PEOPLES, PARKS AND BIODIVERSITY CONSERVATION: A CASE STUDY OF THAP LAN NATIONAL PARK, THAILAND

by

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ABSTRACT

Biodiversity degradation is a critical problem in Thailand. Although protected areas have been established throughout the country, the diversity and abundance of many species of wild fauna and flora continue to decline. Furthermore, the management of protected areas is complicated by current economic problems and political intervention. The government has focused on expanding the protected area system but relatively little attention has been given to monitoring conditions within protected areas. Often solutions for management problems have developed without real understanding of causes, resulting in frequent failures. This study is therefore conducted in response to this problem.

The study investigates the situation of a national park in northeast Thailand, Thap Lan National Park, that suffers from many of the problems seen in the Thai protected area system and examines the programs which the government initiated to resolve conservation problems. The first part of the study reviews the historical relationship between the park and local people and previous government attempts at nature conservation. The second part investigates the current relationship between the people and park using a questionnaire survey. Four villages located inside and around the park representing different situations were selected for field study. One hundred and fifty-one households were interviewed during data collection in 1997.

The results suggest that use of park resources by local people is the main cause of park degradation and biodiversity loss. Poverty, village location and the market economy influence the violation of park laws and regulations. Park exploitation is often a

collaboration between local poor and influential people, including authorities. The main problem facing park management is encroachment as a result of local dependence on agriculture. Previous government solutions focusing on land allocation and economic development have caused further encroachment. Government compromises on violations have incited further violations and violence against park officials. Consistent law enforcement combined with increased punishments reduces illegal use of park resources. Off-farm employment also reduces park resource exploitation but local people have limited opportunities due to their low education levels. The relationship between park officials and local people is generally poor. Results suggest that biodiversity conservation through park management would be enhanced by enforcing laws consistently, reducing local dependence on using park resources through raising education levels of local people and providing off-farm job opportunities, and providing educational programs to enhance local people's awareness of biodiversity conservation.

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CHAPTER 1

INTRODUCTION

There are millions of people occupying lands in and around protected areas all over the world. The subsistence of these people often involves natural resource utilization. Protected area management is therefore connected to managing humans and communities. In other words, managing protected areas involves not only conserving biodiversity, but also taking into consideration the needs of people dependent on their resources as well. The success of biodiversity conservation, a primary objective of protected area designation, often reflects the effectiveness of managing people, especially those who are living in the vicinity of the protected areas. Therefore, developing effective management strategies for a certain area needs to be done through an examination of local history along with current conditions of the area and its surrounding peoples.

This thesis is the product of a research project aimed at providing such fundamental information for developing more effective management for one of Thailand's national parks. It is the result of historical and current analysis of natural resource utilization by local people who have caused significant degradation of biodiversity. The thesis is composed of six chapters: Introduction; Literature Review;

Study Area; Methods; Results; Conclusion and Recommendations. This first chapter is divided into three sections. The first clarifies the nature of the problem under consideration. The second presents more specific objectives of the study, and third addresses some recognized limitations of the research.

1.1 Nature of the Problem

Erosion of global **biodiversity**[1] is occurring at unprecedented rates (Ehrlich and Ehrlich, 1992). Deforestation is the most critical cause since forests are the major home of the world's species. Approximately 17-20 million hectares of forest area are lost per year worldwide. The major share is tropical forest that covers only 6-7 percent of the earth's surface but contains between 50 to 90 percent of the world's species (WRI, 1992). An analysis of forest cover indicates that most tropical regions have already lost over two-thirds of their original forests (Wilcox, 1995) and the deforestation rate continues to be high and accelerating. Some scientists estimate that up to 10 percent of tropical forest species will face extinction in the next 30 years (e.g. Ehrlich and Wilson, 1991; Reid, 1992) and half of the terrestrial species might disappear by 2050 if the current accelerating trends continue (Ehrlich and Ehrlich, 1992). Extinction of species directly affects natural ecological functions that could eventually lead to the crash of ecosystems (Dearden and Mitchell, 1998). Conservation of biodiversity is therefore important to all species on Earth as it maintains vital ecosystem processes and a healthy environment.

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[1] Biodiversity is the variety of genetically distinct populations and species of plants, animals, and microorganisms with which *Homo sapiens* shares Earth, and the variety of ecosystems of which they are functioning parts (Ehrlich and Ehrlich, 1992, p. 219).

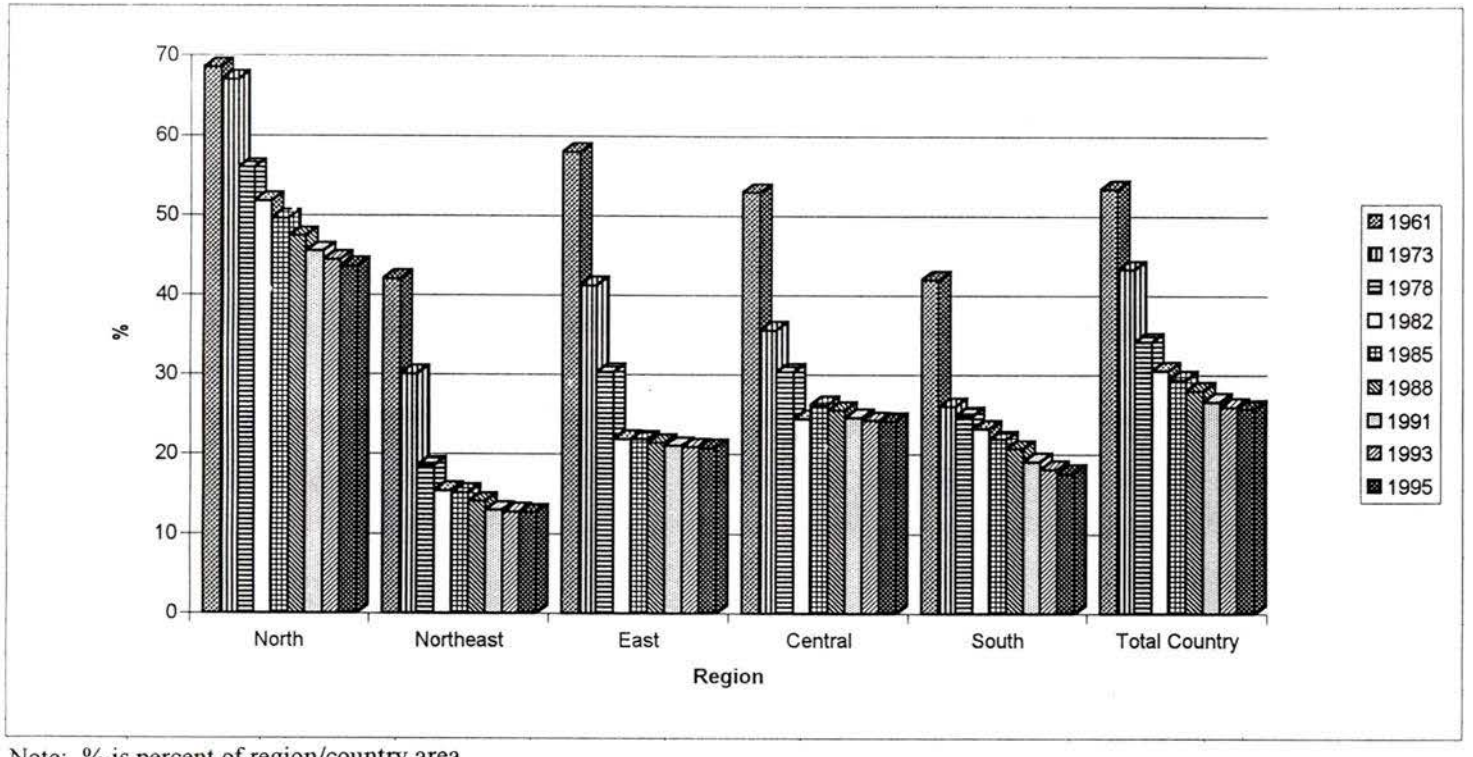
As habitat destruction is the main cause of biodiversity degradation one major way to protect flora, fauna and their habitats is, therefore, through the establishment of protected areas. These protected areas, mainly national parks and wildlife reserves, have long been recognized as playing a crucial role in conserving biodiversity. Nowadays, more than 8,500 protected areas covering about 800 million hectares, are found throughout the world (WRI, 1994). However, establishment of these protected areas has generated increasing conflict over time. Local residents perceive protected areas as a constraint on their ability to earn a living due to the exclusion of people from the area and restriction on the use of the resources within it. In consequence the people violate the rules and regulations in order to meet their basic needs.

The traditional management approach of protected areas that focuses mainly on controlling access and imposition of penalties for illegal extraction is an ineffective solution for biodiversity conservation in many places, especially in the tropics. Estimates suggest that more than 80 percent of protected areas are affected by human activities (Gilmour, 1994). Meanwhile, recognition is increasing that the long-term successful management of protected areas depends on genuine cooperation and support from local people. Thus, a new approach to biodiversity conservation that integrates conservation with development has been recommended and received widespread attention in many developing countries (Wells and Brandon, 1992; Gilmour, 1994). However, the success of these integrated conservation-development projects (ICDPs) is still under question in many areas (Wells et al., 1992; Wells and Brandon, 1993).

In Thailand, erosion of biodiversity is a main concern. Thailand contains about 7% of the world's species (Science Society of Thailand and Scientific Research Society of Thailand, 1991). This includes more than 15,000 species of vascular plants (500 trees, 1,000 orchids), 2,000 mushrooms, 282 mammals, 918 birds, 298 reptiles, 107 amphibians, 2,650 fish, 210 hard corals, 10,000 beetles, 1,200 butterflies and 200 hawk moths (Gray et al., 1991; Office of Environmental Policy and Planning, 1995). Nevertheless, economic development fueled partly by natural resources extraction and agriculture has resulted in rapid loss of national forests during the last few decades (Phantumvanit and Sathirathai, 1988; Trebuil, 1995). The Royal Forest Department (1995) reported that Thailand lost about 45% of its forests over the 25-year period during 1961-1985 and deforestation still continues (see Figure 1.1 and Appendix A), resulting in a decline of biodiversity. Clear evidence is provided by the disappearance of large fauna in Thailand. Certain large animals, such as the Kouprey *(Bos sauveli)* and Javan Rhinoceros *(Rhinoceros sondaicus)*, are no longer found in Thailand while numbers of other endangered species have been drastically reduced (Gray et al., 1991; Dearden, 1994).

The decline of the area and ecological integrity of the national forests has brought many social, economic, and environmental as well as political problems to Thailand (Sricharatchanya, 1989; Hurst, 1990; Dearden, 1995; Hirsch, 1995; Rigg, 1995). Previous social forestry grant programs have been ineffective, since lands granted are often freely traded without any title deed. The number of forest dwellers taking advantage of such programs has also been swelled enormously by immigrants from other areas in Thailand (Panayotou and Parasuk, 1990; Round and Hobart, 1995). This has resulted in increased

Figure 1.1 Forest area in Thailand by region between 1961-1995



Note: % is percent of region/country area

Source: Royal Forest Department (1996)

pressure on the remaining forest areas associated with an increasing need for biodiversity conservation.

In response to these problems, the Government of Thailand banned commercial logging throughout the country and set a policy to increase the amount of forest cover to 40 percent of the country's area; 25 percent of this will be for conservation purposes, and the remainder for future commercial uses. This has resulted in an expansion of the protected area system and reforestation programs that have limited support from local people because they often involve some kind of relocation program (Lohmann, 1990; Laungaramsri and Rajesh, 1996). The reason behind the resettlement is not simply to conform with the original model of national park management but realization of the major threats to biodiversity. Several studies have found that the rapid decline of biodiversity in national parks is a direct effect of the activities of local people living both inside and around their boundary (Round, 1984; Brockelman and Dearden, 1990; Dearden et al., 1996; Tanakanjana, 1996).

It is obvious that protected areas are important habitats for Thailand's biodiversity. One comprehensive evaluation of the natural resource base in Thailand (TDRI, 1987, p.104) states that "*...most species which depend on forests for survival will soon remain only within the protected areas of national parks and wildlife sanctuaries*". The target size for conservation forest was increased from 15 to 25 percent of the country's total area in the 1985 and 1992 national forest policies (National Park Division, 1992; Laungaramsri and Rajesh, 1996). The remaining forest reserves are proposed to be established as national parks and wildlife reserves although at least 1.2 million families or about 20

percent of Thai farmers depend on these lands for their livelihood (Hirsch, 1990). Tongpan et al. (1990) noted that areas occupied by these local people account for 35 to 40 million rai (5.6 - 6.4 million hectares) of the country's forest reserves. Meanwhile, the role of government officials and politicians has been brought into question as some have been involved in large scale, illegal losses of biological resources (Dearden, 1996). The officials and the farmers show little respect for one another (Hurst, 1990). Hence, implementation of resettlement programs arising from park designation face many difficulties and are unlikely to be successful. By contrast, forest encroachment, logging, poaching and illegal collecting of wild products are prevailing and increasing. Examples of apparently successful existing community-based natural resource management in some areas (e.g. Wittayapak, 1994; Santasombat, 1995) have resulted in increasing calls for legal rights for communities to manage their own forests including those in protected areas. However how successful such community-based regimes may be in biodiversity conservation has yet to be evaluated (e.g. see Elliott, 1994).

The consequence is a great deal of controversy on the best management approach for the country's protected areas. The government and environmental scientists favor the current policy of allowing no human residency in protected areas whereas NGOs and social scientists prefer residency, allowing humans to live within and manage protected areas. Furthermore, previous projects have often begun with limited understanding of the root causes of the threats to biodiversity that arise from complex social, economic, cultural and political interactions at a specific site. The result is an inability to carry out objectives of those projects. These have confused policy-makers regarding the best

policies for managing protected areas. Scholars have, however, suggested that there is no one particular approach that is definitely superior to the others or appropriate in all places (e.g. Talbot, 1984; Dearden, 1996). Different approaches would be compatible with different situations and places. Reflecting such recommendations, it is crucial to carry out an in-depth study in order to understand antecedent and current conditions of a national park and investigate ways of approaching the problem of reconciling biodiversity protection with providing for the needs of local peoples. Such a study requires investigation of the historical context of the successes and failures of previous programs. This will assist the government in developing effective management policies and strategies to manage national parks in the future.

1.2 Purpose of the Study

The purpose of this study is to review the historical context of the relationship between one national park and its local people and to assess the current situation. The specific study objectives are to: (1) research and document the historical relationship between local villagers and the park; (2) describe the various programs for local involvement that have been initiated; (3) assess local peoples' and park officials' perceptions of the efficacy of these programs; (4) assess the success of the degazetting strategy; and (5) plot out future management scenarios for the park and local area, again based on interviews with villagers and local officials, to ascertain the possible management strategies for protecting park resources in the future.

1.3 Limitations of the Study

There are some limitations in conducting this kind of research. Firstly, local people may be quite sensitive to research questions regarding park resource utilization and may not answer questions completely. Secondly, bias may have been caused by using different interviewers; and thirdly, bias may also have occurred in selecting respondents. Each of these will now be discussed in turn.

The first limitation reflects the sensitivity of local people to research questions regarding park resource utilization. During the period of data collection some of the local people were fighting to obtain private land rights on park lands. They may well have been afraid that data will be used by park managers against allowing residency and granting land rights inside the park boundary. Thus, they may have given false information in order to persuade the public and the politicians that their everyday activities do conform to park regulations and do not cause any damage to park land and resources. As a result, illegal use of park resources could be underestimated. In addition, concern for rights on the park land and resources could force the respondents to exaggerate their case and therefore affect the reliability of data. For example, one respondent reported that he came to a study village to clear his farm land and lived there for more than 50 years despite the fact that he was only 51 years old at the time of interviewing. Every effort was made to try to identify such inconsistencies through holding lengthy interviews with several questions focusing on the same topic.

The second limitation is the bias which may have been caused by different interviewers. Field research assistants were hired for data collection. It was difficult to

find field assistants who had a good background related to the research topic and were also skilled in interviewing local people. Bias may thus be caused by different interviewers having different standards of judgment although the researcher organized an intensive orientation for the field assistants before starting the data collection process.

Bias may also have arisen from respondent selection. During the period of research, some families living in the study villages seasonally moved to work in Bangkok or other urban areas; in other cases, just the males left. Respondents were randomly selected from villagers staying at home at that time. However, in some cases, the researcher interviewed respondents who depend heavily on decision-making done by an absent spouse.

Finally, it should be pointed out that the study is an in-depth study of several villages around one national park. It is thought that these villages are good representatives of all the villages surrounding the park and adequately portray the conditions there. However generalization should not be made above this local level to other parks without undertaking further research.

CHAPTER 2

LITERATURE REVIEW

This literature review will provide a brief overview of the relevant scholarly writing in the main research areas. The first area, park-people relations, will review interactions between local people and parks. The second section will discuss the background of nature conservation and the national park system in Thailand.

2.1 Park-People Relations

Historically, local people in many areas had free access to areas and resources for social and economic needs. Hence, designation of national parks as a vehicle of state control directly affected their historical use patterns as well as livelihood. The traditional park approach has created a number of adverse consequences for local peoples, including the restriction of access to traditionally-used resources (Mishra, 1984; Njiforti and Tchamba, 1993), the disruption of local cultures and economies by tourists (Callimanopulos, 1982), increased depredations on crops and livestock by wild animals (Santiapillai and Jackson, 1990; Heinen, 1993), displacement of peoples from their traditional lands leading to social and cultural disruption (Brower, 1991), enforced poverty (Laungaramsri and Rajesh, 1996) and injury and even death (Saharia, 1984;

Mishra, 1984). Thus conflicts between wildland management and local people's way of life have developed. The effects have created resentment and hostility against parks that have led to vandalism, such as the setting of fire, damage or destruction of park property, the refusal of local people to sell food to park staff, or even, the murder of park employees (Hough, 1988; Brockelman and Dearden, 1990).

As the traditional national park approach is considered unsympathetic to the local people, international conservation organizations have focused increased attention on how to take into account the needs of local people living next to protected areas. For example, the Third World National Park Congress in Bali, Indonesia, in 1982 recommended that more multiple use management areas must be established and support be provided for local people who may be disadvantaged by the establishment of protected areas (McNeely, 1984). Different protected area categories have been outlined by IUCN to allow for management objectives oriented more to local people. Historically, however, consideration for local people has been minimal in the planning of protected area management and most nations focus on strictly controlled reserves. As a result, Category II, National Park, has become the largest category by law despite the fact that national parks in several countries do not meet the criteria regarding human residence and others are being encroached on by local people (IUCN, 1994). In the United Kingdom, for example, national parks contain human settlement and extensive resource use. Likewise, in South America, 84 percent of national parks have significant resident human populations (IUCN, 1994). As a consequence, many protected areas worldwide have

people living or farming in them, either temporarily or permanently (Martin, 1993), with varying impacts upon biodiversity.

The people in local communities surrounding parks, particularly in developing countries, tend to be poor and less educated so that loss of access to resources without alternatives has led to violation of park boundaries and regulations regarding hunting animals, cutting down trees, extracting forest products and grazing. Emphasis on law enforcement is not always an effective strategy and is often met by increasing animosity and violence. In Gunung Leuser, Indonesia, park officials reporting illegal activities of local people to government authorities have been threatened (Wells et al., 1992). In Khao Yai National Park, Thailand, radical law enforcement such as shooting poachers led to armed clashes between park officials and local people resulting in loss of lives on both sides (Brockelman and Dearden, 1990; Wells et al, 1992). In addition, the pressure of growing populations and unsustainable land use practices outside park boundaries frequently leads to more illegal and destructive encroachment. The national park officials themselves are often relatively powerless in dealing with illegal activities by local people because of lack of staff, budget, equipment and outside support. As a result, although national parks and reserves are created for conserving biodiversity, many are in crisis and facing increased degradation from local use of their resources. Thus, it is now widely accepted that successful management of protected areas depends upon the cooperation and support of local people. Current approaches to protected area management are being oriented towards improving relationships with local people to enhance support for conservation.

Increasing local participation in park planning is viewed as a prerequisite for developing effective management approaches (Hough, 1988; Rao and Geisler, 1990; Martin, 1993; Fiallo and Jacobson 1995). With the cooperation of the World Bank, the World Wildlife Fund and the U.S. Agency for International Development, one significant effort, integrated conservation-development programs (ICDPs), has been initiated to engender local support for conserving biodiversity through protected areas management (Wells et al., 1992). The main strategy of the programs attempts to address the needs of nearby communities by emphasizing local participation and combining conservation with development. Several ICDPs case studies have presented positive results from using economic incentives and development in management protected areas. The South Luangwa National Park, Zambia, gained more support from local communities after providing training and benefits from hunting fee revenues and employment. The Amboseli National Park, in Kenya received more cooperation from local communities after providing water point development for livestock, community services and sharing revenue from tourism (Wells et al., 1992; Wells and Brandon, 1993).

All of these cases suggest that illegal activities are continuing. The ICDPs therefore may only mitigate certain forces causing biodiversity degradation but cannot address all of the underlying threats to biological diversity because many of the factors leading to the erosion of biodiversity and the degradation of protected natural ecosystems originate far from park boundaries. Though the activities of local people, beneficiaries of ICDPs, represent the most direct and visible agents of park degradation, in many areas

threats to parks also derive from laws, policies, social changes, and economic forces over which the poor people living next to the parks have no influence (Wells et al., 1992).

The effectiveness of ICDPs is also under question. Some ICDPs have led directly to protected area degradation. In Gunung Leuser National Park, Indonesia, the provision of a new road led settlement to expand along the road, removing timber and other forest products, burning and planting annual crops and degrading the park for several kilometers on both sides of the road and threatening its ecological integrity. In Volcanoes National Park, Rawanda, using tourism development to gain support for conservation of the African gorilla has compromised gorilla welfare and has tested local support since the government attempts to earn as much income as possible from tourism focusing on gorilla viewing and none of the revenue goes to local people. At Ban Sap Tai village on the border of Khao Yai National Park, in Thailand, community development, with road and electricity, caused an escalation of land prices leading to villagers selling land and an increasing landless population that caused further encroachment (Wells et al., 1992).

As population pressures increase and the rights of indigenous people and local communities gain recognition and respect, people are beginning to call for the setting up and management of their own protected areas that they can continue to live in or use. Several groups of people have claimed to be able to best conserve biodiversity with their traditional practices. In the Amazon, million of hectares of forest have been ceded to indigenous groups on the grounds that their practices would conserve biodiversity (Redford and Stearman, 1993a). Moreover, several countries have increased the amount of land allocated to multiple-use areas and kept at a much lower level the amount of land

dedicated to national parks and other such traditional conservation units. The pattern is demonstrated by Brazil, which has 74 million hectares in all categories of Indian lands, compared with 13 million hectares in all categories of conservation units, and by Columbia, which has 18 million hectares in Indian reserves and 2.5 million hectares in national parks (Redford, 1992).

Though some indigenous peoples have illustrated living in balance with nature in the past, empowering these people to manage protected areas is being questioned. Different concepts of conservation is a main concern (Redford and Stearman, 1993a, 1993b; Alvard, 1994) since the indigenous people undertake subsistence activities that may affect conservation values. Moreover, most indigenous peoples confine their attention to forest conservation and invest little effort in protecting wildlife. However, the amount of wildlife extracted by subsistence activities may be large. For example, Yost and Kelley (1983) found that 230 inhabitants of three Waorani villages in Ecuador killed 3165 mammals, birds and reptiles in less than a year. Redford (1992) estimated that the rural population of Amazonian Brazil kill 14 million mammals each year for subsistence and this amount is up to 19 million if including birds and reptiles. The number of animals fatally wounded or killed could reach 57 million animals a year. Several wildlife species have been hunted to extinction in the past by the subsistence activities of indigenous peoples (Alvard, 1994). As human populations grow and such extractions increase, support for traditional sustainable use and the commitment of indigenous peoples to conserve biodiversity will be questioned.

While local communities are being supported in their rights to manage protected areas including strictly protected areas such as national parks and wildlife sanctuaries by some authors (e.g. Lohmann, 1991; Alcorn, 1993; Saberwal, 1997), several studies have revealed that communal management is problematic to protected areas and, in particular, areas that primarily manage for protecting rare wildlife. For example, Fox et al. (1996) found that violations of agreements by native people in Langtang National Park, Nepal, are widespread and as a result, over 60 percent of the habitat of the red panda, the species for which the park was established to protect, suffers from over-grazing. Karanth and Madhusudan (1997) suggest that the lack of guard patrols and competition with local people for wild ungulate prey is a crucial cause reducing the number of tiger, an endangered species, in India. These cases suggest that the common property management of natural resources to protect biodiversity and meet the needs of local people at the same time might be very difficult. In consequence, the best approach for protected area management is hotly debated by conservationists (e.g. Redford, 1992; Alcorn, 1993; Redford and Stearman, 1993b; Alvard, 1994; Karanth and Madhusudan, 1997; Saberwal, 1997). However, all of these cases illustrate that protected area conservation requires a site-specific solution related to the cultural, social, and economic environments in different locations.

2.2 Conservation and National Parks in Thailand

The concept of parks and conservation in Thailand was initiated in the thirteenth century during the Sukhothai Period when King Ram Kamhaeng creating "Dong Tan" for

royal recreation. The public was simultaneously encouraged to create parks near Buddhist temples and other religious areas as Buddhist teaching prohibits taking of life, as a result, those parks served as "wildlife sanctuaries". The capture of wild elephants was also regulated during this period due to the elephant's great economic, military and cultural value (Kasetsart University, 1987).

