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# Thai Baan Research in the Lower Songkhram River Basin



**Reflections on Experience and Guidelines for  
Establishing Participatory Resource Research Elsewhere**

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**Thai Baan Research in Lower Songkhram River Basin,  
Thailand:  
Reflections on Experience and Guidelines for  
Establishing Participatory Resource Research Elsewhere**

English Summary Report - Thai Baan Research  
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## LIST OF ACRONYMS

IUCN	The World Conservation Union
LSRB	Lower Songkhram River Basin
MWBP	Mekong Wetlands and Biodiversity Project
NECC	Nakhon Phanom Environmental Conservation Cooperation
NGOs	Non-government Organizations
NTFPs	Non-timber Forest Products
PPA	Participatory Poverty Assessment
SEARIN	South East Asia River Network

## SECTION 1. INTRODUCTION

In 2003-2004, IUCN - The World Conservation Union (IUCN) and the South East Asia River Network (SEARIN), in partnership with the Nakhon Phanom Environmental Conservation Cooperation (NECC), helped villagers from four Lower Songkhram River Basin villages conduct Thai Baan research. Thai Baan participatory resource research involves community-based documentation of the local resources and their importance to village livelihoods. Knowledge about resource use and ecology, including trends and historical resource quality was consolidated on six issues: fish, fishing gear, local vegetation, agriculture and gardens, cattle and buffaloes, and local ecosystems.

Thai Baan research in the Lower Songkhram River Basin (LSRB) is part of the Mekong Wetlands and Biodiversity Project (MWBP). The MWBP is primarily interested in maintaining wetland integrity and biodiversity throughout the Mekong Basin and hopes to achieve better management and sustainability of the surrounding wetlands by helping local resource users, NGOs, and government collaborate on regional efforts. The project focused its efforts in Thailand on the LSRB because of the fish diversity in the region.

The preparatory phase for the MWBP began in 2002 and consisted of laying the groundwork for the project, including establishing an office, a partnership network, and carrying out a Participatory Poverty Assessment (PPA) on two villages with ActionAid: Ban Kaew Pad Pong and Ban Na Piang. The MWBP project, including additional outside funding from WIDGIS and WANI, started in 2004. Thai Baan research efforts are expanding and will be further expanded under MWBP. The Thai Baan experiences can be 'scaled up' to other countries as well as have exchanges of experiences between villagers from the four demonstration sites.

Catch monitoring, a short duration project, was completed during the preparatory phase. It was carried out in 2003 in four villages that were identified in collaboration with the NECC coalition partner. Village researchers logged their daily fish catch for a month, including names, weight and length. The data was then handed off, and the results were supposed to be relayed back to the village research participants in the next couple of months. This project, in retrospect, was not very empowering for local villagers, nor did it build local capacity – villagers had less ownership of the knowledge because they had to wait for results, and the research goals were more about numbers than livelihoods or villagers' relation to the resource. The villagers did not express interest in continuing that sort of research in the future. Organisers also agreed they should consider a new project that had greater promise of strengthening local capacity.

Around this time it was evident that a new category of project, Thai Baan participatory resource research, was yielding positive benefits in locations where it had been tried, by giving a better representation of the resources and empowering local resource users.

Thai Baan research was started by SEARIN several years ago as a way to document environmental resources and empower local resource users. Participatory resource research was employed in two locations (Pak Mun and Rasi Salai districts in Northeast Thailand) before being considered for the Songkhram River Basin. Thai Baan research in both locations was initiated as a response to the completion of dams that had significant impacts on the local ecology and resource users downstream, and on the livelihoods of displaced persons upstream.

The research, facilitated and implemented by SEARIN, was used to monitor changes in the quality of the ecosystem during experimental periods of reopening the dams. The research was respected by policy makers because it provided documented evidence of the quantity and quality of environmental resources and the degree to which the resources, or changes in

resource availability, affected the villagers. Furthermore, the villages that were affected became better networked, and established useful partnerships with local and international NGOs. Villagers and NGO partners became empowered and gained an enhanced ability to take part in the dialogue about how future planning could be established to ensure environmental sustainability and livelihood security.

The situation in the Lower Songkhram River Basin is quite different from the two precursors because the research was not carried out in response to a dam, but it is hoped the research will have the same positive results that it has had in the other locations, including capacity building and enhancing local networks.

In 2003, initial contacts were made between IUCN and partners, and Thai Baan organizers with SEARIN, to discuss the possibility of starting up Thai Baan research in the Sri Songkhram district. It seemed like the LSRB was a good place to try Thai Baan because of the abundant natural resources and livelihood connections to the environment, and because groundwork had already been laid for carrying out conservation and livelihood research through NGO support and village participation. SEARIN, IUCN and partners agreed they would only go forward with it if there was full support and interest from the villagers.

## **SECTION 2. PROCESS AND GUIDELINES**

Participatory resource research is a dynamic, and at times challenging, undertaking. It requires time, perseverance, and flexibility by facilitators and researchers. Facilitators must work closely with village researchers and build personal relationships based on trust and respect, and view researchers as equal and capable partners. Facilitators also consolidate results, coordinate efforts among the multiple villages involved in the research, and maintain communication with network partners. The results of participatory research include compiled data on the quantity and quality of the area's available natural resources and documented records of the extent and ways in which villagers use the resources. The social goals of capacity building and networking are important and lasting benefits of the research. Although the experience in Sri Songkhram is ongoing, the process used was successful in building close working relationships with villagers and consolidating information on resource availability and use, and it promises to achieve many social benefits like strengthened capacity.

The experience in Sri Songkhram is a useful guide for carrying out participatory resource research elsewhere. The steps used can serve as a roadmap for conducting participatory research in other locations and include the important first steps of getting villagers interested in the research, holding a training workshop for volunteer facilitators, compiling background information, cross-checking compiled results in the target villages, and holding progress report meetings after each research phase. Flexibility and place specificity should be considered when carrying out the research. We found that each of these steps were helpful and suggest they be adapted to other locations.

### **Step 1: Generate interest in Thai Baan participatory resource research**

Village exchange visits and informal meetings with IUCN and SEARIN facilitators were held to generate interest in Thai Baan research. Initially they were about conservation and livelihoods in general, and did not focus on Thai Baan research specifically. Later efforts addressed Thai Baan research directly.

#### **Site selection**

Facilitators focused on four LSRB villages: Ban Tha Bo, Ban Yang Ngoi, Ban Ouan and Ban Pak Yam. The villages were identified early in the preparatory phase of the project through

contacts with local coalition partners at NECC. The four villages were involved in the catch monitoring project.

In June 2003, MWBP partners organised a series of exchange visits in the four selected villages and Ban Dong Sarn<sup>1</sup>. During the exchange visits, villagers met and presented information about conservation techniques used in the villages and their concerns about natural resource use changes and availability. The visits raised awareness about conservation approaches and enhanced the networks and social connections between villages. The exchange visits laid the groundwork for discussing Thai Baan research in the future.

