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Trade in Natural Resources in Attapeu Province, Lao PDR: An assessment of the wildlife trade

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TRADE IN NATURAL RESOURCES IN ATTAPEU PROVINCE:

An assessment of wildlife trade in the Lao PDR demonstration site of the Mekong River Basin Wetland Biodiversity Conservation and Sustainable Use Programme (MWBP)

Prepared by TRAFFIC Southeast Asia - Greater Mekong Programme
for the Mekong Wetlands Biodiversity Conservation and Sustainable Use Programme (MWBP)
Sarinda Singh, Ramesh Boonratana, Mark Bezuijen and Aloun Phonvisay
August 2006

TABLE OF CONTENTS

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ABBREVIATIONS AND ACRONYMS

CI	Conservation International
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CPTC	Provincial Communication, Post, Transportation and Construction
DAFO	District Agricultural and Forestry Office
DC	District Capital
DFID	Department for International Development
DFO	District Finance Office
DoF	Department of Forestry
GAPE	Global Association for People and the Environment
GoL	Government of Lao PDR
IUCN	The World Conservation Union
LAK	Kip - Lao Currency (USD1 = LAK10,100, May 2006)
LARReC	Living Aquatic Resources Research Center
Lao PDR	Lao People's Democratic Republic
LWU	Lao Women's Union
MAF	Ministry of Agriculture and Forestry
MoF	Ministry of Finance
MRC	Mekong River Commission
MWBP	Mekong Wetlands Biodiversity Conservation and Sustainable Use Programme
NGO	Non-governmental organization
NPA	National Protected Area
NTFP	Non-timber forest product
PAFES	Provincial Agriculture and Forestry Extension Service
PAFO	Provincial Agricultural and Forestry Office
PC	Provincial Capital (e.g. Attapeu PC)
PFO	Provincial Finance Office
PLF	Provincial Livestock and Fisheries (in PAFO)
PPA	Participatory Poverty Assessment
TSEA	TRAFFIC Southeast Asia - Greater Mekong Programme
UNDP	United Nations Development Programme
USD	US Dollars
WWF	World Wide Fund for Nature

EXECUTIVE SUMMARY

As a contribution to the Mekong River Basin Wetland Biodiversity Conservation and Sustainable Use Programme (MWBP), field studies were conducted in the MWBP demonstration sites of Lao PDR and Cambodia to investigate trade in natural resources. This report summarises findings from the Lao demonstration site in Attapeu Province.

The aim of the field study was to provide an overview of natural resource trade, including fish, wildlife (terrestrial and aquatic vertebrates aside from fish) and non-timber forest products (NTFPs). The MWBP is founded on an integrated approach to natural resource management, as it seeks to incorporate needs for biodiversity conservation with the promotion of sustainable use that supports local livelihoods. Thus, the study sought to highlight the varied economic, ecological and social factors that influence trade dynamics in the MWBP demonstration site.

Participatory methods were used to collect information from four villages and 20 camps in the demonstration site, as well as from local urban markets, in order to identify the types of natural resources being traded, trade routes and trends in trade over time. In addition, information on regulations and current management practices was collected from government offices in the provincial capital in Attapeu.

The results demonstrate the critical importance of trade in natural resources for rural livelihoods, as both a source of regular income and a coping strategy during rice shortages. Reliability in supply and market demand, along with flexibility in use, were key characteristics of natural resources that were preferred trade items. While trade in NTFPs is most significant at a provincial level, fish trade was considered more important by villagers in the demonstration site, thus indicating the significance of wetlands and river systems in the site. Trade in NTFPs and wildlife is, however, often conducted in conjunction with fishing activities. This trend was particularly apparent in temporary and semi-permanent camps established along the Xe Kong and Xe Pian Rivers, where fishing was interspersed with the collection of forest resources for trade. Local trade patterns for common wildlife match many of the trade routes for fish, due to limited transportation options, overlap in market demand and the fact that wildlife and fish are often traded by the same trader. Many of the natural resources currently traded in the demonstration site are also used for local subsistence. Given the impacts of trade on consumption patterns, it is not surprising then that while trade in natural resources is incredibly important for local livelihoods, unregulated trade is also regarded as an issue of concern by villagers.

In Attapeu, 14 globally threatened (IUCN Red List) wildlife species and 23 CITES-listed species were observed in trade during the field studies. Estimates of trade volumes reveal that official perceptions of wildlife trade vastly underestimate its actual extent and hence its significance for both villagers' livelihoods and biodiversity conservation. As market demand and market access are key determinants of trade patterns, it is apparent that ongoing road improvements in Attapeu Province are having effects on trade in natural resources in the demonstration site. The prices, volumes and diversity of natural resources being sourced from the demonstration site for trade purposes have all increased in recent years. As construction of major roads in Attapeu has only just been completed, it can be expected that the trade-driven pressures on natural resources in the demonstration site will continue to intensify.

Provincial authorities are making clear efforts to regulate trade in natural resources, such as by establishing checkpoints to regulate natural resources trade at domestic and international borders. However, uncertainties and contradictions persist in implementation and enforcement, as they do in policy. Interventions must ensure that local communities with limited alternative economic opportunities are able to secure their natural resources for long-term benefits. Village-level interventions are appropriate for some trade issues, but there must also be corresponding action to control the activities of outsiders, as well as interventions targeting local, domestic and international markets in order to ensure the effectiveness of management and the sustainability of trade in natural resources.

1. INTRODUCTION

The Mekong River Basin Wetland Biodiversity Conservation and Sustainable Use Programme (MWBP) of the United Nations Development Programme (UNDP), IUCN - The World Conservation Union and the Mekong River Commission (MRC) seeks to promote the conservation and sustainable use of wetland biodiversity. There is wide recognition that a challenge for such integration is trade in natural resources. Trade in aquatic and terrestrial animals and plants is an important component of rural livelihoods in the demonstration sites where MWBP is working, yet unregulated and unsustainable trade has also been identified as a major threat to biodiversity in the Greater Mekong Region (Nooren & Claridge 2001; WCS 2004; World Bank 2005; see also Robinson & Bennett 2000).

Figure 1: Map of MWBP demonstration ites.

Source: MWBP (http://www.mekongwetlands.org/)

Socio-economic development in China, Thailand and Viet Nam has seen increasing affluence resulting in increased demand and ability to purchase natural resources (World Bank 2005). As natural resources in consumer countries have declined over recent decades, valued products have been increasingly sourced from neighbouring countries, including Lao PDR and Cambodia. Plans for socio-economic development often envisage an increase in regional trade as a means to achieve poverty alleviation goals.[1] Thus, it is likely that such trade in natural resources will continue to expand.

These issues are particularly critical in MWBP demonstration sites in Attapeu Province in Lao PDR and Stung Treng Province in Cambodia. Both demonstration sites are characterised as less-developed but resource-rich areas within their respective countries. Attapeu and Stung Treng are also becoming increasingly connected with regional trade through improved transport networks. Hence there is a need for a greater understanding of the dynamics of trade in order to develop appropriate interventions that allow management actions to contribute to the integration of sustainable resource use and biodiversity conservation.

In Lao PDR, various studies have demonstrated the importance of diverse natural resources for rural livelihoods (e.g. Foppes & Ketphanh 1997, 2004; Clendon 2001; Vantomme *et al.* 2002; Mollot *et al.* 2003; Johnson *et al.* 2004a). Given that rural households comprise approximately 80% of the total population of Lao PDR and that the majority of poor households reside in rural areas (GoL 2003), the importance of natural resources translates into a priority for national development as well as poverty alleviation. The rural economy in Lao PDR is highly reliant on forest as well as wetland resources, which complement outputs from agricultural production. In addition, since capture fisheries and wildlife (rather than domestic animals) often contribute the majority of animal protein to rural people's diet, managing natural resources for the long term also represents an important concern for nutrition and health security (Meusch *et al.* 2003; Krahn 2005). Yet many types of natural resources are in decline, precipitated by over-harvesting as well as habitat loss and environmental degradation (IUCN & Action Aid 2003). Eventually the decline of these natural resources will negatively impact local livelihoods as well as the national economy.

[1] The most significant in the region is ADB's Greater Mekong Subregion (GMS) program (http://www.adb.org/gms/)

The MWBP demonstration site in Attapeu Province is located in Sanamxay District around the southern portion of the Xe Kong and Xe Pian Rivers near the Lao-Cambodian border (Figure 1). The demonstration site is rich in diverse habitats including seasonally-flooded forests and plains and seasonal wetlands with significant biodiversity values (MWBP 2006). Recent studies in Attapeu demonstrate how rural communities have adapted their livelihood strategies to capture seasonally-variable resources with their livelihood security strengthened through the use of diverse habitats and biological diversity (Mollot *et al.* 2003). A Participatory Poverty Assessment (PPA) carried out in Attapeu province in 2003 by IUCN and Action Aid indicated the importance of natural resources for exchange and income generation, particularly for poorer households that regularly face rice shortages. The PPA also identified local concerns regarding declines in natural resources, as access to the province has improved and as many have become commercialised. This field study was developed to further explore the importance of natural resources for local livelihoods and trade in Attapeu.

2. OBJECTIVES

The objective of this field study was to provide an overview of trade in natural resources in the MWBP demonstration sites in Lao PDR and Cambodia.[2] In the context of this study, 'natural resources' refers to fish, wildlife (terrestrial and aquatic vertebrates aside from fish) and NTFPs (non-timber forest products). This overview explores the patterns of resource extraction and trade in wild animals and plants used for exchange and income-generation, while also recognizing their importance for meeting subsistence needs. The aim of this report is to provide an overview of trade in natural resources in the Attapeu demonstration site summarising findings from both surveys. Additional detailed information on natural resources observed or reported in trade with local as well as scientific names, uses of natural resources and derivatives, prices in different locations, trade destinations, harvesting methods, products observed in markets and restaurants and other information is provided in the appendices as well as in separate reports arising from the first survey (Boonratana *et al.* 2005; Bezuijen *et al.* 2005).

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Camp on the Xe Kong River

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Bengal Monitor and hardshell turtles at Ban Phonseath on the Xe Pian River

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Camp on the Xe Pian River

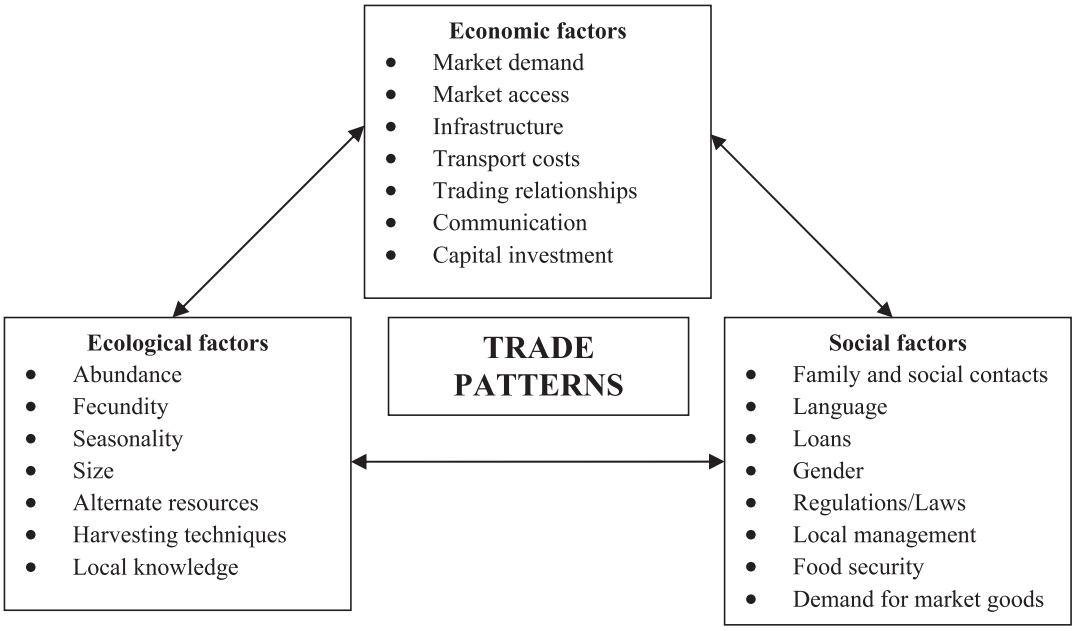
[2] The results for Cambodia are presented in a separate report (Singh *et al.* 2006).

3. METHODOLOGY

3.1. PARTICIPATORY LIVELIHOODS APPROACH

Field surveys, each of two weeks duration, were conducted in Attapeu province in September-October 2005 and May 2006. The first survey, led by a biologist, focused primarily on trade in wildlife, while the second survey, led by an ethnoanthropologist, emphasised trade in fish and NTFPs.

Figure 2: Trade patterns as an interaction between varied economic, ecological and social factors.



Given that a primary objective the MWBP is the integration of biodiversity conservation and sustainable use through targeted demonstration sites, a livelihoods approach was considered the most appropriate research framework for this report. Reflecting this integrated approach, trade in natural resources is recognised as an outcome of varied economic, ecological and social factors (Figure 2, adapted from the DFID Sustainable Livelihoods Framework).

Using a participatory approach, a flexible variety of structured, semi-structured and informal survey and interview methods were used to collect data about trade in natural resources. Participatory assessments draw upon the knowledge of local people who use natural resources on a regular basis and thus also accord due regard to local values and interpretations of resource use (Chambers 1994). In addition, participatory approaches allow the collection of information that cannot be obtained through direct observations because of time constraints.

Table 1: Summary of the field surveys on trade in natural resources in Attapeu Province.

Survey	Dates conducted	Primary focus*	Data sources	Survey team
First	20/09/05 to 03/10/05	Wildlife, markets and restaurants	Group discussions in villages, interviews with government officials and traders, market surveys, restaurant surveys, observation and casual conversations.	5 people
Second	03/05/06 to 16/05/06	Fish and NTFPs, camps	Focal group discussions in villages, surveys of camps, interviews with key informants (e.g. village traders, village headmen, bus drivers), interviews with government officials and traders, observations and casual conversations.	4 people

* Although this reflects the primary focus of each survey, both also collected significant additional information on trade in natural resources.

Prior to initiating field surveys, the lead researcher spent time with the survey team in Attapeu PC providing training regarding the objectives and methodology to used. A summary of the field surveys is provided in Table 1 with further details on the methodology in the sections below.

3.2. DATA COLLECTION IN VILLAGES AND CAMPS[3]

The first survey utilised a semi-structured questionnaire (see Appendix 1) conducted with groups of around 10-20 villagers each. A wide range of individuals was involved in these discussions, including women and men, elderly and young, those in formal positions (e.g. village headmen, Lao Women's Union representatives, school teachers, village milita members), as well as those known to regularly collect or trade natural resources (e.g. hunters, fishers, village traders).

The second survey drew on the initial survey questionnaire, but with a particular focus on fish and NTFPs. The approach also shifted to smaller focus group discussions and semi-structured interviews with key informants (between 1-10 people per group; see Appendix 2). A key technique used was to first allow villagers to identify those natural resources they considered important for the local economy, then to focus the discussion on collecting more detailed information on each of the resources identified.

In addition to these semi-structured approaches, a range of information was collected during both surveys through casual conversations, daily interactions and observations made while staying in the villages. The second survey also focused on the collection of information from camps in the demonstration site to explore their involvement in the collection and trade of natural resources.

3.3. DATA COLLECTION IN TOWNS AND MARKETS

Semi-structured interviews were conducted in Attapeu PC with a range of government officials (Provincial High Court, PAFO, PAFES, PLF, PFO, CPTC, Sanamxay DAFO, Samakhixay DAFO, Sanamxay DFO), NGO representatives (WWF), and, where possible, traders and transporters of natural resources. These interviews aimed to collect information about patterns in trade of natural resources as well as to improve understanding about current regulations and management (see Appendices 1 and 2). During the first data collection period, comprehensive surveys were conducted in provincial and district markets, restaurants and the bus station in Attapeu PC. Additional data were collected at these locations during the second period; interviews were also conducted with in Attapeu with market managers and in Pakse with those knowledgeable regarding the links to trade in natural resources from Attapeu.

3.4. SITE SELECTION

Villages that were the focus of this work were selected by the MWBP provincial programme office on the basis of:

- **(i)** their location in the MWBP demonstration site;
- **(ii)** their reported roles in trade in natural resources; and
- **(iii)** logistics (e.g. seasonal access, time availability).

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Camp at the confluence of the Xe Kong and Xe Pian Rivers

[3] For simplicity, this report uses the term 'camp' as most residences visited were temporary fishing camps. A number, however, were semi-permanent residences where agriculture (e.g. rice production, livestock raising, garden produce cultivation) as well as fishing, collection and trade in natural resources and other livelihood activities were conducted.

A total of four villages in Sanamxay District were surveyed: Ban Sompoy and Ban Hat Oudomxay on the Xe Kong River, and Ban Phonseath and Ban Mai on the Xe Pian River. As opportunities arose, information was also collected from traders in adjacent villages (e.g. Ban Samong, directly opposite Ban Mai on the Xe Pian river). In addition, four camps on the Xe Kong and 16 camps on the Xe Pian Rivers were surveyed in May 2006, their selection being opportunistic.[4]

3.5. SCOPE AND LIMITATIONS OF STUDY

This report and the field study it was based upon sought to explore the trade in natural resources within the study area as fully as possible. However, particular factors which limited the extent of the data that could be collected must be recognized. These were as follows:

- Changes in methodology between the first and second surveys prevent temporal comparisons, though limited verification through cross-referencing the results from both surveys was possible.
- Opportunities for external verification of villagers' reports were limited, particularly with regard to topics such as species identification, trends in abundance and trends in trade (e.g. trade volumes).
- As trade in particular species is widely recognised as illegal, this is likely to have influenced the reliability of the information provided.
- Quantitative data is limited in accuracy and reliability as the methodology relies on villagers' responses rather than direct assessments. This may be pertinent for trade volumes more-so than trade prices.
- The time available for the surveys precluded a detailed, comprehensive account of trade in natural resources and may have missed some important but seasonally-dependent or spatially-dependent patterns.
- The fieldwork targeted the source-end of trade networks; often the final destination of natural resources could not be determined and less information was collected on the demand-side of the trade.
- Overview of diverse types of natural resources that display varied trade patterns, which means a compromise on detail.
- A focus on trade means this report does not provide a comprehensive approach to rural livelihoods.[5]
- Use of natural resources by outsiders could not be fully assessed as surveys were primarily with villagers.

3.6. OTHER ISSUES

Prices in this report are listed in US Dollars. The exchange rate as of May 2006 was 10,100 Lao Kip (LAK) to 1 US Dollar (USD).

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[4] By the time of the second survey in May 2006, many of the temporary fishing camps on islands had or were in the process of being abandoned by their occupants as water-levels rose and they were inundated. Fishing camps located near villages were also often unattended during the day.

[5] Often it is the better-off households who are more involved in trade by virtue of the labour and capital they have available. Poorer households may have different approaches to resource collection and use (e.g. Meusch *et al.* 2003).

4. RESULTS

4.1. TRADE AND LOCAL LIVELIHOODS

4.1.1. OVERVIEW

In the Attapeu demonstration site, while there is substantial diversity in livelihood strategies within and among villages (IUCN & Action Aid 2003), trade in natural resources is important across a broad range of rural households. Villagers report various sources of income including: (i) trade in natural resources, (ii) hired labour within Lao PDR, (iii) migrant labour in Thailand, (iv) government jobs, (v) sundries sales and (vi) sales of agricultural produce (e.g. rice, livestock, vegetables; see Appendix 3).[6] While trade in natural resources does not represent the most lucrative option, natural resources are an object of exchange available to all households. Trade in natural resources is seen by villagers to be an important coping strategy in times of vulnerability, when rice crops fail and during illness. As one villager at a camp along the Xe Pian explained, *"…our paddy was flooded last year so we came to fish, collect mushrooms and wildlife to sell to buy rice."* Villagers at 20% of camps mentioned flooding as the reason for moving, at least temporarily, to the camps; buffalo theft was an additional reason, given at 10% of camps. The deputy headman of Ban Mai explained how flooding of rice crops has increased reliance on fish trade as villagers struggle with rice shortages.[7]

Animals - both aquatic and terrestrial - were considered by villagers to be more important overall than plants for exchange and income-generation. This was largely because of the significance of fish: villagers consistently reported fish as being the most important natural resource, for consumption, exchange, and income-generation. When fish were excluded, however, NTFPs were considered more important than animal species for trade. Also, nearly all villagers stated that rice production is more important to their livelihoods than collection or trade in any type of natural resource, including fish. The exceptions were a small but significant number of full-time fishers and fish traders who considered fishing and/or fish trade as equally or more important than rice production. For example, one village trader in Ban Mai said rice production and fish were equally important because *"…if we do not have enough rice then we sell fish to buy rice."* Villagers reported that the collection and trade in natural resources - especially fish - usually becomes more important in the dry season after the harvest of rice (approximately December/January) and before the next planting (approximately May/June for paddy and approximately February for swidden fields).[8] Villagers' collection of natural resources would also be influenced by other factors such as seasonal changes in abundance and migration patterns (see Baran 2005).

Gender has a strong influence on trade in natural resources in the demonstration site. This was confirmed in relation to NTFPs and fish; of the traders identified during the second survey, 68% were men, 24% were women and 8% were husband and wives trading together (Table 2). This is in stark contrast to local urban markets where nearly all sellers are women.

There are distinctions between natural resources that are important for direct consumption (e.g. food, construction, medicine, torches, basket weaving) as well as trade and those that are mainly traded and rarely consumed locally. In the demonstration site there are some natural resources in

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[6] Approaches to income generation vary between villages. For instance, people from Ban Sompoy often go to Thailand and to Paksong during the coffee-harvesting season for work, people from Ban Phonseath usually go to Pakse and those from Ban Hat Oudomxay usually do not go elsewhere to look for work as hired labour. These different approaches to income generation will influence village-level patterns of harvesting natural resources for trade.

[7] Villagers in the demonstration site often mentioned recent changes in flooding in the last 5-10 years. Floods were said to have occurred in the past but now they are of longer duration and greater frequency (see also MWBP 2006; IUCN & Action Aid 2003).

[8] Some seasonally-available resources are exceptions to this trend (e.g. het phor mushrooms collected for trade in May-June). In addition, during the dry season villagers may spend most of the daytime in the rice fields and go fishing in the late evening and early morning.

the latter category (e.g. Vomica nuts) but they tend to be less abundant or only seasonally significant. Given this pattern, it can be concluded that trade in natural resources from the demonstration site will affect the well-being of villagers not only through impacts on income-generation but also through impacts on consumption patterns. This is particularly the case for fish given its importance for exchange and income generation as well as nutrition (Meusch *et al.* 2003).

Table 2: Gender distribution for NTFP and fish traders interviewed or reported in Attapeu PC, Sanamxay DC and villages in the demonstration site (May 2006).

Resource type	Traders/companies	Women*	Men	Husband -Wife	Unknown
NTFPs	Large-scale traders	1			2
	Village traders	1	8	2	1
Fish	Large-scale traders	3			
	Village traders	3	13	1	
	Fisher-traders	1	3		1
	Unregistered traders		1		6
Total		**9**	**25**	**3**	**4**

* Some traders work with their children.

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Family from Ban Hat Oudomxay at camp on the Xe Pian River

It is not surprising therefore that, while trade in natural resources is incredibly important for local livelihoods, unregulated trade is also regarded by villagers as an issue of concern. For instance, villagers in the demonstration site often attribute declines in fish catches to increased trading of fish. A frequently heard comment was that *"now fish have a price,"* so more people fish for trade and this has contributed to fish declines (see also IUCN & Action Aid 2003). Villagers also attribute unsustainable harvesting of natural resources for trade, such as use of illegal fishing methods, to deficiencies in regulations and enforcement.

Unsustainable harvest of natural resources for trade is also a major concern for provincial government authorities. This is apparent in the recent establishment of checkpoints at international, provincial and district borders. For instance, in 2004 a checkpoint was established between Attapeu PC and Sanamxay DC (near Ban Bpeui) along Route 18A. DAFO staff explained that this is intended to be a collaboration between police, PAFO and DAFO to monitor trade in significant natural resources, these being in order of priority NTFPs, timber and wildlife.[9] The establishment of a checkpoint specifically for Sanamxay District emphasises its importance as a source of natural resources and also the concerns of authorities about over-harvesting for trade (Box 1). While subsistence and income-generation do not have to be incompatible goals, in the absence of appropriate management systems subsistence needs can be compromised by the use of resources for trade.

Box 1: Enforcement at Sanamxay checkpoint.
In 2006, approximately six incidents involving illegal harvest, transport and trade of natural resources were reported for the Sanamxay checkpoint. In order of the number of offences, these were: (i) bong bark trade without a quota, (ii) turtles collected for trade by Vietnamese and (iii) illegal timber harvest. DAFO reportedly fine offenders double the market value of the illegal product.

4.1.2. CAMPS

In May 2006 a total of 20 camps along the Xe Kong (Sanamxay DC downstream to the Xe Kong-Xe Pian confluence) and Xe Pian (from the Xe Kong-Xe Pian confluence upstream to Ban Mai, c. 75km) Rivers were also visited. A summary of the information collected from these camps is provided in Table 3. Many camps were established by villagers for the purpose of fishing in the dry season when water levels drop facilitating access and when time was spared from rice production.[10] Fishing was for immediate consumption, processing to store for later consumption during the wet season and for trade.

[9] Similarly, the Lao-Vietnaemse border has police, soldiers, PAFO, PFO and CPTC officials working together. CPTC are responsible for checking licenses and are less involved with PAFO or police in monitoring trade in natural resources.

[10] Some camps, particularly those along the Xe Kong, were quite heterogeneous, with different families having different origins and different patterns of collecting and trading natural resources.

Table 3: Summary observations and reported activities at camps visited in Sanamxay District.

River		Xe Kong	Xe Pian
Total # camps		4	16
Activity (# camps)	Fishing	4	16
	Swidden	1	9
	Collect NTFPs/wildlife	2	16
Social context (# families)	Total # families	>10	>40
	Families per camp	1- 7	1- 6
	From a different district	3	1
	Resident all year	5	0
	Resident in dry season	>5	>40
Natural resources (# camps)	Fish catch (kg/day/family):		
	Annual range	2-20	5-50
	Average	10	10
	Sell fresh fish	4	16
	Sell processed fish	4	1
	Sell NTFPs/wildlife	2	16
Trade location (# camps; some sell at >1 location)	Attapeu PC	4	1
	Large-scale trader	1	1
	Trader comes to camp	3	14
	In own village	1	6

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Khmer traders arriving at camp at the confluence of the Xe Kong and Xe Pian Rivers

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Bangana behri *(pa va) sold at a camp on the Xe Kong River*

Further details on the origins of camp residents is presented in Table 4. Families that came from outside Sanamxay District were only at camps along the Xe Kong. These families specialised in fishing and fish processing for sale in Attapeu PC, they often did no rice production and usually did not collect NTFPs or wildlife for trade. In comparison, families from nearby villages along the Xe Kong often practiced swidden agriculture and collected NTFPs and wildlife, as well as fishing at the camps. Camps along the Xe Pian were varied, though those along the downstream Xe Pian[11] usually only collected natural resources while camps along upstream Xe Pian primarily planted swidden fields and collected natural resources when time was spare from rice production. Trade in natural resources occurred at all camps and across all surveyed families but was particularly apparent at camps or with families who were not practicing swidden agriculture at that location. There was no reported conflict over access to camps or traditional fishing grounds, though this was not queried in depth. In a long-established fishing camp near Ban Sompoy villagers who originally came from Saysetha District gained permission from the village headman to become residents of the village. In the same camp however, residents from Sanamxay DC claimed that they did not live permanently at the fishing camp, only staying a week or two at a time and thus did not need to request permission to become residents. Whether conflict emerges in certain seasons or localities is unknown.

Some camps along the Xe Kong and Xe Pian were reported by residents to have been long established dry season fishing spots for people from nearby villages and elsewhere (see Table 4). The majority of people however, from both nearby villages (77%) and from more distant locations (78%), had only begun staying at the camps within the last five years (see Figure 3). For instance,

[11] 'Downstream Xe Pian' is from the confluence of the Xe Kong and Xe Pian Rivers up to the Keng Luang rapids near Ban Phonseath. 'Upstream Xe Pian' is from Ban Phonseath up the Xe Pian River to Ban Mai (*c.*30km).

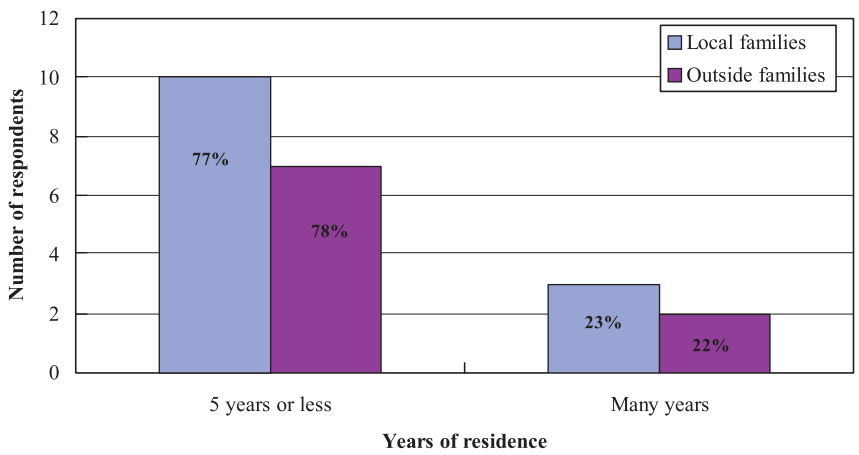
Table 4: Number of camps on the Xe Kong and Xe Pian Rivers organised by the origin of the occupants (May 2006).

