Investigation into the Human Communities of the Sebangau Peat Swamp Forests, Central Kalimantan, Indonesia: Demography, Attitudes and Impacts.

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EXECUTIVE SUMMARY

The Sebangau tropical peat swamp forests in Central Kalimantan have recently been identified as supporting the largest, and therefore possibly the most important, orangutan *(Pongo pygmaeus pygmaeus)* population in Borneo (Husson and Morrough Bernard 2001). The region is subject to a proposed Integrated Conservation and Development Programme (ICDP), which includes conservation areas, buffer zones and development areas, with the local communities being important stakeholders in this initiative.
This research project was developed to obtain an overview of the demography of the communities within the ICDP area, to assess their attitudes to proposed nature conservation, and to collect information on the human use of forest resources that may impact on the orangutans and the local people.

Settlements along the Katingan and Sebangau rivers, that are located within the catchment area, were visited over a period of three months. The locations and population estimates of each village were recorded. More detailed census information on the different settlements, such as the number of schools and health facilities available, were also noted. Questionnaire surveys were conducted on a one-to-one basis to examine individual knowledge, attitudes, activities, perceptions and opinions about sustainable forest usage, orangutans, conservation and conservation legislation. Two Indonesians, fluent in the local dialects and English, acted as interpreters.

The results of this project will be useful in the implementation of the proposed ICDP and will lead to targeted environmental education within the province through an NGO, LPLH-KT (Foundation for Natural Environmental Care of Central Kalimantan), whose remit is to implement environmental education within the local school curriculum. WWF Indonesia and the Ou-Trop Project are working in the area and this report will provide support to their shared aim of conserving the orangutan population.

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CONTENTS

1. Introduction

This report describes the findings of my research conducted within the Sebangau region for 15 weeks during June to September in 2002. It summarises my methods, results and conclusions; it presents the current state of knowledge about the ICDP areas, the resident human communities and their use of forests resources.

The peat swamp forests of the Sebangau are unique, their importance as "carbon sinks" has been consistently highlighted (Page et al 1999). The orangutan is a critically endangered species and the forests within the ICDP provide the orangutan with one of its last remaining strongholds (Husson and Morrough Bernard 2001). Orangutan populations are under serious threat of extinction despite its formally protected status (Rijsken 1999). Increasing human populations, with an insatiable demand for resources, threaten to destroy the few remaining natural habitats with disastrous consequences for the orangutans survival prospects.

The aim of the investigation was to examine the activities of the local communities within the proposed Sebangau Conservation Area, with particular regard to their use of forest resources. This area supports a large population of orangutans *(Pongo pygmaeus)* and their prospects of survival are coming under increased attention; in addition the local communities will be important stakeholders in any conservation action. This research collated demographic information about the communities, identified current usage of forest resources, and assessed people's knowledge of orangutans and their understanding of environmental conservation. Knowledge of a community's dependence on forest resources is information that needs to be carefully considered prior to the implementation of any conservation strategy (Caldecott, 1996).

Prior to my research the ICDP region contained an unknown number of human communities. Gaps in knowledge on the area's communities, such as the location of settlements along the Katingan and Sebangau rivers and the

population size of each, needed to be addressed to assist in the planning of a conservation management strategy. Research in this region has previously been conducted by OuTrop (Husson, S. and Morrogh-Bernard, H. 2001). Their project report describes their findings from 1995-2000 on orangutan densities and distribution. No data have been gathered along the Katingan river or from the more remote communities of the Sebangau river, and consequently little information about the activities of the local communities has been compiled prior to this report. As part of this project individuals were asked to complete a questionnaire, however the findings only cover a small percentage of the total population of the existing communities.

2. Methods

2.1 Study Area

The Sebangau catchments are found in the southeast of the province of Central Kalimantan. The proposed Integrated Conservation and Development Programme (ICDP) covers an area of approximately 9200 km sq which is predominately forested peat land. The approximate boundaries of my research area were the Katingan-Seruyan Kabupaten (Regency) boundary to the west, the Kahayan River to the east, the Java Sea to the south and the Kasongan-Tangkiling road to the north. All boundaries are highlighted on the map of the area (Appendix 1).

The provincial capital Palangkaraya is the only large town in the region, although there are many small towns and villages along the Katingan and Kahayan rivers. Sixteen villages along the Kahayan river were surveyed. The majority of these are traditional settlements with only two of the locations visited being trans-migrant communities. The Sebangau river has nine permanent settlements, five of which are trans-migrant villages. The principal economic activity in this area (excluding Palangkaraya) is logging for timber, much of which is illegal. Two economically important sawmills on the Sebangau river, and the largest sawmill on the Kahayan river, were visited and included in the study. The forest is also utilised by many people from the surrounding area for hunting, the collection of latex, rattan and other valuable forest products, while the river provides the main source of fish.

I initially based myself at the Setia Alam Field Station in the north of the Sebangau catchments which is approximately two hours by car, boat and foot from Palangkaraya. Setia Alam stands on an old logging concession camp where selective logging was practised for thirty years until 1996. I worked from this base camp, extending into the interior as the project proceeded mainly travelling by boat and on foot.

2.2 Permits

Prior to departure from the UK I obtained a social and cultural visa from the Indonesian Embassy. This visa was of the appropriate type for the planned research and was required to be renewed every 60 days.

The district surrounding the provincial capital of Palangkaraya is separated into sub districts and four different sub districts covered the proposed research area within the ICDP. It was necessary to obtain permission to conduct the research from each of the local government offices within these four sub districts before I could proceed. To support my application for approval I initially obtained the following three letters:

1. Letter of introduction and reference from Oxford Brookes University.
2. Letter of support and approval from the local government office of research and development in Palangkaraya (Pemerintah Propinsi Kalimantan Tengah, Badan Penelitian Dan Pengembangan Daerah).
3. Letter of recommendation and association with CIMTROP (Centre for International Co-operation in Management of Tropical Peatland), University of Palangkaraya, Kalimantan Tengah.

Each of the four government sub district offices were presented with these three letters of recommendation (Appendix 2) upon arrival. The nature and objectives of the research was explained to them and a request was made for their consent. When approval had been granted a further request was made for a letter of introduction for the sub districts village heads (Appendix 3). This final letter was crucial in assuring the settlements we had the appropriate permission to conduct research, without this formal recommendation it would not have been possible to complete the study.

2.3 Translators

To ensure there was efficient communication at all times two translators were employed to accompany me on each of the river trips. The assistance of

these four field assistants, who were fluent in local dialects, was vital in contributing to the success of the project and therefore careful selection of individuals was important. I was fortunate to have the been advised throughout the process by a representative from CIMTROP who assisted with the recruitment of all four translators.

Upon arrival in villages, and under my direction, the field assistants conducted the initial introductions and ensured accurate understanding as to the nature and purpose of my research. They translated the questionnaire into the appropriate local dialect and communicated the response to me. They also enabled me to gain a full understanding of community structure and local politics. Through them I learnt of local customs and became aware of possible conflicts, and I believe this considerably increased the communities' confidence in the research team and also their willingness to co-operate and discuss various issues.

2.4 Logistics

I made two visits, to the Katingan, and Sebangau rivers, each lasting approximately three weeks. Travel in both areas was mainly by klotok (a traditional slow boat), I employed local individuals in the various locations to transport us. It was necessary to obtain permission from each sub district's local government before we could proceed with the research. This would often mean that travel to an area was not straight forward as visits to various government, forestry and police offices had to be made

The distance between settlements varied greatly, and availability of klotoks occasionally proved difficult. If transport was easily available I arranged to travel in the early morning as this usually resulted in arriving in the new location at a more convenient time of day, I avoided arriving in the evening whenever possible. We spent a minimum of one day in each of the communities and a maximum of three days.

On both trips we were usually invited to stay with the village head. Alternatively accommodation would occasionally be found with other local residents. During the interim weeks between the river trips I conducted interviews with local people who were working in the forest, close to the Setia Alam Field Station, however they did not permanently reside there.

2.5 Procedures

Once I had arrived at a settlement care was taken to obtain full permissions from the communities in a friendly, non-forceful manner. I introduced myself to the village head, explained the purpose of my research and that I hoped to complete census details, questionnaires, semi-structured interviews and occasionally focus groups. The recommendation letter, which had been obtained from the local government office, was presented and the village head was encouraged to ask questions about the research and the research team. An information sheet (Appendix 4) was read out and only after the contents had been fully understood and consent given did I proceed with the research. I thought it important to remain flexible and sensitive to the requests of some communities and therefore the time spent on introductions varied greatly in length. I constantly aimed to be as respectful and culturally sensitive to the respondents' values as possible, thereby minimising the risk of embarrassment or disrespect.

2.6 Census

After the initial introductions I began collecting information about the community. Each location was recorded using GPS. The village head provided an estimate of the population size, and occasionally further information on schools, health facilities and the primary economic activities of the settlement. Village records were sought for additional information. Interviews with the village elders, and other senior individuals, provided further information about the community.

2.7 Questionnaire

The questionnaire was compiled prior to my departure for Indonesia (Appendix 5). Upon arrival in Palangkaraya the document was translated into Bahasa Indonesian. I designed the questionnaire with an emphasis on personal history, current use of forest resources, degree of dependency on those resources, attitudes towards others (including orangutans), and opinions on future availability of resources. I placed emphasis on obtaining details of local knowledge, perceptions and opinions on sustainable forest usage, orangutans, and conservation. Finally, the questionnaire focused on current use of forest resources to establish the possible impacts such activities may have on both the communities and the orangutan. I aimed to establish the numbers of people working in the forest and trends in demand for forest resources such as timber and rattan (enabling estimates to be made on the sustainability of current practices).

The questionnaires were completed on a one-to-one basis to examine individual attitudes (Fink, 1995). To ensure that the questions were efficiently communicated the questionnaire was cross checked by my translators to highlight any confusion that might have been caused through the translation process. Interviews varied in length, from forty five minutes to two hours, depending on the individuals. All interviews were completed although some were later disregarded if I suspected the information provided was incorrect.

I completed the study using a cross section of the community i.e. both sexes, varying status, and from age sixteen upwards. In selecting respondents there was a risk of being biased so to minimise the impact of this where possible a predetermined procedure was followed. At each settlement an estimate of the total number of dwellings was obtained from the village head. I then selected individuals for interview who lived in different areas of the village and at some distance to each other to. Often individuals who were approached would decline to be interviewed; however the village head was often helpful in encouraging people to participate. My field assistants advised me if they felt the random procedure suffered from manipulation at any time, for example,

people occasionally were suspected of moving to dwellings to increase their chance of selection. Under such circumstances interviews were conducted but the data from them were not included in the analysis.

Questionnaires surveys impose certain restrictions on the type of information that can be collected (Oppenheim, 2001; Robson, 2002). However, such techniques facilitate the collection of certain kinds of information relatively quickly and from a large number of respondents, thus given the time and logistical constraints a questionnaire survey strategy was adopted for this study. When combined with other techniques such as semi-structured interviews and focus groups, as was done in this study, it is also possible to gather qualitative information from the residents in the proposed ICDP (Hammersley, 2000; Bryman, 1992). When interpreting questionnaire data it is important to take great care (Kapila and Lyon 2000) although all possible attempts were made in this study to identify any incorrect information and remove it from the data. However it must be recognised that there are limitations involved and further study of the area is recommended.

2.8 Semi-structured interviews

Semi-structured interviews were also conducted. This method provided further detail on local activities, including information about village facilities, services, transportation, and any social conflicts. This process enabled individuals to talk in depth about areas where they had extensive personal knowledge, and also allowed me to gain more detailed information where appropriate.

The format of these interviews consisted of introductory comments, a list of topics, key questions for each topic and closing comments. The freedom of this structure permitted me to have greater control over the amount of time and attention given to individual topics. The interviews varied in length but provided extremely useful spontaneous and informal remarks. Notes of the interactions were important, these were completed immediately after the interview had concluded.

2.9 Focus groups

Whenever possible it was arranged to conduct a discussion with several members of the community, this format is described here as a focus group. These were open ended discussions guided by myself and lasted for at least half an hour; however the amount of free time individuals had frequently determined the length of the focus group. The groups consisted of 6-10 individuals all of whom were encouraged to participate. Such discussions provided me with an opportunity to debate current issues and suggestions of possible local solutions to conservation and sustainable development. Most commonly they were spontaneous events, if several members of the community were gathered together I would request we discuss issues of local concern. It was also important to encourage comments from all the participants or occasionally some individuals would dominate the conversation.

2.10 Other sources

The government statistic library in Palangkaraya provided a map of the area and additional information on various villages in statistical reports. Unfortunately the majority of this information later proved to be out of date, or it had been estimated due to the remote locations and was simply incorrect. However they did provide an initial indication of the number of settlements located within the ICDP.

3. Results

3.1 Introduction

Over a twelve week period, 160 interviews were conducted in 21 villages along the Katingan and Sebangau rivers. It is desirable when sampling a population for the sample size to be between 3-5% of the total population (Oppenheim, 2001), this allows for inferences to be drawn between the sample and the entire population. Due to the lack of prior knowledge of population sizes within the area, and the time restraints of this study, these percentages were not achieved (see Table 1).

Table 1: Villages surveyed, populations and sample sizes.