After the end of the Sukhothai Period to the end of the nineteenth century, parks and conservation were neglected. In 1896, the Royal Thai Forest Department (RFD) was founded to manage the forest resources of the country. In 1897, the Forest Protection Act declaring all unoccupied land within the national boundary as "state forest" under the jurisdiction of the RFD was proclaimed and several acts followed subsequently. These early pieces of legislation focused on regulating forest exploitation and conserving species for commercial benefit. The first legislation for conserving wildlife, the Law for the Conservation of Wild Elephants, was enacted in 1921 reflecting the substantial decrease in the country's wild elephant population in the early nineteenth century. In 1938, the Protection and Reservation of Forest Act, that was subsequently replaced by the National Forest Reserve Act in 1964, was established to preserve a proportion of the country's forest area and coordinate the creation of forest reserves. As a result, forest reserves were declared and the extraction of forest products required official permits (Chuntanaparb and Wood, 1986; Kasetsart University, 1987; Feeny, 1988; Filipchuk, 1991; Vandergeest, 1996a). In the first year of the new legislation (1964), thirty-seven forest reserves comprising 6,720 km^2 were designated (Hafner and Apichatvullop, 1990)

and this was expanded to 1,210 forest reserves covering approximately 227,099 km^2 of the country's area by 1987 (Royal Forest Department, 1989).

The awareness of the need for nature conservation was apparently increasing during the early 1940s reflecting the deteriorating conditions of the forests and rapid decline in wildlife due to habitat destruction and hunting, and the examples set by America and Canada in establishing national parks. In response, the RFD oriented attention to conservation of forest areas that offered interesting scenery for recreation and provided wildlife habitat. In 1958, Field Marshall Sarit Thanarat, the Prime Minister, directed the Ministries of Agriculture and Interior to establish national parks and other protected areas and to draft enabling legislation for the areas. A National Park Committee was established in the year following to assign areas and prepare the legislation for protected areas. The IUCN supported technical assistance by sending Dr. George D. Ruhle of the U.S. National Park Service to assist the RFD in selecting areas for designation as national parks and to advise concerning the National Parks Act (Kasetsart University, 1987).

In 1960, the Thai government passed the Wild Animals Reservation and Protection Act and the year following passed the National Parks Act. The first act provided regulations for designation of wildlife sanctuaries and non-hunting areas, and specified two groups of wild animals, Reserved and Protected, protected by laws. The latter act provided regulations and procedures for the designation and management of national parks. The country's first national park, Khao Yai National Park, was established in 1962 and Salak Phra Wildlife Sanctuary was declared as the first wildlife sanctuary of

Thailand in 1965 (Kasetsart University, 1987; Gray et al., 1991). By 1967 Pragtong and Thomas (1990) stated that only 1% of the national area was demarcated as national parks and wildlife sanctuaries. By 1996, eighty-two national parks, forty-two wildlife sanctuaries and fifty non-hunting areas had been proclaimed, covering 77,365.95 km^2 or about 15% of the national area (Royal Forest Department, 1996) while sixty-eight national parks and wildlife reserves more are being designated (National Park Division, 1997a; Wildlife Conservation Division, 1998). The administration of protected areas was initially under two sections of RFD's Silviculture Division that was upgraded to sub-divisions in 1965. As the number of protected areas increased and the conservation responsibility expanded the National Parks Division was established in 1972, followed by the Wildlife Conservation Division in 1975 (Kasetsart University, 1987).

According to the National Parks Act, national park land is to be *"preserved in its natural state for the benefit of public education and enjoyment"* (Kasetsart University, 1987). This indicates that the primary management goal of the parks is to preserve natural ecosystems. The use of national parks for recreation, education and research is allowed while consumptive uses such as logging, hunting, collecting and so on are prohibited by law.

In fact, however, Kasetsart University (1987) reported that illegal uses occur throughout the protected areas system and are increasing as a result of growing population pressure. The people who benefit from illegal uses of protected areas represent the entire social class including wealthy businessmen, politicians and government officials as well as hilltribes, landless Thais and local villagers. Illegal activities are often a collaboration

among rich and poor, but poor villagers who live in the vicinity of protected areas, landless Thais and hilltribes may be responsible for a large, and possibly the largest proportion of illegal activities because of economic necessity and lack of alternative income sources. Several researchers have documented illegal uses of park resources by local communities. For example, Dearden et al., (1996) found an average of 82 percent of local people living in and around Doi Inthanon National Park used the park for collecting plants and plant products, 48 percent for hunting, 88 percent for gathering fuelwood, 68 percent and 5.5 percent for cutting wood for construction and making furniture, respectively (Dearden et al., 1996). Tanakanjana (1996) found that over half of the people who live inside and along the boundaries of five national parks were involved in at least one type of illegal activity within the national parks. Seventy-three percent of them collect plants within parks, 70 percent collect fuel wood, 53 percent cut the trees, and 20 percent hunt.

The national parks have been also found to be deteriorating and will suffer increasing biodiversity loss due to illegal exploitation. Round (1984) reported a decline of 50 birds species in Doi Suthep-Pui National Park, northern Thailand, between 1945 and 1984 as a result of hunting and forest clearance by local residents. By 1991, 44 percent of the park area was cleared of forest by encroachers (Elliott and Beaver, 1993). Dearden et al. (1996) found that more than 40 percent of Doi Inthanon National Park had been encroached on by local people for agriculture by 1985. In early 1997, wild elephants in Kui Buri National Park, southern Thailand, were found to have been poisoned and died resulting from searching for food on their habitat which had been encroached on and

converted to agricultural lands by local people (Sadyaem, 1997). At the same time, degradation of national parks and their biodiversity has also occurred from legal uses such as tourism and rural development programs including the construction of dams and roads (Laungaramsri and Rajesh, 1996; Vandergeest, 1996b; Dearden and Chettamart, 1997).

Many national park lands remain relatively intact due to law enforcement efforts. Nevertheless, the imposition of national park rules and regulations has resulted in conflicts and hostility against parks among local people depending on park resources that often generate armed clashes and the loss of lives (Brockelman and Dearden, 1990). In addition, one recent study indicated that a majority of local people believe that national parks contribute no benefit to them but bring limitations to their everyday lives (Tanakanjana, 1996). As a consequence, the establishment of national parks and reserves has increased conflict. The national park approach is viewed as depriving local people of lands, forcing impoverishment, increasing forest encroachment and degradation, as well as undermining the conservation system of local communities (Laungaramsri and Rajesh, 1996; Vandergeest, 1996b).

As poverty and agricultural encroachment by local people have been assumed to be a crucial cause of the rapid deforestation and biological resource degradation (Phantumvanit and Sathirathai, 1988; Tongpan et al., 1990) several development programs focusing on improving agricultural technology and welfare have been initiated to control the expansion of agriculture area and park encroachment. However, such programs cannot guarantee long term success. At Doi Intanon National Park, for

example, a Royal Project aiming to exterminate slash and burn cultivation as well as opium growing in the park was initiated and found to be relatively successful. The benefits generated by cultivating various temperate cash crops attracted outsiders to Doi Inthanon National Park for commercial farming. As a consequence, the rates of forest encroachment in and outside the park were higher than before the project was initiated (Dearden, et al., 1996).

Another recent important effort that was initiated to address local threats to national parks through development is integrated conservation and development projects (ICDPs). For example, a pilot project was implemented by NGOs at Ban Sup Tai adjacent to Khao Yai National Park, Thailand's first national park, and one with serious conflicts between local people and park authorities (Brockelman and Dearden, 1990). Evidence suggests that the ICDP reduced violation of park boundaries and regulations by local participants by providing an alternative way to earn income and improving social welfare, nonetheless, illegal activities have been continuing in the park. Furthermore, the impact of development, land price increases causing land speculation problems, raises suspicions about the benign attitude toward nature conservation of local residents in the long term (Gray et al., 1991; Wells et al., 1992; Dearden and Chettamart, 1997).

Though the national park system plays a crucial role in the protection of biodiversity in Thailand (TDRI, 1987), conservation through the national park approach focusing on wilderness has also increased tension with laws since several case studies suggest that some communities have coexisted in harmony with nature. For example, Thongmak and Hulse (1993) and Steinmetz and Mather (1996) have suggested that the

Karen people in Thung Yai Naresuan, western Thailand, have lived in balance with nature for at least 200 years. Santasombat (1995) reported a harmonious life-style and a respect for nature of the Karen at Ban Mae Harn in northern Thailand. Lohmann (1991) and Wittayapak (1994) have documented the role of local peoples in managing forests for both economic and environmental benefits. As a result, local people not only resist relocation from parks but claim to be able to manage more effectively for nature conservation than the government. In addition, they have called for the right and legislation to manage forested areas, with no exceptions for areas in national parks and reserves. The legislation, known as the Community Forest Act, is now under cabinet consideration. However, inclusion of national parks and wildlife reserves as well as watershed areas into areas that will be included in the act is keenly debated by conservationists.

The Act is being hailed by social scientists (e.g. Lohmann, 1991; Laungaramsri and Rajesh, 1996; Vandergeest, 1996a, 1996b). To them, not only should the protected area system be regulated by local communities but utilization of those protected areas should meet the commercial needs of local people. They have suggested that one important reason for some of the problems of official conservation programs such as national parks is the incompatibility between the informal local tenure systems which existed in some areas and the land use patterns the government attempts to impose. To address the problem, social scientists recommend that local property rights must be recognized in establishing and managing the protected area system. Local institutions must be supported to manage reserves including national parks and wildlife reserves and

the household-based nature of forest tenure or even the commercial nature of rural forest use must be approved (Vandergeest, 1996b).

Nevertheless, granting rights to either households or communities for lands inside national parks and wildlife reserves could be a serious problem since many villagers seeking for new land to clear believe that "state" land is public, open access land (Wittayapak, 1994). The consequence has been illustrated by approval of land rights claimed in forest reserves. A large number of forest reserve lands were granted to encroachers under several programs such as the Forest Village and the STK (Chuntanaparb and Wood, 1986) or even the land reform program (SPK) that prohibit the transfer of granted lands except by inheritance. In practice, the commitments have commonly been violated as granted lands are widely traded among villagers who then pursue further forest encroachment (Panayotou and Parasuk, 1990; Round and Hobart, 1995; TDRI, 1995).

In addition, allowing residency inside protected areas inevitably leads to demands for improved infrastructure such as roads and electricity, directly damaging the environment and affecting wildlife (Dearden and Chettamart, 1997). It may also trigger a rise in land prices bringing a further round of illegal land sale and purchase. Round and Hobart (1995) found that villagers still illegally harvest timber and forest products from those parts of forests suggested as community forest. Integration of resource management into the village community is also weak since much of the settlement in the reserves involves not only local people but immigrants from distant provinces. Furthermore, evidence suggests that forest laws are often violated by wealthier villagers who have

control over village management and the local economy. In northern Thailand, for example, Anand and Mingarn (reviewed in TDRI, 1995) found that richer farmers and local leaders were important supporters of forest resource extraction by providing advance capital for poor villagers to make expeditions into the forests in search of timber and other products. This evidence suggests that community-based consensus on conservation is very difficult to attain.

Though managing protected areas is still a contentious issue the pressures have forced the government to approve a new policy, known as the 22 April Cabinet Resolution. In effect, local people living inside park boundaries prior to designation of national parks could obtain land rights and remain living on park lands (Office of the Secretariat of the Cabinet, 1997). The Royal Forest Department is redrawing new boundaries for national parks throughout the country. A large number of park areas are pending to be degazetted for community use. However, the policy is increasing concern for conserving biological resources as it encourages claims on park lands, including claims from those who have benefited from previous government programs and been relocated from parks. Land occupation is very difficult to prove as a result of the inadequate data base. The policy was also found to cause increased deforestation by local people as they seek opportunities to claim park lands by increasing the amount of degraded areas in national parks. The encroachers were accused of being behind the devastating forest fires in many national parks in early 1998, the year following the 22 April Cabinet Resolution. As the resolution contains loopholes for further encroachment

in national parks, the government is now considering revoking this resolution (Bangkok Post, March 28 and 31, 1998; Thairath, April 1, 1998).

The Director General of the Land Department has drawn attention to the illegal acquisition of forest lands by influential people through transfer of land documents, known as Sor Khor One (Sunday Perspective: Bangkok Post, May 4, 1997), that do not identify a specific location (see Appendix B). In the absence of maps providing details of the exact location, boundaries and connected lands, the Sor Khor One can be used to claim rights to lands in the vicinity of the actual plot in the same sub-district. Thus, in practice, influential people bought the Sor Khor One from local people and illegally transformed them to different legal land documents (see Appendix B) for other plots of forest land nearby. In addition, one top forestry official revealed that as many as 200,000 plots of land equivalent to more than one million rai (16,000 hectare) of forest reserves have been acquired through illegal ownership certificates (Sunday Perspective: Bangkok Post, May 4, 1997).

Many original owners or squatters also attempt to sell lands to developers and move further into the forest. For example, Trisurat (1991) found that villagers living inside and around Phu Rua National Park sought new agriculture lands within the park after selling their land to investors and brokers. Similarly, TDRI (1995) reported that many villagers in villages surrounding Khao Yai National Park sold their land to private enterprises, both domestic and a Japanese joint venture, and moved deeper into the forests, including the park. As a consequence, land ownership within national parks is a very contentious issue. The policy of granting private land rights inside the park

boundaries is therefore seen as encouraging encroachment and providing an opportunity for rich people to obtain land rights.

All of the foregoing cases have illustrated that the management of national parks and reserves in Thailand faces increasing difficulties. The practices of local people reflect their culture and social and economic environments which are distinct in each area. Conservation systems either initiated by the government or local people also have limitations under growing population pressures. To address the problems, the actual situation of each specific area much be taken into consideration not simply increasing law enforcement or ceding those areas to local people.

Summary

This chapter has reviewed efforts towards protecting biological resources and the problems challenging conservation through protected area designation with emphasis on the national parks. In many cases, it is impossible to completely exclude local people from the protected area system. The success of protected area management in a particular area depends on factors such as local history, local technologies, resource use organization and regulation, as well as recent trends in changing environments. The implementation of any approach needs to be carefully considered for each specific area and much can be learnt from examining one particular area in more depth and the variety of approaches that have been attempted. The area chosen for greater study by this research, Thap Lan National Park, will be described in the following chapter.

CHAPTER 3

STUDY AREA

This chapter describes the study area selected for investigation. The first section provides the justification for selecting Thap Lan National Park as the study area. The second section presents the background on the designation of the national park. The third section describes geographical context of the study area, Thap Lan National Park, including physical characteristics and biological resources, as well as communities surrounding the national park.

3.1 Justification

The research was conducted at Thap Lan National Park, northeast Thailand (Figure 3.1). The park was selected for more in-depth study for several reasons: (1) it is the country's last remaining natural habitat of the Lan tree; (2) it serves as watershed forest for important rivers, such as the Mun and Bang Pa Kong rivers; (3) it connects with three important national parks, Khao Yai, Pang Sida and Ta Pra Ya National Parks and is currently part of a World Heritage Nomination that will include all the parks (Chettamart et al., 1997); (4) it has been affected by a relocation program resulting from dam construction (Upper Mun Project); (5) it has experienced many of the problems of Thai

national parks including threats from local populations and various social forestry programs initiated to address them; and (6) part of its area is going to be degazetted for use by local people as a result of the land reform for agriculture program (SPK). In other words the park has significant biodiversity and watershed values and yet has suffered from many of the threats characteristic of protected areas throughout the country. It has also been the site for several different programs to try to rectify these threats including the largest degazetting of a park area in Thailand for community use.

3.2 Background

Thap Lan National Park is the second largest national park of Thailand. It was initially established as Thap Lan **Forest Park**[2] in 1974 with an area of approximately 58 km^2 (36,250 rai). The specific objective for the establishment of the park was to conserve the country's last remaining natural habitat of the Lan tree (*Corypha lecomtci* Becc), a Palm species. Subsequent surveys revealed the high ecological value of the forests around Thap Lan Forest Park that were added to the park and the whole gazetted as Thap Lan National Park, the 39th national park of Thailand, on 23 December 1981. The national park covered 2,240 km^2 (1,400,000 rai) in Prachin Buri and Nakhon Ratchasima provinces when established (National Park Division, 1981). In 1989, 4.2 km^2 (2,625 rai) of the national park area was degazetted for the construction of two dams under the

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Forest Parks are forest areas that contain attractive scenery and are developed for public recreation. They are too small for inclusion as national parks, but management aims are similar. Forest Parks may be upgraded to national park status if or when the Royal Forest Department has sufficient scientific knowledge, budget and manpower to do so (Kasetsart University, 1987, p.2).

Figure 3.1 Location of Thap Lan National Park

Upper Mun Project of the Royal Irrigation Department (National Park Division, 1989). Thus, the actual area of Thap Lan National Park was 2235.8 km^2 (1,397,375 rai) until recently. Some of the national park is now being degazetted as a result of encroachment pressures from local villagers. More details will be presented on this in Chapter 5.

3.3 Geographical Information

3.3.1 Physical Characteristics

3.3.1.1 Location

Thap Lan National Park is located at N14°05'-N14°33', and E101°50'-E102°40'. It encompasses Bu Phram, Kang Din So and Tung Po sub-districts in Na Dee district, Prachin Buri province, and Udom Sap and Wang Nam Kiew sub-districts in Pak Thong Chai district, Lam Phiak, Khon Buri Tai, Cha Ra Kha Hin and Kok Kra Chai sub-districts in Khon Buri district and Sra Ta Kien and Non Som Boon sub-districts in Soeng Sang district, Nakhon Ratchasima province. The main office of the park is located in Prachin Buri province beside highway number 304 approximately 197 kilometers away from Bangkok (Figure 3.1).

3.3.1.2 Topography

The topography of Thap Lan National Park is mountainous with intercepting plains and valleys. The altitude ranges between 100-992 meters. The Panom Dong Rak is the main mountain ridge of the park including several important mountains such as Khao La Mang, Khao Phu Sam Ngam, Khao Phu Soong, Khao Wong, Khao Salad Dai, Khao Tid Si, Khao Mai Plong and Khao Dan Ngiu. Khao La Mang is the highest peak of the national park with an attitude of 992 meters above sea level. These mountains are the

headwater areas of two significant rivers in the northeast and east regions of Thailand, the Mun and Bang Pa Kong Rivers.

3.3.1.3 Geology

The park area is comprised of seven geological formations: Khok Kruat, Phu Phan, Sao Khua, Phra Wihan, Phu Kradung, Sap Bon and Sciwei Inirusives. The main parent materials are schist, silt, shale, sandstone and limestone of varying ages. There are two main types of soils, low-humic gley soils and podzolic soils with laterite. The low-humic gley soils are found in low elevations while the podzolic soils are found in higher elevation. These soils are low to medium fertile and easily eroded (National Park Division, 1992).

3.3.1.4 Climate

The climate in the park, like other areas of the country, is influenced by two seasonal monsoons, southwest and northeast. The southwest winds carry monsoon rains over the park between mid May to October while the northeast winds bring cool dry air masses resulting in cooler temperatures starting in November. The intensity of rain, however, varies so that the areas located against the southwest winds receive more rain than the north. There are three seasons, summer, rainy and winter. The summer is between from February to May followed by rainy from June to November and winter from late November to early February.

The mean annual rainfall is 1,070 mm, with peak precipitation occurring in September. The temperature ranges from a mean monthly minimum of 26.7 degrees Celsius in December to a maximum of 29.3 degrees Celsius in April with an annual

average temperature of 22.8 degrees Celsius. The mean relative humidity for the whole year is 72 percent (National Park Division, 1992). However, these are statistics recorded at Nakhon Ratchasima weather station located in the nearby town because of the absence of a weather station in the park. The climate statistics could be different if they are gauged in the park due to differences the variation in elevation and vegetation types.

3.3.2 Biological Resources

3.3.2.1 Vegetation

The forest covering Thap Lan National Park is classified into two main types, deciduous forest and evergreen forest. Deciduous forests, accounting for about 12 percent of the area, are dry dipterocarp forest dominated by *Shorea obtusa, Shorea siamensis* and *Dipterocarpus tuberculatus,* and mixed deciduous forest dominated by *Xylia kerrii, Lagerstroemia* sp. and *Dalbergia oliveri* and *Spondias pinnata.* The evergreen forests, accounting for about 55 percent of the national park area, are dry evergreen forest dominated by *Dipterocarpus alatus* and *Dipterocarpus turbinatus*, and moist evergreen forest dominated by other members of Dipterocarpaceae. In addition, there are 200 rai (32 hectares) of the last natural Lan Forest in Thailand (National Park Division, 1992).

3.3.2.2 Wildlife

The park contains at least 321 species of wildlife (vertebrates), including 76 species of mammals, 149 species of birds, 48 species of reptiles, 17 species of amphibians and 31 species of fish. Ten of these are endangered mammals and 15 species are threatened or rare species (13 mammal species and 2 birds). The endangered wildlife

are serow *(Capricornis sumatraensis)*, Asiatic elephant *(Elephas maximus)*, gaur *(Bos gaurus)*, white-handed gibbon *(Hylobates lar)*, pileated gibbon *(Hylobates pileatus)*, Asian wild dog *(Cuon alpinus)*, jungle cat *(Felis chaus)*, Asian golden cat *(Felis temmincki)*, leopard *(Panthera pardus)* and tiger *(Panthera tigris)*. The threatened species found in the park are the hairy-wing bat *(Harpiocephalus harpia)*, pig-tailed macaque *(Macaca nemestrina)*, crab-eating macaque *(Macaca fascicularis)*, silvered langur *(Presbytis cristata)*, Malayan pangolin *(Manis javanica)*, Asiatic jackal *(Canis aureus)*, Malayan sun bear *(Helarctos malayanus)*, Asiatic black bear *(Selenarctos thibetanus)*, smooth-coated otter *(Lutra perspicillata)*, masked palm civet *(Paguma larvata)*, fishing cat *(Felis viverrina)*, leopard cat *(Felis bengalensis)*, banteng *(Bos javanicus)*, silver pheasant *(Lophura nycthemera)* and fireback pheasant *(Lophura diardi)* (National Park Division, 1992).

3.3.3 Communities

Eleven villages located on the boundary of Thap Lan National Park were recorded when the park was designated in 1981 (National Park Division, 1981). By 1991, the National Park Division (1992) found that there were sixty-six villages located inside and around the park boundary with 12,955 households and 49,572 villagers. The majority of villagers (66%) are immigrants, with 28 percent migrating from other districts in provinces in which the park is located, Prachinburi and Nakhon Ratchasima Provinces, and 38 percent migrating from other provinces. Forty-two percent of the villagers were allocated lands legally from government programs, while 26 percent and 24 percent obtained land illegally through clearing forest and buying from other villagers,

respectively. The average land holding is 21.4 rai (3.4 hectares) per household. However, more than fifty percent of households stated that they have too little land to support their living and 70 percent of these expected more land allocation from the government.

A survey of park resource utilization (National Park Division, 1992) found that 41.93 percent of the local people collected plants within the park, 31.08 percent hunt, 49.78 percent collect fuel wood, while 42.81 and 9.96 percent of them log for house construction and making furniture respectively. As a consequence, an analysis of aerial photographs found that almost one-fourth of the park area, particularly along the west, north-western, and northern boundaries has been cleared cut and used for agriculture and settlement of local villages (National Park Division, 1992).

CHAPTER 4

METHODS

This chapter will outline the organization of the research and describe procedures for conducting the research including field data collection and data analysis. The first section will state the purpose and organization of the research. The second section will address regulations and procedures for selecting villages for conducting the field survey. The third section will discuss field data collection. The fourth section will describe techniques of data analysis.

4.1 Research Organization

The first part of the research was devoted to assembling the historical context in which the local peoples' relationship with the park is embedded. It included interactions between local people and the park, changes in the park's biodiversity and the socio-economic conditions of local people, and the implementation of previous rural development and social forestry programs. The purpose of historical analysis is to identify and explain the factors which caused biodiversity degradation of the park, and assess the successes and failures of previous programs.

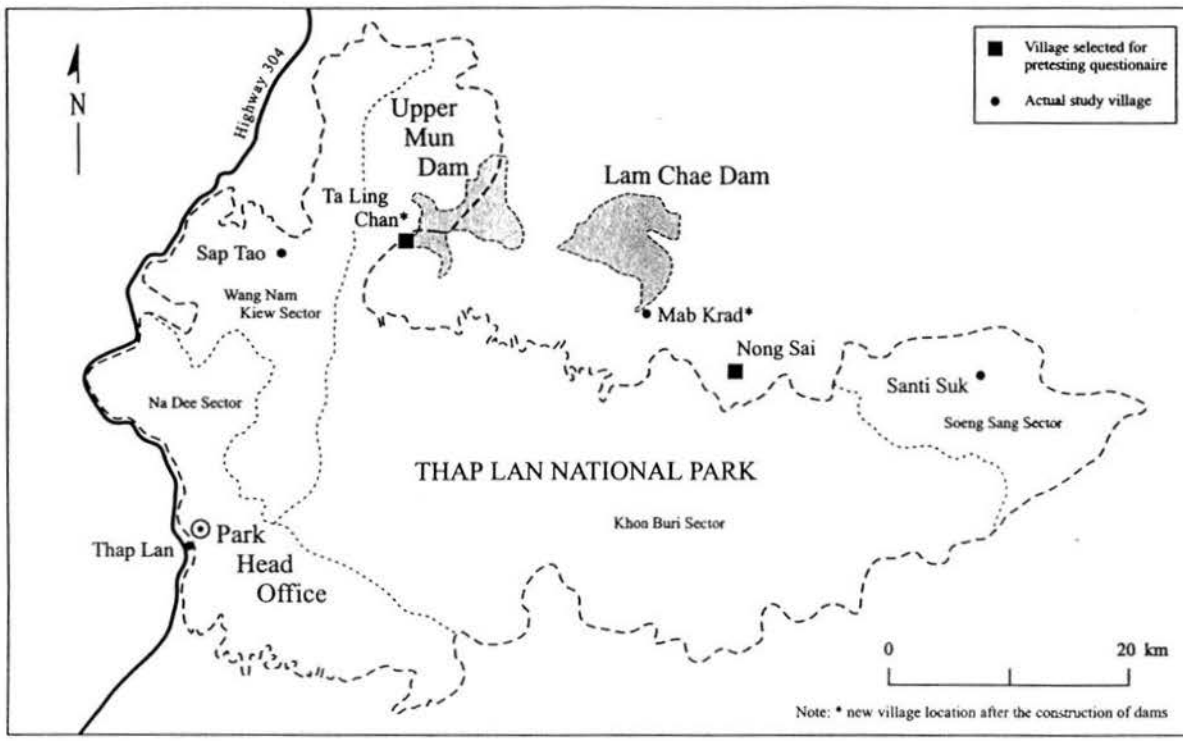
The main sources of historical information were reports of previous government projects, socio-economic surveys done by local officials (district level), document files of the Royal Forestry Department and newspapers. Invasions of the park by villagers have been headline news for a few years and both Thai and English-language newspapers were reviewed for coverage of these events. A second source of information was through interviewing previous and current superintendents of the park, park staff, project managers, village headmen, and the elders in the villages. Aerial photographs and topographic maps were used as supplementary sources to document the decrease of the park's forest area, and identify the time period when the villages were settled, determine village distribution and cross-check the data received from the literature review and interviews.

