Self-Recruiting Species in Aquaculture: Their Role in Rural Livelihoods

Participatory Rural Appraisal in Thom Village Case Study 3 (PRA Report from 2001)

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Table of contents

Thom Village

Introduction

Background

The present status of aquatic systems in the province as well as the effect of these aquatic systems to the people has not been established. In any development organization and even to government agencies, knowing the general background of the village is very important. An outsider would not see the true and whole picture of the village unless proper baseline gathering is conducted. This information can be used to develop new programs or in designing relevant intervention activities in the area. It is also very important that the information is generated from and with the primary stakeholders themselves – the farmers/villagers.

A lot of development programs had been started in different villages and there have been some problems in sustaining these programs. Most common reason for the low success of development projects is the passive, "disengaged attitude" of the supposed primary stakeholders towards the project or program. This can be attributed mainly to the way the project or program was conceived and the planning process used. Frequently, development interventions are designed and managed using the top-down approach. Projects are initiated and planned at the top, with no prior consultation with the other stakeholders and no involvement of the intended beneficiaries in the planning process. Thus, the communities are left to just accept and accommodate the said "intervention". It is therefore necessary to listen to the villagers and to consult them first regarding the status of their area prior to starting any activity, rather than just thrusting information and expectations on them.

Objectives

The main objectives of the study are to assess the general livelihood activities in the village and to establish rapport with the villagers. To achieve these main objectives, the following are the specific objectives:

1. To assess the local conditions in the village;
2. To gather baseline information on the status of aquatic animals in the area using participatory tools;
3. To work with the villagers in facilitating the identification of issues in the community.

Participatory Rural Appraisal Team

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Schedule of Activities

The workshop was done in three days, which also included the collection of secondary information about the commune and the village (see Table below). During the first day the commune office was visited. Secondary information was gathered from the office that helped the team identify the village for this study. Before the village was finally selected validation and additional information were asked from the head of the commune. A staff was sent to set appointment with village for the two days activity.

On the second day, the village profile was generated and participants for the next day's activity were identified. The last day of the workshop was used for collation and processing of outputs from the two days' activities. The last important activity that was done in the village was the validation of the information and getting feedback from the villagers.

Table 1 Schedule of Activities during the PRA in Thom Village

Dates	Activities
13 May 2001	Commune office visitation
14 May 2001	Introduction with the village
15 May 2001	PRA workshop

Svay Rieng Province

Province description

Location. Svay Rieng is situated 124 km away from Phnom Penh on the southeast part of Cambodia. It covers a land area of 2970 km^2.

Boundaries:

North - Kampong Cham province
South - Long Anh province of Vietnam
East - Tha Ninh province of Vietnam
West - Prey Veng province

Administration and population. The province is compose of seven (7) districts with 80 communes and 690 villages. Since 1998 estimated population of the province is 442, 000 with an average 149 persons per sq. km. (Census, 1998)

Kampong Ro

District Description

General information. Kampong Ro is one of the districts in Svay Rieng province, which is situated in the southern part of the province and close to the border of Vietnam. The district has a total land coverage of 41,492 hectares. This district is composed of 12 communes and the number of villages in each commune ranges from 4 to 14. The whole district has a total of 89 villages. Among the 12 communes, 4 of these are flooded every year.

Population. It is estimated that the district has a total of 63,494 residents with an average percentage of women of 52.60%. There are about 13,489 households in the villages, which are divided into 778 groups. The average household size in the village is 4.7 head/family *(District office of Kampong Ro, 2001).*

Water bodies. There are a number of water bodies in the district that serve as sources of aquatic animals in the district. Below are the main water bodies located in the district:

Boeung Chop Pring in Thmei commune
Prek Kampong rotes in Bang Taykrang commune
Boeung Khset in Khset commune
Ou Kampong Ro in the district center
Boeung Bekchan in Gner commune

Aside from the water bodies mentioned above, trap ponds in the village are also considered as another source of wild fisheries in the district especially during the cold season. In general, trap ponds are in the lake but there are some located in rice fields and near homestead also.

Land use. Majority of the households here are farmers thereby the main use of land is for cultivating rice. Below is the division of land according to usage:

Rice land	-	30,972.56 ha
Forest land	-	38.31 ha
New grown forest	-	10.50 ha
Water area	-	2,950.64 ha
Irrigation area	-	789.62 ha

Sources of income. Aside from rice cultivation, residents from this district also get income from other sources. Livestock is considered as another main source of income. Vegetable growing and making mats also contribute to the income of the families. Some families also work outside the village to gain more income. Phnom Penh is the most common place where residents in this district go for work. Women usually work in garment factories and men work in construction sites. People who work outside the village return to their communities during the planting season.

Food supply. In general the food supply in some parts of the district is not enough due to regular flooding during the rainy season. However production in agriculture increased compared to the previous year.

Status of culture/wild fish. Kampong Ro district is considered as a medium rich in wild fisheries. This is due to some parts of the province that are low and with water, which serve as a good habitat for wild aquatic animals. An organization known as "Food for the World" assisted the district in teaching people how to culture fish. Majority of the communes in this district are into fish culture for their own consumption. Species like catfish, pangasius and Tilapia are the common species being cultured and the seeds come from Vietnam. However there are still problems in terms of technical knowledge on how to culture these species properly. Thus the number of families culturing fish decreased.

Species of wild aquatic animals are still abundant in this district particularly in three communes. Big fishes like snakehead, catfish and climbing perch dominate the district market and command a higher price.

Commune Description

Tnort Commune comprised 11 villages as follows:

1.	Thom	162 families
2.	Kbalknal	258 families
3.	Bonn	98 families
4.	Khang keatwat	113 families
5.	Khang leakwat	97 families
6.	Trant	98 families
7.	Kandal	160 families
8.	Por maom	142 families
9.	Phor Chy	108 families
10.	Prey Romeas	150 families
11.	Tlork Thmey	74 families

Selection Process for the village

The selection of the village was done by drawing a transect line traversing the province from the northwest down to the southeast. By doing this, the line passes through three topographies of the province: higher area in northwest, midland and lower area in the southeast. A district was identified first from each topography level. There were three districts identified in this province namely Chantrea, Kampong Ro and Ramdoul.

Names of the communes situated close to or along the transect line were listed down in a piece of paper. The staff then selected the possible commune for study by randomly picking a paper from the pot with all the names of the commune. A second and third alternate communes were also picked for possible replacement or as a back-up option if the first commune is not possible.

After the commune was identified, the team visited the place to clarify and get more secondary data about the commune and its different villages. The village was then identified using the criteria of the aquatic resource in the area, economic level of the village and also the number of the villagers.

Specific Methods Used

Village (Resource) Map – Mapping of the resources was conducted to generate information about the different resources present in the village and how these resources impact the villagers.

Timeline – This activity was conducted to trace the development trends in the village. This activity also showed the different "shocks" the village encountered from past to present.

Well-being Ranking. Mapping of the socio-economic context of the village was done. This activity determined the different social groupings in the village and how villagers naturally grouped themselves.

Seasonal calendar. This illustrated the different situations in the village during the year. Information about the weather, traditions and festivals, economic activities, when people migrate and the health conditions were included in the calendar.

Activity profile. This activity was meant to identify the common activities in the village and to differentiate the priorities of each group.

Aquatic animals identification/ranking. This was accomplished to find out the available and unavailable aquatic species in the area. This activity also determined how important each aquatic animal is to the villagers

Aquatic animals' seasonality. This activity showed the status of each aquatic animal during the year. The location where aquatic animals can be caught and the gear that can be used were also included in the seasonality diagram.

Aquatic animals' trend. This activity showed the perception of the different groups on the status and condition of the different aquatic animals in the village. The causes of the increase as well as the decrease of a particular aquatic animal were also understood.

Transect. Established "ground truths" to cross check the map.

Process

The activity was divided into three parts. The first part was done with the village headman and involving key informants. During this activity the profile of the village was established. The information about the present resources in the village was generated using the village mapping exercises, which was done by the village headman with the help of other key informants present in the meeting.

For the purpose of getting the social context of the village, the list of households was used by the team in the well being activity. The individual names were written down in cards and farmers/key informants identified the different social groups in the village. Using the results of this activity the participants for the next day's activity were selected. Two groups of farmers representing the poor group and the better off group were identified. The team set an appointment with the selected people to participate in the activity for the next day.

The second part of the activity generated more detailed information about the activities in the village and how different social groups differ in their ideas. During this day men and women from poor and better off groups were separated into two. Seasonal calendars and activity ranking matrices were produced during this period. Information

about aquatic animals and their importance were also generated during this day. The perceptions of the different groups regarding the status of aquatic animals were also discussed during this period.

The last part of the workshop was the validation. After the team collated all the information generated from the first two days, the team made summaries of the important issues and had a brief meeting with the villagers to validate some information. The follow-up discussion focused on clarifying the contradictory information and the vague ones.

Setting the Context

Mapping the Current Resources in the Village

The village headman with the help of some key informants carried out a village mapping exercise. The objective of the activity was for the participants to discuss and fully understand what resources are present in the village. They also discussed the current status or what is the present scenario of these identified resources.

The first resource that was identified in the exercise was the road. This road plays a big role to the villagers in terms of meeting their household and farming needs. No significant amount of development could have happened in the village if the road was not constructed. However the current condition of the road is not so good because during the rainy season, travel is still a problem.

Two major groups of resources were identified in the village map. These are land resource and water resource (see Figure 1)

Land resource. Majority of the land resource in the village is being used for rice cultivation. As shown in Figure 1, rice fields are all over the village and occupy the largest portion. This is also the reason why rice cultivation is the major activity for all groups since this is the most abundant resource in the village. Aside from rice fields, land is being used for residential purposes. Soil is also used as material for building houses.

