

Fisheries Baseline Survey in Champasack Province, Southern Lao PDR.

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1. Abstract

In Lao P.D.R, fish play a very important role in food security, particularly in remote areas. However, only limited information is available on the fish production and fish consumption in Lao P.D.R. Previously, the Assessment of Mekong Fishery Component (AMFC) carried out a baseline survey in Luangprabang province, northern part of Lao P.D.R in order to obtain baseline fishery information from an area representing the upper, mountainous region of the country. In order to complement the Luangprabang survey, more information about the fisheries of the lowland regions of Lao PDR is needed. This paper describes preliminary results from a baseline survey carried out in August/September 2002 by LARReC and AMFC in Champasack province, southern Lao PDR, representing the lowland region of the country.

The study covered four districts (Xanasomboun, Pakxong, Pathophone and Khong district), eight villages and 200 households/individuals. 1% of the villages and 0,23% of household in Champasac province were sampled. The method used for the survey was the same as in Luangprabang province (questionnaires).

The results of the survey showed that the fishery is the third-most important activities after rice culture and livestock (in terms of time spent on the activity). The most important fishing gears for both dry and wet season are stationary gill net, cast net, drift net and long line. The most important fishing habitat for both seasons is permanent rivers. The fish consumption and total fish catch is two times higher than for Luang Prabang Province (50kg/capita/year and 16,000-28,000 tones per year).

2. Objectives of the survey

The main objectives of the survey are:

To improve information and awareness, so that people will take the value of the fishery into account in water use planning.

To improve the method of fish consumption survey.

To determine whether figures from the Luang Prabang survey are within a reasonable range.

3. Champasack Province - Topography and Resources

The province of Champasack is the third-largest province of the Lao PDR. It borders Cambodia to the South, Vietnam to the East and Thailand to the West. Champasack Province consists of 10 districts: Pak Xe, Sanasomboun, Phonetong, Bachiengchaleunsook, Pakxong, Pathomphine, Mulapamouk, Soukhouma and Khong district.

Champasack Province has one of the highest population densities in Southern Lao PDR with an estimated total population of 552,752 people. There are 896 villages, 84,047 households and two main ethnic groups: Lao Loum (Lowland Lao) and Lao Thueng (Upland Lao) (LNSC, 1996 & LNSC, 1999).

Because of the geographic characteristics of the province, the farming system is dominated by lowland rice culture. Only in a few districts is gardening of cabbage, tea and coffee the main activities, for instance in Pakxong district, where the production of coffee and tea were 15,000 tonnes in the year 2001.

Fishing is also one of the most important activities in Champasack province. Almost all households are engaged in fishing both for subsistence and income. The aquaculture sector is quite developed in the area, i.e. there are 2,487 ha of fishponds under culture for the whole province, of which 297 ha are man-made, 2,190 are natural ponds and 1,4 ha are cage culture (PAFO annual report, 2002). The KM-8 Fish Farm is a major farm for supplying fingerlings to farmers in Southern Lao PDR. The area of this farm is around 6 ha, of which 2,5 ha are fishponds. The main species cultured are: Common carp (*Cyprinus carpio*), tilapia (*Oreochromis sp*), Indian carps and two indigenous species: Silver carp (*Barbodes gonionotus*) and Pa Phone (*Cirrhinus microlepis*).

In terms of transportation systems, Champasack province has a good road (road no. 13 south), which connects to Salavan, Attapeu, Savannakhet and other provinces. The second bridge that has been built across the Mekong River also provides a good transportation system as well as trading opportunity for local people in the area.

4. Methodology

4.1 Village sampling

Based on an existing database from the Lao National Statistics Centre (LNSC), eight villages were selected for the survey. These villages were representative of four different agro-ecological zones in Champasack province:

Lowland areas near or adjacent to the Mekong River
Upland, plateau areas distant from the Mekong River
Floodplain areas characterized by seasonal wetland
Island-dominated riverine habitats

Two villages were sampled in each of these zones. Within each village, 25 households were sampled, representing 1,263 people or 0.2 % of the total population of the province.