The second part of the research was to examine the current relationship between the local people and the park, and to assess the success and the impact of previous government programs on local villagers and the park in order to ascertain an appropriate management approach for managing the park in the future. Field research based on interviewing was conducted in four villages located inside and on the park boundary.

4.2 Village Selection

To assess current relationships between local people and the park as well as the success and impacts of previous programs, four villages that experienced different programs located inside and along the boundary of the national park were selected as study sites after preliminary site visits and consultation with the superintendent, park staff

Figure 4.1 Location of the Study Villages



and other experts. More details on the different development programs are presented in Chapter 5. The first village, Ban Thap Lan, was chosen to represent villages settled before the declaration of the park and that experienced the Forest Village Project. The second, Ban Sap Tao, was chosen to represent villages that are "islands" inside the park boundary and that experienced unsuccessful relocation. The third village, Ban Mab Krad, was chosen to represent villages suffering from the recent construction of a large dam. Finally, Ban Santi Suk was chosen to represent villages that experienced the Land Distribution Program for the Poor Living in Degraded Forest Reserves (Figure 4.1).

4.2.1 Ban Thap Lan

Ban Thap Lan was settled before the declaration of Thap Lan National Park but was formally established as a forest village by the RFD in 1982, the year following the park designation. It is located on the boundary of the park along highway number 304 at Bu Pram sub-district in Na Dee district, Prachin Buri province, approximately 30 kilometers away from the Na Dee and the Kra Bin Buri district offices and very close to the park headquarters office (Figure 4.1). There were 206 households when it was established (Plantation Promotion Division, 1993). According to the village headman, there are 17 more households registered in the village during the past few years but there are no details on population. The villagers have long depended on agriculture, largely fruit trees, such as pomelo, coconut and rambutan. However, the villagers have recently shifted to depend more on industry. Farming and wicker work using the leaves of the Lan Tree remain main sources of income for the older generation but the young generation

now work in industries in Kra Bin Buri district located 30 kilometers away from the village.

4.2.2 Ban Sap Tao

Ban Sap Tao is located in Udom Sap sub-district, Wang Nam Kiew district, Nakhon Ratchasima province, approximately 80 kilometers from downtown Nakhon Ratchasima (Figure 4.1). It is a village that was approved to remain inside the park boundary. It is estimated that the village was settled more than 50 years ago. However, the village was formally established in 1980 with 60 households that increased to 217 households by 1996 (Wang Nam Kiew District Office, 1997). Analysis of aerial photographs also found that the community already existed when Thap Lan National Park was designated. In 1986, the Royal Forest Department attempted to relocate the village to a degraded forest area outside the park but it was finally cancelled because there was no more land outside the park available for the resettlement. The villagers depend on growing cassava and the wages obtained from working as laborers in large urban areas. According to the village headman, the village area is 15,000 rai (2,400 hectares), with 8,910 rai (1,425.60 hectares) of farming area and 6,090 rai (974.40 hectares) of housing area and community forest, and all of these are now under the degazetting process for the use of the villagers. The village is settled in three communities, namely Sap Tao, Sap Pla Kang and Sap Ploo Heep.

4.2.3 Ban Mab Krad

Ban Mab Krad is located on the northeast boundary of the park in Mab Krad sub-district, Khon Buri district, Nakhon Ratchasima province, about 20 kilometers from the

Khon Buri District Office (Figure 4.1). It is estimated that the village is more than 100 years old. According to a survey in May 1997 conducted by the village headman, the population was 2,042 people with 611 households. The village is one of ten villages affected by the construction of dams under the Upper Mun Project.

The construction of the Lam Chae Dam, one of two dams in the Upper Mun Project began in 1989. In effect, almost all villagers in Ban Mab Krad lived in the flooded zone so they were paid for moving out. Compensation included 1 rai (0.16 hectare) of housing plot for each and monetary payments for house and other buildings, lands, crops and for buying new pieces of farm land. The public area of the village located above the flooded zone and connected to the park boundary was set as the new housing area for resettled villagers. In practice, most of the villagers moved their property to the resettlement area but remained farming in their farming areas as usual. In 1996 the Lam Chae Dam began holding water so that the villages had to move out of their farming area. However, the majority of villagers who got paid for their land from the project have not bought any new piece of farm land. They are living on wages obtained from agricultural and non-agricultural sectors. Some of these villagers now expect to get new pieces of farm land from the park area.

4.2.4 Ban Santi Suk

Ban Santi Suk is located in the degazetted area in the northeast of the park in Sra Ta Kien sub-district, Soeng Sang district, Nakhon Ratchasima province, approximately 15 kilometers from the Soeng Sang District Office (Figure 4.1). The village was formally

established in 1991 under the Khor Jor Kor Project. Local villagers living and farming in Thap Lan National Park were relocated to the village. The villagers now earn their living through cassava cultivation and working in large cities as well as illegal logging. The number of households was 612 when it was established (Soeng Sang District Office, 1992). At the time of the last census conducted by Soeng Sang District Office in early 1997, however, there were 451 households, with a population 1,904 people.

4.3 Field Data Collection

4.3.1 Getting Accustomed to the Study Sites

Following the preliminary survey of the park and the study site selection, the researcher (I) started to assemble documents relating to the study villages as well as the park. Reports and files of the park offices, local district offices, local project offices and the Royal Forest Department were reviewed. Initially, the researcher contacted village headmen through local officers who were familiar with them, then, visited them at their homes or sometimes their offices. A house at Ban Mab Krad, one of the study villages, was rented as a research center. The researcher was introduced to villagers by the owner of the house and the village headmen. Then, the researcher began making friends with villagers and exploring conditions of the villages at the same time. Visiting villagers at their houses and grocery shops and even accompanying them to do activities were all part of the participant observation aspect of the study.

4.3.2 Pretesting the Questionnaire

A questionnaire was developed to address the objectives of the study. It was divided into seven sections: general information about the village and household; land use and land tenure; park resource utilization; knowledge about conservation and park regulations; attitude towards park and park staff; attitude towards previous projects and their effects; and recommendations for future management of the park. A translated copy of the questionnaire is provided in Appendix D.

To test the validity of the questionnaire, two villages located along the park boundary that were not chosen as study sites and had experienced similar programs as the study villages were selected for pretesting the questionnaire. One village, Ban Nong Sai, had experienced the forest village program. The other, Ban Ta Ling Chan, had experienced the dam construction (Figure 4.1). The pretest was conducted at the beginning of May 1997, two weeks before the actual household survey of study sites. It took about 45 minutes for each interview. The total number of questionnaire tests was 20, with 10 at each village. This resulted in the correction of the questions that were found to be unclear or hard to make local villagers get to the point of the questions before using the questionnaire for questioning villagers of the four main study villages.

4.3.3 The Questionnaire Survey

The actual questionnaire survey was conducted in May and June 1997. The purpose of the study and schedule for field survey was discussed with village headmen and by getting to know the villagers and living in the village, at least one month before beginning interviewing. Two research assistants were employed for collecting data in

addition to the researcher. They had an intensive orientation, included outlining the objectives of the study, the details of the questionnaire, and characteristics of villagers. Approximately 10 percent of the total households in each village was interviewed. They were randomly selected from villagers staying at home at that time. The researcher and field assistants visited villagers and conducted interviews following a set schedule (Appendix D) including both close-ended and open-ended questions, at each house. The respondents were heads of the household or spouses. In addition, group discussions were conducted at each study site, mainly at grocery shops in the villages where villagers gathered for talking after work. Between three and five such discussions were documented in each village.

4.3.4 Informal Interviews

In general, informal interviews allow the researcher to gain more in-depth information from exploring the issue in a broader context and examining it from different angles. Therefore, village headmen of the study villages and other villages near the study sites, village elders, village committees and villagers familiar to the researcher were selected for informal interviews for more understanding. Informal interviews were also undertaken with the park officials and project officials whose work related to the study villages together with site visits. This resulted not only in more information but also enabled the cross checking of data obtained from villagers to reduce the possibility of bias. The chief of the park, head of each park sector, some park rangers, former and/or current managers and staff of projects working related to the park, such as the Upper Mun

Project, Forest Village Project and Khor Jor Kor Project, were all interviewed in this manner.

4.4 Data Analysis

The analysis of data includes both descriptive and explanatory analysis. The explanatory section clarifies the historical context of Thap Lan National Park focusing on the linkage between the park and local people as well as government organizations. It is derived from literature reviews and interviews and addresses the degradation of the park biodiversity, efforts of the government in protecting biodiversity and providing social needs and the current situation of the park. The descriptive section presents quantitative data derived from the questionnaire survey. The SPSS software was used as a main tool to analyze the data for this section. The descriptive statistics (i.e. frequencies, means, standard deviations, etc.) of socio-economic characteristics of respondents, park resource utilization, attitudes towards park management, and similar variables for each study village were computed and transformed into statistical format (i.e. frequency tables). The statistics are then compared among groups. ANOVA and Non-parametic tests (i.e. Chi-Square, Median and Kruskal-Wallis) are applied to test for significant difference of variables between communities where applicable.

CHAPTER 5

RESULTS

This chapter presents qualitative information gathered through literature review and informal interviews, and the results of data analysis of the questionnaire survey. The first section addresses the historical context of the study area. The second section summarizes aggregate results for all questionnaire surveys in this study. The third section describes socio-economic characteristics of local villagers and relationships of the villagers to the park. The fourth section discusses the consequences of previous government programs in the area.

5.1 Historical Perspectives

5.1.1 General Situation

Thap Lan National Park covers Wang Nam Kiew Forest, Khon Buri Forest, Kang Din So Forest, Kang Yai Forest and Khao Sa Tone Forest (National Park Division, 1992). These forests were declared as national forest reserves under the 1964 National Forest Reserve Act. The Khon Buri National Forest Reserve was proclaimed in 1966, followed by Kang Din So, Kang Yai and Kang Sa Tone National Forest Reserves in 1967 and Wang Nam Kiew National Forest Reserves in 1972, respectively (National Forest Reserve Land Management Division, 1981). These areas were communist refugee camps,

especially Khon Buri Forest Reserves. The communists induced local people to be supporters and fight against the government. In response, the government sent soldiers to clear all communists from the area. Following the communist suppression, the area was designated as Thap Lan National Park in 1981. Local communities scattered in the forest reserve area between Khon Buri and Soeng Sang districts (see Figure 5.1) were resettled in villages located along the park boundary by the army under the National Security Development Project during 1983-1987.

In other zones of the park, several projects including the Thap Lan Forest Development Project, the Upper Mun Project, the Land Distribution Program for the Poor Living in Degraded Forest Reserves (Khor Jor Kor) and the Helping People Affected by the Khor Jor Kor Project were conducted on and around the park area. The main objective of these projects was to protect natural forest resources and improve the standard of living of the local people. The details of these projects will be addressed later.

Thap Lan National Park is divided into 4 management zones reflecting the local administration divisions: Na Dee zone; Wang Nam Kiew zone; Khon Buri zone; and Soeng Sang zone (see Figure 4.1). Management problems are similar all over the park but vary in degree of intensity in each zone. Problems include forest encroachment, illegal logging, wildlife poaching and illegal forest product collection. More than 400 cases of park law violations are recorded each year (National Park Division, 1992).

Poaching and illegal logging in Na Dee zone (figure 4.1) is occasionally done by local villagers but it is not serious when compared to the other zones. This encroached area is in the process of degazetting. However, conflicts between villagers and park

officials often occur from illegal collecting of the leaves of the Lan Tree, the palm species which the park was designated to conserve and which grows only in this zone.

The Wang Nam Kiew zone (figure 4.1), formerly a part of Pak Thong Chai district, presents a good location for tourism with nice scenery and weather and convenient transportation. Land in this sector has been assembled by politicians, high ranking officials, and investors for developing resorts. This zone is also habitat for some rare wildlife, such as banteng *(Bos Javanicus)* and gaur *(Bos gaurus)*, so that poaching is prevalent. Reports suggest that poaching is mainly done by three groups of people: tourists using 4 wheel drive vehicles with the logo of a reputable foundation; professional hunters from Na Dee District; and government officials. Another problem is illegal logging undertaken by local villagers for trading by outsiders (Matichon, April 18, 1997, p.9).

The park in the Khon Buri zone (figure 4.1) suffers from two main problems, illegal logging and park encroachment. Illegal logging is mainly done by local villagers and traded by outsider traders with the support of some government officials. Encroachment is extensive despite the fact that villagers in this zone have benefited from land allocation programs. Currently, this zone is under further pressure from the villagers to reclaim land from the park. Villagers claim that they originally lived on park land and only left when the communists moved in. Following the communist suppression the area was established as a park without redistributing land to them. Some villagers who have already benefited from government projects also claim that the land which they occupied in the past was more than the 15 rai (2.4 hectare) that government allocated to them. As

the number of family members increases, the allocated lands are inadequate to support them and their children. These people are calling for allocating areas in the park for supporting a living for their children by claiming use of those lands before the designation of the park. An intensive survey of the park in 1997 found that 1,213 people were claiming rights on 46,758 rai (7481.28 hectare) of the park area in the Khon Buri zone (see Figure 5.4) (Thap Lan National Park, 1997a). Almost all of this area is an RFD plantation that was added to the park area in 1994.

The current claim to park land in this zone arises from a conflict between the village headmen and park officials. On August 31, 1996, park officials arrested four encroachers directed by the village headmen of Ban Sai Ngam and Ban Lam Phiak while they were using tractors to clear large areas in the park. The accused and four tractors were brought to a local police station to register the illegal case for suing in court later as forestry officials in Thailand are not authorized to charge law violations and send them to court. The police initially declined to register this illegal case, however, it was finally approved. In the same day, the village headmen accompanied by about 50 villagers went back to the park office and threatened that a protest for claiming park land might happen again if the park officials refused to cancel the case as well as return the tractors. The threat was unsuccessful. As a result, the leaders have encouraged villagers in their villages and nearby villages to claim park land by providing budgets and giving commitments regarding benefit sharing if they are successful in their claim. The protest, including demonstrations and rallies in the park and public areas has been supported by thousands of villagers including villagers who recently gained lands from the park. Some participants

have not claimed more lands from the park but participate in the protest because the main protesters supported them during their past land claims (Thap Lan National Park, 1996).

The government is trying to check ownership through an analysis of aerial photographs and personal interviews. The results have not yet come out, however. Resolving the problem is going to be difficult since the protesters, influenced by village headmen and high ranking local officials, are attempting to get a large piece of land in the park. In many cases, the villagers claiming park land are defined as outsiders by the local villagers. Some villagers also claim rights without identifying the specific location of the property while others who are not claiming land report that other people are now making claims on their land (Thap Lan National Park, 1996).

The main problems of the park in the Soeng Sang district are forest encroachment and illegal logging. Forest encroachment in this zone has occurred for more than 10 years, especially in the area around Ban Nong Yai, and Ban Dan La Ko (see Figure 5.1). The problem has continued despite large scale land distribution projects, including the National Security Development Project, Khor Jor Kor Project and the Helping People Affected by the Khor Jor Kor Project which were conducted in the area. Furthermore, illegal logging in this zone is the most serious in terms of volume and weaponry. It is widely conducted by local villagers and outsiders with support of some local officials and army weapons are used for guarding during logging and transportation. Often, park officials have been hurt from armed clashes during patrolling in this area. Some local police officials involved with illegal logging processes have been reshuffled to other areas or even forced to leave their jobs. For example, it was reported in the press that two policemen were forced to leave

their jobs, four more were moved elsewhere while others were in court during 1995-1996. However, the situation has not improved as remaining officials are involved in illegal logging and timber trade in the area continues as usual (Matichon, April 18, 1997, p.9).

5.1.2 Government Projects in the Study Area

5.1.2.1 National Security Development Project

During the past few decades, the hillside area between Soeng Sang and Khon Buri districts in Nakhon Ratchasima province (see Figure 5.1) was widely encroached on by squatters from many areas of the country. A large forest area was cleared and communities were randomly settled all over the area. As the same time, the area was the main camp of the communist refugees migrating from Cambodia since 1975. Local villagers were threatened by the communists and either became supporters or left the area. The fighting between the communists and the Second Regional Army Force of Thailand was prolonged for many years. After 1982, the strategy to fight against the communists was changed. Social and economic development planning was added to the military strategy under the National Security Development Project. The project aimed to stop villagers from being supporters of the communists and prevent further forest encroachment through development. The main activities of the project were forest village establishment, land allocation, occupation development, fundamental public utility development, and training.

Local communities scattered in forest areas in Soeng Sang and Khon Buri districts were reorganized into eleven forest villages between 1983-1987 (Table 5.1). A housing area of 1 rai (0.16 hectare) and farming area of 15 rai (2.40 hectares) were distributed to

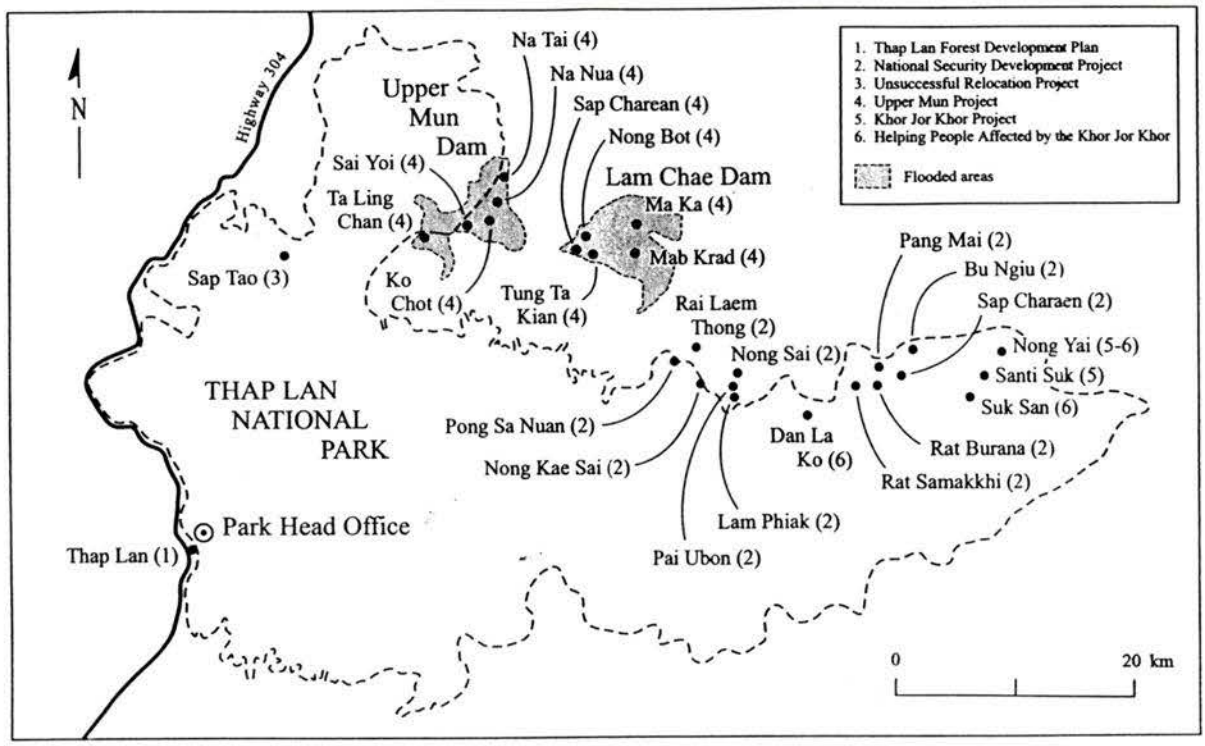
each family. In total, 1,927 housing plots and 4,411 farming plots, covering 64,230 rai (10,276.80 hectare) of forest reserves and parts of Thap Lan National Park were allocated (see Figure 5.1). These lands were issued a PS.21 certificate (see Appendix B) indicating the harvest rights of the villagers. Another 6,750 rai (1,080 hectares) of degraded national forest reserve, once encroached on by these people, was rehabilitated with fast growing tree species to maintain forested area and secure the environment. Fundamental public utilities, including electricity, schools, and health care centers were provided and several small-scale irrigation projects were constructed for serving these forest village communities. Several annual crops, such as corn, soybean, chili and

Table 5.1 Villages established under the National Security Development Project

No.	Village Name	Location		Year
		sub-district	District	
1	Rat Samakkhi	Non Som Boon	Soeng Sang	1984
2	Rat Burana	Non Som Boon	Soeng Sang	1984
3	Sap Charaen	Non Som Boon	Soeng Sang	1985
4	Pang Mai	Non Som Boon	Soeng Sang	1985
5	Bu Ngiu	Sra Ta Kien	Soeng Sang	1983
6	Rai Laem Thong	Lam Piew	Khon Buri	1983
7	Nong Kae Sai	Lam Piew	Khon Buri	1983
8	Lam Phiak	Lam Piew	Khon Buri	1983
9	Pai Ubon	Lam Piew	Khon Buri	1986
10	Nong Sai	Lam Piew	Khon Buri	1986
11	Pong Sa Nuan	Lam Piew	Khon Buri	1986

source: Suranaree Army Force, no date.

Figure 5.1 Map of the Villages Involved in Previous Government Project



sunflower were promoted as rotation crops for year-round planting. The large-scale growing of cashew nuts was promoted by the corporation of the Agriculture and Cooperatives Bank and a private company, Maboonklong Cashew Nuts Company. Several training courses were conducted to develop the agricultural knowledge of the villagers and introduce sources for earning extra income including the raising of silk worms (Suranaree Army Force, no date).

5.1.2.2 Thap Lan Forest Development Project

The Thap Lan Forest Development Project is a sub-project of the Prachin Buri Province Hillside Area Development Project, a King's Initiative Project, conducted between 1978-1991. The main project covered an area of 404,730 rai (64,756.80 hectares) with 94 villages in 5 districts of Prachin Buri province, including Sra Kaew, Wattana Nakhon, Kra Bin Buri, Na Dee and Tra Pa Ya districts. The objective of the project was to eradicate the influence of the communists in the area, stop further forest encroachment and create national security through development and land allocation (Office of Agricultural Economics, 1987; Plantation Promotion Division, 1993).

The Thap Lan Forest Development Project was begun in 1981 at Bu Pram sub-district in Na Dee district. The activities of the project included forest village establishment, area development and rehabilitation of degraded forest area. In 1982, groups of squatters living in forest reserves connected to Thap Lan National Park or on the park area around project area were reorganized and settled in a forest village by the Royal Forest Development, named Ban Thap Lan (Figure 5.1). One hundred and eighty families were allocated a housing area of 1 rai (0.16 hectare) each. Two hundred and six

families were further allocated farming areas, ranging between 3-14 rai (0.48-2.24 hectares) each. The total area was about 16,000 rai (2,560 hectares) (Plantation Promotion Division, 1997).

Following establishment of the forest village was the development of the area, public utilities and jobs for the villagers. Thap Lan Reservoir was constructed to supply water for household consumption and a farming and irrigation system was provided all over the village area. A health care centre, school, and electrical system were also provided. Large areas of degraded forest around the village were reforested and some 125 rai (20 hectares) set aside as a community forest. Seedlings of both fruit and wild tree species were distributed to villagers together with provision of knowledge for agriculture development. Wicker work, using the leaf of the Lan Tree as material, was introduced for earning extra income and now it serves as a significant source of income for several households in the village.

5.1.2.3 Unsuccessful Land Relocation Project

After the declaration of Thap Lan National Park, park officials found that several communities were located inside the park boundary. Some communities were included in the park because of inadequate field surveys during park declaration while others were communities that settled down after park declaration as a result of insufficient park staff to control the park area. Use of lands and biological resources in the park by these communities caused rapid degradation of the park's biodiversity. As a result, the RFD initiated a land relocation program aiming to relocate the communities to degraded areas outside the park. According to park officials, Ban Sap Tao located in Wang Nam Kiew

district, Nakhon Ratchasima province (see Figure 5.1) was one of several communities subjected to the land relocation in 1986. The relocation was resisted by some villagers with larger land holdings in the village while others called for large compensation including cash and land. However, the efforts of the RFD to relocate the village to degraded forest areas outside the park was finally cancelled after officials found that there were no lands available for resettlement. Thus, Ban Sap Tao is currently a part of the park area under the degazetting process for local use.

5.1.2.3 Upper Mun Project

The Upper Mun Project is located in Khon Buri District, Nakhon Ratchasima Province. The project is composed of two large earth dams, the Upper Mun and Lam Chae Dams (Figure 5.1). The first dam is located at N 14°-28'-54", E 102°-09'-17" in Cha Ra Kha Hin sub-district, Khon Buri district, Nakhon Ratchasima province. It is 8 meters wide, 880 meters long and 32.70 meters high. The second dam is located at N 14°-25'-00", E 102°-16'-20" in Khok Kra Chai sub-district, Khon Buri district, Nakhon Ratchasima province. It is 8 meters wide, 2,400 meters long and 29.50 meters high (Royal Irrigation Department, 1996).