Water resource. The water resource is one of the reasons why this area was selected. A lot of water resources are available in the area. The major water resource where most of the villagers have access to is the lake that is situated in the western side of the village. The lake never dries up so for the whole year the villagers can utilize this resource. There is also a canal connected to this lake, which also plays an important role in the village for irrigation and as source of aquatic animals. At household level, which is more likely not an open access, resources like household ponds and ditches are available. The rice fields also become a water resource during the rainy season.

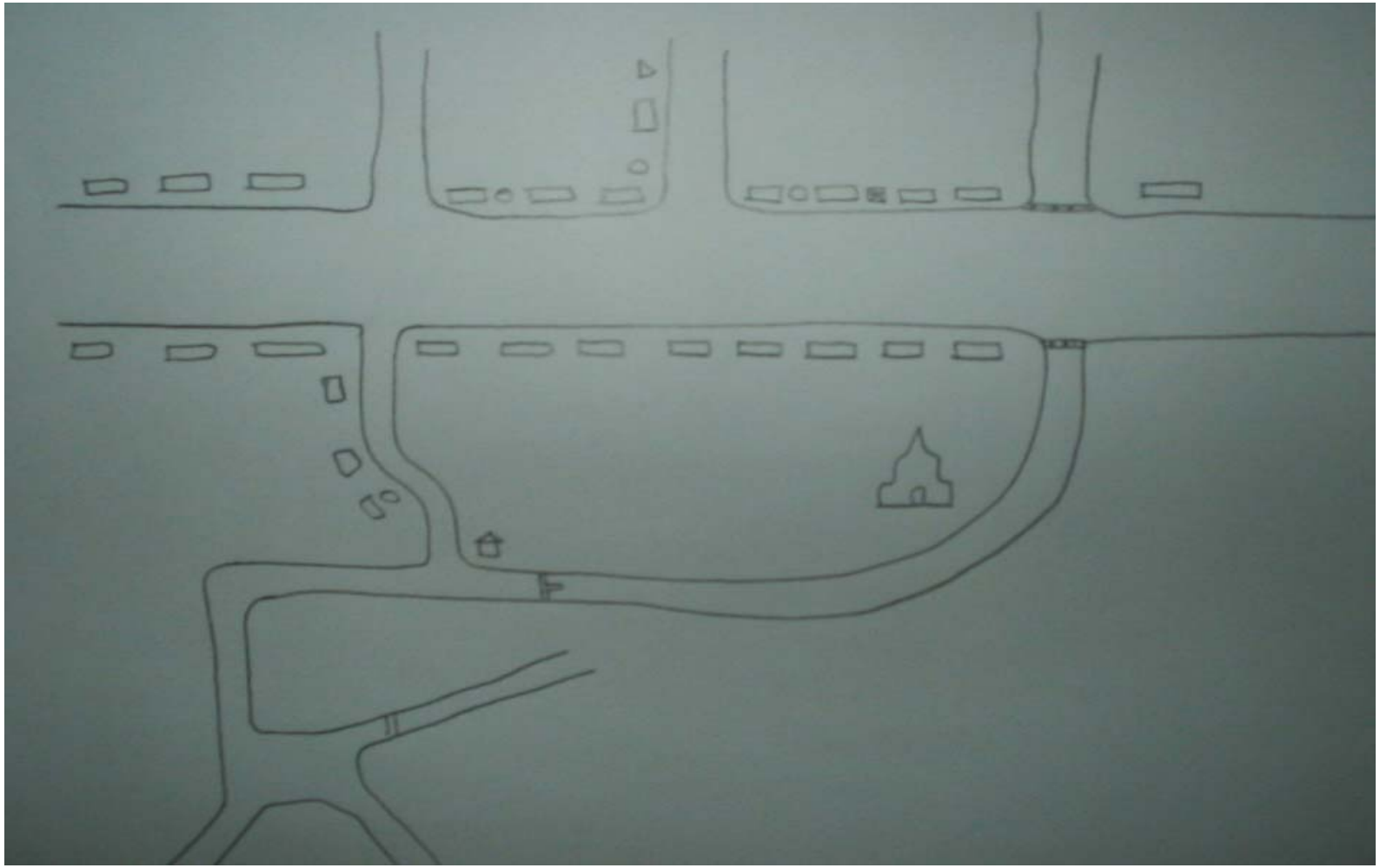

Figure 1 Village Map of Thom

Mapping the Development in the Village

The development of the village was discussed during the timeline exercise participated in by some old people in the village and also by young villagers. The discussion was focused on the political situation of the village from the early years. This really means that political insurgency in the country had a very big impact on the villagers. However during the discussion some information regarding living conditions, status of resources and problem with the resources were also included (see Table 2).

The development history that was discussed in this exercise can be divided into three stages: 1962 – 1975, political problem in the area, 1975 - 1985, when people started to migrate to other places and for those remain to work hard in the field, and 1990 onwards, when some development started in the village.

There was not much development discussed during the early years of the village. Even the establishment of the village was not talked about. During the time when the political situation was not favorable, rice production in the area was also not good. This was so because majority of their products got destroyed because of the bombings. People were also afraid to go to the field because of the bomb threat. Moreover, during that time people would work together in rice cultivation but the government would be the one benefiting from it. It was only in 1979 when the government started distributing land to villagers. This was also the time that developments in agriculture started. During the period of 1985 – 1990, the government started distributing chemicals and fertilizers to increase rice production. This was the first development activity of the government related to rice. Introduction of different varieties of rice from Vietnam also occurred during the period of 1990-1995.

Livestock was also one of the products in the village that were affected by the political problems. In the history presented by the villagers, humans, animals and resources were badly affected by the bombings in the area.

The situation of the fishery resource in the village was not affected very much by the political situation and insurgency. During the early years when the situation was bad, the aquatic animals in water resources particularly the lake was abundant. This was due to two main reasons. One, there were only a few people in the village because most of them have escaped to other places. And two, only a few fishermen were collecting aquatic animals because they were afraid of the bombs possibly buried in the rice fields. The supply of aquatic animals started to decline when the government started the distribution of chemicals and fertilizers in the period of 1985 – 1990 to increase rice production. This was the period when fishes started to have diseases. The villagers observed the decline of the population of aquatic animals and the occurrence of fish diseases. At present there are some projects to increase the population of the aquatic animals in the area. However, some species like giant snakehead, turtles, green blowfish and great white sheatfish are still extinct in the area.

Table 2 Timeline of the Development in the Village

Year	Events/Situation
1962	-Bombs were dropped in Chantrea District, people left the village to study in Chresh, Chyphou, Prey Korki with relatives. -Rice production irregular due to fear of bombs. The people haven't enough food to eat. People decided to borrow money and some people made mats to exchange for rice in Prosot District, Svay Rieng and Chyphou. -Most children under the age of 15 years got smallpox and this killed from 50-60 children. Had no medicine for treatment except traditional medicine. -Livestock got diphtheria and most of the pigs were killed. -In the lake there were a lot of water plants and lots of aquatic animals fish, eel, snake, frogs because of a thatch field near by the lake that kept the water deep
1965-70	-Geak Kong (Vietnamese) entered the village but there was no violence. -Rice production irregular.
1970-75	-The war - bombing in the village, nearly all the households were destroyed. 30-40 people were killed and also some livestock. Also some disappeared. -People went as refugees to Thnortboun Camp Trapaing Rong Village, Chresh Commune. -Nearly all rice and other wealth was burned and destroyed. -People and livestock got pest diseases. -In 1971-72 de-mining of the whole village. -Fish and other aquatic animals were abundant.
1975-79	-People went as refugees to Svay Chrum for 6 months and next to Kandal Stun and escaped to VN -Not enough food to eat and people worked hard.
1979-85	-People came back from Kandal Stun to the village and some went to PP or stayed in Kandal Stun. -There was not enough livestock - only 2 livestock in the village. -In 1979 there was a drought over the whole year. People eat core of banana tree, corn and a small amount of rice. -Fish was abundant because of absence of fishermen. -People caught a lot of fish. -Rice production was done as a community. -In 1984 the Government had policy to distribute land to each household. The community head distributed the land.
1985-90	-A charity built the school in Bonn Village and pupils had a good school for studying. -Most people went to do business in Pailin (find diamonds) they got malaria (4 people died). -Government distributed chemical fertilizer for rice production also at that time they used pesticide. -Reduced fish and other aquatic animals due to use of pesticide and more fishermen.
1990-95	-People clean thatch field for rice farming, and thatch field were reduced. -People buy the seed from VN IR 54 and IR 75 -Hun Sen built the school in Bonn village. -In 1993 there was an election. -The commune had medicine, but not enough materials and drugs. -Fish became less plentiful and rice field and trap pond fish got diseases (snakehead and catfish).
1995-2001	-IPM organization taught people about agriculture (crops, fish…). -H.E Chhear Song built the road.

Mapping the Social Context of the Village

One of the bases why Thom village was selected for this particular activity was the economic situation of the village. In general the village is a representative of the low-income group category although not the lowest in the commune. However the well

being of the villagers differ specially in the perception of villagers. One of the participants in this activity believes that the villagers can be grouped into nine groups according to well being. However, another participant believes that the villagers can only be divided into three groups. The participants of this activity used several indicators to classify the well being. In general most of the villagers belong to the second and middle level well being categories. There were only a few villagers that were considered poorest or richest in the area. Below are the socio-economic characteristics of the different groups in Thom Village.