Location	# camps on rivers**		First came to camp (range)***	
	Xe Kong	Xe Pian	Xe Kong	Xe Pian
Saysetha District	1		2-4ya	
Attapeu PC	2		2ya-20ya	
Sanamxay DC and nearby villages	1	1	2ya-20ya	
Ban Sompoy	2	1	2 months ago – many years	
Ban Hat Oudomxay		2		<5ya
Ban Khamphor*		1		5ya
Ban Nongkhe*		4		1-3ya
Ban Pak Boh*		1		2ya
Ban Phonseath		2		4 years ago – many years
Ban Mai and adjacent villages		6		1-2ya
# camps with locals (villages on Xe Kong and Xe Pian)	**2**	**7**	**-**	**-**
# camps with people from elsewhere	**4**	**11**	**-**	**-**

* Villages on Xe Khamphor River.
** Numbers of camps include recounts when camps were occupied by people from various locations.
*** Data not available for all families at all camps, includes 22 responses across 18 camps.

many of the upstream Xe Pian camps were swidden fields of villagers from Ban Mai who had lost rice crops to flooding over successive years and had recently established fields just downstream from their village. Similarly, villagers from Ban Sompoy recently moved to a camp on the Xe Kong to do swidden fields there, they explained, *"…our livelihood is easier here because all types of natural resources, like fish, Vomica nuts, squirrels, monitor lizards, are close together."* In comparison, camps along downstream Xe Pian were often set up in recent years by people from villages along the Xe Khamphor River coming to fish and collect NTFPs and wildlife both for trade and consumption. More detailed research would be required to document if this reflects an expansion of the number of families at camps in recent years or if camps simply represent a livelihood option adopted by some families during particular life stages (e.g. during times of hardship).

Figure 3: Years of residence at camps on Xe Pian or Xe Kong Rivers by type of occupant (local residents are from villages on those rivers).



Other observations of camps, boats and extractive activities along the Xe Kong and Xe Pian were also recorded (Table 5). At the time of the second survey in May 2006, the majority of the camps had been abandoned due to rising water levels.[12] The frequency of active camps observed along the Xe Pian (0.2 camps/km) was comparable to previous years along the same portion of the river (0.4 camps/km in October 2000 and 0.3 camps/km in June 2005; see Bezuijen *et al.* in prep.), although the seasonal timing of these observations may an important influence consider. The majority of active and inactive camps were located along the Xe Pian (77%). The percentage of motorboats relative to all boats was comparable for the Xe Kong (13%) and Xe Pian (16%), though overall the majority of boats (63%) were observed on the Xe Kong.[13] This suggests that the larger Xe Kong has more activity overall compared to the Xe Pian, which is not surprising given its larger size. Yet the Xe Pian is more of a focus for camps where villagers from surrounding areas prefer to extract natural resources, possibly due to accessibility to the area[14] and the availability of natural resources.

Table 5: Observations of activities along rivers.

Observation	River		Total
	Xe Kong	Xe Pian	
# active camps	5	19	24
# inactive camps	17	60	77
Total camps	**23**	**79**	**102**
# active motor boats	13	8	21
# inactive motor boats	23	17	40
# active paddle boats	11	7	18
# inactive paddle boats	221	124	345
Total boats	**268**	**156**	**424**
# logging camps	3	0	3
# inactive gold dredges	32	0	32

Note: Numbers are indicative only as counts made over multiple times/days in May 2006.

4.2. OVERVIEW OF TRADE NETWORKS

Trade in natural resources is recognised as the act of exchange, here specifically the exchange of natural resources for money or other goods. Thus, trade involves people who collect and sell natural resources (collector), those who buy and sell natural resources (trader) and those who buy and consume natural resources (consumer). Trade in natural resources from the demonstration site in Attapeu province follows varied routes and patterns of exchanges. A generalised market structure is proposed based on the trading patterns observed during the fieldwork (Figure 4), and more detail on the actors based at each of the locations is provided below. The main local urban markets for the demonstration site are Sanamxay DC, Attapeu PC and Saysetha District while distant markets are those in other provinces of Lao PDR or in foreign countries. While natural resources originating from other locations may be traded through Attapeu,[15] the focus of this report is on natural resources sourced from the demonstration site.

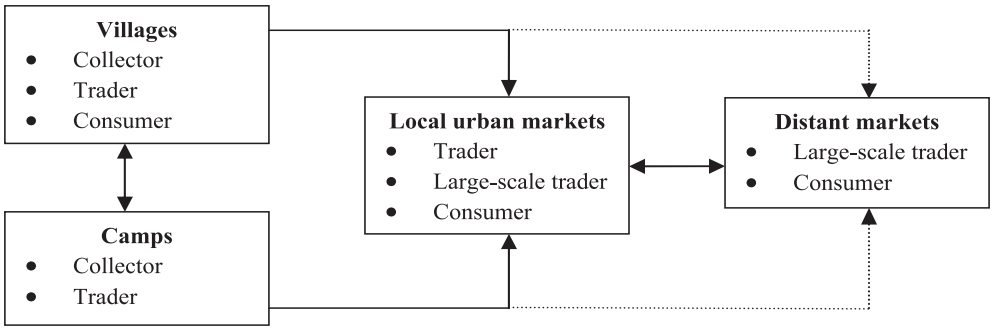
[12] Inactive camps that had been abandoned were identifiable through the removal of tarpaulins, grass roofing and bamboo flooring material from huts usually leaving the bamboo frame behind.

[13] This is despite visibility being lower on the Xe Kong than the Xe Pian as it is a much larger river.

[14] For instance, Xe Pian is more accessible to villagers who do not have motorboats and large fishing nets. Also there are many villages upstream of Xe Pian and along Xe Khamphor, in contrast, the downstream Xe Kong forms the Lao-Cambodian border and there are no villages on the Khmer side.

[15] For example, wildlife are often reportedly sourced from Xe Pian National Protected Area which is mainly located in Champassak province (Boonratana *et al.* 2005).

Figure 4: Generalised market structure showing the various actors found at different locations and the trade links between them (dashed line was less commonly observed).



(i) Collectors: Villagers in the demonstration site usually collect natural resources near their village or from camps within the same district. More distant locations prompt overnight trips (2-10 nights). Livelihood activities integrate collection of natural resources with other needs, for instance fish processing may be done at fishing camps and multiple types of forest resources are typically collected at the same time (e.g. mushrooms, wildlife). Village collectors usually do not go to local urban markets and instead sell natural resources to traders who come to villages and camps.[16] There are a significant number of people coming from elsewhere to collect and trade natural resources in the demonstration site, primarily people from villages upstream on the Xe Khamphor River as well as from Sanamxay DC, Attapeu PC and Saysetha District (see Table 4). Villagers reported that people also come from villages in neighbouring Champassak province.[17] Villagers and urban residents who collect natural resources may permanently, temporarily or occasionally take up trading depending on other livelihood aspects (e.g. enough labour for rice production), resource availability and trade conditions.

(ii) Traders: Village traders either purchase natural resources from collectors in their own village or nearby villages and camps. In the Attapeu demonstration site the latter is readily achieved by travel along the Xe Kong and Xe Pian Rivers. Generally it is a one-way flow of natural resources from villagers (collectors or traders) to traders in local urban markets. Traders from local urban markets often go to villages that are recognised trade hubs (e.g. Ban Mai) and to other villages when supplies are low. Traders from more distant markets (e.g. Pakse) may also go to villages and camps to buy high-value resources - often this is based on family networks. Traders, both those in villages and local urban markets, may give credit or loan equipment to trading partners from whom they purchase natural resources.

(iii) Large-scale traders: Large-scale traders are mostly based at local urban markets and supply distant markets. There is also one large-scale fish and wildlife trader based in the demonstration site near the Lao-Cambodian border. Some villagers (collectors and traders) in villages and camps sell directly to large-scale traders in local urban markets and less frequently to distant markets (e.g. Pakse).

(iv) Consumers: Trade between village traders and village consumers do occur for all broad types of natural resources though the distinction between trade and gift exchange is not always clear. In contrast, there were no reports of village collectors from the demonstration site selling directly to consumers in local or distant locations. Thus, while there is not always a clear flow the relationships between collectors and traders are critical to ensuring supplies of natural resources reach many of the final consumers.

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[16] This is the same pattern reported for trade in natural resources in Xekong province (Krahn 2005).

[17] The Xe Pian River marks the provincial border between Champassak and Attapeu.

4.3. TRADE ROUTES

4.3.1. TRANSPORTATION

The two modes of transportation that allow villagers in the Attapeu demonstration site to access markets are river and road. River transport is primarily local, whereas road access is more important for transport to distant markets, although it is also becoming increasingly important for transport to local urban markets. For both river and road transportation, investments in capital (e.g. boat, motor) and operational costs (e.g. petrol) can be key factors determining trade patterns. For instance, all village fish traders interviewed during the field study owned a motorboat, and large-scale traders had multiple boats and/or private vehicles.

Box 2: Passenger vehicles in Ban Mai.

There are 12 drivers from Attapeu PC who operate passenger vehicles between Ban Mai – Sanamxay DC – Attapeu PC with four services per day. Drivers usually buy their own car, pay for licences from CPTC and other ongoing costs (e.g. petrol 15L/trip). These expenses prevent villagers being involved in this service.

Drivers often transport fish from Ban Mai to Attapeu PC for village traders (see Box 7). They do not transport NTFPs as volumes are too large; instead large-scale traders use private vehicles. Wildlife was reportedly not transported much because of the checkpoint established along the road between Sanamxay DC and Attapeu PC. In 2005, however, a passenger vehicle was involved in a complex transfer of a sack of turtles from a Lao villager to the passenger vehicle for later collection by a Vietnamese man travelling by motorbike.

Wildlife meat is also sometimes hidden in ice boxes containing fish.

Xe Kong River at Attapeu PC

Newly completed road linking Attapeu to Pakse (Route 23)

(i) River: The Xe Kong and Xe Pian Rivers have long been the main mode of transport allowing traders to reach villages in the demonstration site, selling products and buying natural resources. For instance, some villagers reported that even 30 years ago Chinese traders would travel the Xe Kong selling goods. Another villager described how when he was young (*c.* 30 years ago) the Lao-Cambodian border was near the Xe Pian-Xe Khamphor confluence and Lao people would sell the skins of cobras, water monitors and tigers to Khmer traders who came to buy there. Now there are police and army checkpoints on the Xe Kong at the Lao-Cambodian border just south of the Xe Kong-Xe Pian confluence.[18] Lao police report that the primary purpose of these checkpoints is monitoring trade in natural resources across the international border.

Travel in the dry season is disrupted along the Xe Pian as water levels fall and rapids are exposed, particularly upstream of Ban Phonseath. Few villagers have motorboats, whereas all people who come from elsewhere have their own motorboats. Most villagers rely on private boats for their transport. The exception is in Ban Mai, where there is all-year road access to Attapeu PC - this route is particularly important in the wet season when the road continuing past Ban Mai to Pakse (Route 18A) is impassable. Generally natural resources sourced from along the Xe Kong are transported by boat upstream to Sanamxay DC or Attapeu PC, whereas those from along the Xe Pian are usually transported upstream by boat to Ban Mai and from there by road to Sanamxay DC and Attapeu PC.

[18] As of May 2006 there were four checkpoints on the Xe Kong, two Lao and two Khmer, each country having one police checkpoint and a separate army checkpoint closer to the border.

(ii) Road: As noted above, Ban Mai on the Xe Pian is a trade node due to its location near Sanamxay DC on Route 18A at the last point with year-round access (Box 2). Some villages in the demonstration site (e.g. Ban Sompoy) are have limited road access, usually motorbikes in the dry season only, while others (e.g. Ban Hat Oudomxay) only have walking tracks. Ban Phonseath and villages along the Xe Khamphor until recently received services from a passenger vehicle that has been transporting natural resources from Xe Pian to Pakse for nearly a decade via Route 18A; villagers related how trade in natural resources particularly increased after this vehicle started operating (Box 3). Route 18A permits an exception to the river routes described above, as it allows direct transport from the Xe Pian to Pakse, thus avoiding the district and provincial centres. This route is limited to motorbikes, trucks and 4WD in the dry season, and hence trade is limited to those who can afford these vehicles. The travelling time to Pakse is similar to travel to Sanamxay DC.[19]

Box 3: Changes in transport leads to changes in trade.

In 1998, a passenger vehicle started operating out of Ban Nongkhe (on the Xe Khamphor River), travelling via Route 18A from Xe Pian to Pakse. As the road is in poor condition, this vehicle, an old army truck, had a monopoly on the route. The operator of the passenger vehicle bought high-value fish, usually sourced from Cambodia, and wildlife (monitor lizards, muntjac, turtles, pangolins) from people in surrounding villages to take to Pakse. Villagers reported that the operator of the passenger vehicle was caught and fined for trading wildlife so he does not trade anymore.

In 2005, this passenger vehicle started transporting valuable and nationally protected timber (*may khaay nyung*; *Dalbergia cochinchinensis*), apparently sourced from Xe Pian NPA. The shift away from fish and wildlife was because "timber is more valuable and fishing is difficult now." Another factor is that rules at the Lao-Cambodian border regarding fish trade recently changed, making fish trade more costly (see Box 11). Villagers at camps along the Xe Pian reported that they now usually sell when the traders come to camps since there are no alternative transport or market options.

At the provincial scale, transportation from Attapeu PC is dominated by road transport. The completion of a road among Attapeu, Xe Kong and Champassak provinces has drastically improved market access to Attapeu (Figure 5). For example, travelling times between Attapeu PC and Pakse were reduced from six-seven hours to only three hours. Previously Route 18A, which passes through the demonstration site at Ban Mai and Sanamxay DC, was the main road to Pakse. Provincial authorities would like to pave this road but have yet to receive any funding.[20] Another major issue is the construction of Route 18B, linking Attapeu to Kon Tum Province in Viet Nam, which officially opened on 18 May 2006. This road, including a bridge over the Xe Kong River at Attapeu PC, was built by Vietnamese companies in exchange for logging rights along the route and has seen the rapid expansion of timber extraction, sawmilling, furniture production and construction in Attapeu PC as well as an influx of Vietnamese businesspeople and labourers. Road construction has thus improved links between the demonstration site and domestic as well as international markets.

Figure 5: Major roads with approximate distances and year paved (Source: Attapeu CPTC).

Vientiane			
Route 13: 700km, 2000	**Pakse**		
	Route 23: 200km, 2004	**Attapeu PC**	
		Route 18B: 100km, 2006	**Viet Nam**

[19] For example, from Ban Phonseath on the Xe Pian to Sanamxay DC takes 1.5 hours by motorbike while travel to Pakse via Route 18A takes *c.*2 hours.

[20] Flooding every wet season is an issue. Previously the road was maintained every year.

Changes in the trade of natural resources are often linked to road improvements (see Nooren & Claridge 2001). As one resident of Attapeu PC said, *"[n]ow many people are selling things, after the road was finished…."* Similarly, villagers in Ban Mai reported that fish trade was initiated *c.*1989 when Route 18A was made passable for vehicles; trading activities further developed after 2003, when the section between Sanamxay DC and Ban Mai was significantly improved, as many more people started coming to the village. Passenger vehicles operating out of Ban Mai increased their services after the road to Sanamxay DC was improved.

As mentioned previously, there is a checkpoint on the Route 18A between Attapeu PC and Sanamxay DC. This checkpoint is apparently focussed on checking goods that are being traded, with the emphasis on natural resources. While police were observed to stop and check passenger vehicles and motorbikes, apparently they do not stop private, government or project (e.g. aid agency, international organization) cars. This likely allows aspects of unregulated trade to continue. There is also an international checkpoint at the Lao-Vietnamese border (Route 18B) that was not visited in this field study.

4.3.2. MARKET DEMAND

Market demand that stimulates trade in natural resources in the Attapeu demonstration site operates at various spatial scales. For convenience these are separated here into the local, domestic and international:

(i) Local market demand: Trade to other locations within Attapeu province, primarily to markets and restaurants in Attapeu PC and to large-scale traders based in other districts in Attapeu, mainly Saysetha District (Route 18B).

(ii) Domestic market demand: Trade to other locations within Lao PDR, primarily Pakse[21] (mainly Route 23, also Route 18A) and Vientiane (Routes 23 and 13). Other markets along these routes (e.g. Paksong) are sometimes supplied from Attapeu but they involve much smaller markets and trade volumes.

(iii) International market demand: Trade to foreign countries, primarily Thailand (Ubon Rattchathani Province via Pakse) and Viet Nam (Kon Tum Province, via Route 18B). There is a minor trade flow from the demonstration site into Cambodia (Xe Kong River).

The relative importance of different forms of market demand varies depending on the type of natural resource. For some resources these major markets may not be the final point of consumption but rather the point up to which traders in Attapeu Province are involved.[22] The distinctions among local, domestic and international trade are not always clearly demarcated. For example, this is apparent at the Lao-Cambodian border near the confluence Xe Kong and Xe Pian Rivers, where 'Lao fish' and 'Cambodian fish' become administratively indistinguishable (see Bush 2004).

[21] Pakse has long been a trade node for fish (Bush 2004; Baird 1994) and wildlife (Baird 1993; Nooren & Claridge 2001; Srikosamatara & Suteethorn 1994).

[22] For instance, many NTFPs exported to Viet Nam are destined for Chinese markets (Vantomme *et al.* 2002).

4.4. FISH

4.4.1. OVERVIEW

Collection of some aquatic resources (e.g. frogs) is concentrated in paddy fields; seasonally flooded plains and forests also form an important source of aquatic resources for villagers in the demonstration site (Meusch *et al.* 2003; Mollot *et al.* 2003). However, the vast majority of fish observed in trade come from the Xe Kong, Xe Pian and other associated rivers (e.g. Xe Khamphor) and streams. While aquatic resources aside from fish, such as molluscs (e.g. snails, shellfish), crustaceans (e.g. crabs, shrimp), amphibians (e.g. frogs, tadpoles) and aquatic plants, can be very important for food security and nutrition (see Meusch *et al.* 2003), they were never reported by villagers in the demonstration site to be important for trade compared to fish.[23] These lower-value aquatic resources were observed in local urban markets and seasonally become common trade items. In the case of Sanamxay DC market, the market manager reported that usually villagers who sell natural resources like these only come from villages near the district centre; lower-value aquatic animals seen in local urban markets tend to come from villages near the markets, whereas higher-value fish come from more distant areas. Hence this section will focus on fish, given the focus in the survey on villages more distant from local urban markets where fishing was a major source of income.

Fish were often considered by villagers in the demonstration site to be the most important natural resource for trade, above all other aquatic resources and above forest resources (NTFPs and wildlife). For example, villagers in Ban Hat Oudomxay said, *"…all [natural resources] are important but fish are our occupations."* Villagers as well as district officials noted that the importance of fish derived largely from their reliable availability year-round. In the case of the camps visited during the 2006 survey, much of the collection of natural resources was also primarily prompted by fishing for trade with the collection of other natural resources being additional to this. This does not mean however, that fishing always took precedence over other livelihood activities. Fishing activities were observed to rapidly decline when prices for other natural resources increased (see Box 17).

A common comment made by villagers was how they needed to sell fish in order to buy their basic necessities (e.g. salt, chilli, MSG).[24] Fish were thus the natural resource that was consistently considered to be most important for both subsistence, as well as trade. Hence, fish constitute a central component of villagers' livelihood strategies.

Two aspects that emerged as a reason for the importance of fish for villagers' trade activities are their reliability and flexibility. The year-round abundance of fish relative to other animals, their seasonally predictable migration patterns and steady market demand together ensure that fishing can provide a reliable, though still variable, stream of income.[25] In addition, the diversity of ways in which fish

Box 4: Flexible fish

Families from Sanamxay DC and Attapeu PC who fish at camps along the Xe Kong often based their activities around processed fish. Fish storage is a key issue as fishing trips last 7-10 days, people do not own expensive ice boxes, and petrol costs prohibit returning to local markets. While large fish can be sold to a large-scale trader based near the Xe Kong-Xe Pian confluence, small fish have no nearby market.

Some fishers come from elsewhere purely to fish and sell to this trader. Others lack the gear to catch larger fish, and therefore salt and dry small fish at fishing camps. This requires relatively small outlays of capital, and the dried fish are easily sold at local urban markets or to large-scale traders. One family from Sanamxay DC estimated they caught 1-1.5T of fish per year, most of this being made into salted fish (*pa som*). They estimated their monthly income as USD100/month. Salted and dried fish sell for USD2-4/kg, much higher than the fermented fish (*padek*) that is more commonly made in villages, which sells for only USD0.50/kg. Higher-value processed fish provide the flexibility needed to make fishing trips to the Xe Kong a viable activity for families coming from elsewhere.

[23] High-value aquatic animals like soft-shell turtles are considered along with wildlife, since most information on these animals was collected when discussing wildlife rather than fish and other aquatic animals.

[24] This comment also appeared to be used to emphasise small-scale fish trade practiced by most households in contrast to the fish trade of the smaller number of village traders (see Singh *et al.* 2006).

[25] According to the interviews with local fishers and traders, fish migrate upstream from around June to August and migrate downstream from September to November, though the species-specific migration patterns can vary considerably with the rising and falling water levels. During these times of migration fishers can catch large amounts of fish.

can be used is not matched by any other type of natural resource. Fish can be consumed or sold either fresh or preserved (fermented, salted or dried; see Appendix 11). The storage of fish - either[26] alive or processed - gives villagers even more options regarding trade (Box 4). As a villager from Ban Mai explained, *"[i]t is our occupation to go fishing! It is food, you can sell, take money and buy rice to eat".*

Fish are not however, always sourced in Lao PDR. Particularly for fishing camps near the Xe Kong-Xe Pian confluence, people often fish across the border in Cambodia, explaining that the deeper waters there support more and larger fish.[27] Fish traders from local urban markets, Sanamxay DC and Attapeu PC also go to the Lao - Cambodian border to buy fish directly from Khmer fishers and traders (Box 5).[28] Much of the fish traded from this area through traders is also sourced from Khmer fishers. This is primarily an issue for fish trade as Lao villagers do not go to Cambodia to fish for subsistence purposes.

Box 5: Khmer fishers and fish traders.

Khmer fishers and traders cross the Lao-Cambodian border just south of the Xe Kong-Xe Pian confluence (photo left). They fish and buy fish in Siam Pang District of Stung Treng Province and then travel to Lao PDR, usually to sell to a large-scale fish trader based near the Xe Kong-Xe Pian confluence. One Khmer couple reported that they had known this trader for 20 years and that about 10 families from their village in Siam Pang fish and sell this trader. They explained that they can sell fish in Cambodia at the same price, but that the distance to the provincial market is much farther than to Lao PDR. They pay 1USD/kg of fish in tax at two Khmer checkpoints and usually take about 500 kg per trip. Khmer fishers say they have been selling fish in Lao PDR for many years, though now the amount of trade has increased.

© Sarinda Singh/TRAFFIC

Khmer people negotiating with Lao police about tax on fish they sell to a trader near the Lao-Cambodian border on the Xe Kong River

In the demonstration site, people from villages on the Xe Kong and Xe Pian Rivers do fish regularly, yet 'outsiders' possibly represent a more significant presence in terms of fishing for trade. One fisher from Sanamxay DC noted this, saying, *"…people from the district go to fish and then sell fish. Villagers fish and make fermented fish; they do not sell as much".* Similarly, villagers from Ban Hat Oudomxay reported that the most important fish for them was the Siamese Mud Carp, *Henicorhynchus siamensis (pa soi),* a small fish that was most important for consumption and for making processed fish.[29] For these villagers, small fish were important for eating everyday and thus considered more important overall, whereas large fish were important to sell when villagers had no rice. In contrast, high-value fish that were of secondary importance to these villagers were most important for fishers coming from elsewhere who were often fishing for trade.

'Outsiders' includes villagers from more populated areas in the same district (e.g. from villages along the Xe Khamphor and around Sanamxay DC) and from neighbouring Champassak Province. People also come from Attapeu PC and other districts of Attapeu. One woman from Saysetha District now lives at a camp along the Xe Kong; she explained her decision to move to the area four years ago, *"I saw there were abundant [natural resources] so I moved to come here…"* A number of former officials left their government positions because of the low salary and instead fish at camps along the Xe Kong. Fishermen also from Saysetha District reported that they had been coming to fish in the area for more than a decade as fish are much more abundant in Sanamxay than in their own

[26] Fish (and other animals) may be kept alive, e.g. high-value fish may stored in the river until sold to passing traders.

[27] Trade of fish from Cambodia to Attapeu was not observed in the early 1990s (Baird 1993), though small quantities of fish from Attapeu were reportedly traded to Khmer traders from Stung Treng (Nash 1997). The current survey only observed fish from Cambodia being traded into Lao PDR.

[28] Historical changes in the location of the international border means that although many of the Cambodian people in neighbouring Stung Treng province speak Lao, Lao people in this area usually do not speak Khmer.

[29] People at Ban Hat Oudomxay reportedly do not make fermented fish (padek) and instead dry small fish in the sun and then pound into powder, making pa ka taw, which can be stored for 1-2 years.

village. The capital required to trade fish (e.g. ice box, motorbike, mobile phone)[30] or to fish for trade (e.g. nets, petrol) can act as a barrier to villagers' involvement in trade. As one woman from Sanamxay DC who was fishing along the Xe Kong said, *"it is not easy to trade fish without a loan"* (Box 6). Village traders often start out by receiving informal loans from fishers in the form of delayed payment. A village fish trader in Ban Phonseath explained how when he first started, he often could not pay people straight away; instead, they would agree on a price, write a note, and then he would pay later: *"it was an exchange."* This demonstrates the importance of trading relationships as well as the unclear distinctions between informal, local trade that sustains rural livelihoods and large-scale, profit-driven trade.

Box 6: Loan arrangements in the Attapeu demonstration site.

Entry into local fish trading is often contingent upon receipt of loans from traders at Sanamxay DC or Attapeu PC. Motorboats are very expensive (USD200), and even ice boxes used to store fish are a considerable expense beyond the means of most villagers (USD40-130 depending on size). Ongoing operational costs for petrol (USD0.90/L), ice (see Box 9) and other equipment such as weighing scales (USD8) are also significant. For fishers, large nets are needed to catch large fish that are desired for trade; these nets cost USD35-150.

All village traders queried reported that they also give loans to fishers for fishing gear, mostly nets, and petrol. Interest-free loans may be arranged at the beginning of the season/year, if the seller (fisher or village trader) commits to only selling to the buyer who gives the loan (village trader or large-scale trader) until the end of the year/season or until the loan is repaid. This arrangement acts to ensure a regular supply.

Loans from traders sometimes involve interest or commissions, so the loan is a source of additional income for the lender. For instance, one large-scale trader reportedly charges 30% commission from fishers to whom loans are given. Another unregistered fish trader reported paying USD0.10/kg commission on all fish to a relative in Sanamxay DC who is a registered trader. A villager at a camp on the Xe Pian explained why they do not own nylon nets saying, *"...if someone buys equipment for me to fish then I can not sell to anyone else even if they offer a higher price!"* Thus, loan arrangements sometimes provide villagers with new economic opportunities and sometimes create debt and limit open market competition.

4.4.2. TRADE PATTERNS FOR FISH

(i) Types of fish

Twenty-five fish species were observed in trade during the first survey (see Appendix 10). Villagers' decision-making about how to use fish they caught was highly dependent on both the type and size of fish. A common comment was, *"[w]e sell large fish and eat small fish."* Another man said, *"[e]ating big fish is taboo!"* - joking that large fish are never eaten, as they are always sold (see Meusch *et al.* 2003; Singh *et al.* 2006). 'Large fish' in the urban markets usually referred to those fish weighing more than 3kg, this being the size required by large-scale traders at Pakse (Phonvisay 2003). However 'large fish' did have alternate definitions depending on the species and context.[31]

Some fish commonly recorded in trade in the demonstration site during the second survey are presented in Table 6 (see Appendix 14). High-value fish that were frequently reported by villagers as being important for the local economy often have strong market demand because of their lack of scales and taste *(pa nang, pa kung)*. The high-value fish are sold by size-dependent pricing. The sale price of larger size classes are relatively stable across different locations in the demonstration site and across the year. Some fish with high market demand (Phonvisay 2003) had slightly lower sale prices possibly because of seasonality.[32] Prices for smaller fish (which are often grouped as 'mixed species') vary; prices are lower in villages and while small fish are abundant during the wet season and are higher in urban markets and during the dry season.[33]

[30] In Ban Mai, four of the five fish traders had motorbikes, with a total of about 13 overall in the village. Most of the village traders there also have acquired mobile phones since the area gained reception in 2005-06.

[31] 'Large fish' for some species (*Hemibagrus nemurus*, *pa kot*) refers to those larger than 1kg, whereas other species such as *pa kung* (*Hemibagrus* spp.) have different prices for fish larger than three kg, between two and three kg and less than three kg (see Appendix 13). Villagers also sometimes distinguished fish by finger, hand and arm sizes.

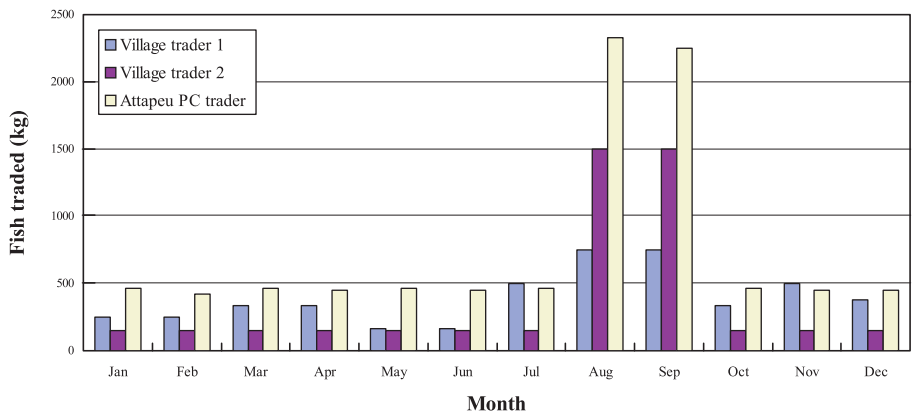
[32] These are fish with high market demand; the lower prices in this survey probably reflect the seasonal availability of larger individuals and size-dependent prices (Baird 1994).