4.2 Household/Individual sampling

Based on experiences from a previous survey in Luang Prabang Province, household and individual surveys were not separated. Therefore during the household interviews all family members engaged in fishing provided information on their fishing activity instead of one key informant providing information for the entire family. 25 households

were randomly selected per village from the village inventory. The total number of sampled households was 200, representing 0.23% of households in Champasack province.

4.3 Questionnaires

The questionnaire for the survey was written with the intention of establishing an efficient, standardized form. The survey used two questionnaire formats:

Village profile, covering all data related to village activities, water resources, community based aquatic resources management, aquaculture development, and fishing activity provided by the village head

Household/Individual form, covering information on household activities such as family demographics, land used, livestock, priority activities, annual income, fishing activities by season, marketing, weekly and 24-hour aquatic animal consumption.

4.4 Fish catch and consumption.

There is a need for more accurate estimation of fish catch and consumption. This survey therefore sought to develop some Portion Size Estimate Aids (PSEAs) for the Lao PDR based on the experience of various other studies (Garaway, 1999). These were based on techniques used by the AMFC fish migration survey over the last three years. The method involved using cardboard cut-outs of fish representing two general groups – catfish and carp fish. Calibration of these cut-outs with fish weights was carried out in Pakse market prior to the survey. These cut-outs were then used to estimate weights of fish associated with both catch and their consumption. Other PSEAs were used such as bowls and cups for processed fish products such as fermented fish.

All household members involved in fishing activities were asked to participate by providing information on their fishing.

4.5 Data entry and analysis

Data were entered into EXCEL software for storage and JMP statistical software was used for data analysis.

5. Survey results

As the analysis for this survey is still in progress, the results presented here provide only a preliminary indication. Thus, the following should be regarded as preliminary results on such issues as community-based management, aquaculture development, dominant species, fishing gear, habitat, catch and consumption.

Village profile

The number of households within the survey area is 1,414 of which 270 households was Lao Theung (Upland Lao). The total population within the survey area is 7,672 people, of which 1,419 (or 19%) were Lao Theung.

Village resources

Water is a common resource for all villages within the survey area. The Mekong River is the main fishing habitat for around 50% of surveyed villages. Around 38 % reported that they go fishing in streams (mainly in Pakxong and some in Sanasomboun district) and 12 % reported that they used swamps (mainly in Kiat Ngong village, Pathomphone district) for fishing.

Involvement in economic activities

The major economic activities in Champasack Province are rice culture and gardening. Fishing is the third most important activity. Livestock and trading rank forth and fifth in importance, respectively.

Community based aquatic resources management

Community-based management systems for living aquatic resources are widespread throughout Champasack (Baird, 1999; Noraseng, 1999; Noraseng, 2001). The following systems of management were found in the surveyed villages:

Conservation zones: Main river habitats in deep pools, established systems, local community

Community pond: Backswamps, enhanced fisheries, established systems

Gear Restrictions: Was the most widely enforced form of management across all agro-ecosystems and aquatic resources. Especially banning of the use of dynamite and electro-fishing.

Aquaculture development

Aquaculture is not very widespread in Champasack. Only 15 % of the surveyed households reported involvement in aquaculture. The average area of fish ponds per household is 0.14 ha This is mainly extensive fish culture. The main species cultured are common carp and tilapia. The main feed is rice brand.

Fishing activities

The most active fishing was in Kong District (Banna and Veunkao), whereas Pakxong District was the area least involved in fishing (Thongset and Huaykong).

Number of fishing household

The total fishing households were 1,358 of which 191 (or 14%) were fulltime and around 54 households (or 4%) did not do fishing.

Fishing gears

The most used fishing gears in Champasack were several types of gill nets and traps (see household profile).