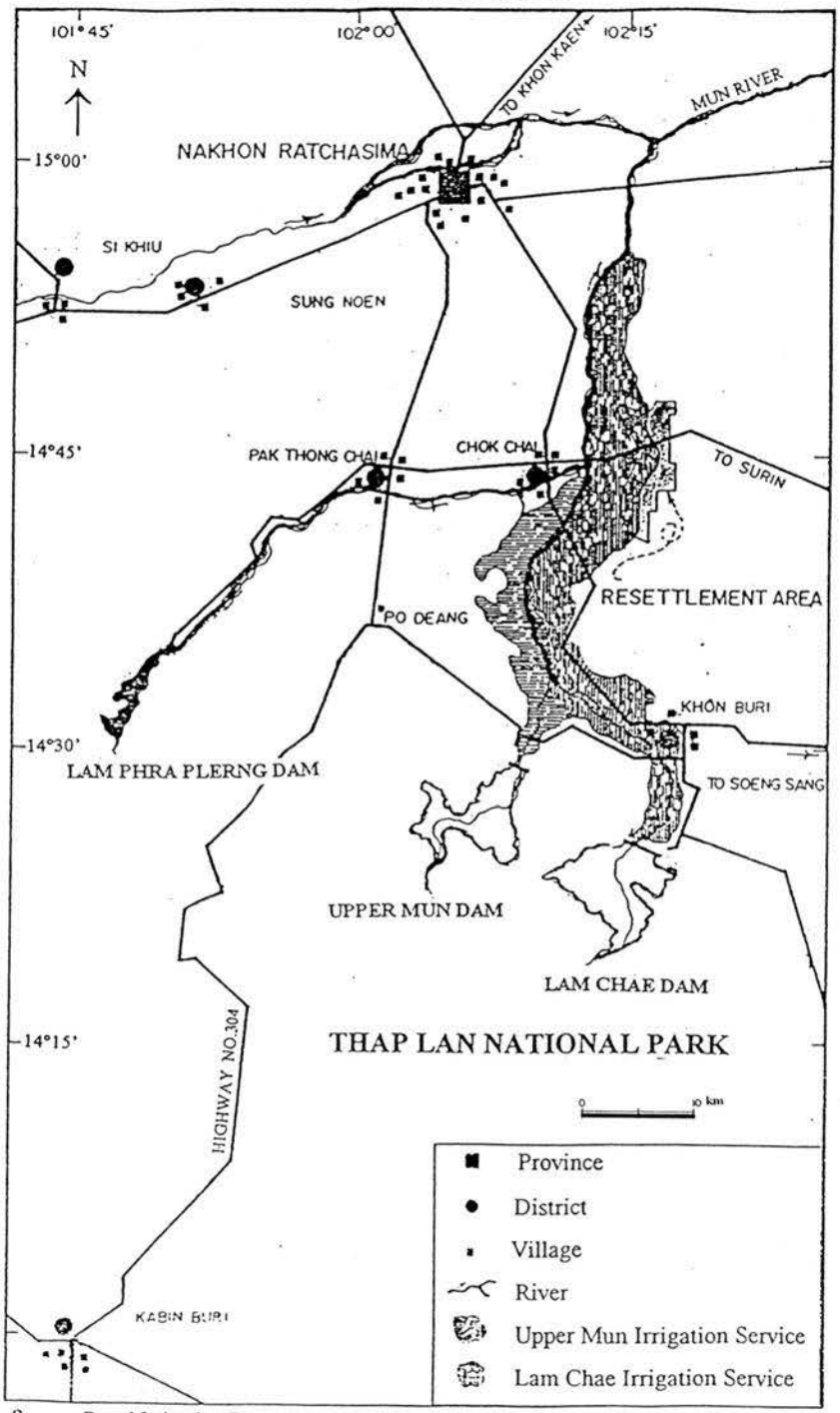
The main objective of the project is to provide irrigation for agriculture. The dams distribute water supply for an agricultural area in Khon Buri, Chok Chai and Pak Thong Chai districts, Nakhon Ratchasima province (see Figure 5.2). It is estimated that the highest volume of water held by the Upper Mun Dam is 350 million m^3 while Lam Chae Dam could hold up to 325 million m^3. The irrigation system distributed from the dams could serve an area of 41,400 rai (6,624 hectares) and 80,600 rai (12,896 hectares)

during the rainy season and 34,300 rai (5,488 hectares) and 70,700 rai (11,312 hectares) during the dry season, respectively (Royal Irrigation Department, 1996).

The impacts of the dams on the area including effects on the socio-economic status of local people were assessed in 1969. The study found that there were 5 villages including Ban Na Nua, Ban Na Tai, Ban Ta Ling Chan, Ban Ko Chot and Ban Sai Yoi, affected by the construction of the Upper Mun Dam. Similarly, 5 villages including Ban Ma Ka, Ban Nong Bot, Ban Tung Ta Kian, Ban Sap Charoen, Ban Mab Krad (see Figure 5.1) were affected by construction of the Lam Chae Dam. These villages account for 471 households and 902 households, counted at the relocation time, affected by the Upper Mun Dam and the Lam Chae Dam, respectively. In 1980, the Royal Irrigation Department started preparing an area for resettlement of the affected villagers. Degraded forest area in Dong Aee Chan Yai National Forest Reserves in Chok Chai district, Nakhon Ratchasima province (see Figure 5.2), covering an area of 32,000 rai (5,120 hectares) was arranged for relocation for the villagers affected by construction of the Upper Mun Dam. In 1986 the construction of the Upper Mun Dam began along with payment of compensation for affected villagers. In addition to payment for their house, buildings, lands and crops, each family was allocated 1 rai (0.16 hectare) for housing and 10 rai (1.6 hectares) for farming in the resettlement area (Royal Irrigation Department, 1994).

However, the resettlement of the villagers generated conflicts among former land users and the resettled villagers. Some of the degraded forest areas arranged for resettlement were already occupied by local villagers and they remained guarding the lands. Therefore, the villagers could settle on their housing plots but could not use the

Figure 5.2 Map of the Upper Mun Project



Source: Royal Irrigation Department, 1996

farming land. The conflicts between former users and new-comers over farming areas resulted in armed clashes and one new-comer was shot dead. At the same time, some villagers subjected to relocation refused to move to the resettlement area that far away from relatives who lived above the flooded zone. They called for money payment instead of provision of land. Thus, negotiation between the Irrigation officials and the villagers took place again and ended with money payment instead of land distribution. Each family obtained 1 rai (0.16 hectare) for housing and 300,000 baht (CAD$10,000) for buying new farming area.

In October 1989, a few months after the completion of the Upper Mun Dam, the construction of the Lam Chae Dam began, based on the model of the first dam. One year later, October 1990, the construction of the Lam Chae Dam was temporally suspended because the Upper Mun Dam was found to be leaking as a result of structural problems. The dam model was rectified and the Upper Mun Dam restoration was completed in 1992. Nevertheless, leakage of the dam gave a chance for some villagers to move back to live and farm in their farms again on the previously flooded land. When the dam could hold water again these villagers moved from these areas and started encroaching in Thap Lan National Park. A survey conducted by the park officials in 1994 reported that 150 villagers were occupying the park again. Officials of the Upper Mun Project identified that 101 of these were villagers had already obtained compensation from the construction of the dam and 49 were children of the affected villagers and others (Upper Mun Project, 1997). At the same time, the construction of the Lam Chae Dam resumed and the area of the five villages has gradually filled with water since 1996. The dam was completed by

the end of the monsoon season in 1997. Hundreds of villagers affected by the construction of these two dams are now collaborating with villagers nearby and claiming rights to park land in the Khon Buri zone (see Figure 5.4).

5.1.2.5 Khor Jor Kor Project

The "Land Distribution Program for the Poor Living in Degraded Forest Reserves" is known in Thai as the "Khor Jor Kor" Project. The main objective of the program is to help the people living on degraded forest lands to obtain legal rights to their land, improve social welfare and stop further encroachment on watershed area at the same time. Initially, the program set a target to carry out work in 352 National Forest Reserves in 17 provinces throughout the northeast of Thailand with a five year plan running between 1991-1995 (Internal National Security Army Force, 1991). However, the program was ended in 1992, one year after initiation, because of demonstrations against the program by local people.

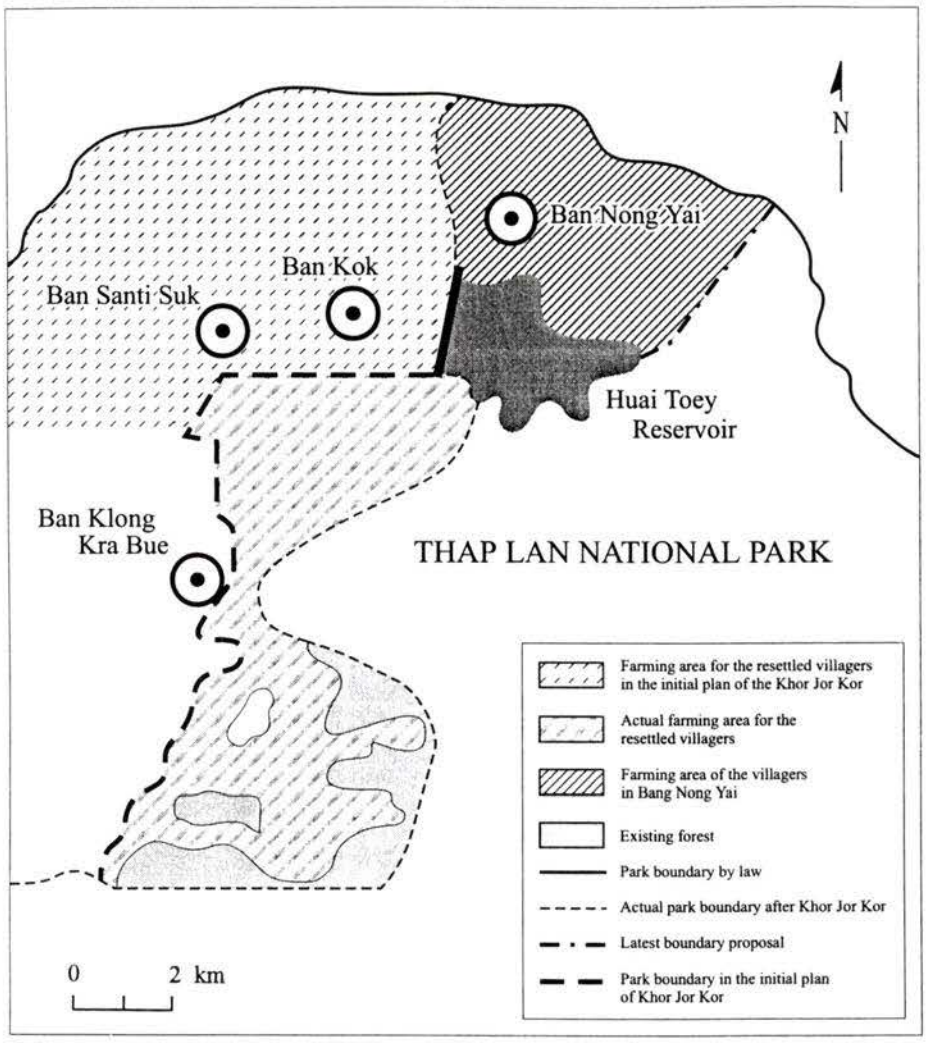
The Khor Jor Kor Project at Ban Santi Suk was a part of the Khor Jor Kor Program running in Nakhon Ratchasima Province, under the administration of the Second Regional Army Force. The project was conducted on a degazetted zone of Thap Lan National Park in Soeng Sang District (see Figure 5.1). The specific objective of the project was to relocate villagers living in Ban Nong Yai (Huai Toey Pattana), Ban Kok and Ban Klong Kra Bue scattered in Thap Lan National Park to resettle in a new village named Ban Santi Suk (Nakhon Ratchasima Provincial Office, 1993) (see Figure 5.3).

The project arranged 612 plots for housing and the relocation began in September 1991. Six hundred and twelve households were moved to the resettlement area.

According to the villagers, in addition to 12.25 rai (1.96 hectares) of land for housing and farming, some basic needs including rice, canned and dried food, some materials for house construction as well as 2,000 baht (CAD$66.67) were distributed to each family during the relocation period. Associated with the resettlement, fundamental public utilities, such as a school, a health care center, electricity, water supply and market, were provided and the overall infrastructure improved. Training programs were provided both for on-farm and off-farm activities. Seeds of fruit trees and vegetables were distributed to each household.

The Khor Jor Kor Project at Ban Santi Suk was faced with several problems. First, the number of villagers to be resettled increased over time as more villagers from elsewhere claimed previous residency. Originally, some 300 households were involved. However over time this increased to 588 households, including villagers living in Ban Nong Yai (348), Ban Klong Kra Bue (67), Ban Kok (23), former users of the resettlement areas (70) and villagers living above Huai Toey Reservoir (38) (Nakhon Ratchasima Provincial Office, 1994). The final number of villagers settled in Ban Santi Suk increased up to 612 households, although not all of these villagers actually moved in. Thus, the area prepared for resettlement was inadequate, resulting in a reduction in the amount of area allocated to each family and further clearing of forest for resettlement. This generated resentment from already settled villagers. Each family was therefore allocated 0.25 rai (400 m^2) for housing and 12 rai (1.92 hectares) for farming, reduced from 0.50 rai (800 m^2) for housing area and 15 rai (2.4 hectares) for farming area as in the project plan.

Figure 5.3 Map of the Khor Jor Kor Project



Source: Tanadkla (1991)

Second, the area set aside for farming for the resettled villagers in the initial plan of the project was claimed by other local villagers resulting in a change in location of farming plots and further expansion of the project area into the park. In some cases, the resettled villagers could not use their allocated farming land if they did not pay the former users who remained protecting their lands. Finally, opposition by a group of 69 villagers living in Ban Nong Yai was the main problem that led to the cancellation of the Khor Jor Kor Project throughout the country. Tanadkla (1991) reported that these villagers were people owning plots of land of more than 15 rai (2.4 hectare) in Ban Nong Yai and the resettlement area. They would receive a smaller amount of land if they participated in the project as land allocation of Khor Jor Kor was limited to 12.25 rai (1.96 hectare) for each household. When the project started, the public hall of Sra Ta Kian Temple located near the resettlement area became the center for making speeches and activities against the project, supported by villagers from nearby and several NGOs from Bangkok. One important leader was a well-known monk, named Prachak, who encouraged local people to violate laws to hamper the project (Nakhon Ratchasima Provincial Office, 1991). In June 1992, these villagers moved back to Ban Nong Yai and 17 people were arrested and sued in court by park officials. This resulted in a rally at Nakhon Ratchasima City Hall and a demonstration in Bangkok, collaborating with villagers who resisted the project from other provinces. Finally, a cabinet resolution dated June 23, 1992 was proclaimed to cancel the rest of the program all over the country (Nakhon Ratchasima Provincial Forest Office, 1993).

5.1.2.6 Helping People Affected by the Khor Jor Kor Project

The cancellation of the Khor Jor Kor Project resulted in the large scale claiming of rights to lands in Thap Lan National Park. Several groups of local people claimed that they were affected by the Khor Jor Kor Project at Ban Santi Suk, mostly claiming losing lands to the resettlement despite the fact that the project also allocated land to the former users. As a result, the government initiated a project, known as the "Helping People Affected by the Khor Jor Kor Project" to resolve the problems of these villagers, including allocation of lands in Ban Nong Yai to the group of 69 villagers resisting the resettlement to Ban Santi Suk. However, these people have broken the resettlement agreement with the government in that when they moved back to Ban Nong Yai they also induced relatives and friends living in nearby villages, including villagers from Pa Kam district in Buri Rum province, to move in and replace the villagers moved to the resettlement area at Ban Santi Suk. Furthermore, hundreds of people from other areas took advantage of the proclaimed cabinet resolution by moving into different areas of the park and claiming park lands. The Nakhon Ratchasima Provincial Forest Office (1993) reported that there were 1,521 households, in total, claiming rights to lands in Thap Lan National Park when the Khor Jor Kor Project was canceled. This included 536 households claiming rights to lands in Ban Nong Yai again, and 985 households more making claims on different areas of the park in Soeng Sang zone.

The forest officials attempted to investigate the claims of these peoples through personal interviewing as well as field checking. However, not all villagers making claims

cooperated with officials in checking ownership. The investigation continued and the number of villagers claiming rights to lands in the park increased. By 1994, the number of villagers claiming lands increased up to 2,390 people, including 505 people claiming effects from the Khor Jor Kor Project, 28 people claiming effects from the construction of Lam Pley Mas Reservoir and another 1,857 people claiming rights to the park land. Seven hundred and eighteen claims were later approved, including 485 people in Ban Nong Yai, 209 people in Ban Dan La Ko and 24 people in Ban Suk San (see Figure 5.1) while others have been removed from the park by 1994 as most of them were found to have invaded the park after 1991. Nonetheless, claims to park land in Soeng Sang zone by villagers still exist (Soeng Sang District Office, 1997).

In early 1997, these villagers making claims joined with other people claiming lands in national forest reserves and parks throughout Thailand and people who claim effects of the construction of several dams, called the "Assembly of the Poor", and conducted protests and rallies in Bangkok lasting more than a month to call for the allocation of conservation forest areas to support their living. Their efforts have succeeded. In April 1997, the government approved a policy known as the "22 April Cabinet Resolution" that allows residency of local people living inside protected areas including national parks. However, this policy is now proposed to be revoked as it has opened the way to encroachment and many national parks have found increased degradation by local people who expect to claim ownership rights on further degraded areas (Bangkok Post, March 28 and 30, 1998).

5.1.3 Degazetted Area

The rapid declaration of Thap Lan National Park and inadequate field checks resulted in the inclusion of some communities and agricultural lands in the park. Claiming rights to lands in the park has therefore occurred since the park was designated. An increase in population associated with the large number of immigrants from nearby areas has resulted in rapid expansion of the park areas occupied by local people. Park officials have investigated the ownership of these areas followed by the resettlement of some communities, land allocation and re-demarcation of the park boundary several times. The latest re-demarcation of the park boundary was in 1994 and the RFD suggested that 153,625 rai (24,580 hectares) or 11 percent of the park land should be set aside for degazetting (National Park Division, 1994). However, further encroachment on areas in the park continues despite local villagers agreeing with the new park boundary of each re-demarcation. It is estimated that approximately 247,055 rai (39,528.80 hectares) or 18 percent of the park land is now under the degazetting processes for the use of communities (Thap Lan National Park, 1997a). These areas include lands which villagers claim they were occupying and using before designation of the park and park areas allocated to the villagers under previous government programs (see Figure 5.4). The numbers of degazetted areas by park zone are presented in Table 5.2. These amounts do not include 46,758 rai (7,481.28 hectares) of the park area in the Khon Buri sector where claims started in 1996 and are now under the processes of ownership investigation (see Figure 5.4).

Figure 5.4 Degazetted Areas

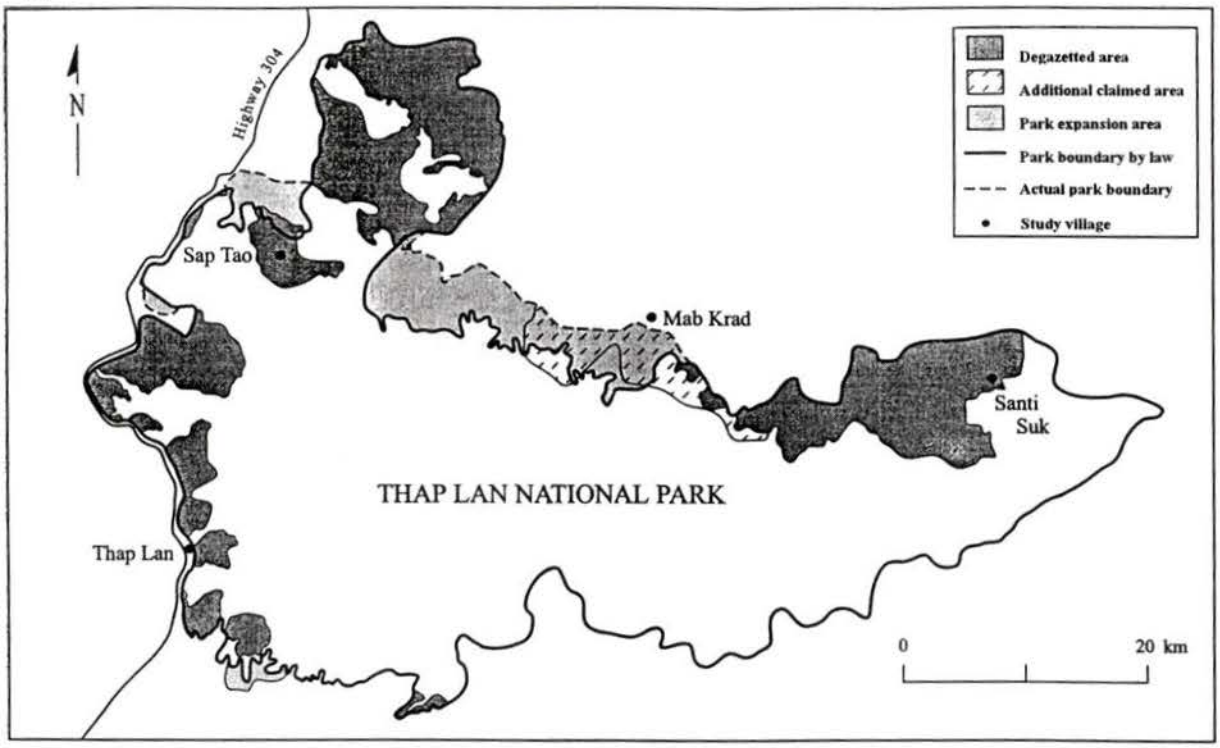


Table 5.2 Degazetted areas by park zone

Park Zone	Province	Degazetted Area (rai)	Remarks
Na Dee	Prachin Buri	37,550	approved by the park superintendent
Wang Nam Kiew	Nakhon Ratchasima	88,968	21,135 rai approved by the cabinet, and 67,833 rai (overlap with the land reform zone) approved by the park superintendent
Khon Buri	Nakhon Ratchasima	33,390	(overlap with the land reform zone) approved by the park superintendent
Soeng Sang	Nakhon Ratchasima	87,147	approved by the park superintendent
Total	Prachin Buri - Nakhon Ratchasima	247,055	

sources: National Park Division, 1994; National Park Division, 1997b; Thap Lan National Park, 1997a, 1997b

5.2 Total Questionnaire Surveys

The total number of questionnaire interviews conducted in the four study villages was 151 households. Twenty-nine of these were conducted at Ban Thap Lan, 26 households at Ban Sap Tao, 61 households at Ban Mab Krad, and 35 households at Ban

Santi Suk. Fifty-three percent of the respondents were heads of the household and others were spouses, with 42 percent male and 58 percent female (Table 5.3). The average age of the total respondents was 44.52 years ranging from 18 to 86 years (Table 5.4).

Table 5.3 Total number of households interviewed by community

Village Name	Total Households	Total Sampled	Gender				Household Status			
			male		female		head		spouse	
			case	%	case	%	case	%	case	%
Ban Thap Lan	223	29	13	45	16	55	19	66	10	34
Ban Sap Tao	217	26	11	42	15	58	13	50	13	50
Ban Mab Krad	611	61	27	44	34	56	34	56	27	44
Ban Santi Suk	451	35	13	37	22	63	14	40	21	60
Total	1,502	151	64	42	87	58	80	53	71	47

Table 5.4 Age class distribution of respondents by community (%)

Village Name	Age (years)						
	≤20	21-30	31-40	41-50	51-60	>60	Remarks
Ban Thap Lan	0	3	17	28	24	28	Mean = 50.4, SD = 11.0 Range = 30-68
Ban Sap Tao	0	15	35	23	15	12	Mean = 43.2, SD = 11.7 Range = 28-70
Ban Mab Krad	2	16	31	26	7	18	Mean = 44.5, SD = 15.6 Range = 18-86
Ban Santi Suk	3	29	26	17	20	5	Mean = 40.6, SD = 14.0 Range = 20-65
Total	1	16	27	24	16	16	100

5.3 Characteristics of Local Villagers

5.3.1 Immigration Rate

This study defined the status of the villagers by their place of birth so that only villagers who were born within the study village were defined as non-immigrants while all others were immigrants. There is a high proportion of immigrant villagers in the four study communities (Table 5.5). In Ban Thap Lan, all respondents are immigrants, with 10 percent from other districts of Prachinburi Province that the village is located in, and 90 percent from other provinces mainly Nakhon Nayok (45%) (Table 5.6). The period of immigration to the area was between 1961 to 1987. The main purpose for moving into the area for the majority of respondents was to get farm land through clearing forest areas and buying from other villagers living in the village (Table 5.7).

In Ban Sap Tao, 54 percent of the respondents are immigrants from nearby villages and elsewhere (Table 5.6). The moving was between 1959 and 1996. The main purposes for immigration to the area were 72 percent following their parents and family and 28% clearing forest for farming (Table 5.7).

In Ban Mab Krad, nearly all of the villagers in the village were subjected to the recent relocation resulting from the Lam Chae Dam construction. Thus, villagers moving from the flooded zone to settle in the new village location are not recognized as immigrants in this study. Thirty-four percent of the villagers interviewed in the village are immigrants, with 31 percent of them from others villages within Nakon Ratchasima province and 3 percent from other provinces (Table 5.6). The period of immigration to the village was between 1959 to 1996. Seventy-six percent of the immigrants report that

the purpose for moving to the area was the opportunity for obtaining new farm lands. Fourteen percent obtained them through clearing forest and 62 percent through buying, while others follow their parents (19%) or come for other reasons (5%) (Table 5.7).