[33] Some traders from Attapeu PC reported that the price for mixed species of small fish (small-bodied species and small individuals of larger fish species; *pa luam*) is higher when the fish are alive (USD2.50/kg) rather than already dead (USD1.00/kg).

Table 6: Some fish commonly reported as being traded in Attapeu (May 2006).			
Fish type	**Lao name**	**Scientific name**	**Selling price (USD/kg)**
High-value	*pa kung*	*Hemibagrus* spp.	2.00-3.70
↑	*pa nang*	*Kryptopterus* spp., *Micronema* spp.	
	pa khae	*Bagarius* spp.	
	pa ern	*Probarbus jullieni*	
	pa pheung	*Pangasius larnaudii*	1.50-2.00
	pa va	*Bangana behri*	
	pa souay	*Pangasius krempfi*	
↓	*pa khao*	*Wallago attu*	
	pa luam	Small mixed species	0.50-1.10
Low-value	*pa soi*	*Henicorhynchus siamensis*	

It must be emphasised that these trends in fish trade are highly seasonally and context dependent. Trade volumes are highest in August-September (Figure 6) when rainfall peaks (MWBP 2006); apparently this is when fish are abundant but still scarce in markets, so they have a high price. Other determining factors are that large individuals of some species are only available during a few months of the year, may be caught only with certain fishing gear or only in certain areas. For instance, the reported price of *Bangana behri (pa va)* during the survey in May is reportedly lower than its price when larger individuals become more abundant in November. Similarly, the IUCN (2006) Red-Listed Giant Barb *Probarbus jullieni (pa ern)* migrates late in the year (Baird 1994), with large individuals (up to 35kg) mainly caught in the Xe Kong in October with provincial sources reporting catches of 200-300kg/year. The nets used to catch the large individuals of this species are relatively expensive (USD35 in Sanamxay DC), which many villagers would not be able to afford and thus would not be able to catch large fish. Prices on a per-kilo basis for more valuable fish may actually be higher for medium than for very large individuals, as the latter have a total value which fewer traders can afford pay; very large fish are also more difficult to transport. To fully explore the importance of such resources for exchange and income-generation of different social groups would require more in-depth study.

Figure 6: Estimated trade volumes for fish traders along the Xe Pian.



(ii) Trade routes for fish

Fish trade routes in the demonstration site are quite complex at a local scale due to the various actors present in a single area. For instance, villagers usually sell fish to village-traders who travel by motorboat with their ice boxes and weighing scales along the rivers. In contrast, collectors who come from elsewhere have the additional options of trading at Sanamxay DC, Attapeu PC or Saysetha District when they return home. For instance, a village trader in Ban Mai who originally came from Saysetha District takes fish by passenger vehicle to sell in Attapeu PC (Km3 market, main market). If this trader can not sell all the fish then they are taken to Saysetha District, where

it is easier to sell them as there are fewer fish available. The long-established presence of one large-scale trader near the confluence of the Xe Kong-Xe Pian creates additional complexities in flows of natural resources. Khmer fishers and traders cross the Lao-Cambodian border to sell their fish to this trader, Lao villagers sell this trader their high-value fish, and townspeople sell this trader high-value fish and processed fish.[34]

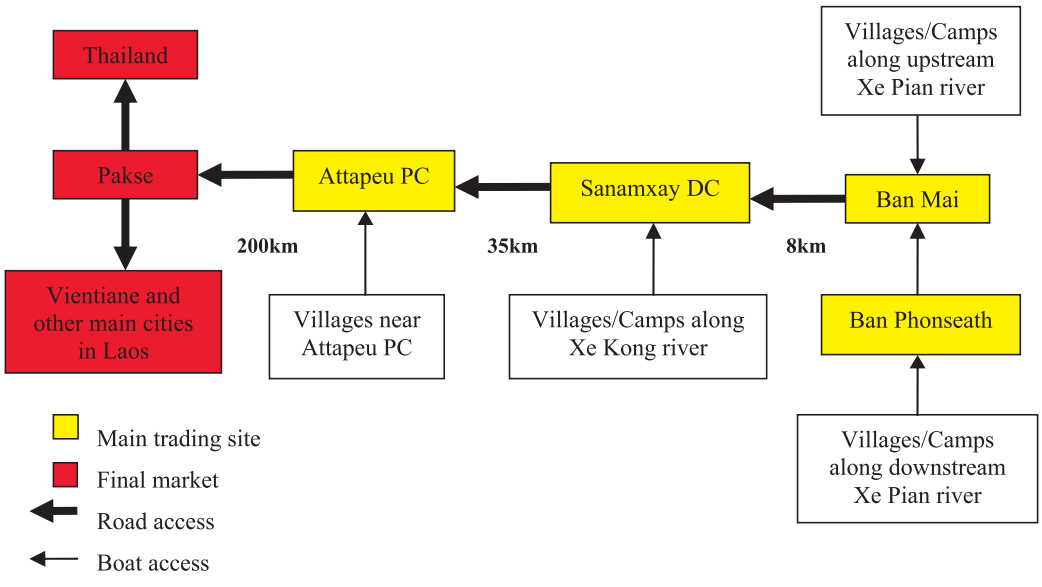
A depiction of the main trade routes is provided in Figure 7.

Transportation is a key determinant of trading patterns (Box 7). For instance, the separate routes for villages and camps upstream and downstream Xe Pian is due to the rapids located just north of Ban Phonseath. Fish from downstream Xe Pian are often collected by village traders from Ban Phonseath who sell to regular buyers from Ban Mai who they meet at the rapids. While Ban Mai has more fish traders than Ban Phonseath only a minority travel the entire length of the Xe Pian buying fish at camps and villages along the way, particularly in the dry season. Some village traders in Ban Mai do not travel at all and instead people from nearby villages take fish to sell to them. Very few villagers in the demonstration site reported taking fish to sell themselves at local urban markets.

Box 7: Fish trade from Ban Mai via passenger vehicles.

Passenger vehicles that operate between Ban Mai and Attapeu PC transport fish for village traders, mostly in late wet season (Aug-Sep). Not surprisingly, transport of fish increased in 2001 after the road was improved in the previous year, thus allowing easier wet season access. Drivers reported that in peak months 5-8 ice boxes (100L) are sent each trip at a cost of 1USD/ice box. This equates to 36T of fish in a peak month. (This assumes 50kg fish per ice box, with six ice boxes/service and four services every day.) In other months, drivers report zero to three ice boxes/trip. As such, a conservative estimate of annual fish export by this route is 132T (6T/month in ten months and 36T/month for two peak months). Fish is sent to Km3 market or sometimes sent directly to Pakse/Vientiane by bus, but often is collected by *tuktuk* and taken to large-scale traders in Attapeu PC who arrange private transport. Fish traders also send wildlife meat hidden under fish and ice, though wildlife is always less common than fish.

Figure 7: Main trade routes for fish sourced from the Attapeu demonstration site.



Some high-value fish are consumed in restaurants in Attapeu PC; this is, however, a small proportion of the total trade. Apparently the bulk of high-value fish is transported by private vehicles from Attapeu PC to the main domestic markets in Pakse and Vientiane. Bus drivers at the Km3 bus station in Attapeu PC noted that more fish were sent by buses until 2004 when Route 23 was completed; now there are many private cars and therefore people are able to send fish by themselves

[34] This large-scale trader also buys wildlife from various sources but apparently does not trade in NTFPs.

as it is cheaper and faster. If fish are sent in ice boxes by bus, this is usually in the wet season.[35] Some high-value fish are consumed in restaurants and hotels, particularly in Vientiane, but the majority are apparently destined for Thailand[36] (Box 8).

Box 8: Links from Attapeu to Pakse.

Links between large-scale traders in the Attapeu demonstration site and Pakse were traced. Trader One is a fish trader in Pakse who buys from two large-scale traders in Attapeu, Trader Two in Sanamxay DC and Trader Three near the Xe Kong-Xe Pian confluence. Trader One gave loans to Trader Two that allowed him to expand fish trade by purchasing a private vehicle. Interestingly, it was Trader Two's mother who initiated much of the fish trade directed through Ban Mai when she went to the village looking for suppliers a decade ago. Five of the six village traders in Ban Mai still sell to Trader Two. Large-scale traders in Attapeu do, however, sell to a number of buyers; for example, Trader Three also sells fish to buyers in Savannakhet and Vientiane, as well as in Pakse.

Trader One has been operating a registered business in Pakse with her husband for more than a decade, paying export taxes to DLF. Large fish (*c.*10-20kg) (*pa kung, pa nang, pa waa, pa khun*) are sent to Ubon Ratchathani in Thailand as well as restaurants and hotels in Vientiane. This trader reported that fish from Attapeu are traded in much smaller volumes compared to fish from Khong District in Champassak and Cambodia (via Veun Kham) (see Phonvisay 2003).

(iii) Trends over time for fish trade

Most villagers report all fish as declining in abundance and size, particularly over the last five years, though the diversity was usually reported as being the same as in the past (see Poulsen & Luanglath 2005). Even small fish *(pa soi)* were said to be declining, though they are still relatively common compared to larger fish. Villagers at Ban Hat Oudomxay explained, *"[n]ow people fish to sell and are selling more…"* and those at Ban Mai said, *"…if we get a lot of fish then we sell for salt, chilli…if we get big fish, then straightaway see the trader's face! It was easier in the past…"* Villagers at camps and district officials repeatedly voiced similar concerns. Even fish traders expressed their concern over fish declines due to trade; one village trader from Ban Phonseath said, *"[t]here is a lot of selling so now the fish are finished! Before it was only looking to eat."* Declines in capture fisheries were commonly attributed to human population increases, new fishing methods and equipment that have a higher catch per unit effort (e.g. nylon nets), as well as fish trade. Yet it was apparent that fish were still more abundant in the demonstration site than other areas of Attapeu, and this continues to prompt people from elsewhere to come to the area.

In contrast to reported declines in fish abundance, trade in fish was said to have increased over the last five years. Both the number of traders looking to buy fish from villages and camps as well as the number of villagers looking to sell fish has increased over time. Nine of the fifteen (60%) smaller-scale traders interviewed in the demonstration site only started trading fish since approximately 2000. Changes in recent years that have facilitated trade include the completion of the road to Pakse as well as the provision of electricity to Sanamxay DC (2003) and Ban Mai (2005). Prior to that, fish traders would have to source ice from Attapeu PC, a more expensive option (Box 9). One village trader in Ban Mai noted a decline in the volumes of fish he trades from 2-3T/year to only 400-600kg/year and related this to increased competition as well as fish declines.[37] Similarly, a large-scale trader in Sanamxay DC explained, *"[w]hen I started to trade villagers would come to sell fish but now there are more buyers so I have to go and buy from them."*

Box 9: Ice and fish trade at Ban Mai.

Located next to a restaurant where passenger vehicles stop in Ban Mai is a small ice 'factory'. The ice seller at Ban Mai is from Ban Hin Laat, next to Ban Mai. He started selling ice in November 2005, one month after the village received electricity. He explained that many people sell fish, so he realized it would be good to sell ice to them. He invested USD2,000 of his own money to purchase the equipment. He sells on average 150kg of ice per day for 0.05-USD0.07/kg. Previously ice from Attapeu PC and cost USD0.25/kg. The main customers are fish traders from Ban Mai and other nearby villages, downstream on the Xe Pian to Ban Phonseath. Localised ice production indicates the importance of fish trade to the local economy in the demonstration site.

[35] The cost to send one 100L ice box to Vientiane is USD10.

[36] Fish traders from Vientiane reportedly offer higher prices than traders in Pakse (about USD0.15-0.50/kg or more depending on the season). However, more fish from Attapeu are thought to be destined for Pakse since Vientiane buyers reportedly go to Veun Kham to buy fish directly there.

[37] These volumes appear to be significant underestimates given the observed level of trade, but the scale of decline may be similar.

While fish have apparently declined in abundance over time, there has been little change in the price of high-value fish over the last few years. In contrast, the price for small fish is apparently increasing. For example, one trader in Sanamxay DC reported that smaller mixed fish *(pa luam)* increased in price from USD0.80/kg in 2003 to USD1.30/kg in 2006. Similarly, a fish trader in Ban Mai said that he previously only bought large fish, but that in 2002-03 there were fewer large fish available, so in 2004 he began buying more small fish. It may be significant that village traders report that they buy mixed fish when there are not enough large fish. Increased trade in smaller fish is a probable indicator of a decline in abundance of larger sized fishes as well as a market response to this decline. Hence, small fish that were previously ignored in trade are now being traded more.

While it is difficult to decipher cause-and-effect relations in such broad trends it appears that market demand for fish has increased, as has the number of people directly involved in fish trade, though this general increase in fish trade does not necessarily translate into an increase in all aspects of trade (Box 10). It is uncertain whether fish stocks for most species have significantly declined; it may be the average catch per fisher has declined as more people are fishing for both trade and subsistence (MRC 2003; see Bush & Hirsch 2005).[38] The sourcing of high-value fish from Cambodia also makes it difficult to determine trends relating to specifically 'Lao' fisheries.

Box 10: Change in border regulations and changes in trade.

Until 2005, many Lao villagers, particularly from Ban Nongkhe on the Xe Khamphor River, would go to Cambodia to collect or buy fish and other natural resources for trade. These were then taken to sell to the operator of a passenger vehicle who travelled from that village to Pakse. In 2004-05, the rules at the Lao-Cambodian border changed. Now Lao people are charged USD2/day to collect natural resources in Cambodia and area also taxed USD0.50/kg at the Lao checkpoints for any fish brought into Lao PDR for trade. The Ban Nongkhe passenger vehicle also started transporting timber, which is more valuable than people, fish, wildlife and NTFPs (see Box 3). Villagers therefore usually lack alternative transport and market options, and so this trade route to Pakse has declined in significance. However, some wealthier villager traders with motorbikes continue to use these to transport natural resources from the Xe Pian for sale in Pakse.

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Village trader buying Bagarius *spp. (pa khae) at a camp on the Xe Kong River*

4.4.3. REGULATIONS FOR FISH TRADE

In Lao PDR, most national regulations concerning capture fisheries focus on illegality of particular fishing methods (e.g. poison, electro-fishing, blocking streams, spear fishing) rather than limiting the collection of specific species since the latter are so variable. Indeed, regulations for protected species that include fish have typically been issued by MAF/DoF without consulting DLF, although the latter has responsibility for fisheries management. This lack of administrative cooperation has resulted in regulations for protected fish species having little acceptance amongst the government agencies responsible for their implementation. For instance, the CITES Appendix I-listed Giant Barb *Probarbus jullieni (pa ern)* has been listed as a nationally protected species for many years (Baird 1994), but in Attapeu it is not considered rare, and thus it continues to be openly traded.

In contrast to the lack of attention given protected species, illegal fishing methods are regarded as a real concern by local government authorities. Aside from blocking streams, villagers in the demonstration site generally associate illegal fishing methods with outsiders, saying *"…it is [done by] people from other places."* People from Sanamxay DC and Attapeu PC are said to illegally use poison and electricity in the dry season; often these are soldiers or government officials as they are the ones who can access the required equipment.[39] Villagers in Ban Sompoy said that they had reported the use of poison by soldiers, but that higher authorities in the army had just dismissed

[38] The concern would then be whether total catches have exceeded maximum sustainable yields (see Baran 2005).
[39] One DAFO official reported that poison used for fishing is sold by the same people who sell illegal drugs (meta-amphetamines, *yaa baa*) because both are illegal.

their claims. Villagers said that fish caught with poison is not good to eat often because the poison accumulates in gills.[40] In addition, bombs were usually associated with Khmer fishers and electro-fishing with the Chinese.[41] Such comments were usually linked to trade, as one fisher from Sanamxay DC said, *"[i]n the past people did not use bombs but now because people sell fish then they often use bombs in Cambodia…"* Whether or not these statements reflect the actual situation they do reveal concerns about unsustainable trade-driven fishing practices.

Regulations regarding trade in fish are unclear. In the 1990s, fish trade - imports as well as exports - was banned nationwide for the purpose of ensuring food self-sufficiency (Baird 1994). While this ban was subsequently lifted for Champassak Province in 1999 (Bush 2004), it apparently still applied to other provinces. In Attapeu, provincial authorities reported that a provincial decree in about 2003 again prohibited the export of some high value fish *(pa kung, pa khae, pa ern)* that were usually sent to Pakse for sale to Thailand. The export ban also aimed to "protect fish as food for Attapeu,"[42] but is thought to no longer apply. The PFO reported that it does collect tax on the export of "large amounts of fish" but details are unfortunately lacking. The Attapeu provincial fisheries authorities (PLF) report that there are no quotas set for fish trade or export.

Part of the reason for the lack of any clear policy is that, in the case of Attapeu, trade in fish is not regarded as a major issue at a provincial level. One provincial official explained, *"NTFPs are more important for trade than fish…NTFPs are sold by tonnes but fish are only sold in the province by kilos."* While fish trade may represent a smaller proportion of current trade in natural resources across the entire province, it is a very important activity in Sanamxay District. Many people reported that Sanamxay District has the most fish and also a lot of wildlife compared to other districts in Attapeu. Thus the checkpoints near the Lao-Cambodian border reported that there was no trade in NTFPs and no problems with border security and that fish were the most important issue for the Lao-Cambodian border[43] (Box 11).

Box 11: Lao-Cambodian border regulations.

At the Lao-Cambodian border, Lao police collect a tax of USD0.50/kg on fish brought into Lao PDR by Lao traders. Lao officials do not tax Khmer people as they are taxed by Khmer police and soldiers (USD1/kg). This tax is restricted to larger amounts of fish that are being traded; fish for consumption (1-2kg) are not taxed.

The head of the Lao police checkpoint strongly asserted the importance of fish over any other issue. *"There are no issues with NTFPs because Khmer people do not sell in Lao PDR. Wildlife are not important like fish; people just eat wildlife, but fish are very important for the economy"*.

Lao fishers also reported better fishing opportunities in Cambodia. Lao people are also charged USD2/ day to fish in Cambodian waters, though villagers report that they can request at the border to just go for the day to catch fish for eating, give some fish to the police and then not have to pay.

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Fishing along the Xe Kong River

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Edible ground mushrooms (het la ngo) at a camp on the Xe Pian River

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Fishing at the Lao border police check-point on the Xe Kong River

[40] Use of poison is considered a more serious offence than other illegal fishing methods. DAFO officials report that people caught poison fishing are fined USD300 whereas the fine for electro-fishing is USD100-300 depending on the village. (Usually the amount of the fine is decided among DAFO, the village and the district governor).

[41] Approximately 62 gold dredges belonging to a Chinese company had been operating on the Xe Kong, though they had stopped dredging by May 2006 and were apparently waiting permission to go into Cambodia.

[42] This is comparable to the recent provincial ban on fish export from the Stung Treng Province, MWBP demonstration site in Cambodia, into Lao PDR (Champassak and Attapeu Provinces).

[43] This perspective is influenced by the fact that the income of these checkpoints primarily derives from 'taxes' charged on fish that are traded across the border.

This field study identified three large-scale traders and at least 30 village traders and unregistered traders who source fish from Sanamxay District.[44] In Sanamxay District, the DFO reportedly taxes one large-scale trader USD3.50/month and about 15 other smaller traders are taxed at about USD1.50/month.[45] Fish are not separated by species for tax purposes, only by volume. The tax rates are meant to be in proportion to the amount of fish traders report - though it must be noted that traders in all types of natural resources generally under-report trade volumes. As one official noted *"…if they have 100kg of fish then they say only 60kg."* The DFO only has responsibility for the export of fish from the district; fish exported from Attapeu are the responsibility of the province. Unregistered fish traders who do not pay tax to the DFO may sell fish to registered traders or transport the fish themselves for sale in Attapeu PC (Box 12).

Box 12: When is fish trade to be taxed?

In addition to the registered and unregistered 'fish traders,' there are also fishers who come from elsewhere in Attapeu province to fish in the demonstration site. They may sell their fish to one large-scale trader based there (see Box 13) or sell the fish as fresh or processed in Sanamxay DC, Attapeu PC or Saysettha Districts. These people are not considered to be 'trading' fish as they do not buy fish, they only catch it; therefore, they are not required to pay tax. Some of these people do not produce rice themselves and instead rely on fish sales to buy rice. Whether or not they are indeed 'traders' who should be taxed is unclear.

In Sanamxay District, where the local importance of fishing is widely recognised, villagers and officials report that many of the high-value fish being traded are sourced from Cambodia. This creates little incentive to clarify policies regarding fish trade. Indeed, most concerns would be on the Cambodian side, as Stung Treng province of Cambodia currently has a ban on all fish exports, and fisheries officials there note that 'taxes' collected at the border are not legal (see Singh *et al.* 2006). This is of little concern to Lao authorities. For instance, while the Lao border checkpoints monitor the use of illegal fishing methods nearby they play no role in monitoring the use of explosives by Khmer fishers who may then sell fish to traders in Lao PDR (see Nash 1997).

Box 13: Large-scale trader at Xe Kong-Xe Pian confluence.

There is one large-scale trader based in the demonstration site who plays a very significant role in local trade patterns. Through ethnicity, citizenship and residency, this trader has close links to three countries – Cambodia, Lao PDR and Vietnam – speaks all three national languages, and has relsative which facilitates trade at the border area. In addition, this trader has relatives active in fish selling and wildlife trade in Attapeu PC, Cambodia and Viet Nam, which makes for useful family-based trade connections.

This trader was frequently associated by interviewees with illegal fishing methods. In May 2006 a relative of this trader was fined USD100 by Sanamxay DAFO in for using nets to block streams on Xe Pian. This trader is also alleged to have close ties to the police who have a checkpoint very near this trader's residence. Police collect taxes from fishers and traders who pass to sell fish to this trader. If this trader discontinued these activities, the police would be deprived of an important income source. Because local police receive little benefit when DAFO enforces laws about illegal fishing (e.g. only received USD6 when the relative was recently fined), they reportedly prefer to cooperate with this trader.

While villagers along the Xe Pian often blame this trader for fish declines, villagers along the Xe Kong do not. This is partly because the stream blocking was mainly on the smaller Xe Pian river and thus affected the catches of villagers there, and also because this trader is the only permanent buyer of high-value fish in the area and villagers cannot afford to travel to local markets to sell. In past years this trader reportedly paid one village USD30/season (Aug-Sep) to use a net (*tong*) to block a stream in their village area; district authorities have now banned that practice. This trader has also reportedly employed villagers from Ban Hat Oudomxay to drive this trader's boat and be involved in fishing by blocking streams. Thus, this trader has close connections with nearby villages.

This fish trader is also said to be the major local trader in wildlife, paying higher prices than other village traders. This trader reportedly trades mainly turtles and monitor lizards which are sent to Attapeu PC and sold there to Vietnamese buyers. By one account, this trader *"buys everything, wild boar meat, sambar meat, muntjac meat, birds…[this trader] buys from Lao PDR and Cambodia…"* Interviewees explained that meat is hidden under fish and ice inside ice boxes, while smaller wildlife is transported live. The main suppliers of wildlife are said to be villagers, police and Khmer villagers. People alleged that this trader "pays money at the province and district" so the authorities will not allow anyone else to sell wildlife. The relationship between this trader and authorities is unclear, but there were some suggestions made that payoffs may be occurring.

[44] The majority of these traders are based in Sanamxay District; a minority live in Attapeu PC.

[45] Obviously the reported total tax, USD312/year, would be considerably greater if all identified traders were included. Also these values appear to be under-reported, as village traders in Ban Mai said that they pay USD2-5/month in tax to the district with the amount varying depending on the amount of fish they trade.

4.5. WILDLIFE

4.5.1. OVERVIEW

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Wild boar meat transported with fish at Ban Mai

The most commonly reported and observed types of wildlife in trade were reptiles, mammals and birds. While trade in invertebrates (e.g. insects) does occur in Attapeu, these animals were never reported by villagers in the demonstration site as being important for the local economy. Thus, this section summarises information on reptiles, mammals and birds (see Appendices 4-10 and 12). Varied animal and plant resources are frequently harvested together in an opportunistic manner. For example, villagers reported that they may make trips specifically to collect NTFPs like yang oil and *het phor* mushrooms, but they would also look out for wildlife at the same time. Similarly, at camps along the Xe Pian villagers noted that people opportunistically collect wildlife when collecting NTFPs in the forest. Fish traders were also often involved in wildlife trade, despite the former being their main occupation. As one villager in Ban Mai joked, *"…village traders buy everything…If you have a Bengal monitor then they will buy a Bengal monitor!"* This integration of wildlife trade with the collection and trade of other natural resources means that the detailed information collected on those other resources also provides insight about wildlife trade (see Box 13; photo right of wild boar meat being transported with fish).

According to villagers, trade in wildlife sourced from the demonstration site is often stimulated by outside traders. For example, trade in turtles was usually reported to be initiated by Vietnamese traders who went to villages looking to buy these animals. One large-scale fish trader based in the demonstration site reportedly provides rice to villages along the Xe Kong which is later 'exchanged' for wildlife (i.e. by creating a debt which has to be repaid). Exchanges of wildlife for rice indicate the frequency of rice insufficiencies and the importance of wildlife 'trade' as a coping strategy. There were also reports of a trader on the Xe Khamphor who exchanges alcohol for wildlife, which is then sold on in Pakse. In this case the 'exchange' is more akin to monetary trade.

Though consumed less frequently than fish, wildlife can also be an important food source. For example, in Ban Hat Oudomxay villagers reported that some relatively common wildlife like squirrels and wild boar are still eaten more than sold (see also Bezuijen *et al.* in prep.). Provincial officials also note the importance of wildlife as a source of food for villagers in Attapeu. Village location influences the availability and proximity of wildlife and thus the extent of its use. For instance, villages along the downstream Xe Kong (Ban Sompoy, Ban Hat Oudomxay) often hunt in Cambodia because it lies just on the opposite bank of the Xe Kong, and the absence of villages in the area means that wildlife are more abundant there.[46]

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Indochinese Water Dragon at a camp on the Xe Kong River

While the relative importance of wildlife to overall livelihoods was not assessed, it appears that it is most significant for exchange and income-generation rather than meeting direct subsistence or food security needs. Villagers from Ban Sompoy said, *"…wildlife is something to sell; everyone likes to buy wildlife."* Similarly, villagers in Ban Hat Oudomxay noted that they previously ate turtles because there were no buyers, but that now they always sell the turtles to buyers who come to the village. An old hunter in Ban Hat Oudomxay reported that in the past wild boar and deer were most important because people hunted to eat, but this has changed as people now hunt to sell. Thus, market demand is changing hunting as well as consumption patterns.

[46] Ban Sompoy is recognised as being particularly reliant on wildlife trade (see Nooren & Claridge 2001).

4.5.2. TRADE PATTERNS FOR WILDLIFE

(i) Types of wildlife

Thirty-six wildlife species were observed in trade during the first survey (see Appendices 7, 8 and 10). Wildlife identified by villagers and officials as being traded in the demonstration site and Attapeu province are summarised in Table 7 with estimated trade volumes and prices as well as the most significant species for trade. (See Appendices 4 and 5 for details.) This demonstrates that the level of wildlife trade is significant, particularly considering that the reported volumes are likely underestimates.[47]

Table 7: Summary of wildlife trade reported from two villages in the demonstration site (Ban Mai, Ban Sompoy) and by government officials for Attapeu Province (September 2005). Wildlife shaded in grey were reported by villagers as being most important for trade.

Animal type	Species/Form	IUCN Red List*	CITES*	Villages		Officials	
				Annual trade volume**	Price (USD)	Annual trade volume**	Price (USD)
Reptiles	Hard-shell turtles			520 animals	2.50/ kg		
	Soft-shell turtles		II	500kg +20 animals	0.60-5.00/ kg		
	Bengal Monitor *Varanus bengalensis*		I	420 animals	1.50-2.50/ kg		
	Water Monitor *Varanus salvator*		II	20 animals	1.00/ kg		
	Python spp.		II	5 animals	2.00/ kg		
	Reticulated Python *Python reticulatus*		II	30 animals	2.50/ kg		
	Rat Snake *Ptyas* spp.			*c.*155 animals	1.50-2.00/ kg		
	King Cobra *Ophiophagus hannah*		II	10 animals	9.00/ kg		
	Indochinese Water Dragon *Physignathus cocincinus*			50 animals	0.50-0.80/ animal		
Mammals	Wild Boar *Sus scrofa*	LC		20-30 animals	1.00-1.50/ kg	72 animals	2.00/ kg
	Squirrel spp.			200 animals	0.50-0.80/ animal		
	Red muntjac *Muntiacus muntjak*	LC		12 animals	0.80-2.50/ kg	96 animals	1.60/ kg (whole animal), 2.00-3.00/ kg (meat)
	Sambar *Cervus unicolor*	LC			2.50/ kg		
	Northern pig-tailed Macaque *Macaca eonine*	VU	II		10.00/ young animal		
	Long-tailed Macaque *Macaca fascicularis*	NT	II	1-2 animals		2-3 animals	2.00-3.00/ young animal
	Silvered Leaf Monkey *Trachypithecus villosus*	DD		10 animals			
	Red-shanked Douc *Pygathrix nemaeus*	EN	I	10 animals			
	Malayan Pangolin *Manis javanica*	NT	II	10 animals	35.00/ kg	200-300kg	25-35/ kg (animal <3kg), 100-200 (animal>3kg)
	Siamese Hare *Lepus peguensis*	LC		>50 animals	2.00-3.00/ animal		

[47] This is due to villagers' possible concerns about reporting their trade in wildlife as well as the difficulty of gaining estimates of volumes, more species were reportedly traded but villagers' could not provide volumes (see Appendix 4).

