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FINAL REPORT

ASSESSMENT OF NATIONAL PARKS, WILDLIFE SANCTUARIES AND OTHER PRESERVES DEVELOPMENT IN THAILAND

prepared by

FACULTY OF FORESTRY, KASETSART UNIVERSITY

in collaboration with

ROYAL FOREST DEPARTMENT

and

OFFICE OF THE NATIONAL ENVIRONMENT BOARD

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EXECUTIVE SUMMARY

I. PURPOSE AND SCOPE OF THE REPORT

This report is a final, revised edition of a working document that provided the basis for discussions at the "International Conference on National Parks and Protected Areas Development in Thailand" during 13 -15 February 1987 in Phuket. The report has been prepared for distribution to key government and NGO agencies, in Thailand and abroad, that are directly or indirectly concerned with protected areas policy, planning and management.

The ultimate purposes of the report are :

a) To prepare a basic summary assessment of the accomplishments to date, the current situation and plans for future development, and the principal problems and issues facing development and maintenance of national parks and equivalent reserves in Thailand.

b) To establish a common understanding of these issues and problems, both among responsible officials of the Royal Thai Government (RTG) and among key representatives of potential donor agencies.

c) To identify a realistic agenda for collaboration with foreign park and sanctuary management agencies and with interested donor agencies for addressing issues of mutual interest and capability.

II. BACKGROUND TO THE PROJECT

This project evolved from discussions held by the United States Agency for International Development with agencies responsible for protected area policy and administration in Thailand. The Faculty of Forestry, Kasetsart University was subsequently contracted to produce a report to meet the objectives stated above.

III. PROJECT ORGANIZATION

Preparation of the working document was initiated in May 1986 and completed in January 1987. This final edition was prepared in March 1987 incorporating comments and pertinent information received during the international conference. Report preparation involved four major steps:

a) An exhaustive review of Thai and English publications concerning Thailand 's protected areas system and related fields.

b) Interview with senior government officials directly and indirectly involved in protected area administration and policy formulation.

c) Preparation, distribution, and collation of a survey distributed to all nation park and wildlife sanctuary superintendents to discern major issues and constraints in protected area management as perceived by field staff.

d) Incorporation of comments received from conference participants.

The study team included:

1.	Surachet Chettamart Assistant Professor Faculty of Forestry Kasetsart University	Ph.C. (Outdoor Recreation) Principal Investigator and Project Coordinator
2.	Utis Kutintara Assistant Professor Faculty of Forestry	Ph.D. (Wildlife Biology Forest Ecology) Investigator
3.	Seri Vejaboosakorn Director Office of Protected Areas Planning Royal Forest Department	M.S. (Outdoor Recreation) Investigator

4. Komol Praktong Chief Community Forestry Subdivision National Forest Lands Management Division Royal Forest Department	M.S. (Forest Management) Investigator
5. Surin Vivajsirin Chief Natural and Water Resources Suvdivision Environmental Policy and Planning Division Office of the National Environment Board	M.S. (Outdoor Recreation) Investigator

IV. REPORT FORMAT

The report is organized into three major parts presenting: (i) objective information on the evolution/development of Thailand's protected areas system and the system's current status; (ii) major trends in protected areas administration and development; and (iii) major issues/constraints and recommendations. Project concept papers, based on the recommendations presented, are annexed to the report.

V. ACKNOWLEDGEMENTS

Project funds were supplied by the United States Agency for International Development-Thailand. Mr.Will Knowland and Mr.Kasem Srinian of USAID/Thailand, extended support for many aspects of project implementation. The study team gratefully acknowledges the valuable advice

provided by Dr.Somsak Sukwong, Dean of the Faculty of Forestry, Kasetsart University, and Mr.Pong Leng-Ee, former Director of the National Parks Division; both men also provided critical administrative support.

Ms. Noppawan Tanakanjana and Ms. Chatpet Dumrongkijkaset served as project assistants and made important contributions in all phases of report preparation. We thank all the park and sanctuary superintendents who responded to the report questionnaire and supplied insights based on their experiences in the field. We wish to express our gratitude to the many individuals in the Royal Forest Department, the National Environment Board, and others, without whose assistance the report could not have been completed.

Finally, the study team would like to thank Mr. Robert Dobias for his valuable advice and superb translation of the original Thai report to English.

VI. SUMMARY OF MAJOR ISSUES AND RECOMMENDATIONS

Presented below is a summary of major issues and recommendations from section 5 of the report. Each of the recommended actions are prefaced by a letter code indicating:

a) action that can be implemented immediately with minimal or no increase in planning, budget/manpower, and/or technical inputs;

b) action requiring moderate to substantial planning, budget/manpower, and/or technical inputs;

c) action requiring major planning, budget/manpower, and/or technical inputs.

A. Budget

Issues and Constraints

1. Limited government allocations for protected areas administration and management are hampering efforts to provide enhanced benefits from protected areas to local, regional, and national development.