Fish species caught by fishers

114 species were found in the surveyed area. The most frequently reported species are *Channa striata* (Pa kho), *Clarias sp*, *Hypsibarbus malcolmi* (Pa pak noat), *Anabas testudineus* (Pa kheng), *Mystus nemurus* (Pa khot) and *Morulius chrysophekadion* (Pa phia).

Channa striata (Pa kho), *Clarias sp*, *Anabas testudineus* (Pa kheng), were found mainly in rice fields and swamps. *Hypsibarbus malcolmi* (Pa pak noat), *Mystus nemurus* (Pa khot) and *Morulius chrysophekadion* (Pa phia) were mostly found in mainstream Mekong and its tributaries.

Catch

The total catch estimated by the village headmen of the 8 villages was 16,000 tones per year.

The most expensive fish within the survey area are *Hemibagrus aubentini* (Pa kheung), *Micronema bleekeri* (Pa Nang), *Chitala ornata* (Pa tong dao) and *Morulius chrysophekadion* (Pa Phia).

The most preferred fish for eating are *Channa spp* (Pa Kho), *Clarias spp* (Pa Douk), *Cyprinus carpio* (Pa Nai) and *Hysibarbus spp* (Pa Pak).

Fish marketing

Usually, fish are sold by fishers themselves within the village or at the local market nearby the villages. None of the interviewed fishers reported that they sold the fish to Thailand.

The price of fish varies depending on species and size. The smaller size of catfish is around 5.000 to 15.000 kip per kilo, whereas the bigger size is around 9.000 to 25.000 kip per kilo. For smaller size of scaled fish, the price is 4.000 to 10.000 kip per kilo and for the bigger-size scaled fish it is around 8.000 to 13.000 kip per kilo.

6. Household and Individual profile

It is interesting that 91% of the land was used for fruit tree plantation. Rice cultivation accounted for only 8% of total land used. The remaining land (1%) was used for fishponds, vegetables and upland rice cultivation. This shows that aquaculture in Champasack Province is not much developed.

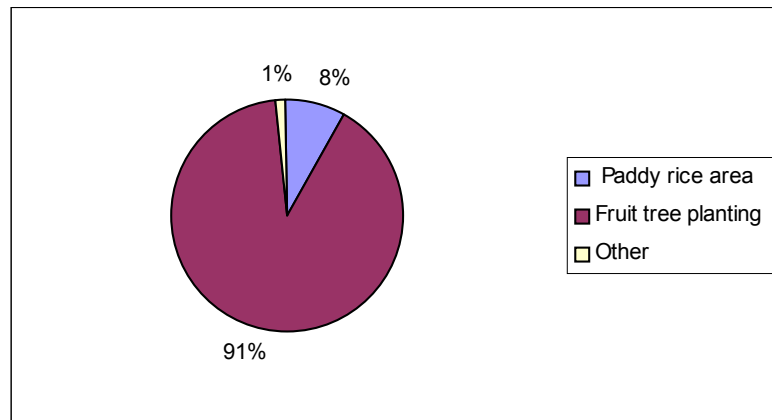


Figure 1. Main uses of land in Champasack Province

Main activities of households

The importance of different household activities is illustrated in Figure 2.

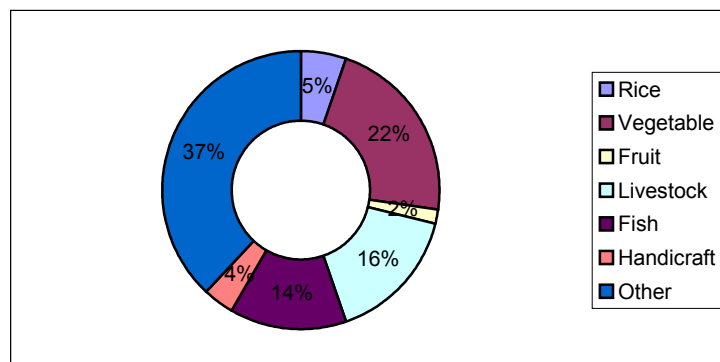


Figure 2. The relative importance of household activities (in terms of time spent). The average annual income for households is around 700.000 kip (or 70\$) per household per year.