Table 7 (cont.): Summary of wildlife trade reported from two villages in the demonstration site (Ban Mai, Ban Sompoy) and by government officials for Attapeu Province (September 2005). Wildlife shaded in grey were reported by villagers as being most important for trade.

Animal type	Species/Form	IUCN Red List*	CITES*	Villages		Officials	
				Annual trade volume**	Price (USD)	Annual trade volume**	Price (USD)
	Giant Flying Squirrel *Petaurista elegans/ petaurista*	LC		7-8 animals	5.00-10.00/ animal		16.00/ animal
	Phayre's Flying Squirrel *Hylopetes phayrei*	LC		20-30 animals	0.50/ animal		
	Malayan Porcupine *Hystrix brachyura*			2-4 animals			
	Common Palm Civet *Paradoxurus hermaphroditus*	LC		20 animals	1.00-2.00/ animal	120 animals	1.00-5.00/ animal
	Small Indian Civet *Viverricula indica*	LC		3-4 animals	2.00/ animal	10-20 animals	1.00/ kg
	Large Indian Civet *Viverra zibetha*	LC		12 animals	3.00-10.00/ animal		
	Lesser Oriental Chevrotain *Tragulus javanicus*	LC			3.00/ animal	50-60 animals	8.00-10.00/ animal, 6.50/ kg
	Binturong *Arctictis binturong*	LC	III			10-20 animals	1.00/ kg
	Gaur *Bos gaurus*	VU	I			0.5 animal	2.50-3.00/ kg (meat), 200-300/ piece of gall bladder
Birds	Thick-billed Green Pigeon *Treron curvirostra*	LC		600-700 animals	0.20-0.50/ animal		
	Bird spp. Duck spp.			 10-20 animals	0.20/ animal 0.50/ animal		
	Oriental Pied Hornbill *Anthracoceros albirostris*	LC	II	22-23 animals	0.70-0.80/ animal		
	Parakeet *Psittacula* spp.	LC	II	400-500 animals	0.10-0.20/ animal		
	Owl/ Owlet sp.		II		0.20/ animal		
	White-breasted Waterhen *Amaurornis phoenicurus*	LC		20-30 animals	0.30-0.50/ animal		
	Mountain Imperial Pigeon *Ducula badia*	LC			1.00/ animal		
	Dove spp.			50 animals	0.30-0.50/ animal		
	Hill Myna *Gracula religiosa*	LC	II		5.00/ animal		
	Egret spp.				0.20/ animal		
	Heron spp.				0.20/ animal		

* For explanations of threat and CITES categories see IUCN (2006) and CITES (2004).

** Villagers reported trade volumes sometimes by number of animals and sometimes by weight, so a total figure is not calculated. In addition, villagers reported trading other species but could not provide estimates of volume.

The data collected on trade volumes are limited, as villagers' estimates usually refer to numbers of animals rather than weights; weight variation among species and individuals means that these data are not quantitatively comparable. In addition, trade volumes often could not be provided for all species that were reportedly traded, meaning that a summary will underestimate total volumes. Despite these limitations, the total number of animals reported by the surveyed villages is indicative of the extent of wildlife trade, with an annual off-take from only two villages of 1,230 reptiles, 433 mammals and 1,212 birds.[48] By contrast, official estimates are that only 375 mammals

[48] In deriving these numbers, ranges were averaged and trade reported as a weight measure was excluded, so these are again likely to underestimate total trade volume.

were traded for the whole of Attapeu Province, which includes around 210 villages (CPC & NSC 2001). If just half of the villages in the province trade wildlife in volumes similar to those reported by the surveyed villages, then this equates to nearly 23,000 animals of the species identified above being traded each year. Thus, official perceptions of wildlife trade appear to be a vast underestimate of its actual extent and hence its significance for both villagers' livelihoods and for wildlife conservation.[49]

Where data are available for the same species, a comparison reveals that trade prices are often lower when reported by villagers than by officials (e.g. for wild boar, pangolin, Lesser Oriental Chevrotain; see Table 7). This is probably due to the lower prices offered for wildlife in villages as compared to local urban markets. The effect of location on trade prices are shown for wild boar meat as an example, with prices lowest in villages furthest from urban markets, increasing in villages that are focal points for wildlife trade and highest in urban markets (Table 8; see Appendix 12).

Table 8: Wild Boar meat prices in various locations (May 2006).

Location	Price (USD/kg)*	Trade destination
Villages and camps on the Xe Pian River	1.00-1.60	Local village trade
Ban Mai	1.90	Attapeu PC residents
Main market, Attapeu PC	3.50	Attapeu PC residents

* Prices may sometimes be inflated for foreigners.

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Giant Flying Squirrel at a trader's house in Attapeu PC

Turtles and monitor lizards were the most consistently reported wildlife that are important for trade when considering the camps as well as the villages.[50] Turtles as well as squirrels, Thick-billed Green Pigeons, parakeets and rat snakes were reportedly harvested in the highest volumes in the demonstration site. Unfortunately official perceptions of trade in these animals are unknown. High value wildlife reported during the field study - Giant Flying Squirrel, Hill Myna, pangolins, King Cobra and Asian Giant Soft-shell Turtle - are valuable but *"very difficult to find"* and usually villagers said these species were less important for trade. Some wildlife that are still common, like Variable Squirrels, have a low price and lower market demand and are thus more often eaten. Between these extremes were monitor lizards and turtles which, like fish, were reliable in both supply and market demand, ensuring steady opportunities for trade and thus making them more crucial to rural livelihoods. Villagers from Ban Hat Oudomxay explained that they could go across to Cambodia and collect three monitor lizards in one trip, and then they could always exchange the monitors for rice. Similarly, villagers in Ban Mai reported catching at least one to two monitor lizards per day at nearby camps. A large-scale trader in Attapeu PC confirmed the importance of monitor lizards; of all wildlife they are the animal she trades most often.

The seasonal availability of wildlife varies among animals, and this influences villagers' responses as reported here. Hard-shell turtles were apparently more abundant from September to November, whereas monitor lizards' availability peaked between May and June. This seasonality is important as it relates to other livelihood activities. For instance, the months when monitor lizards are most abundant are also when many villagers collect *het phor* mushrooms along the Xe Pian for trade. Usually collectors will transport the meat of larger animals (e.g. deer, wild boar), but other

[49] Estimates provided by officials may in some cases intentionally underestimate wildlife trade for various reasons (e.g. curtailing trade may decrease opportunities to collect informal taxes; widespread wildlife trade implies current management by officials is ineffective).

[50] Wildlife like wild boar and birds, although reportedly important in villages, were less often reported by respondents in camps, possibly because they are more frequently caught in rice fields.

animals (e.g. monitor lizards, turtles) are transported live. Animal size is also significant. For example, at a camp on the Xe Pian, a man with a small Indochinese Water Dragon explained that they would eat it *"…because it is too small to sell."* Size-dependent prices were also reported for some high-value wildlife, with larger animals not always receiving the highest price. The price per kilogram for King Cobra reported in May 2006 for example, was said to be highest for animals between 2-5kg; individuals both above and below this size range fetched lower prices (see Appendix 12).

The presence of Xe Pian National Protected Area (NPA), which lies mainly within Champassak province with its eastern border along the Xe Pian River in Attapeu province, also influences the availability of wildlife species for hunting. A high degree of trade-driven hunting pressure on the NPA has been reported, at least some of which relates to villages in the demonstration site. For instance, at least until the late 1990s, people from villages in Sanamxay District continued to hunt pangolins inside the NPA for trade, and specific orders for high-value wildlife (e.g. tigers) were placed by Khmer traders with villagers in the demonstration site (see Nooren & Claridge 2001).

(ii) Trade routes for wildlife

The local trade patterns for common wildlife follow many of the same trade routes as for fish (see Appendix 9). Reasons for this are the limited transportation options, overlap in market demand and the fact that wildlife and fish are often traded by the same individuals. For instance, reference was made that all three large-scale fish traders interviewed during the field study are likely also involved in wildlife trade.[51] One resident of Attapeu PC noted, *"[w]ildlife and fish are sold together; traders do not just sell wildlife. It is different to NTFPs."*[52] Village traders rarely confirmed that they traded wildlife, but given the opportunistic nature of trading patterns it appears that many do actually trade wildlife. For instance, villagers reported that they collect wildlife when collecting *het phor* mushrooms for trade and that village traders who buy fish also buy *het phor* opportunistically, since they are both sent to Pakse to meet market demand from Thailand. Thus it is likely that the same traders would also buy any wildlife villagers wanted to sell at the same time. Also, as with fish, wildlife that is observed in trade in Attapeu sometimes comes from Cambodia.[53] During surveys at the main market in Attapeu PC in 2006, a seller of wild boar reportedly sourced it from Cambodia. Wildlife has in the past flowed in the opposite direction - from Attapeu into Cambodia (Nooren & Claridge 2001). This was not reported during the current survey, possibly due to the changes at the Lao-Cambodian border, though it may still continue.

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Fish and Bengal Monitor at the main market in Attapeu PC

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Parakeets at the main market in Attapeu PC

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Grilled Lesser Oriental Chevrotain at Ban Hat Oudomxay

[51] One openly admitted trading wildlife; the other two denied involvement but were observed and/or frequently reported to be involved in trade (e.g. identified by villagers as someone they sell wildlife to).

[52] Here NTFPs refers to those that need a quota and are traded in very large quantities (see section 4.6.).

[53] Villagers from Ban Hat Oudomxay reported that common wildlife including Sambar, Muntjac, Wild Boar often comes from Khmer hunters because they have guns.

At a camp on upstream Xe Pian, villagers from Ban Mai explained how people collect turtles when collecting mushrooms (*het phor*), *"[t]hey get 2-3 animals and sell turtles and wildlife in the village,"* selling all to village fish traders. The ice box of one village fish trader in Ban Mai was seen to contain bags of wild boar meat amongst the ice and fish; both the meat and fish had been bought from villagers and were being sent to Attapeu PC in the ice box. The driver of a passenger vehicle in Ban Mai observed that village fish traders, *"…also take monitor lizards, mushrooms (het phor), Sambar meat, wild boar meat, muntjac meat…they use ice boxes for small amounts."*

Lower-value wildlife used for food may end up in local urban markets, and Ban Mai again appears as an important conduit for this local trade. For instance, a woman selling wildlife in Sanamxay DC reportedly gets it from her daughter in Ban Mai. Another woman selling dried Sambar meat at a foodstall in Attapeu PC also bought it from Ban Mai. In Sanamxay DC, monitor lizard was observed for sale in the market, and small restaurants sold dishes with muntjac meat and were observed buying a Siamese Hare (see Appendix 8). The market manager noted that it is usually families of district officials who buy from the market and district or provincial officials who eat at the restaurant, whereas villagers collect their own food and do not buy there[54].

Not surprisingly, wildlife is more frequently observed at the main market in Attapeu PC and larger restaurants there than in Sanamxay DC. In Attapeu markets, wildlife observed in trade was intended for local consumption. These included Sambar, muntjac, wild boar, Gaur (*Bos gaurus*), Common Palm Civet (*Paradoxurus hermaphroditus*), monitor lizards, hard-shell turtles, and some seasonally-common bird species. Four of the 14 restaurants and foodstalls around Attapeu PC that were surveyed in 2005 reported the availability of wildlife dishes, mainly serving meat from wild boar, deer and monitor lizards (see Appendix 8). One of the main restaurants is purported to be frequented by senior government officials. Hence, in Attapeu PC as in Sanamxay DC, officials are contributing to market demand for wildlife meat. Wildlife is also commonly seen in restaurants, guest houses and private homes as ornaments including trophies, skins and pets. Residents of Attapeu PC report that they "request" villagers to collect certain wildlife for them to have as pets. These may be birds, such as Hill Mynas, or primates, including at least one Red-shanked Douc Langur.[55]

Yet these observations from Attapeu PC apparently only represents a small proportion of the wildlife trade.[56] One of the large-scale traders explained how she sells less wildlife in Attapeu PC because *"…wildlife is too expensive to sell here, only a small amount goes to restaurants…people here have no money so it is difficult for them to buy…".* Instead she sends much of the wildlife to Pakse where she also trades fish. These species include wildlife used mainly for food (Phayre's Flying Squirrel, Lesser Giant Flying Squirrel, other squirrels and deer). She also sources wildlife primarily through relationships established directly with villagers (Box 14).

Box 14: Trading relationships.

One large-scale fish and wildlife trader based in Attapeu PC explained that when she first started trading in 2001, she went to villages to buy. Beginning in 2002, she did not have to go to the villages any longer, because the relationships that she had developed relationships with villagers meant that they now come to sell to her. She said, *"I now have junior associates"* (*mii luuk-nong*). Villagers come on motorbikes to sell to her; they do not use passenger vehicles. During the interview, a husband and wife came on their motorbike to deliver fresh Serow meat cut into strips for drying, carried in a basket and covered with leaves.

This trader also gives loans to regular sellers, describing this in saying, *"we help each other."* She did note, however, that she can buy more wildlife if she goes in person.

In contrast to commonly-consumed wildlife species that are of less conservation concern, high-value wildlife species that are traded for food, ornamental and medicinal uses (e.g. pangolins, King Cobra, Hill Myna) were never observed in the markets surrounding Attapeu PC. It appears that trade

[54] He also noted that the district market is mainly comprised of people from nearby villages selling natural resources in the morning, whereas district residents sell manufactured goods throughout the day.

[55] The Douc Langur was bought for USD35 by the owners of a Vietnamese restaurant which also sold medicinal alcohols, including various animal (e.g. porcupine stomach, snake, gecko) and plant products.

[56] Comparative observations made in Pakse (May 2006) and Savannakhet (March-June 2005) also indicate that the volume of wildlife trade at the markets in Attapeu PC is relatively small (see also Nooren & Claridge 2001).

in high-value wildlife is usually directed towards Viet Nam. Often Vietnamese traders travelling by motorbike, bicycle and foot source valuable wildlife directly from villages. In Ban Mai, villagers said, *"…soft-shell turtles do not get sent by passenger vehicles; [these] usually go by motorbike because it is forbidden…Vietnamese people go to buy from villages."* Villagers in Ban Hat Oudomxay also reported Vietnamese traders coming to their village to buy turtles, despite the difficult access. District officials in Sanamxay reported that Vietnamese traders go to villages around September to buy turtles and other wildlife. These Vietnamese traders may sell household wares, but they also seek out opportunities to buy or exchange goods for valued wildlife and to establish relationships like those held by Lao traders (see Box 14). It is important to note, therefore, that most of the trade in high-value wildlife is conducted outside of formal markets.

(iii) Trends over time for wildlife trade

A resident of Sanamxay DC said, *"[w]ildlife goes to Attapeu PC like expensive fish...Now it is different from the past because everyone is going to fish and hunt."* Comments similar to this were repeated throughout the field study; declines in wildlife populations were also commonly noted. For example, one villager at a camp on the Xe Pian said, *"…there used to be lots of wildlife here. I caught two tigers!…but now there are none…"* Villagers noted that in the past they may have worried about dangerous wildlife eating their livestock, but this is no longer a concern. A large-scale trader also reported that fish are just as easy to find now as in the past, but that wildlife is increasingly scarce. While studies in the Xe Pian NPA summarise villagers' reports that wildlife abundance has increased following gun collections (e.g. Poulsen & Luanglath 2005), caution must be adopted in interpreting such reports, as other studies have shown that villagers may report increases in wildlife abundance to assert their cessation of hunting (see Johnson *et al.* 2004b). Villagers in this field survey attribute declines in wildlife to over-harvesting - prompted by increases in human populations and by trade-driven rather than subsistence-driven hunting, conducted by villagers as well as outsiders.

Interestingly, villagers in the demonstration site usually reported wildlife trade to have started only in the last five years or so. Villagers from Ban Sompoy reported that traders started coming to their village around 2000, saying, *"…before then, there were no buyers and only we ate wildlife; everything now has a price…"*. However, wildlife trade from Attapeu province was apparent well before this time (Baird 1993; Nooren & Claridge 2001). A former bus driver reported how a decade ago, even when the roads were very bad, pangolins were being sourced from Attapeu. Similarly, a forestry official reported that in the early 1990s, King Cobras were sourced from the Xe Pian. Villagers' comments thus possibly refer to a more recent expansion of wildlife trade within the demonstration site and also to the presence of more traders who come seeking to buy wildlife directly from villagers.

The limited information on trade volumes makes it difficult to assess the extent of these reported declines in wildlife and whether they have resulted in overall declines in wildlife trade. One village trader in Ban Mai reported that wildlife is traded only once every five months, but in the past it was traded nearly every day; however, others said that this trader actually continues to buy a lot of wildlife. Wildlife trade does still appear to be widespread, though probably highly variable among villages, households and species. For instance, in Ban Sompoy, which was associated with the most wildlife collection, people estimated that their village collected 500 turtles and 400 monitor lizards per year. Trade in high-value wildlife like pangolins and King Cobras has apparently declined, as these animals become increasingly difficult to find. People also point to increased enforcement as leading to less hunting and trade of wildlife.

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Red-shanked Douc Langur at a Vietnamese restaurant in Attapeu PC

While there are apparent declines in some aspects of wildlife trade (e.g. fewer high-value species, less wildlife transported by passenger vehicles), local trade routes are diffuse and adaptive to enforcement activities, and this may allow trade to continue more surreptitiously. For instance, village traders were seen to hide small amounts of wildlife meat in ice boxes full of fish. Also, traders may go directly to villagers, or villagers may travel to traders, taking only small amounts of wildlife and avoiding markets completely, thus making trade more difficult to detect.

In addition, there were reports that more women were trading wildlife than in the past, acting in various roles (e.g. trader in village, market-seller, agent selling for someone else). Other studies in the region show how women's involvement in illicit trade may be facilitated by the lower degree of enforcement border authorities apply to women rather than men (Walker 1999).

4.5.3. REGULATIONS FOR TRADE IN WILDLIFE

Although Lao PDR joined CITES in 2004, it does not yet have any national legislation to implement the Convention. Regulations regarding domestic exploitation, including trade of wildlife in Lao PDR, are covered by MAF Decree 0360 (originally issued in 1996) revised in 2003. This decree defines lists of 'protected' species that can not be hunted or used at all. Rules regarding trade of common or 'managed' species are less clear (WCS 2004). Previously, under the 2001 decree (MAF Decree 0524), hunting common wildlife for subsistence was permitted, but hunting wildlife for trade was not. When the law was revised in 2003, the article relating to wildlife trade was omitted, such that at present only protected species are still legally banned from trade. In practice, however, authorities have varying interpretations of the law, and implementation is thus dependent on the place and context. For example, officials often do not regard use of small amounts of wildlife for consumption as a serious offence, and indeed themselves regularly consume common types of wildlife purchased at markets and restaurants.

In most cases, awareness of the 2003 revision is lacking. Hence, the common interpretation is that hunting common species for subsistence use is considered acceptable though trade is not. Stricter interpretations of government policy are also apparent, though these may not necessarily coincide with current laws. For instance, PAFO officials report that they do *"awareness raising"* in villages during the Buddhist Lent (September) and *"…tell villagers that hunting is not allowed…"* [57] Some of the same officials also purchase wildlife for their own consumption, yet some villagers reported that all wildlife hunting is illegal and they can not even hunt common species like squirrels to eat (Box 15).

Box 15: Official practice and villagers' interpretations.

In early 2006, two villagers from Ban Sompoy were caught by Khmer authorities hunting wildlife on the Cambodian side of the Xe Kong. They were each fined USD90. In mid-2006 Lao police stationed at the Lao-Cambodian border checkpoint chased three wild boars as they swam from the Lao side of the Xe Kong across to Cambodia. They were able to shoot one and brought it back to the Lao side to eat. One local comparison of these situations would suggest that villagers are not allowed to hunt with guns on the opposite riverbank but police are.

However, trade in high-value wildlife or in very large quantities is a situation more people, officials and villagers, would generally consider 'illegal'. Thus, the market manager of the main market in Attapeu PC reported that wildlife is not sold in any of the permanent market stalls that comprise the market proper, but only in the open-air temporary stalls next to the bridge. Bans regarding wildlife trade in markets are enforced less frequently when the trade is seen as being a small amount for local consumption.

Villagers, officials and traders usually reported that there has been increased enforcement of rules regarding wildlife trade, and there is widespread awareness of wildlife trade being illegal. Activities included regularly checking vehicles at checkpoints, gun collections[58] and stricter rules and

[57] While hunting is legally prohibited in the 'breeding season' (1 May - 31 October), villagers' understanding from awareness raising efforts is often that all hunting is illegal.

[58] Government officials and villagers also noted that some people make their own guns.

penalties. One large-scale trader in Sanamxay DC reported that previously more people had guns, but now there is less hunting with guns because officials have conducted gun collections and have also levied fines (see Box 3). However, it was suggested that large-scale traders of wildlife are still known to government officials,[59] and that government officials contribute to local market demand, which would undermine the weight of legal instruments for controlling wildlife trade. Others reported that when people are caught trading wildlife usually they are not fined by police; instead, the animals are simply confiscated and released (if alive). However, the stringency of rules for high-value wildlife is noteworthy, since these are often the species of greater conservation concern.

4.6. NTFPs

4.6.1. OVERVIEW

A wide diversity of NTFPs are of importance to rural livelihoods in southern Lao PDR, being collected for food, medicines, construction of houses, making implements (e.g. baskets, fish traps) as well as being exchanged and sold (Clendon 2001; Krahn 2005; Vantomme *et al.* 2002). A total of 24 plant forms[60] was recorded in markets in Attapeu during the first survey (see Appendix 10). From a provincial trade perspective, NTFPs are considered one of the most important types of natural resources in Attapeu, more important for the provincial economy than fish. The PFO reported that the most important include damar resin *(kisii)*, Malva nuts *(mak jong)*, Vomica nuts *(mak saeng [61])* and valuable types of bamboo culms *(mai bong)* and rattan canes *(wai tun)*. These are the NTFPs for which companies must obtain a quota from government authorities in order to trade (Vantomme *et al.* 2002). Other NTFPs, such as honey and other resins *(nam man yang, khii khwang[62])*, are also collected and traded without a quota, but these are less common and not considered as important for the provincial economy.

All districts in Attapeu aside from Samakhixay were considered to be important as sources of NTFPs, though different types of NTFPs are found in different areas. For instance, Phou Vong District reportedly has the most NTFPs overall, while Sanamxay District has relatively high amounts of Vomica nuts and bong bark and less *kisii*. Sanamxay DFO provided information on NTFP trade in the district and the companies currently involved (Table 9). It must be noted that village-level patterns of trade in NTFPs can be considerably different, as many NTFPs are traded without a quota, especially those which are traded in smaller quantities and are not transported through district or provincial centres.

In some cases, emerging markets may have yet to reach the demonstration site. Thus, since 2004 trade in Berberine vine *(khua haem)* has become important for Sanamxay District because of the establishment of companies near Sanamxay DC that buy the plant and do basic processing (i.e. chopping and sun-drying) before sending it to Viet Nam. This trade does not currently involve villages in the demonstration site, though it may signal the possibilities for further expansion of NTFP trade.

Most of the NTFPs traded in Sanamxay District are collected in the dry season, because of both seasonality (e.g. Vomica nuts ripen around February-March) and villagers' time availability from rice production (see Appendix 13). Often people at camps near Ban Mai reported that they were not able to collect NTFPs in 2006. When their paddy fields were flooded, they had to do spend more time planting swidden fields, and this kept them occupied in the dry season.

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[59] The survey teams were introduced to one large-scale fish and wildlife trader by PAFO officials who requested that we did not ask about any endangered wildlife, as this could scare the trader. Similarly, village traders in the demonstration site who were involved in wildlife trade are often known to government authorities.

[60] Plant products were recorded as 'forms' rather than species, because it was unknown whether seeds, leaves and other plant products on display were from the same or different species.

[61] A higher quality form called *mak saeng bua* receives higher prices but is less abundant.

[62] This is similar to damar but less common and in Cambodia reported to be higher quality. Damar and *khii khwang* are also called 'hard resins,' in contrast to the liquid oleoresin or 'soft resin' called yang oil *(nam man yang)* (Tola & McKenney 2003).

Table 9: Large-scale NTFP trade in Sanamxay District operating with a government quota (Source: Sanamxay DFO).

Lao name	English name	Scientific name	Licensee	Quota 2005-06	2003 buying price (USD/kg)	2006 buying price (USD/kg)	Comments April 2006
khua haem	Berberine vine	*Coscinium usitatum*	4 Vietnamese companies	80T	0.01	0.02	Each company had a 20T quota. One company exceeded the quota (collected 60T), was fined USD1,200. Sourced from villages near Sanamxay DC.
kisii	Damar resin	*Parashorea* spp.	Trader in Saysetha District	5T	0.10	0.10	Collected 9.4T damar resin and 47.5T of Vomica nuts. No report of any fine. Malva nuts trees mast, producing fruit only once every three years, and thus malva nuts were not available in 2005-06.
mak saeng	Vomica nuts	*Strychnos nux-vomica*		15T	0.10	0.20	
mak jong	Malva nuts	*Scaphium macropodium*		-	0.40	0.80	
puak bong	Bong bark	*Notaphoebe umbelliflora*	Lao company	30T	-	0.05	Only collected 6T.

In the demonstration site, collection of NTFPs was often associated with fishing and the collection of wildlife. For instance, at a camp along the Xe Pian, many villagers from Ban Hat Oudomxay were collecting yang oil and *het phor* mushrooms for trade and watersnails to eat, while some young men were hunting monitor lizards with dogs. While wildlife collection was often opportunistic, different NTFPs were associated with different seasons and areas, so the focus of collection shifts accordingly in different months and geographic locations.

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Yang oil tapping at a camp on the Xe Kong River

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Vomica nuts at Ban Hat Oudomxay

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Bong bark at Ban Hat Oudomxay

4.6.2. TRADE PATTERNS FOR NTFPs

(i) Types of NTFPs

A variety of NTFPs are important for the trade in the demonstration site. The most important are Vomica nuts *(mak saeng)*, yang oil *(nam man yang)* and damar resin *(kisii)* (Table 10). In surveyed villages on the Xe Pian (Ban Phonseath, Ban Mai), Vomica nuts were considered the most important NTFP for trade, while villages on the Xe Kong (Ban Sompoy, Ban Hat Oudomxay) considered yang oil the most important. This pattern is an outcome of both availability and localized market demand, as yang oil is bought by Khmer traders along the Xe Kong and downstream Xe Pian (Box 16). Villagers in upstream Xe Pian (e.g. Ban Mai) did not trade yang oil simply because *"there are no buyers."* At the time of the second field study, an interesting situation also arose with a large

Box 16: Khmer traders

Khmer fishers and fish traders often come to sell fish to Lao traders near the Lao-Cambodian border. People from Stung Treng province in Cambodia often speak Lao as well as Khmer, making it possible for some Khmer fishers to branch out into trading other natural resources. For example, one Khmer couple brought fish from Cambodia to sell to a large-scale Lao trader and then bought yang oil from villages along downstream Xe Pian to sell in Stung Treng. Three refineries have opened in Stung Treng PC in recent years, and much of the yang oil is sent on to Viet Nam to be used as a boat sealant and varnish (Singh *et al.* 2006). The Khmer traders also bought *het phor* mushrooms to sell at Ban Khii Nak in Champassak province.

amount of collection and trade in an edible ground-mushroom, *het phor,* which has strong demand from Thailand (Box 17). The case of *het phor* mushrooms demonstrates the responsiveness of villagers to international market demand.

Table 10: NTFPs trade in the demonstration site.

Lao name	English name	Scientific name	Quota	Collection	Sale price and destination	Transport
kisii	Damar resin	*Parashorea* spp.	Yes	Ban Sompoy, Ban Hat Oudomxay, less available in Ban Phonseath.	USD0.80-1.80/kg Viet Nam	Village traders purchase from villagers, and then the large-scale Lao trader uses a private vehicle to collect from villages and transport to a residence in Saysetha District. From there, the resin is transported by road (Route 18B) to Viet Nam.
mak saeng	Vomica nuts	*Strychnos nux-vomica*	Yes	Ban Sompoy, Ban Hat Oudomxay, Ban Phonseath, Ban Mai.	USD0.30-2.50/kg Viet Nam	Transport as above. Villagers near Lao-Cambodian border used to sell to Khmer traders or the Lao trader, but now the Lao trader is the sole buyer, as quotas are more strictly enforced.
puak bong	Bong bark	*Notaphoebe umbelliflora*	Yes	Ban Hat Oudomxay	USD0.05/kg Viet Nam and Thailand	Village trader from another village on Xe Pian collects using his own vehicle.
het phor	Edible mush-room	*Astraeus hygrometricus*	No	Villagers from Xe Kong, Xe Pian and Xe Khamphor collecting at camps along the Xe Pian.	USD0.60-3.00/kg Thailand	Trade expanded rapidly in 2006. Villager traders buy at camps and villages along the Xe Pian. Drive own motorbikes to Pakse.
nam man yang	Yang oil	*Dipterocarpus* spp. (mainly *D. alatus*)	No	Ban Sompoy, Ban Hat Oudomxay.	USD0.27-0.50/L Cambodia	Khmer fish traders travel with own motorboat. Bring fish from Cambodia to sell to large-scale Lao trader, then buy resin to sell to refineries in Stung Treng PC. Also buy *het phor*.