*“The first step is quite difficult because we want to make clear to the villagers and other stakeholders what the benefits of the project are after the project finishes ... At the end of this research, it can be used or adapted for them. The research is not put in a library or somewhere where people cannot use it – it can be used to help and to adapt their livelihoods; they have a target and an objective together.”*

Rattaphon Pitaktapsombut, IUCN Sri Songkhram Project Manager

Following the exchange visits, IUCN and SEARIN facilitators spoke with villagers about Thai Baan participatory resource research and asked if they were interested in being involved this relatively new and demanding method of research. It is very important, particularly in the beginning, that villagers are committed to participatory resource research and are willing to take responsibility for the research. Facilitators spent a great deal of time speaking with villagers about the benefits of Thai Baan research. They explained the research takes considerable effort but it has the potential to benefit the community and future resource planning.

A final meeting to generate interest in Thai Baan research was held and included representatives from Pak Mun and Rasi Salai who discussed their experience with Thai Baan research. LSRB villagers were impressed by the process used in the other locations and the benefits of the research. They agreed with the sentiments expressed by the representatives from the previous Thai Baan sites that it is a good idea to conduct the research before there are impacts like those that affected their areas. After the exchange visits and discussions with facilitators, all four villages decided to go forward with the research.

## **Step 2: Generate ownership of Thai Baan research as a co-learning process**

It was essential for facilitators to understand and convey this was a co-learning process. It was not about teaching but about learning together and finding ways to best manage the resources. In the beginning, facilitators made this clear, along with the idea that the benefits of the research would accrue to them.

### **Importance of building strong personal relationships**

An important role of the volunteers and project organizers was to get to know the villagers and be on comfortable and friendly terms with them. They were successful in this regard at Sri Songkhram and this may well be the key to the usefulness of the research. There is no single best way to build close relationships between facilitators and villagers – the way depends on the personality of the individuals involved and the ability of the facilitators to adapt to village social norms. In Sri Songkhram, facilitators built close relationships with villagers through mutual respect during the research period and by spending a great deal of

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<sup>1</sup> Ban Dong Sarn's experience with fish conservation zones led to a local campaign to have inundated forestland returned to the community from an agricultural company that acquired it in the late 1980s.

'non-research' time with them. Some non-research time activities included having meals together and accepting their hospitality, helping villagers with their tasks like preparing food and washing dishes after meals, or husking and slicing collected bamboo (particularly for the female volunteers), and participating in recreational activities like karaoke and attending Buddhist celebrations.

*"The villagers want to see that you are not so different from them ... If you can do it in the local style, and you can learn with them and become close with them, then you can learn about the real problems and situation and can develop a plan for the future."*  
Rattaphon Pitaktapsombut, IUCN Sri Songkhram Project Manager

The facilitators built a strong foundation of mutual respect with the village researchers and this sentiment is representative of the spirit of mutual learning. The establishment of close personal interactions and mutual respect was an integral element in building a sense of ownership of the villagers for the research.

### **Step 3: Training workshop for the IUCN volunteers**

In July 2003, a training workshop was held for the IUCN volunteers. Organizers from SEARIN worked closely with them on how to facilitate the research. They were given a thorough introduction on how the research should be carried out and why it was important. They practiced speaking about the research and learning how to facilitate small groups. The IUCN volunteers also learned about their roles in the research – including responsibilities and limitations – such as how to facilitate rather than guide the research.

#### **IUCN volunteers' role in Thai Baan research**

Throughout the process, IUCN volunteers played an important role in facilitating Thai Baan research. Each volunteer concentrated on a single issue-area and worked with researchers from each of the four villages. The role of the volunteers was to gather data through observation and interviews, to cross-check data among the villages, ensure everyone used the same terms, and link all the issues to the villager's social and cultural life. Although the volunteers played an important role, they did not drive the research, but kept their role to facilitation.

#### **SEARIN's role in Thai Baan research**

SEARIN was the official implementing agency of Thai Baan research in Sri Songkhram. Facilitators from SEARIN played a major role in the beginning of the process. They outlined their experiences, assisted in formulating research goals, and training the IUCN volunteers. After laying the groundwork and initiating the research, SEARIN played a less active role in carrying out the research.

### **Step 4: Formulate research goals**

In August 2003, researchers from all four villages met for the first workshop. The goal of the meeting was for villagers to identify the topics they wanted address in the research. The villagers decided on six areas of interest: fish, fishing gear, vegetation, agriculture and gardening (including riverbank gardens), livestock (cattle and buffaloes), and ecosystems. It was agreed they would only research a topic if there were 30 individuals in a group.

At the training workshop, village researchers expanded the issue-areas to include subtopics and more specific research goals. The six issue-areas were in practice narrowed to five, with information on fish and fishing gear provided by the same group of village researchers. Subtopics are similar for each of the issue-areas and generally include classification of the

resource, livelihood importance, past trends versus current use and availability, marketing mechanisms, and cultural and social importance of the resource (Annex 1).

### **Step 5: Setup research schedules**

Although the major decisions about going forward with the research were made communally, logistically it was difficult to bring together every researcher within each theme to discuss results. Therefore, research was carried out in each village separately, with periodic gatherings of multiple villages.

Before collecting data, volunteers spent a couple of days in each of the villages and set up a timeline. Volunteers were flexible and the schedule was established by the village researchers. Each village issue-area group established individual schedules; some groups chose to have volunteers stay in the village for a week and concentrate on research every day, while other groups opted to meet one day at a time with research spread over a longer time period.

### **Step 6: Initiate research - compile background information**

The first research phase was for villagers to compile background information for each of the issue-areas. Most of the information about the resources, including the availability and how they were used by the villagers, was compiled during meetings attended by issue-area groups from a given village. Meetings were generally held in the nighttimes and facilitated by IUCN volunteers, with assistance from SEARIN organisers. Villagers discussed various topics and answered questions from volunteers. The volunteers took notes and entered the information on computer later.

IUCN volunteers accompanied village researchers to observe resource use activities on each issue-area. They also observed resource uses within the village (e.g. the process for fermenting fish). For the ecology issue-area, the volunteers went to the field with the researchers, discussed the ways villagers used the local ecosystems, and helped them make a map of the area showing the various ecosystems and uses.

In addition to observing the ways in which villagers used resources, volunteers took pictures and samples for classification. The pictures were taken with a digital camera and samples were dried, mounted, or stored in plastic or jars. The visual evidence was used to establish the common names of the specimens and cross-check them across the four villages so that there was uniformity in their use. Digital pictures of the resources were shown to each issue-group, either printed or projected onto a screen. (These continue to be used as a classification tool for LSRB resources.)

Throughout the first research phase (about three months), IUCN volunteers consolidated the results and wrote summaries on the sub-topics.

### **Step 7: First progress report**

At the beginning of December 2003, all researchers involved in the project and representatives from Rasi Salai and Pak Mun attended a progress meeting in Sri Songkhram. Researchers and facilitators presented a progress report on each of the issue-areas. Village researchers from each of the issue-areas presented their initial findings to the larger group. The groups also discussed problems or concerns they had during the first phase of research. SEARIN and IUCN facilitators, as well as representatives from Rasi Salai and Pak Mun, also gave short presentations during the meeting. Another objective of the meeting was to re-evaluate the process and research goals, and establish plans for the next steps for collecting information.