Socio-Economic Characteristics

Land ownership. Owning land and the area of the land are the most common and/or major criteria used. The lowest income group in the village usually owns 0.02 to 0.5 ha. In some cases poor people even lose this small piece of land to rich farmers due to unpaid loans. The land area for the rich and middle groups varies depending on the source of income of the family. However none of the villagers own more than 10 hectares of land in the village. Most of the families in the middle group usually own 1-3 hectares of land, which is still small considering the number of household members in the family.

Livestock. Livestock play a very significant role in their livelihoods. Farmers use their livestock in preparing their land for agricultural activities, as well as in transporting their products. The number of livestock would also be related to the size of the land the farmer owns. This is the reason why villagers use the number of livestock as one criterion for ranking the well-being of farmers in the village. Very of few of the poor families (who are not even necessarily the poorest) own a cow or a buffalo but some do own some pigs and chickens. Livestock would be valuable for them as food and for income generation, and not so much for agriculture. Most of the poor families that have livestock sell them especially during lean season. On the other hand, rich families and even those in the middle group and own at least 1 to 4 heads of livestock. These livestock are used to assist in agricultural work (ex. plowing) and also as source of income by renting them to other farmers.

Source of income. In general the source of income can also dictate the well-being of the individual. Farmers in this village used this variable for grouping themselves according to their respective well being category. The common source of income in the area is farming since the whole village is surrounded by paddy land. However in each group farmers/participants identified some differences regarding the additional livelihoods of the farmers in the village. It is very common among the lowest or poor families to augment their income by working as a helper for other farmers or rich families. Aside from working as helpers, poor families can also get income by selling livestock (chicken and pigs) and through fishing. The richer group and even the middle group get income from offering services to the villagers like operating rice mills, renting livestock, motor taxi driving and small shops. There are some families in the rich group that allow their land to be cultivated by others and they get rental fees from it.

Food availability. Most of the families in the village have problems with the supply of food for the year. This is because the production from agriculture is not enough to meet the demands of the villagers. The most common groups affected by the lack of food particularly during the lean season are those belonging in the lowest and second to the lowest socio-economic groups. According to the village headman there are

cases that some families do not have enough food to eat for four months. For the middle to rich group, food would usually be available but not in large quantities.

Equipment. Farming equipment and household equipment also help in establishing the well-being in the village. It is very common among rich families to have appliances in their big, durable houses as compared to the lower group. On the other hand, the houses of the poor group are usually made from leaves and other light materials. Thus, acquiring and owning appliances are not their priority since it is not their immediate need. The richer farming group would also have tools and equipment that help make their production level high at some point. Member of the rich group have generators, pump and modern farming equipment while those from the poor group only have simple and traditional equipment.

Transport. Transport to go in and out of the village is usually provided by the richer group or even by the middle group. Poor families usually take public transport like motor taxi to go around but most of the time they just walk if their destination is close to the village. The poor group usually has bicycles as their transport for going to other places in the area. In the village, most of the villagers own a bike that is the most common form of transport.

Table 3 Well-being Characteristics in Thom Village

Group of Women	Couple	Village Chief
I • House made from small oblong trap with leaf roofing matl. • Small land 0.2-0.3ha • Not enough food to eat • Used their land as collateral • Work as helper • Selling livestock and fishing for food • No livestock	I • House made from small oblong trap with leaf roofing matl. • Small land 0.02-0.03ha • Not enough food to eat for whole year • Used their land as collateral • Work as helper • No livestock • Used their land as collateral	I • House made from small oblong trap with leaf roofing matl. • Small land 0.5ha • Enough food for 4 months • Work as helper (construction worker and garment factory • Selling livestock and fishing for food consumption • Limited livestock • With bicycle
II • House made from small oblong trap or wood with leaf roof • Small land 0.5ha • Not enough food to eat • Used their land as collateral • Work as helper • Selling livestock and fishing for food • No livestock • Makes basket for selling	II • House made from small oblong trap with leaf roof • Small land 0.2-0.5ha • Enough food for 6months • Work as helper • Selling livestock and fishing for food	II • Own land 1.5-2.5ha • Enough food for 5months • I livestock • Small house with leaf roof • Number of family is 5 • Transportation mostly with bicycle • Operating a rice mill • Appliance small radio • Work as helper • Selling livestock • Makes mats for selling
III • House made from small oblong trap with leaf roof • Small land 0.5-1ha • Not enough food to eat • Used their land as collateral • Work as helper • Selling livestock and fishing for food • limited livestock mostly	III • House made from bamboo with leaf roof • Small land 0.5ha • Enough food for 8months • Work as helper • Selling livestock and fishing for food • 1-2 livestock • Making mats, basket	III • House with GI sheet or tiles roofs • Own land 5-6ha • Leave the farm to other farmer • Provide rice as credit • Motor taxi driver • Operating a rice mill generator, water pump,

don't have		speaker • Appliance like TV • Average number 5 children
IV • House made from small oblong trap with leaf roof • Small land 0.2-0.3ha • Enough food for 4months • Get debt from (group9) • Work as helper • Selling livestock and fishing for food consumption • Limited livestock (1)	IV • House made from bamboo with leaf roof • Own land 1ha • Enough food for 9months • Selling livestock and fishing for food • 1-2 livestock • Making mats, basket • Appliance like cassette small oblong trap	
V • House made from bamboo with leaf roof • Own land 1-2ha • Not enough food for a several month • Get debt from (group9) • Work as helper • Selling livestock and fishing for food consumption • Limited livestock • Mostly have bicycle	V • House made from bamboo with leaf roof • Small land 1-2ha • Enough food for 10months • Selling livestock and fishing for food • Making mats, basket • Appliance like TV, cassette small oblong trap	•
VI • House made from bamboo with leaf roof • Own land 1-2ha • Enough food for 6months • Selling livestock and fishing for food consumption • Limited livestock (2cows)	VI • House made from wood with tiles roof • Small land 2-3ha • Enough food for whole year and selling • Selling livestock and fishing for food • 2 livestock • Making mats, basket • Appliance like TV ,cassette small oblong trap • Operating a rice mill • Mostly have motorbike	•
VII • House made from wood with GI sheet or tiles roof • Own land 2-3ha • Have enough food • Selling livestock and fishing for food consumption • 2-4 livestock • Transportation with bike cycle and motorbike • Work as helper		
VIII • House made from bamboo, wood with GI sheet or tiles roof • Own land 3-4ha • Have enough food • 2-4 livestock • Transportation with bike cycle and motorbike • Work as helper construction worker • Appliance like TV cassette small oblong trap		

IX • House made from wood with GI sheet or tiles roof • Own land 4-5ha • Leave their farm to other farmer • Have enough food • Transportation with bike cycle and motorbike • 4 livestock • Operating a rice mill, generator, water pump		

Activity Profile of the Village

The main activities in the village focus on agriculture particularly on rice cultivation, which ranked highest (see Table 4). Rice production got the highest number of beans (353) in the list, which is way beyond the other activities. Cropping comes next to the list with a total number of 191 beans. Livestock came third while fishing was fourth (117 beans). The four major activities mentioned above can be grouped as activities providing food. There are also other activities that are important to the village although not directly providing food but contributing to the livelihoods of the villagers. Selling and making mats are the most important activities that can be grouped under the non-food activities.

The priority and importance of the different activities mentioned in the earlier discussion differ with each individual and between groups. Priority might change based on the gender and even from the social group an individual belong to. The table below shows the different activities of the various groups in the village.

Table 4 Summary of Important Activities in the Village by Gender and Socio-Economic Group

Socio-econ group	Gender	
	Men	Women
Rich	Rice production (110) Livestock (41) Cropping (35) Carpenter (19) Fishing (15) Seller (14) Work as helper (5)	Rice production (95) Cropping (45) Selling (42) Housework (41) Selling food (32) Fishing (31) Making mats (28) Wage labor (6)
Poor	Rice production (68) Livestock (43) Crop production (38) Fishing (33) Construction (20) Carpentry (20) Motor taxi (11)	Rice production (80) Cropping (73) Making mats (56) Livestock (55) Fishing (40) Selling mats (38) Taking care of children (17) Selling cakes (14)

The poor group identifies rice cultivation as their main and most important activity compared to other activities listed in the table. As presented in Table 4 rice cultivation gained a percentage of 24% of the total number of beans from the poor group. The next activity that follows rice cultivation is cropping, which is also related to food production. Livestock and fishing were also included as one of the most important activities by the poor. From the ten activities listed by the poor group, four of them are related to food production and fishing was included in the group. The rest of the activity listed can be under the category of income generating or maintenance. However none of the poor group (men and women) included household work as important.

For the richer/middle group, the priority of activities had some differences as well as similarities with the poor group. Rice production was also being identified as the most important due to the income and contribution to food demand. It gained a percentage of 43% of the beans for the rich group. Aside from cropping and fishing, selling was included among the most important activities in the rich group.

In terms of gender implications or influence, although both men and women identify rice production as the highest and most important activity, there are still some differences when it comes to other activities. The number of activities do not differ much (men cited 10 and women cited 11 activities). For the men group the most important activities are agricultural activities and the rest are all related to income earning activities. For the women only two agricultural activities were considered important: rice production and cropping. Other livelihood activities like making mats and selling are also important to the women group. Aside from food and economic activities, women also included in their list the importance of looking after their children and other household activities.

Fishing was not ranked very high by both gender but was considered important. In all groups, fishing was mentioned. Some activities ranked high because some groups put too many beans while others put nothing. A good example is livestock, which is in the list of the rich women group.