Village	Location: Katingan or Sebangau River & Sub District (S/D)	Population Size	Sample Size	Percentage
Asem Kumbang	Katingan (Kamipung S/D)	1365	7	0.5%
Baunbango	Katingan (Kamipung S/D)	854	7	0.8%
Tumbang Ronen	Katingan (Kamipung S/D)	514	7	1.4%
Jahanjang	Katingan (Kamipung S/D)	786	5	0.6%
Karung	Katingan (Kamipung S/D)	750	7	0.9%
Parupuk	Katingan (Kamipung S/D)	148	7	4.7%
Telaga	Katingan (Kamipung S/D)	1489	7	0.5%
Tampelas	Katingan (Kamipung S/D)	600	7	1.2%
Galinggang	Katingan (Kamipung S/D)	1800	7	0.4%

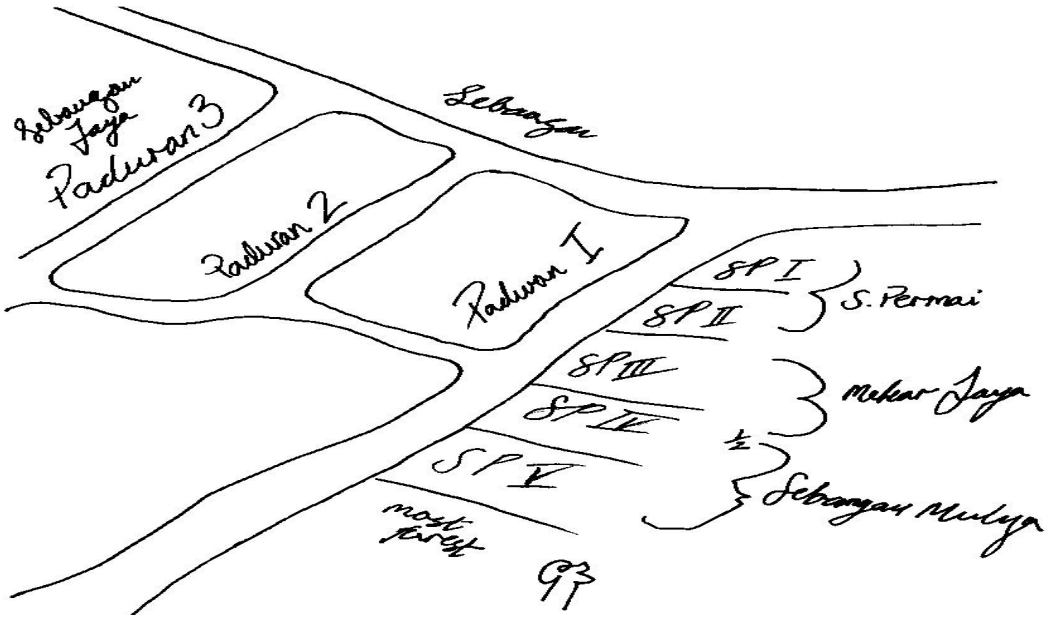
Perigi	Katingan (Mendawai S/D)	180	7	3.9%
Tewang Kampung	Katingan (Mendawai S/D)	850	7	0.8%
Kampung Melayu	Katingan (Mendawai S/D)	1026	7	0.7%
Mendawai	Katingan (Mendawai S/D)	1366	7	0.5%
Kampung Tengah	Katingan (Katingan Kuala S/D)	1472	7	0.5%
Jaya Makmur	Katingan (Katingan Kuala S/D)	2058	7	0.3%
Subur Indah	Katingan (Katingan Kuala S/D)	3170	1	0.03%
Muara Pangkuh	Sebangau (Kahayan Kuala S/D)	150	7	4.7%
Sebangau Mulya	Sebangau (Kahayan Kuala S/D)	1324	8	0.6%
Bantanan	Sebangau (Kahayan Kuala S/D)	125	7	5.6%
Sampang	Sebangau (Kahayan Kuala S/D)	650	7	1%
Kereng Bangkirai	Sebangau (Kahayan Kuala S/D)	5519	27	0.5%

Questionnaires were used in conjunction with other research methods, such as focus groups, to minimise the effects of a small sample size (Kapila and Lyon, 1994). However the results of this study should be treated with some caution.

All population figures are supplied by the Village Heads and assumed to be reasonably accurate. The total population of the villages surveyed is 26,196 and the sample size is 0.6% of the total population surveyed. The actual population for the area will be substantially higher than 26,196 as the large port of Pegatan, located on the Katingan river, was not included in this survey.

3.2 Trans-migrant settlements

Jaya Makmur and Subur Indah are two trans-migrant villages located towards the south of the Katingan river. They were established in 1983 along with four other villages in the district; Singham Raya, Bangun Jaya, Kampung Baru, Setia Mulia. All of these villages are located close to Pegatan, a busy port at the entrance to the Katingan river. On the Sebangau river the village of Sebangau Mulya is part of another large trans-migrant settlement called Paduran. Paduran is divided into 3 areas, comprising of 5 villages. Paduran 1 is divided into 3 settlements; Sebangau Permai, Mekar Jaya and Sebangau Mulya, these locations are also referred to as SP's. Paduran 2 is one settlement, so too is Paduran 3 but this is also referred to as Sebangau Jaya. The map below drawn by a villager of Sebangau Mulya illustrates the layout.



The busy port of Kerengbankirai is located on the Sebangau river. It is in easy reach from the province's capital Palangkaraya and was originally developed in 1972 by the government as a trans-migrant village. Prior to this time its population numbers were in the low hundreds, they now exceed five thousand. However, unlike the Paduran settlements this relocation was localised, with migrants originating from the Kahayan and Kuapas districts in Central Kalimantan.

3.3 Demographic information

Educational and medical facilities were recorded at each location (see Table 2). There are four levels of schooling; Kindergarden (4-6 years), Elementary (7-12 years), Junior High (13-16 years), and Senior High School (16+ years). All of the settlement locations were recorded using GPS, and locations have been transferred onto a satellite map of the area (see Appendix 6).

Table 2: Educational and medical facilities / staff available in each village.

Village	No. and Type of Schools Available	Medical facilities and Staff Available
Asem Kumbang	3 Elementary	1 Clinic: 1 Midwife
Baunbango	1 Elementary 1 Junior High	1 Clinic: 1 Midwife
Tumbang Ronen	2 Elementary	No medical facilities
Jahanjang	2 Elementary	1 Clinic: 1 Midwife
Karung	1 Elementary	1 Clinic: No Staff
Parupuk	1 Elementary	No medical facilities
Telaga	2 Elementary 1 Junior High	1 Clinic: No Staff
Tampelas	1 Elementary	No medical facilities
Galinggang	3 Elementary 1 Junior High	1 Clinic: No Staff
Perigi	1 Elementary	1 Clinic: 1 Nurse
Tewang Kampung	1 Kindergarden 1 Elementary	2 Clinics: Nurse and Midwife
Kampung Melayu	2 Elementary	1 Clinic: 1 Midwife
Mendawai	1 Kindergarden 2 Elementary 2 Junior High	1 Clinic: Doctor, Nurse and Midwife
Kampung Tengah	1 Kindergarden 2 Elementary	1 Clinic: Nurse and Midwife

Jaya Makmur	2 Kindergardens 4 Elementary 1 Junior High	1 Clinic: 1 Nurse
Subur Indah	2 Kindergardens 4 Elementary 1 Junior High	1 Clinic: 1 Midwife
Muara Pangkuh	1 Elementary	1 Clinic: No Staff
Sebangau Mulya	2 Elementary	1 Clinic: No Staff
Bantanan	1 Elementary	1 Clinic: 1 Nurse
Sampang	No Schools	No Clinic
Kereng Bangkirai	2 Kindergardens 5 Elementary 3 Junior High	1 Clinic: 1 Doctor, 2 Nurses and 2 Midwives

In settlements where no medical staff or facilities are available the villages arrange to have a monthly visit from a nurse located within the same sub-district. Shamen, village elders trained in tradition medicine, are present in the majority of locations and are frequently employed to assist with child birth. They are trusted members of the communities who are paid for their services. This trust was demonstrated by a nurse from the village of Mendawi who commented that he would select a shamen to assist his wife in child birth in preference to the trained midwife available in his village.

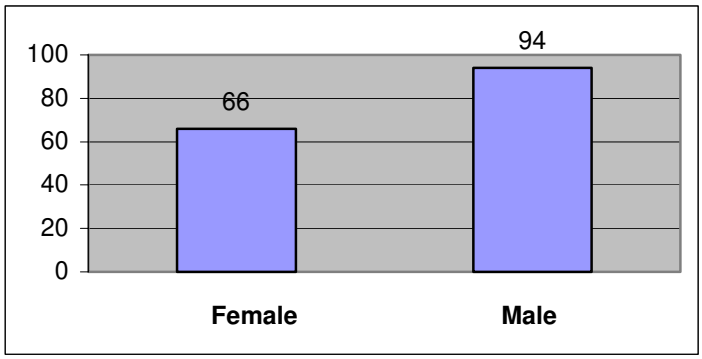
In villages where school facilities are limited, or absent, children will occasionally move to locations where schooling is available and reside with relations. However, frequently the absence of schools results in poor educational standards.

3.4 Gender

Of the 160 people interviewed 59% are male and 41% are female (Figure 1). An attempt was made to interview equal numbers of men and women, but women frequently refused to be interviewed resulting in a male bias. This reflects not only the unwillingness of females to be interviewed but also the

perception of women that it is more appropriate to record male opinions. Wives would often request that their husband should be selected for interview instead of themselves.

Figure 1: Number of male and female of interviewees (n=160).



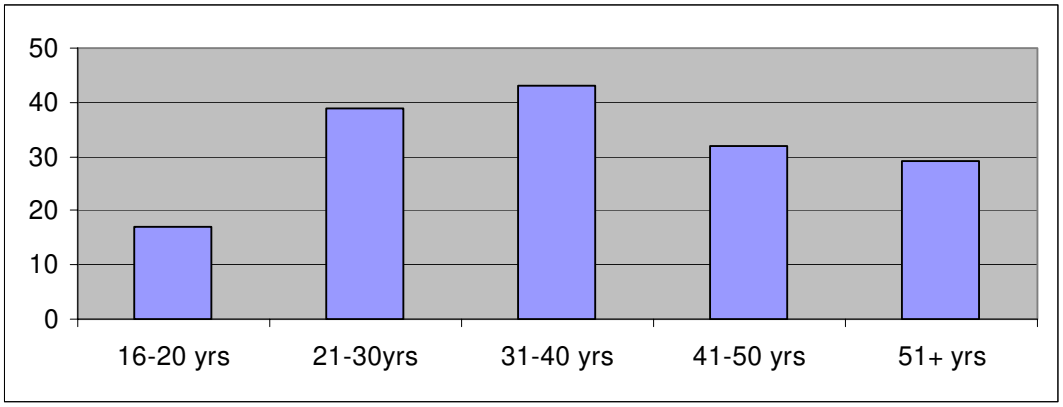
3.5 Religion

The predominate religion in the catchment area is Islam, only 4% of individuals are Christian and 1% Hindu. Christians resident in the villages are often teachers, or medical staff, who have specifically moved to the location for employment. Islamic life forms the routine of the community with prayers being made at regular intervals throughout the day. This large Islamic community limits the amount of hunting in the area for consumption purposes; in Kampung Melayu villagers commented that pigs were occasionally killed for crop raiding but the “carcasses were buried”.

3.6 Age

Any individual over the age of sixteen was eligible for interview, there was no upper age limit. Figure 2 shows the age distribution of interviewees.

Figure 2: Age ranges of interviewees surveyed (n=160).



3.7 Education

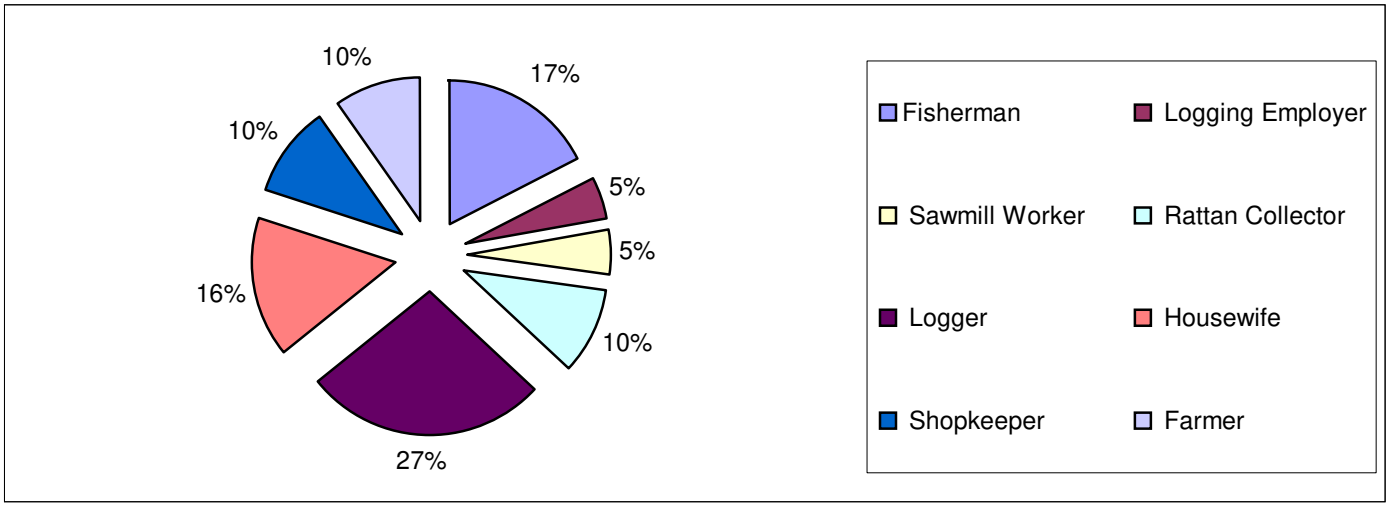
Information on school leaving dates is difficult to obtain, also attendance varies considerably. This results in a number of people attending school until the age of 12 years but the academic ability varying hugely. For example, 94% of individuals state they are able to read, however this information needs to be treated with caution. It was generally found during unstructured interviews that reading abilities were of a low standard, I would therefore estimate that the positive response to the question confirms only a very basic understanding of written documents. It should be noted that the availability of newspapers, magazines and books is extremely limited in all but a few locations and a teacher in Tampelas commented that this contributes to the poor development of reading standards.