## **Step 8: Second phase - collect more detailed information**

Lasting for several months, the second phase was to follow-up on each issue-area in greater detail. Volunteers continued to facilitate group meetings and carry out interviews, but village researchers delved deeper into the issues and sub-topics. For example, they followed-up on information about classification and trends in resource use, gathered more information about access to and marketing the resources.

Another important objective of this phase of research was to cross-check the data to make sure the same level of information was collected in all the villages and the same terms were used. The ecology group played an important role by linking ecosystems with the issues identified by other groups as being important, such as fish spawning grounds or the places where certain vegetation was collected.

IUCN facilitators also took greater note of the social norms and cultural importance of the resources to the village researchers. The volunteers and facilitators gained an understanding about social connections or cultural importance through observation, then followed-up with informal interviews.

## **Step 9: Encourage other related activities**

Thai Baan research encourages related activities that address resource availability and livelihoods but are unconnected to the research goals or groups. These activities include holding environmental festivals with education components or promoting value-added local products made from local resources. Villagers embraced several related events during the second research phase, when they felt settled in the process but while participation in resource research and networking among villages and coalition partners was still fairly novel. Related events and activities should not be confined to the second phase, however – they can be held earlier if appropriate and should be continued throughout the process.

### **Environmental festivals and education**

In the early months of 2004, villagers and IUCN facilitators worked together to host a Wetlands Festival. The Wetlands Festival was primarily a celebration and served as a way to showcase and promote the rich biodiversity of the Songkhram Basin. Villagers hoped to show outsiders and the younger generation how important fishing is to their lives. Models of some fish were displayed, and some villagers sold their fermented fish. Environmental education for the youth was promoted because some villagers fear the new generation does not appreciate the importance of fish and local ecology. Students were invited to participate by displaying river-related artwork and asked to speak about why they valued the wetlands.

In addition to informal environmental education through activities like the Wetlands Festival, villagers and Thai Baan researchers wanted to promote formal environmental education for youth in the area's 17 primary schools and two high schools. The schools were interested in teaching students about the local ecology, particularly the inundated forest, and wanted to use information from the Thai Baan research to make lesson plans. Environmental education benefits students because it raises awareness about the important linkages between ecology and local livelihoods. The exchange of knowledge is empowering for village researchers because students learn about the resources vital to their livelihoods.

The connections between Thai Baan research and environmental education are promising and efforts should be continued and strengthened. Other suggestions for future environmental education include integrating students with future research and expanding environmental education to more schools and to universities like the Rajaphat Institute of Sakorn Nakorn.

### **Added value for local products**

Villagers and Thai Baan researchers expressed interest in promoting local products that are sustainably produced. The market structure for local products, particularly fish, is one that currently favours distributors. The distributors buy low cost fish from the villagers and sell them for higher prices, sometimes after adding value through processing. Fermented fish made in factories at the district level is much more profitable than village-made fermented fish because it is processed. Villagers want to add more value at the local level and promote locally produced products so that there is greater demand for products produced in the village over those produced at the district level. It has been suggested local villages set up a network or cooperative so that they can sell their fish for higher prices, and develop products that have higher value like the processed fermented fish.

The Women's Group of Ban Pak Yam has started to establish a cooperative and add value to local products. The women are focusing on fish products that include fermented fish, dry fish, fish cake, and fish jam (chilli-spiced and sweet). The women have made these products individually in the past but are beginning to think about how to do so as a group, in which case they may be able to form a cooperative and reduce production costs. They are also discussing ways they can distinguish their products and to package, label, and prepare the products in a way that consumers want them.

Currently, the products have limited markets that are dominated by similar products made in other places at a lower cost. The group will ask the Lotus market's "one tambon, one product" programme to promote local products to a wider audience. Last year, the Women's Group secured funding (about 100,000 baht) to help their efforts at adding value to local products. It allowed them make a field visit to a district level fish processing operation so that they could learn about the process and the production costs involved in reaching a wider market. The Women's Group worked in collaboration with Thai Baan researchers, and in future, they can use the organization and network of coalition partners to further their efforts.

### **Step 10: Second progress report**

A progress meeting was held after the second phase and as was the case in the first meeting, researchers from all four villages, IUCN and SEARIN facilitators and representatives from Rasi Salai and Pak Mun, attended the meeting. Village researchers presented their findings, discussed problems and concerns, reevaluated the research goals and looked at the next steps in the research.

### **Step 11: Third phase of research – cross-check consolidated data**

During this phase, the volunteers verified that the compiled results made sense to the village researchers, and read the draft report with them so that they could make changes in content and wording. The volunteers went through several edits with the researchers. Village researchers, also provided information on some new topics, or fleshed-out ones that had been addressed previously (e.g. information on Giant Catfish or land use in the local ecosystems). Lastly, villagers and project facilitators discussed how the research should be wrapped-up and how they should proceed after the completing the final report.

### **Step 12: Final progress report**

A further meeting was held at the end of October 2004. The meeting included village researchers from the four villages, representatives from Rasi Salai and Pak Mun, IUCN and SEARIN facilitators, and observers other villages where Thai Baan research was starting up. Researchers presented their findings, and facilitators released the final project document.

They reflected on the research and discussed what to do next to address conservation and livelihoods in the LSRB.

### **SECTION 3. BENEFITS OF PARTICIPATORY RESOURCE RESEARCH**

The process of learning together about the existing biodiversity and its social and cultural importance has many benefits. The data gathered during the research is useful for planning. Thai Baan Research is not just about data – it is as much about process as about product as it promotes capacity building and networking.

*“This research is simple and is clear in itself ... how livelihood links with the social and natural ... From the research made simple we have a process for learning and at the end of the research the people have not only the information but they also have learned how to work together and they know about the role of organization. The process is dynamic – it does not stop, it keeps going, and in the future they have a plan.”*  
Rattaphon Pitaktapsombut, IUCN Sri Songkhram Project Manager

#### **Baseline information**

The data acts as an information baseline on the quantity and quality of natural resources in the LSRB and the extent to which they are used to support livelihoods. This information is necessary for resource use planning in the area, including conservation and livelihood improvement schemes. It allows for monitoring and better assessment of changes in the ecosystem and livelihood connections with the resources.

The data details the rich biodiversity of the area. There are strong ties between resources and villagers that are evident in all areas of life: fishing, collecting vegetation, agriculture, and livestock grazing. The natural water flow patterns are extremely important in the local ecology and therefore are important for livelihoods. The inundated forest is also important for the local ecology as a nursery and refuge.

#### **Networking**

One of the major benefits of participatory resource research is that it allows for a strong network to be formed among villages participating in the research, villages from other provinces that undertook similar research, and coalition partners. Villagers, local government, and NGOs learned how to work together. Networking among villages allowed for idea exchanges – they saw what had been done elsewhere, what worked and didn't, and this refines their ability for wise management planning. It is also empowering because it allows villagers to take a lead role in coordinating efforts at sustainable development.

Villagers involved within the LSRB established good relationships with each other, and this in turn established good connections with village researchers from Rasi Salai and Pak Mun, and with coalition partners including IUCN, SEARIN and the NECC. The network between researchers and local government is limited but the groundwork has been laid to strengthen this network as well. For example, one of the partners in NECC works in the forestry department, so there are plans to link Thai Baan research with forestry policy in Nakhon Phanom province. There are hopes to expand partnerships to the district and provincial government in the agriculture and fishery departments.