Ban Santi Suk is similar to Ban Mab Krad as all villagers in this village were recently relocated from villages located inside Thap Lan National Park. Thus, the immigration status of villagers is identified through their status in Ban Nong Yai since it was found that all respondents interviewed in this village lived in Ban Nong Yai before the relocation. Nonetheless, all respondents are identified as immigrants, with 34% from other areas within Nakhon Ratchasima Province that the village is located in, and others from other provinces, mostly Buri Rum Province (Table 5.6). These people reported moving into Ban Nong Yai between 1967 to 1991, and were relocated to Ban Santi Suk by the end of 1991. Ninety-four of them headed to Ban Nong Yai to clear forest areas (51%) and buy lands (43%) for farming while others followed their parents to the area (Table 5.7).

Table 5.5 Status of the respondents by community (%)

Village Name	Status			
	Non –immigrant		Immigrant	
	case	%	case	%
Ban Thap Lan	0	0	29	100
Ban Sap Tao	12	46	14	54
Ban Mab Krad	40	66	21	34
Ban Santi Suk	0	0	35	100
Total	52	28	99	72

Table 5.6 Hometown of respondents by community (%)

Village Name	Hometown				Total
	within village	other villages	other districts	other provinces	
Ban Thap Lan	0	0	10	90	100
Ban Sap Tao	46	15	31	8	100
Ban Mab Krad	66	10	21	3	100
Ban Santi Suk	0	20	14	66	100
Average	28	11	19	42	100

Table 5.7 Purpose of immigration of respondents by community (%)

Village Name	Purpose				Total
	clear forest for farming	buy land for farming	follow parents or family	others	
Ban Thap Lan	14	69	10	7	100
Ban Sap Tao	28	0	72	0	100
Ban Mab Krad	14	62	19	5	100
Ban Santi Suk	51	43	6	0	100
Average	27	43	27	3	100

The number of non-immigrants in villages is relevant to the length of the village settlement since the respondents are heads of the household or spouses. It was found that the respondents in Ban Sap Tao and Ban Mab Krad are mostly non-immigrant while all respondents in Ban Thap Lan and Ban Santi Suk are immigrants (Table 5.5). This reflects the ages of Ban Sap Tao and Ban Mab Krad that are between 50 years old to more than 100 years old while the age of Ban Thap Lan and Ban Santi Suk (as measured by the

age of Ban Nong Yai), are about 10 to 15 years old. Thus, the potential to select non-immigrants in Ban Thap Lan and Ban Santi Suk to interview is low as the majority or possibly all of the non-immigrants in these villages are too young to be heads of the household or spouses.

An analysis of the time periods of immigration found that the majority of the immigrants moved into the areas after these were declared as conservation forests, national forest reserves or a national park, (Table 5.8) and, overall, more than half of the people recognized the conservation status of the areas during their immigration (Table 5.9).

Table 5.8 Area status during the immigration period by community (%)

Village Name	Area Status			Remarks
	forest	forest reserve	national park	
Ban Thap Lan	27	73	-	outside the park
Ban Sap Tao	36	36	28	
Ban Mab Krad	-	-	-	outside the park & forest reserve
Ban Santi Suk	3	9	88	

Table 5.9 Perceived status of area by immigrants during the immigration period by community (%)

Village Name	Area Status			Remarks
	don't know	forest reserve	national park	
Ban Thap Lan	34	66	-	outside the park
Ban Sap Tao	57	29	14	
Ban Mab Krad	-	-	-	outside the park & forest reserve
Ban Santi Suk	29	20	51	

According to the survey, the early immigrants in the four communities are villagers clearing forest for agriculture or the children of these villagers while the more recent immigrants are villagers moving to buy land for farming or following their family to the area. The change in motivation is because the opportunity to clear new farm land is now limited since those areas are declared as national forest reserves and Thap Lan National Park. Thus, the only chance to obtain lands for new immigrants is through buying. However, expansion of farm lands into the park continued after their settlement. Ban Sap Tao is the only village that has no immigrants coming to buy land in the village while all others have some of these immigrants. This discrepancy between villages might be because of the unsecure ownership of lands in Ban Sap Tao as the village has been subjected to relocation programs since Thap Lan National Park was designated until recently.

5.3.2 Household Size

The average household size of all respondents was 4.92 persons and ranged between 1 to 12 persons. The majority of respondents (76%) have a household size of 3-6 members (Table 5.10). The variation in family size of respondents among the four communities shows no significant difference (ANOVA, $F = 0.530$, $P = 0.662$). The demand for manpower to work for the family as well as a lack of information on family planning has resulted in large household sizes for the old respondents, especially those who are older than 60 years. The younger respondents tend to have smaller families because of increased awareness of family planning. Nonetheless, some of them still have

large families resulting from a concern for mortality of their children and a refusal to use family planning due to concerns over side effects.

Table 5.10 Household size by community (%)

Village Name	Size (persons)					Total	Remarks
	1-2	3-4	5-6	7-8	>8		
Ban Thap Lan	7	31	41	17	4	100	Mean = 5.1, SD =1.7 Range = 2-9
Ban Sap Tao	8	54	27	8	3	100	Mean = 4.5, SD = 1.7 Range = 2-10
Ban Mab Krad	13	33	35	8	11	100	Mean = 5.0, SD = 2.5 Range = 1-12
Ban Santi Suk	6	42	40	6	6	100	Mean = 4.9, SD = 2.0 Range = 1-11
Average	8	40	36	10	6	100	

5.3.3 Education

In Thailand, compulsory education was initially for four years but was later expanded to six years. Most local people complete only the primary school of four or six years, and some of them have never attended school. However, the young generation now has the opportunity to get higher education as the current compulsory education is secondary school (grade 9) and the government has also increased the numbers of schools providing classes up to the secondary level.

Table 5.11 Education levels of respondents by community (%)

Village Name	Education						Total
	none at all	primary school		secondary school	high school	bachelor or higher	
		≤4 years	6 years	(9 years)	(12 years)		
Ban Thap Lan	17	52	10	14	0	7	100
Ban Sap Tao	12	76	12	0	0	0	100
Ban Mab Krad	6	76	16	2	0	0	100
Ban Santi Suk	14	55	26	0	5	0	100
Average	12	65	16	4	1	2	100

The majority of the respondents in the four study villages attended primary school for four or six years while others have never attended school and yet others completed higher education levels (Table 5.11). The variation in education level of respondents among the four communities is not statistically significantly different (ANOVA, F = 1.798, P = 0.150). The average years of schooling of villagers in Ban Thap Lan, Ban Sap Tao, Ban Mab Krad and Ban Santi Suk are 4.62 years, 3.23 years, 4.03 years and 4.26 years, respectively. Ban Thap Lan has the highest percentage of villagers obtaining education higher than primary school (21%) but at the same time has the highest percentage of villagers having no school (17%). Seven percent of respondents in Ban Thap Lan have completed bachelor degrees while the highest education levels of villagers in Ban Santi Suk, Ban Mab Krad and Ban Sap Tao are high school, secondary school and six years of primary school, respectively (Table 5.11). Most of these villagers have limited education because they are unable to afford higher levels. The schools in their communities formerly provided only primary school level so that attending secondary or high school elsewhere was too expensive.

5.3.4 Land Holdings

In Ban Thap Lan, 80 percent of the respondents have lands for housing and farming while 17 percent have no land for farming and 3 percent are totally landless. The average land holding of the villagers is 10.73 rai (1.72 hectare) per household (Table 5.12). Eighty-two percent of the owners obtained lands from allocation of the forest village project, 4 percent from buying and 13 percent from buying and the allocation program (Table 5.13). The types of land document held are 96 percent with SPK and 4

Table 5.12 Size of land holding by community (%)

Village Name	Land Holding (rai)							Total
	0	>0-1	>1-5	>5-15	>15-25	>25-50	>50	
Thap Lan[1]	3	17	17	35	21	7	0	100
Ban Sap Tao[2]	11	4	4	23	11	27	20	100
Ban Mab Krad[3]	3	51	15	21	3	5	2	100
Ban Santi Suk[4]	5	0	0	77	9	9	0	100
Average	5.5	18	9	39	11	12	5.5	100

Note: [1] Mean = 10.73, SD = 8.72, Max = 34.00
[2] Mean = 32.85, SD = 33.40, Max = 150.00
[3] Mean = 11.71, SD = 49.40, Max = 385.00
[4] Mean = 14.40, SD = 7.50, Max = 36.25

Table 5.13 Land attainment by community (%)

Village Name	Land Attainment					Total
	clear forest	buy	land allocation	buy & land allocation	inherit	
Ban Thap Lan	0	4	83	13	0	100
Ban Sap Tao	64	18	0	0	18	100
Ban Mab Krad	4	68	16	12	0	100
Ban Santi Suk	0	3	78	19	0	100
Average	17	23	44	11	5	100

Table 5.14 Land documents by community (%) (include housing area)

Village Name	Land Document*				Total
	no	PBT	STK	SPK	
Ban Thap Lan	0	4	96	0	100
Ban Sap Tao	100	0	0	0	100
Ban Mab Krad	78	3	0	19	100
Ban Santi Suk	0	3	97	0	100
Average	37	4	48	11	100

*see Appendix B

Table 5.15 Respondents seeking new farm lands by community (%)

Village Name	Seeking New Farm Lands			Total
	no	yes, (from buying)	yes, (from allocation)	
Ban Thap Lan	90	10	0	100
Ban Sap Tao	85	0	15	100
Ban Mab Krad	41	3	56	100
Ban Santi Suk	60	3	37	100
Average	69	4	27	100

percent with PBT documents or tax receipts (Table 5.14). The majority of respondents (90%) report having sufficient land to support their living while another 10 percent are seeking to buy new land (Table 5.15).

In Ban Sap Tao, the majority of respondents (85%) own land for housing and farming while 4 percent of them have only housing plots and others are landless. The average land holding of the villagers in the village is 32.85 rai (5.26 hectare) per household (Table 5.12). Sixty-four percent of the villagers obtained lands from clearing of the forest, 18 percent from buying and 18 percent from inheriting from their parents (Table 5.13). All of these lands have no land documents (Table 5.14) as the village is located inside Thap Lan National Park, however, the village area is now under the degazetting process. Therefore, these lands might be given STK or SPK land documents later that are untransferable but inheritable. Eighty-five percent of the respondents interviewed in this village report holding enough land to support their livelihood while others are seeking new lands expected from land allocation programs (Table 5.15). Secure land ownership is a main concern of the villagers in Ban Sap Tao. Although the government has formally approved living in the park by the community the villagers still want land title deeds.

In Ban Mab Krad, over half of the villagers (54%) have no lands or hold only housing areas as they occupy lands of not more than 1 rai (0.16 hectare) (Table 5.12). The average land holding however could reach 11.71 rai (1.87 hectare) per household as a result of the large amount of land (385 rai) held by one villager. However, almost all respondents claim that they formerly possessed larger pieces of land on areas now under

the Lam Chae Dam. The majority of land (78%) currently occupied by these villagers has no land document while 19% of them are SPK and 3% the PBT (Table 5.14). Fifty-nine percent of the respondents are seeking new pieces of farm land and 98 percent of these expect to get this land from forest areas, particularly the park (Table 5.15). It was found that 41% of the respondents in the village are claiming park lands outside the degazetted zone, ranging between 10-100 rai/case.

In Ban Santi Suk, 95 percent of respondents have lands for housing and farming while others are landless (Table 5.12). The average land holding of the villagers is 14.40 rai (2.30 hectare) per household. All lands held by the villagers were a part of Thap Lan National Park which the government allocated to them under the Khor Jor Kor Projecct and it is now under the degazetting processes. These lands are also under the process of obtaining STK land documents. However, 3 percent of the respondents are villagers who obtained their land through buying from other villagers who had allocated lands from the Khor Jor Kor Project, and claim to have a PBT or tax receipt for their lands. Forty percent of the villagers are demanding more farm lands and over half of these expect to get them from the allocation programs (Table 5.15).

The variation in numbers of villagers holding lands among the four communities differs significantly ($\chi^2 = 21.0553$, $P = 0.0001$) but the size of land holdings of villagers in these communities has no statistically significant difference (ANOVA, $F = 2.579$, $P = 0.056$). However, over half (58%) of the villagers in Ban Sap Tao hold lands of more than 15 rai (2.40 hectare) while the other villages have few inhabitants with so much land (Table 5.12). This is because lands held by the villagers in Ban Sap Tao were mostly

gained through clearing forest lands resulting in the considerably larger land holdings of these villagers while lands held by villagers in other villages are regulated by land allocation regulations and the amount of money they have. The land holding per household in Ban Thap Lan and Ban Santi Suk is limited by the land allocation regulation providing lands up to 15 rai (2.40 hectare) per household, thus, only villagers able to afford additional lands could own larger lands. In the case of Ban Mab Krad, the villagers in this village lost their lands to the construction of the Lam Chae Dam. Thus, lands held by villagers in this village are totally dependent on the payment ability of each household. Some villagers claim an inability to afford lands and own only housing plots, despite all of them being paid for buying new lands from the dam project.

Lands occupied by the villagers in the four study communities have only documents that indicate occupancy and harvesting rights (STK, SPK or PBT) but not a title deed (see Appendix B) as they were all parts of forest areas. Although some of these lands were obtained through buying, the villagers prefer to buy lands having no land document as they can be readily traded at low prices. In areas where there are land allocation projects the villagers are given land documents, such as STK and SPK (see Appendix B), indicating legal rights for occupying and harvesting the lands. Lands in other areas could have PBT or tax certificate if the users are making tax payments as they expect to use the certificate as the evidence for occupancy and obtaining legal rights later. Similarly, as the allocated lands are heritable but not transferable, the owners who buy allocated lands from the local people pay tax to claim land rights later.

The variation in seeking new farm lands in the four communities (Table 5.15) is statistically different (χ^2 = 26.6185, P = 0.000) and varies with the economic activities and land holdings of villagers in the communities. In Ban Thap Lan, the villagers have off-farm alternatives for generating income from nearby industries as well as the wicker business. As a result, the number of villagers seeking farm land is lower than those in other villages that depend heavily on agriculture. Ban Mab Krad has the highest percentage of villagers who are seeking new farm lands as a result of the largest number of landless farmers in the village. A poor economic situation in communities forces most villagers to seek new farm lands through allocation programs except those in Ban Thap Lan where the village economy is better. In Ban Sap Tao, Mab Krad and Santi Suk, villagers who seek farm lands are poor and are seeking lands to support their living whereas those in Ban Thap Lan are the rich in the village and are seeking lands to support their children as they have alternatives for earning a living. However, although all of these villagers in Ban Thap Lan report seeking new farm lands through buying (Table 5.15) the results in the next sections (Table 5.32-5.33) reveal that many villagers in this village also expect opportunities to get land from allocation.

5.3.5 Land Use

The pattern of land use in the four communities is regulated by water supply. In Ban Thap Lan, lands are integrated among orchards with a variety of fruit trees, paddy fields, and cash crops, including several species of vegetable, where irrigation is available. Some areas outside the irrigation area have cash crops, particularly cassava and corn. Ban Sap Tao, Ban Mab Krad and Ban Santi Suk are rainffed areas. Reservoirs,

ponds and wells are constructed to supply water for the villages but there is no irrigation system. Cassava is cultivated all over the area as it requires little water. Rice and vegetables are grown where water is available. Some fruit tree species such as mango and jack fruit are planted in housing plots and used for household consumption purposes. Several villagers explained the reason for the continuous growing of cassava as being their limited land holdings. They are concerned that they might not earn enough income if all or parts of their lands are converted to orchards, as fruit trees take several years before giving income. Patterns of land use, counted by numbers of respondents holding farm lands are reported in Table 5.16.

Table 5.16 Land use patterns by community (%) (exclude housing area)

Village Name	Land Use					Total
	cash crop	paddy field	orchard	integrated farm	others	
Ban Thap Lan	39	0	26	31	4	100
Ban Sap Tao	91	0	0	9	0	100
Ban Mab Krad	80	8	0	8	4	100
Ban Santi Suk	97	0	0	3	0	100
Average	77	2	6	13	2	100

5.3.6 Occupation

The livelihood of the villagers in the four study sites is similar to that of other local communities as most of them remain involved in the agricultural sector (Table 5.17). The variation in numbers of respondents involved in agriculture in the four communities is statistically significant ($\chi^2 = 7.6455$, $P = 0.05$). In Ban Thap Lan, the villagers are

shifting to depend more on the non-agricultural sector since industries were constructed on the Kabin Buri Industrial Site located 30 kilometers from the village. The industrial factories provide a more stable income with jobs that do not require high investment like agriculture inputs and labor costs but offer a regular income as well as welfare including medical care and transportation. Thus, although over half of the villagers (58%) in Ban Thap Lan remain dependent on farming, 41 percent of these work as part time off-farm laborers in industrial sites, while another 31% of the villagers in this village depend solely on unskilled labor wages at the same site. Almost all of the households depending on farming earn extra income from the wicker work introduced by the forest village project.

In Ban Sap Tao, 69 percent of the villagers are cassava growers, however, 23 percent of these seasonally move to pursue jobs in urban areas after harvesting while another 27 percent of the villagers in the village earn their living by working as full time laborers (Table 5.17). Most of these laborers are workers on construction sites in Bangkok while others are workers in garages and shops in urban areas. The low price of cassava during the last season forced more villagers to pursue jobs in large cities in 1997.

In Ban Mab Krad, 69 percent of the villagers are dependent on agriculture while others depend on non-agricultural income, including 5 percent of the villagers who depend on banking interest generated from the compensation money paid by the dam construction project (Table 5.17). Most of the farmers in Ban Mab Krad are involved in cassava growing while some of them depend on growing vegetables and earn a better income. However, more than half of these cassava growers have no farm land; as a result, they are laborers for cassava farms in nearby villages. Some farmers that hold a small amount of

Table 5.17 Main sources of household income by community (%)

Village Name	Sources of Household Income					Total
	agriculture	agriculture & off-farm unskilled labors	off-farm unskilled labors	professional careers	others	
Ban Thap Lan	17	41	31	4	7	100
Ban Sap Tao	46	23	27	0	4	100
Ban Mab Krad	69	0	11	7	13	100
Ban Santi Suk	88	0	3	0	9	100
Average	55	16	18	3	8	100

farm land also earn additional income by working as on-farm laborers in others villages. The Royal Forest Department has also contributed significant income to this community as many villagers in this village earn a major part of their household income through working as park rangers or as workers in the seedling nursery in the RFD's plantation unit.

In Ban Santi Suk, the majority of the villagers (88%) depend on farming, dominantly growing cassava, while 3 percent of them are laborers on construction sites in downtown Nakhon Ratchasima and others earn their major income from selling groceries (Table 5.17). Some of these villagers are involved in illegal logging whenever the chance comes as it offers good rewards. Each of them could earn about 500-700 baht a day from cutting wood for sale.

Education is an important factor in determining the careers of people. People having limited education are farmers, unskilled laborers, or traders while those who have higher education could be skilled laborers in government or non-government organizations. Most villagers in the four communities are farmers and unskilled laborers as they have completed only compulsory education. Ban Thap Lan has the highest percentage of villagers depending on the non-agricultural sector. This is because the villagers in Ban Thap Lan have the opportunity to access nearby industries providing better benefits. Villagers in the other three villages also have off-farm employment but the work does not contribute much income. They go to work as far away as Bangkok or at least downtown Nakhon Ratchasima and incur high expenditures for housing, transportation and other facilities. Moreover, most of them are hard laborers on

construction sites since they have completed only primary school while the factories in large urban areas prefers laborers with education at least at the secondary school level. Therefore, most of the villagers in the other three villages (Ban Sap Tao, Ban Mab Krad, and Ban Santi Suk) remain dependent on agriculture in their villages or nearby villages while some of them will access non-farm employment only when the agricultural sector can not provide enough income for their living.

5.3.7 Income

The annual household income of villagers was calculated from the cash income that heads of the household and their spouses earned during the last 12 months. It excludes values of crops and forest products which villagers grow or gather for their household consumption. Moreover, the price of cassava, their main cash crop, had dropped significantly from prior years. Thus, the annual household income in this study might be lower than the actual income that is derived on an ongoing basis.

The variation in income among the communities is statistically significant (ANOVA, $F = 14.54$, $P = 0.000$). There is, however, a very wide range in incomes within each community as indicated by the standard deviation (Table 5.18). Ban Thap Lan has the highest annual household income ranging from 12,000 baht (CAD$400) to 330,000 baht (CAD$11,000) per year with an average of 84,965.52 baht (CAD$2,832.18) that is far higher than these other three villages. More than 50 percent of the villagers in Ban Thap Lan have an household income higher than 50,000 baht (CAD$1,666.67) per year while the majority of the villagers in other villages obtain household income up to 50,000 baht (CAD$1,666.67) per year. The economic condition of Ban Thap Lan is considered

Table 5.18 Distribution of annual household income by community (%)

Village Name	Income (baht)							Total
	≤ 15,000	<15,000 - 30,000	30,001 - 50,000	50,001 - 80,000	80,001 - 100,000	100,001- 200,000	>200,000	
Thap Lan [1]	3	7	14	35	14	24	3	100
Ban Sap Tao [2]	23	39	15	15	8	0	0	100
Ban Mab Krad [3]	8	29	33	16	0	4	0	100
Ban Santi Suk [4]	37	31	20	6	6	0	0	100
Average [5]	20	26	21	18	7	7	1	100

Note: [1] Mean = 84,965.52, SD = 59,089.81, Min = 12,000, Max = 330,000
[2] Mean = 37,192.31, SD = 25,487.28, Min = 12,000, Max = 100,000
[3] Mean = 39,114.75, SD = 33,532.12, Min = 10,000, Max = 200,000
[4] Mean = 29,114.29, SD = 22,245.65, Min = 5,000, Max = 100,000
[5] Mean = 45,271.52, SD = 41,403.21, Min = 5,000, Max = 330,000

good as the villagers in this village have alternative ways to generate regular and extra off-farm incomes from wicker work and off-farm employment in nearby industries. Each of them could earn about 8,000 baht (CAD$266.67) a month from working as full time unskilled laborers in industrial factories while wicker work could contributed up to 3,000 baht (CAD$100) per month for each. Furthermore, the main types of land use in the village are orchards and integrated farms that have orchards, paddy fields and/or cash crops, which yield better benefits compared with the monocultures of cash crop popular in the other three villages. The respondent earning the maximum annual household income in Ban Thap Lan is, however, a villager working in government (professional career) while a farmer earns the minimum.

The annual household income of villagers in Ban Sap Tao ranges between 12,000 baht (CAD$400) to 100,000 baht (CAD$3,333.33) with an average of 37,192.31 baht (CAD$1,239.74) while Ban Mab Krad ranges between 10,000 baht (CAD$333.33) to 200,000 baht (CAD$6,666.67) with an average of 39,114.75 baht (CAD$1,303.83). Although the economies of Ban Mab Krad and Ban Sap Tao mostly depend on cassava and unskilled wages, the average annual income per household of villagers in Ban Mab Krad is somewhat higher than Ban Sap Tao's. This is because the average annual household income of the villagers in Ban Mab Krad is raised by the income of a family (200,000 baht or CAD$10,000 per year) that owns a bus business running between Khon Buri district and villages in this vicinity, and a professional worker's income earning up to 180,000 baht (CAD$6,000) per year. The maximum annual income of the villagers who depend on agriculture and unskilled wages in Ban Mab Krad and Ban Sap Tao is the same,

100,000 baht (CAD$3,333.33). Ban Santi Suk has the lowest average annual household income of the villagers, 29,114.29 baht (CAD$970.48) per year, ranging between 5,000 baht (CAD$166.67) to 100,000 baht (CAD$3,333.33). This results from the majority of the villagers (88%) being solely dependent upon growing cassava which has a low price and is grown on limited land holdings.

5.3.8 Debt

Many villagers in the four study communities are in a circle of debt mostly resulting from agricultural inputs (Table 5.19). Each year loans are taken at the beginning of the growing season and paid back after crop harvesting. The main source of credit is the Village Cooperatives and the Bank of Agriculture and Cooperatives. The variation in number of villagers in debt among the communities is statistically significant (χ^2 = 22.5303, P = 0.0000). As expected, the rate of villagers having debts is inversely related to annual household income of the communities. The percentage of villagers in debt in Ban Thap Lan (55%) is lower than Ban Sap Tao (69%) and Ban Santi Suk (71%). Ban Mab Krad has the lowest rate of debt (28%), as the villagers obtained a large cash

Table 5.19 Family debt status by community (%)

Village Name	No Debt	In Debt		Total
		agricultural inputs	household expenditures	
Ban Thap Lan	45	41	14	100
Ban Sap Tao	31	54	15	100
Ban Mab Krad	72	15	13	100
Ban Santi Suk	29	51	20	100
Average	44	40	16	100

payment resulting from the construction of the Lam Chae Dam in early 1996, for buying their new farm lands. Most villagers have not bought any land, and the compensation payment was spent for general household expenditure.

5.3.9 Children

A study of the situation of the respondents' children is useful for predicting the degree of dependency on park resources as well as the trend of threats to the park in the future. The level of education of children indicates their potential to access off-farm employment and the number of people absorbed into the agricultural sector as well. The number of children depending on cultivation and holding lands is also important for predicting trends, since most agricultural lands held by villagers living in the vicinity of parks are converted from forest lands.

The ability to reach a higher education level for children is limited by several factors, such as their household economy and the occupation of their parents. Often, children coming from families of higher economic status or having professional career parents have a higher education levels than those coming from poor families or having parents that subsist on agriculture. The variation in education among respondents' children in the four study communities has no significant difference (ANOVA, $F = 2.279$, $P = 0.086$). Overall, this study found that children have a better education than their parents, however, some communities still have children with no school at all. The children in Ban Thap Lan have better education than the others resulting from the better economic situation of their parents and more convenient transportation to school. The number of years of schooling of the children who have the highest level of education in each household is presented in Table 5.20.