Other NTFPs that are used for local consumption (food and construction) in the demonstration site, such as bamboo shoots, other edible mushrooms *(het la ngo)*, edible flowers *(dok kha jia)*, broom grass *(nyaa khaa)* and small rattans, may also be sold opportunistically to other villagers and passing traders. The sale prices of these items are generally low. However, one exception is honey, which has a relatively high price (USD1/L) but is only available in very small quantities and is usually consumed locally. Often villagers specifically refer to local trade in low-value items as not being sale or trade but rather being "*barter trade*" *(lek pian kan)*. When demand for NTFPs is high but fluctuating, as observed in trade of *het phor* mushrooms, then sellers often sell to family and friends over strangers. This apparently reduces the likelihood of villagers being tricked into selling their products for lower than the current market price.

(ii) Trade routes for NTFPs

At a provincial level NTFPs from Attapeu are primarily destined for Viet Nam and to a lesser extent for Thailand. As the PFO noted of NTFPs, *"…valuable resources are sent to foreign countries,"* this comprising about 80% of the NTFP trade by their estimate. Trade routes for NTFPs sourced from the demonstration site are dependent on the final market destination as well the type of NTFP. Those collected by a quota system tend to go by road to Viet Nam (Route 18B), whereas those collected without a quota are sent to Viet Nam, Thailand (via Route 18A) or Cambodia (by motorboat via the Xe Kong).

For most NTFPs, it appears that large-scale traders who have a company quota go to villages to advertise that they wish to purchase a particular resource. They establish a trading relationship with one collector who will then act as a village-trader and gather that NTFP from all other villagers

Box 17: International mushrooms.

Het phor mushrooms (photo right) have long been collected by villagers for food, but it was only around 2000 that market demand reached the demonstration site in Attapeu. These seasonal ground mushrooms have high market demand from Thailand in May. The mushrooms continue to be available through June-July, but by then the market is flooded, and they are cheaper to source from elsewhere.

Sometimes the price offered for *het phor* was not much higher than that offered for other edible mushrooms, but *het phor* were still distinguished by strong market demand – traders wanted to buy large quantities, and they were coming to the Xe Pian river specifically to buy this mushroom. One trader from Pakse bought 200kg/day from camps along the Xe Pian, taking these by motorbike back to Pakse via Route 18A. Some local fish traders even switched to mushroom trade, just as fishers at camps stopped fishing and started collecting *het phor*.

2006 was the first year that the price for these mushrooms reached up to 2USD/kg at villages and camps along the Xe Pian (see Bezuijen *et al.* in prep.). Apparently in previous years *het phor* was sourced in large amounts from neighbouring areas of Cambodia and sent via Veun Kham to Pakse. In 2005 many of the mushrooms were not bought by Lao traders at Veun Kham, as the Thai market was flooded. Khmer traders lost a lot of money when they could not sell the mushrooms, so they did not trade them much in 2006 (Singh *et al.* 2006). Hence, this 'new' market demand in Attapeu was due to traders in Pakse looking for alternative suppliers.

Het phor mushrooms are often traded opportunistically by village traders who trade fish. This is because both are sold to same traders in Pakse who trade to Thailand. *Het phor* are, however, associated with rapid price fluctuations. Thus, village traders involved in this trade were those who had contacts in Pakse or Attapeu PC, often using their mobile phones to find out the prices in distant markets. When the prices were high, village traders would go to villages and offer high prices for the mushroom, thus stimulating trade such that many villagers from nearby started collecting in camps.

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Edible ground mushrooms (het phor) at a camp on the Xe Pian River

in their own and nearby villages. As such, the trader can then more easily collect the NTFP from one location at a time when there is a sufficient quantity to justify the transportation costs. This system is comparable to trading relationships established for fish and wildlife (see Box 14); however, NTFP trade is more visible because of the larger trade volumes[63] as compared to fish and wildlife. Therefore, quotas are more common, and usually large-scale traders have their own private vehicle that goes to villages to collect from their agents. For NTFPs traded from the demonstration site without a quota, usually traders go to villages and camps looking to buy. Thus, village traders who buy *het phor* mushrooms travel along the Xe Pian river in months when the price is high, while Khmer traders who buy yang oil travel along downstream Xe Kong and Xe Pian buying from villages and at camps.

Often NTFP traders are different people to those who trade fish and wildlife. This is particularly apparent for large-scale traders, as they often require quotas for NTFPs but not for fish and wildlife. Thus, none of the three large-scale fish/wildlife traders interviewed in the field study traded NTFPs. At a village level, however, the distinction is less clear. Ten of the 13 (77%) village fish traders interviewed also traded some NTFPs, either regularly or opportunistically. Often trade is dependent on the different trading relationships that develop between village traders and large-scale traders. For instance, the majority of the village traders in Ban Mai sell fish to a trader in Sanamxay DC and sell NTFPs that have a quota to another trader in Saysetha District. Loans between traders and collectors were not reported in the case of NTFPs.

(iii) Trends over time for NTFP trade

Market demand for NTFPs from the demonstration site is high. Provincial authorities noted that there has been increased collection, trade and export for all types of NTFPs from Attapeu in the last three to five years (see Vantomme *et al.* 2002). This was attributed to improvements in transport and the electricity supply. The number of companies trading NTFPs has not increased much over time, with six businesses reported by provincial authorities; however, trade volumes have increased significantly. The Sanamxay DFO reported, *"…all NTFPs are being sold more…in the last three years there has been a 30% increase."* The DFO also reported that most NTFPs, with the exception of damar resin, had doubled in price between 2003-06 (see Table 5).

[63] This is particularly for NTFPs that have a relatively low price.

This recent increase in trade in NTFPs was also reported from villages in the demonstration site. Some NTFP traders specifically related this increase to increased road access. While some NTFPs like Vomica nuts had been sold for many years, others were new to trade. Villagers in Ban Hat Oudomxay said that they only started collecting yang oil for trade in 2004, as there were no buyers before then. Yang oil had previously been collected for local use only, often used with damar resin for sealing of boats. Now yang oil was considered the most important NTFP for trade in the village, as about 40% of households collect it. Similarly, *het phor* mushrooms had been collected by most villagers for their own consumption in the past; it was only in recent years that these mushrooms have been collected for trade. There were also reported increases in the number of villagers trading NTFPs, though the number of large-scale traders had not changed significantly.

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Making flammable torches using yang oil at Ban Hat Oudomxay

In some villages and camps, particularly those along the upstream Xe Pian, people expressed concerns over declines in NTFPs because of trade. For instance, villagers from Ban Mai at a camp along the upstream Xe Pian said that the availability of NTFPs had declined over time because many people now collect them. Yet other villages along the Xe Kong (e.g. Ban Hat Oudomxay) considered NTFPs to be stable and not declining in abundance. This suggests that there may be localised declines, reflecting different patterns of collection and trade. In any case, declines in NTFPs are not as noted by villagers as being as extreme as declines in fish and wildlife. However, villagers and traders did comment on the importance of protecting forests to ensure a continued supply of NTFPs. Observing that after 2003 a lot of forest was cut in Attapeu because of the improved road access, one large-scale NTFP trader cautioned, *"[w]e need to protect forest to have NTFPs."*

Another trend has been the contraction of the market for some NTFPs as the quota system has become more stringent. In the past, there were a number of traders to whom villagers could sell certain NTFPs (Damar resin, Vomica nuts, Malva nuts), but now there is only one-large scale trader who has a quota for these products.[64] This monopolised system does sometimes disadvantage villagers. For instance, this trader only buys NTFPs if weighed using the trader's own scale, something that village traders are understandably wary of. Also, unknown to villagers, prices varied between villages and camps, even when people were selling the same NTFP to the same buyer.

4.6.3. REGULATIONS FOR NTFP TRADE

Management of NTFPs, like wildlife, falls under the jurisdiction of MAF. Formal permission for trade in NTFPs primarily relates to the issue of export quotas (Vantomme *et al.* 2002). Some rare and valuable NTFPs, like Agarwood (*mai ketsana, Aquilaria* spp.), are prohibited for exploitation and trade; hence these cannot receive export quotas. Only large-scale traders who regularly export large amounts of NTFPs require official quotas. People trading NTFPs locally, such as village traders who buy from collectors to sell to large-scale traders, do not require a quota. Export of NTFPs requires permission from various levels within a single government agency in a rather complex system (Box 18). For instance, people who trade NTFPs out of a district require permits from DAFO, and those exporting NTFPs from the province require permission from PAFO, while those exporting from Lao PDR require permits from DoF.

[64] This market contraction is also due to changes in the rules for the Lao-Cambodian border. Until a few years ago, Khmer traders would travel up the Xe Kong to buy NTFPs like Vomica nuts from villages.

There are also issues of inter-agency cooperation, as forestry (MAF/DoF/PAFO/DAFO) has responsibility for monitoring compliance with forestry laws, finance (MoF/PFO/DFO) has responsibility for the collection of taxes, and the police have responsibility for enforcement. In addition to the 'tax' *(khaa phasii)* paid to the PFO, there are 'resource fees' *(khaa sapanyaakorn)* that must be paid to PAFO. While police have no official role in the issuance of NTFP quotas, they staff the district, provincial and international checkpoints that monitor all products which are being traded.[65] Quota amounts are based on the previous years' quotas, as well as the availability of and demand for the NTFP. When there is high availability and demand, then quotas are usually increased. Most companies receiving quotas for NTFP export are Lao, but some are Vietnamese.

Box 18: General procedure for provincial NTFP export quotas.

1. Company licensed by MoC.
2. Annual nation-wide quota allocated to company by DoF (Vientiane).
3. Annual provincial quota allocated to company by PAFO.
4. Districts for collection allocated by PAFO.
5. DAFO monitors collection at the village-level.
6. DFO collects tax.
7. Company shows records to PAFO.
8. PAFO gives transport licence.
9. Pay tax to PFO.
10. CPTC may check licence.
11. Police check documents when passing district/provincial checkpoints.

In general, practice in NTFP trade roughly follows the official procedure outlined above. For instance, companies greatly exceeding quotas or exporting without all levels of permission are sometimes penalised (Box 19). Police at the checkpoint along the road linking Attapeu PC and Sanamxay DC do check much of the passing traffic with a view to regulating trade in natural resources. However, quotas are still exceeded, fines are erratically collected, and informal 'taxes' are collected at all levels and by various agencies that have no legal basis for collecting fees.

Box 19: Bong bark enforcement

In March 2006, a Lao company started collecting bong bark (*puak bong*) in Attapeu. The bark was sent to Pakse for sale to Thailand. This company had a quota from Vientiane but did not receive permissions at a provincial level. In May 2006, three trucks, with about 4T of bong bark, were confiscated by Attapeu PAFO working with police, reportedly for not paying tax. Residents of Attapeu PC noted, *"...they stole a lot,"* whereas other large-scale traders *"only stole a little, like if they have 21T then say have 20T."*

People - officials and villagers alike - are aware that quotas for NTFPs are being exceeded, yet they are sometimes unaware of the extent of the excess. For instance, a villager trader in Ban Phonseath who sold Vomica nuts to a large-scale trader said he thought the trader had a quota for 100T based on the rate of collection from surrounding villages. A DAFO official then noted that this trader only had a quota for 30T; in fact the official figure quoted by the DFO was actually only 15T (see Appendix 13).

A comparison of information from different sources also indicates that trade prices reported by district officials (see Table 5) and those reported by villagers in the demonstration site (see Table 6) can be quite different. While all the NTFPs reported as most important by Sanamxay DFO had an average sale price of USD0.25/kg, the NTFPs that villagers reported to be most important had an average sale price of about USD1/kg. Official sale prices for some NTFPs (e.g. Damar resin, Vomica nuts) are considerable underestimates of prices reported by villagers in the demonstration site. When trade volumes and prices are underestimated, this is a potential cause for concern for both lost national revenue and sustainability. In addition, as noted earlier, quotas issued to only a single trader create a monopoly, which disadvantages villagers, as the lack of market competition limits' villagers' basis for negotiating trade conditions. Yet district officials noted that problems with over-harvesting of bong bark (see Box 19) was partly a result of there being more than one company with a quota, so it was more difficult for authorities to monitor and regulate the trade. Thus, the quota system does have benefits despite its flaws in current practice.

[65] Forestry officials noted that without the cooperation of police often they would be unable to enforce regulations.

Sanamxay DAFO enforces rules about specific NTFPs that are important for trade. For instance, since 1996, there has existed a district-wide rule that cutting mature trees of Malva nuts and Vomica nuts is prohibited, and offenders are to be fined. While compliance has been variable,[66] this shows the recognised importance of NTFP trade for Sanamxay District. Traditional user rights for NTFPs such as resin, wild fruit and honey are allowed without formal permission. At a village level, collection of most NTFPs is open to any villager. For instance, Vomica trees are said not to be owned by any individual but can be used by anyone; even people from other villages can collect without requesting permission.

Rules do, however, stipulate how NTFPs are to be collected. Vomica nuts, for example, are meant to be collected only once they have ripened and fallen from the trees. Some villagers noted that these rules are not always followed and that more assistance is needed with enforcement. For instance, in Ban Sompoy villagers said, *"[s]ome people collect Vomica nuts when they have not [yet] fallen from the tree…it is difficult to stop, because we are all from the same village; the headman can not stop it…he reports to the district."* Villagers also reported that rules for Vomica nuts were followed more in Ban Phonseath, where the MWBP has been working.[67] This indicates the need for government authorities and projects to provide additional support to villagers in regulation and enforcement (Box 20).

Box 20: Market information.

Often villagers in the demonstration site had only limited access to information about markets for the natural resources that they were selling. For instance, few villagers made salted fish to sell, often saying that they did not know the higher value of these compared to fermented fish. Even the fish species that receive high prices were not always known, and NTFPs were often sold at varying prices to the same trader.

As one villager said *"[i]t is difficult when we do not know the price…we do not know the market…"* and *"we are worried we would not be able to sell."* One DAFO official exclaimed, *"villagers should all talk together, tell each other prices…if you do not talk together then it will not help!"* Thus, villagers' success in market participation is also dependent on access to information about products and prices.

[66] Villagers from Ban Sompoy and Ban Hat Oudomxay said they had these rules for only two to three years.

[67] A Vomica nut trader in Ban Phonseath explained that the rules about cutting trees became much stricter in 2006, with fines up USD150 because of MWBP activities. As a result, no one has broken the rules.

5. CONCLUSIONS

5.1. BIODIVERSITY CONSERVATION

Table 12 provides a summary of the natural resources observed in trade in Attapeu Province and those reportedly traded by villages in the demonstration site. When results of market observations and villagers' reports are combined, a total of 17 globally threatened species on the IUCN Red List (IUCN 2006) and 23 CITES-listed species were identified as being traded.

While the fish and reptiles were primarily used for consumption as food, the mammals and birds were also traded for ornamental and medicinal purposes (see Appendices 4, 10 and 12). For many of these animals, over-harvesting driven by trade represents their single greatest threat. This is particularly apparent for turtles (Stuart *et al.* 2001). The widespread decline of pangolins as a result of over-harvesting for trade in recent years could be a pattern easily repeated for other species, as demand for wildlife in Viet Nam, China and Thailand filters nearly unimpeded across national borders (World Bank 2005). For example, the CITES-listed species of fish reported in trade was a high-value species usually targeted for trade to distant markets (e.g. Thailand). Although over-fishing may not seem to be a major threat when one considers total fish catch, it may be an issue in key sites and for particular species (e.g. *Probarbus jullieni*; see Baird 1994).

As discussed in previous sections, national regulation of fish and wildlife trade is impaired by the use of protected species lists which are not always congruent with threat status in Lao PDR, as well as the lack of procedures to allow refinement of these lists (WCS 2004; Nash 1997). Lao PDR only became a member of CITES in 2004, and the country is thus still in the process of establishing procedures and authorities for the implementation of CITES (WCS 2004). In Attapeu, people reported that regulations concerning various aspects of natural resource management (e.g. declaring particular fishing methods illegal, controlling trade in wildlife, enforcing NTFP trade quotas) had all become stricter in recent years.

Table 12: Summary of natural resources traded in Attapeu (September-October 2005).

Natural resource type	Number of species/forms	
	Observed in Attapeu Province*	Reported by villagers in the demonstration site**
Mammals	12	22
Birds	17	15
Reptiles	7	21
Amphibians	1	-
Freshwater fishes	25	-
Invertebrates	6	-
Plant species/forms	24	-
Total species/forms	**92**	**-**
Globally-threatened species (IUCN Red List)	**16**	**10**
CITES-listed species	**22**	**25**

* See Appendix 4.
** See Appendix 10.

5.2. LIVELIHOODS

Overall, animals were recognized as more important than plants for villagers' livelihoods in the Attapeu demonstration site through exchange and income generation, with fish unanimously considered the most important natural resource for trade as well as subsistence. When fish were excluded, however, villagers considered trade in NTFPs more important than trade in wildlife. This was partly because of declines in many wildlife species due to unsustainable levels of harvesting, which have made wildlife trade less reliable. Depletion of high-value wildlife has shifted the overall emphasis to more common species for the majority of villagers. This pattern also reflects the fact that wildlife trade

has been long-established, whereas some of the NTFPs that are most important for trade in the demonstration site have only recently emerged as trade items. Despite commonly reported declines in various natural resources, trade is still increasing in the demonstration site.

Broad generalisations can be drawn regarding types of natural resources that are being traded in Attapeu (Table 11). While natural resources with low market values (such as small fish, bamboo shoots, some edible mushrooms, and water snails) are traded, as observed in Attapeu PC markets, factors such as low prices, distance to markets and transportation costs means these do not form a significant trade item for villagers in the demonstration site - though these resources may still be very important for daily subsistence[68] and/or regularly traded in nearby urban markets.

At the opposite extreme are resources like very large fish and pangolins. While of very-high value, these resources are also quite rare; as such, they are collected so infrequently that villagers do not usually consider them as significant to their everyday livelihoods. If such very-high value resources are collected, however, villagers clearly note they would always choose to sell rather than consume them.

Table 11: Generalised resource types.

	Low-value ←		→ **High-value**
Abundance	Common	**Important resources for the local economy**	Very rare
Collection	Everyday		Very infrequent
Use	Consume		Sell
Price	Lower		Higher
Destination	Local		Distant
Conservation concern	Lower		Higher

In between these two extremes lie the items that villagers most commonly identify as important for the local economy. These include medium-value fish (e.g. *Hemibagrus* spp., *Kryptopterus* spp., *Micronema* spp., *Bagarius* spp.), NTFPs (e.g. yang oil, Vomica nuts, *het phor* mushrooms) and the most commonly traded wildlife (e.g. monitor lizards, turtles). These medium-value resources have both reliable availability and regular market demand, ensuring that they are a regular object of exchange for villagers in the demonstration site. While other natural resources, both low and high-value, may be sold to traders at the same time, it is the trade in these medium-value products that most strongly influences villagers' overall livelihood strategies.

This represents a generalisation of a complex situation, as a single type of resource can move along this continuum depending upon various ecological, economic and social factors. Yet this typology highlights a space where efforts to integrate both sustainable use and biodiversity conservation may be best achieved. It is important to note that, as the market economy expands and more natural resources are traded, villagers' livelihoods will be affected not only by increasing income in the short-term but also by long-term impacts on the availability of natural resources critical for meeting subsistence household needs.

Another issue that arose during the survey was that villagers from the demonstration site usually do not go to the market to sell the natural resources that they have collected, due to issues such as the distance and cost of transportation. Instead, it is village traders who often (though not always) act as agents for large-scale traders based in local urban centres. Village traders in the demonstration site were mostly found to be wealthier villagers who have access to the capital required for transportation and equipment. One effect of this arrangement is that poorer villagers frequently lack access to good market information about prices, alternate buyers, basic processing and value-adding opportunities. In some cases, village traders too were found to have poor market information.

[68] For instance, villagers in Ban Hat Oudomxay reported that small fish (*pa soi*) and bamboo shoots were the most important natural resources for their livelihoods, as these are the things they eat every day.

5.3. GENDER

The majority of traders in natural resources in the demonstration site are men, or husbands and wives working together. The few exceptions are female traders who rarely travel to villages and camps; instead villagers bring them natural resources to sell. In contrast, large-scale traders in Sanamxay DC, Attapeu PC and Saysetha District are frequently women, and local urban markets are also dominated by women. A similar contrast was seen at camps, where families from other districts highly involved in fishing and fish trade (i.e. without household rice production) were often husbands and wives fishing and trading together, whereas local villagers' fishing activities were dominated by men.[69]

In other words, people more highly involved in trade were observed to practice less gender demarcation in their livelihood activities. Furthermore, women's involvement in wildlife trade in Attapeu is said to have increased, possibly because enforcement may be less stringent for women than men. As villages in the demonstration site become more engaged with trade, therefore, it is possible that gender roles relating to the collection and trade of different types of natural resources may shift over time, and thus the current urban pattern of women being more highly involved in trade of natural resources may also become more common in villages.

5.4. URBAN AND RURAL DEVELOPMENT

Recent developments in Attapeu province, notably improved transportation, electricity supply and market access, appear to have had significant effects on trade in natural resources in the demonstration site. In addition, there are other major developments underway that will potentially impact on trade patterns. For instance, the construction of major international roads is ongoing, with Route 18B having only just been completed. In addition, there is ongoing logging and a plan to establish 20,000 hectares of plantation rubber on degraded forestland starting in 2007; it will also improve access through road networks and likely increase the penetration of market demand, while reducing the availability of wild resources. Surveys for rubber plantations were being conducted in Sanamxay District in 2006 near the demonstration site.

Villagers in the demonstration site express desires for some of these changes, such as improved road access. However, there are also concerns about how existing management systems can be adapted to meet such rapid changes, particularly the growth in market demand for particular species. For example, Yang oil is known to have traditional rules governing its use in Lao PDR and neighbouring countries. It is important for livelihoods in villages along the Xe Kong River, and a lengthy time is required for replacement if trees are cut in the process of harvesting. Demand from refineries in Cambodia is increasing, and logging in Attapeu has expanded. However, there are further concerns that recently-improved road access from Attapeu to Viet Nam (Route 18B) may provide opportunities for the establishment of refineries in Attapeu, given that Viet Nam is the main market for Yang oil traded through Cambodia. As such, it is clear that there is a need to further consider how the traditional management system can be formally reinforced in order to respond to such challenges.

5.5. GOVERNMENT COORDINATION AND AWARENESS

The recent establishment of a road checkpoint in Sanamxay District signifies a formal commitment by government forestry and police officials to cooperate in regulating natural resource flows in the area. However, overall efforts remain fragmented, both within and between agencies. For example, fish trade seems to be less regulated than trade in wildlife and NTFPs, with no reports of formal cooperation between PLF and police. For all natural resources - fish, NTFPs and wildlife - there appear to be limited formal linkages between the finance offices responsible for collecting taxes and the relevant ministries.

[69] This observation was made with respect to fishing using nets. Women do fish using other methods, but generally their catch is not intended for trade purposes.

Officials charged with the management of protected wildlife species seem generally familiar with the relevant national regulations. Those responsible for management of capture fisheries, on the other hand, are not consistently familiar with relevant laws relating to protected species and fish trade. Furthermore, very few government officials in any agency are familiar with Lao PDR's obligations under CITES.

5.6. TRADE ROUTES

Natural resources that are traded from the demonstration site are directed to local urban markets, Sanamxay DC and Attapeu PC or directly to Pakse, and from there are either consumed or sent on to distant markets in Phnom Penh, Thailand (via Lao PDR) or Viet Nam. The typical trade routes vary among the broad types of resources - fish, wildlife and NTFPs - though there is also overlap due to limited transport options and the tendency to 'piggyback' some lower value products with higher value ones. Figure 8 below summarises the information on trade routes provided in earlier sections (see sections 4.4.2., 4.5.2. and 4.6.2.).

Figure 8: Common trade flows reported for different types of natural resources from Attapeu.

6. RECOMMENDATIONS

6.1. OVERALL APPROACH

Trade in natural resources in the demonstration site has emerged as an outcome of a complex set of interactions among ecological, economic and social factors. Thus, all these dimensions need to be considered in the development of specific management interventions.

6.2. RESOURCE EXTRACTION BY OUTSIDERS

A key approach to integrating sustainable use of natural resources and biodiversity conservation would be to ensure resource security by protecting the legally or *de facto* recognised rights of local users (e.g. with respect to traditional fishing areas, customary rules regulating the collection of Vomica nuts, villagers' hunting non-protected wildlife species for subsistence use). Villagers are more likely to receive the benefits of regulated use and locally enforce sustainable use if they have long-term security. Major related issues include:

(i) Camps: Current regulations and policies regarding the establishment of temporary or semi-permanent camps along rivers in the demonstration site are insufficient for effective natural resource management. Although conflict within or among camps and/or villages was not reported during this field study, the potential will likely increase as extraction of natural resources by outsiders and overall pressure on the area increases due to improved transportation networks and the implementation of provincial development plans (e.g. industrial plantations, expansion of NTFP trade)

Concurrent with a review of management systems related to these camps, there is also a need to establish systems to improve data available regarding the camps. For example, surveys conducted during this field study indicated that the number of camps is comparable to previous years; however, the majority of families reported that they had only started to reside at the camps within the last five years. Further research, therefore, is required to document trends in the demography of camp populations over time and to assess the impact of these camps on natural resource sustainability. Such information could not only provide a useful baseline but would also help to guide future management interventions.

(ii) Checkpoints: Officials are a visible presence in the region, stationed in the demonstration site and along the Lao-Cambodian border. However, the varied levels of awareness among officials in different locations create challenges the overall effectiveness of such efforts. The ways in which these officials both use (e.g. for their own consumption) and manage natural resources (e.g. by determining how fines are levied and whether quotas are enforced) represent an important means by which local villagers and others (e.g. fishers from Sanamxay DC, Khmer traders) come to understand government regulations in everyday practice. The results of such constraints are relatively uneven levels of enforcement and practices which sometimes diverge from official policy.

6.3. INTER-AGENCY COORDINATION AND AWARENESS

There is a need for greater coordination and cooperation among the various government agencies responsible for natural resource management and enforcement of regulations. For example, since wildlife and fish are frequently traded along the same transport routes, opportunities exist to increase synergies among agencies by insuring that both forestry and fisheries officials are aware of relevant regulations concerning trade in wild animals, NTFPs and fish.

Initial efforts might include a training workshop involving representatives from relevant agencies at provincial and district levels, as a forum to promote cooperation and information-sharing among agencies with overlapping jurisdictions for managing trade in natural resources, while helping to insure that interventions implemented at the province, district and village level are supported by consistent implementation across the various agencies. Any training should incorporate both relevant national and international regulatory frameworks.

Given that many officials (e.g. police, army) who play a role in managing natural resources have little training related to species identification, illustrated guides of protected species (including photographs with both scientific and local names) could be produced and distributed to government officials, in order to improve capabilities with regard to identifying protected species in trade.

6.4. LOCAL AWARENESS AND ENFORCEMENT EFFORTS

Current local perceptions of the legal framework are often that biodiversity conservation is a detriment to local livelihoods. For example, villagers in the demonstration site sometimes reported that all hunting of wildlife, even that of non-protected species for subsistence use, was prohibited.

Efforts are needed to increase the awareness among villagers of the legal frameworks regarding natural resources, distinguishing between protected and non-protected species and including both trade and subsistence use. This should be reinforced by the clear and consistent implementation of relevant national and international legislation at a local level.

During the survey, villagers frequently articulated concerns regarding declines in the availability of particular natural resources and the impact of unchecked access by outsiders to harvesting areas. Awareness-raising activities should expressly identify the ways national and international regulatory efforts respond to the concerns voiced by local communities, in order to encourage broader participation and support.

6.5. OFFICIAL DILIGENCE

Although legal frameworks exist for the protection of wildlife, the use of wildlife as food and ornamentation remains widespread in Sanamxay DC and Attapeu PC. Government officials are sometimes among those implicated in these practices and in the use of damaging harvesting methods, which creates difficulties for attempts to assert the legal basis for the protection of wildlife in the region. Enforcement is further complicated by social networks which often result in traders (e.g market sellers, restaurant owners) being closely known by those officials charged with enforcement efforts, thus creating challenging conflicts of interest between personal and professional obligations within these relatively-small communities.

Both awareness-raising and capacity building are needed. In general, government officials, like others, often appear to have limited awareness of the implications of their actions and of the relevant legal frameworks for trade in natural resources. For example, accounts from villagers often suggested that official perceptions of wildlife trade significantly underestimated trade volumes.

6.6. NTFPs MANAGEMENT

Recent and ongoing increases in NTFP trade in the demonstration site suggest the importance of developing appropriate regulations and monitoring mechanisms. Key issues include:

(i) Local management systems: There is a need to assess how NTFP access is negotiated and managed locally. These local approaches should not be supplanted; instead, they could form the basis for officially-recognised systems. An example already exists in the case of Vomica nuts, where traditional rules concerning the collection of the nuts are now also promoted by district authorities. Further work is needed in this area on products which are facing increasing demand, such as Yang oil.

(ii) Quotas: The current quota system that is used to regulate NTFP trade provides a useful foundation for the concept of regulating resource extraction. However, a variety of changes are needed to strengthen this system. First, the issue of monopolised quotas should be examined, as it is a potential barrier to pro-poor trade in the region. Furthermore, the current system pays insufficient attention to issues of sustainability, with quotas primarily allocated on the basis of traders' requests and perceived resource availability. Stronger and more consistent monitoring and enforcement of quotas is also needed.