#### **Capacity building**

The goal of this research is better resource management to preserve the region's biodiversity and benefit people through maintained and improved livelihoods. Longer-term planning and development of the LSRB wetlands can be achieved through a combination of

documented knowledge, development of networks and capacity for management. The network can be used for planning in ways that highlight the strengths and abilities of the partners, thereby building capacity for effective and equitable resource management.

Village researchers increased resource awareness and are empowered to be actively involved in planning that enhances their environment and livelihoods. Their knowledge and abilities are now acknowledged and highly regarded by local and regional decision-makers. The villagers gained experience by working together, had more public speaking opportunities, and some individuals during the course of the research demonstrated natural leadership skills.

*“At the end of the project the local people can work together, work with the government, have a good process for conservation, and have the funds to follow up activity (created by themselves or supported by the government or NGOs)...they can use the data collected to solve problems. If they understand that the information helps them then they will cooperate, will compromise and will adjust - they will work with the conservation projects.”*

Rattaphon Pitaktapsombut, IUCN Sri Songkhram Project Manager

One of the important ecosystems being impacted through land use change is the inundated forest. Having knowledge about the forest, including how villagers use it to collect vegetation, graze livestock, or use it for agriculture, as well the degree to which the forest plays a role as a spawning ground for fish migrating to the Songkhram Basin from the Mekong, allows for better forest management, as well as restoration if it is necessary. The villagers and the government can now work together on conservation plans and focus their efforts that best use their abilities, time constraints, and funding, while NGOs can assist as needed.

Many resources have declined in availability or average size. The causes for the declines must be addressed to maintain biodiversity and livelihoods. The villagers have started to consider conservation planning, such as creating fish refuges. If the issues are to be addressed successfully in the long-term, however, there must be better cooperation and planning. For example, many say the fishing gear used at the end of the rainy season reduces fish populations because fish are caught before they leave the Songkhram Basin. It is difficult for a single village to make the decision not to take part in the harvest, but if there was a wider agreement then villages would be more likely to cooperate and let fish populations recover. There is no law currently to restrict the use of certain nets, but if communities were willing to reduce the use of plastic nets or consider alternatives (e.g. nets with larger holes, allowing small fish to pass through), then new regulations or management plans could be agreed upon and coordinated among LSRB villages and the government.

The hope is that in future, the enhanced capacity opens doors for other beneficial activities: increased environmental education about the importance of the wetlands for biodiversity and local livelihoods, and further the development of sustainable wetland products and livelihood alternatives. There is also hope that in future, Thai Baan research will be included in government and NGO plans to increase the knowledge about resource availability and capacity building (e.g. environmental education and value-added products). Villagers are now brainstorming more environmentally sustainable livelihood options. One suggestion is to promote ecotourism in the area featuring boat trips and home stays where visitors can learn about the ecology and biodiversity of the Songkhram and Mekong Rivers, as well as about Thai Baan research. Finally, there are hopes to expand Thai Baan-style research to other locations in Thailand and other MWBP demonstration sites.

## **SECTION 4. ANNEXES**

### **Annex 1. Initial findings**

The initial findings for each of the issue-areas are listed below. Although a major focus of the research, lists and images of the classified fish, fishing gear, vegetation, and ecologies have not been included.

#### **Fish and Fishing Gear**

##### **Fish classification**

- 141 species were identified including past and present fish populations
- 128 species of fish are currently caught, 7 of which are rare including the critically endangered Giant Catfish (13 species that used to be caught are no longer found in the area )

##### **Ecology**

- The Songkhram River has strong seasonal variation in flow. In rainy season, from around April to September, the river flows from the Mekong into the Songkhram. During this time, fish from the Mekong come to the Songkhram River Basin to spawn. After September, the water from the inundated forest flows to the Songkhram and Mekong Rivers – the flow of the Songkhram switches direction during this time and flows toward the Mekong. Fish from the inundated forest are larger at the end of the rainy season and they swim back to the Songkhram and the Mekong Rivers from September through December. The dry season begins around January and continues through March. During this time, the water levels drops and collects in ponds. After December, and until the rainy season starts in April, there are few fish in the Songkhram. Some native species do not go back to the Mekong and these stay in the ponds during the dry season.
- Many fish from the Mekong come to the Songkhram River to spawn during the rainy season. The inundated forest along the banks of many tributaries that branch out from the Songkhram River is particularly important. The ecology of the forest is suitable for spawning grounds – some spawn near the sandy shores, some on the leaves of the trees, some under the marsh water. Furthermore, fish consume nutrients from the forest, including fruit from the inundated forest and insects (e.g. ants). Fish use niches within the habitat, but all of the inundated forest is important as habitat for feeding or spawning.

##### **Past and current availability**

- Both the number and the size of fish that migrate from Mekong have decreased in the past several decades.
- A flagship species that has been shown to have a marked decrease in population is the Giant Catfish. It migrated from the Mekong to spawn in the inundated forest and eat the green algae and salt that was mixed in the soil near the green algae (prevalent in areas around Ban Tha Bo where the largest size and number of catfish were found). In the past, villagers caught catfish up to 500 kg, and villagers say 200 kg was the minimum. Ban Tha Bo fishers still catch catfish (about one each year), but they are much smaller than they were in the past – last year the one caught was 68 kg. In Ban Pak Yam, Giant Catfish were caught up to 170 kg. The 20 caught in 2002 were only 40-80 kg. In the past three years, four catfish were caught near Ban Yang Ngoi and ranged between 50-60 kg. In Ban Ouan, villagers caught catfish weighing up to 140 kg, but in the last six years only two were caught: one was 47 kg and the other 10 kg.

- Possible reasons for the decline include: changes in upstream river conditions, increased pesticide use, increased catch of smaller fish, and possible loss of feeding and spawning areas. The ways to address fish population declines has to include management on local, regional and national levels, as well as within the entire LSRB.

### **Livelihoods**

- 90 per cent of households in each village have fished. Villagers are usually involved in both fishing and rice farming.
- Fishers can catch fish all year but concentrate on certain areas depending on the season and use appropriate fishing gear to the season. At the beginning of the rainy season in April or May when the fish are coming from the Mekong to spawn in the LSRB, fishers catch in the river. During the rainy season when the fish are spawning (May to September) the fishers catch in the inundated forests and the tributaries of the Songkhram. From September to December they catch the larger fish dispersed in the inundated forest during the rainy season and are migrating back to the Mekong. At this time of year, nets are used to catch the large numbers of fish – this is the time of year when there is the largest catch. When the water levels fall during the dry season (January to March) villagers catch fish in the remaining ponds. They may also pump out the ponds and collect everything. During this time of year, the catch is more for personal consumption than for sale.