Table 5.20 Highest education levels of respondents' children in each household by community (%)

Village Name	Education Level							Total
	none at all	primary school		secondary school	high school	bachelor or higher	still attending	
		≤4 years	6 years	(9 years)	(12 years)			
Ban Thap Lan	0	0	21	21	18	11	29	100
Ban Sap Tao	8	4	29	4	17	0	38	100
Ban Mab Krad	2	15	17	11	7	9	39	100
Ban Santi Suk	6	0	21	21	0	3	49	100
Average	4	5	22	14	10	6	39	100

The main occupations of school leavers, counted by household unit, are presented in Table 5.21. The variation in numbers of children involved in agriculture in the four communities is statistically significant (χ^2 = 13.0802, P = 0.0045). All children of respondents interviewed in Ban Thap Lan have off-farm occupations, with 65 percent of them unskilled laborers in industrial factories (55%) and construction sites (10%), 25 percent in professional careers, and 10 percent traders including one person involved in the trade of wildlife at the local level. Nevertheless, it is surprising that the wildlife trader is a son of a village committee member who understands the forest laws and is supposed to act towards conservation. In turn, Ban Sap Tao has the highest percentage of children depending on the agricultural sector, followed by Ban Mab Krad and Ban Santi Suk, respectively (Table 5.21). This might be because the children in Ban Thap Lan have an opportunity to work in nearby industrial factories while the children in the non-agricultural sector in the other three villages are forced to be unskilled laborers in large cities.

Table 5.21 Occupations of the respondents' children by community (%)

Village Name	Occupations				Total
	agriculture	unskilled labors	professional careers	others	
Ban Thap Lan	0	65	25	10	100
Ban Sap Tao	53	47	0	0	100
Ban Mab Krad	36	51	13	0	100
Ban Santi Suk	29	65	6	0	100
Average	30	57	11	2	100

Nearly all of the respondent's children in the four study communities are landless. The percentage of respondents who report that their children possess lands in Ban Thap Lan and Ban Sap Tao is only 4 percent while those in Ban Mab Krad and Ban Santi Suk are 9 and 6 percent, respectively. In the case of Ban Thap Lan and Ban Santi Suk, all the lands are obtained from government allocation programs while those in Ban Sap Tao are inherited. In the case of Ban Mab Krad, one-third of the total of 9 percent of children having lands have obtained them from government allocations, one-third from buying and another third from inheritance.

5.3.10 Park Resource Utilization

The study excludes use of lands and resources in the degazetted zones in evaluating park resource utilization. Thus, growing plants and making uses of other resources within the village boundaries of the villagers living in Ban Sap Tao and Ban Santi Suk located on park degazetted areas is not recognized as a part of park resource utilization. Visiting Thap Lan National Park by villagers living in the four communities differs significantly (χ^2 = 25.21110, P = 0.0000). The percentage visiting the park during the past 12 months is reported in Table 5.22.

Park resource utilization in the four communities is significantly different (χ^2 = 36.04550, P = 0.0000). The percentage of respondents making use of at least one item of the park resources in the four study villages is 24 percent in Ban Thap Lan, 34 percent in Ban Mab Krad, 69 percent in Ban Santi Suk and 89 percent in Ban Sap Tao. The patterns of park resource utilization of these communities are reported in Table 5.23.

Table 5.22 Frequency of visitation of the park during the past 12 months by community (%)

Village Name	Visitation					Total
	never	<1/month	1/month	>1/month	1/week or more	
Ban Thap Lan	69	7	17	7	0	100
Ban Sap Tao	8	23	34	31	4	100
Ban Mab Krad	49	17	26	3	5	100
Ban Santi Suk	29	43	17	8	3	100
Average	39	22	24	12	3	100

Table 5.23 Patterns of park resource utilization by community (%)

Village Name	Resource Utilization					
	cutting wood	hunting	fishing	collecting plants and plant products	collecting fuel wood	grazing livestock
Ban Thap Lan	3	3	3	24	0	0
Ban Sap Tao	15	8	31	89	50	12
Ban Mab Krad	2	7	13	34	16	0
Ban Santi Suk	14	6	29	69	54	0
Average	9	6	19	54	30	3

Overall, the main use of park resources of respondents is for consumption purposes (Table 5.24). The respondents in Ban Thap Lan, Ban Sap Tao and Ban Santi Suk use the park for both household consumption and commercial use while those in Ban Mab Krad use it for household consumption alone (Table 5.25-5.28). This might be

because of the better monetary condition of respondents in Ban Mab Krad during the last few years as a result of dam compensation, increased patrols by park staff and improving relations with park officials. In addition, Ban Mab Krad, unlike both Ban Thap Lan and Ban Santi Suk, has no professional poachers and loggers. Several villagers in Ban Thap Lan and villages nearby are professional loggers cutting wood from the park for commercial purposes; as a result, illegal logging continues although the economic condition of Ban Thap Lan is good and park officials have increased patrols and punishments for violations. Increasing law enforcement by officials cannot stop wood cutting totally, however and has forced some loggers living in Ban Thap Lan to log in other areas whereas others continue cutting wood from the park.

The use of the leaves of the Lan tree for the wicker work business, an important income source for the villagers, results in a high percentage of plant product collection for commercial use in Ban Thap Lan while the other three villages largely collect for household use. In Ban Santi Suk, the poorest among the four study communities, poverty and support from influential people as well as cooperation from corrupted officials has encouraged illegal logging by the villagers. During the period of data collection a big house built from illegal timber cut from Thap Lan National Park was disassembled for sale to an outside investor. Some villagers also said that all of the villagers in Ban Santi Suk who have big houses are involved in illegal logging.

Table 5.24 Percentage of park resource utilization: **Total Sample**

Park Resource Utilization	Purpose			
	never	yes, for household use only	yes, for household use and for sale	yes, for sale only
growing plants on park land	100	0	0	0
grazing livestock on park land	97	0	3	0
cutting wood for building houses or making furniture	91	7	1	1
collecting plants and/or plant products	46	49	1	4
collecting fuel wood	70	29	1	0
hunting	94	5	1	0
fishing	81	19	0	0

Table 5.25 Percentage of park resource utilization: **Ban Thap Lan**

Park Resource Utilization	Purpose			
	never	yes, for household use only	yes, for household use and for sale	yes, for sale only
growing plants on park land	100	0	0	0
grazing livestock on park land	100	0	0	0
cutting wood for building houses or making furniture	97	0	3	0
collecting plants and/or plant products	76	7	0	17
collecting fuel wood	100	0	0	0
hunting	97	3	0	0
fishing	97	3	0	0

Table 5.26 Percentage of park resource utilization: **Ban Sap Tao**

Park Resource Utilization	Purpose			
	never	yes, for household use only	yes, for household use and for sale	yes, for sale only
growing plants on park land	100	0	0	0
grazing livestock on park land	88	0	12	0
cutting wood for building houses or making furniture	85	15	0	0
collecting plants and/or plant products	11	85	4	0
collecting fuel wood	50	50	0	0
hunting	92	8	0	0
fishing	69	31	0	0

Table 5.27 Percentage of park resource utilization: **Ban Mab Krad**

Park Resource Utilization	Purpose			
	never	yes, for household use only	yes, for household use and for sale	yes, for sale only
growing plants on park land	100	0	0	0
grazing livestock on park land	100	0	0	0
cutting wood for building houses or making furniture	98	2	0	
collecting plants and/or plant products	66	34	0	0
collecting fuel wood	84	16	0	0
hunting	93	7	0	0
fishing	87	13	0	0

Table 5.28 Percentage of park resource utilization: **Ban Santi Suk**

Park Resource Utilization	Purpose			
	never	yes, for household use only	yes, for household use and for sale	yes, for sale only
growing plants on park land	100	0	0	0
grazing livestock on park land	100	0	0	0
cutting wood for building houses or making furniture	86	11	0	3
collecting plants and/or plant products	31	69	0	0
collecting fuel wood	46	51	3	0
hunting	94	3	3	0
fishing	71	29	0	0

In general, the rate of park resource utilization is high in the communities located inside the park or having a high proportion of villagers with insufficient income. Use of park resources in Ban Sap Tao (89%) is higher than Ban Thap Lan (24%), Ban Mab Krad (34%) and Ban Santi Suk (69%) since Ban Sap Tao is located inside the park boundary. The rate of park resource utilization in Ban Santi Suk (69%) is also higher than Ban Thap Lan (24%) and Ban Mab Krad (34%) since the proportion of villagers with very low incomes (≤ 30,000 baht/year) in Ban Santi Suk (68%) is larger than in Ban Thap Lan (10%) and Ban Mab Krad (37%) (see Table 5.18). However, interviews with the villagers suggest that the rate of park resource utilization depends largely on the strictness of the park officials controlling each zone as the villagers report that the main reason to give up collecting park resources is the result of more frequent patrolling by park officials as well as stricter imposition of penalties. In the past, park officials found that fines were

not an effective deterrent, especially for illegal logging, as the fine is very low. Recently the penalty was changed to focus on suing intruders in court, and this has significantly reduced the number of intruders. Park officials also found that park violations were often repeated by the same group of people. Ban Thap Lan and Ban Mab Krad show a much lower percentage of villagers making use of the park resources than Ban Santi Suk and Ban Sap Tao (Table 5.23). The difference might be because Ban Thap Lan and Ban Mab Krad are located near the park offices and the villages are on main routes for patrolling resulting in lower opportunities for villagers to violate the park regulations. In contrast, Ban Sap Tao is a poor community, and located inside the park area away from park officials and shows the highest percentage of villagers using park resources.

Local people increasingly use the park for recreational purposes, and at the same time collect plant products as a supplementary source of food. The seasonal collection of plant products, such as bamboo shoots and the fruit of *Baccaurea sapida,* for sale in the local market has declined rapidly as the park officials have tightened control over the area and the products have become more cultivated on farms. Collection of fuel wood in the park for cooking has also decreased as more villagers shift to depend on natural gas while villagers owning orchards report using dead sticks from fruit trees as fuel wood. However, Ban Sap Tao and Ban Santi Suk still have a relatively high rate of villagers depending on fuel wood collection in the park due to most of them having low incomes.

Charcoal sold in village markets is locally produced by the villagers. Some villagers still hunt for food and income. During the survey, several live species, such as squirrel, parakeet and myna, that have been trapped for raising as pets or for sale in the

local market were found in cages, while the meat of many species, such as wild pig, pangolin and porcupine, are available on the special menu in restaurants surrounding the park. Illegal wood cutting still exists for sale either within the communities or in the outside market. In general, illegal timber is temporarily built to be a house for a while before disassembling and selling to outsiders.

5.3.11 Park Regulations and Conservation Knowledge

Local villagers recognize the park boundary through park posts and signs. The percentages of the respondents recognizing the park boundary is 90 percent at Ban Thap Lan, 92 percent at Ban Sap Tao, 84 percent at Ban Mab Krad and 80 percent at Ban Santi Suk. The variation in park boundary recognition in these four communities has no significant difference ($\chi^2 = 2.3961$, $P = 0.4944$). All respondents understand the park regulations; however, respondents claimed that there are informal allowances by park officials for collecting several forest products for household use (Table 5.29) while the park officials report no informal allowances except collecting fuel wood for cremation. This misunderstanding about informal allowances occurs as a result of allowing uses of the park resources including cutting wood for household construction during the early period of the forest village resettlements conducted by the RFD and the Second Regional Army Force.

To the local people, lack of understanding of natural ecosystems could result in the over use of park resources as some local people believe that their collecting activities won't affect the park system. In an open question, most respondents stated that parks are important for influencing rain and controlling the water cycle while some of them report

no understanding at all (Table 5.30). The variation in understanding of park value in the four communities is statistically significant (χ^2=13.8940, P= 0.0031). In each community, there is a low number or no villagers who really understand the significant value of maintaining park biodiversity including wildlife and the role of parks in maintaining ecosystem processes. This probably results from the limited education of the respondents.

Table 5.29 Perceived informal allowances allowed by park authorities by community (%)

Village Name	Informal Allowance				
	cutting wood	fishing	collecting plants and plant products	grazing livestock	collecting fuel wood
Ban Thap Lan	0	7	17	0	0
Ban Sap Tao	4	54	96	31	65
Ban Mab Krad	0	28	36	28	33
Ban Santi Suk	0	69	80	20	83
Average	1	40	57	20	45

Table 5.30 Understanding of the most important role of parks by community (%)

Village Name	Park Value				Total
	maintain balance of ecosystem	control water cycle	reserve resources for next generation	no under-standing	
Ban Thap Lan	21	69	0	10	100
Ban Sap Tao	0	85	4	11	100
Ban Mab Krad	6	51	15	28	100
Ban Santi Suk	11	49	14	26	100
Average	9	64	8	19	100

5.3.12 Attitude towards the Park and Park Officials

In a closed question, the percentage of respondents who agreed that the designation of parks is necessary for preventing environmental degradation is 90 percent at Ban Thap Lan, 92 percent at Ban Sap Tao, 82 percent at Ban Mab Krad and 94 percent at Ban Santi Suk. Other benefits resulting from the designation of Thap Lan National Park reported by villagers include employment opportunities, collection of forest resources, and recreation areas as well as a balanced environment (Table 5.31). Ironically, most villagers acknowledge that were it not for the park then the opportunity to collect forest resources would no longer be possible. However, they also would like more tangible benefits such as income and forest products including timber (Table 5.33-5.37) while over half of them suggest that at least some parts of the park should be degazetted for community use (Table 5.32).

The variation in attitude towards degazetting of the park area in the four communities is statistically significant ($\chi^2 = 20.68925$, $P = 0.00012$). It varies according to different situations, especially village location and the dependency on agriculture of each community. At Ban Sap Tao, concern for rights on lands entirely inside the park results in the highest percentage of respondents asking for park degazetting. Next is Ban Mab Krad where there is a high percentage of landless respondents depending on agriculture that are involved in the current claim on the park. The large number of villagers in Ban Santi Suk dependent on agriculture also creates a high demand for park degazetting despite the fact that the villagers were recently allocated land from the park. In contrast, Ban Thap Lan has the lowest percentage of villagers agreeing with park

degazetting as the villagers have alternative ways for earning income from non-farm employment. However, nearly half of them suggest degazetting of degraded areas and areas claimed by landless villagers and others that claim long occupancy.

Table 5.31 Benefits generated from the park by community (%)

Village Name	Benefit				Total
	recreation area & balanced environment	income from employment	income & food from illegal collecting	no benefit	
Ban Thap Lan	52	10	10	28	100
Ban Sap Tao	16	0	42	42	100
Ban Mab Krad	15	15	18	52	100
Ban Santi Suk	14	9	37	40	100
Average	24	9	27	40	100

Table 5.32 Approval of degazetting of Thap Lan National Park by community (%)

Village Name	Degazetted Area					Total
	whole park	degraded area	claimed area	not at all	no comment	
Ban Thap Lan	0	31	17	48	4	100
Ban Sap Tao	8	15	73	0	4	100
Ban Mab Krad	7	41	36	11	5	100
Ban Santi Suk	3	37	29	20	11	100
Average	4	31	39	20	6	100

In a closed question, as a whole, over half of the respondents have a positive attitude towards park policies (Table 5.33), however, more flexibility on the use of park resources would be appreciated. Attitude towards park policies of each community is

reported in Table 5.34-5.37. The variations in attitude towards the policies of controlling expansion of agricultural land in the park and of controlling minor uses of park resources among communities have no significant difference while variations of other policies are significantly different (see Table 5.33).

The results of these attitude tests reflect the different conditions of the communities. Lack of lands for farming while land prices are high results in an expectation of degazetting the park for community use. All communities, therefore, have a high percentage of villagers who disagree with controlling expansion of agriculture land in the park. At the same time, most villagers in these communities believe that uses of minor forest products by villagers for subsistence will not damage the park ecosystem. As a result, they have a negative attitude towards controlling minor uses of park resources for subsistence. However, the need to depend on park resources also varies upon the economic condition of the communities. In a community where economic conditions are good, demands to use park resources as a source of food and income are lower than poorer communities. The average annual household income is 84,965.52 baht in Ban Thap Lan, 37,192.31 baht in Ban Sap Tao, 39,114.75 baht in Ban Mab Krad and 29,114.29 baht in Ban Santi Suk. The result is Ban Thap Lan has a higher percentage of villagers who agree with controlling of hunting and fishing as well as commercial uses in the park than in the three poorer villages (Table 5.34 - 5.37). As to the wood cutting policy, although all communities realize the need to control wood cutting in theory (Table 5.33) benefits from the past informal allowance for wood cutting generate opposition in practice towards this policy. Ban Thap Lan, where wood cutting for house construction was allowed informally in the past, has the highest percentage of villagers who disagree

with controlling wood cutting as they expect the similar opportunity as was afforded in the past, despite the fact that Ban Thap Lan has the highest income levels.

Overall, more than half of respondents also believe that grazing livestock will not damage park ecosystems, and communities with inadequate grazing areas suggest providing grazing zones in the park. Ban Sap Tao and Ban Mab Krad have a higher percentage of villagers who disagree with controlling grazing livestock in the park than Ban Thap Lan and Ban Santi Suk. The difference is because of the lack of grazing areas in Ban Sap Tao and Ban Mab Krad, and these villagers currently use the park as grazing areas whereas Ban Thap Lan has grazing areas within the village and the people of Ban Santi Suk do not raise livestock.

In terms of attitudes towards the long-term residency policy, in all communities, most villagers agree with allowing long-term residence for villagers living in the area before designation of the park. Ban Sap Tao is the only village where all villagers agree with allowing a long-term residency policy while the other villages have some villagers who disagree with this policy. This is because the villagers in Ban Sap Tao are concerned about the village relocation as the village is located inside park boundary.

In an open question, most local villagers suggest providing a multiple use zone for communities (Table 5.38) and sharing authority between the government and local people (Table 5.39). However, some villagers who are aware of the power of influential people prefer government control and request stricter control over the park as well. They also suggest that providing a multiple use zone on park land could result in an increase in wood cutting and hunting as villagers would have easier access to the park and have a higher opportunity to hunt wildlife.

Table 5.33 Attitude towards park management policies (%): **Total Sample**

Management Policies	Attitude					Variation (among villages)
	extremely positive	somewhat positive	neither positive nor negative	somewhat negative	extremely negative	
controlling expansion of agricultural lands within park boundary	31	8	5	48	8	$\chi^2 = 4.1312$ P = 0.2476
allowing long-term residence of villagers living before the designation of the park	81	10	2	3	4	$\chi^2 = 39.9867$ P = 0.0000
controlling grazing within the park to decrease disturbance of park ecosystems	32	4	14	26	24	$\chi^2 = 7.9583$ P = 0.0469
controlling hunting within the park to preserve wildlife population	68	10	12	8	2	$\chi^2 = 23.1593$ P = 0.0000
controlling fishing within the park to preserve fish population	13	5	9	42	31	$\chi^2 = 16.8274$ P = 0.0008
controlling wood cutting within the park to maintain the area in its natural state	71	18	2	7	2	$\chi^2 = 17.3058$ P = 0.0006
controlling minor uses of park resources such as fuel wood and plants collected for subsistence	8	4	2	7	79	$\chi^2 = 3.6149$ P = 0.3062
prohibiting all commercial uses within the park	52	7	36	2	3	$\chi^2 = 20.3037$ P = 0.0001
Average	45	8	10	18	19	$\chi^2 = 1.9891$ P = 0.5747

Table 5.34 Attitude towards park management policies (%): **Ban Thap Lan**

Management Policies	Attitude				
	extremely positive	somewhat positive	neither positive nor negative	somewhat negative	extremely negative
controlling expansion of agricultural lands within park boundary	55	0	3	35	7
allowing long-term residence of villagers living on the area before designation of the park	90	0	0	7	3
controlling grazing within the park to decrease disturbance of park ecosystems	42	3	10	31	14
controlling hunting within the park to preserve wildlife population	87	3	0	7	3
controlling fishing within the park to preserve fish population	35	3	7	48	7
controlling wood cutting within the park to maintain the area in its natural state	72	0	0	24	4
controlling minor uses of park resources such as fuel wood and plants collected for subsistence	10	0	0	4	86
prohibiting all commercial use within the park	83	0	17	0	0
Average	59	1	5	20	15

Table 5.35 Attitude towards park management policies (%): **Ban Sap Tao**

Management Policies	Attitude				
	extremely positive	somewhat positive	neither positive nor negative	somewhat negative	extremely negative
controlling expansion of agricultural lands within park boundary	23	15	15	47	0
allowing long-term residence of villagers living before the designation of the park	96	4	0	0	0
controlling grazing within the park to decrease disturbance of park ecosystems	15	8	8	38	31
controlling hunting within the park to preserve wildlife population	42	27	12	15	4
controlling fishing within the park to preserve fish population	0	0	4	58	38
controlling wood cutting within the park to maintain the area in its natural state	46	42	4	8	0
controlling minor uses of park resources such as fuel wood and plants collected for subsistence	11	4	4	0	81
prohibiting all commercial use within the park	23	8	65	0	4
Average	32	13	14	21	20

Table 5.36 Attitude towards park management policies (%): **Ban Mab Krad**

Management Policies	Attitude				
	extremely positive	somewhat positive	neither positive nor negative	somewhat negative	extremely negative
controlling expansion of agricultural lands within park boundary	22	3	0	62	13
allowing long-term residence of villagers living before the designation of the park	90	6	0	2	2
controlling grazing within the park to decrease disturbance of park ecosystems	41	3	5	18	33
controlling hunting within the park to preserve wildlife population	85	3	10	2	0
controlling fishing within the park to preserve fish population	12	6	3	33	46
controlling wood cutting within the park to maintain the area in its natural state	86	10	2	2	0
controlling minor uses of park resources such as fuel wood and plants collected for subsistence	3	6	0	9	82
prohibiting all commercial use within the park	54	5	35	3	3
Average	49	6	7	16	22

Table 5.37 Attitude toward park management policies (%): **Ban Santi Suk**

Management Policies	Attitude				
	extremely positive	somewhat positive	neither positive nor negative	somewhat negative	extremely negative
controlling expansion of agricultural lands within park boundary	31	20	6	34	9
allowing long-term residence of villagers living before the designation of the park	46	28	9	6	11
controlling grazing within the park to decrease disturbance of park ecosystems	20	3	37	28	11
controlling hunting within the park to preserve wildlife population	57	6	28	6	3
controlling fishing within the park to preserve fish population	6	6	25	43	20
controlling wood cutting within the park to maintain the area in its natural state	60	31	3	0	6
controlling minor uses of park resources such as fuel wood and plants collected for subsistence	6	6	6	14	68
prohibiting all commercial use within the park	46	14	34	3	3
Average	34	14	19	17	16

Table 5.38 Recommended forms for future park management by community (%)

Village Name	Management Form			Total
	stricter control	park multiple use zone	community forest	
Ban Thap Lan	21	73	6	100
Ban Sap Tao	0	85	15	100
Ban Mab Krad	0	97	3	100
Ban Santi Suk	15	71	14	100
Average	9	81	10	100

Table 5.39 Preferred future management by community (%)

Village Name	Preferred Management			Total
	government	local people	government & local people	
Ban Thap Lan	24	0	76	100
Ban Sap Tao	0	0	100	100
Ban Mab Krad	21	2	77	100
Ban Santi Suk	0	0	100	100
Average	11	1	88	100

Attitudes towards park officials by the study communities is reported in Table 5.41 - 5.44. Sixty-four percent of all respondents state that the park officials do a good job while others suggest that practices of the park officials need to be improved. Protection of park resources is rated as the best job of the park officials while contributing benefits from the park to local people is the poorest (Table 5.40). The variation in attitude towards efforts of park officials in the four communities is reported in Table 5.40. The variations in attitude towards protecting park resources and contributing benefits from the park among communities are significantly different while variations towards providing knowledge both park regulations and significance of park, and carrying public relation have no significant difference.

The strictness of park law enforcement as well as the honesty of park officials was claimed by villagers as indicators of the capacity to protect park resources. Frequent patrols and strict punishments by park officials result in a high percentage of villagers who have positive attitudes towards park officials in protecting park resources in each community. However, experience with corrupt park staff has pushed some villagers to have negative attitudes towards park protection by park officials. In the case of Ban Sap Tao, all respondents said that the park officials do a good job in protecting park resources (5.42) although the rate of violations in this village is still very high (see Table 5.26). This is because in the past, the villagers had experienced an attempted relocation of the village from the park and, currently, the village is subjected to stricter control as the village remains inside the park boundary.

Contributing benefits from the park to local communities is generally considered poor by respondents as using park resources for consumption purposes is prohibited by law while the opportunity to work as park staff is limited. At the same time, tourism has not been promoted in the park. Only in Ban Mab Krad where over half of the villagers consider efforts by park officials to contribute benefits from the park are fair to the community. This results from the large number of villagers in Ban Mab Krad working in or related to the park area. Some of them work as park rangers while others work as workers for the RFD's seedling nursery located behind the park office. However, very few park staff come from Ban Thap Lan and Ban Santi Suk and none from Ban Sap Tao.

As the park has insufficient staff, village headmen are coordinators who help park officials provide knowledge regarding park regulations as well as the value of parks, to local villagers. As a result, almost half of the villagers in the communities reported that park officials have not made enough effort personally in providing communities with the knowledge. Similarly, lack of direct contact between villagers and park officials makes several villagers suggest improving efforts by the park officials to carry out public relations. Ban Sap Tao has the highest percentage of villagers who have a negative attitude towards existing public relations efforts of park officials. This is a result of the past conflict between park officials and the villagers in Ban Sap Tao resulting from an attempt to relocate the village from the park. In contrast, Ban Mab Krad has the highest percentage of villagers who have a positive attitude towards public relations' efforts of

park officials as a result of the recent effort of park officials watching over areas in the Khon Buri sector, including Ban Mab Krad, in improving relations with villagers.