Seasonality

The seasonality calendars were done by four groups and illustrated the condition of the village for the whole year. Different groups produced different activities for the year. There were also differences in perception of the villagers in terms of climate, festivals, migration and health. However all the calendars started on the same month, which is normally the start of rice cultivation – April. It is also the start of the year in the *lunar* calendar (Please see samples of seasonal calendars in annexes).

Weather. In general there are only three seasons in the village. The longest season experienced here is the hot season, which usually starts in the first quarter of the year. Another season is the rainy season. This is the most awaited season in the village since most of the agricultural activities depend on this season. The last season is the cold season. There are some differences between the perceptions of men and women, and even between the rich and the poor regarding these seasons. The starting period of a particular season, and the duration of the season differ between groups.

For the start of the hot season, the rich women experienced the latest hot season, which starts from March and ends in August. The rest of the group (poor men and women and rich men) experience hot weather from January but the duration differs. The hot weather for the three groups can be experienced between January to October but not in continuous. For the rainy season, again the rich women experienced it late compared the three groups. From the month of May, the three groups are experiencing little rain already. These differences in the experience about the weather can only be explained by relating it to the common activities of the group and also the well being. It is evident from the list of activities the rich women are doing household works and other that can be done in the house. In this case the poor women are limited to go out and spent most of their time in their household thereby not noticing the early start of the weather change. They only experience the weather during the peak of the period.

Tradition. Festivals and ceremonies are significant aspects of the culture of any village. This is their way of expressing their beliefs and traditions. In general most of the festivals and ceremonies celebrated in the village are directly connected or related to their religion, which is Buddhism. Although it was mentioned that everybody observe these festivals and ceremonies, some social groups do not observe some of the events.

The groups according to social strata again differ in terms of the number of festivals and events celebrated in a year. The poor group of men only has 7 months with activities or festivals being celebrated. On the other hand, the rich group, both men and women, has activities/festival for almost the whole year. However there is only one month where most of the villagers do not have any social activity, which is the month of August. This can be attributed to the fact that in the calendar of activities, the month of August is a very busy month because of rice cultivation.

Economic activities. The most important economic activity in the village is performed almost throughout the year. In this village, the economic activities of men are diversified, unlike that of the women. The whole year is busy for both gender groups. Economic activities in the village can be classified into whole year, seasonal and occasional. Different groups in the village listed different economic activities and reflected in the seasonal calendar (see annexes, seasonal calendar). Below is the summary of all the economic activities that farmers do in the village

Table 5 Summary of Important Economic Activities in the Village by Gender and Social Group.

Socio-econ group	Gender	
	Men	Women
Rich	Rice production Cropping Livestock Fishing Making farming tools Making boats Making mats Making basket Collect thatch Collect wood Carpenter	Rice production Cropping Livestock Fishing Making fishing gear Making mats Selling

Poor	Rice production Cropping Livestock Fishing Making fishing gear Making basket Making thatch Collect wood Motor taxi Wage labor Construction Carpentry Selling	Rice production Cropping Livestock Making mats Making wine Collect woods Selling Fishing

For the group of men, the main activity that they do almost the whole year is rice cultivation. Both livestock and fishing are done the whole year but more so during some particular months of the year. Like for livestock activities, men (from both socio-economic groups) find these easier to attend to during summer, which is the period of February to April. During the rainy season, the rich group still has activities regarding their livestock from June to July and from October to November. During the rainy season both groups cut grasses in the field as feed for their livestock.

For the women group majority of the activities are done the whole year although not continuously. Among the economic activities identified by women, rice cultivation, fishing, and making mats are the ones performed almost the whole year. Making fishing gear, wine and livestock production are done on seasonal basis. There are some activities that are often performed by the poor women but not by the rich women. Poor women do trading for almost 8 months in a year while the rich group only does it twice a year and during rice harvesting season. Another activity being done by poor women is wine making. Poor women make wine for 7 months in a year in this village while the rich women do not make wine.

Like livestock, fishing activity is done the whole year but the location for the activity changes. July, December and February are the months where there would be no collection of AA. For the rest of the year, most of the villagers would collect from water bodies like lake, trap ponds and small lake. These would be for their consumption and for selling. For the women group, both rich and poor do fishing in the village. For the rich women they collect AA for almost 11 months although it was not mentioned in the exercise where in the village they normally collect AA. The poor women also collect AA for eight months in a year (see annexes).

Health. In general, the health condition of the villagers is in good state. There was no serious epidemic identified by the villagers that affected the community. All groups experience common illnesses like colds and flu usually during the end of a season. However based on the calendar done by the different groups it is very evident that poor groups get sick often compared to the rich group. The continuous heavy on-farm and off-farm work by the poor families affects their health condition, while it can be assumed that the rich group have an easier life.

Migration. In the village, migration is an option taken by almost every family depending on their needs. There are two main reasons why villagers move to another place. The main reason is for the family to have additional source of income. The other

is for the family member who does not want to work in the field to find an alternative type of work. Migration in the village takes place every year after the harvesting season. Most of the villagers go to Phnom Penh to work as construction workers (for the men) and as factory workers (for the women). Some of the villagers go back to the village during the planting season but others opt to stay and would just send remittances to their family.

Role of Aquatic Animals

Villagers have their own motivations and different reasons for collecting particular aquatic animals from systems. As presented in Table 6, villagers from the different groupings listed different criteria for collecting and ranking the importance of aquatic animals in the system. Based on the criteria shown in Table 6, the main reasons why villagers collect aquatic animals are due to their need for it for food consumption and also for additional income.

Food supply. In general the criteria that relate to food consumption ranked the most important. Taste has 184 total number of beans followed by availability, which has a total of 170 beans. These two are the main reasons for collection, and the variables used for ranking the importance of aquatic animals. Most of the farmers go to the field or any aquatic system to acquire food. Some villagers collect aquatic animals from big water bodies. If the collection is enough, this farmer will not go fishing for a few days until their fish stock runs out. Other criteria used by farmers that relate to consumption are: can be processed, family consumption, bony (has few and bigger bones versus small and many bones), and easy to catch.

Additional income. Other farmers and some fishermen collect aquatic animals that have high value. All the groups mentioned that high value aquatic animals are in demand among farmers collecting aquatic animals. During the rainy season most farmers benefit from aquatic animals. Because of the increase in AA population among the different systems, farmers can afford to sell some of their catch and thus gain additional income. However, this is not the case during the dry season where all aquatic animals are limited in supply.

Table 6 Summary of the Different Criteria Used by the Villagers in Identifying the Importance of Aquatic Animals.

Socio-econ group	Gender			
	Men		Women	
Rich	High value	(49)	Availability	(48)
	Availability	(45)	Taste	(40)
	Family consumption	(32)	High value	(35)
	Taste	(26)	Easy to catch	(31)
	Easy to catch	(25)	Family consumption	(30)
	Can be process	(20)	Can be process	(23)
	Bony	*(20)*	*Bony*	*(23)*
Poor	Taste	(56)	Taste	(62)
	High Value	(35)	Availability	(47)
	Easy to catch	(33)	High value	(44)
	Abundant	(30)	Can be process	(18)
	Spawn in lakes	(29)	Easy to catch	(12)
	Can be process	(28)		

The groups ranked the different aquatic animals using different criteria also. The richer/middle group considers the aquatic animals important if they are always available in the village whether in open system or private system. High value is important to the rich group because they have the capacity to sell their collection and they invest in fishing gears that would allow them to collect more aquatic animals. The poor group gives more importance to the taste of the aquatic animals and high value is only secondary. Families belonging to the poor group need to have secured food before they think of income.

Between men and women, there are also some similarities and differences on how they rank the importance of aquatic animals. For the women, the taste of the aquatic animals is the most important. Aquatic animals are more preferred for its good taste. Aside from the taste, availability is also important for the women. This means that the aquatic animals are available in areas where women have access. High value of the species is also important for the women group but not as important like the criteria mentioned earlier. For the men group high value is really important since they are the ones collecting mostly high value aquatic animals. Most of the high value aquatic animals need special equipment for collection that men use. The men group also give importance to the aquatic animals with good taste and always available in the area. Bony and family consumption are the least considered criteria used by the men group in ranking the importance of aquatic animals.

Aquatic animals that are breeding naturally and can be collected from lakes and open water bodies are very important to the villagers because these are the only places that they can collect aquatic animals from, particularly in the case of the poor men.

Important Aquatic Animals

The identification and ranking of aquatic animals facilitated a big discussion in the village during the PRA. The different groups produced a long list of aquatic animals that are present in the village and that they utilize or consume. The species identified range from big aquatic animals (big fish) to small aquatic animals and also non-fish aquatic animals. In general more than 12 important aquatic animals were identified in the village (see annexes for individual list of the group). The most important aquatic animal identified is the snakehead (*Chana sp.*), which ranked high in all four groups. The second in the list is the snake (however, the specie of the snake was not mentioned). Other species of fish that ranked high are: catfish (*Clarias*), Grey featherback, climbing perch (*Anabas*), and whisker sheatfish. Most of these fish species of aquatic animals ranked higher than the non-fish species. Among the non-fish species, freshwater eel and frogs are the most important. Small shrimp and spiny eel also ranked as important in the village.