### **Social norms for access to fishing grounds**

- Fishers access two kinds of fishing grounds, personal and open. During the early rainy season, when the water is flowing from the Mekong and villagers fish in the Songkhram River, fishers have personal areas which others respect. Open areas are fished using only small fishing gear like hooks. During the rainy season, villagers fish everywhere in the inundated forest and along the Songkhram, with some areas personal and some open. During the dry season, fish are caught from small ponds or in the Songkhram with nets. Again, some areas are personal and some open.
- Personal areas are demarked because the fishers have put effort into making them suitable, for example they cut trees and clear away brush. The personal areas can be passed to the next generation. Some fishing gear is set around the river bank and left to trap fish. Gear sets are personal and everyone knows who the owners are.
- When fish swim back to the Mekong at the end of the rainy season, access is more controlled. This is the time of the largest fish catches. With the nets currently in use, it is possible to catch more than one ton per day. During this season, the community decides who gets to fish and where, and controls the branches of the Songkhram that can be accessed.
- In the past, the community owned both the access rights and the nets that were set across the Songkhram tributaries. The larger nets were major investments that had to be made by the community rather than individuals. Individuals are now able to make the personal investment for the new and efficient nets, but they must still get permission from the community to fish.
- The community currently uses an auction system to decide who has access to branches of the Songkhram from September to December. The community controls many branches of the river and auctions off access rights to individuals –including individuals from outside of the community, and some accessed by several families that grouped together to pay for the rights. Those who win the auctions pay the community and then have personal access to the branch and they keep the profits. Money from the auctions is used to help develop the community. For example, the money may build a road, go toward community education and some goes to the Tambon Administration.

### Classification of fishing gear

- 85 kinds of fishing gear have been used in the area, with 8 (all constructed from natural sources) no longer used because they were inefficient.
- Seasons require changing fishing gear to catch various species or size of fish. Small fishing gear is used in the inundated forest and larger gear is used in the Songkhram. Water depth and river flow dictates which gear is necessary. Gear may be used with food to lure the fish, especially in the inundated forest when fish are spawning.
- The gears were catalogued in eight groups:

Hand held (e.g. nets)	Mixed gear, usually hand held and traps with food as a lure. These are not used anymore <sup>2</sup>
Traps with food (e.g. shrimp, rice, or fruit) to lure fish	Gear that is a mix of hand-held and traps (e.g. a gear with food inside used to catch frogs)
Sharpened gear to stab the fish	Non-trapping collecting baskets, used to store the fish after they are caught with the main fishing gear
Guns with a hook at the end	Nets along the riverbank to catch passing fish. No food is used as a lure; fish are caught when they swim into the net. The nets are usually made from plastic.

### Past and current use

- In the past, fishers used hand-made fishing gear from natural sources (e.g. wood from the inundated forest). They caught only large fish for personal consumption or for fermenting and drying. In part, this was because the nets had wide spacing that allowed small fish to pass through. They exchanged the fermented and dried fish for rice grown in the upland.
- About 25 years ago, the fishing gear changed and fish was caught for sale. New technology was brought by Vietnamese immigrants, including plastic nets with smaller holes. These allowed larger catches and are now commonly used, however, fishers still use hand-made fishing gear, which they use depending on the season, area, or species.
- Also starting about 25 years ago, villagers from this area started to sell outside to a larger market. They used ice and shipped the fish farther away, which had not been done previously. Now it is more common to sell fish and buy rice rather than exchange fish for rice.

### Market mechanisms

- Most small fish, which are not very valuable economically, are kept by the villagers for home consumption and to make fermented fish.
- More valuable fish are sold at the district and province levels by traders who handle the transport to distribution centres. From there, fish are sold to restaurants. Fish in Songkhram are considered delicious because they have a salty flavour.
- Distributors buy fermented fish during the dry season to sell throughout Thailand.
- Fermented fish is also made at factories at the district level. Unlike home-fermented fish, factories add ingredients to give the product flavours (e.g. made slightly sweet), and add preservative like sodium glutamate. Many consumers prefer the less strong flavour and aroma of processed fish.

<sup>2</sup> Called white plate fishing. It was believed fish responded to the colour white, so fishers banged large white plates on the side of the boat, drawing fish to the boat. This practice no longer attracts many fish.

### Cultural beliefs and resource ceremonies

- In the past, there were fish that people did not eat: ghost fish. For example, the Giant Catfish was thought to be a ghost fish because they did not have gear that could catch them. They also did not eat fish that had eggs. Some villages are still apprehensive about ghost fish. For the most part, villagers now catch everything and there are not as many cultural taboos about fish.
- Some villages gather to make fishing gear together. For example, fishers from Ban Pak Yam come together in September and November and work on large gear.
- Starting four years ago, villagers began hosting annual fish festivals. The festivals include activities for children and villagers sell their fish products, like fermented fish. Models of the fish are displayed at roadside. Villagers hope to show how important fishing is to their lives, particularly since some fear that the new generation does not understand the importance of fish to local livelihoods. The festival also serves as a way to showcase and promote to outsiders the rich biodiversity of the Songkhram Basin.

### Other harvested species

- Fifteen species of molluscs and snails are found in the area. Snails and molluscs are collected primarily during the dry season (February to April) when water levels are low. They are collected from the sand along the riverbank. Snails are only sold in the local market because they are not popular in other provinces.
- Three species of shrimp were identified in the area. Shrimp are caught all year, but seasons require specific catching methods. It is easiest to catch shrimp during the dry season. Throughout the year, most catching is done during the full moon because they can catch more shrimp at this time.
- Two species of crab are caught in the area. Crabs are usually found in rice fields during dry season when the fields are being prepared. Farmers catch them during field preparation.
- Turtles are also collected. It is unclear how many local species there are, but *ba pa*, predominates. The turtles are mostly found in the inundated forest, where they live in ponds and eat bamboo shoots and other vegetation. During the rainy season, turtles are more abundant and widespread. While harvested all year, they are easier to find in the dry season because they are localized in the ponds. During this season, households can find 10 turtles a night. Turtles are sold in the local market. There is a belief that if you release a turtle it is good luck, so people buy them to release.

### Vegetation (collected from the inundated forest)

#### Classification

- 208 types of vegetation were identified as being used by villagers in the area.
- It is used for many purposes, including food, sale in the market and other home uses.

Food for consumption	- bamboo shoots (boiled, dried or fermented for storage) - leaves to flavour soup - fruit eaten as is or made into a dessert (mixed with bread) or processed for storage - mushrooms
Fish feed and fodder	- used as animal feed (e.g. some roots mixed with rice for pigs) - in the rainy season, fruit are the preferred food for spawning fish, birds also like fruit
Charcoal and fuelwood	- branches from old trees are used for fuelwood or to make charcoal - large branches from living trees are also cut for charcoal
Sale in the market	- mushrooms, bamboo shoots, and vegetables

Other household uses	<ul style="list-style-type: none"> <li>- making soap</li> <li>- strong bark to tie or bind things together</li> <li>- blend certain varieties of wood with soil to cover homes as prevention against ants and other insects eating the supporting wood beams</li> <li>- boil certain varieties of fruit, bark or leaves to use as a cloth dye</li> <li>- construction material for homes, toys, musical instruments, hats, buckets, chickens cages, sticky rice containers, and fishing gear</li> <li>- herbs are collected for medicines (e.g. to relive stomach pain, itchiness from insect bites (including scorpion bites), skin rashes, lessen eye pain by reducing swelling, or to promote general good health)</li> <li>- flowers or trees with aromas are used to decorate homes or for celebrations</li> <li>- individuals use the forest as a place of relaxation and for peace of mind</li> </ul>
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### Ecology

- Vegetation is collected from the inundated forest and villagers collect it all year but there are seasonal differences. For example, leaves used for food and flavouring can be collected all year while mushrooms are primarily a dry season harvest. In the rainy season, the most important uses for vegetation are for food, (human and spawning fish), and for herbs (for flavouring or medicine). They may collect the same NTFPs for particular reasons depending on the season (e.g. for food during the rainy season but construction material in the dry season).
- The vegetation supports ecosystems that benefit villagers. Fish depend on the vegetation and some believe if there is less inundated forest or fewer resources for the fish (e.g. fruit), then the fish will not come. The forest also protects against erosion.