Table 5.40 Attitude towards efforts of park officials (%): **Total Sample**

Park Management Practices	Attitude					Variation
	very poor	poor	fair	good	very good	(among villages)
protecting park resources	2	9	23	49	17	$\chi^2 = 10.9342$ P = 0.0121
providing knowledge about park regulations to local people	9	31	28	28	4	$\chi^2 = 1.3469$ P = 0.7180
providing knowledge about significance of the park and the natural ecosystem within the park to local people	11	34	25	27	3	$\chi^2 = 1.7742$ P = 0.6206
carrying on public relations programs in order to establish a good relationship between the park and local communities	1	21	21	46	11	$\chi^2 = 3.8160$ P = 0.2820
contributing benefit(s) from the park (e.g. employment as park's staff, income from tourism, community development program, etc.) to local communities	27	37	26	10	0	$\chi^2 = 31.1567$ P = 0.0000
Average	10	26	25	32	7	$\chi^2 = 2.3520$ P = 0.5026

Table 5.41 Attitude towards efforts of park officials (%): **Ban Thap Lan**

Park Management Practices	Attitude				
	very poor	poor	fair	good	very good
protecting park resources	0	14	21	38	27
providing knowledge about park regulations to local people	21	21	34	24	0
providing knowledge about significance of the park and the natural ecosystem within the park to local people	24	24	31	21	0
carrying on public relations programs in order to establish a good relationship between the park and local communities	0	13	38	45	4
contributing benefit(s) from the park (e.g. employment as park's staff, income from tourism, community development program, etc.) to local communities	4	48	48	0	0
Average	10	24	34	26	6

Table 5.42 Attitude towards efforts of park officials (%): **Ban Sap Tao**

Park Management Practices	Attitude				
	very poor	poor	fair	good	very good
protecting park resources	0	0	42	42	16
providing knowledge about park regulations to local people	7	27	27	31	8
providing knowledge about significance of the park and the natural ecosystem within the park to local people	11	31	23	27	8
carrying on public relations programs in order to establish a good relationship between the park and local communities	4	35	11	35	15
contributing benefit(s) from the park (e.g. employment as park's staff, income from tourism, community development program, etc.) to local communities	38	50	4	8	0
Average	12	29	21	29	9

Table 5.43 Attitude towards efforts of park officials (%): **Ban Mab Krad**

Park Management Practices	Attitude				
	very poor	poor	fair	good	very good
protecting park resources	2	13	13	49	23
providing knowledge about park regulations to local people	3	38	26	26	7
providing knowledge about significance of the park and the natural ecosystem within the park to local people	5	39	25	26	5
carrying on public relations programs in order to establish a good relationship between the park and local communities	2	6	20	56	16
contributing benefit(s) from the park (e.g. employment as park's staff, income from tourism, community development program, etc.) to local communities	23	11	38	26	2
Average	7	21	24	37	11

Table 5.44 Attitude towards efforts of park officials (%): **Ban Santi Suk**

Park Management Practices	Attitude				
	very poor	poor	fair	good	very good
protecting park resources	6	9	17	68	0
providing knowledge about park regulations to local people	6	37	26	31	0
providing knowledge about significance of the park and the natural ecosystem within the park to local people	6	40	20	34	0
carrying on public relations programs in order to establish a good relationship between the park and local communities	0	28	17	46	9
contributing benefit(s) from the park (e.g. employment as park's staff, income from tourism, community development program, etc.) to local communities	43	37	14	6	0
Average	12	30	19	37	2

5.3.13 Involvement in Park Activities

Participation in park activities in the four communities differs significantly (χ^2 = 15.02906, P = 0.00578). The villagers mostly replant trees on special occasions, such as the King's birthday (Table 5.45), while village headmen and other village committees work in cooperation with park officials to solve local conflicts, such as re-demarcating park-village boundaries. Involvement in protecting park biodiversity among villagers is rare. Although some respondents have attended forestry training programs none of them have been volunteers in protective activities of the park such as patrolling or forest fire suppression. Some of them state that they are too busy in earning their living while others would participate only if they get payment. Also villagers often view training as wasting time instead of getting knowledge. In many cases forest officials must pay pocket money to villagers for attending forestry programs despite the fact that the programs are free of charge and provide meals and transportation.

Table 5.45 Participation in Park Activities by Community (%)

Village Name	Participatory Activities			
	never	re-planting	training	others
Ban Thap Lan	41	42	17	0
Ban Sap Tao	65	27	4	4
Ban Mab Krad	69	21	8	2
Ban Santi Suk	83	17	0	0
Average	64	27	7	2

5.4 Consequences of the Government Projects

Government projects dealing with local people face increasing difficulties resulting from increased public involvement as well as political interference. Past success in claims is an important factor that is causing increasing difficulties in more recent projects as people attempt to earn similar benefits from recent projects. At the same time recent beneficiaries may also call for additional benefits. The attitude towards projects of the local people depends upon benefits they might derive from them. A negative attitude results if the villagers feel that the projects will bring negative impacts or even provide fewer benefits than expected. Moreover, recent beneficiaries expect more benefits than before as a result of past successes. Thus, the variation in attitude towards government projects differs significantly ($\chi^2 = 59.2322$, P = 0.0000).

Table 5.46 Attitudes towards previous government projects (%)

Project (Village Name)	Satisfactory Level				
	none at all	low	intermediate	high	very high
Forest Village (Ban Thap Lan)	0	3	4	31	62
Village Relocation (Ban Sap Tao)	100	0	0	0	0
Dam Construction (Ban Mab Krad)	43	21	34	2	0
Khor Jor Kor (Ban Santi Suk)	14	20	34	26	6

In Ban Thap Lan, the forest village program in 1982 resulted in a smaller size for land holdings for the villagers. Moreover, the villagers unofficially paid the former users 300 baht (CAD$10) per rai (0.16 hectare) of allocated lands for those lands already occupied by other farmers in order to reduce the conflict on land rights between the new users and former users. Nevertheless, this study found that all respondents are satisfied with the management of the project (Table 5.46). They state that the project brings them a better life through allocating legal land, development of the area for agriculture, introducing opportunities to earn off-farm income, and improving social welfare. However, earning income with the wicker work introduced by the project has become a problem resulting from use of the leaves of the Lan Tree as raw material. Although this tree was formerly found all over the area around the village it has been significantly reduced in areas outside the park as a result of land clearing for agriculture during the past decades. Only some park areas in the Na Dee zone now serve as the last natural habitat of the Lan Tree in Thailand. The tree takes decades to mature while the number of villagers earning family income through wicker work is increasing. Therefore, conflicts between the villagers and park officials often arise from illegal collection of leaves of the Lan Tree inside the park boundary.

With regard to the allocated lands, transfer of those lands is freely conducted regardless of the forest village regulation against it. According to the villagers, over half of the allocated lands have been transferred. Moreover, the respondents frequently cite the past informal allowance of wood cutting for house construction during the beginning of the village resettlement and call for similar opportunities now. At the same time, the

villagers formerly involved in wood cutting have not changed to farming their allocated lands but remain involved in illegal logging. Increasing the penalty for violating park regulations forces some of these people to depend more on off-farm employment while others remain cutting wood.

In Ban Sap Tao, all villagers have a negative attitude towards the village relocation (Table 5.46). But, after the relocation of the village to degraded forest areas outside the park was cancelled in 1986, the villagers claimed farm lands of other nearby villages relocated to areas outside the park. Park officials have long fought this claim on the park by the villagers in Ban Sap Tao and have prevented from relocated villagers moving back to the park. The RFD recently approved claims on about 16,000 rai (2,560 hectares) by the villagers and this land is now under the degazetting process and will be followed by allowing public utilities to reach the village area.

Nonetheless, the problem is unlikely to be over as some villagers with large land holdings have started leading outside investors to buy lands in the village for speculation after the RFD approved formal residency inside the park. This study found that only 46 percent of the respondents have recognized the commitment to no further encroachment, given to the park officials for allowing residency inside the park, while others insist that there is no commitment. The past effort at relocation has created hostility towards the park officials among the villagers even though the park approved allocations of claimed land for the community. The current strict control over the park area around the village has also increased the degree of resentment.

In Ban Mab Krad, the villagers lost lands to the construction of Lam Chae Dam. As a result, the Royal Irrigation Department paid 300,000 baht (CAD$10,000) per household for buying 10 rai (1.6 hectare) of farm lands having title deeds or NS.3K (Appendix B). The payment was made in two steps to ensure that the villagers bought new lands. The first payment was 120,000 baht (CAD$4,000) paid without any commitment on the part of the villagers while the second payment was 180,000 baht (CAD$6,000) and it was paid only when the villagers could show land buying contracts. Nonetheless, the Irrigation officers found that most villagers sold lands back to their former owners after obtaining their full payment. In many cases the villagers paid investors about 70,000 baht (CAD$2,333.33) per case for renting them the land documents so that they could pretend that they had bought the land and get payment from the Royal Irrigation Department. The local officials reported that the money for buying new farm lands was used in other ways, such as buying vehicles and constructing luxurious houses, as well as gambling. Some of the luxurious houses can be seen in the village.

The villagers, however, claim that the compensation payments were inadequate. They could not get new pieces of land at the price paid by the Royal Irrigation Department. Moreover, some villagers who occupy lands without any land title claim that the officials did not give them enough details of compensation payment and, therefore, they sold their lands at low prices to outside investors before getting compensation payments. They claim that local officials including some irrigation officials shared benefits with outside investors from those cases. However, this study found that the villagers obtained the main

compensation including payments for houses and other buildings under the flooded zone and extra money for buying new farm lands as well as a new housing plot although they sold their lands to investors before getting payments from the Royal Irrigation Department. Those investors obtained only payments for lands and crops under the flooded zone. The rate of payment (30,000 baht (CAD$1,000)/rai) was sufficient for buying lands having land title at that time. Lands having no land title were widely traded at 100,000 baht (CAD$3,333.33) to 150,000 baht (CAD$5,000) per 15 rai-plot during the period of data collection. These lands are part of the lands allocated to local people under the National Security Development Project during the past decades.

Analysis of the total personal interviews (61 cases) conducted in the village found that 55 respondents obtained compensations from the dam project including extra money for buying new farm lands while 5 cases are children of villagers paid compensation and the other case is a villager living above the flooded zone that obtained compensation only for property under the flooded area. Only 16 of the 55 bought new farm lands after obtaining payments. The size of the lands ranged from between 3 (0.48 hectare) to 10 rai (1.6 hectares). All those lands have no land documents. Nonetheless, a survey of attitudes towards the dam project found that 43 percent of the respondents have a negative attitude towards the project (Table 5.46) and claimed that the project made them landless while others expressed some satisfaction resulting from the provision of money payments and public utilities.

The villagers in Ban Mab Krad are currently involved in two protests. One protest is calling for more compensation from the dam project as they claim that villagers could

obtain up to 15 rai (2.40 hectares) from government allocation projects, like the forest villages, despite the fact that the cabinet resolution approved paying only 10 rai (1.6 hectares) for the compensation of dam projects (Royal Irrigation Department, 1994). Therefore, they are asking for 4 rai (0.64 hectare) more per household since they obtained 1 rai (0.16 hectare) for housing plots and 300,000 baht (CAD$10,000) for buying 10 rai (1.6 hectare) of farm lands. However, they are demanding the compensation in the form of a money payment instead of lands.

Lack of lands for farming has pushed the villagers to generate another protest, the recent claim to lands inside Thap Lan National Park in collaboration with nearby villagers. Meanwhile, the villagers in Ban Mab Krad are planning to earn more benefits from government projects as the researcher found that some respondents who received payments from dam construction are building houses in other areas where dams might be constructed to obtain compensation later. Similarly, some villagers involved in claims on the park lands have already benefited from land allocation programs since they are holding lands having the SPK land document (see Appendix B).

In Ban Santi Suk the objective of the Khor Jor Kor Project was to resettle people living in Thap Lan National Park at Ban Nong Yai (Figure 5.3) to the park degazetted zone. It is unlikely to be a success since some of the people in Ban Nong Yai have protested against the relocation and, eventually, the cabinet approved long term residency of the resisting villagers in Ban Nong Yai. Moreover, the 612 households resettled in Ban Santi Suk had decreased to 451 households by early 1997. The local officials explain the decrease as the populations of outside villagers moving back home after

gaining benefits from the project. These villagers were nearby villagers who moved into Ban Nong Yai, the main target village under the Khor Jor Kor Project, a few months before the resettlement was conducted as they realized that there was an opportunity to obtain lands from the project. After the project was over they sold their allocated lands to other villagers and returned home. Similarly, villagers occupying lands of more than 12.25 rai (1.96 hectare), the amount allocated under the Khor Jor Kor Project, obtained additional lands through buying from others gone back to their hometown or moved further into other forested areas. Respondents moving into the village after the end of the Khor Jor Kor Project also report obtaining their lands through buying from other villagers in the village. Some respondents have lost their land to outside money lenders but remain living in the village and work as on-farm labors. Meanwhile, allowing residency in Ban Nong Yai of the villagers resisting the resettlement has given a chance to nearby villagers to claim rights on lands in the park again. Hundreds of villagers have taken advantage of this by replacing villagers moved to the resettlement area in Ban Santi Suk while more than a thousand of them claim rights to different areas of the park.

The majority of the respondents (86%) have a positive attitude towards the Khor Jor Kor Project (Table 5.46) resulting from the provision of legal lands and improving public utilities. Negative attitudes towards the project result from the limited land holdings and unsatisfactory location of the allocated lands. Some of the respondents claim that the allocated lands are unsuitable for agriculture while others claim that they had larger land holdings before the resettlement. In the village, the respondents formerly working as illegal loggers continue cutting wood whenever the opportunity arises. They

recommend that the government needs to provide them with opportunities to earn stable off-farm income if no more illegal wood cutting is expected.

Seemingly, the land allocation policy induces further encroachment since the people illegally occupying forest land may obtain land from allocation while others who have never broken the laws could not access the programs. Encroaching on forest lands is viewed as an opportunity to obtain legal land. The early land resettlement programs such as the forest villages under the Thap Lan Forest Development Project and the National Security Development Project were conducted successfully, however, those lands have been found widely traded while the villagers who have benefited from the projects remain involved in further encroachment and claims on the park land. The recent resettlement programs seem to be getting worse in this regard as some forest areas are cleared for the resettlement, while the areas which the government aims to conserve have had other villagers move in to replace the relocated villagers. In the case of Ban Nong Yai, for example, 47 households in total of the villagers were resettled in other areas under the National Security Development Project in 1985. This area was found to be occupied by 350 households again in 1991 which were then relocated to Ban Santi Suk under the Khor Jor Kor Project. However, more than 500 households remain claiming rights to the area after the majority of the villagers were resettled in Ban Santi Suk in 1992 (Nakhon Ratchasima Provincial Office, 1991).

Claiming rights to lands in the park is very complicated. It is a collaboration among villagers, local officials and investors. Some village headmen are leaders in claiming lands while others not supporting claims to land in the park by villagers have

conflicts with the villagers and other local officials. Local influential people are making money from claiming park land while the allocation of claimed lands induces further claims instead of resolving the problem. In Ban Ta Ling Chan, one of two villages selected for pretesting the questionnaire in this study, for example, the past claim to lands in Thap Lan National Park was ended with the allocation of 4,000 rai (640 hectare) of the park land for supporting the villagers. In reality, only 2,000 rai (320 hectare) was distributed to the villagers while another 2,000 rai (320 hectare) was sold to investors by the former village headman. The villagers are now claiming park land again with past successes used as an example. The recent claims focus on demonstrations inducing politician intervention and usually ending up with the concessions from the government for political reasons.

As a result, the main cause of conflict between park officials and local villagers is now claiming rights to the park land. However, the intensity of illegal logging is still high while collection of minor forest products seems to be declining. The previous government programs did not improve the relationship between the villagers and the park officials as the villagers distinguish project officials from the park officials. Park officials are viewed as the enemy preventing allocation of lands. Moreover, hiring local villagers as park rangers may also have a negative impact as some of the rangers are involved in illegal logging, making suppression difficult. The villagers suggest that conservation awareness is a personal characteristic. Violation of regulations is frequently repeated by the same groups of villagers.

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

Protected area establishment is a major tool for conserving biodiversity. Managing protected areas is, however, faced with many problems resulting in them often being unable to reach conservation goals. Loss of forest cover and biological resources is a primary concern. Local villagers are responsible for major degradation. However, protected areas have also affected the economic well-being of these people. Several efforts have been implemented to address conflicts, but problems still exist and have increased in intensity in many areas. Moreover, the failure of official approaches to nature conservation and confusion over the roles of people living in the vicinity of protected areas is leading to an increased public polarization over protected area management policies.

The purpose of this study was to help understand the situation at Thap Lan National Park, a national park in northeast Thailand that suffers from many problems seen in the Thai protected area system, to examine the effects of programs which the government has initiated to resolve such problems and to provide information and recommendations for future management. Four communities located inside and around the park representing different situations were selected for field study. The historical part of the study summarized the conflicts between the park and local people and the

results of programs initiated to resolve the problems through integrating nature conservation and rural development. A comprehensive analysis of the local communities was conducted to examine the current relationship between local people and the park.

This chapter will summarize the more important findings and then discuss these results before providing recommendations for future management of the park.

6.1 Summary of Findings

6.1.1 Government Solutions

This historical context summarizes information concerning efforts of the government to reconcile nature conservation and rural development in Thap Lan National Park. Social forestry projects were implemented to address social causes of biodiversity loss as well as the effects of park declaration on local communities. The results of the projects varied with locality, methods used and time periods. However, all projects have led to further encroachment as a result of giving land ownership rights to encroachers. Government compromises on violations resulted in beneficiaries expecting larger and larger benefits leading to the ultimate failure of the following projects. A summary of these projects follows.

National Security Development Project : The project was initiated to overcome communist intervention and further encroachment through land allocation and development. It was applied to villages in two zones of the park, Khon Buri and Soeng Sang, and gained enormous local support. The results eradicated communist influence but only slowed down encroachment. Without irrigation, drought has caused low

agricultural yields and poverty among local villagers. Many villagers have sold their allocated lands and move further into forested areas in the hope of getting new allocated lands.

Thap Lan Forest Development Project: This project also aimed to end further encroachment as well as communist intervention through land allocation and rural development and was conducted in Ban Thap Lan on the park boundary in another zone, Na Dee. Providing irrigation offered villagers a better potential for agriculture and income. An introduced off-farm alternative income, wicker work, has created more stable income but, in turn, has generated destructive use of the plant species which, ironically, the park was established to protect. Informal allowance of park resource use by the project initially has led to calls for similar opportunities in other areas. Though allocated areas are fertile and suitable for agriculture the selling of lands has continued as villagers cannot resist the high price of lands as a result of development.

Unsuccessful Land Relocation: This project attempted to relocate a village inside the park boundary, Ban Sap Tao, to outside areas in order to reduce degradation of the park as a result of local uses. This village relocation was strongly resisted by the villagers as the village was settled before park declaration. At the same time, no lands outside the park were available for resettlement, thus, the village relocation was finally canceled. But, the compromise to allow the people to continue to live inside the park has led to further claims on park lands and violations facilitated by village location. The recent formal allowance of residency has created security of land ownership rights leading outsiders to buy lands in the villages.

Upper Mun Project: This project was initiated to alleviate drought and increase the potential for agriculture in order to raise the standard of living and reduce dependency on forest resources of communities in the vicinity of the park through dam construction. Unfortunately, it has resulted in more pressures on the park area. The construction of the dams resulted in the relocation of thousands of local villagers living in the flooded zone. Providing cash payment instead of lands resulted in large numbers of landless people and further encroachment. Many affected people are making claims on park lands while others also claim the effects from the dam construction and are calling for compensation. The success of using loopholes to earn benefits from the project by outsiders has led some people to seek new opportunities to earn benefits from government projects in the other areas where they may also be able to falsely claim compensation.

Khor Jor Kor Project: This project attempted to protect park areas and resources by relocating encroachers living in Ban Nong Yai, Soeng Sang sector, to degazetted areas at Ban Santi Suk. But the result generated further loss of park area. With the limitation on the amount of land allocation, the Khor Jor Kor Project was resisted by villagers holding large land holdings, resulting in the cancellation of the project before the village relocation was completed. The resettlement area, however, filled with resettled villagers whereas the area from which the relocation had taken place had other villagers making claims.

Helping people affected by the Khor Jor Kor Project: This project was conducted to settle villagers who resisted relocation under the Khor Jor Kor project from their claimed lands in Ban Nong Yai. However, the government compromise and giving land

rights to these villagers resulted in extensive claims on park areas again. The area from which relocation has already taken place is under claim again while several groups of people who claim to have been affected from the Khor Jor Kor have generated claims further into the park areas.

6.1.2 Surrounding Communities : Current Evaluation

This study found that the majority of local people surrounding Thap Lan National Park are immigrants. Lands held by these people were formally parts of conservation forests which they obtained through clear cutting and allocation programs. Limited education forces most villagers to continue depending on agriculture but they still earn inadequate income. Over half of the respondents are involved in the illegal collection of park resources. Fifty-four percent of them collect plants and plant products within the park, 30 percent collect fuel wood, 19 percent fishing, 6 percent hunting, 3 percent grazing livestock and 9 percent cutting wood. Increased patrols and punishments cannot eliminate park violations; however, they do help to reduce the numbers of illegal cases. Previous government projects initiated to conserve nature through land allocation and developments have induced large scale immigration to the area. Raising education levels and provision of alternatives to earn regular income from off-farm employment has reduced dependency on park resources by the villagers. In the meantime, park biodiversity is being exploited by local people who well understand the laws and regulations. Claiming rights on the use of park resources has now changed to claim on the park property itself.

Ban Thap Lan: The villagers have limited land holdings, but their monetary condition is good. The irrigation system provides the villagers with a high potential to cultivate their limited land. The nearby industries provide a better alternative for income generation than agriculture and is an important factor in reducing the dependency of the villagers on park resources. However, the wicker business introduced by the previous government project is threatening the species which the park was established to protect and has become the main cause generating conflicts between park officials and local villagers. Illegal logging and poaching continues by professional loggers existing within and around the village. Transfer of land is common and has a tendency to increase resulting from development. With a good economic condition, the villagers have less reliance on the use of park resources resulting in a more positive attitude towards park management policies than the other villages. However, benefits from an informal allowance for wood cutting in the past have caused expectations for similar opportunities among the villagers and hence negative attitudes towards controlling wood cutting. The relationship between park officials and the local villagers is quite poor as a result of the strict control over park resources and a lack of public relation activities.

Ban Sap Tao: Limited education as well as low economic returns from off-farm jobs far away from home forces the villagers to continue depending on farming and forest resource extraction. Although most villagers have lands for farming, the limited water supply forces them to continue growing cassava which has poor economic returns. Without supplementary sources to generate additional income the villagers are poor. This economic constraint induces large demands for the use of park resources and a high

proportion of villagers with negative attitudes towards policies controlling the use of park resources. The village location, inside park boundary, also facilitates access to park resources causing a high rate of park resource utilization. Living inside the park boundary combined with a need for lands to support large numbers of children who expect to join the agricultural sector forces all villagers to strongly support park degazetting policies. The park around the village is becoming increasingly degraded from development and increased population. The new government policy (22nd April Cabinet Resolution) has secured land rights for the villagers and, at the same time, led speculators to the village. Law enforcement has created conflicts and poor relationships between the villagers and park officials. The past official attempts at village relocation as well as the current conflict over resource interests makes the villagers view the park officials as their enemy and they refuse to be involved in park activities making it difficult for the park officials to work with them.

Ban Mab Krad: The majority of the villagers have a low income largely generated from agriculture. However, the cash compensation that flowed from the dam project to the village economy has reduced the dependency on park resources of the villagers during the last few years. The dam project, in turn, has increased the number of landless people that has also increased park encroachment indirectly. As these landless people have low education levels, off-farm job opportunities are very limited and, as a result, most of them continue earning a living from on-farm activities and generate large demands for farm lands. With pressure from landless people and examples of the past success of claims as well as support from influential people these villagers are making more claims on park

lands. This results in strong support for the park degazetting policy and a very high rate of villagers having negative attitudes towards the policy controlling expansion of agriculture land in the park. Claims on the park land have now intensified and become a main problem, even generating violence. Increased public relations and employment from the park have improved attitudes towards the park officials, however, conflicts of interest remain. Provision of alternatives or job opportunities in the non-agricultural sector may reduce this tension.

Ban Santi Suk: The village economy is poor. The majority of villagers depend on agriculture and have no alternative sources to generate additional income. Without irrigation, drought has forced the villagers to pursue cassava cultivation which gives low economic returns. Poverty also pushes large numbers of the villagers to depend on park resources. This results in a high rate of villagers having negative attitudes towards controlling use of park resources. Furthermore, with good rewards from illegal logging, loggers continue cutting wood from the park with the collaboration of influential people including local authorities. Efforts to terminate illegal logging in the areas are therefore unlikely to be successful. The Khor Jor Kor Policy has increased the number of new encroachers in the park while much of the allocated lands have been sold. Hostility between park users and park officials either deriving from the strict control or from corrupt local authorities continues.

6.2 Discussion of the Results

In general, the results correspond to the general conclusion from the literature review on park and people relations. Use of park resources by local people is the main cause of park degradation and biodiversity loss. The results also illustrate the influence of poverty, village location and the market economy on the violation of park laws and regulations. The following presents some aspects of the findings.