The main income comes from "external" sources such as trading and labors (37%). Income from vegetables, fishing and livestock are also important for households (22%, 14% and 16% respectively).

Fishing activities

The most frequently used fishing gears during the wet season are gill nets and cast nets, followed by long line and various traps. The gill nets are usually used from early May to June when the first rain comes. The traps are used during the same period, but at different locations (Figure 3).

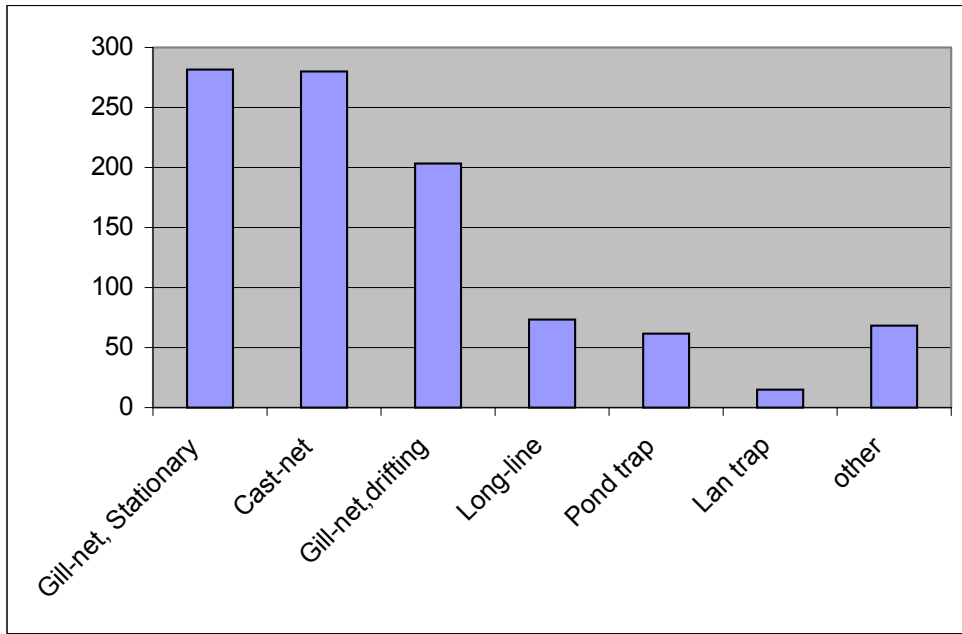


Figure 3. Fishing gear used during wet season

The fishing gears used during the dry season are more or less the same as in the wet season (Figure 4). The most used gears are stationary gill net and long line, followed by hook and line, cast net and various traps. The difference between wet season and dry season is that the fishers use drift nets rather than stationary gill nets in dry season, especially in Ban Na, Ban Veunkhao and Ban Hat village, Kong district, where the fishers use drift net to catch scaled fish (cyprinids) during the Chinese new year (January to February) (Singhanouvong and Warren, 1998).