Few individuals rely on only one type of employment for their income and this is certainly the case for many teachers. It is felt that the teaching wage alone is insufficient to support them, so additional part-time employment is common. Teachers, and other villagers, are aware that additional employment distracts them from providing a good standard of education. However it is felt that there is no alternative because additional work is necessary to supplement their income. I was informed on several occasions their low wage reflects the fact that “the government does not care about its teachers”.

3.8 Employment

Figure 3 shows the main occupations in the catchment area. The most commonly cited professions are logging and fishing.

Figure 3: The main occupations of respondents (n=160).



3.8.1 Loggers

27% of the people report their main employment to be logging. These are people who work in small teams at locations close to their villages and within the catchment area throughout the wet season. Accessibility to forest areas, and transportation of logs, is at its easiest in the wet season due to the high canal and river levels. To gain a better understanding of what the work involves I spent time in the forest with a group of loggers from Jahanjang. Their working day commences at 5.30am when they leave their village. They cross the Katingan river by canoe and proceed into the interior of the forest. The majority of the journey is along a canal previously constructed by the logging team where they have cut into the forest floor with their chainsaws and removed the soil. The area they work in is “owned” by a Jahanjang villager. He informed me that he owns the area because he has paid for the construction of the canals; I subsequently learnt that this was a common way of claiming ownership of forest land. He commented that he logged legally,

claiming to have permission from the government. However he was unable to show me any documentation to substantiate this claim. At no point in the research study was any claim that the logging practices were legal ever substantiated to me.

The loggers removing a tree along a skid.

The loggers work throughout the day, cutting down trees over 30cm in diameter breast height (DBH) and dragging them along skids. Skids are tracks constructed from saplings, they are often coated with soap enabling the trees to slide along them easily. The logs are then stockpiled in a clearing close to a canal, they will remain here until the water levels increase and they can be transported to the main river. While interviewing the loggers it became apparent that although they had similar duties, and worked together in a team,

they are paid different amounts. Wages vary from 500,000 - 300,000 rupiah a week (approximately £27 - £45). Their employer informed me this is due to their varying experience. The day ends at 4.30pm at which point all tools are gathered together and the loggers return to their village. I had hoped to gain estimates of the quantities of timber being logged but my presence had obviously disrupted the normal work pattern and it was not possible to gain accurate production rates from their employer.

3.8.2 Logging Employer

Logging employers are distributed throughout the catchment area. Employers commonly “own” land through the construction of canals or because they have worked in a specific area for a number of years, this enables them to claim the land as their own. This claim of ownership is not disputed by other villagers. Logging employers are older members of the communities who are financially able to pay regular wages to their employees. This type of employment is preferable to some loggers as they do not have to wait until the sale of logs to generate an income. However the majority of loggers choose to work in small teams and simply divide the profits between the team members when the logs were sold. These individuals may have to travel greater distances to work in areas that are not “owned” by locals.

3.8.3 Sawmill Worker

Sawmills / bansaws can be seen at regular intervals along both the Katingan and Sebangau rivers. Smaller sawmills, such as the one located in the village of Telaga, are referred to as bansaws. This is considered the appropriate name for the smaller sawmills, the word sawmill is used to refer to the larger businesses. Workers at both types of mill rely on a continual supply of timber to support their jobs, but the difficulties in transporting logs to the mills in the dry season frequently results in work being restricted to the wet season. Only the larger sawmills can guarantee they will be operational all year round, the majority of bansaws close down or slow production. In the interim months

employees will turn to other professions such as fishing, or simply remain unemployed until the wet season begins again. This seasonality made it difficult to assess if bansaws were closed for the dry season or had permanently shutdown.

Sawmill worker.

3.8.4 Rattan Collecting

Rattan collectors work on their own although their families will often help them to clean and process the rattan ready for sale. Individuals can have their own areas to work in but rattan is easily available in many areas and it is not difficult to find sufficient quantities of the resource. The main problem for rattan collectors is the instability of the price they receive from buyers. Consequently their income varies greatly and they may be unable to afford basic foods such as rice. A rattan collector from Tumbangronen commented that he has known the price for 200 kilos to vary between 20,000 and 200,000 rupiah. These unstable prices have caused him to change his profession to that of a logger.

A collector and his son cleaning the rattan.

3.8.5 Fishing

Fishing is the main occupation for 27% of individuals interviewed.

Fishing traps.

There are several ways of catching fish; using rods, nets, box traps and electricity. All fishermen have their favourite method, however the most popular choice is box traps. These are boxes, constructed from rattan, bamboo or wood with a small gap which directs the fish inside (see previous photo), these traps are submerged in the river and emptied each day.

The use of electricity is limited. I was constantly informed that only outsiders, frequently people from Banjarmasin in West Kalimantan, are the main people who use this method; however this was unsubstantiated. The process involves delivering a mild current of electricity to the water which stuns the fish, enabling them to be gathered from the surface of the water. This method is unpopular because it quickly removes large quantities of fish of all ages from an area which reduces subsequent catches for other villagers. People using this method to fish are sometimes approached by the village head and requested to cease using electricity or asked to leave the village area. Unfortunately this does not always stop the use of electricity.

A fisherman wearing the electrical equipment on his back.

Income from fishing is stable but competition is high. A total of 38% of individuals fish only for their families' consumption. Although fishing is sustainable the increasing use of electric equipment is already decreasing catches according to the numerous comments made by fishermen. Villagers in Tampelas told me they are concerned that they are unable to manage their fish stocks. They can not control the use of electricity, and believe their standard of living will decline as a consequence of decreasing fish stocks.

3.8.6 Farming

The majority of farmers are located in the trans-migrant villages. Their income from farming is stable but many of the other villages are unable to grow produce because of regular flooding, or very acidic soil. Crops are usually sold locally as transportation costs are too high to allow goods to be distributed widely. Farming practices are described in the forest resources section.

Farmers working in the rice fields surrounding Jaya Makmur.

3.8.7 Other Occupations

There are Gemor collectors in the catchment (see Forest Resources section). However the restricted availability and decline of Gemor has reduced the number of collectors. All collectors interviewed report the resource to be increasingly difficult to find. Rubber collecting is sustainable. Trees are "tapped" (see photo) and the rubber drained. Collectors informed me that tapping is not detrimental to the health of the tree. They usually rest trees between tappings, although resting periods will vary from a few months to several years. Trees are reported to decline in yield after approximately three years of being tapped. The number of trees that a collector taps varies, but an average figure is 150 trees.

Tapping a tree.

The rubber collected from the trees is emptied into large containers and mixed with acid to encourage it to set. Once set the containers are transported out of the forest, usually along canals, and sold to a buyer. A popular buyer for rubber is located at a warehouse in Palangkaraya. One collector informed me he is paid 250,000 rupiah for 100 kilos by his buyer. He knew of between 10-20 other people collecting in the same area of forest as himself but they collect from different trees.

Hunting is rare, but bats are hunted in the area surrounding the Setia Alam Field Station in the north of the Sebangau catchment. This location is approximately two hours from Palangkaraya which allows the bat collectors to transport their catch to buyers in town easily. To gain an insight into the activities of a bat collector I spent a night observing a collector working in the forest. To hunt bats a small area is cleared in the forest and a tower constructed from saplings in one corner of the site. This particular tower was approximately 10 metres high. From the top of the tower to the adjacent trees are strung ropes to which large nets are attached. The nets are on a pulley system which allows them to be drawn in easily.

A bat having string tied to its digits.

The collector usually arrives at the clearing at approximately 5pm and climbs up to the platform at the top tower before it becomes dark. The nets are reeled out and they sit up through the night listening attentively until a bat is heard struggling in the nets. The nets are then reeled in and the bat untangled. The bat is kept alive, with its digits tied tightly with string, and is then attached to the sides of the tower. At 5am, when it becomes light, the collector climbs back down with the night's catch. One bat is left up the tower ready for the next night's work because its cries are believed to attract other bats to the area. The collector is met at the base of the tower by an associate who transports the catch to Palangkaraya for sale at the market.

The collector complained that most bats die before reaching town. He is usually paid 17,000 rupiah for alive bats and 12,000 rupiah for dead ones. He knew of 30 other people collecting bats in the area. Hunting in the area is popular due to the location being reasonably close to town, and therefore buyers. He does not object to the competition as he believes there are plenty of bats in the area. Only one type of bat is collected, the large flying fox bat *(Pteropus vampyrus),* this is the only species he knew to exist in the area. The buyer for this collector is located in the Kahayan market in Palangkaraya, I subsequently visited the location and observed the trading of live bats. People purchase the bats from the market stall to eat. The buyer told me they are considered a delicacy. The collector normally catches 15 bats a night in July, 25-50 bats in September and October and 15-50 bats in November. He will only hunt between July to November as the wet season means conditions are difficult to work in and the catch also declines as the bats are attracted to certain fruiting trees. He estimated he earns between 2-3 million rupiah a year from bat collecting.

Birds can easily be purchased in Palangkaraya. They are a popular pet and are displayed outside many homes throughout the study area. A popular type of bird is the Tiung, a minor bird. Bat collectors will also occasionally catch birds. However, bird collecting appears to be more an occasional and spontaneous activity that cannot be relied on to provide a regular income. In

Tampelas young boys informed me they had caught their own birds, implying it is considered more of a hobby than a profession.

A deer hunter was interviewed in Muara Pangkuh. He currently hunts part-time and kills four deer a year on average. He works locally and sells the deer to other villagers. He sells each one in segments and estimates he receives 800,000 rupiah for each deer. He knew of no other hunters in the area. Long-tailed macaques *(Macaca fascicularis)* are also popular pets and can be found in 14 of the 21 locations visited. They are caught in locations close to the villages and are usually chained to poles outside family homes. During the course of the study I also discovered two dark-handed or agile gibbons *(Hylobates agilis)* being kept as pets. One was located at a sawmill and I was told it had been a present to the owner. The second gibbon was located in a rattan warehouse and was also a present to the owner.

I encountered one orangutan hunter on the Sebangau river. He has previously successfully hunted for three orangutan infants, on each occasion shooting the mother. Only when the mother is dead will he remove the infant from her body. He claims that it has been five years since he last hunted for orangutans because he only hunts if he is certain he can sell the infant. In the past he has received orders for these infants from a shop located in Banjarmasin. He is aware that it is illegal to hunt for orangutans but said he would be prepared to break the law again if he received another order. The smaller the orangutan the greater the payment he receives; he has been paid 250,000 rupiah for an infant weighing 3kgs. He informed me that the price declines for larger orangutans because they are not so easy to sell. This hunter also told me of an additional orangutan that he purchased from a group of loggers for 100,000 rupiahs. He thought this a good price and had hoped to make a reasonable profit when he found a buyer. However before he could sell the orangutan he was visited by government forestry officers who confiscated the orangutan. They paid him 20,000 rupiah, which he informed me was “thank you” money, a contribution towards covering some of his financial loss. He claims he has no knowledge of any other orangutan hunters working in the area.

3.9 Sawmills

Makmur Abadi Sawmill

The largest sawmill in the catchment, Makmur Abadi, is located on the Katingan river, opposite the village of Kampung Melayu (see Appendix 6 for the location). The majority of employees have travelled to the area from Java and Banjarmasin specifically to work in this sawmill. The mill owner is an Indonesian who lives in Jakarta but he visits the premises once a month to meet with his Chinese manager.

Timber stores at the Makmur Abadi sawmill.

The mill was established in 1993 and until two years ago business was extremely good. I was informed that the availability of timber started to decline in the year 2000 but that the mill is expected to remain profitable for at least another five years. I was unable to discover how profitable the business actually is, but was told that a large percentage of the business relies on the exportation of timber to Korea and Japan. During a tour of the premises I watched employees at work. There is a total of 140 employees but this will

increase in the wet season. Production also increases in the wet season because of the easier transportation of logs to the mill when the water levels rise. Employees work at various tasks throughout the packing, storage, and moulding warehouses. The majority of timber processed is Meranti and Mentibu, these are the preferred species as they obtain a high price when exported. I was told that the timber would initially be transferred by the company to Java prior to being exported abroad.

Makmur Abadi Sawmill.

Sanintra Sebangau Indah

The Sanintra Sebangau Indah sawmill, known locally as S.S.I, is located on the Sebangau river (see Appendix 6). It was established in 1999. The owner

of the mill is an Indonesian living in Jakarta who visits every month to speak with his Chinese manager and check on business. I visited the mill in August 2002 but discovered production had actually ceased two months previously after a visit from government officials. Prior to closure the mill had employed over one hundred people. At the time of the visit there were sixty individuals remaining, living on site in accommodation provided by the S.S.I. A respondent commented that the majority of staff are from Banjarmasin, West Kalimantan; however I did speak with some employees who originated from Central Kalimantan. The logs processed are all from the Sebangau river area, species include Ramin, Meranti and Pulai. The smallest logs being processed are 20cm DBH. The timber is then shipped to Semerang, in Java, where the owner has another business.