### Past and current availability

- The amount of vegetation available for collection has decreased. Some, including many mushrooms, have decreased in availability and in average size. Some have observed the soil and forest has changed. Reasons for the changes include large parts of the inundated forest being cleared and vegetation collected very quickly.

### Livelihoods and trends in use

- More than 70 percent of households collect vegetation; predominantly women. If possible, villagers prefer to collect vegetation rather than buy it.
- Some products that used to be made from collected vegetation have been replaced with plastic. Despite available alternatives, collected vegetation is still important for people's livelihoods and provides many benefits, including intangible benefits like a sense of tradition, peace of mind, a connection to the land and ecosystem protection.

### Cultural beliefs and resource ceremonies

- In the past, villagers cremated the dead in the inundated forest. Some villagers believe the inundated forest has ghosts. In response, those with these beliefs burn small fires in the area to scare the ghosts. Furthermore, they limit their collection to only the amount used for household consumption because they believe the ghosts do not like the resources harvested for sale.
- Villagers have respect for nature and there is a sense of trust that resources will be used in sustainable ways. For example, large trees are only cut for important purposes (e.g. boat construction). If a large tree is cut, there is first a ceremony in respect of the tree and to apologize since they know that the tree gave a long life for them.

## **Agriculture, Gardening, and Water Management**

### **Classification**

- Fifteen varieties of rice are used currently, mostly in the uplands. Historically, 66 varieties used to be grown in the area. There are 3 main varieties: normal rice, sticky rice, and black sticky rice. Some varieties grow well in the uplands while others are grown near wetlands.
- Ten main vegetables are planted in gardens, including riverbank gardens, near rice fields after the rainy season when the water recedes, and those planted near their homes. The major crops are: corn, tomatoes (7 types), leaf tobacco (not planted much now but was commonly planted in the past), onions, chillies (in the upland), cucumbers, watermelon (including a new and native variety; planted in the dry season along the riverbank or by ponds), pumpkin, beans (3 types), and potatoes.

### **Ecology**

- There are two rice harvests annually. The uplands are planted during the rainy season. The seedlings are prepared at the end of April: farmers seed the soil, let the seedlings grow, transport the seedlings to prepared fields partway through the season, and harvest sometime between September and November. The second crop is planted near the Songkhram River. The seedlings are planted and prepared for the second crop after the first harvest and water from the Songkhram recedes, usually around November. The second crop is harvested in February.
- Riverbank gardens are planted after the water recedes but where the soil remains moist; they are planted alongside the rice during the second crop.
- Some crops are planted in the inundated forest, including rice with vegetables are limited to corn and cucumber.
- Crop watering is largely dependent on natural ecological cycles. For the most part, the first crop in the rainy season is still rain irrigated. In the past, the second crop in the dry season used natural flows, but now it is more common to pump water for irrigation.

### **Livelihoods**

- The main agriculture of the area is rice. 90 per cent of households farm rice during at least one of the seasons.
- Riverbank and home gardens are planted mostly for home consumption, with the major exception being watermelon, which is planted extensively (10 rai) and then marketed.

### **Social norms**

- Approximately half of the families in the villages have fields in the uplands they use for the first crop of rice. They either purchased the land (by saving money from fishing) or the fields were passed down to them from their parents.
- For the second crop, near the Songkhram River after it recedes, villagers know who accesses the land. Villagers may or may not have official deeds depending on the village.
- Riverbank gardens are planted near the rice fields during the second crop.

### **Past and current use and social implications**

- Over 50 rice varieties previously grown in the area are no longer used. The decrease in the number of varieties is largely because of agriculture policies that encouraged the use of hybrids. While they produce a high quality, high yield, and have a short growing cycle, they need more fertilizer and pesticides and can only be grown in the uplands. Old varieties have disappeared because they were not used and the government collected the old seeds.

- The old varieties had several unique properties not found in the new. Some were well adapted to the wetlands, grown when flooded and harvested from boats. The varieties commonly used today are not adapted to wetlands flooded for more than four months and can be lost if they are flooded. Unlike the varieties grown today, the older varieties did not need to be boiled before eating, only soaked in water.
- The older varieties matured at different times so communities could harvest communally. Instead of hired labour to help with the harvest, they asked neighbours to help and reciprocated by helping when their fields were ready for harvest. The rice currently grown is all harvested at the same time. Since everyone has to harvest at the same time, there is no time to help each other. There has changed cultural and social relations.
- The varieties commonly grown today have shorter growing cycles and it is possible harvest in two or three months. Farmers can potentially make a third crop in some years if there is good light and use a lot of fertilizers and pesticides. The third harvest would be planted in March and harvested in May. A third harvest was not possible with the old varieties.
- There are more flood damaged crops than in the past and this means that not only is the current crop is lost, but farmers are not able to gather seeds for the next season. In response, the government established subsidy programs to assist farmers if they lost a crop. Unfortunately, the policy encouraged villagers to plant as much as possible, even in high risk areas because farmers know if the crop is lost they receive a subsidy. The policy also led to deforestation in the inundated forest because villagers expanded the amount of land under cultivation. The program is a costly one for the government and policy makers are considering more dams to control flooding, although it would probably be more effective to reconsider the subsidy policy or consider other solutions, such as recovering seedlings that are suitable for the wetlands.
- In the past, gardens were planted solely for home consumption. The riverbank gardens are still mostly planted for the family, but villagers sell some of the vegetables at the local market if they have a surplus. They also plant watermelon extensively on the riverbank during the second rice crop and sell the watermelon in the market. Vegetable gardens near homes remain mostly for household consumption.
- More chemicals are used now than in the past, particularly for watermelon.

#### **Past and current water use**

- The first rice crop in the uplands is rain irrigated. There have not been significant changes in this first crop irrigation regime; however, some individuals now pump pond water for the first crop.
- There have been changes in water use for the second crop grown in the dry season. Previously, it was irrigated with natural flows diverted from the Songkhram. Villagers were only able to divert small amounts of the flow. Now it is more common to pump water to irrigate the second crop, (water from ponds created by blocking the flow, from natural sources including ponds in the inundated forest, or from the river itself). The government helped by buying water pumps and some of the petrol. The government also helped villagers block more of the flow by building sturdier, permanent structures, like small dams, to create larger ponds that hold more water and can be used for aquaculture. Because more of the flow is diverted, villages now use an auction system to determine who can to block the flow for personal fields. Of the villages that participated in Thai Baan research, Ban Pak Yam has more blocked flows and larger ponds than the others. The new irrigation methods had positive effects like creating a more reliable water source for the second crop, increasing the yield. Unfortunately, blocked flows created more flooded area, reducing the amount

of publicly available land. This has disproportionately affected the poorer villagers – they lost access to land they previously farmed and must now rely on fishing.