Table 7 Summary of important aquatic animals in the village by gender and socio-economic group

Socio-econ group	Gender			
	Men		Women	
Rich	Snake	(41)	Climbing perch	(31)
	Snakehead	(20)	Snakehead	(23)
	Catfish	(20)	Yellow catfish	(22)
	Climbing perch	(14)	Grey feather back	(17)
	Whisker sheatfish	(13)	Whisker sheatfish	(17)
	Mystus	(13)	Walking catfish	(15)
	Freshwater eel	(13)	*Mystus*	(14)
			Frog	(14)
Poor	Snakehead	(26)	Catfish	(24)
	Freshwater eel	(25)	Snakehead	(20)
	Frog	(21)	Spiny eel	(14)
	Snake	(21)	Snake	(14)
	Grey feather back	(19)	Whisker feather back	(13)
	Small shrimp	(17)	Grey feather back	(12)

The various groups ranked the aquatic animals mentioned in the discussion above differently. Poor groups have a different list and ranking of aquatic animals from the rich group. For the rich group, the climbing perch was ranked as the most important because it's always available in the rice fields and even in their household ponds since it can thrive in different kinds of environment. Climbing perch also has a good price value in the market. The composition of important aquatic animals by the rich group is mainly of big fishes like snakehead, catfish, whisker sheatfish, mystus and yellow catfish. However there are also non-fish varieties that are important the to rich group. The snake is at the top of the list for the non-fish. Aside from the snake, better-off families also like freshwater eel and frogs. The poor group is different from the rich group in terms of the composition of the important aquatic animals. There are non-fish varieties included as some of the most important but like the rich group, majority of the species are fish. Snakehead also was identified as the top most important followed by the snake. Grey featherback, catfish and spiny eels were included also among the fish species that are important. Non-fish species that are important to the poor villagers are freshwater eel, frogs, and small shrimps.

Among men and women there are also similarities and differences in the ranking but not in the composition of important aquatic animals. The women group showed the importance of snakehead among other aquatic animals by giving more beans. Both poor and rich groups gave a large number of beans to the snakehead. This specie is considered as one of the special fish since it is tasty at the same time with high value. Walking catfish, climbing perch, and Grey feather back are some of the species of fish important to the group of women. However there are only two species of aquatic animals that are non-fish that are important to women group : snake and frogs. The men group also identified snakehead as the most important aquatic animals because of its high value and taste. But unlike women, men ranked snake as the second high specie because of its value. Some men in the village also like to eat snake. Again the difference in the

composition of the men and women list is that more non-fish varieties are included in the list of men like snake, freshwater eel and shrimp. The first two species are important to men because they believe that these species have a good effect on man's health, and mainly since these are considered to be potent aphrodisiacs.

Sources of Aquatic Animals

Thom village was selected because of the amount of water-bodies present in the village. As presented in the village map, a number of water-bodies can be found around the village. The major sources of aquatic animals in the village are the two open access systems, which are lake (*beoung*) and rice fields (*srai*). The rice field is around the village and the lake is located in the western part of the village. Aside from the two open access systems there are also some individual or privately own aquatic systems like ditches, household ponds, canals and pond in the ricefields. Some farmers also have trap ponds near or in the lake to trap aquatic animals when the water starts to recede. In rice fields near the lake some farmers build jump traps to collect aquatic animals, mostly catfish (*Clarias*) and snakehead (*Chana*). Other sources aside from what had been mentioned above would be outside the village or not a system like the market and mobile trader.

Gear Used

There are different types of catching/collecting gears being used by the farmers in this village. Different species of aquatic animals need different and specific types of gear. However in most cases, farmers use cast net (*sam nagn*), which can collect a variety of aquatic species, ranging from surface species to bottom dwelling species. The type of fishing gear owned by farmers in the village depends on the farmers themselves. There are farmers that do not go fishing often so the most common fishing gear you may find in their houses are simple ones like bamboo traps, small handled scoop nets (*chheang day*), hook and lines etc. Some families who rely mostly on collected aquatic animals for their food would have different types of fishing gears. Farmers would use a scooping basket, oblong trap, hook and line, gill net (*morng*), and cast net. There are also farmers who opt to drain the system to collect aquatic animals and use their hands to collect aquatic animals.

Seasonality of Aquatic Animals

Most of the aquatic animals collected and being utilized in this village are seasonal. However some species are available throughout the year depending on the availability of water in the community. One of the bases for ranking the importance of aquatic animals in this village is the availability of the species. Availability here not only refers to presence of the species but also the quantity or supply. For this seasonality exercise, the villagers were able to establish the condition of the different important aquatic animals throughout the year. The abundance, location and the gears used were discussed during this activity (Refer to annexes on the seasonality of aquatic animals).

There are three main seasons in the village that affect the availability of aquatic animals in the village. These seasons can change the AA's abundance and their sources

or habitat. Like in summer, most of the aquatic animals can only be collected from big communal bodies of water like canals and lakes and some individual household ponds. But during the rainy season and cold season, collection of aquatic animals can be done in the rice fields, which is the largest source during this period. People can still collect from lakes specially when the water is not moving fast during flooding season.

The different groups have different ideas and perception on what species to collect and where they can collect during the season. The perception on the abundance of aquatic animals also differs from one group to another. This can be explained by establishing who is really collecting aquatic animals and where they normally collect these.

In terms of the perception of the poor men, who usually collect aquatic animals especially during summer, some of the important aquatic animals are abundant and some are limited in number or nothing at all. For snakehead it is abundant during the summer month of April and from August to March or the whole period of the rainy season. In summer snakehead can be collected only from the lake, where most aquatic animals are concentrated in. During the rainy season these species can be collected from rice fields and lakes. Apart from snakehead most of the aquatic animals important to poor men are in limited and insufficient quantity. These only start increasing in population as soon as the rains come. There are months that some of the aquatic animals are really scarce such as the freshwater eel in March, frogs are lacking from November to March, snake from January to February, Grey feather back in April, and small shrimp from February to March.

For the poor women, most of the important aquatic animals are abundant during the rainy season. As for the case of the snakehead, these species do not get scarce but get reduced in population. From April to May, this specie is abundant but starts to decline in population from June to October, and again increases in population from November to January. There are also some aquatic animals that become scarce in a certain period of the year. For instance Grey featherback get scarce from July to January, whisker sheatfish from July to September, snake from May to October and January to February. Catfish, snakehead and spiny eel do not get scarce during the year but the location of collection change i.e. from lakes to ricefields to individual ponds and back to lakes again.

In the calendar of the rich men, the discussion was not focused on the abundance but on the different gears used and location, which can also relate to abundance later on. The calendar (see annexes, Seasonality of Aquatic animals) shows the different activities of the rich men every month regarding the collection of aquatic animals. A lot of collecting activities go on in the months of April and May for all the important aquatic animals, which include drying of pond, putting of branches to attract aquatic animals, catching by hook and line and gill net. Most of these activities are being done in ponds and lakes. During the start of the rainy season, collection of aquatic animals is usually done in rice fields using hard traps, hook and lines and also light when collecting at nighttime. Rich men collect AA mainly during the start of the rainy season and harvesting season.

The rich women who are not collecting aquatic animals regularly also have their own perception about the status of aquatic animals. The status of snakehead, catfish and climbing perch are the same for the whole year as presented in the calendar (see annexes, Seasonality of Aquatic Animals). These three main species are abundant in the

lake from October to April. From May to September, population of this specie is small and can only be collected from rice fields and small swamps. The mystus species is only abundant in trap ponds and lakes from March to April and the rest of the year it is deficit. The snake is available throughout the year and can be collected from the lakes but in small quantity.

Trends of Aquatic animals

The status of the aquatic animals and its trend was discussed during the PRA activity. Each group expressed their perception about what is happening now and what happened before with the different aquatic animals. The trend started from 1960 which is the farthest that they can remember and this is also close to the year when they started the development history of the village.

From 1960 to 1970 most of the aquatic animals are abundant. During this period very few people are in the village and the demand for aquatic animals for food was very small. Farmers before are using simple and traditional fishing gears that are not harmful both to aquatic animals and to the environment. Also during this period farmers collected aquatic animals for their own needs and not as an additional source of income.

The status of most of the aquatic animals changed from the year 1975–1979. The political situation in the village was not good and people were migrating or escaping other places particularly to Vietnam. However during this time since most people were forced to work hard in the rice fields and people were leaving, the aquatic systems increase in population. It was only during the year 1980 when the population of the aquatic animals started to decrease and this was due to several factors listed below.

Factors Affecting the Trend

Population growth. With the increasing population in the village, the demand for fish or aquatic food also increased thereby people are collecting too much from the system but no replacement activities are being done.

Fishing gears. In the early years people only used simple gears and sometimes just their hands to collect aquatic animals. However, due to the competition and with the situation now being considered as "survival of the fittest", fishermen and farmers now use collecting gears that are harmful to the ecology of the aquatic animals. Complete draining of the systems, using of small mesh cast net and gill net and some chemicals are some of the very destructive practices used in collecting aquatic animals.

Change in environment. The human and natural factors can also bring change in the environment. At present, the lake in the village is becoming shallow and the water gets dried up easily. So far, no proper intervention or management had been done to control the fast evaporation of water. Flooding also cause a big change in the environment because it can remove the good topsoil in the area and can bring either good or bad quality of water. In some ponds that farmers dug, total draining of pond can also contribute to the loss of some species.

Income source. With the limited livelihood in the village and the increasing number of family members, farmers are now fishing to get more income. Before, people

collect aquatic animals because they need food for the family to eat. However, due to other basic needs of the family like medicines and clothes, subsistence fishing is eventually now leaning towards becoming a cash activity.

At present the situation of most of the aquatic animals are decreasing, some in an alarming stage due to the different factors discussed above.