The processing area at S.S.I.

Initially my respondents stated they would not discuss the reason for the mill's closure, and I was only allowed to proceed with the interviews after I agreed not to question them on the issue. However I was subsequently told, in less formal discussions, that the illegal processing of the Ramin species had been the reason for closure. The hope was expressed that the owner would come

to an agreement with government officials which will enable him to re-open the mill. Four other respondents, who were much were less guarded, informed me that the reason for closure was actually because over half of the production had been identified as illegal timber by the visiting government officials. The mill's management had allegedly been unable to produce the relevant government documents. The respondents hope that the owner of the mill will obtain the relevant paperwork, through a substantial payment to the government, to enable the mill to re-open as soon as possible. They believe that if the appropriate bribes are paid to the forestry department business will continue.

Usaha Rimba Mandiri

The Usaha Rimba Mandiri sawmill, referred to locally as U.R.M., was established in 1998. It is also located on the Sebangau river (see Appendix 6) and is of approximately equal size, and production, to S.S.I. The owner is Chinese and lives in Pontianak, West Kalimantan. He visits the premises twice a year to speak with his Chinese manager. The managers deputy is an Indonesian from West Java, and the deputy's assistant a Chinese male from West Kalimantan. There are approximately 140 employees. The mill is operational for only eight months of the year, the majority of staff then return to their villages for the other four months. It is estimated that 25% will remain in accommodation provided by the mill. There are extensive facilities available to employees and their families, including a clinic that is well stocked with medical supplies and has a resident nurse. The nurse provides free advice to employees and locals to whom the facilities are also available. The school has educational books and posters available in the classrooms. I did not see these facilities in any of the other schools I visited. There is also a lavishly furnished guest house that is maintained specifically for visiting businessmen.

The mill ceased to process Ramin in August 2001 in accordance with government guidelines. Consequently, the business profits have declined due to this restriction, and there is concerned about falling profits. My interviewees believe that unless the restriction is relaxed the mill may have to close in

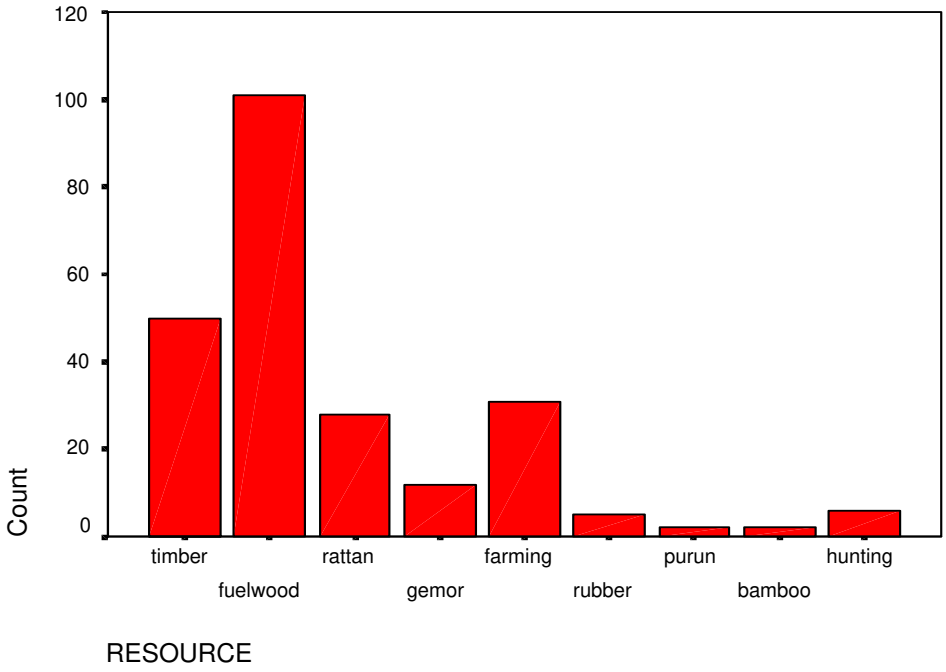
2003. The main tree species being processed are Mertibu, Tarantang and Alau, I was told these were far less profitable than Ramin for the mill. All timber processed is obtained from the Sebangau area, Kerengbangkirai is the source furthest away. One respondent estimated that over 300 loggers supply timber to U.R.M. After being processed the majority of the U.R.M. timber is shipped to Semerang were it is sold to the owner of the S.S.I. sawmill. This individual also owns a furniture factory in Semerang where timber can be made into furniture prior to export. Timber is also sent to Pontianak, West Kalimantan, and sold to the Bumi Raya Wood Industri (BAWI Ltd.).

Stores of timber at U.R.M.

3.10 Forest Resources

Of the 160 people interviewed 92% use at least one type of forest resource. Figure 4 shows the resources used by respondents. Individuals were asked to list everything they use from the forest. The chart includes the responses from individuals who have cleared forest areas to grow crops on the land.

Figure 4: Forest resources that are utilised by respondents (n=147). (Count = No. of respondents using forest resources).



All the villages surveyed were situated on rivers or canals and are located close to forest areas. With the exception of Kerengbangkirai, the only form of transport available is klotoks. Many individuals can not afford river transportation costs and therefore the sale of goods is restricted to locals, or buyers travelling to the area.

3.10.1 Timber / Fuel wood

Fuel wood is the most popular resource to be utilised, followed by timber. The timber figure represents trees logged for sale to bansaws and sawmills. The

timber figure is half that of the fuel wood total but the removal of trees causes far greater damage to the forest in comparison to the persistent but relatively small quantities used for fuel wood. The predominate fuel used for cooking on domestic stoves is wood taken from the forest. An alternative fuel, kerosene, can be purchased in all locations but is not widely used. Although kerosene is considered relatively cheap, fuel wood is free and easily available and therefore the preferred choice. Most individuals collect their fuel wood straight from the nearest forest. However in locations such as Telaga where a bansaw operated, off-cuts can be collected direct from the bansaw. No charge is made by the bansaws for off-cuts. Wood is occasionally obtained from other sources, for example in Sampang one family collects loose logs found floating in the river, and in Sebangau Mulya branches from fruiting trees on farm land are collected for fuel.

3.10.2 Rattan

Rattan is used to make furniture and handicrafts, the collection of it is a sustainable practice that has existed in the area for generations. The rattan is collected from the forest by individuals who then clean it before selling the rattan to a buyer.

3.10.3 Gemor

The name Gemor refers to the bark collected from the Gemor tree. These trees are stripped of their bark which destroys the tree. The bark is then dried and sold to a buyer. Gemor is used in products such as make-up and mosquito coils. This practice is not sustainable and collectors are having to travel increasingly long distances to find Gemor.

3.10.4 Farming

All of the villages on the Katingan from Asem Kumbang to Galingang (see Appendix 6) suffer from regular floods and are therefore unable to profitably grow crops. In these locations floods have been experienced at least twice a

year since 1987. The remaining villages along the Katingan are tidal and do not suffer from flooding. It is acknowledged by a small fraction of villagers (8%) that these regular floods, which prevent them farming, are caused by over logging of the area. At the base of the Katingan river trans-migrant locations depend on agriculture for their income. The villages in this area are Jaya Makmur, Subur Indah, Singham Raya, Bangun Jaya, Kampung Baru and Setia Mulia, all of which were established by the government between 1983-5. Each village has approximately 1000 hectares of forest cleared to provide land for farming. Irrigation canals provide the land with adequate water. The variety of crops grown includes rice, corn, beans, spinach, red pepper, cabbage, cassava, tomatoes, cucumber, water melon, and mango.

On the Sebangau river the combined villages of the Paduran trans-migrant settlement also rely on farming for their income. These villages were established from 1986-88. Each has approximately 1000 hectares of land developed for agricultural use by the government. However in the village of Sebangau Mulya only half the land cleared is currently being farmed. The Village Head informed me that this is because the villagers find it too difficult to irrigate the land. Crops grown in this location include coffee, cassava, rice, oranges, coconut and an assortment of vegetables.

3.10.5 Others

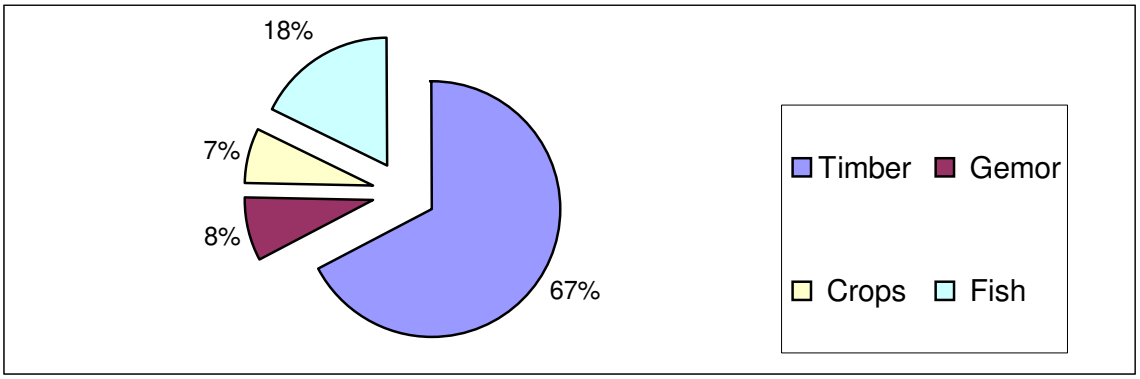
The remaining resources utilised are a combination of rubber, purun, bamboo and hunting. Rubber collecting has been described in the previous section. Purun is a type of long grass that grows in swamp areas. It is cut at the base, dried and then woven into mats for use in the home. Bamboo is collected and made into fishing box traps, it is an alternative material to rattan. Hunting practices have also been discussed in the previous section.

3.10.6 Attitudes to resource availability

Results show that of the individuals who use forest resources only 52% experience difficulty in obtaining the resources. However I estimate that this

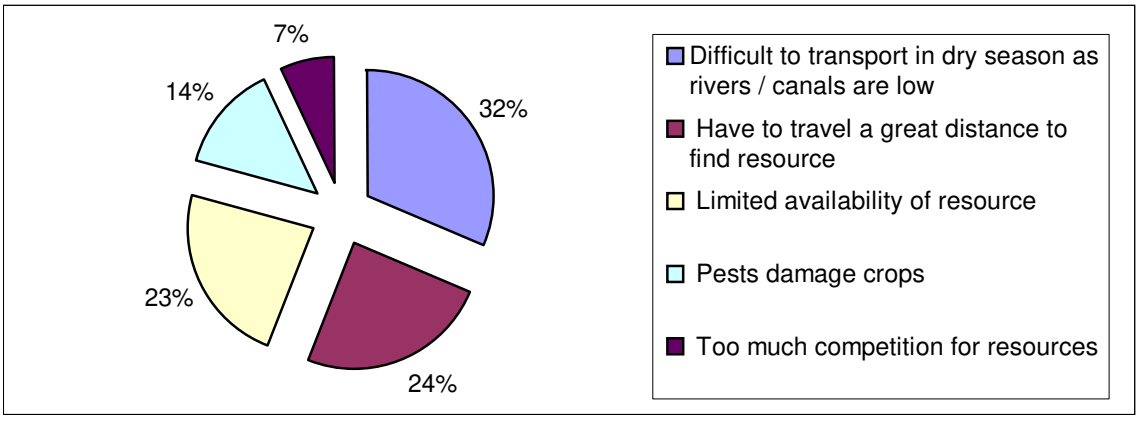
figure would have been much higher were it not for the relatively easy availability of fuel wood. Figure 5 shows the resources that respondents consider difficult to obtain.

Figure 5: Resources which are identified as being difficult to obtain (n=83).



Clearly timber is considered the most difficult resource to obtain with 67% of the total figure. When asked what the difficulties were the main problem is the transportation of timber in the dry season due to the low water levels, see figure 6. When logs cannot be moved out of the forest for sale to mills then loggers have to wait for the rains before they can continue to work. 24% stated the difficulty of finding trees of sufficient size to log causes them to travel great distances, a further 23% recognise that there is reduced availability of resources.

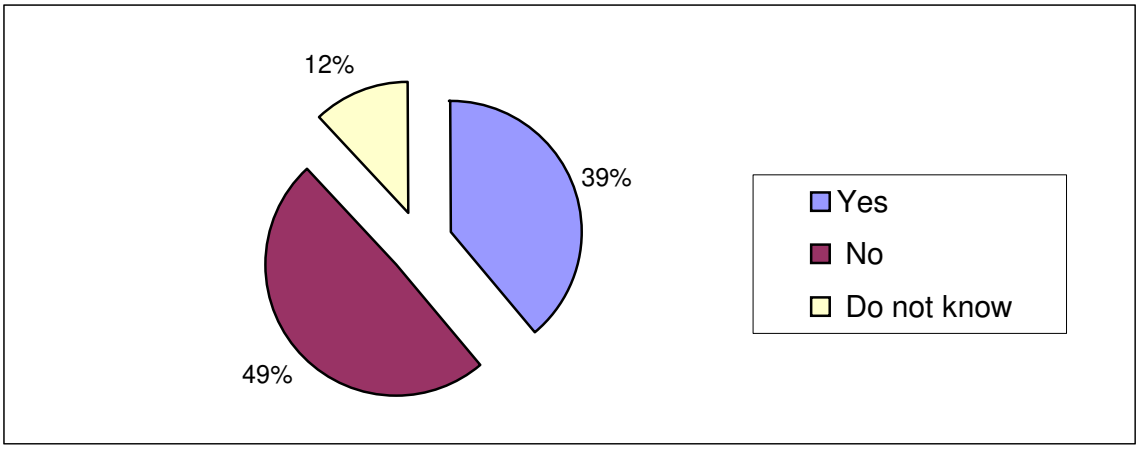
Figure 6: Reasons for difficulties in obtaining resources (n=83).