(iii)Trade prices and trade information: Another issue related to government-allocated quotas concerns trade prices. Official sale prices for some NTFPs (e.g. Damar resin, Vomica nuts) considerably underestimate prices reported by villagers in the demonstration site, resulting in the potential for both lost national revenue and decreased sustainability. Mechanisms should be developed to more clearly share accurate information regarding trade regulations, quotas, market prices, etc. among stakeholders (e.g. villagers, district officials, provincial officials); increased standardization would likely result in better transparency and sustainability for the trade system as a whole. As an initial step, for example, there is a need to improve information flows between forestry and finance offices at both provincial and district levels.

6.7. LOCAL LIVELIHOODS AND MARKET ACCESS

Limited access to market information, particularly among the poorer households, tends to consolidate power among those with greater wealth and connections to the urban centre, thus resulting in missed economic opportunities for rural villagers. As such, livelihoods-focussed interventions should seek to help facilitate the flow of such information, identifying and promoting such opportunities where they exist. For example, fish processing, particularly salting and drying, provides an inexpensive and relatively simple means to add value to fish products, while also providing flexibility for storage and alternate use if fish can not be immediately sold.

6.8. MULTI-SITED APPROACHES TO REGULATING TRADE

Interventions that operate at a single level are often insufficient to influence trade. For example, there is a need to combine village-level interventions with corresponding action to influence the activities of outsiders and local, domestic and international markets. This is particularly relevant for wildlife trade. Awareness raising, monitoring and enforcement are all important tools to be used. Key locations include:

(i) Trade nodes or bottle-necks: In the demonstration site, for example, Ban Mai is an important natural resources trade node and should be targeted by interventions.

(ii) Road checkpoints: Transportation of natural resources is currently regulated by road checkpoints along Routes 18A (Sanamxay DC - Attapeu PC) and 18B (Attapeu - Viet Nam), as well as at the Lao-Cambodian border; however, strengthened management is needed. For instance, motorbikes and passenger vehicles are regularly monitored at these checkpoints, whereas 4WD vehicles are not. Furthermore, there is apparently no system in place for recording trade-related violations and penalties.

6.9. MONITORING TRADE

Given the rapid changes that are taking place in the province, as well as the general lack of quantitative information on trends in natural resource availability over time, ongoing monitoring is needed to build on the field surveys. Any temporal changes detected in the trade of natural resources should be fed back into future management interventions and regulatory decision-making

Monitoring should also be used as a tool to build capacity and strengthen management. For instance, maintaining records at the various checkpoints and sharing these among various agencies would help authorities track and respond to trade in natural resources that varies spatially and temporally. Recent and planned rural infrastructure development projects (e.g. road construction) should also take into account the need for monitoring and enforcement mechanisms to be established simultaneously.

Such monitoring efforts should take into account the need to collect varied information at all levels of the trade - village, district and province - and covering both overt and (to the extent possible) more covert trade. For example, below is a possible simple monthly monitoring approach for locations near Attapeu PC, with the following specific objectives: to record diversity of wild animals and plants

in public markets and shops; to assess quantities of mammals, birds, reptiles, amphibians, and fish species being openly traded; and to monitor simple presence/absence of wildlife meat in local restaurants:

(i) Spending approximately four days per month in selected urban sites in Attapeu;

(ii) Monitoring each of the following: Attapeu town and Saysetha markets; bus terminal;

(iii) Visiting local restaurants to ask simple questions regarding the availability of wild meats, prices and time required to source these dishes.

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Showing an edible flower (dok kha jia) at a camp on the Xe Pian River

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APPENDICES

TRADE IN NATURAL RESOURCES IN ATTAPEU PROVINCE:

An assessment of trade in the Lao PDR MWBP demonstration site

Sarinda Singh, Ramesh Boonratana, Mark Bezuijen and Aloun Phonvisay

LIST OF APPENDICES

August 2006

Appendix 1: Questionnaires developed for the first survey (Setpember-October 2005).

VILLAGE/VILLAGER(S) QUESTIONNAIRE 1: VILLAGE BASICS						
Research team members					**Date (D/M/Y)**	
Village		**District**			**Province**	
GPS position (Lat/Lon)	**N**	**E**	**Source of power (national grid, micro-hydro, none)**			
# of HH now			**# of HH 5 years ago**		**# HH 10 years ago**	
Total population now		**Year established**		**Ethnicity (# HH)**		
Road access (all-year, dry season, none)				**Other access**		
Domestic animals				**Crops grown**		
Total cultivated area			**# of landless HH**		**# of HH in poverty**	
Dominant geographic features						
TV, Motorbike, Car, Truck, Hand-Tractor, etc.						

Respondent(s)	**Status/Position**	**Remarks**

Food and income sources	**# of HH now**	**% of HH now**	**# of HH 5 years ago**	**% of HH 5 years ago**	**# of HH 10 years ago**	**% of HH 10 years ago**
Settled agriculture						
Swidden agriculture						
Government jobs						
Livestock sales						
Sundries sales (retail sales)						
Wild plant (NTFP) sales						
Wild animal (terrestrial or aquatic) sales						
Wild animal (terrestrial or aquatic) for food						
Hired labour						
Other						

# & % of HH with rice insufficiency?		**How many months on average?**	

Description of main reasons given for rice insufficiency	**Description of principle coping strategies**

VILLAGE/VILLAGER(S) QUESTIONNAIRE 2: RESOURCE USE (PLANTS & PLANT PRODUCTS)

Research team members														Village														Date (D/M/Y)		
Plant / Plant product	Abundance		10 yr trend?			Wild?	Cultivated?	Location harvested (habitat & how far)	#HH collect?			Season		Use (highlight primary)				Volume harvested				Price trend			Where sold (village/ roadside/ town)	Buyer information (who, when, frequency, how, etc.)	Taboo?	Photo?	Remarks
	Common	Rare	Increase	Decrease	Stable				Most	50%	Few	Wet	Dry	% Food	% Other	% Medicine	% Sale	per month	per season	per annum	Price	now	5 ya	10 ya					
Of the plant resources listed, highlight the resource(s) whose scarcity is of the greatest concern to the village (& why this is).																														
NOTES																														

VILLAGE/VILLAGER(S) QUESTIONNAIRE 3: RESOURCE USE (FISH, SHELLFISH & FROGS)

Research team members		Village		Date (D/M/Y)	

Animal	Abundance		10 yr trend?			Catch/Collected?	#HH collect?			Season		Current collecting methods									Past collecting methods (c. 10 ya)						Use (highlight primary)			If sold			Price Trend			Where sold (village/ roadside/ town)	Buyer information (who, when, frequency, how, etc.)	Taboo?	Photo?	Remarks
	Common	Rare	Increase	Decrease	Stable		Most	50%	Few	Wet	Dry	Net	Rod/Hooks	Trap	Spear gun	Other	Location harvested (& how far)	Vol/ mo	Vol/ season	Vol/ annum	Net	Rod/Hooks	Trap	Spear gun	Other	Location harvested (habitat & how far)	Food	Medicine	Sale	% Live/ Dead	% Parts	% Derivatives	Price	now	5 ya	10 ya					

Of the resources listed, highlight the resource(s) whose scarcity is of the greatest concern to the village (& why this is).

NOTES

VILLAGE/VILLAGER(S) QUESTIONNAIRE 4: RESOURCE USE (MAMMALS, BIRDS, REPTILES)

Research team members		Village		Date (D/M/Y)	

Animal	Abundance		10 yr trend?			Hunted?	#HH hunt?			Season		Current hunting methods									Past hunting methods (c. 10 ya)						Use (highlight primary)				If sold				Price Trend			Where sold (village/ roadside/ town)	Buyer information (who, when, frequency, how, etc.)	Taboo?	Photo?	Remarks
	Common	Rare	Increase	Decrease	Stable		Most	50%	Few	Wet	Dry	Gun	Bow	Snare	Dogs	Other	Location harvested (habitat & how far)	Vol/ mo	Vol/ season	Vol/ annum	Gun	Bow	Snare	Dogs	Other	Location harvested (habitat & how far)	Food	Medicine	Pets	Sale	Dead	% Parts	Derivatives	Price	now	5 ya	10 ya					

Of the resources listed, highlight the resource(s) whose scarcity is of the greatest concern to the village (& why this is).

NOTES

VILLAGE/VILLAGER(S) QUESTIONNAIRE 5: ISSUES					
Research team members		Village		Date (D/M/Y)	
Community Development Issues				# of HH affected	Priority

Resource Use Issues - Rank most important natural resources (wildlife spp , NTFPs, and aquatic resources) for consumption and income					
5 most important terrestrial animal resources?	Why this animal?	Rank importance	Rank importance for income	Other	Value per annum (if app.)
5 most important aquatic animal resources?	Why this animal?	Rank importance	Rank importance for income	Other	Value per annum (if app.)
5 most important plant/ plant product resources?	Why this plant/ plant product?	Rank importance	Rank importance for income	Other	Value per annum (if app.)

Describe any management systems and rules related to the use of above species, if any.

Describe any community management systems and rules, if any.

What are the main threats to habitats and wildlife that effect availability and trade?

What issues/problems do you have with natural resources that impacts your lives?	Recommendations on measures for addressing them

Any hunting-related mishaps?	
Any villager fined/ arrested for illegal harvest?	
NOTES	

TRADER QUESTIONNAIRE (MIDDLEMEN, MARKET-SELLERS, RESTAURANT-OWNERS)

Research team members														Date (D/M/Y)					Market type			
Village/Town		District					Province				Country								Position (Lat/Lon)	N	E	
Respondent (M/F)				Status (seller, middleman, etc.)										How long in business								
Species/products sold	Bred or Wild?	Used for food, medicine, etc.	Cost	Product/ Unit	Season		Volume sold (turnover rate e.g., per week)	Source (hunters, villagers, middlemen, etc.)	Source (location harvested)	Routes used	Transportation mode	Buyer information (who, when, frequency, how, etc.)	Abundance		10 yr trend (Availability)			10 yr trend (Demand)			Remarks
					Wet	Dry							Common	Rare	Increase	Decrease	Stable	Increase	Decrease	Stable	
Any items are prohibited by law?																					

Any experience with enforcement agencies? Who? What action taken?	Recommendations (legalize, farm, etc.)

Notes	

OFFICIALS QUESTIONNAIRE

Research team members													Date (D/M/Y)			Position (Lat/Lon)	N					E
Checkpoint/ Crossing			Village/ Town			District							Province							Country		
Respondent (M/F)				Position				Agency												Years in service		
Species/products	Use (food, medicine, construction, trophies, etc.)	Cost	Product	Source of products (hunters, villagers, etc.)	Source of products (harvest location)	Harvesters/ Traders Profile	Destination	Routes Used	Transportation Modes	Season		Volume Per mo/ season/ yr (turnover rate)	Abundance		10 yr trend (Availability)			10 yr trend (Demand)			Remarks
										Wet	Dry		Common	Rare	Increase	Decrease	Stable	Increase	Decrease	Stable	

Any arrests/ confiscation? Who? What action taken?	
Time of year when wildlife products are more likely to be seen in trade?	
Familiarity with relevant national laws & CITES?	
Aware of International buyers of wildlife?	
Inter-agency cooperation (national)?	
Inter-agency cooperation (international)?	
Current resources to address enforcement (salaries, equipment)?	
Resources required to improve enforcement efficiency?	
Participated in any relevant training?	
Recommendations for Improvement	
Notes	

General Wildlife Observation Sheet - Phase I												
Researcher(s):									Province:			
Species observed	Seasonality Y/N	Date (D/M/Y)	Product (live/prt/der.)	Use (food/med/etc)	Price	Qty obs. (No / kg)	Origin (if available)	Consump. (dom/inter)	Market description (daily, weekend, etc)	Seller gender M/F	Location (village /town /border crsg)	Remarks

Appendix 2: Summary of methodology used to brief team members and guide the second survey (May-June 2006).

Objective

The objective of this survey is to provide an overview of trade in natural resources in the Stung Treng and Attapeu MWBP demonstrations sites. 'Natural resources' includes animals and plants from both aquatic and terrestrial habitats. While collecting information about all natural resource this survey will give particular attention to aquatic resources and NTFPs and to identifying the main trade networks involving natural resources from wetlands.

Methodology

The methodology will use semi-structured interviews in villages in combination with informal interviewing and unobtrusive observations in villages, markets and fishing camps. The questions in each of these locations will be similar but informal interviewing and observations will require some independence in data collection. The questions listed below are intended to provide a general guide to the types of information that is required. Each team member will be required to modify and expand on these questions to suit particular situations encountered in the field.

Villages

- *Common types of natural resources harvested for trade:* What are the common types of natural resources that are harvested for trade? Which are most important for the local economy? Are the resources collected for trade the same as those collected for local consumption? What is the relative importance of the different natural resources that are traded (e.g. aquatic/forest, animals/plants)?
- *Main sources of natural resources that are traded:* Where are natural resources that are important for trade harvested from? This can include specific locations (e.g. near particular villages or fishing camps) and important habitat types (e.g. deep pools, flooded forest, seasonal streams).
- *Harvesting techniques:* What harvesting techniques are used? Are these the same techniques as used in the past? How do these techniques vary between villages or different source areas? Are different techniques used by different groups of collectors (e.g. men versus women, people collecting for subsistence versus people collecting for trade)?
- *Relative importance of natural resources that are traded:* How important is harvesting of natural resources for traded relative to other livelihood activities (e.g. farming, wage labour)? Which are most important, aquatic or terrestrial animals or plants? Is trade in natural resources more important for wealthier or poorer households or in certain villages?
- *Trade patterns:* Where are natural resources sold and to who? What are normal prices for important natural resources? Is there any seasonal variation in this trade? What volumes are natural resources collected and/or traded in? Are natural resources sold alive/as parts/derivatives and is there any local processing (e.g. fish drying, wood carving) of natural resources for trade? How are natural resources transported to traders/markets? What other factors affect the extent of local harvest for trade (e.g. market access, availability of ice and cold boxes, arrangements with bus drivers for

transportation, loans and/or provision of equipment by traders outside the village)? What characteristics of natural resources affect the extent of trade (e.g. larger animals sold more than smaller animals)?

- *Regulations governing trade in natural resources:* What regulations govern trade in various types of natural resources?
- *Social factors influencing harvest of natural resources:* Are there any social factors that influence harvesting patterns? For example, do women harvest some resources more/less than men? Do wealthy households harvest different natural resources compared to poor households? Do wealthy households trade more/less than poor households? Are some villages more involved with harvesting or trading of natural resources?

Camps

- Questions about types of natural resources harvested for trade the same as listed above for villages.
- *Background on fishing camps:* Size and location of fishing camps? Where do people come from and how long have they been setting up camps for? How long do they stay in the camps and how often do they come? Do they come to the same location every year and stay in the same camp for the entire season? What activities do they conduct at the camps? Are any natural resources collected and/or traded? What are the trade patterns and routes? What trends over time are apparent with camps? Do they have any relations with neighbouring villages?

Markets and traders

- *Type of natural resources commonly traded:* What are the most commonly traded natural resources? What are the most valuable or most desired natural resources? Is there any seasonal variation in this trade? What types of resources (e.g. aquatic/forest animals/plants) are most important for trade? What volumes are natural resources collected and/or traded in?
- *Value of natural resources that are commonly traded or valuable:* What are the normal prices for natural resources that are important in trade? What factors affect the trade price of natural resources (e.g. processing, size, sale location, buyer-seller relationship)?
- *Trade patterns:* Where are the main sources and destinations of natural resources that are important in trade and why? What are the modes of transportation? Are there any differences or similarities in trade routes for different types of resources? Have there been any recent or historical changes in trade patterns (e.g. trade routes, major price changes, change in traders, changes in government regulations)? Have there been any major changes in the availability or demand for natural resources?
- *Consumer/Buyer information:* Where are buyers from? How regularly do they purchase natural resources? How do buyers use the resource (e.g. food, medicine, pet, construction, trophies)?
- *Regulations governing trade in natural resources:* What regulations govern trade in various types of natural resources?
- *Social factors influencing trade in natural resources:* How does the price of natural resources in trade vary between different social contexts (e.g. better prices with

regular customers/suppliers, loans)? Are there certain times when natural resources are traded more? Are there any social factors (e.g. gender, age, wealth, education, family connections) that influence local trading patterns? How do people initially start trading natural resources?

Officials

- *Type of natural resources commonly traded:* Which government agencies are involved in the regulation of trade in natural resources? What are the roles and responsibilities of each? What are the most commonly traded natural resources? Which are most important for the local, district and/or provincial economy? Are records kept of trade volumes and is there any data available? What are the most valuable or most desired natural resources? What types of resources (e.g. aquatic/forest animals/plants) are most important for trade?
- *Regulations governing trade in natural resources:* What regulations govern trade in various types of natural resources? What issues of enforcement, regulation and management are currently pertinent in the province/district?
- *Trade patterns:* Where are the main sources and destinations of natural resources that are important in trade and why? What are the modes of transportation? Is there is any local processing of natural resources? Are there any differences or similarities in trade routes for different types of resources? Have there been any recent or historical changes in trade patterns (e.g. trade routes, major price changes, change in traders, changes in government regulations)? Have there been any major changes in the availability or demand for natural resources?

Additional information

- *Key informants:* In each location attempt to identify and interview key informants including village traders, traders coming from elsewhere, village committee (e.g. village headman, teacher), elders, bus drivers, market managers and so on. The selection of key informants will vary with the specific locality (i.e. village, market)
- *General observations:* Observations of trade interactions and casual conversations will also form an important source of information especially when staying overnight in villages and camps.
- *Survey locations:* Records will be kept of GPS locations of villages and camps as well as local names for camps.

Appendix 3: Comparative profile of villages interviewed in Attapeu demonstration site (September 2005).

Village	Ban Mai Gp.1	Ban Mai Gp.2	Ban Sompoy Gp.1	Ban Sompoy Gp. 2
District	Sanamxay	Sanamxay	Sanamxay	Sanamxay
GPS location	N 14° 42' 20.1" E 108° 29' 45.5"		N 14° 33' 30.6" E 106° 27' 53"	
No. of respondents	10 persons (Headman, Village elders, Party Secretary, Unit leaders, Youth leader, Militia, Village police, Women's union)	14 persons (Women's Union)	13 persons (Headman & Deputy, Elders, Unit leaders, Accountant, Village Police)	15 persons (Women's Union)
Date Interviewed	Sep. 29, 2005	Sep. 30, 2005	Sep. 27, 2005 [This village was divided into Ban Sompoy & Ban Songkhon in 2000, and later rejoined in 2005]	Sep. 28, 2005
Year established	c. 150 years ago	no idea	more than 100 years ago	no idea
Dominant geographic features	located next to Xe Pian River; Nong Tamlie & many other nongs (ponds); Mineral licks: Poung Kalung (West 5 km), Poung Kasae (West 6 km), Poung Huai Pun (West 4 km), Poung Keng Laan (West 3 km)		Primarily flat lands with ponds & marshes that dry up during the dry season; Village located next to Xe Kong; 3 major breeding pools (depressions) in Xe Kong i.e., Wang Herp, Wang Tamokhoy, & Wang Alai; 3 major mineral licks i.e., Poung Huai La-liang (ENE c. 7-8 km sambar, muntjak & wild pig); Poung I-laik (SSW c. 10km elephant, tiger, gaur, & bear spp.); Poung Pou Nya-tok (SE c. 10km elephant, tiger, gaur, & bear spp.); Ban Ta-nguan village to the north; Ban Sompoy located close to the historical Ho Chi Minh Trail & close to the Cambodian border	
Source of power	national grid c. 1.5 mo ago on Aug. 21, 05		Generator connected to a hand-tractor providing electricity to 10 households (one fluorescent tube/household) from 1800-2100h at 1,000 kip/day	
Ethnicity	Lao loum (+ 2 Oy individuals)		Lao loum	
Population size	591 individuals	no idea	916 persons	
No. of families/households now	109 families	no idea	157 households	
No. of families/households 5 years ago	109 families	no idea	c. 153 households	
No. of families/households 10 years ago	97 families	no idea	c. 100 households	

Village	Ban Mai Gp.1	Ban Mai Gp.2	Ban Sompoy Gp.1	Ban Sompoy Gp. 2
Access	all year road access, but difficult during wet season (muddy and flooded in some areas); boat access up to Pak Song Note: Small public transport operate 2 times daily		By road during dry season only, c. 4 hours from Muang Samakhixay by boat along Xe Kong (all year). Note: Public transport (boat) runs daily from Ban Sompoy ETD 0800h ETA Muang Sanamxay 1030h, ETD 1500h ETA 1700h	
Domestic animals	Buffalo (76), Cow (144), Goat (221), Pig (>100), Duck, chicken, goose, dog, cat		Buffalo, cow, pig, goat, duck, chicken, dog, cat	
Primary crops grown	Rice, maize, bananas, chillies, etc.		rice & maize; string beans, bananas, jackfruit, lemon, tamarind, Teak trees (c. 4-5 years ago)	
Total cultivated area (paddy lands)	100 ha	no idea	??	no idea
No. of landless families/households	5 families	no idea	None, but some HH do not cultivate their lands due to laziness (respondents' comment)	
No. of families/households in poverty	c. 70 families	many	33 households	
No. of Hand-tractor, motorboats, etc.	8 hand-tractor, 12 motorbikes, 11 TV (incl. vcd players)		14 hand-tractors, 7 TVs (Lao & Thai programs), 30 motored boats, & 1 passenger boat (for 30 persons)	
Food and income sources				
• Settled agriculture	104 families	no idea	115 households	No idea
• Swidden agriculture			None	
• Government jobs	10 persons	no idea	3 persons	
• Livestock sales	all opportunistically	all occasionally	all occasionally	
• Sundries sales (retail sales)	12 families	14 families	17 households	
• Wild plant (NTFP) sales		none	c. 60 households	
• Wild animal (terrestrial or aquatic) sales	all when available, 5 families full-time	all on small scale; fish sale began in 2001-2002	All occasionally ; 6 households full-time fish sale	
• Wild animal (terrestrial or aquatic) for food	all	all	all	
• Hired labour	6 persons to Thailand	Seasonally, within village (to plant rice c. 40 persons)	33 persons	
No. of families/households with insufficient rice	84 families	more than 50 families	157 households	139 households
Average no. of months with insufficient rice	5 months	Usually 3 mos, but expect 12 months in the coming year	3 months (Jul-Sep); expect 12 months rice shortage due to recent floods	3 months Aug, Sep & Oct although some from May

Village	Ban Mai Gp.1	Ban Mai Gp.2	Ban Sompoy Gp.1	Ban Sompoy Gp. 2
Reasons for insufficient rice	major floods; long drought; many rice pests (insects and rats)	major floods; long drought; many rice pests (insects and rats)	Long drought; major floods; crop pests (disease, insects & crabs); lacking draught animals; no irrigation	Long drought; Lacking draught animals; Severe floods; Rice pests (insect, rats, etc.)
Principal coping strategies during rice insufficiency	Increase fish harvest and sale; grow more maize for food; some families borrow rice	Harvest NTFP and aquatic resources for food and small scale sale; work as hired labourer	Increase fish harvest and sale; Livestock & poultry sale; NTFP sale (mak saeng, kisee - resin, yaang oil, wai noi - small rattan, puark bong - bong bark for incense); Work as hired labour (for the coming months due to long draught and heavy floods of this year)	Mak saeng beua collection & sale; Kisee collection & sale; Yaang oil collection & sale; Livestock & poultry sale (for those who have); Fish & frog sale
Community development issues according to priority [1being most important]	1. Improve quality and productivity of rice & irrigation; 2. Increase rice cultivation area; 3. Need project assistance for poverty alleviation - e.g., loans for purchasing animals; 4. Improve quality of livestock & poultry; 5. High school; 6. Dispensary; 7. Improved road access	1. Irrigation (for drought and for draining during floods); 2. Schooling to higher secondary; 3. Dispensary; 4. Livestock & poultry assistance (loan or provided); 5. Improved road access; 6. Weaving/looming equipment & training	1. All-year road access; 2. School; 3. Electricity	1. All-year road access; 2. School; 3. Latrines
Five most important wildlife resources according to overall priority [1being most important]	1. Wild pig; 2. Muntjak; 3. Bengal & water monitor lizards; 4. All turtle species 5. Sambar	1. Turtle spp. 2. Squirrel spp. 3. Thick-billed green pigeon; 4. Parakeet sp. 5. Oriental pied hornbill	1. All tortoise spp. 2. Bengal monitor; 3. Parakeet, Hill Myna & green pigeon; 4. Pangolin; 5. Softshell turtles	1. Bengal monitor; 2. All tortoise spp. 3. Wild pig; 4. Muntjak; 5. Siamese hare
Five most important wildlife resources according to income priority [1being most important]	1. Bengal & water monitor lizards; 2. All turtle species 3. Wild pig; 4. Muntjak; 5. Sambar	1. Turtle spp. 2. Squirrel spp. 3. Parakeet sp. 4. Thick-billed green pigeon; 5. Oriental pied hornbill	1. Pangolin; 2. All tortoise spp. 3. Bengal monitor; 4. Parakeet, hill myna & green pigeon; 5. Softshell turtles	1. Bengal monitor; 2. All tortoise spp. 3. Wild pig; 4. Muntjak
Five most important aquatic animal resources according to overall priority [1being most important]	1. All fish spp. 2. All frog spp.	1. All fish spp. 2. All frog spp.	1. All fish spp. 2. All frog spp.	1. Pa Soi; 2. Pa Kho; 3. Pa Khing; 4. Pa Duk; 5. Pa Pout
Five most important aquatic animal resources according to income priority [1being most important]	1. All fish spp. 2. All frog spp.	1. All fish spp. 2. All frog spp.	1. All fish spp. 2. All frog spp.	none
Five most important plant resources according to overall priority [1being most important]	1. Timber; 2. Bamboo; 3. Nya khaa grass; 4. Rattan; 5. Mak Saeng	1. Timber; 2. Nya khaa grass; 3. Bamboo; 4. Mak saeng; 5. Yaang oil	1. Yaang oil; 2. Bamboo; 3. Kisee (resin); 4. Small rattan sp. 5. Mak saeng boua	1. Nyaa kha grass; 2. Yaang oil; 3. Bamboo; 4. Small rattan sp. 5. Kisee (resin)
Five most important plant resources according to income priority [1being most important]	1. Mak saeng	1. Mak saeng; 2. Yaang oil	1. Yaang oil; 2. Kisee (resin); 3. Mak saeng boua	1. Kisee (resin)

Village	Ban Mai Gp.1	Ban Mai Gp.2	Ban Sompoy Gp.1	Ban Sompoy Gp. 2
Main threats to wildlife and habitats that affect availability and trade	Hunting by outsiders and insiders; Increase in human population (and demand); Animals fleeing due to human disturbance	Over-harvesting & excess trade	Over-harvesting of wildlife by villagers and outsiders; Reduction of tree habitats due to certain harvest method e.g., felling trees for pangolin	Over-harvesting of wildlife by villagers and outsiders
Issues/problems related to natural resources	Management of breeding pools cannot be implemented due landslides; Overharvest by insiders & outsiders; increasing need for cash and for coping, therefore need to harvest more; electro-fishing by insiders & outsiders	no idea	Large-scale harvest of aquatic resources by outsiders; Some outsiders stay in village or village areas for extended periods (some more than a year) - to harvest aquatic resources; Rivercourse, riverbed, riverbank & water quality impacted by gold extraction activities (plus rubbish)	Availability of most items greatly reduced; Rats predating on rice crops
Recommendations to address issues/problems related to natural resources	District authorities should respond immediately to any report received from the village authorities	no idea		Need Provincial and/or District authorities' assistance to resolve issues; Make traps for rats
Hunting-related mishaps				muzzle-loading gun backfired and disfigured a villager c. 30 years ago
Villager/outsider fined/arrested for illegal harvest	In 2004, villager authorities fined 2 villagers Kip 150,000/each for electro-fishing, but offenders refused to pay; In 2004, district penalised 35 villagers for electro fishing	Electro-fishing by outsiders and insiders		
Community-based natural resource management system	No felling of certain timber spp. No hunting during Buddhist lent; No harvest of certain fish spp. during Buddhist lent	no idea	Wang sanguan - conservation breeding pools/depressions exist but rules could not be implemented (likewise for others); No unsustainable fishing (electric shocks, poisons, etc.) allowed; No swidden cultivation allowed; No hunting during the Buddhist lent; Blocking of natural ponds (for fishing) not allowed; No cutting/felling of Mak saeng boua trees (otherwise free access to the fruits when in season)	Wang sanguan - conservation breeding pools/depressions exist but rules not implementable (likewise for others); No unsustainable fishing (electric shocks, poisons, etc.) allowed; Outsiders not allowed to harvest resources; No hunting during the Buddhist lent
Community management system and rules	Villagers would like to introduce, but find it difficult to implement	no idea	Every family is expected to contribute a can (empty condensed milk can) of rice & 1,000 kip; Every family expected to contribute 5,000 kip/annum towards the village's school fund; Livestock (pigs buffalo, cow & goat) kept outside village habitation area	

Appendix 4: Volume and value of wildlife species reported harvested/traded in the Attapeu demonstration site (September 2005).