Farmers' Meeting

Validating and feedbacking is one of the most important parts of this activity. After the two days' collection of different information about the village and aquatic systems in particular, the staff summarized the information and collated them. A small meeting was then held with all the participants. This time was used to clarify some information, especially the contradictory ones coming from particular groups. Both the facilitators' group and the farmers highlighted their significant experiences in doing the exercises and how the information can be used.

Annexes

Seasonal Calendars

Weather

Poor men

April	Ma	Jun	Jul	Aug	Sept	Oct	No	De	Jan	Feb	Mar
Hot	Hot, a bit rain	A bit rain	Hot, a bit rain	rainy	Flood, rain	Hot, Rainy	Cold, little rain	Cold, a little rain	Hot	Hot	Hot

Poor women

Hot	windy, a bit rain	Hot, bit rain	Hot	Little rainy	hot	Rainy, flood	Little rain, cold, windy	Cold, a little rain, windy	Hot	drought	Hot, unseasonal rain

Rich women

Hot	Hot, sunny	Hot, sunny	A bit rain, hot	Hot	Rainy	Cold	Cold	Very cold	Cold, a little rain	Cold	Hot

Rich men

Hot	Hot, little rain	Hot, rainy	Rainy	Hot, sunny	Hot	Heavy Rain	Heavy rain	hot	Hot	hot	hot

Social events

Poor men

April	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Khmer New Year	Praying celebration- Prying for asking water				Pchum Ben ceremony	Celebration of the end rainy season	Full moon Water festival- Kathin ceremony	Flower ceremony	7 January ceremony		

Poor women

Khmer New Year	Praying celebration- Praying for asking water		Start of rainy season		Pchum Ben ceremony	End of rainy season	Kathanatienne Ceremony	nothing		Flower ceremony	Flower ceremony

Rich men

Khmer New Year	Praying celebration- Prying for asking water Visa Bochea	Praying ceremony	Start of rainy season		Pchum Ben ceremony	Full moon Water festival- Kathin ceremony	Water festival, full moon	Flower ceremony	Flower ceremony	Wedding, flower ceremony	Wedding ceremony,

Rich women

Khmer New Year	Praying celebration- Prying for asking water	Plowing ceremony Blessing ceremony, CEREMONY ??	Start of rainy season		Pchum Ben ceremony	Celebration of the end of rainy season	Full moon Water festival- Kathin ceremony	Flower ceremony	Wedding ceremony	Wedding ceremony	Wedding ceremony

Economic Activity

Poor men

April	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
Fishing, collect wood, moto taxi, crop preparation, livestock, RF preparation, village maintenance-road construction	RF prep. House making, crop prod, RF maintenance, collect wood, fishing, making fishing gear	RF prep. Sowing rice, crop prod, fishing, collect wood, husking, make baskets, make fishing gear, seller	Rice field preparation, sowing rice, RF maintenance	.RF prep, livestock, fishing, RF maintenance	Harvesting first rice, mill rice, livestock,	Harvesting second rice, processing, fishing, livestock, crop production	Tranplanting, rice processing, RF maintenance,	Rice harvesting, processing, crop production, seller	Fishing, collect wood and thatch, making thatch	Harvest dry season rice, rice processing, crop production, livestock	House maintenance, livestock, fishing, worker

Poor women

Making mats, fishing, collect wood, making wine, crop production, seller	Making mats, RF prep. Crop prep.	RF prep, plowing, RF maintenance, fishing	Plowing, Transplanting	Making mats, fishing, wine, seller, transplanting	Fishing, crop prod. Wine, seller	Dry season rice, RF prep, wine, seller, fishing	Livestock, seller	Harvest first rice, fishing, crop prod, seller	Harvest third rice, making mats, seller	Rice harvesting, mats, wine, livestock	Storing rice, fishing, making wine, livestock

Rich women

Crop production Making mat, cake making, livestock, fishing	Crop preparation, making mats, fishing	RF prep, fishing, making mats, making cakes	RF prep, transplanting, making mats, seller, fishing, crop prod.	RF maintenance, transplanting, fishing, making mats, crop prod.	RF maintenance, fishing	Fishing, making fishing gear, making mats, crop prod.	Making mats, fishing, crop production	Harvest first rice, fishing, crop production	Crop prod, rice harvest, making mats	Harvest rice, making cakes, making mats, fishing, crop prod	Livestock, fishing, mats, crop prod, cakes, seller

Rich men

Crop prep. Fishing, collect thatch, house making, collect wood, RF preparation, livestock	RF prep, crop prep, fishing, making farming tools, baskets, Village maintenance	RF preparation, RF maintenance, livestock	Sowing rice, RF maintenance, livestock,	RF maintenance, transplanting, fishing,	Ricefield preparation, fishing, transplanting, RF maintenance	RF maintenance, fishing, boat building, livestock	Livestock, fishing, making boat, RF maintenance	RF prep. (prepare seed for dry rice production), first rice harvest, RF maintenance, rice processing and storing	Sowing dry season rice, RF preparation, transplanting, RF maintenance, fishing,	Harvest wet season rice, processing rice, storing, RF maintenance	Harvest dry season rice, rice processing, livestock, fishing

Health

Poor men

April	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Ma
Stomach problems, typhoid, dengue, skin, eye disease	Cold, cholera, flu,	Fever	Fever	Fever	Stomach problem	Flu, fever	fever	Flu	Flu	Malaria, fever	Stomach problems

Poor women

Typhoid, skin disease	Livestock disease	Normal sickness	Normal sickness	Normal sickness	Normal sickness	Normal sickness	Normal sickness	Normal sickness	Normal sickness	Normal sickness	Normal sickness

Rich men

Fever, cold, flu, measles	Measles, malaria, typhoid, dengue, fever	Normal	Normal	Normal	Normal	Fever, stomach problem, dengue, typhoid,	Fever, typhoid, cholera, stomach problems, cold, flu	Cold, flu, fever, measles, typhoid	Normal	Happy	Happy

Rich women

Fever, stomach problems	Fever, stomach problems	Normal	Happy	Happy	Fever, stomach problems	Normal	Fever	Unhappy	Normal	Normal	Fever

Migration

Poor men

April	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Ma
Construction worker									Construction worker, moto taxi.	Construction worker, moto taxi	Construction worker, worker

Poor women

										Work as in garment factory in PP	

Rich men

Six households go to PP											Go to PP,Battenbong, Kompong Sou, garment factory, construction,

Rich women

Go to PP garment factory,	Come back from PP						Come back from PP	Go to PP			

Activity Profile

Poor men

V3pm	Oun sam on	Reac Ang	Sanh Samnag	Khan sopheap	Doung Chea	Ken Ket	Phan salan	Sous Vai	Sat khna	Yi pea	Eak sam ol	Tin Min
Rice	9	5	5	5	6	7	6	5	5	3	6	6
Fishing	1	2	3	3	3	2	2	5	2	4	3	3
Crop production	4	5	2	3	3	2	4	2	3	3	4	3
Raise Livestock	2	3	3	4	3	2	2	2	0	2	2	1
Construction	2	2	1	2	0	5	2	2	2	1	1	0
Moto driver	0	0	3	0	0	1	0	0	2	4	1	0
Carpenter	2	1	1	2	2	1	3	2	2	1	1	2
Livestock care	0	0	2	1	3	0	1	2	2	2	2	4

Poor women

V3pw	Sou Pon	Seik Savai	Sour Sa Muen	Soun Rot	Dut Na	Sang Hon	Choun Niek	Aim Tea	Guy Sa Muen	Tok Yun	Nyan Rut	Horn Knar	Niyun Sour	Kon Jun	You Yah	Noi Rith	Yu Nain	Jak Sou	Hun Put
Crops	6	5	7	3	3	2	3	4	2	2	5	5	4	7	2	3	3	5	2
Mats	6	5	5	2	3	2	3	3	3	3	0	4	0	0	0	5	3	4	5
Livestock	3	4	0	3	3	2	3	4	4	4	4	3	5	4	0	0	4	4	4
Rice	5	6	3	0	0	4	6	5	5	5	8	3	6	3	7	4	3	3	4
Fishing			5	3	3	2	2	2	1	1	0	0	4	0	4	4	2	4	3
Seller mats				3	3	2	2	2	2	5	0	5	0	6	3	2	2	0	1
Seller cakes				2	5	2	1	0	1	0	0	0	0	0	0	1	1	0	1
Childcare				1	0	4	0	0	1	0	3	0	1	0	4	1	2	0	0

Rich men

V3rm	Srey Vong	Ouch Thao	Hun Morn	You Yai	San Hat	Yos Yet	Chhun Ve	Keuy Mot	Chin Yim	Mean Tim	Khon Vy	Phal Thy
Rice production	12	10	10	9	12	10	11	9	7	9	7	4
Fishing	0	0	0	0	1	1	0	6	0	3	2	2
Carpenter	0	0	0	4	2	0	4	0	4	0	4	1
Crop production	5	5	6	3	2	4	4	0	4	1	1	0
Raising livestock	3	5	3	3	1	5	1	5	5	4	3	3
Seller	0	0	0	0	2	0	0	0	0	3	3	6
Work as helper	0	0	0	1	0	0	0	0	0	0	0	4