3.10.7 Concerns about the future of forest resources

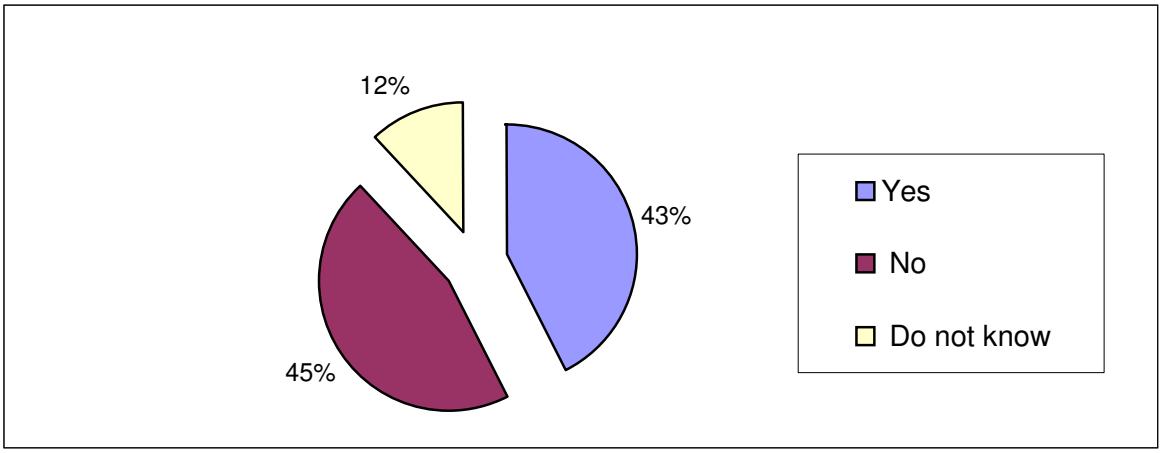
To identify if respondents believe resources will always be available for them to utilise they were asked about their opinions on future availability (Figure 7). Almost half of respondents, 49%, believe that resources will not be available in the future, while 39% believe they will be available.

Figure 7: Respondents' opinions on whether their forest resources will always be available (n=160).



The majority of respondents think the gradual decline in availability will result in the eventual extinction of some resources. Loggers in particular are aware that the forest trees left to log are of a smaller diameter than were available in previous years. These interviewees believe that the continual logging of these trees will clear the forest completely. Many stated they will not remove trees of under 30cm DBH but that they know of many others who do remove these smaller trees. However, 39% feel that resources will still exist, villagers will simply have to travel further into the forest to find them. There is some confusion over the concept of the "the future", it is generally considered to mean for the extent of the individuals lifetime. To gain a clearer understanding of their views on future prospects individuals were then asked if they expected their children to have the same resources available to them (Figure 8).

Figure 8: Respondents' opinions on whether their children will have the same resources available to utilise (n=160).

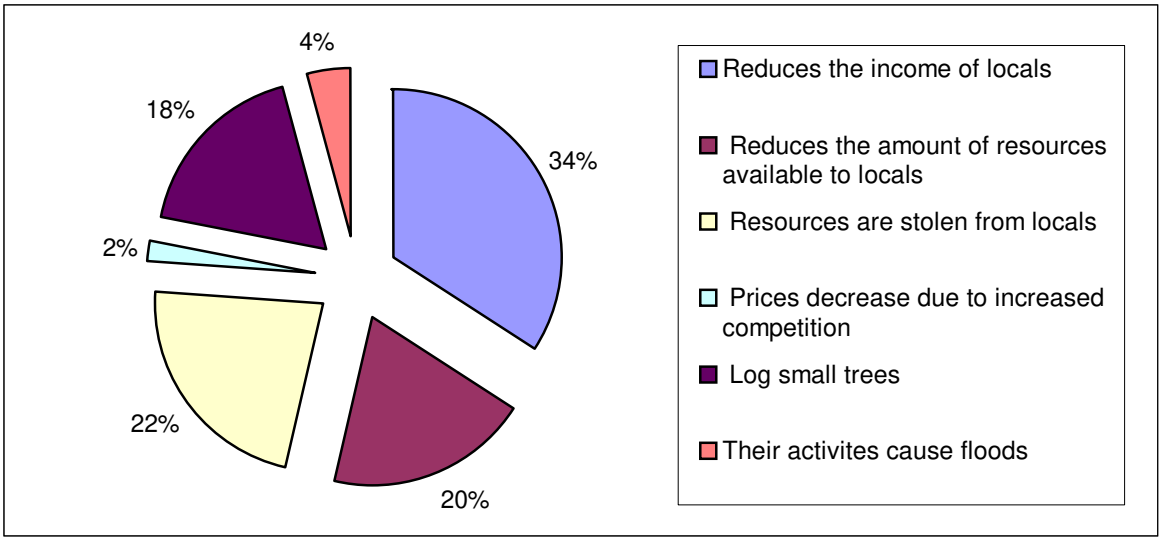


The results are very similar to the previous question with 43% believing their children will have the same resources available to them and 45% believing they will not. The 12% of those who simply do not know remains the same. Some interviewees commented their children will probably have to move to other areas to find the resources, this partially explains the slight increase in positive responses from the previous question. These respondents consider there to be a huge area of forest available in other areas which could provide for their children in the future.

Of the villagers interviewed 70% state that they object to the way other people use resources. They were asked to provide more detail on who these people are and also what resources they are using. Sixty seven percent of respondents identified the people to be from outside of the village, mostly from other villages along their main river. Twenty eight percent were more specific, they believe the people to have travelled to the area directly from Banjarmasin in West Kalimantan, while only 5% object to how local people use resources. This indicates that villagers think resources are being over exploited by people moving into the area rather than the local population. However, this information should be treated with caution as the abuse of resources by outsiders may be a perceived problem. But this does highlight that locals have

concerns over current and future usage. Individuals were asked to state which resources they objected to being utilised by other people (Figure 9).

Figure 9: Reasons why locals object to outsiders using resources (n=112).

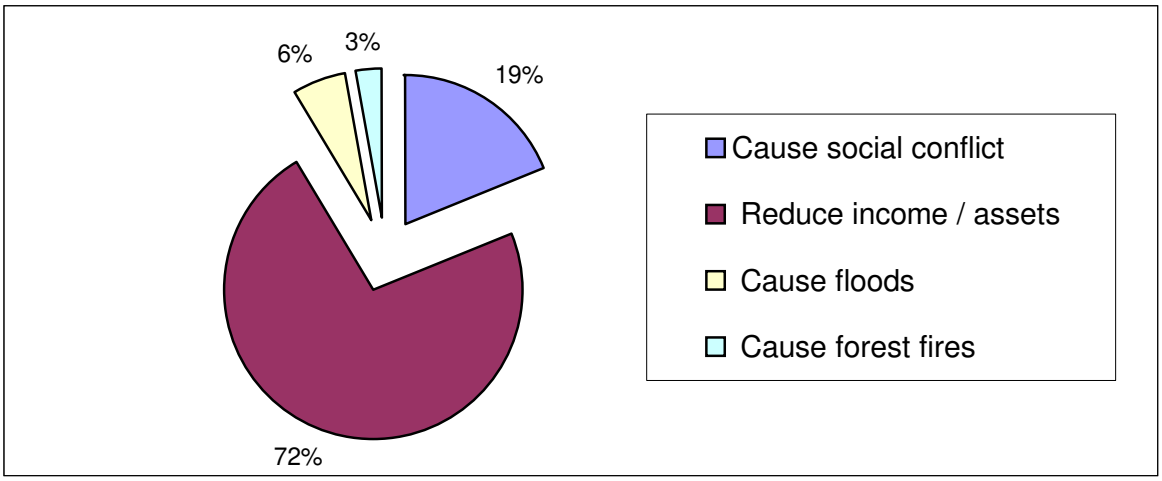


Thirty four percent of respondents object to outsiders because they feel that outsiders utilisation of resources reduces the income for local people, 20% give a similar response stating that outsiders reduce the quantity of resources available to locals. Twenty two percent went further and accuse outsiders of stealing the resources from local people. This gives a total of 76% of interviewees attributing reduction in resources, and therefore income, to outsiders. Of the remaining 24%, 2% felt that increasing competition causes prices to decrease. Eighteen percent object to outsiders because they log small trees - this refers to trees of less than 30cm DBH; and these individuals want the trees grown to a greater diameter before being logged. Four percent believe the outsiders over log areas and that this causes floods.

These results show that although locals are aware there are problems in obtaining resources they attributed the difficulties to outsiders, rather than local utilisation. Local people do not perceive their own use of forest resources to be a major factor in decreasing availability.

The interviewees were then asked if they consider the outsiders to cause them any problems on a personal basis, 43% believe they do. This 43% of respondents were then asked what these problems were (Figure 10).

Figure 10: Problems that were believed to be caused by outsiders (n=69).



While 19% of respondents have concerns about the social conflicts outsiders cause within their community 74% state the main problem is the reduction in income for local people when they have to share resources with outsiders. A small fraction of the community are concerned that outsiders cause flooding in the area through over logging of the forest or blame the outsiders for forest fires through the careless disposal of lighted cigarettes.

Social problems certainly exist between outsiders and locals. Village Heads often explain that they are attempting to negotiate between individuals. However they are not always successful, for example while interviewing in Bantanan a fight broke out. Disputes are mainly over access to resources. There are other reasons for social problems, for example in Kampung Melayu the village elders have concerns about the drug abuse that exists in the village. They are located opposite to the largest sawmill on the Katingan river and visiting business men, from Kalimantan and Sumatra, are reportedly selling the drug Ecstasy to locals. The village elders blame these visitors for corrupting their community. But the reduction of income for locals, through

having to share resources with outsiders, is the main problem. People are reluctant to share their working areas to the extent that many patrolled their perimeters to deter others from entering. Others will report anyone working in their locations to their Village Head, or simply ask them to leave. The frequency of these disputes varies from village to village, in locations such as Asem Kumbang no problems exist.

3.10.8 Opinions on future prospects

90% of respondents believe that the area needs protection. These individuals were then asked what it was they think the area needs protection from.

Figure 11: Opinions on what the area needs protection from (n=144).

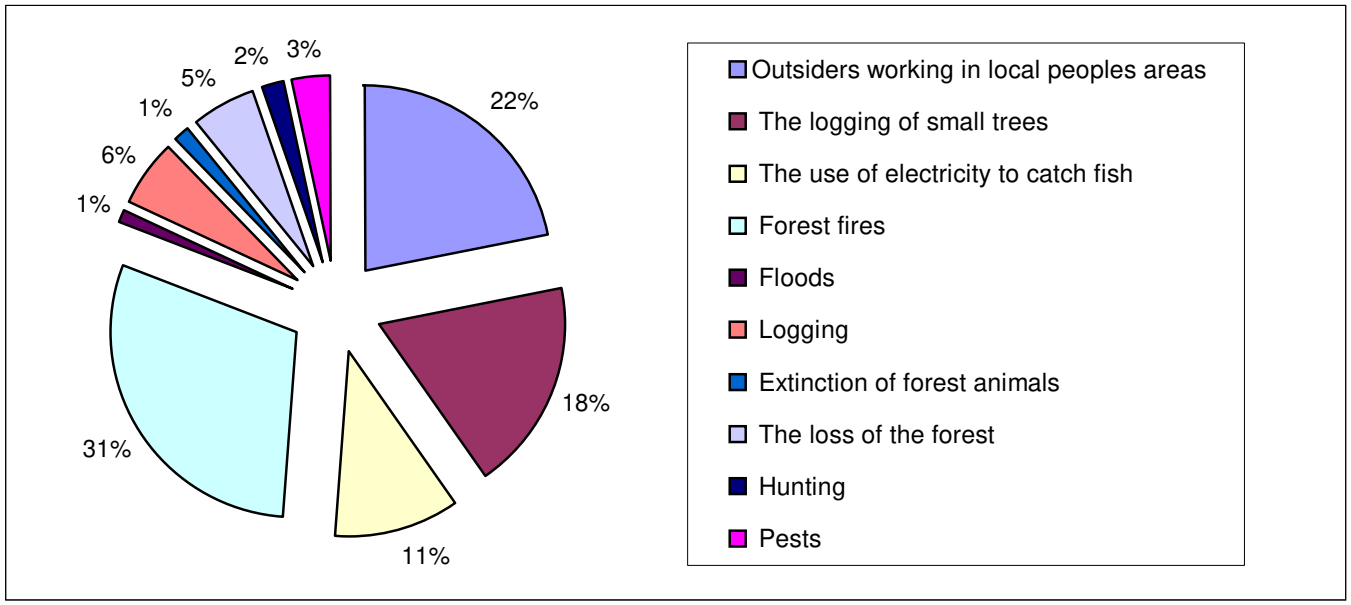


Figure 11 clearly shows that the main concern is forest fires with 31% of the total percentage. Fires are used in some locations to clear and fertilise the land after harvesting, however the main problem are the forest fires which frequently start in the dry season. Canals constructed by loggers may dry out the surrounding forest and therefore increase the possibility of fires occurring (Bompard and Guizol, 1999). However respondents attribute the most common cause of fires to be loggers working within the forest who fail to

extinguish their cigarettes properly. Twenty two percent state they need protection from outsiders working in local areas, 18% want to see a reduction in the amount of trees under 30cm DBH being logged, while 11% would like to end the use of electricity for catching fish. When asked who could effectively protect the area 43% responded that it can only be local people, 12% believe it must be the government, and 21% that it would have to be a collaboration between locals and government officials. 11% consider it impossible to successfully protect the area. The remainder suggest collaborations between government, locals, outsiders, and NGO's.