- Villagers use rain water predominantly for drinking. The water is collected and stored in large jugs. Some groundwater is also used. Today, some villagers also buy bottled water from the market, which is treated and packaged elsewhere.
- Household water consumption has changed slightly in the past couple of decades. In the past, villagers used water directly from the Songkhram River – they put it in a jar and took it home. Now water is pumped from the Songkhram, treated, and then piped to people's homes.

### **Market mechanisms**

- In the past, it was common to trade rice for other things. Now rice is sold in market.
- Vegetables are grown mostly for home consumption, except watermelon which is planted extensively and sold. For the most part, vegetables sold in Sri Songkhram markets are from another province, except those collected from the inundated forest (e.g. mushrooms).

### **Cultural beliefs and resource ceremonies**

- The harvest festival was a very important community ceremony. All villagers took part of their harvest to the temple and had a big celebration with a communal meal. Now, villagers still have a harvest celebration but it is generally with the family rather than the whole community.
- In the past, villagers came together on a celebration day to dig a reservoir to be used for dry season rice irrigation. The reservoirs were small, temporary and lasted only a couple of years. After digging the reservoir, villagers held a small celebration and ate together. These communal digging ceremonies are no longer held given the new ways of blocking flow that are used today.

### **Livestock – Cattle and Buffaloes**

#### **Classification**

- Seven breeds of cattle and two of water buffaloes are currently raised in the area. One breed of buffalo is local and the other a hybrid mix of local and outside breeds.

#### **Livelihoods**

- Approximately half of the families in each of the villages own livestock, although the proportion of individuals owning cattle and buffaloes varies slightly by village. The percent of livestock owners in each village are: 40% in Ban Pak Yam, 65% in Ban Tho Bo, 50% in Ban Yang Noi, and 60% in Ban Ouan. The total number of livestock kept in all four villages for the last year was 1,365 cattle and 898 buffaloes.

#### **Past and current use**

- In the past, more buffaloes were kept (worked in the rice fields, rather than sold) than cattle; now the reverse is true. Now it is more common for farmers to plough their fields with machines. Both cattle and buffaloes are raised to be sold in the market.
- In the past, a household had a minimum of 10 cattle or buffaloes and perhaps 20, 50 or 100 head of livestock. Now, fewer cattle and buffaloes are kept with an average of three to five to a maximum of 20 per household. The main reason why families own fewer livestock is because the amount of public land for grazing has decreased.
- Three feeding regimes have been used in this area:
  1. 100 years ago, villagers let large livestock go alone into the inundated forest where they ate the grass and survived without supervision. Each month, villagers went out to see if the livestock were doing well. They used male buffaloes to prepare the rice fields and once the soil was prepared, they were

sent back to the forest. Buffaloes were only used to prepare the soil. Cattle were used to carry carts and for travel. Villagers did not take much care with the animals<sup>3</sup>.

1. 30 years ago, villagers took the livestock to the inundated forest in the early morning, and took them back to the house in the evening. They did not follow the animals during the day or as they walked between the forest and their homes – the cattle and buffaloes remembered the way.
  1. For the last 30 years villagers have followed the livestock as they graze. They do this in part to make sure that they do not eat from the rice fields and damage other villagers' crops – they like to graze on rice plants because they are easy to eat. Livestock are kept at the villagers' homes.
- There were many native breeds in the past, but the number has decreased in favour of hybrids. Villagers still have some native breeds, but they are rare because the selling price for them is low.
  - In the past, villagers allowed cattle and buffaloes to breed naturally. Now they use selective breeding, sometimes charging a fee if the sperm of their animal is used. Most families that own livestock breed them as well – if they have an animal that is good for breeding, they'll keep it and continue breeding it rather than sell it.

### **Social norms for access to grazing areas**

- Livestock is grazed on public land, of which no person has formal or informal claims to access. Villagers have a rotation – they walk with the livestock, stop and let them eat, then move on to another area. They let grass grow back in recently grazed areas and go back later.
- Some villagers rent lots by the year where they have exclusive grazing rights.

### **Market mechanisms**

- In the past, villagers sold cattle and kept the buffaloes. The villagers took the cattle to be sold to Southeast Thailand – the journey took four months. Along the way, they passed through many provinces and they developed relationships with villagers along the route. Good relationships were further fostered by acts of kindness like giving a buffalo or other gift to the village as a way of expressing thanks for allowing them to stay in their homes and eat their food. While moving south with the herd, the villagers also traded fish for rice, exchanged fermented fish, and came back to Sri Songkhram with products from other provinces.
- Now cattle and buffaloes are both for sale. Villagers use transportation networks and sell livestock in a centre not far from the village. Cattle are mostly for markets in Northeast Thailand, the southern areas of the country, and Malaysia where beef is popular. Buffaloes sold in the north of Thailand, are consumed there, and in the southeast of Thailand, they are either bought to prepare the fields or transported to countries that eat buffaloes, (e.g. Myanmar).
- Villagers usually hold cattle or buffaloes for five years before selling them. They get a good price after five years, although they can also sell younger animals. It is most common for villagers to buy females, breed them, and then raise the offspring. Occasionally, with cattle, villagers buy calves rather than breed their own.

### **Caring for cattle and buffaloes, past and current cultural importance and social relations**

- In the past, villagers kept the village livestock communally. They fed them together, went to the fields together, and journey together to sell the cattle. These times

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<sup>3</sup> In Ban Pak Yam, some individuals are beginning to care for the livestock in a new way. They keep the livestock at their homes and feed them grass and vitamins. They use new hybrids that grow quickly. The livestock use more calories when they are walked so they are only taken out to walk for exercise. The villagers who have started raising livestock in this way do so in part because of the limited amount of public land available for grazing.

fostered important social ties and a strong sense of community. They spent a great deal of time working and socializing together, allowing them time to talk about their lives and get to know the behaviour of their friends and neighbours. This established a strong sense of trust and reciprocity in the community. Currently, villagers care for the livestock individually, with family members, or with members of another household. Today, caring for livestock does not provide a way for individuals work as a group.

- In the past, villagers held buffaloes in a high regard. They needed a buffalo to prepare the fields and livestock is an asset in times of financial trouble. They maintained the inundated forest because they believed it was important for the livestock. They had a deep connection with nature and occasionally slept in the wetlands. Today, buffaloes are not as important for local villagers. Some families, maybe 5 per cent, still use buffaloes to prepare the rice fields, but the majority use machines and ploughs. As such, buffaloes are not regarded as highly today as they were in the past.
- Because of the high regard for buffaloes in the past, villagers also had high regard for the individuals that had experience taking care of them. The person who knew the most about livestock was respected and looked to for advice (this was particularly the case before there were village heads or Tambon leaders). This relationship has changed. Today, livestock is a less important way to gain prestige within the villages. Other means now determine levels of prestige, like the amount of money a person has, and there are official processes to decide on a village head and Tambon officials.
- In the past it was important to pass knowledge to the next generation about how to care for the livestock, including what kinds of herbal medicines should be used. Now, with hybrid animals and government support for medicines it is less important to pass on this knowledge. Also, there is less interest in next generation because it is not seen as being a modern profession. The knowledge about how to care for animals and select the best ones based on their head, ears, eyes, etc. is given only to individuals who love to learn about the animals.