Rich Women

V3rw	Pau	Kung	Wien	Prak	Kim	Pau	Die	Ning	Aik	Chie	Dieu	Chieu	Ouch	Sou	Sou	Rouh
	Krang	Vibol	Leng	Sarain	Jun	Ron	Pah	Wat	Jun	Yong	Jien	Sang	Sithaa	Souriaa	Sarin	Vy
Rice	5	6	6	6	7	6	5	6	7	6	6	6	5	6	6	6
Crop production	3	3	3	4	2	4	3	3	3	2	3	3	3	2	2	2
Fishing	3	2	0	0	0	0	3	0	0	4	3	4	3	3	3	3
Seller	4	3	2	4	3	3	3	3	3	0	4	1	3	1	1	4
Sell food .	2	2	6	3	2	3	2	3	0	3	1	0	2	1	1	1
Mats	1	2	0	0	3	2	2	3	1	3	2	2	1	2	2	2
Worker	0	0	0	3	1	0	0	0	0	2	0	0	0	0	0	0
Housework	2	2	3	0	2	2	2	2	6	0	1	4	3	5	5	2

Identification and Ranking of Aquatic Animals

Poor men

Species	Taste	Value	Easy to catch	Processing	Abundant	Spawning in the lake (What does that mean??)
Snakehead	10	4	4	3	3	2
Catfish	3	2	2	2	2	1
Climbing perch	3	2	2	2	2	2
Three-spot gourami	1	1	2	1	2	1
Spiny eel	3	2	2	2	2	2
Whisker sheatfish	3	2	2	2	2	2
Mystus	1	1	2	0	2	4
Rasbora	1	2	3	1	2	2
Small shrimp	2	2	2	3	3	5
Grey featherback	5	4	4	3	2	1
Crab	2	0	0	0	0	0
Freshwater eel	8	5	2	4	3	3
Frog	6	2	4	3	3	3
Snake	8	6	2	2	2	1

Poor women

Species	Taste	Value	Processing	Availability	Easy to Catch
Snakehead	4	5	6	3	2
Catfish	5	6	4	5	4
Spiny Eel	5	4	0	5	0
Climbing Perch	4	4	0	3	0
Catopra	2	0	0	0	0
Rasbora	2	0	4	5	0
Small Shrimp	3	0	0	5	3
Crab	2	0	0	2	0
Frog	3	3	0	4	0
Grey feather fish	4	4	4	0	0
Eel	4	4	0	3	0
Whisker feather fish	3	4	0	4	2
Snake	4	7	0	3	0
Mystus	6	0	0	3	1
Yellow Mystus	3	3	0	0	0
Three-spot gourami	2	0	0	2	0
Snakeskin gourami	4	0	0	0	0
Silver Barb	2	0	0	0	0

Rich men

Species	Availability	High value	Taste	Easy to catch	bony	processing	Family consumption
Snakehead	5	5	3	2	1	2	2
Catfish	5	5	3	2	1	2	2
Climbing perch	3	2	2	2	2	2	1
Grey featherback	2	3	1	2	2	1	1
Whisker sheatfish	3	4	1	2	1	1	1
Spiny eel	3	3	1	1	1	1	1
Mystus	6	1	1	2	2	0	1
Snake skin gourami	1	3	1	1	1	0	1
Silver rasbora	2	2	1	1	1	0	1
Small shrimp	6	1	1	2	1	0	1
Catopra	1	1	1	1	1	0	1
Rasbora2 (janwar plien)	5	1	1	2	1	0	2
Pygmy gourami	5	1	1	2	1	1	1
Freshwater eel	1	7	3	1	1	0	0
Frog	1	2	2	1	1	0	0
Snake	1	8	3	1	2	10	16

Rich women

V3rw	Taste	Value	Fam. consump	Processing	Availability	Bony	Easy to catch
Yellow catfish	4	5	2	1	5	2	3
Walking catfish	2	1	3	3	4	1	1
Climbing Perch	4	3	3	2	4	3	2
Mystus	1	1	2	2	4	3	1
Whisker Sheatfish	4	2	2	2	4	1	2
Snakehead	5	5	2	2	5	1	3
Grey featherback	2	2	2	1	4	3	3
Pangasius	1	0	2	2	1	1	3
Three spot gourami	2	1	2	2	3	1	2
Spiny eel	3	2	2	1	3	1	1
Small shrimp	2	1	2	1	3	1	3
Snakeskin gourami	2	2	2	1	1	1	2
Frog	3	2	2	1	3	1	2
Eel	3	4	1	1	2	1	1
Water snake	2	4	1	1	2	2	2

Seasonality of Aquatic Animals

Poor men

	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
Snakehead	Abundant, in lake use gill net	Scarce	Scarce	medium lake	abundant in rice field, lake, line	abundant in rice field, lake, hook long line	abundant in rice field, jump trap	As previous	abundant in lake, use trap net, line, long line	As previous	abundant hook long line, trap net	Abundant in lake, drain trap pond, use tree branches
Freshwater eel	Deficit - in lake	As April	Medium In RF, use eel trap	As June	Medium In RF and ditch	Moderate, in RF, oblong trap, drum trap	Abundant - in lake, eel trap	As October	As October	Moderate, in lake, eel trap	Scarce, water evaporates	As February
Frog	Medium - in rice field, ditch, dig holes	Abundant - in rice field, lake, lighting	Abundant - in rice field	As June	As June	Moderate in RF, drum trap, hook long line	As September	Scarce, water evaporates	Scarce	As December	As December	As December
Snake	Deficit Water evaporates	As April	As April	Medium lake, gill net.	As July	As July	As July	Abundant in RF	Moderate in lake	Scarce, draining trap pond	Scarce, hook	As February
Grey featherback	Scarce, water evaporates	As April	As April	Medium lake, trap net, scoop net	As July	As July	Abundant Gill net	As October	Abundant lake, oblong trap	Abundant lake, trap net,	Abundant in lake, drain trap pond	As February
Small shrimp	Deficit In lake, scoop net	Deficit Oblong trap	Medium In lake	Abundant - in rice field, lake	Abundant in lake, use scoop net	Moderate in RF, put scoop net in current water	Medium In rice field	Abundant - in rice field, lake, oblong trap	Abundant Lake, Scoop net	Abundant in lake, scoop net	Scarce, water evaporates	As February

Poor women

Species	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
Catfish	Abundant, use gill net, dry trap ponds, in the lake	Moderate, hook line, line, in ricefield and lake	As for May	Moderate, gill net, line, hook line in the lake and ricefield	As for July	Less abundant, gill net, oblong trap, line, in the ricefield and lake	As for September	Very abundant, jump trap, oblong trap, line, gill net, in ricefield	As for November	Moderate, catch by hand, dry ponds, use scoop net, in the lake and ricefield	Moderate, use line, hook line, gill net, in the lake	Moderate, gill net, line dry the trap pond, in the lake
Snakehead	As for Catfish above	As for Catfish above	Moderate, hook long line, line, hook line, gill net, in ricefield and lake	As for June	As for June	As for Catfish above	As for Catfish above	As for Catfish above	As for November	Abundant, jump trap, dry ponds, in lake and rice field	Moderate, line, hook line, gill net, in lake	As for February
Spiny eel	Abundant, dry trap pond, hook, in the lake	Moderate, oblong trap, line, in ricefield	As for May	Moderate, line, oblong trap, in the ricefield	As for July	Moderate, line, in the lake	Abundant, line, oblong trap, jump trap, in ricefield and lake	Abundant, jump trap, oblong trap, in ricefield and lake	Moderate, oblong trap, in ricefield	Moderate, dry pond, hook, in ricefield and lake	As for January	As for January
Snake	Moderate, Dig holes, hook, in ricefield and lake	Poor, dig, hole, hook in ricefield	Poor, gill net, oblong trap, in ricefield and lake	As for June	As for June	As for June	As for June.	Abundant, gill net, oblong trap, in lake and ricefield	As for November	Poor, dig holes, in ricefield and lake	As for January	Moderate, dig hole, hook, in lake.
Whisker featherfish	Abundant, use bamboo net, dry trap ponds, trap nets in the lake	Moderate, scoop net, trap net, in the lake,	Moderate, trap net, in the lake	Poor, scoop net, line, hook line, in ricefield	As for July	As for July	Moderate, hook line, line, in the ricefield	Abundant, oblong trap, line, in ricefield	As for November	Abundant, trap net, dry ponds, in the lake	Abundant, trap net, dry trap ponds, catch by hand, in lake	Abundant, Scoop net, dry trap pond, in the lake
Grey featherfish	Abundant, dry trap pond, in lake,	Moderate, trap net, in lake	Poor, trap net, in lake	Scarce, dry trap pond, hook line, in ricefield	Poor, scoop net, in ricefield,	As for August	As for August	As for August	As for August	Poor, trap net, in lake	As for January	Abundant, dry trap pond, in lake

Rich men (where branches in = take branches out that were put in to attract fish there in the first place)