Individuals were then asked what they believe the future prospects are for their community. 70% of respondents consider the prospects to be bad, with only 13% believing there is a good future ahead for their community. The remaining 17% are unsure or do not know. To examine to what extent people's own particular interests influenced their response an independent – samples t-test was conducted to compare the concerns over future prospects for the community for fishermen and loggers. There was no significant difference in scores for fishermen (M=4.20, SD=0.5314), and loggers (M=4.06, SD=0.4286). The magnitude of the differences in the means was very small (eta squared=0.013).

Of the 17% who were unable to provide an answer many considered it is impossible to make predictions. The majority of interviewees were Dayaks who frequently commented that they traditionally make few plans for their future. In less structured conversations it was discussed how they will wait until a situation occurs before deciding how to progress. This explains why although the majority of respondents feel that the future holds bleak prospects for their community few have anticipated what can be done to avoid it. Some respondents found it very difficult to reply to the question.

In every location visited it was suggested by locals that development of the area would provide a better future for the community. I was often asked to appeal to the government upon my return to Palangkaraya to request assistance in providing the villages with the means to improve their prosperity.

Villagers most frequently want to see the development of plantations in their area either for oil palm, rattan or other produce such as fruit. They believe plantations provide a good source of income and that this would benefit their community enormously. Other development schemes include the building of roads to improve access to the area and the irrigation of land for the development of agriculture. In several focus groups the view was also expressed that the government will eventually provide assistance for the communities the form of the development of such schemes.

In Jahanjang, Karuing, Telaga and Tampelas (all villages located on the Katingan river), I was informed that the area is suitable for gold mining. It appears that westerns, surveying these locations for gold, have visited villages in recent years. These visits have encouraged the locals to believe that there are good prospects for gold mining locally. However, there is no documentation to substantiate the presence of gold in the area, the actual results of these surveys has not been communicated to the Village Heads. The presence of gold, and its potential to be a source of economical development in the future, appears to be little more than a rumour.

3.11 Orangutans

Of the individuals questioned 94% do not consider orangutans to cause them any problems. The remaining 6% are loggers who complain of occasions when orangutans have eaten their food while they work in the forest - they attribute the disappearance of rice stored at their pondoks to food raids by orangutans. But the majority of respondents do not have negative feelings towards orangutans.

Throughout the entire study I encountered only one orangutan hunter (see previous section on hunting) despite numerous local enquiries, and heard of only one report of an orangutan being sold as pet. In Kerengbangkirai I met a villager who had purchased an infant in February of 2002 for 200,000 rupiah. The seller had captured the baby from an unknown location along the Sebangau, and was not a resident of Kerengbangkirai. The infant had

subsequently died. Two other residents of the village commented that they believe the hunting of orangutans may continue in the area but they do not know of any individuals involved. In Bantanan a respondent described to me how one day he had found a sick orangutan on the forest floor when returning from his work in the forest. He gathered friends and family who helped him carry the orangutan, a large male, back to his house. He provided food and water in an attempt to nurse the orangutan back to health but he died on the floor of the house the following day. The man was unsure as to why the orangutan had become sick but commented on its poor physical state, he considered the orangutan to be very thin. In Sampang, an area of the Katingan that attracts many loggers, a villager described how in August of 2002 he had been caught in an area of forest that was on fire. He eventually made his escape to the river bank and the safety of his boat but observed two orangutans caught in the forest close to the flames. He felt certain they must have perished.

Dayaks refer to orangutans as “kahiu” and I was told several stories in which they described orangutans as attacking people. These stories have been passed from generation to generation, at no location did any actual incidents appear to have occurred in the life span of the villagers. However the belief in the stories is strong. Many respondents, when speaking to me individually and in semi-structured interviews, expressed the opinion that orangutans are dangerous. Women especially believe that they are in danger of being attacked and raped by male orangutans. It is considered dangerous to disturb orangutans, especially as they could be having sexual intercourse which would cause the male to angrily attack those who disturb him. Men and women who hold these beliefs will therefore move away if they see an orangutan. One group described that several orangutans had once been observed in a single tree, these villagers thought the orangutans were meeting to communicate with each other. They consider this to be a regular occurrence for orangutans and that it demonstrates their similarity to humans. Although people have heard many stories about orangutans they have limited knowledge of the species and therefore continue to rely heavily on these traditional stories.

Loggers report that it is not uncommon to see orangutans whilst working in the forest, however frequently they will also move away and return to the area later in the day when the orangutan has passed by. It is considered dangerous to work close too orangutans as they may attack. Even individuals who had never personally seen an orangutan believe them to be dangerous. This fear of personal safety appears to have served to protect the orangutan from further encroachment. However as previously mentioned, the results from this study are limited as these are views from a relatively small section of the total population.

During more informal discussions locals often report the presence of orangutans in the area, especially in the locations of Jahanjang, Karuing, Tampelas, Perigi, and Sampang. Loggers in particular frequently state that they observed orangutans whilst working in the forest. This indicates the existence of orangutans around the locations visited. Five respondents described how they had seen orangutans on the river banks opposite to their villages. They consider the dry season to have prompted orangutans to move towards the river to drink.

Respondents were asked what they thought the future prospects are for orangutans. Thirty eight percent believe they are good, 39% bad and the remaining 23% do not know. There is a general lack of concern from respondents about what the future will hold for orangutans. Of the 38% most believe that as long as orangutans are not hunted, as is the situation in the majority of locations, their future will be good. Others consider there to be plenty of forest remaining for orangutans to survive in and that they can always move to other areas even if the local forest is no longer suitable for orangutans to live in. Of the 39% that consider prospects to be bad the overwhelming reason reported for this is lack of habitat and food availability for orangutans. These respondents believe that logging disturbs orangutans and causes them to leave the area. It is considered difficult for orangutans to find alternative places to live as so much of the district is being logged. They also believe that food availability is declining, resulting in orangutans ultimately starving. Although these individuals consider it a shame for

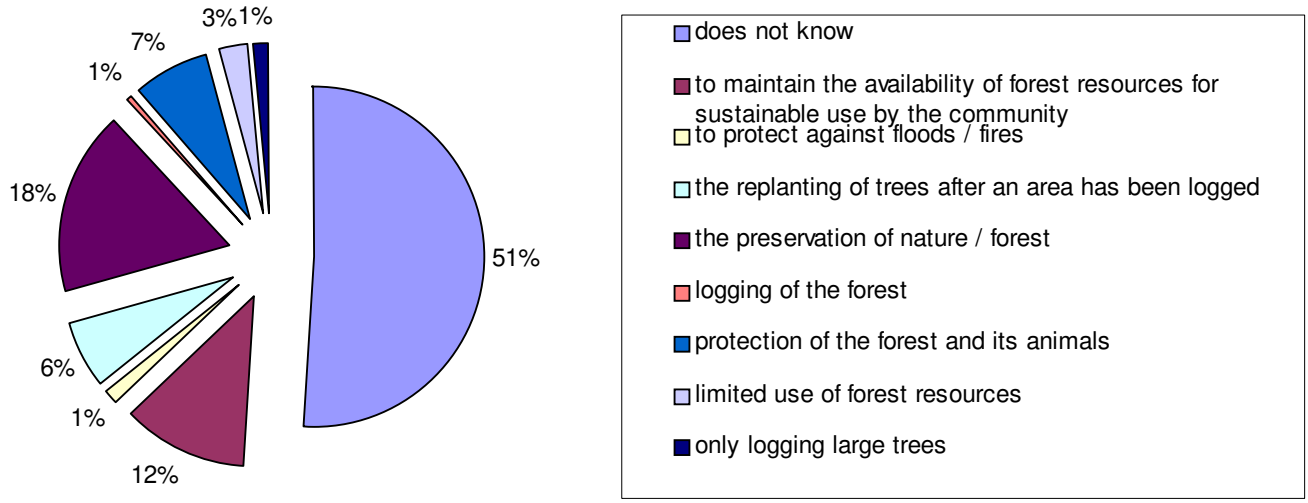
Indonesia to lose an asset such as the orangutan it is thought to be unavoidable. This is because they think that the continuous demand for timber will eventually reduce the amount of forest available for the orangutan to survive in. The protection of the area to promote the survival of the orangutan was debated during focus groups. It is generally felt that the orangutan is an asset to the area. However it is considered that protection of the species would bring no benefit to the local people. Economic development of the area is the main concern for villagers.

The communities' knowledge of orangutan behaviour and ecology is extremely limited. There is also a lack of interest in the well-being of the orangutan, even from the individuals who commented on its bleak prospects. Information on the species is generally gained through traditional stories which provide many inaccuracies on orangutan behaviour. There are no other sources of information on orangutans available to villagers.

3.12 Conservation

To assess the villagers understanding of environmental conservation the respondents were asked to explain what they understand the word "conservation" to mean. Figure 12 shows the results.

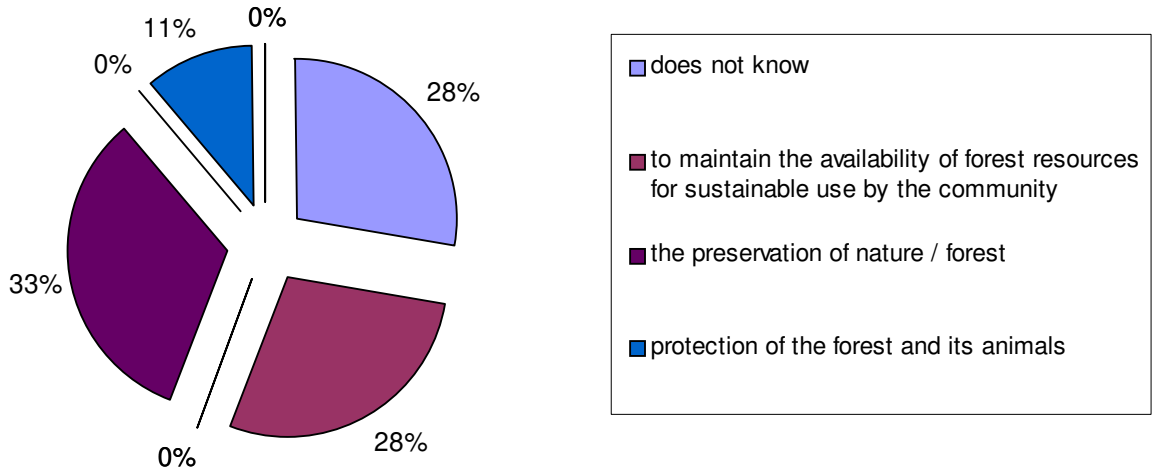
Figure 12: Opinions on the meaning of the word "conservation" (n=160).



Over half the respondents do not know the meaning of conservation. The remaining 49% have quite different opinions about the meaning; 18% state conservation means the protection of the forest, the birds and animals that live within it; 7% give a similar response believing it to mean the preservation of the forest and nature. These two interpretations give a combined result of 25% which indicates some understanding of conservation exists in the area.

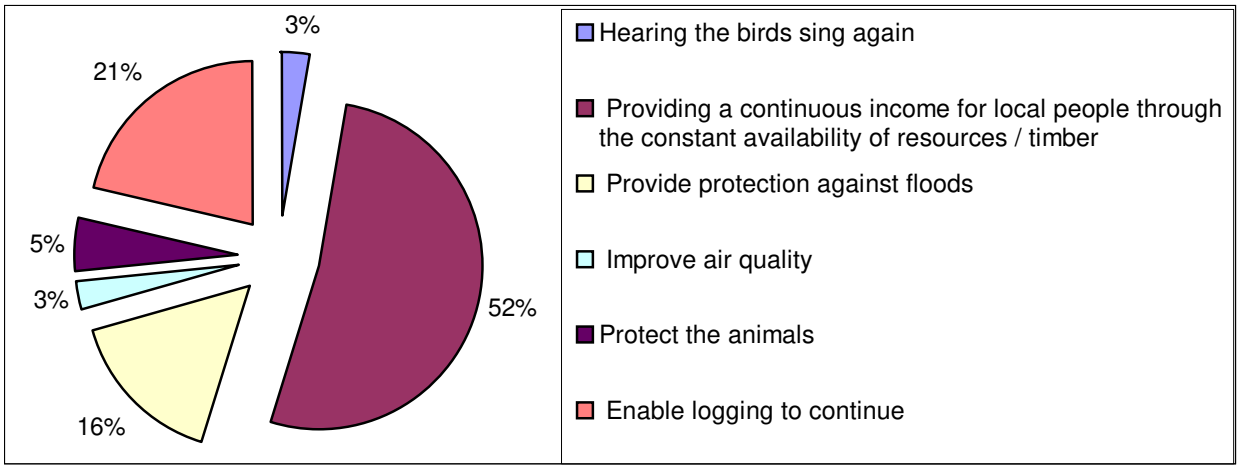
Figure 13 looks only at those individuals who depend on forest resources to examine whether they have a better understanding of conservation. It is immediately obvious that there is some improvement. A greater percentage of these people are able to suggest meanings, the “do not knows” have dropped from 51% to 28%. However it is still evident there is a lack of understanding as to actual meaning of the word. Twenty eight percent consider conservation to provide constant availability of resources for the community.