Key:

(?)	Provisional; Lao (LA) names reported given in square brackets, when provisionally recorded or species identification uncertain
Vol/yr	Approximate volume of products currently harvested in a year (unless indicated otherwise); Gp. 1's information, unless indicated otherwise
Gp. 1	Representatives from various village administrative units (excluding women)
Gp. 2	Representatives from the local women's union (housewives)
X	Harvested, but volume unknown
XX	Traded, but value unknown
USD 1	LAK 10,860 (Sep. 2005)

Species	IUCN Red List	CITES	Ban Mai			Ban Sompoy		
			Vol/yr	Gp. 1's Price (in LAK)	Gp. 2's Price (in LAK)	Vol/yr	Gp. 1's Price (in LAK)	Gp. 2's Price (in LAK)
Bengal loris *Nycticebus bengalensis*	DD	II						
Macaque spp.		II	X (Gp. 2)					
Northern pig-tailed Macaque *Macaca leonina*	VU	II	rarely	100,000/ young animal				
Long-tailed Macaque *Macaca fascicularis*	NT	II				1-2 animals		
Griffith's Silver Langur *Trachypithecus villosus*	DD	II				10 animals		
Red-shanked Douc *Pygathrix nemaeus*	EN	I				10 animals		
Malayan Pangolin *Manis javanica*	NT	II				10 animals	350,000/ kg	XX
Siamese Hare *Lepus peguensis*	LR/LC		20 animals	20,000/ animal	30,000/ animal	>30 animals	20,000/ animal	XX
Squirrel spp.			200 animals	5,000/ animal	8,000/ animal			
Giant Flying Squirrel *Petaurista elegans/ petaurista*	LR/LC		5 animals	80,000/ animal	50,000/ animal	2-3 animals	100,000/ animal	
Phayre's Flying Squirrel *Hylopetes phayrei*	LR/LC		20-30 animals	5,000/ animal	5,000/ animal			
Malayan Porcupine *Hystrix brachyura*	VU		1-2 animals			1-2 animals		
Hog Badger *Arctonyx collaris*	LR/LC							
Civet spp.						X		XX
Common Palm Civet *Paradoxurus hermaphroditus*	LR/LC	III	10 animals	20,000/ animal		10 animals	10,000/ animal	
Small Indian Civet *Viverricula indica*(?) [LA - Hen Hang Kaan]	LR/LC	III	2 animals	20,000/ animal		1-2 animals	XX/ animal	
Large Indian Civet *Viverra zibetha*(?) [LA - Hen Phaeng]	LR/LC	III	2 animals	30,000/ animal		10 animals	10,000/ animal	
Binturong *Arctictis binturong*(?) [LA - Hen Haang Kho]	LR/LC	III				Very rarely caught		

Species	IUCN Red List	CITES	Ban Mai			Ban Sompoy		
			Vol/yr	Gp. 1's Price (in LAK)	Gp. 2's Price (in LAK)	Vol/yr	Gp. 1's Price (in LAK)	Gp. 2's Price (in LAK)
Wild Boar *Sus scrofa*	LR/LC		10 animals	10,000/ kg	15,000/ kg	10-20 animals	10,000/ kg	XX
Lesser Mouse Deer *Tragulus javanicus*	LR/LC		X		30,000/ animal	2 animals > 10 years ago		
Red muntjac *Muntiacus muntjak*	LR/LC		10 animals	10,000/ kg	25,000/ kg	2 animals	8,000/ kg	XX
Sambar *Cervus unicolor*	LR/LC		X		25,000/ kg	1 animal caught about 2-3 years ago		XX
Bird sp. [LA - Nok Thua]			X		2,000/ animal			
Duck sp. [LA - Nok Pet Nam]			10-20 animals	5,000/ animal	5,000/ animal			
Great Hornbill *Buceros bicornis*	NT	I	X					
Oriental Pied Hornbill *Anthracoceros albirostris*	LC	II	20 animals	8,000/ animal	7,000/ animal	2-3 animals		
Parakeet sp. *Psittacula* sp. [LA – Nok Khek]	LC	II	X (Gp. 2)		2,000/ animal	400-500 animals	1,000/ animal	
Parrot sp. [LA - Nok Keo]		II	X (Gp. 2)					
Owl/ Owlet sp. [LA – Nok Khau]		II	X		2,000/ animal			
White-breasted Waterhen *Amaurornis phoenicurus*	LC		20-30 animals	5,000/ animal	3,000/ animal			
Mountain Imperial Pigeon *Ducula badia*	LC		X (Gp. 2)		10,000/ animal	X (Gp. 2)		
Thick-billed Green Pigeon *Treron curvirostra*	LC		100-200 animals	5,000/ animal	3,000/ animal	500 animals	2,000/ animal	
Dove sp. [LA - Nok Khaau]			50 animals	5,000/ animal	3,000/ animal	X (Gp. 2)		XX
Hill Myna *Gracula religiosa*	LC	II	X (Gp. 2)		50,000/ animal			
Common Myna *Acridotheres tristis*	LC					X (Gp. 2)		
Egret sp. A [LA - Nok Chao]			X		2,000/ animal	X (Gp. 2)		
Heron sp. A [LA - Nok Nyaang]			X		2,000/ animal	X (Gp. 2)		
Python spp. [LA - Ngu Leuam]		II	5 animals	20,000/ kg				
Reticulated Python *Python reticulatus*		II				30 animals	25,000/ kg	XX
Rat Snake *Ptyas* sp. [LA - Ngu Sing Dong]						2-3 animals	XX	XX
Rat Snake *Ptyas* sp.[LA - Ngu Sing Seua]						2-3 animals	XX	XX
Rat Snake *Ptyas* sp [LA - Ngu Sing]			50 animals	20,000/ kg	15,000/ kg	100 animals	20,000/ kg	
King Cobra *Ophiophagus hannah*		II				10 animals	90,000/ kg	XX
Indochinese Water Dragon *Physignathus cocincinus*			50 animals	5,000/ animal	8,000/ animal			
Bengal Monitor *Varanus bengalensis*		I	20 animals	15,000/ kg	25,000/ kg	400 animals	20,000/ kg	XX
Water Monitor *Varanus salvator*		II	20 animals	10,000/ kg		X (Gp. 2)		XX

Species	IUCN Red List	CITES	Ban Mai			Ban Sompoy		
			Vol/yr	Gp. 1's Price (in LAK)	Gp. 2's Price (in LAK)	Vol/yr	Gp. 1's Price (in LAK)	Gp. 2's Price (in LAK)
All turtle species			X (Gp. 2)		25,000/ kg			
Turtle sp. [LA - Tao Mae Mai]						500 animals	25,000/ kg	
Turtle sp. [Tao Phat]			20 animals	25,000/ kg	25,000/ kg			XX
Turtle sp. [Tao Hua Leuang]								
Turtle sp. [LA - Tao Kap Nyang]								
Yellow-headed Temple Turtle *Hieremys annandalii*	EN	II						XX
Elongated Tortoise *Indotestudo elongata*	EN	II						XX
Asian Box Turtle *Cuora amboinensis*	VU	II						
Giant Asian Pond Turtle *Heosemys grandis*	VU	II						
Malayan Snail-eating Turtle *Malayemys subtrijuga*	VU	II						
Softshell Turtle sp. (?). [LA - Pa Fa Lai]			X					
Asian Giant Softshell Turtle *Pelochelys cantorii*	EN	II	500 kg	35,000/ kg for animals weighing less than 3 kg; 18,000/ kg for animals weighing between 3 to 10 kg; 10,000/ kg for animals weighing more than 10 kg		10 animals	50,000/ kg	35,000/ kg for animals weighing less than 3 kg; 10,000/ kg for animals weighing more than 3 kg
Asiatic Softshell Turtle *Amyda cartilaginea*	VU	II				10 animals	6,000/ kg	

IUCN Red List Categories (2006):

EX: Extinct
EW: Extinct in the wild
CR: Critically endangered
EN: Endangered
VU: Vulnerable
NT: Near threatened
LC: Least concern
DD: Data deficient
NE: Not evaluated

CITES Appendices:

Appendix I - Lists species that are threatened with extinction; most international trade in these species is prohibited
Appendix II - Lists species that are not necessarily now threatened with extinction but that may become so unless trade is closely controlled
Appendix III - Lists species included at the request of a Party that already regulates trade in the species and that needs the cooperation of other countries to prevent unsustainable or illegal exploitation

Appendix 5: Volume and Value of Wildlife Species Observed by Government Officials in Trade in Attapeu (September 2005).

Species	Product	Unit Cost (in LAK)	Volume (per annum)	Use	Source	Destination	Remarks
Long-tailed Macaque *Macaca fascicularis*	Live young animal	20,000-30,000/animal	2-3 animals	Pet	Sanamxay & Saysettha Districts	Samakhixay PC	
Malayan Pangolin *Manis javanica*	Whole animal, meat, blood, scales, & gall bladder	250,000-350,000/kg for animals weighing less than 3 kg; 1,000,000-2,000,000 /animal for animals weighing more than 3 kg; 2-3 million/kg	200-300 kg	Medicinal food, medicine	Sanamxay & Saysettha Districts	Viet Nam, Cambodia, China(?), & Thailand(?)	Price reduces with weight due to difficulty in transportation; Uses public transport, motorcycles, boat & on foot (at international border) via Route 16a & Xe Kaman River
Giant Flying Squirrel sp. *Petaurista elegans/petaurista*	Whole animal, meat, bones, & stomach	160,000/animal	??	Food, medicine	Sanamxay, Phouvong & Saysettha Districts	Samakhixay PC & Pakse	Public transport, motorcycle, & boat via Routes 18a, 18b, & 16a
Common Palm Civet *Paradoxurus hermaphroditus*	Whole animal	10,000/kg-50,000/animal	120 animals	Food	Sanamxay, Phouvong & Saysettha Districts	Samakhixay PC markets & restaurants	
Small Indian Civet *Viverricula indica*(?) [LA - Hen Hang Kaan]	Whole animal	10,000/kg	10-20 animals	Food	Sanamxay, Phouvong & Saysettha Districts	Samakhixay PC markets & restaurants	
Binturong *Arctictis binturong*	Whole animal	10,000/kg	10-20 animals	Food	Phouvong, Sanamxay & Sanxay Districts	Samakhixay PC markets & restaurants	
Gaur *Bos gaurus*	Meat	25,000-30,000/kg	0.5 animal	Food	??	Samakhixay PC markets & restaurants	
	Rotten meat	30,000/kg		Delicacy		Samakhixay PC markets	
	Gall bladder	2,000,000-3,000,000/piece		Medicine		??	
Wild Boar *Sus scrofa*	Meat	20,000/kg	72 animals	Food	Sanamxay District	Samakhixay PC markets & restaurants	
Lesser Mousedeer *Tragulus javanicus*	Whole animal	80,000-100,000/animal; 65,000/kg	50-60 animals	Food	Phouvong, Sanamxay & Sanxay Districts	Samakhixay PC markets & restaurants	
Red Muntjac *Muntiacus muntjak*	Whole animal	16,000/kg	96 animals	Food	Phouvong, Sanamxay & Sanxay Districts	Samakhixay PC markets & restaurants	
	Meat	20,000-30,000/kg					
Sambar *Cervus unicolor*	Fresh meat	20,000-30,000/kg	36-48 animals	Food	Phouvong, Sanamxay & Sanxay Districts	Samakhixay PC markets & restaurants; Pakse	Public transport, motorcycle, & boat via Routes 18a, & 16a(?)

Species	Product	Unit Cost (in LAK)	Volume (per annum)	Use	Source	Destination	Remarks
Parakeet *Psittacula* sp.	Whole animal	10,000-15,000/animal	100-200 animals	Pet		Thailand, Viet Nam	Harvesters collect eggs and raise chicks then sell
Thick-billed green pigeon *Treron curvirostra*	Whole animal	5,000/animal	200-300 animals	Food		District & PC markets	
Heron sp.	Whole animal	6,000/animal	10 animals	Food		District & PC markets	
Python *Ptyas* sp.	Meat	30,000/kg for meat;	1-2 animals	Food	??	Samakhixay PC markets, Viet Nam & Cambodia	
	Skin	500,000/skin for individuals measuring more than 2 m		Leather products(?)		??	
King Cobra *Ophiophagus hannah*	Whole animal	250,000-300,000/kg	20-30 animals	Medicine (preserved in drinking alcohol)	??	Viet Nam, Cambodia	
Bengal Monitor *Varanus bengalensis*	Meat	15,000-35,000/kg	60 animals; 1,200kg	Food	All over Attapeu Province	Samakhixay PC markets & Viet Nam (?)	
Turtle species	Whole animal, meat & shell	15,000-30,000/kg	10-20 kg	Food, shell for medicine	Phouvong, Sanamxay & Sanxay Districts	Samakhixay PC markets, Pakse & Viet Nam	
Softshell turtle species	Meat	20,000/kg	180kg	Food	Phouvong, Sanamxay & Sanxay Districts	Samakhixay PC restaurants (mostly)	
Asian Giant Softshell Turtle *Pelochelys cantorii*		50,000/kg	120 kg	Medicine	Phouvong, Sanamxay & Sanxay Districts	??	

Appendix 6: Wildlife Traded by one large-scale trader in Attapeu town (September 2005).

Key:
USD 1 LAK 10,860 (Sep. 2005)

Species	Product	Cost (in LAK)	Volume per Annum	Remarks
Sambar *Cervus unicolor*	Meat	25,000/kg	10 kg	Saysettha District
Red Muntjac *Muntiacus muntjak*	Meat	30,000/kg	30 kg	Saysettha District
Squirrel spp.	Whole animal	12,000/animal	10-20 animals	Supplied from all over Attapeu
Phayre's Flying Squirrel *Hylopetes phayrei*	Whole animal	6,000/animal	20-30 animals	Xe Kaman area, Phouvong District
Lesser Giant Flying Squirrel *Petaurista elegans*	Whole animal, meat, stomach, bones	1,400,000/animal	5-6 animals	Supplied from all over Attapeu

Appendix 7: Wildlife monitoring at Attapeu markets (September 2005).

Key:
TBT Thateng (Sekong Province) bus terminal market
SXM Samakhixay main market
SBT Samakhixay bus terminus market
STM Saysettha main market
USD 1 LAK 10,860 (Sep. 2005)

Species	Date and Time											
	Sep. 21 0940-1010	Sep. 23 1600-1645	Sep. 24 0545-0645	Sep. 24 1630-1730	Sep. 25 0545-0645	Oct. 1 0600-0700	Oct. 1 0545-0645	Oct. 1 1700-1800	Oct. 2 0550-0700	Oct. 2 1840-1730	Oct. 3 0550-0650	Oct. 3 1700-1800
	Markets											
	TBT	SXM	STM	SBT	SXM	SXM	STM	SXM	SXM	SBT	STM	SXM
Giant Flying Squirrel *Petaurista* sp.	1 dead individual at USD 11.05/ individual											
Phayre's Flying Squirrel *Hylopetes phayrei*							1 dead individual at USD 0.46/ individual					
Common Palm Civet *Paradoxurus hermaphroditus*		2 skinned individuals and fresh meat chunks (1 individual) at USD 2.95/kg										2 dead individuals at USD 0.92 /individual
Wild Boar *Sus scrofa*	3-4 kg fresh meat at USD 1.84/kg	4-5 kg fresh meat at USD 1.84/kg			4-5 kg fresh meat at USD 2.76/kg; 1 kg smoked meat	7 kg fresh meat at USD 2.76/kg		Less than 5 kg fresh meat at USD 4.60/kg	Less than 5 kg fresh meat at USD 4.60/kg			
Red Muntjac *Muntiacus muntjak*		7-8 kg fresh meat at USD 2.76/kg		2 kg fresh meat at USD 3.22/kg (meat only) and USD 2.76/kg (meat on the bone)	2-3 kg fresh meat at USD 2.76/kg	2 kg fresh meat						10-11 kg fresh meat at USD 3.22/kg

Species	Date and Time											
	Sep. 21	Sep. 23 1600-1645	Sep. 24 0545-0645	Sep. 24 1630-1730	Sep. 25 0545-0645	Oct. 1 0600-0700	Oct. 1 0545-0645	Oct. 1 1700-1800	Oct. 2 0550-0700	Oct. 2 1840-1730	Oct. 3 0550-0650	Oct. 3 1700-1800
	Markets											
	TBT	SXM	STM	SBT	SXM	SXM	STM	SXM	SXM	SBT	STM	SXM
Sambar *Cervus unicolor*		c. 2.5 kg smoked meat (chunks) at USD 5.52/kg; c. 1.5 kg jerky at USD 7.37/kg [sambar jerky might be mixed with beef jerky]			10 kg fresh meat at USD 2.76/kg; 2-3 kg smoked meat at USD 5.52/kg	3 kg fresh meat at USD 2.76/kg; 1.5 kg jerky at USD 7.37/kg		Less than 5 kg fresh meat at USD 3.04/kg	Less than 5 kg fresh meat at USD 3.04/kg			2 kg fresh meat at USD 2.76/kg; 13 kg smoked meat at USD 5.52/kg; 3 kg jerky at USD 7.37/kg
Gaur *Bos gaurus*					3 kg rotten meat at USD 3.68/kg							
Oriental Pied Hornbill *Anthracoceros albirostris*					1 dead individual at USD 4.60/ individual							
Spotted Dove *Streptopelia chinensis*												2 skinned individuals at USD 0.46/individual
Snipe *Gallinago* sp.			9 live birds (6 bought by another market seller) at USD 0.23-0.28/ individual								3 live individuals	
Accipiter *Accipiter* sp.									1 individual at USD 0.28/ individual		1 individual at USD 0.28/ individual	
Chinese/Javan Pond Heron *Ardeola bacchus/speciosa*		2 live individuals	1 live individual								5 dead individuals at USD 0.46/individual	

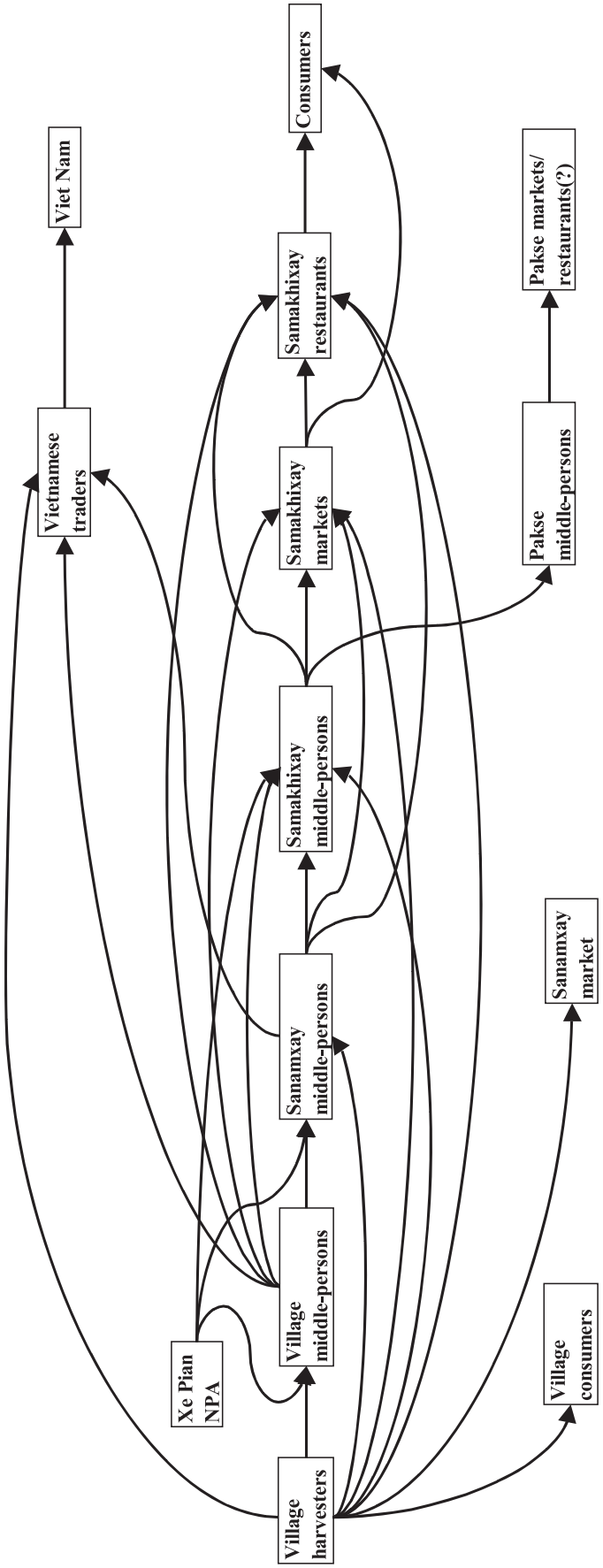
Species	Date and Time											
	Sep. 21 0940-1010	Sep. 23 1600-1645	Sep. 24 0545-0645	Sep. 24 1630-1730	Sep. 25 0545-0645	Oct. 1 0600-0700	Oct. 1 0545-0645	Oct. 1 1700-1800	Oct. 2 0550-0700	Oct. 2 1840-1730	Oct. 3 0550-0650	Oct. 3 1700-1800
	Markets											
	TBT	SXM	STM	SBT	SXM	SXM	STM	SXM	SXM	SBT	STM	SXM
Spangled Drongo *Dicrurus hottentottus*			3 dead individuals at USD 0.28/ individual				1 individual at USD 0.28. individual					
Small bird sp.[Nok Ta-lieu]	20-30 barbecued individuals at USD 0.46/ 3 individuals											
Common Rat Snake *Ptyas korros*							1 individual at USD 0.46/ individual					
Bengal Monitor *Varanus bengalensis*		At least 2 chopped-up individuals at USD 3.22/ kg [local buyer bought at USD 2.76/kg]			fresh chunks from 2 individuals at USD 2.76-3.22/ kg	fresh chunks from 1 individual at USD 2.76-3.22/ kg				1 live individual at USD 4.60/ individual		4-5 chopped individuals
Water Monitor lizard *Varanus salvator*								2 individuals at USD 3.22-3.68/ individual	2 individuals at USD 3.22-3.68/ individual		1 individual at USD 3.22-3.68/ individual	
Asian Box Turtle *Cuora amboinensis*								3 individuals at USD 0.46/ individual				
Black Marsh Turtle *Siebenrockiella crassicollis*		2 live individuals at USD 1.84/individual										

Appendix 8: Restaurants trading in wildlife in (and to/from) Attapeu Province (September 2005).

Key:
USD 1 LAK 10,860 (Sep. 2005)

Date	Period	Restaurant Location	Remarks
Sep. 21, 2005	Brunch	Bus terminal in Thateng District (Sekong Province).	Only two jars of rice wine with stomachs of Malayan Porcupine and Giant Flying Squirrel *Petaurista* sp. sold (by the glass). However, wildlife sold at the bus terminus include Wild Boar meat and Giant Flying Squirrel sp. (see table 3.5)
Sep. 22, 2005	Lunch	Samakhixay town centre.	Meat dishes from Red Muntjac and Bengal monitor available.
Sep. 30, 2005	Dinner	Samakhixay town centre	Deer meet served. Visited by senior provincial officials and frequently host national/international business visitors.
Oct. 1, 2005	Lunch	Samakhixay town centre	No wildlife meat at time of visit but may be ordered. Outlet purchases from fresh market.
Oct. 1, 2005	Lunch	Samakhixay town centre	No wildlife meat at time of visit but may be ordered. Outlet purchases from fresh market.
Oct. 1, 2005	Lunch	Samakhixay town centre	Wild Boar meat available during visit. Other meats may be ordered. Lao and Chinese customers present. One Sambar antlers mounted on wall.
Oct. 1, 2005	Lunch	Samakhixay town centre	No wild meat available but a range of captive wild birds in cages held at restaurant.
Oct. 1, 2005	Dinner	Samakhixay town centre	No wildlife meat at time of visit but may be ordered. Outlet purchases from fresh market.
Oct. 3, 2005	Breakfast	Saysettha town centre	Owner stated no wildlife meat available. Antlers, turtle shell, hornbill casques mounted on walls; this outlet probably buys/sells wildlife meat.
Oct. 3, 2005	Dinner	Samakhixay town centre	Meals ordered in advance for large dinners. Probably includes wildlife meat.
Sep. 29, 2005	Breakfast	Sanamxay district centre	No wildlife observed in current visit. Purchase of one Siamese hare observed on Jun. 5, 2005
Oct. 5, 2005	Lunch	Khone Phapheng Falls (Champassak Province)	3-4 kg sambar jerky at USD 0.92/ smaller bundle (c.200 g) and USD 1.10/ larger bundle (c. 250 g) [N.B. Might be mixed with buffalo jerky]

Appendix 9: Flow of Wildlife Resources from Attapeu Demonstration Sites (Ban Mai & Ban Sompoy).



Appendix 10: Wild animals and plants recorded in trade in Attapeu (September 2005).

Key to Tables: USD-price per unit (in USD); ATT-Attapu; ST-Stung Treng. **IUCN** status: E-Endangered; V-Vulnerable; LR/nt-Lower Risk/near threatened. Blank cells indicate the data (e.g. price) was not obtained. **Survey sites. LAO PDR. Attapu Province:** SD-Sanamxay District market; **XM**-Xaysettha market; **ATT**-Attapu town market; **BT-**Attapu bus terminal. **Champasak Province:** KM-Khinak Market; KF-Khonphapaeng Falls. **CAMBODIA. VK**-Veunkham border crossing. **ST**-Stung Treng town. **FISH VOLUMES** indicate the number of individuals observed or was only recorded as "present". **IUCN Red List or CITES (Appendix I or II) listed species are shaded grey.**

							USD		ATTAPEU PROVINCE 29 Sep-2 Oct 2005										CHAMPASAK PROV	
No.	Scientific name	Common name (English)	IUCN status	CITES App.	Use	Unit	ATT	ST	SD (29-Sep)	Mai vill (29-30 Sep)	XM (1-Oct: 0545-0645)	XM (3-Oct: 0550-0650)	ATT (1-Oct: 1700-1800)	ATT (2-Oct: 0550-0700)	BT (2-Oct: 1840-1730)	Rest. 5 (1-Oct)	Rest. 12 (3-Oct)	Home 53 (1-Oct)	KM (5-Oct: 0830-850)	KF (5-Oct)
	MAMMALS																			
1	*Nycticebus pygmaeus*	Pygmy Slow-Loris	VU	II	Medicinal	Skin														
2	*Macaca fascicularis/mulatta*	Long-tailed/Rhesus Macaque	LR/Nt	II	Ornamental	Live individual														
3	*Manis* sp.	Pangolin sp.	LR/Nt	II	Ornamental	Skin	n/a											1		
4	*Lepus peguensis*	Siamese Hare	LR/LC		Food	Live individual			1 (5-Jun)											
5	*Callosciurus finlaysonii*	Variable Squirrel	LR/LC		Food	Dead individual				6										
6	*Petaurista elegans*	Lesser Giant Flying Squirrel	LR/LC		Food	Skin														
7	*Hylopetes phayrei*	Phayre's Flying Squirrel	LR/LC		Food	Dead individual	0.50		1 (1-Apr)		1									
8	*Hystrix brachyura*	East Asian Porcupine	VU		Ornamental	Quill														
8	*Hystrix brachyura*	East Asian Porcupine	VU		Medicinal	Stomach (dried)														
9	*Ursus* sp.	Bear sp.	VU	I	Ornamental	Claw		1.25												
10	*Canis* sp.?	Canine sp.			Ornamental	Tooth														
11	*Paradoxurus hermaphroditus*	Common Palm Civet	LR/LC	III	Food	Dead individual				1										
12	*Panthera tigris*	Tiger	EN	I	Ornamental	Claw														
12	*Panthera tigris*	Tiger	EN	I	Ornamental	Tooth														
13	*Elephas maximus*	Asian Elephant	EN	I	Ornamental	Single hair		0.88												
13	*Elephas maximus*	Asian Elephant	EN	I	Ornamental	Bone fragment (uncarved)		2.50												
14	*Panthera tigris*	Tiger	EN	I	Ornamental	Claw														
15	*Sus scrofa*	Eurasian Wild Pig	LR/LC		Food	Per kg meat	5.00						<5 kg	<5 kg						
15	*Sus scrofa*	Eurasian Wild Pig	LR/LC		Food	Smoked (strips)														
15	*Sus scrofa*	Eurasian Wild Pig	LR/LC		Ornamental	Tusk		0.75												
16	*Tragulus javanicus*	Lesser Oriental Chevrotain	LR/LC		Food	Dead individual		3.75		2										
17	*Muntiacus muntjak*	Red Muntjac	LR/LC		Ornamental	Antlers (pair)	n/a	10.00									3	1		
18	*Cervus porcinus*	Hog Deer			Ornamental	Antlers (pair)		10.00												
19	*Cervus unicolor*	Sambar	LR/LC		Food	Per kg meat	3.30						<5 kg	<5 kg						