## **Ecology**

### **Classification**

- 27 local ecosystems were identified in the area. Volunteers created area maps of the area surrounding each village, focusing on the ecology near the Songkhram River, the inundated forest, and rice fields. The ecosystems are cross-linked with the other issue areas, such as where the fish spawn, where villagers collect snails, where they graze livestock, etc.

### **Ecology**

- There are two seasonal ecologies, the rainy season and the dry season. For example, the inundated forest is a wetland in the rainy season but in the dry season it has scattered ponds.
- At times during the year, an area may be covered with water and named accordingly as a flooded area. Later in the year, the same area may be broken with land, in which case another name and use for the ponds and the dry patches chosen. Later still, there may be no or very little water, in which case the area would be described according to its specific use.

### **Livelihoods**

- The ecosystems include agriculture, the fish that are caught, the vegetable gardens, and the livestock. The movement of water and the use of the ecology are integrally linked with livelihoods.

- If the ecological cycle is broken, the area's biodiversity will change. For example, if land were flooded all year, villagers would not have dry season rice fields.

## Annex 2. Issues and subtopics addressed in Sri Songkhram

Issue-area	Subtopics
Fish	<p><i>Classification</i> - What fish are being caught, or were caught in the past? What are their common and scientific names? In addition to the fish, what other riverine species are commonly used by researchers (e.g. includes river crabs, shrimps, molluscs and snails)?</p> <p><i>Ecology</i> - Where do the fish spawn (where have researchers seen the spawning grounds)? What is the composition and size ranges for the fish? How have the size and composition changed in the recent past? What are the migration patterns? What about the Giant Catfish (has it been found in this area and is it still available)?</p> <p><i>Social</i> - How are fish and fishing socially and culturally important? How important is fishing to villagers' livelihoods?</p> <p><i>Marketing</i> - What are the economics regarding the species – for example how much do they cost in a market or how much rice are they exchanged for? What markets are being reached? How are they processed?</p>
Fishing Gear	<p><i>Classification</i> - What kind of gear is used currently? What kinds have been used in the past? How is the gear used? What material is the fishing gear made from? What species or quantity of fish can be caught in the gear? How many are used?</p> <p><i>Ecology</i> - What time of year is the gear used, and how does this relate to seasonal changes in water levels or fish availability?</p> <p><i>Social</i> - Where do they get the fishing gear (make, buy, community purchase)? What factors have led to changes in fishing gear use? What are the social norms for fishing area access? How are property rights determined and respected?</p>
Vegetation	<p><i>Classification</i> - What vegetation is harvested? What are their common names?</p> <p><i>Ecology</i> - What season does the vegetation grow, and when is it collected? Why is it not collected at certain times? Where is it found? Have there been changes in the availability of the resource? Do only humans use it or is it important for fauna as well?</p> <p><i>Social</i> - What is the use for each vegetation - is it used for food, medicine, cultural or social purposes, and is it sold? What part of the vegetation is used, e.g. the leaf, flower, fruit, branch, bark, and how is it used? Is the vegetation used for food and medicine prepared in a certain way, e.g. boiled, eaten in a soup, eaten with rice, used as is? How important is it to villager's livelihoods? How is collecting vegetation culturally important?</p> <p><i>Marketing</i> - If the vegetation is sold in the market, what is it sold for, in what markets?</p>
Agriculture, Gardening, and Water Management	<p><i>Classification</i> - What plants were and currently being grown for consumption? How many varieties of rice were grown in the past and are grown currently? What has been or is being grown in vegetable gardens?</p> <p><i>Ecology</i> - When are the rice fields and vegetables planted (what season or seasons), and when are they harvested? Where are they planted, e.g. is rice planted in uplands or near rivers and are vegetable gardens planted on riverbanks, on home lots, or in the forest? What water is used for irrigation? What water is used for drinking and home consumption?</p> <p><i>Social</i> - How are the rice fields managed? How has the technology used to farm rice and tend the fields changed? How is water managed for drinking, family use and agriculture - How is water allocated? What technology or facilities are used to store or treat the water?</p> <p><i>Marketing</i> - What is the exchange value for rice? What funding sources are used to support agriculture? Are the gardens for home use or, if sold, how much do the products sell for?</p>
Livestock – Cattle and Buffaloes	<p><i>Classification</i> - What breeds are raised currently? What breeds were raised in the past?</p> <p><i>Ecology</i> - What areas are used for livestock grazing? What is the timeline for weight change?</p> <p><i>Social</i> - How many cattle and buffaloes are cared for currently and in the past? What is the process to take care of them? What is the importance of cattle and buffaloes to</p>

	<p>the culture or social structures of the villages? What issues of trust are developed or used in caring for livestock? How is knowledge about how to care for the livestock transferred from one generation to the next?</p> <p><i>Marketing</i> - How are the cattle and buffaloes marketed – how has this changed?</p>
Ecology	<p><i>Classification</i> - What are the number of ecosystems? What are they commonly called?</p> <p><i>Ecology</i> - How does the ecology change seasonally?</p> <p><i>Social</i> - How are each of the ecosystems used by the villagers? What local knowledge and issues of trust or social connections are associated with the ecosystems? How are the ecosystems linked with the other five research areas, e.g. what ecosystem acts as a fish spawning ground, what vegetation is found in the ecosystems, in which do the livestock graze?</p>



## Mekong Wetlands Biodiversity Conservation and Sustainable Use Programme

The Mekong Wetlands Biodiversity Conservation and Sustainable Use Programme (MWBP) is a joint programme of the four riparian governments of the Lower Mekong Basin – Cambodia, Lao PDR, Thailand and Viet Nam – managed by the United Nations Development Programme (UNDP), IUCN – The World Conservation Union (IUCN) and the Mekong River Commission (MRC), in collaboration with other key stakeholders. With funding from the Global Environment Facility (GEF), UNDP, the Royal Netherlands Government, MRCS, the Water and Nature Initiative (WANI) and other donors, the programme addresses the most critical issues for the conservation and sustainable use of natural resources in the Mekong wetlands. MWBP aims to strengthen the capacity of organisations and people to develop sustainable livelihoods and manage wetland biodiversity resources wisely. It is a five-year (2004-2009) intervention at three levels – regional, national and local – with demonstration wetland areas in each of the four countries: in the Songkhram river basin, Thailand; in Attapeu province in southern Lao PDR; in Stung Treng, Cambodia; and in the Plain of Reeds in the Mekong Delta, Viet Nam. The programme aims to:

- Improve coordination for wetland planning from regional to local levels
- Strengthen policy and economic environments for wetland conservation
- Generate and share information
- Train and build capacity for the wise use of wetlands
- Create alternative options for sustainable natural resource use and improve livelihoods

MWBP is a partnership between governments, aid agencies and NGOs, and provides a framework for complementary work for wetland conservation and sustainable livelihoods in the Lower Mekong Basin.

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A JOINT UNDP - IUCN - MRC GEF-FUNDED PROGRAMME