	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
Snakehead	Dry trap ponds, put branches in, hard trap with gill net, also catch with line from the lake	As for April	Hard trap, hook line, lighting, in ricefield and lake	As for June	Dry the ricefields and ponds, hard trap, hook long line	Hook line, Lighting Use oblong trap in the ricefields	( )Oblong trap Jam trap, hook long line, in the ricefield	As for October	Dry canal, oblong trap, hard trap, jam trap, lighting, in the ricefield and lake	As for December	Dry trap pond, take branches out, hook line, in the lake	As for February
Catfish	Dry trap ponds, put branches in, hard trap with gill net, also catch with line and hook line from the lake	As for April	Lighting , hard trap, hook line, gill nets in the lake	As for June	Lighting, hard trap, hook long line, hook line, gill nets, catch in the ricefield and lake	As for August	As for August	Jump trap, oblong trap, Bamboo net, line, hook line, in the lake and ricefield	As for November	As for November	Dry ricefields and ditches, gill nets, line, in other ricefields,	As for February
Climbing Perch	Dry trap ponds, put branches in, hard trap with gill net, also catch with line and hook line from the lake, and from ricefields	As for April	Dry trap ponds, use hook line, hard trap and gill nets in the lake	As for June	As for June	Hook line, Gill nets in the ricefield	As for September	Jam trap, oblong trap, bamboo net, hook line, line, gill net in the lake and ricefield	As for November	Dry the ricefield and ditch, Hard trap Jump trap and line and gill net in the lake	Jam trap, oblong trap, gill nets, hard trap, in the lake,	As for February
Grey Featherback	Dry trap ponds, put in branches, catch with gill net in the lake	Catch with oblong trap in the lake, also use lighting and gill nets	As for May	Use only gill net, in lake	As for July	As for July	As for July	Oblong trap, hook line, line, in the lake	As for November	Oblong trap Dry the pond, in the lake	As for January	As for January
Wisher sheatfish	Dry trap ponds, catch in lake with gill net and scoop net abundant	As for April	Deficit, As for May	As for June	Dry ricefields, Catch using bamboo nets and gill nets in ricefield and lake	As for August	Gill net, hook line, in the ricefield and lake	As for October	Oblong trap, gill nets in the lake	Dry the pond, put tree branches in the trap with : gill net and hard trap in the lake	As for January	As for January
Mystus	Dry trap ponds, catch in lake with gill net and scoop net abundant	As for April	Scoop net, gill net in the lake	As for June	Use line, oblong trap in the lake	As for August	As for August	Line, oblong trap, gill net, scoop net in the lake	As for November	Dry the trap pond, gill net and bamboo nets in the lake	As for January	As for January

Rich women

	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
Snakehead	Abundant, gill nets, line, dry trap ponds, catch them in the lake	Moderate, use line, hard trap, dry part of the lake, in the lake	Deficit, scoop net, lighting, in the lake	Deficit, line,gill net, oblong trap, in the ricefield	As for July	Deficit, with gill net, line, hook long line, lighting in the ricefield	Abundant, oblong trap, line, gill net (Bamboo fance trap), (small oblong trap) in the ricefield	As for october	Abundant, trap net, gill net, line, in the lake	Abundant, dry the trap pond, trap net, gill net, line, in the lake	As for January	As for January
Catfish	As for Snakehead	As for snakehead	As for snakehead	As for snakehead	As for snakehead	As for snakehead	As for snakehead	As for snakehead	As for snakehead	As for snakehead	As for snakehead	As for snakehead
Snake	Deficit, use spear, in the lake	Deficit, use spear, in the lake	Deficit, use spear, in the lake	Deficit, use spear, in the lake	Deficit, use spear, in the lake	Deficit, use spear, in the lake	Deficit, use spear, in the lake	Moderate, gill net, in the lake	As for November	Deficit, then same as December	Deficit, then same as December	Deficit, then same as December
Eel/swamp eel	Moderate, spear, in the lake, and small stream	Abundant, eel trap, in the lake, and small stream	As for May	Deficit, then as for May	Moderate, eel trap in the lake	As for August	Abundant then as for August	As for October	As for October	As for October	Moderate, eel trap in the lake	As for February
Climbing Perch	As for snakehead	As for snakehead	As for snakehead	As for snakehead	As for snakehead	As for snakehead	As for snakehead	As for snakehead	As for snakehead	As for snakehead	As for snakehead	As for snakehead
Mystus	Abundant Trap net, dry trap ponds, in the lake	Deficit, scoop net, gill net in the lake and small stream	As for May	As for May	As for May	As for May	As for May	As for May	As for May	As for May	As for May	Abundant, use gill net, dry the trap ponds, catch in the lake, small strm

Trends

Poor man

	1960-70	1970-75	1975-79	1980-1990	1990-2001
Snakehead	Abundant, simple gear, low human population,	Abundant, enough water, few fishermen,	Abundant, in lake, draining	Moderate, gill net, trap net	Scarce, high human population, modern gear
Freshwater eel	Abundant, low human population, few fishermen, eel trap, lake	Abundant, low human population, few fishermen, eel trap, lake	As previous	Moderate, high human population, eel trap, spear	Scarce, high human population, eel trap, electro fishing
Frog	Abundant, RF, lighting	Abundant, RF, lake	As previous	Moderate, RF, lake, ditch, lighting	As previous
Snake	Abundant, lake, spear	Abundant, lake, ditch, use spear	Abundant in lake, spear	Moderate, lake, gill net	Scarce, high human population, gill net, electro fishing
Grey featherback	Abundant in lake and ditch, scoop net	As previous,	As previous, minus ditch	Moderate, lake, ditch, gill net, hook long line	Moderate, in lake, ditch, gill net, drain trap pond
Small shrim	Abundant in lake and RF, scoop net, oblong trap	Abundant in lake, oblong trap, scoop net	As previous	Abundant, lake and RF, use oblong trap, scoop net	As previous

Poor woman

	1960-1970	1970-1975	1975-1979	1980-1990	1990-2001
Catfish	Abundant, simple gear, line, oblong trap, in lake and rice field, low human population,	As previous	Very abundant, nobody allowed to fish, use line, oblong trap, jump trap, in lake and RF	Less abundant, more fishermen, high human population, RF, lake	Less abundant, water evaporates, people use water for rice prod. Modern gear, more fishermen, electro fishing
Snakehead	As above	As above	As above	As above	As above
Spiny eel	As above	As above	As above	As above	As above
Snake	Very abundant, more floating plants, few fishermen, catch in floating plants	As previous	As previous	Declining year by year, fewer floating plants, evaporating water, Catch in lake	Declining year after year, no floating plants, more fishermen, snake has high value, sell in Vietnam
Whisker sheatfish	Very abundant, simple gear, gill net, drain trap pond, trap net, oblong trap, lake, RF	As previous	As previous	Decline year after year, lots of fishermen, they use modern gear, in RF, lake, oblong trap, drain trap pond	Increasing and abundant, use oblong trap, trap net, draining trap pond, in RF and lake
Grey feather fish	As above	As above	As above	Declining year after year, no place for spawning, more fishermen, small amount of fish But more fishermen, catch draining trap pond, line, trap net, in lake	Declining year after year, no place for spawning, can catch in lake by using trap net, draining trap pond, line

Rich woman

	1960-1970	1970-1975	1975-1979	1980-90	1990-2001
Snakehead	Abundant in the lake. Lake was very deep, spawning in the lake in the floating plants, also spawned in the ponds, a few fishermen who could catch more fish using line, hard trap, oblong trap and lighting in the flood plains	Abundant, fish disease, Lake was deep and wide, more species of snakeheads in the lake and some species came from Vietnam (they think black snakehead came from there), still few fishermen, floating plants reducing	More abundant, Lake was deep and wide, but floating plants still reducing, because fishermen burned the plants to get frogs, snakes etc. Used only line and hard trap. Fish spawned in the lake, in the trap ponds and in the flood plains	Moderate, fish disease, lake becoming shallow, fishermen using modern gear, population increase=more fishermen	Deficit, fish disease, more trap ponds, more fishermen=poor catch (each fisherman must spend more time to catch fewer fish)
Catfish yellow and walking types	Abundant, As for Snakehead (above)	As for snakehead (above)	As for Snakehead (above)	Moderate, as for Snakehead above	Deficit, as for snakehead above
Snake	Abundant, in the lake, more floating plants and grass, nobody ate snake then, so nobody wants to buy it either	Abundant in the lake, many floating plants and grass, a few fishermen	Abundant, the lake start to become shallow, floating plants also reduced, more fishermen	Deficit, lake more shallow, reduced floating plants because of burning, more fishermen and more buyers	As for 1980-90
Eel	Abundant in the lake, few fishermen, using the eel trap, trident spear	As for 1960-1970	As for 1960-1970	Deficit, lake is shallower, no mud, floating plants reduced by burning, more fishermen, eel trap	Scarce, lake is drying up, no mud, no jump traps, more fishermen
Climbing Perch	Abundant, lake is deep, a few fishermen,	ditto	ditto	Scarce, lake is shallower, more fishermen	Ditto
Mystus	Abundant, water is deep, population is lower, nobody needs Mystus	ditto	ditto	ditto	Ditto

Rich men

As for 1960-1970

	1960-1970	1970-1975	1975-1979	1980-1990	1990-2001
Snakehead	Abundant, use hard trap, dry trap pond, line, spawning in floating plant, trap ponds and flood plain, lake is deep and wide	Abundant, floating plants reduced, more trap ponds around the lake, still spawning in floating plant and trap ponds; lake is deep and wide	As for previous plus: fishermen burning floating plants to catch frogs, eels and fish, fish disease	Moderate, more population, few kinds of gear	Moderate, more population, more demand and consumption, more kinds of gear
Catfish	Abundant in the lake, fish spawning in the lake and floating plants, low population, more rain, basic fishing gear	Abundant, low population, more rain, still basic fishing gear	As previous	Moderate, more population, high demand and consumption	Moderate, more population, more fishing gear
Climbing Perch	Abundant, low population, more fish species, basic fishing gear	As previous	Abundant, no fishermen	Abundant, more population, more gear, high demand, more consumption	Moderate, more population, more fishermen and more demand and consumption
Grey Feather fish	Abundant, catch fish by hand, low population, traditional gear	As previous	As previous	Moderate, more population, more modern gear	Moderate, more population, high demand and consumption more fishermen
Whisker feather fish	Abundant, low population, traditional gear,	As previous	As previous	Reduced, more population, less rain, modern gear	Scarce, more population, modern gear, high demand and consumption
Mystus	Abundant, low population, traditional gear	As previous	As previous	Moderate, lake is shallower, more population, no flood, use more gear,	Abundant, flooding,