19	*Cervus unicolor*	Sambar	LR/LC		Ornamental	Antlers (pair)		300.00												
20	*Cervus eldii*	Eld's Deer	VU	I	Ornamental	Antlers (pair)		250.00												
21		Deer sp.			Ornamental	Antlers (fragments)														
22	*Bos javanicus*	Banteng	EN		Ornamental	Horns (pair)		40.00										2		
23	*Bos gaurus*	Gaur	VU	I	Ornamental	Horns (pair)		70.00												
24	*Capricornis sumatraensis*	Southern Serow	VU	I	Ornamental	Antlers (pair)											1	1		
	BIRDS																			
25	*Francolinus pintadeanus*	Chinese Francolin	LC		Ornamental	Live individual										1				
26	*Pavo muticus*	Green Peafowl	VU	II	Ornamental	Feathers														
27	*Dendrocygna javanica*	Lesser Whistling Duck	LC		Ornamental	Live individual										2				
28	*Megalaima lineata*	Lineated Barbet	LC		Ornamental	Live individual										1				
29	*Buceros bicornis*	Great Hornbill	Nt	I	Ornamental	Casque											2			
30	*Psittacula roseata*	Blossom-headed Parakeet	LC	II	Ornamental	Live individual										2				
31	*Psittacula alexandri*	Red-breasted Parakeet	LC	II	Ornamental	Live individual				1										
32	*Columba livia*	Rock Pigeon		III	Ornamental	Live individual										4				
33	*Streptopelia orientalis*	Oriental Turtle Dove	LC		Ornamental	Live individual			1							3				
34	*Streptopelia chinensis*	Spotted Dove	LC		Ornamental	Live individual			2							3				
35	*Gallinula chloropus*	Common Moorhen	LC		Food	Dead individual		0.75												
36	*Gallinago* sp.	Snipe sp.	LC		Food	Live individual						3								
37	*Haliaeetus leucogaster*	White-bellied Sea-Eagle	LC	II	Ornamental	Live individual	7.00									1				
38	*Accipiter* sp.	Accipiter sp.	LC	I/ II	Food	Dead individual	0.30					1		1						
39	*Ardeola bacchus/speciosa*	Chinese/Javan Pond Heron	LC		Food	Dead individual	0.50					5								
40	*Urocissa erythrorhyncha*	Red-billed Blue Magpie	LC		Ornamental	Live individual										1				
41	*Dicrurus hottentottus*	Spangled Drongo	LC		Food	Dead individual	0.30				1									
42	*Sturnus nigricollis*	Black-collared Starling	LC		Ornamental	Live individual														
43	*Acridotheres tristis*	Common Myna	LC		Ornamental	Live individual			2											
44	*Gracula religiosa*	Hill Myna	LC	II	Ornamental	Live individual				1										
	FISH																			
45	*Chitala blanci*		LR/Nt		Food	Live/dead individual		2.50					x							
46	*Chitala ornata*				Food	Live/dead individual		0.25												
47	*Notopterus notopterus*				Food	Per kg	6.00				x	x	x	x						
48	*Chitala lopis*				Food	Live/dead individual														
49	*Anguilla marmorata*				Food	Live/dead individual							x	x						
50	*Paralaubaca typus*				Food	Live/dead individual					20									
51	*Probarbus jullieni*	Jullien's Golden Carp	EN	I	Food	Live/dead individual													x	
52	*Puntioplites falcifer*				Food	Live/dead individual		0.13											x	
53	*Puntioplites/Hypsibarbus*				Food	Live/dead individual	0.20							x	x					
54	*Hypsibarbus malcomi*				Food	Live/dead individual														
55	*Poropuntius laoensis*				Food	Live/dead individual					x	x	x	x						

56	*Scaphognathops stejnegeri*				Food	Per kg	1.00				x	x		x	x					
57	*Hampala dispar*				Food	Live/dead individual		0.13						x					x	
58	*Systomus orphoides*				Food	Per kg	1.50				x			x						
59	*Banghana* sp.				Food	Live/dead individual														
60	*Morulius barbatula*				Food	Per kg		1.25												
61	*Osteochilus lini*				Food	Live/dead individual														
62	*O. microcephalus/waandersi*				Food	Live/dead individual														
63	*Botia beauforti*				Food	Live/dead individual														
64	*Botia helodes*				Food	Live/dead individual							x							
65	*Botia modesta*				Food	Live/dead individual					1	x	x							
66	*Mystus* sp.				Food	Live/dead individual														
67	*Mystus filamentus*				Food	Per kg		1.38												
68	*Hemibagrus nemurus*				Food	Per kg						x								x
69	*Mystus wyckioides*				Food	Per kg		2.00												
70	*Belodontichthys dinema*				Food	Live/dead individual							x							x
71	*Hemisilurus mekongensis*				Food	Live/dead individual														x
72	*Micronema* sp.				Food	Live/dead individual														x
73	*Ompok* sp.				Food	Live/dead individual														
74	*Wallago attu*				Food	Live/dead individual							x							
75	*Wallago leeri*				Food	Live/dead individual														
76	*Pangasius larnaudiei*				Food	Per kg		1.75												
77	*Pangasius siamensis*				Food	Live/dead individual		0.03												
78	*Pangasius* sp.				Food	Per kg														x
79	*Bagarius yarrelli*				Food	Per kg	1.20					x	x	x	x					
80	*Clarias batrachus*				Food	Per kg	1.20				x				x					
81	*Xenentodon cancila*				Food	Per kg	0.50	0.25			x	x								
82	*Monopterus albus*				Food	Per kg	0.30	1.50				x	x	x	x					
83	*Macrognathus siamensis*				Food	Per kg		1.25			x								x	
84	*Mastacembelus favus*				Food	Per kg	1.70	1.25			x		x	x	x					
85	*Coius undecimradiatus*				Food	Per kg														
86	*Pristolepis fasciata*				Food	Per kg		1.25					x							
87	*Oxyeleotris marmorata*				Food	?		?				x								
88	*Trichogaster trichopterus*				Food	?					1									
89	*Osphronemus gouramy*				Food	Live/dead individual		0.88												
90	*Osphronemus exodon*				Food	?														
91	*Channa micropeltes*				Food	Per kg		1.75												
92	*Channa striata*				Food	Per kg	1.60				x	x	x	x	x				x	
93	*Channa* sp.				Food	Per kg														
94	*Brachirus harmandi*				Food	Live/dead individual														

	REPTILES																			
95	*Ptyas korros*	Common Rat Snake			Food	Dead individual	0.50				1									
96	*Physignathus cocincinus*	Indo-chinese Water Dragon			Food	Live individual		0.50												
97	*Varanus bengalensis*	Bengal Monitor		I	Food	Live individual	5.00								1			2		
98	*Varanus salvator*	Water Monitor lizard		II	Food	Live/dead individual	3.5-4.0	3.75				1	2	2						
99	*Cuora amboinensis*	Asian Box Turtle	VU	II	Food	Live individual	0.50						2							
100	*Heosemys grandis*	Giant Asian Pond Turtle	VU	II	Ornamental	Carapace											1			
101	*Indotestudo elongata*	Elongated Tortoise	EN	II	Ornamental	Carapace				1 (4-Jun-05)							1			
102	*Trionyx/Amyda* sp.	Softshell turtle sp.		I/II																
	AMPHIBIANS																			
103	*Hoplobatrachus rugulosus*	Field Frog	LC		Food	Per kg (live)	1.00		200		652	1,000	1,100	925	270					
103	*Hoplobatrachus rugulosus*	Field Frog	LC		Food	Bunch (~20, dried)	0.20				5									
104	frog sp. (skinned)				Food	Dead individual (skinned)		0.03												
	INSECTS																			
105	?	Crickets-large			Food	Per cup (live)					200	>1,000	>200	500+						
	CRUSTACEANS																			
106	?	Crab			Food	Per bag (30-50 crabs)	0.10	0.13					200	1000						
107	*Macrobrachium rosenbergii*	Giant river prawn			Food	Per 100 g		1.75												
108	?	Shrimp			Food	Live					x									
109	?	Watersnail-Type 1 (small)			Food	Per cup	0.10				>200	300	>1000	1000+	700					
110	?	Watersnail-Type 2 (large)			Food	Per cup	0.10				50				200					
111	?	Watersnail-Type 3 (orange)			Food	Per kg		0.25							300					
112	?	Freshwater mussel			Food	Live individual		0.03												
	TIMBER PRODUCTS																			
113	*Dalbergia oliveri*	Rosewood	EN		Ornamental	Carving		70-1500												
114	*D. bariensis*	Burmese Rosewood	EN		Ornamental															
115	*Afzelia xylocarpa*	Afzelia	EN		Ornamental															
	NON-TIMBER PRODUCTS																			
116	*Hibiscus*?	Flower-Type 1			Food	Fresh (~10)	0.05				x	210		120	30					
117	?	Flower-Type 2			Food	Fresh (~10)	0.05				x			x						
118	?	Flower-Type 3 (lotus)			Food	Fresh (4-5)								x						
119	?	Seed-Type 1			Food	Seedpod (fresh)	0.20				x		x	x	x					
120	?	Seed-Type 2			Food	Fresh (~12)	0.05				x	x	x	x						
121	?	Seed-Type 3			Food	?	0.05						x	x						
122	?	Seed-Type 4			Food	Fresh bunch	0.05							x						

123	?	Seed-Type 5 (lotus)			Food	Seedpod (fresh, 2)	0.10					x		x						
124	?	Seed-Type 6			Food	Per kg	3.00													
125	?	Tree bark-Type 1 (red)			Medicinal	Fresh strips (~6-7)	0.05				x	x		x	x					
126	?	Tree bark-Type 2 (grey)			Medicinal	Fresh strips (~2)	0.05				x								x	
127	?	Tree bark-Type 3 (rolled)			Medicinal	Fresh strips (~14)	0.05				1									
128	?	Tree bark-Type 4 (chips)			Medicinal	Dried (packet)	0.30	0.38						64						
129	?	Tree bark-type 5 (other)			Medicinal	Fresh strips (~2)	0.05				x			x						
130	?	Tree bark-Type 6 (red strips)			Medicinal	Dried strips (~2)	0.05												10	
131	?	Dipterocarp resin sticks			Light source	Leaf rolls (7-8)	0.20	0.15	5		20	8	3	13	3					
132	?	Root-Type 1 (ginger)			Food	Fresh (per piece)	0.10				x		x							
133	?	Root-Type 2 (white, fleshy)			Food	Fresh (~5)	0.05					23		x						
134	?	Root-Type 3 (white, thin)			Medicinal	Fresh (~15)	0.30							x						
135	?	Root-Type 4 (rhizome)			Medicinal	Per kg		1.25												
136	?	Root-Type 5 (reddish stems)			Medicinal	Dried (~2)		0.13												
137	?	Root-Type 6 (large)			Medicinal	Dried (~3 sections)		0.13												
138	?	Leaf-Type 1 (bipinnate)			Food	Fresh (~15 stems)				x	x	x	x	x						
139	?	Leaf-Type 2			Food	Fresh (~10 leaves)	0.05						x							
140	?	Leaf-Type 3			Food	Fresh (6-7 stems)		0.13												
141	?	Leaf-Type 4			Food	Fresh														
142	?	Leaf-Type 5			Food	Fresh					x	x	x	x	x				x	
143	?	Mushroom-Type 1			Food	Fresh (~200 g)		0.25			x	x		x						
144	?	Mushroom-Type 2			Food	Fresh (~100)		0.08												
145	?	Mushroom-Type 3			Food	Fresh (~10)		0.08												
146	?	Bamboo stem-Type 1			Food	Fresh (per kg)	0.05	0.38				x		x	x					
147	?	Bamboo stem-Type 2			Food	Fresh (sections)														
148	?	Waterplant-Type 1			Food	Fresh					x	x	x	x	x				x	
149	?	Waterplant-Type 2 (lily)			Food	Fresh (~6-7 stems)		0.25												
150	?	Vine-Type 1			Food	Fresh (9-10 stems)		0.13												
151	?	Vine-Type 2			Food	Fresh (bunch)		0.13												
152	?	Fruit-Type 1			Food	Fresh														

Appendix 11: Processed fish traded in Sanamxay District, Attapeu (May 2006; 1USD = 10,100LAK).

English name	Lao name	Locations	Price (USD/kg)	Trade destinations
Fermented fish	*pa dek*	Attapeu PC	0.70-0.80	Attapeu PC residents
		Sanamxay DC	0.50	Sanamxay DC residents
		Xe Kong	0.50	Attapeu PC
Salted fish	*pa som, pa khem, pa jao*	Attapeu PC	2.50-3.00	Attapeu PC residents
		Sanamxay DC	2.00-2.50	Sanamxay DC residents
		Xe Kong	2.00	Attapeu PC
		Xe Kong - Xe Pian	1.00	Sell to Mrs Tieu
	pa som nung	Attapeu PC	4.00	Attapeu PC residents
Dried fish	*pa heng*	Km3 market, Attapeu PC	3.00	Attapeu PC residents
		Xe Kong	3.00-5.00	Attapeu PC
		Ban Mai	2.50	Sell to Mr Meow
	pa khoun	Attapeu PC	4.00	Attapeu PC residents
Smoked fish	*pa yang*	Downstream Xe Pian	2.00	Sell in own village (Ban Phonseath)
	pa yang ket	Attapeu PC	2.50-4.00	Attapeu PC residents
Smoked fish	*pa yang nung*	Attapeu PC	5.00	Attapeu PC residents

Appendix 12: Wildlife traded in Sanamxay District, Attapeu and other locations (May 2006; USD/kg unless stated otherwise; 1USD = 10,100LAK).

Animal type	English name	Lao name	Scientific name	Use	Location	Price (USD/kg)	Trade destinations	Comments
Reptiles	Common ratsnake	*ngu sing*	*Ptyas korros*	Food	km2 market, Pakse (Champassak)	6.00	Pakse residents	
	Python	*ngu luam*	Python sp.	Medicine	km2 market, Pakse (Champassak)	10.00 /dried animal	Pakse residents	
	Large Gecko	*kap khe*	-	Medicine	Attapeu PC	0.50	Vietnam	Vietnamese people buy to make medicine for asthma.
					Attapeu PC	1.00 /glass	Attapeu PC residents	Medicinal alcohols, at Vietnamese restaurant with Douc Langur pet.
	King Cobra (>2kg)	*ngu to ang*	*Ophiophagus hannah*	Medicine / Food	Xe Kong	15.00		
	King Cobra (5-6kg)					8.00-12.00		
	Monitor Lizard	*len / hia*	*Varanus salvator / V. bengalensis*	Food	km2 market, Pakse (Champassak)	8.00 / animal	Pakse residents	
					Sanamxay DC	1 for c.300g	Local residents.	
					Xe Kong	1.20		
					Xe Kong	1.50		
					Attapeu PC	2.00		
					Main market, Attapeu PC	10 / animal	Attapeu PC residents	1 large animal.
					Main market, Attapeu PC	4 / animal	Attapeu PC residents	2 small animals.
					Main market, Attapeu PC	2 / animal	Attapeu PC residents.	2 small animals. Permanent market stall further away from bridge, selling manufactured goods as well as *pa dek, pa heng,* traditional medicine, also dried chunks of sambar meat
					Thatheng (Sekong)	3.75	Passing travellers	One live animal (c.4kg) for 15USD.
					km2 market, Pakse (Champassak)	5.00 / animal	Pakse residents	c.10-15 animals seen during one visit.

	Indochinese Water Dragon	*kathang*	*Physignathus cocincinus*	Food	Xe Kong	0.50 / animal	Buyers come to the village	
	Hardshell turtles	*taw*	-	Food	Xe Kong	3.50	-	
		taw	-		km2 market, Pakse (Champassak)	6.00 / animal	Pakse residents	
		taw (<1kg)	-		Ban Hat Oudomxay	3.00	Buyers come to the village	Various species *(taw phet, taw ngu luam, taw hin)*.
		taw (1-2kg)	-			7.00		
		taw phet	*Indotestudo elongata*		Ban Phonseat	2.00	Sell to traders from Pakse or from Attapeu PC	1 animal
		taw phaan	-		Ban Phonseat	2.00		4 animals
		taw hang	-	-	Attapeu Province	35-37	-	WWF reported high demand for this species.
				Pet	Near Saysettha DC	0.50	Local trade	Lao worker at Berberine vine factory bought as pet. Usually sell when large.
	Softshell turtles	*paa faa*	*Trionyx* sp./ *Amyda* sp.	Food	Thatheng (Sekong)	5.00 /animal	Passing travellers.	
					Near Saysettha DC	0.50	-	Lao worker at Berberine vine factory bought as pet. Usually sell when large.
		paa faa (2-3kg)			Saysttha DC	3.00	Vietnam	
		paa faa oung			Main market, Attapeu PC	3.00	Attapeu PC residents	Also sold 8USD/animal. Sold live.
Amphibians	Frogs	*kop*	*Hoplobatrachus rugulosus*	Food	Upstream Xe Pian	0.70		
					Ban Mai	2.50		
					Km3 market, Attapeu PC	0.6 /8 animals	Attapeu PC residents	
					Ban Mai	0.07-2.50 /kg	Attapeu PC residents	Trader from Attapeu PC said price changes a lot with season.
	Tadpole	*huak*		Food	Main market, Attapeu PC	0.40 / small bag	Attapeu PC residents	Tadpole of *kop*.
	Frogs	*khiat*	-	Food	Sanamxay DC	0.10/ c.8 frogs	Local trade, Attapeu PC	
					Upstream Xe Pian	0.70		
					Ban Mai	2.50		
					Km3 market, Attapeu PC	0.10 /8 animals	Attapeu PC residents	Strung together on a string.
	Bullfrogs	*ung*	-	Food	Foodstall, Attapeu PC	0.50 /2-3 animals	Attapeu PC residents	2-3 animals grilled on sticks.

Mammals	Pangolin	*lin*	*Manis* sp.	Medicine / Food	Attapeu PC	3.50	Vietnam via Pakse	Send to contacts in Pakse (Vongthong).
	Sambar	*khwaang*	*Cervus unicolor*	Food	Foodstall, Attapeu PC	5.00 (dried meat)	Attapeu PC residents	Bought from Ban Mai. 1kg fresh meat = 3kg dried. Also sold at main market.
					Attapeu PC	3.50 (fresh meat)	Attapeu PC residents	Kongcay
					Main market, Attapeu PC	5 (dried meat)	Attapeu PC residents	
					Main market, Attapeu PC	0.80 /bundle	Attapeu PC residents	Strips of dried meat in small bundles.
	Squirrel	*kahok*	-	Food	Thateng (Sekong)	1.00-1.50 / each	Passing travellers.	
	Civet cat	*hen*	-	Food	Thateng (Sekong)	2.50 /each	Passing travellers.	Baby animal sold as aa pet.
	Red Muntjac	*faan*	*Muntiacus muntjak*	Food	Attapeu PC	3.5 (fresh meat)	Pakse, small amount in Attpeu PC	Kongcay
	Lesser Oriental Chevrotain	*kay*	*Tragulus javanicus*	Food	Attapeu PC	7.00 / animal	Pakse, small amount in Attpeu PC	Kongcay. Price varies with size, sell by kilo in Pakse
					Ban Hat Oudomxay	2.50	Local trade.	
	East Asian Porcupine	*men*	*Hystrix brachyura*	Medicine	Attapeu PC	-	Attapeu PC residents	Dried stomach, used as medicine. At Vietnamese restaurant with Douc Langur pet.
	Lesser Giant Flying Squirrel	*bang*	*Petaurista elegans*	Food	Attapeu PC	6.00	Attapeu PC residents, Pakse	
	Wild Boar	*muu paa (boneless meat)*	*Sus scrofa*	Food	Upstream Xe Pian	1.40-1.60	Local trade	
					Ban Mai	1.90	Attapeu PC residents	Fish trader, buys from villagers for 1.60USD/kg.
					Main market, Attapeu PC	3.50	Attapeu PC residents	Sourced from Cambodia.
		muu paa (with bone)			Upstream Xe Pian	1.00	Local trade, Attapeu PC	
	Pygmy Slow Loris	*ling lom*	*Nycticebus pygmaeus*	Pet	Ban Hat Nyaw (near Sanamxay DC)	3.00 for 3 animals	Local trade	Mother with 2 young.. Lao worker at Berberine vine factory bought as pet. Usually sell when large.
		ling lom			Attapeu PC	1/animal	Attapeu PC residents	

	Macaque	*ling*	*Macaca* sp.	Pet	Near Saysettha DC	5.00		Lao worker at Berberine vine factory bought as pet. Usually sell when large.
	Douc langur	*khaa daeng*	*Pygathrix nemaeus*	Pet	Vietnamese restaurant, Attapeu PC	35.00	Attapeu PC residents.	Pet, sourced locally. Also selling plant/animal medicines.
Birds	Hill Myna	*nok salikaa*	*Gracula religiosa*	Pet	Private resident, Attapeu PC Xe Kong	20 / animal 30 /2 chicks	Attapeu PC residents. -	
	Quail	*nok khathaa*	-	Food	Main market, Pakse	0.30 /animal	Pakse residents.	Grilled on sticks, sold at a number of stalls.
	Parakeet	*nok keo*	*Psittacula* sp.	Pet	Main market, Attapeu PC	1.00 / animal	Attapeu PC residents.	
	Green Peafowl	*nok nyung*	*Pavo muticus*	Pet	Downstream Xe Pian	>10 / 2 chicks	-	
	Thick-billed Green Pigeon	*nok baw*	*Treron curvirostra*	Food	Downstream Xe Pian	0.30 / animal	-	

Appendix 13: NTFPs traded in Sanamxay District, Attapeu (May 2006; USD/kg unless stated otherwise; 1USD = 10,100LAK).

NTFP type	English name	Lao name	Scientific name	Use	Location	Selling price (USD/kg)	Trade destinations	Comments
Resin	Yang oil (soft resin)	*nam man yang*	*Dipterocarpus* spp. (mainly *D. alatus)*	Boat repair, used to make varnish.. A mixture of hard and soft resin with some fibre is said to make the best sealant.	Xe Kong	0.30 /L	Khmer traders come to buy	
					Xe Kong	5.00 /20L	Khmer traders come to buy	
					Xe Kong	0.50 /L	Ban Sompoy, Attapeu PC	
					Ban Sompoy, Ban Hat Oudomxay	4.50 /20L	Village traders	
					Ban Sompoy, Ban Hat Oudomxay	6.00 /20L	Village traders sell to Khmer traders	Started c.2003. Do not know how used.
					Downstream Xe Pian	4.50 /20L	Villagers sell to Khmer traders	Villagers from Ban Hat Oudomxay at camp, c.3km from village. Sell at different prices depending on location (petrol costs).
	Flammable torch	*kabong*		Lighting	Xe Kong	0.10 /torch	Khmer traders and villagers	
					Ban Hat Oudomxay	0.10 /torch	Ban Hat Oudomxay	
					Main market, Attapeu PC	0.10 /torch	Attapeu PC residents.	
	Damar resin (hard resin)	*kisii*	*Parashorea* spp.	Boat repair	Saysettha district	0.80-1.51	Vietnam.	Buy from all districts except Samakhixay
					Downstream Xe Kong	0.70		
					Ban Hat Oudomxay	0.20		
					Downstream Xe Pian	1.50	Sell in own village (Ban Phonseath).	Not much available.
					Upstream Xe Pian	1.60		
					Ban Mai and Ban Samong	1.60	Collectors sell to village trader.	
					Ban Samong village trader	1.80	Trader in Saysettha (Vietnam)	
					Xe Kong	0.30-0.40	Ban Sompoy, Attapeu PC	Not much available.
		khi khwang			Xe Kong	0.70	Trader in Saysettha (Vietnam)	Higher-quality form, uncommon.

Mush-rooms	Ball mushroom	*het phor*	*Astraeus hygrometricus*	Food	Main market, Attapeu PC	3.50	Attapeu PC residents	Sell by small can (0.60USD/c.200g).
					Km4 market, Attapeu PC	1.00 / c.201g	Attapeu PC residents	Sell by bag.
					Sanamxay DC	2.00	Sanamxay DC residents	
					Xe Kong	1.00	Village trader	
					Ban Hat Oudomxay	1.00	Village trader	
					Ban Hat Oudomxay	0.60-1.20	Village trader	
					Xe Kong - Xe Pian confluence	0.80	Lao and Khmer traders	
					Downstream Xe Pian	0.60-2.00	Lao and Khmer traders come to buy or sell in own village (Ban Phonseath)	Some villagers sold at lower prices and only later found out that higher prices were being offered.
					Ban Phonseath	2.00	Village trader	
					Upstream Xe Pian	2.00-2.50	Village trader	
					Ban Samong	1.00	Village trader	
					Ban Samong village trader	2.00	Fish trader from Attapeu PC comes to Ban Mai	
					Ban Mai	2.50-3.00		
					Pakse	3.80	Thailand	Traders came to buy along the Xe Pian and reported these values.
					km2 market, Pakse (Champassak)	4.10	Pakse residents	
	Mushroom	*het la ngo*	-	Food	Downstream Xe Pian	1.00	Local trade	Collected mushrooms and small hardshell turtle (*taw phet*), to keep as pet.
	Mushroom	*het huu nuu*	-	Food	Km3 market, Attapeu PC	0.20 / c.100g	Attapeu PC residents.	Sell by bag.
	Mushroom	*het din*	-	Food	Km3 market, Attapeu PC		Attapeu PC residents.	
	Mushroom	*het bot*	-	Food	Km3 market, Attapeu PC		Attapeu PC residents.	
Rattan and vines	Rattan	*wai daeng*	*Calamus* sp.	Construction	Downstream Xe Pian	0.30 / length	Pakse	Collected along the Xe Khamphor.
	Rattan shoot	*saan*	*Raphis* sp.	Food	Main market, Attapeu PC	0.50	Attapeu PC residents	This rattan shoot is more expensive and considered tastier than other types.

	Berberine vine	*khua haem*	*Coscinium usitatum*	Medicine	Ban Hat Nyaw	0.02	Vietnam	Processing depot near Sanamxay DC. Three villages nearby collect.
	Grass roofing	*nyaa phay*	-	Construction	Ban Phonseath	0.20 / slat	Local trade	
Fruit, seeds, flowers, bark etc	Vomica nuts	*mak saeng, mak saeng boua*	*Strychnos nux-vomica*	Medicine	Xe Kong	1.20-2.50	Vietnam	In past collected only in Dec-Feb but now people collect all year. Collect 10kg/day.
					Downstream Xe Pian	0.40-0.70	Sell to Lao and Khmer traders who come to the camp	Villagers collect 2-3kg/day
					Upstream Xe Pian	0.30-0.60	Village trader	
					Xe Kong	2.20	Ban Sompoy, Attapeu PC	Most important NTFP. Ripe in March.
					Ban Hat Oudomxay	0.50	Village trader	Used to sell to Khmer traders and large scale trader but now only sells to the latter.
					Ban Hat Oudomxay village trader	0.80	Trader in Saysettha (Vietnam)	
					Ban Phonseath	0.50	Village trader	Quota exceeded and no buyer but can store until next year. No cutting of trees.
					Ban Phonseath, village trader	0.70-0.80	Trader in Saysettha (Vietnam)	
					Upstream Xe Pian	0.30	Sell in village (Ban Mai)	
					Ban Mai and Ban Samong village traders	0.50-0.80	Trader in Saysettha (Vietnam)	Collect c.7T in 2005-06. Used to sell to Khmer traders and large scale trader but now only sells to the latter. Makes medicine and poison.
	Malva nuts	*mak jong*	*Scaphium macropodium*	Food	Downstream Xe Pian	0.30	Trader in Saysettha (Vietnam)	
	Bong bark	*puak bong*	*Notaphoebe umbelliflora*	Incense	Ban Hat Oudomxay	0.05	Sell to Trader from Ban Bpeui	Collect mainly in March. Trader buys from various villages, he sends vehicle to collect.
	Edible flower	*dok kha jia*	-	Food	Main market, Attapeu PC	0.05 / 5 flowers	Attapeu PC residents.	Sell by small bundle.
					Km4 market, Attapeu PC	0.05 / 6 flowers	Attapeu PC residents.	Sell by small bundle.
	Honey	*nam phung*	-	Food	Ban Phonseat	1.00 /L	Sell opportunistically in village.	Not much available. Only one household sells.

Appendix 14: Sale price (USD/kg) and market demand of fish in Sanamxay District, Attapeu (May 2006; 1USD = 10,100LAK).

Scientific names	Lao name	Market demand	Attapeu PC	Sanamxay DC	Xe Kong	Ban Hat Oudomxay	Siam Pang (Cambodia)	Downstream Xe Pian	Ban Phonseath	Upstream Xe Pian	Ban Mai
Bagarus spp.	*pa khare*	High						1.00-1.50	1.30		
Kryptopterus spp. *Micronema* spp.	*pa nang*	High	3.00-3.70	3.50	2.50-2.80	2.50	2.00	2.00	2.00-2.50	2.50-2.70	3.00-3.50
Hemibagrus spp.	*pa kung* (>3kg)	High	3.00-3.70	3.50	2.50-2.80	3.00	2.50	1.50-2.50	3.00	2.50-2.80	2.50-3.00
	pa kung (2-3kg)		2.20	2.20	1.10-1.50					2.10-2.20	2.40
	pa kung (<2kg)	Medium	1.50	1.80			1.50	1.00	1.30	2.50	
Probarbus jullieni	*pa ern*	High			2.00	3.00-3.50					
Pangusius larnaudii	*pa pheung*	High	2.50							1.40	1.70
Pangusius krempfi	*pa souay*	High								1.40	1.70
Wallago attu	*pa khao*	High						1.00	1.30	1.40	1.70
Wallago leeri	*pa khoun* (>1kg)	High	1.70		1.80			1.00	1.30	1.40-1.50	1.70-1.80
	pa khoun (<1kg)	Medium			0.70					0.50	
Hemibagrus nemurus	*pa kot* (>1kg)	High	1.40		1.00			1.10-1.20			
	pa kot (<1kg)	Low			0.70-0.80			0.60	1.00		1.20
Cirrhinus microlepis	*pa phone*	Medium		1.50-1.80				1.50			
Cyclocheilichthys enoplus	*pa jok*	Medium	2.50	1.50-1.80							
Banghana behri	*pa va*	Medium	2.00-2.50	1.50-1.80	1.00-1.40			1.50			
Osphronemus exodon	*pa men*	Medium		1.50-1.80							
Labeo barbatulus	*pa e tu*	Medium	1.80		0.80			0.90-1.00			

Channa micropeltes	*pa doh*	Medium								1.00	
Channa striata	*pa khor*	Medium								0.90-1.00	2.50
Large scaled fish	*pa ket*	Medium	1.80	1.80					1.00		
Barbonymus gonionotus	*pa pak*	Low		1.50-1.80				0.50-0.60			
Scaphognathops bandanensis	*pa phien*	Low			1.00					0.30	
Puntioplites proctozysron	*pa sa kang* (<10kg)	Low			0.60						
	pa sa kang (<10kg)				1.00						
Mixed fish	*p a luam*	Low	1.00-1.30	0.80	0.50-0.80	0.60	0.40	0.40-0.60	0.70-1.00	0.50-1.00	0.50-1.20

TRAFFIC
SOUTHEAST ASIA

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), 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

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