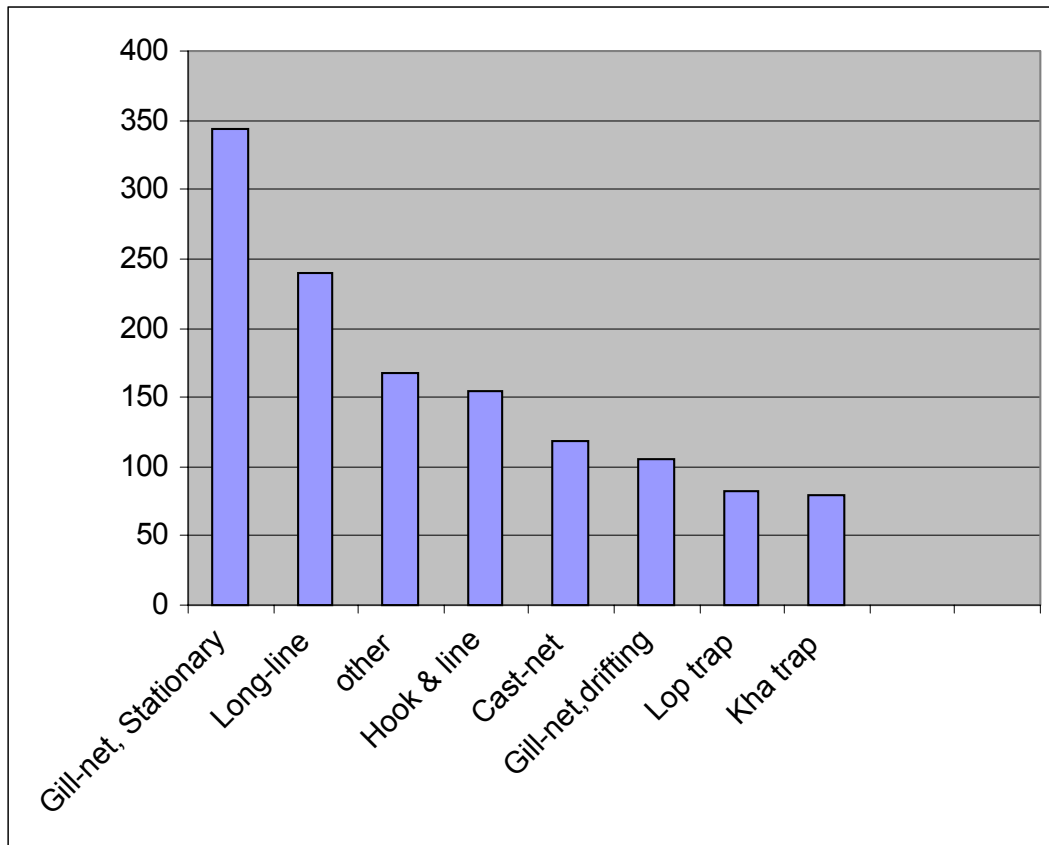


Figure 4. Fishing gear used during the dry season

Habitats

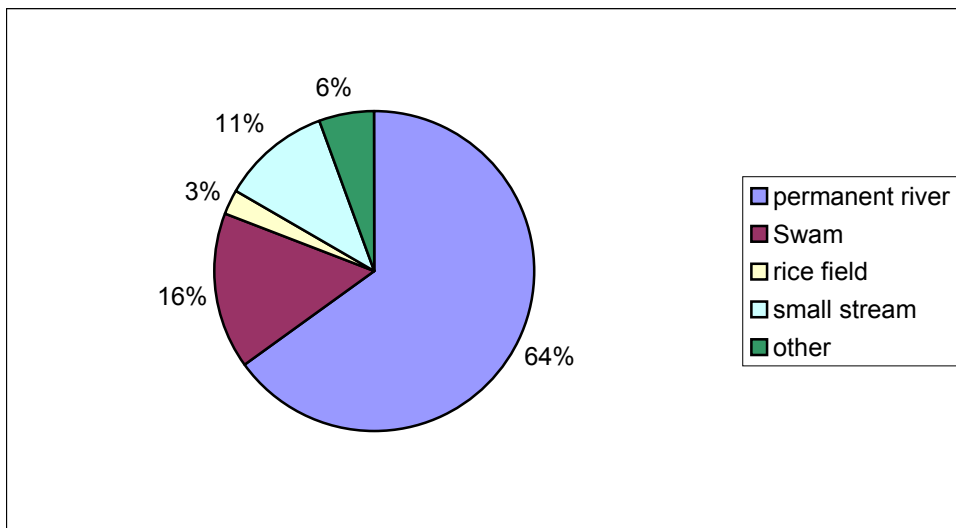


Figure 5. Main habitats used for fishing during the wet season

The most important fishing habitat during the wet season is permanent rivers such as the Mekong River and the Sedon River (Figure 5). Swamps, rice fields and small streams are also important fishing habitats, particularly in the Kiat Ngong Village,

Pathomphone District, where the largest swamps are located (Nong Yom or Beung Phapho).