6.2.1 Park Problems

The results suggest that the main problem of Thap Lan National Park is human encroachment. The situation is very serious and urgently needs to be resolved. Dependency on agriculture among local communities is the most severe threat, since all agriculture lands held by respondents were originally parts of forest reserves and park areas. Moreover, encroachment tends to increase as many respondents do not have enough lands to support themselves while many of their children are continuing in the agricultural sector but with very few of them having lands for farming. These people hope to find new areas for agricultural activities within the park. This suggests that it might be impossible to terminate park encroachment as long as surrounding communities depend heavily on agriculture. The ongoing land reform and degazetting policies have also increased expectations for future land allocation programs among villagers in general. But, park officials face increasing difficulties as recent encroachers have adopted more violent strategies to fight against park protection. To protect park resources, it is essential to reduce poverty and livelihood dependence on using park resources and encouraged conservation awareness. Techniques to reduce dependency on

park resources in communities would however be different reflecting the difference in village situations.

The findings suggest that off-farm employment reduces dependency on agriculture and park resource exploitation. But, the opportunity to access non-agricultural jobs is very limited since villagers are poor and have few opportunities to reach higher education levels required by most workplaces. In this situation, providing other income sources such as handicraft manufacturing is necessary. In some areas, such as Ban Thap Lan, where handicraft production already exists but there is a lack of natural raw material, supplemented and substituted materials should be introduced.

In the long-term, raising education levels may help more people to meet requirements for off-farm jobs. However, this will not be easy to achieve since these villagers are poor and have many children. Most villagers have very low income (see Table 5.18). The average household income of these villagers (45,271.52 baht/year) is much lower than the average household income of the northeast region (89,340 baht/year), which has the lowest income levels in the country (Appendix C). This suggests that it will be very difficult for villagers to afford higher education even for only one child let alone the average number of children, 3.2. Therefore, the government might need to contribute more funds for education development as villagers with many children that depend on agriculture cannot afford higher education for their children. Promoting family planning should indirectly reduce demand for agricultural lands as well as park encroachment.

This study also confirms the influence of village location on law violations (Tanakanjana, 1996). The results show that a village located within the park boundary has a higher rate of park utilization than villages located outside the park boundary. However, experience suggests that village relocation is impossible for this case, Ban Sap Tao. To protect park resources, it is necessary to control the number of the village population. Control of development might help reduce numbers of new-comers. At the same time, offering alternatives combined with incentives for living outside the park such as welfare and job opportunities might encourage moving out.

In the interviews many villagers called for rights to manage and use park resources but, practically, they do not actively protect park resources even though they realize that there are benefits from protecting the park. Protecting park resources and the environment is far away from their view. Most villagers consider protecting the park as the park officials' job and decline to be involved in protection activities. To change the National Park Act to allow consumptive uses of park resources would generate increased biodiversity degradation. Providing alternative sources for income generation might be more appropriate. It is also very risky to empower local villagers to manage park zones since these people have not demonstrated any protection efforts but have collaborated with outsiders to exploit the park. However, there is a need to increase local involvement in park planning in order to help local villagers understand problems and develop mutual solutions.

6.2.2 Law Enforcement

Tanakanjana (1996) suggested that punishments were ineffective in controlling park violations as it was found that people who receive a higher degree of law enforcement in the national park are less likely to conform with park regulations than those who perceive it to be lower. However, the result of this study suggests that this might be because park violations were often repeated by the same group of people. At the same time, this study also suggests that law enforcement is effective and necessary. Although it causes poor relationships between park officials and local people, it significantly reduces illegal uses of the park resources. Consistent law enforcement combined with changing the punishment policy from paying low fines to suing illegal cases in court that generally result in higher fines effectively reduced illegal collection of forest products. However, the fine is still not high enough to completely stop illegal logging.

In contrast, compromising on violations has increased expectations of benefits and encouraged further illegal activities as well as caused more difficulties in law enforcement officials. The informal allowance for logging for household use in Ban Thap Lan by the forest village project resulted in the call for similar opportunities in other areas. Similarly, compromising on encroachment and giving land rights to encroachers led to further claims on park areas and induced increased violence against law enforcement officials. These results correspond to the findings of a former comprehensive study (Tanakanjana, 1996) which found that the higher the expectation of benefits to be gained from the national park, the less likely people are to conform with the park regulations.

Success in law enforcement, however, also depends upon cooperation from local authorities. To influential people, park officials seem powerless since they are not empowered to enforce a full range of laws. Registering illegal cases as well as charging poachers or encroachers must be completed by the local police. At the same time, the involvement in illegal activities of local authorities, including the police, results in a weak system of law enforcement. These problems reflect the need to enforce laws legally and consistently in the park system. However, the government needs to give more support to park officials for dealing with violations, particularly in regard to influential people. It will be very difficult and morally questionable, to prohibit the poor from using park resources if the rich still exploit. Increasing the role of park officials in enforcing laws against encroachers and poachers might also increase the effectiveness of protecting park resources.

Nevertheless, for long-term success, it is also essential to combine public relations and education programs with law enforcement. There is a need to rebuild the trust and good relationship between park officials and surrounding villagers. A good relationship should help facilitate law enforcement at the same time. According to former government programs, park officials played a major role only in park protection but had very little involvement in activities that contributed benefits to villagers. As a result, villagers distinguish park officials from project officials leading to less respect for park officials and causing greater difficulties in resolving park conflicts. This suggests that the government might need to provide a budget for park officials to undertake public

relations activities. Including park officials in village development programs might also help rebuild the trust and good relationship between park officials and local villagers.

6.2.3 Land allocation

The results of previous government programs suggest that land allocation policies have encouraged further encroachment as a result of giving land ownership rights to encroachers. Many beneficiaries have sold their allocated lands and moved further into forested areas in the hope of getting new lands allocated. New encroachers have also been attracted to the park in the hope of further government compromises. Revoking the rights on these transferred lands might be impossible as a result of involvement in the land trade by influential people, including local authorities (e.g. police and village headman). The land allocation policy has changed the attitude towards seeking new lands among the villagers from buying to encroachment. The ongoing land reform and park degazetting also suggest that land allocation is available. As a result, local villagers are seeking lands through park encroachment. Claims on park areas are the main problem generating poor relationships as well as violent conflicts between park officials and villagers.

Park encroachment is currently not only a way to support a living but also to attain wealth. Involvement in park encroachment by influential people and the booming land trade suggests that giving land title deeds to degazetted areas will directly support increasing land trade. Experience suggests that providing usufruct rights will not prevent trading of allocated lands because those lands were traded without any documents. To deter further park encroachment the government policies on land reform and park degazetting may need to be reviewed. Lease of degazetted lands to users instead of

giving land ownership rights may help prevent land speculation. However, providing alternatives for income generation should be given more emphasis than farm land allocation. Moreover, beneficiaries might need to sign an agreement not to generate further encroachment or exploit other park resources or allow their offspring to do so, and at the same time, they must responsible for further park encroachment in areas adjacent to their lands.

6.3 Recommendations

The following are recommendations for park management.

6.3.1 Park Personnel

6.3.1.1 Inadequate numbers of park officials is a significant problem deterring effective management. Nowadays, all park officials are busy with handling daily local conflicts. Activities related to tourism development and research on park and ecosystem characteristics have been abandoned. To increase efficiency in park management, it is necessary not only to increase the number of park personnel but also provide officials with appropriate skills.

6.3.1.2 Training should be provided to park staff to increase capabilities in protecting park resources and dealing with a changing environment. The park superintendent should be well trained with a broad range of administration and protection techniques, law enforcement, ecology, public relations and community development. Park rangers should be trained in practical field techniques, law enforcement, and public relations techniques, as well as having some ecological background.

6.3.1.3 Protecting parks depends heavily on rangers living on low daily wages. Inadequate income often causes corruption among park guards. Therefore, more attention should be given to the basic needs of these low income park staff. Providing benefits, such as a working uniform, medical, housing and education, for guards and their children may reduce involvement in illegal activities and at the same time increase morale. To reflect the risks and hardships providing special incentives, such as life insurance, for field staff would also encourage park protection.

6.3.2 Protection

6.3.2.1 The minimal support provided to park guards is also an important deterrent to improved protection capabilities. Provision of essential and appropriate equipment, such as field supplies, vehicles, weapons and radios is necessary.

6.3.2.2 Truck and foot patrols should be increased and implemented regularly both along and inside park boundaries. Patrolling with helicopter is also necessary to check over the park areas.

6.3.2.3 Park boundary posts and signs should be clearly provided. In some areas that are at risk to further encroachment, fencing may be appropriate.

6.3.2.4 Park laws and regulations should be enforced consistently. Compromising on law violations should be avoided. Outdated legislation inducing ineffectiveness of law enforcement should be updated, particularly in regard to fines and punishments.

6.3.2.5 There is a need to create activities to build in conservation awareness among local people. Providing summer camps should help local children recognize park values and conservation benefits. For adults, using economic incentives (i.e.

employment, tourism, low interest loans, etc.) should help increasing participation in park protection.

6.3.2.6 It is essential to promote conservation outside the park, such as encouraging people to create community forests in public areas. These forests would also meet the future local demands for forest products that might reduce pressure on park resources.

6.3.3 Data Base

Establishing a data base system to provide reliable data should be practical. Physical and ecological information is a basic need for managing and maintaining park biodiversity. Accurate incident records will facilitate resolving problems and help develop effective strategies for park management. In addition, research should be conducted to monitor changes in the park.

6.3. 4 Tourism

The park needs to develop facilities for recreation and tourism, such as an information center, recreation areas, accommodation, etc. Ecotourism development may contribute benefits to local communities. Income generation related to tourism activities (i.e. tour leader, food and souvenir selling) might help change attitudes towards park exploitation. Sharing revenue would be one important tool to create positive attitudes towards park establishment.

6.3.5 Public Relations

Increased public relations activities might help create positive attitudes towards park officials and facilitate solving local conflicts. Increased involvement in community

development programs should improve relationships between park officials and local villagers.

6.4 Conclusion

Erosion of biodiversity is of global concern. Providing habitats is necessary for conserving the world's biodiversity and protected areas have been established worldwide to fulfil this function. However, managing these protected areas is very challenging. Biodiversity degradation is also a critical problem for Thailand. Over the past decade, the Thai government has given increased attention to the expansion of the protected area system, mainly national parks. However, relatively little effort has been devoted to the management of these national parks. Most existing national parks do not function well and park problems are very complicated. The problem is not only park resource dependence among the poor but also political and market influences. In the case of Thap Lan National Park, park biodiversity is being exploited by both the rich and the poor. Claims on park lands have become a way to attain wealth. The park suffers from the influence of several groups of people, particularly local influential people, authorities and politicians. In turn, the park management does not have enough support to deal with the problems. This suggests that, to protect biodiversity, not only should national parks be established but more effective management strategies should be developed. Therefore, more attention should be given to monitoring park conditions and at the same time develop better strategies for managing national parks to achieve their primary goal, protecting biodiversity.

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APPENDIX A

Forest Area in Thailand by Region between 1961-1995

Year	Region										Total	
	North		Northeast		East		Central		South			
	KM^2	%	KM^2	%	KM^2	%	KM^2	%	KM^2	%	KM^2	%
1961	116,225	68.54	70,904	41.99	21,163	57.98	35,661	52.91	29,626	41.89	273,579	53.33
1973	113,595	66.96	50,671	30.01	15,036	41.19	23,970	35.56	18,435	26.07	221,707	43.21
1978	95,207	55.96	31,221	18.49	11,037	30.24	20,426	30.31	17,603	24.89	175,434	34.15
1982	87,762	51.73	25,886	15.33	8,000	21.92	18,516	24.47	16,442	23.25	156,686	30.52
1985	84,126	49.59	25,580	15.15	7,990	21.89	17,685	26.24	15,485	21.90	150,865	29.40
1988	80,402	47.39	23,693	14.03	7,834	21.46	17,244	25.59	14,630	20.69	143,803	28.03
1991	77,143	45.47	21,799	12.91	7,691	21.07	16,616	24.65	13,449	19.02	136,698	26.64
1993	75,231	44.35	21,473	12.72	7,634	20.91	16,375	24.30	12,808	18.11	133,521	26.02
1995	73,886	43.55	21,135	12.59	7,592	20.80	16,288	24.17	12,455	17.61	131,485	25.82

Note: % is percent of region/country area

Source: Royal Forest Department (1996)

APPENDIX B

Different Land Documents

Por Bor Tor (PBT)	This is a tax certificate not recognized as legal title used by landless farmers to demonstrate occupancy. In Thailand, tax is collected on squatters are prepared to pay in hope that it will assist them in obtaining tenure at a later date
Sor Tor Kor (STK)	This is a usufruct certificate issued by the Royal Forest Department (RFD) to squatters in the forest reserves. It provides harvest rights which cannot be transferable except inheritance in land holding up to 15 rai. The conversion of the certificate to title deed or others land certificate of use (NS.3 and NS.3K) is prohibited. The violation could cause revocation of usufruct rights by the RFD.
Por Sor Two One (PS.21)	This document is similar to the STK in terms of status and restrictions but it issued by the Thai Army Force to villagers living in forest reserves under the Army Projects.
Sor Por Kor (SPK)	This document is similar to the STK and the PS.21 but it provides cultivation rights in land holding up to 50 rai and it is issued by the Agricultural Land Reform Office (ALRO) in the forest areas proclaimed as the land reform zones.
Sor Khor One (NS.1)	This is a document to certify that the rights of a land owner to a piece of land without any size limits. It also certifies the owner's right to occupy the land. The land cannot be sold. The right is untrasferable, excepts as inheritance Transfer of ownership can be done at the district office. However, owners have the right to apply to land authorities to upgrade it to *Nor Sor Three.* The *Nor Sor Three* sets no time limits for ownership transfer.
Nor Sor Two (NS.2)	This document is similar to the *Sor Khor One* but limits ownership to a plot of land no larger than a 20 rai plot. It is also upgradable into a *Nor Sor Three*. But holders of *Nor Sor Three* issued from *Nor Sor Two* documents cannot transfer ownership until 10 years have elapsed. The transfer of ownership can be done at the district office.

Nor Sor Three (NS.3)	This is a land ownership certificate issued by the Government long before aerial surveys were conducted. The ownership could be transferred but it must be declared in public in advance, and anyone can object to the transfer. This requirement applies to inheritance as well. This is an option to prevent ownership disputes after the transfer has been completed. However, this ownership could expire and others could claim ownership over the piece of land if the owner neglects the land for over one year. Transfer of ownership can be done at the district office.
Nor Sor Three Kor (NS.3 K)	This is a land ownership document issue based on new survey methods such as aerial surveys, and therefore it is more accurate. The transfer of ownership requires no public announcement. The transfer of ownership can be done at the district office.
Cha-nord (Land title deed)	This is a document to clarify that the persons whose name appears in the document have complete rights over a piece of land. However, one may lose ownership through a court order if the land is left without care for ten or more years. The transfer of ownership must be done at the Provincial Land Office or at the Land Department.

Note: The difference between Cha-nord and Nor Sor Three; chanord is a more accurate size measurement of land than other types of land documents which in the past have always relied on less accurate means. The measurement of land is done through modern methods while the *Nor Sor Three* is made through very rough judgments with the tapes or other means of measurement. The transfer of the right and ownership, for the *cha-nord* must be done only at the Provincial Land Office or at the Land Department but the right under the *Nor Sor Three* and *Nor Sor Three Kor* can be made at district offices.

Sources: Chuntanaparb and Wood, 1986: 85; Feder et al. 1988 (a): 10-19; Wittayapak, 1995: 193-195; Bangkok Post, May 4, 1997: 5

APPENDIX C

Income and Expenditures of Thailand's Population

Region	Average Annual Income (baht)	Average Annual Expenditures (baht)
Bangkok	213,828	177,708
Central	192,468	114,924
North	100,212	86,616
Northeast	89,340	82,260
South	119,952	109,344

Source: National Statistic Office, 1997

APPENDIX D

ID #

Interview Schedule

Peoples, Parks and Biodiversity Conservation: A Case Study of Thap Lan National Park, Thailand

Researcher

Phusin Ketanond

Department of Geography, University of Victoria, British Columbia, Canada

Advisor

Dr. Philip Dearden

Department of Geography, University of Victoria, British Columbia, Canada

Name of Village: _____

Interviewer: _____

Interview Date/Time: _____

Special Remarks: _____

_____

_____

_____

_____

I. General information about the village and household

1. Village's name ..... Sub-district..... District .....

Province .....

2. The village was formally established in year .....

3. Socio-demographic characteristics of the interviewee

race ..... Thai ..... non-Thai (.....)

gender ..... male ..... female

age ..... years

education ..... years

status ..... single ..... married ..... other .....

status within household (if not head of household) .....

4. If you were not born in this village, where did your hometown?

village.....district.....province.....

5. What year did you first live in this village? .....

6. Why did you move here?.....

7. Was the national park already designated at the time you first moved in this village?

..... yes ..... no ..... don't know

If no, was the forest reserve already designated at the time you first moved in this village? ..... yes ..... no ..... don't know

8. The number of membership in family ..... persons, schooling ..... persons

working ..... persons

9. How many children do you have? ..... persons

10. The amount of years of schooling of your children with the highest education in the family ..... years

11. Are your children remain farming? ..... yes ..... no

If no, what are they doing/planing to do?

..... change to non-agricultural occupation (specify).....

..... move to pursue jobs in the city (where?.....)

12. How much is an average household's income? ..... baht/year

major sources of income .....

minor sources of income .....

13. Are you in debt? ..... yes ..... no

why?.....

14. What are the major economic activities of the majority of villagers within the village?

.....

15. How did you rate the economic status of the village, in general?

1	2	3	4	5
very poor	poor	sufficient	good	very good

16. How would you rate economic status of your household?

1	2	3	4	5
very poor	poor	sufficient	good	very good

II. Land use, land holding and land tenure

1. Do you possess piece (s) of lands? ..... yes (..... rai) ..... no

2. How did you get those lands (1)?

.....

3. Patterns of land use/land tenure

Type of Land Use	Land Holding (rai)	Land Tenure
cash crop		
paddy field		
orchard		
others		

4. Do you hold piece (s) of land within the park boundary? ..... yes ..... no

If yes, please describe existing use (s) of that land (s)

Plot # 1 ..... Since .....

Plot # 2 ..... Since .....

5. How did you get lands within the park?

..... encroached on forest/park lands

..... bought from other villagers

..... distributed by government

..... other (specify) .....

6. Have you ever sold your lands? ..... yes ..... no

If yes, to whom ..... other villagers in the village

..... other villagers moving here

..... money lender

..... land speculator

..... other (specify).....

7. What didthe reason for sale (6)? .....

8. Are you remain seeking new pieces of land? ..... yes ..... no

If yes, why/how? .....

9. Do your children have any piece (s) of land under their possession? ..... yes ..... no

If yes, how did they get those lands?.....

III. Park resources utilization

1. How often did you visit Thap Lan National Park for the last 12 months?

1	2	3	4	5
not at all	not very often (less than once a month)	sometimes (once a month)	often (more than once a month)	very often (once a week or more often than that)

2. Is your livelihood dependent on the following park resources utilization?

Park resources utilization	never	yes, for household use only	yes, for household use and for sell	yes, for sell only	period of time
growing plants on park land					
grazing livestock on park land					
cutting wood for building house or making furniture					
collecting plants and/or plant products					
collecting fuel wood					
hunting					
fishing					

3. How would you rate your degree of dependency on park resources in earning a living for your household?

1	2	3	4	5
very low	low	moderate	high	very high

4. Within your village, how would you rate the number of villagers who use park resources as income source and/or for subsistence?

1	2	3	4	5
very small	small	moderate	large	very large

IV. Knowledge about conservation and park regulations

1. In your idea, what is the national park?

.....

.....

2. How important is the national park?

.....

.....

3. Can you recognize the park boundary? ..... yes ..... no

If yes, how?.....

4. In consideration of current environmental situation and trends, do you think national park is necessary ? ..... yes ..... no

5. Should the national park be degazetted for villager's use?

..... yes, some part

..... yes, all area

..... not at all

6. Why some/all parts of Thap Lan National Park should be degazetted?

.....

.....

.....

7. Would you please tell me if these following activities allowed in the park?

Activities	Park Regulation		Informal Allowance	
	allow	not allowed	allow	not allowed
clear cutting for residence				
clear cutting for agriculture				
setting fire				
collecting plants or plant products				
wildlife viewing				
camping				
collecting fuel wood				
cutting wood for making furniture				
cutting wood for building a house				
fishing				
hunting				
grazing livestock				
driving through the park				
changing or blocking a waterway				
developing a resort for tourists				

V. Attitude towards Park and Park Official

1. Could you list benefit(s) your household gained from the national park (if any) since you first lived in this village and/or since this park was first designated?

.....

.....

2. Have you ever participated in activities concerning the park's resources conservation?

..... yes ..... no

If yes, what? ..... patrolling ..... fire fighting

..... re-plantation ..... information

..... others (specify) .....

3. How often did you encounter park rangers when they were patrolling in the past 12 months?

1	2	3	4	5
not at all	not very often (less than once a month)	sometimes (once a month)	often (more than once a month)	very often (once a week or more often than that)

4. How would you rate the efforts of the national park's official in these following park management tasks in the past?

Park management practices	very poor	poor	fair	good	very good
protecting park resources					
providing knowledge about park regulations to local people					
providing knowledge about significance of the park and the natural ecosystem within the park to local people					
carrying on public relations programs in order to establish a good relationship between the park and local communities					
contributing benefit(s) from the park (e.g. employment as park's staff, income from tourism, community development program, etc.) to local communities					

5. The following statements refer to your attitude toward national park regulations.

How would you feel about:	extremely positive	somewhat positive	neither positive nor negative	somewhat negative	extremely negative
controlling expansion of agricultural lands within park boundary					
allowing long-term residence of villagers living on the area before designation of the park					
controlling grazing within the park to decrease disturbance of park ecosystems					
controlling hunting within the park to preserve wildlife population					
controlling fishing within the park to preserve fish population					
controlling wood cutting within the park to maintain the area in its natural state					
allowing minor uses of park resources such as fuel wood and plants collecting for subsistence					
prohibiting all commercial us within the park					

6.How important is each of the following park management practice to you?

Park Management Practice	not at all important	slightly important	moderately important	very important	extremely important
providing knowledge about park regulations to local people					
providing educational programs related to protection of natural resource and the environment to local people					
being friendly with local people					
providing more flexibility to local people in using park resource in earning a living					
contributing park's revenue to local communities					
supporting local communities development programs					
allowing local people to participate in planning and management of the park					

VI. Attitude toward previous projects and its effects

Part A (Village I, III and VI)

1. Project Title: .....

2. What is the project's objectives?

.....

.....

3. How well did you understand the project's objectives while the project was run in your village? 1 2 3 4 5

not at all quite limit moderate good very good

4. Have officials ever organized meeting to explain about the project activities?

..... yes ..... no

5. How does the project affect your family ?

Advantage: 1..... Dis: 1.....

2..... 2.....

3..... 3. .....

6. Have you got any benefit/ compensation from the project? ..... yes ..... no

what?.....

.....

7. Do you agree that the project benefits our local community or the general public?

..... yes ..... no

8. Are you satisfied with the project management?

1	2	3	4	5
not at all	low	moderate	high	very high

why? .....

.....

9. Does the project provide you a better life?

..... yes ..... no

why? .....

10. Is there any illegal park's resources use as a result of the project? ..... yes ..... no

If yes, what?.....

.....

11. Is the project affect the way of life of villagers in earning income? ..... yes .....no

If yes, how?.....

.....

12. How would you recommend to solve those problems (10 + 11)?

.....

.....

.....

13. Do you agree that the cooperation of villagers in park's resources conservation can be achieved by degazetting strategies (i.e. STK/SPK)?

..... yes ..... no

why? .....

.....

Part B (Village II - unsuccessful relocation)

14. What was the reason of the refusal of recent relocation to new village outside the park boundary?

..... commit to home land

..... happy with comfortable life here

..... village leader refuses to move

..... new area is unsuitable for agriculture

..... new area is lacking of public utilities

..... other (specify) .....

15. If your village leader move to new area, will you follow him?

..... yes ..... no

16. If it is necessary to relocate, where do you want to live?

.....

17. What will you request to exchange with the relocation to new village outside park boundary?

.... land for house construction ..... rai/household

.... land for agriculture ..... rai/household

.... money to compensate for land ..... baht/rai

.... money to compensate for trees/fruit trees ..... baht/rai

.... money to compensate for house/other buildings ..... baht/household

.... extra compensation money ..... baht/household

.... complete public utilities before moving

.... other (specify) .....

18. Is there any commitment given to park official for allowing to live within park boundary? ..... yes ..... no

If yes, what? .....

.....

VII. Recommendation for future management of the park

1. Have you ever participated in park management planing? ..... yes .....no

If yes, what? .....

2. Would you tell me, if anyone practices these following activities during the last 12 months?

Activities	yes	no	If yes, by whom		
			local people (1)	outsider (2)	(1)+(2)
clear cutting on park land					
logging					
hunting					
collecting minor forest products for sale					

3. In the past, have you ever been to court or paid fine from illegal activities in the park?

..... yes ..... no

If yes, what?.....

4. Currently, do you have any conflict with the park staff generating from park resource utilization? ..... yes ..... no

If yes, what?.....

5. How could we solve the problem (4)?

.....

.....

6. In case that villager's farm land overlap with park land, what should the government do?

.....

.....

7. What should the government do to preserve the remaining park's resources?

.....

.....

8. In your idea, who should responsible for managing park in the future?

..... government

..... local people

..... joint management

9. To reduce the conflicts between park staff and local people resulting from park resources utilization, what should the government do?

..... increase local participation in policy's making

..... provide community forest (on the national park land)

..... create buffer zone

..... provide multiple use zone

..... others (specify) .....

10. Do you have any other comments about the national park management practice?

.....

.....

.....

Remarks:

village I : village experienced the Forest Village Project

village II : village experienced the Unsuccessful Relocation Project

village III : village experienced the Upper Mun Project

village IV : village experienced the Khor Jor Kor Project

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