Figure 13: Opinions on the meaning of the word “conservation” by people who depend on forest resources (n=77).



This response was repeated when all interviewees were then asked what benefit conservation would be to them, see figure 14.

Figure 14: Opinions on what the benefits of conservation would be (n=82).



A majority of 52% think that conservation could maintain the availability of resources for the communities' continued use. This figure demonstrates that despite some of the respondents previously stating conservation means the preservation, or protection of the forest they believe the benefit of this would be continued utilisation of the forest by local people (i.e. that logging can continue in the area). No respondent suggests that conservation of the area would required logging to cease. In fact 21% thought conservation would enable logging to continue. Despite this activity devastating the forest and contributing to regular flooding such is the communities' economic reliance on logging that one of their main concerns is the continuation of the process.

A focus group in Tumbangronen discussed possible conservation of the area. They had few ideas on how the area could be conserved. The group did want to see the preservation of their natural resources and recognised their dependence on these resources. They were interested to know if conservation could provide solutions to maintain resources for continual utilisation. The main concern is the declining availability of timber in the area and they discussed how the current levels of timber extraction could be maintained. Similar discussions were held in Karuing, Tampelas, Perigi and Mendawai.

4. Conclusion

ICDP's can be problematic in implementation (Adams and Hulme 2001). A review of community conservation initiatives has identified that programmes can fail to achieve success (Hulme and Murphee 2001) and the limitations of ICDP's are recognised (Oates 1995; Wells et al 1999; Salafsky and Wollenburg 2000) and have been widely documented. Therefore the importance of assessing the Sebangau communities' dependence on forest resources can not be underestimated if the ICDP is to be successfully implemented. The characteristics of the area need to be investigated fully before any conclusion can be reached on the areas suitability.

This study establishes that there is a large human population living and working within the catchment with the total figure in excess of the 26,196 individuals identified in this report. This figure suggests that a much higher number of respondents will need to be approached to achieve to an adequate representation of local opinions and attitudes than was possible in this study. However this research report does indicate key concerns. For example it is apparent that the area's dependence on logging would considerably limit any local support for conservation action that restricts the utilisation of timber.

Educational and medical facilities are either limited or totally absent in the locations surveyed. Of the respondents interviewed 94% report they can read but there is no availability of newspapers, magazines or books in the majority of locations. This restricts the development of reading standards which are generally low. The wage paid to teachers by the government is considered inadequate and frequently results in additional part-time work, which contributes to the continuation of poor standards in education. Education on the detrimental effects of activities such as logging would increase local awareness as currently information, and therefore knowledge, is non-existent. However "if the achievement of conservation goals is believed to depend on a value shift through educational inputs, particularly if the shift is expected to be rapid, it is unlikely to be successful" (Adams and Hulme 2001). It is unlikely that education on conservation issues alone would create a radical change in

the lifestyles of the Sebangau communities. However it has previously been recognised that respondents with no education were consistently more negative towards conservation than respondents with some schooling (Infield, 1997). It can therefore be concluded that improvements to educational standards within the area would have some benefits to any conservation strategy.

The results identify a strong dependence by the resident communities on logging, the dominant force in economical development in what is still a relatively sparsely populated region. Since the late 1960's Indonesian forests have become a substantial source of revenue (Barber 1998). The results of this study confirm that the timber industry continues to be an important source of income and employment for the resident communities, despite the increasing difficulty in locating the resource. Existing government guidelines on the restricted logging of small DBH trees is ignored by loggers in many communities, any further restrictions are likely to be equally ignored by these individuals. Knowledge on forest resource use by communities provides a basis for understanding their possible participation in forest conservation (Hedge, 2000) and a conservation strategy that requires logging to cease within the Sebangau catchment would fail to recognise the communities' dependence on forest resources. Non-timber forest products are also important to the communities' economy but suffer from over collection in the majority of locations. For example although 27% of individuals surveyed are fisherman many complain stocks are reducing and that this is detrimental to their income. Although rattan collection is sustainable the poor market prices it achieves means it failed to provide stable employment for many collectors. Hunting practices were minimal.

The timber trade forms an important part of the economic life-support system for villagers, it also impacts on those who serve this industry, for example shopkeepers. Alternative employment opportunities for local people are extremely limited and viable alternatives would need to be developed to support any conservation action. However there is a lack of viable economic alternatives available to the communities and to develop such alternatives

would be a difficult and costly operation. According to Dove, “the search for “new” sources of income for “poor forest dwellers” is often, in reality, a search for opportunities that have no claimants – a search for unsuccessful alternatives” (Dove, 1993).

Of the three sawmills visited, two continue to provide local communities with employment opportunities. So attractive are these opportunities that people travel from outside the local area to gain employment in these mills. The continuous employment that mills provide has been recognised to contribute to improving social prosperity (Choong et al., 1993). However, the closure of one mill and reduced production in another does signal a decline in the sawmills’ success. This will contribute to a decline in living standards for those individuals dependent on the mills for their livelihoods. This will further impoverish local residents who are eager for production to continue.

Wood fuel constitutes the cheapest and most accessible source of household fuel for the majority of the Sebangau population. Wood fuel has previously been identified as one of the most significant causes of forest decline (Osei, 1991). However the consumption identified in this report cannot provide accurate predictions of the effects of wood fuel consumption on the total forest area. Sources and quantities of wood fuel are so varied that further investigation is be needed to assess the negative impact on the area’s forests.

The decline in resource availability is recognised with 49% of respondents stating that resources will eventually become extinct because of over usage. However, many locals attribute this to the settlement of outsiders within the area rather than their own consumption. Local people do not perceive their own use of forest resources to be a major factor in decreasing availability. This may in part be true but locals most certainly contribute to the decline through their continual utilisation of resources. Opinions such as this would need to be given important consideration prior to the implementation of any conservation initiative.

With 70% of villagers considering the future prospects for their community to be poor there is a keen interest in the economic development of the area to improve prospects. Conservation strategies which assume communities to have subsistence goals often discover economic development to be the long term future that these communities actually strive for (Murray Li 2000b). Unless conservation efforts for the Sebangau catchments are clearly rooted in local priorities they will fail to find local support. Within the Sebangau catchment it is not surprising that the local people have little interest in sustaining their areas as forest, this is not uncommon for indigenous people (Brookfield et al., 1995; Murray Li, 2000). Villagers frequently comment that they wish to convert the forest into profitable plantations, thus enhancing their livelihoods through participation in the economic sector. Conservation action that focuses on the sustainability, biodiversity of the area and the needs of future generations would immediately limit villagers' economic aspirations and offer few benefits.

The literature discussion about the link between livelihoods and conservation has been prolific (Fiallo and Jacobson 1995; Salafsky and Wollenburg 2000). The creation of parks and protected areas has historically been a popular approach to protecting areas of important biodiversity but has proven difficult to implement and inadequate in many locations (Brookfield et al., 1995; Naughton – Treves and Sanderson, 1995). Virtually everyone recognises the need for further research into the viability of different regimes especially when this involves the sustainable use of the environment by local communities.

There is clearly a significant orangutan population in existence within the area as many villagers report sightings of orangutans when working within the forest. However the relatively high number of sightings could also indicate that few orangutans are able to avoid encounters with the encroaching human population. Hunting of this species appears to be minimal and fear of these animals seems to have served to protect the species to some extent. The reported instance by the Bantanan villager of the sick orangutan considered to be in a poor physical state indicates that starvation may have been a possible cause of death. Individuals also commented that food availability for

orangutans is declining, suggesting that further investigation is required to assess whether the area has sufficient habitat remaining to support the existing orangutan population.

There is an obvious lack of knowledge of orangutan behaviour and ecology although residents recognise the species as an asset to the area. Educational information on orangutans is not available to villagers. However orangutans, and their survival, are clearly not a priority for this community. The well-being of the species and the poor prospects facing them, although acknowledged by many villagers, is not a serious concern. They simply are not viewed as a priority. It therefore seems extremely difficult to see how these opposing priorities could be combined to produce an effective management solution for the orangutan, even with the support of a comprehensive education programme.

Most respondents have little understanding of conservation. Opinions on how rural people view conservation have ranged widely but it has been previously documented that some communities are too impoverished to support the practice of conservation (Infield 1987). Care must be taken to avoid policies which will be interpreted as being against the interests of communities living within the proposed area and only in the interest of other groups, e.g. NGO's (Infield, 1987). Conservation programmes should not appear preoccupied with environmental concerns, thus management must demonstrate that human well-being is an integral part of any action. It is important to note that any conservation plan and the consequent restrictions on forest usage would have serious repercussions for the community, especially for those villages located in the more remote areas. An assessment of the more remote areas of forest that are not "owned" by locals will need to be undertaken to define the areas of forest they depend on. If assessment of habitat that is not utilised by locals surrounding the village areas could be made it would give an inclination as to whether this habitat is substantial enough to, in part, support the existing orangutan population.

If the pressure on the forests, and therefore the remaining orangutan population is to be reduced, alternative incomes will need to be established. This could be achieved by providing specific alternatives to utilising forest resources or increasing incomes from sustainable products such as rattan. Further investigation into the continued sustainability of rattan would be required if harvesting quantities were to dramatically increase. It is important to recognise that local people have little incentive to support conservation unless they specifically gain from it (Badola,1998). However, the immensity of the task of implementing a successful conservation plan is not to be underestimated. Any strategy for the area should focus on the issue of local peoples dependence on forest resources and how a people-protection relationship can be successfully developed.

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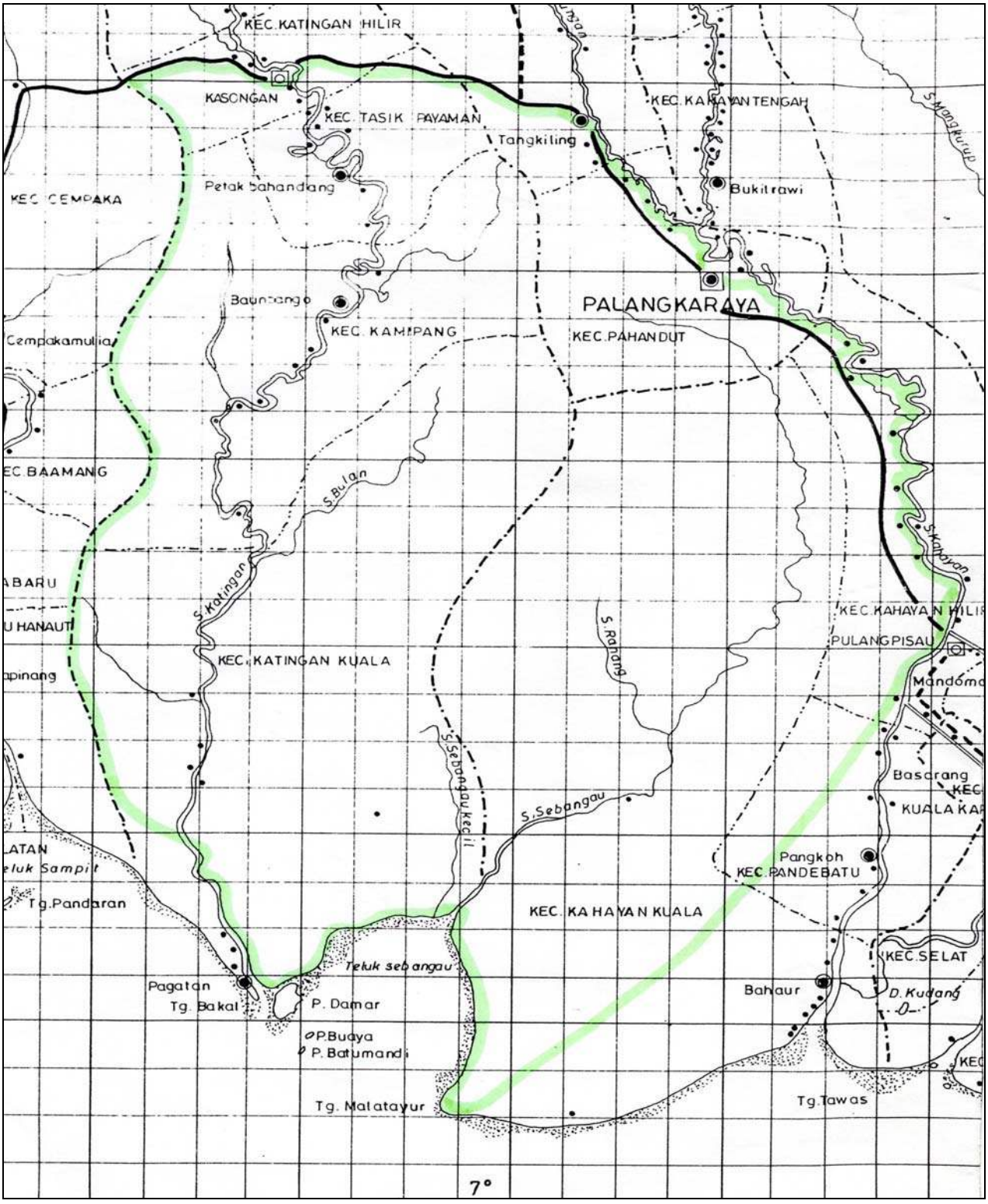
Appendix 1: Boundaries of the Sebangau Catchment



Appendix 2: Letters of recommendation

OXFORD BROOKES UNIVERSITY

To whom it may concern

27th May 2002

Headington Campus
Gipsy Lane Oxford
OX3 0BP UK

Anthropology Department

Tel: +44 (0) 1865 483950/484436
Fax: +44 (0) 1865 483937

Direct Line +44 (0) 1865 48

Dear Sir/Madam,

Letter of introduction and reference for: Ms. Victoria Smith

I am very pleased to provide a letter of introduction and recommendation for Victoria Smith who is a postgraduate student completing an MSc in Primate Conservation at Oxford Brookes University. Victoria is a full time student (one year) who has completed her six taught courses, namely: primate diversity, human/wildlife conflict, conservation genetics, research methods, captive management and environmental education. She is now undertaking her final conservation project towards an MSc dissertation.