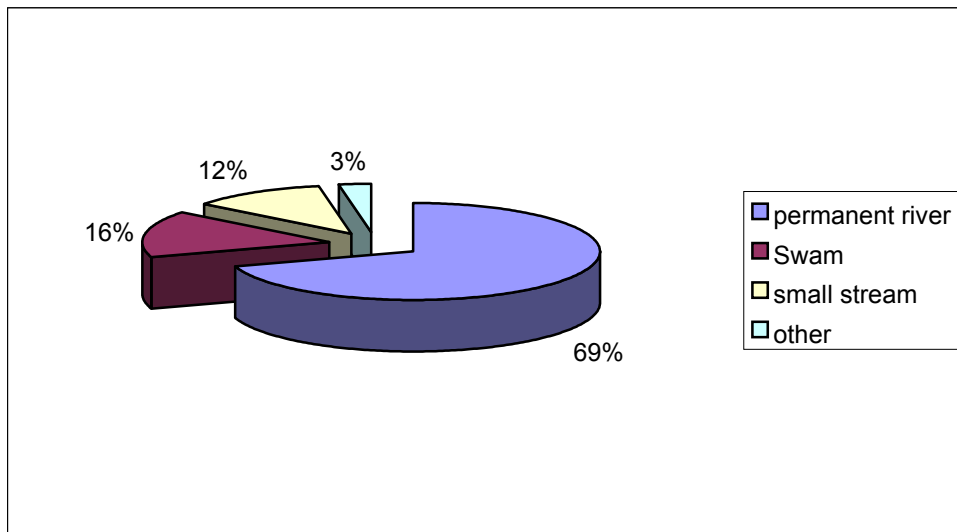


Figure 6. Dry season fishing habitats

Fishing habitats during the dry season are similar to the habitats used during the wet season (Figure 6). The most used habitat was permanent rivers (69%), followed by swamps and small streams. Fishing in rice field is not practiced during the dry season, because there is no water.

Fish consumption

Based on this survey, the fish consumption in Champasack Province is about 50 kg per capita per year, of which 25 kg is fresh fish.

Total catch

By multiplying the fish consumption figures with population figures, the total catch for Champasack province is estimated at 28,000 tones per year, which is about two times more than for Luang Prabang Province.

Comparison of fish production and fish consumption with others studies

Table 1 compares consumption data from three different studies.

Table1. Comparison of fish product and fish consumption

Name of the projects that carried out the survey	Total fish catch (tonnes)	Fresh fish consumption (kg/capita/year)	Fish and other aquatic animal consumption (kg/capita/year)	Remarks
AMFC	10,000-15,000	16-22	29	Luang Prabang survey (1999)
Ian Baird (CESVI)	4,000	43	0	Kong district survey (1998)
AMFC	16,000-28,000	25	50	Champasack survey (2002)

As we can see, the figures from this survey are within the same range as those of Baird (1998).

4. Conclusion

- The fishery in Champasack is the third-most important activity after rice culture and livestock (in terms of time spent on the activity).
- Community based aquatic resources management are widespread in the survey area.
- 114 fish species was found within the survey area (based on interviews) and most common are *Channa striata*, *Clarias sp*, *Anabas testudineus* (mainly in rice fields and swamps), *Hysibarbus malcolmi*, *Mystus nemurus* and *Morulius chrysophekadon* (mainly found in the mainstream and tributaries).
- The most used fishing gears are: stationary gill net, cast net, drift net and several types of traps (e.g. lee trap, lop etc).
- The most important fishing habitat is permanent rivers in both the wet and the dry season.
- Fish consumption in Champasack Province is about 50 kg/capita/year of which 25 kg is fresh fish.
- The total fish catch in Champasack Province is within the range of 16,000 – 28,000 tonnes per year, which is about two times more than in Luang Prabang Province

5. References

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