The practical assignment or project gives each student an opportunity to conduct independent research in an area central to his/her interests. It also provides practical training in research methods. Victoria has completed an extensive literature review and project proposal, both of which are available should you wish to see them. She can also supply further details of the courses in Oxford for your information.

Victoria is extremely hard working and conscientious. She gets on well with fellow students and staff and enjoys good health. She has proved herself to be highly capable of independent work, including fieldwork, and I am sure she will make an excellent contribution towards wildlife conservation. I will be most grateful if you are able to assist her in any way and thank you for your help and consideration.

Please do not hesitate to contact me on any of the numbers below should you require further information.

Yours faithfully,

S. K. Bearder

Professor Simon K Bearder
Leader, MSc in Primate Conservation
Tel. +44 (0)1865 483760/(0)1869 252082, Fax (0)1865 483937/(0)1869 247050
E-mail: skbearder@brookes.ac.uk

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BADAN PENELITIAN DAN PENGEMBANGAN DAERAH
Jalan Yos Sudarso No. 1 Telp. 34363, 34371, 29224 Fax (0536) 38277
PALANGKA RAYA 73112

SURAT IZIN PENELITIAN
Nomor : 072/217/BPPD/II/2002

Membaca : Surat dari Professor Simon K Bearder, Leader, MSc Programme in Primate Conservation, OXFORD BROOKES UNIVERSITY . Tgl. 27 Mei 2002
Perihal : Letter of introduction and reference for : Ms. VICTORIA SMITH.
Mengingat :

1. Peraturan Menteri Dalam Negeri No. 9 Tahun 1993 tentang Pedoman Pendataan Sumber dan Potensi Pembangunan Tanggal 9 Nopember 1983.
2. Surat Menteri Dalam Negeri No. 050.I/635/Bangda Tanggal 10 Mei 1982 Tentang Petunjuk Pelaksanaan Penelitian Sumber dan Potensi Daerah.
3. Keputusan Menteri Dalam Negeri No. 61 Tahun 1983 tentang Pedoman Penyelenggaraan Pelaksanaan Penelitian dan Pengembangan di Lingkungan Departemen Dalam Negeri.
4. Keputusan Gubernur Kepala Daerah No. 42 Tahun 2002 tgl 25 Pebruari 2002, tentang Tata cara Pemberian Izin Penelitian/ Pendataan Bagi Setiap Instansi Pemerintah maupun Non Pemerintah.

Memberikan Izin Kepada	:	Ms. VICTORIA SMITH.
Tim Survey/Peneliti Dari	:	OXFORD BROOKES UNIVERSITY.
Akan Melaksanakan	:	RESEARCH INTO THE USE OF FOREST RESOURCES BY THE LOCAL COMMUNITIES IN THE SEBANGAU CATCMMENT.
Lokasi	:	SEPANJANG SUNGAI SEBANGAU, SEI BULAN DAN KATINGAN.

Dengan ketentuan sebagai berikut :

a. Setibanya Tim Survey/Peneliti di tempat / lokasi penelitian harus melaporkan diri kepada Pejabat yang berwenang setempat;
b. Hasil Survey/Penelitian supaya disampaikan kepada :
   1. Kepala BALITBANGDA Propinsi Kalimantan Tengah sebanyak 2 (dua) eksemplar;
   2. Bupati/Walikota di Wilayah Survey/Peneliti 1 (satu) eksemplar.
c. Surat Izin Penelitian ini agar tidak disalahgunakan untuk tujuan tertentu, yang dapat mengganggu kestabilan Pemerintah, tetapi hanya diperlukan untuk keperluan ilmiah;
d. Surat Izin Penelitian ini dapat dibatalkan sewaktu-waktu apabila tidak dipenuhinya ketentuan-ketentuan tersebut diatas;
e. Surat Izin Penelitian ini berlaku sejak diterbitkan dan berakhir pada bulan 25 September 2002.

Demikian Surat Izin Penelitian ini diberikan agar dapat dipergunakan sebagaimana mestinya.

DIKELUARKAN DI : PALANGKA RAYA
PADA TANGGAL : 24 Juni 2002
A.n. GUBERNUR KALIMANTAN TENGAH
KEPALA BALITBANGDA PROPINSI
KALIMANTAN TENGAH,

PEMERINTAH PROPINSI KALIMANTAN TENGAH BALITBANGDA

H. A. ROMZAH MSc

UNIVERSITY OF PALANGKA RAYA
CENTRE FOR INTERNATIONAL CO-OPERATION IN
MANAGEMENT OF TROPICAL PEATLAND
(CIMTROP)

Palangka Raya, 6, Juli 2002

Nomor. : 213./CIMTROP/ VII/2002
Perihal : **Pemberitahuan dan mohon diberi bantuan**

Kepada Yth: Bapak Camat baun Bango
Di-
BAUN BANGO

Dengan hormat,

Dalam rangka melaksanakan program kerjasama penelitian antara Universitas Palangka Raya dengan Universitas Nottingham, Inggeris, pada saat ini satu dari tiga belas orang peneliti dan dua orang pendamping dari UNPAR, akan mendatangi instansi Bapak di Baun Bango untuk memperoleh informasi tentang sumber daya kehutanan dan pandangan masyarakat tentang konservasi di Kalimantan Tengah. Untuk itu mohon dengan hormat dapat diberi kemudahan dan bantuan seperlunya.

Adapun nama peneliti tersebut beserta pendampingnya adalah sebagai berikut:

1. Victoria Smith (Peneliti dari, Oxford Brookes University, Inggeris)
2. Edi Topon Mahar, SPd. (Pendamping dari UNPAR)
3. Tarung, SPd (Pendamping dari UNPAR)

Demikian pemberitahuan dan permohonan ini disampaikan, atas perhatian dan kerjasamanya diucapkan terimakasih.

Direktur,

Ir. SUWIDO H. LIMIN, MS

Tembusan:
1. Kepada Yth: Seluruh Kepala Desa Di Kecamatan Baun Bango;
2. Yang bersangkutan;
3. Arsip

Appendix 3: Example of letter of introduction presented to Village Head

PEMERINTAH KABUPATEN KOTAWARINGIN TIMUR
KECAMATAN KAMIPANG
BAUN BANGO.

SURAT KETERANGAN.
Nomor : 522 /65 /PMD.

Yang bertanda tangan dibawah ini :

N a m a : D A R W I L I N.
N i p : 131 273 546.
J a b a t a n : Sekrataris Kecamatan Kamipang.
A l a m a t : Baun Bango.

dengan ini memberikan keterangan bahwa :

1. Victoria Smith (Peneliti dari Oxford Brookes University,Inggeris)
2. Edi Topan Mahar, Sod. (Pendamping dari UNPAR).
3. T a r u n g,SPd. (Pendamping dari UNPAR).

dan sesuai Surat Izin Penelitian nomor : 072/213/BPPD/II/2002 dari Pemda Kalimantan Tengah dan juga Surat pemberitahuan yang ditujukan kepada kami, bahwa yang nama-namanya tersebut diatas benar telah melapor kepada kami dan melakukan kegiatan sesuai dengan Surat Izin Penelitian yang telah di - berikan.

Demikian Surat Keterangan ini kami berikan agar dapat dipergunakan sebagaimana mestinya.

Baun Bango, 17 Juli 2002.
AN. CAMAT KAMIPANG
Sekcam,

D A R W I L I N.
NIP.131273546.-

Appendix 4: Information sheet

INFORMATION SHEET

This information sheet is designed for use with non-literate populations. When individuals are approached for possible participation the following information will be read aloud.

Investigation into the Human Communities of the Sebangau Peat Swamp Forests, Central Kalimantan, Indonesia: Demography, Attitudes and Impacts.

I am a post graduate student from Oxford Brookes University, England and you are being invited to take part in a research study. Before you decide it is important for you to understand why the research is being done and what it will involve. Please listen to the following information carefully.

This study aims to improve my knowledge of the activities of the local communities within the proposed Sebangau conservation area, with particular regard to the use of forest resources.

It is up to you to decide whether or not to take part, I understand that you may not wish to participate. If you decide to take part you are free to withdraw at any time without giving a reason.

I aim to speak with many of the local residents to improve my knowledge of the activities in this area, you have been selected because I hope you will provide your views and opinions on local issues. All information collected will be kept strictly confidential, anonymity will be ensured in the collection, storage and publication of any details provided. The results will be used to produce a report for The Royal Geographical Society, who are funding this study. This report will also form part of my post graduate studies.

If you decide to take part you will be asked a series of questions. The length of the interview will depend on the answers you provide and the amount of time you have available. If you have further available time I would like to discuss your opinions and views in greater depth

I would like to thank you for taking the time to listen to this information and hope you may decide to participate in the research.

This study has been approved by the Research Ethics Officer for the School of Social Sciences & Law at Oxford Brookes University.
For further information on the project contact Dr. Catherine Hill, Oxford Brookes University, Gypsy Lane, Oxford, OX3 OBP, UK.

Victoria Smith
May 2002

Appendix 5: Questionnaire

1. Date:

No.

2. Settlement name:

3. Settlement type:

4. Lat/Lon:

5. Estimated population size:

INTERVIEW SCHEDULE

"My name is _____ and I will spend approximately 40 minutes asking you questions which will assist with my research into this area.
I will begin by asking questions about you, and then about your use of forest resources. Please indicate if you do not wish to answer a question and remember you can end the interview at any time without giving a reason.
Thank you for your assistance".

First some facts about you:

6. Individual name/code:

7. Sex: 8. Age: 9. Religion: 10. No. of children living with you:

……. …… …… ……
11. Arrival date in location: 12. Where did you live previously:

…… ……
13. Were you able to have an education: 14. Can you read: 15. Can your children read:

…….. ……. …….
16. What is your current occupation: 17. What was your previous occupation:

……. ……..

Now some questions about your use of the forest:

18. Do you use anything from the forest: ……..

19If yes, what:	20.What quantities do you use:	21.What do you need the items for:	22.What amount do you sell:	23.Who do you sell to:	24 What amount are for own use:
……	……	……	……	……	……
……	……	……	……	……	……
……	……	……	…….	……	……
……	……	……	……	……	……
……	……	……	...……..	……	……
……	……	……	……	……	……

25. How would you manage without access to these resources:

26. Do you experience difficulties in obtaining any resources:

27. If yes, which resource(s) are difficult to obtain:	28. Why is that:	29: Will they always be available:
……	……	……
……	……	……
……	……	……
……	……	……
……	……	……
……	……	……

30. Do you think your children will have the same resources available to them:

31. If not, why is this:

32. What could be done to maintain the availability of resources for your children:

33. Do you clear or burn forest areas:

34. Why:

Now a few questions about your use of animal resources:

35. Do you fish:

36. If yes, what for:	37. What quantity is for your own consumption:	38. Do you sell the rest:	39: Who to:
……..…	……...	...……	……
……..	……...	...……	……

40. Do you hunt:

41. If yes, what for:	42. Does this include orang utans:	43. What quantities do you get:	44. What quantity is for your own consumption:

…… …….. ……
…… ……. ……..
…… ……. ……
…… ……. ……
…… …….. ……
……. ……..… ……

45. Does it provide an income:

46. Who do you sell to:

47. Can you tell me how much money it earns you:

We are almost at the end of the interview but I would like to ask some questions about your opinions on the following issues:

48. Do you object to how other people use the forest resources:

49. If yes, which people: 50. What resources: 51. Why:

……. …….. …….
……. …….. …….
……. …….. …….

52. Does their use of resources cause you any problems:

53. If yes, what problems: 54. What could be done about this:

……. …….
……. …….
……. …….

55. Do orang utans cause you any problems:

56. If yes, how: 57. What could be done about this:

…….. ……
…….. ……

58. Do you believe this area needs protecting:

59. If yes, what does it need to be protection from: 60. Who could do this effectively:

……. ……..
……. ……..

61. What do you think the future prospects are for your community:

62. Why:

63. What do you think the future prospects are for orang utans:

64. Why:

65. What do you understand by the word “conservation”:

66. What benefit could “conservation” be to you:

Thank you for your cooperation. Your involvement has been helpful and I appreciate the time you have spent answering my enquiries.
Is there any questions you would like to ask me?

ADDITIONAL NOTES / CONVERSATION DETAILS

Appendix 6: Satellite map of Sebangau catchment showing locations of villages