Recommended Action

1. (b) Develop and apply beneficial use analyses to qualify and quantify the role protected areas play (or can potentially play) in Thailand's socioeconomic development, and to demonstrate how this role can be further strengthened through adequately funded activities.

2. (b & c) Help ensure more efficient and effective use of available funds through improved administration and management (see B).

B. Personnel

Issues and Constraints

1. There is a serious shortage of existing senior staff trained in fields relevant to protected areas administration and management.

2. Services such as housing provided to field staff are very inadequate, affecting staff morale and thus work effectiveness.

3. Senior level staff strength is less than half that deemed appropriate for proper protected area management.

Recommended Action

1. (a) Revise the NPD and WCD selection process for new employees by emphasizing skills directly related to protected area requirements.

2. (b) exempt NPD and WCD from the government ceiling on hiring of civil servants.

3. (c) Appreciably increase field staff housing and amenities.

4. (c) Establish two national training centers, one located at a major national park and the other at a major wildlife sanctuary.

C. Protection

Issues and Constraints

1. Levels of poaching and encroachment remain high despite emphasis on law enforcement.

2. Guard stations are experiencing debilitating shortages of essential materials.

3. Guards are provided virtually no work incentives despite the hardships and risks the position entails.

Recommended Action

1. (a) Provide basic incentives to guards: (i) a hierarchy of ranks to reward productive workers; (ii) uniforms as a symbol of pride and identity; (iii) annual awards to the "outstanding guard station" at each protected area.

2. (b) Develop comprehensive protection strategies that include law enforcement, provision for enhanced flow of benefits from protected areas to local communities, grass roots conservation education, and increased participation of local people in protected area management.

3. (c) Appreciably increase supplies of vehicles, radios, weapons, and field provisions to guard stations at major parks and sanctuaries.

D. Tourism, Recreation, and Education

Issues and Constraints

1. High-density tourism has had adverse ecological impacts in some popular parks, and this will soon become widespread with expected increases in visitation volume.

2. No park or non-hunting area contains quality interpretive/educational programs, thus missing an opportunity to provide conservation education to a substantial proportion of the Thai population.

Recommended Action

1. (b) Enforce a moratorium on development of bungalows and other visitor service structures at all parks until zoning, carrying capacity, and tourism volume projections are determined.

2. (b) Establish and staff with trained people interpretation sections at all major parks and non-hunting areas.

3. (b) Establish recreation, education, and public relations programs at appropriate sites along park peripheries, especially at or near guard stations.

4. (b) Prepare EIAs before any major development activity is approved and implemented.

5. (c) Develop model interpretive/educational programs at one terrestrial park, one marine park, and one non-hunting area followed by support to other popular parks and non-hunting areas.

E. Administration and Management

Issues and Constraints

1. NPD and WCD administrations are highly centralized.

2. Management at most protected areas tends to be ad hoc, lacking clearly stated objectives and long-term programs.

3. The national Park Act and the Wild Animals Reservation and Protection Act do not appropriately address present and emerging national conservation needs.

Recommended Action

1. (a) Prepare "statements of management" for all protected areas not scheduled to prepare management plans by 1988.

2. (a) Provide for annual independent monitoring of management plan implementation at each of the 23 protected areas schedules to prepare plans.

3. (a) Thailand should ratify the World Heritage Convention and the Ramsar Convention without further delay.

4. (b) Prepare NPD and WCD policy statements.

5. (b) Hire one research coordination officer for each major protected area.

6. (c) Relocate NPD and WCD to a new, autonomous department independent of RFD, with each division maintaining its separate status under the new department.

7. (c) Decentralize NPD and WCD by establishing at least four regional centers for each of the two divisions.

8. (c) Prepare regional (macro) management plans.

9. (c) Amend NPA and WARPA to reflect present and emerging conservation needs, especially as concerns protected areas' role in national development.

F. Integration of Protected Areas Management with Socioeconomic Development

Issues and Constraints

1. Although parks, sanctuaries, and non-hunting areas provide many important, inherent benefits, strategies to maximize existing and potential benefits have been virtually ignored.

Recommended Action

1. (a) NPD should divest itself of profitable accommodation services, giving priority to local people either as concession operators or as employees.

2. (a) Allocate a set percentage of park entrance fees to small-scale rural development projects and other community services.

3. (b) Explore the feasibility of expanding rural development/ conservation programs such as those at Phu Khieo and Ban Sap Tai.

4. (b) Hire one community affairs officer for each major protected areas.

G Expansion of the Protected Areas System

Issues and Constraints

1. There is no acquisition policy for protected areas.

2. Few if any suitable new areas will be available for inclusion in the protected areas system within a decade or so.

Recommended Action

1. (a) Upgrade forest parks, forest reserves, and non-hunting areas where appropriate.

2. (b) Continue to acquire new areas, but within the framework of an acquisition policy derived from preparation of policy statements, one for each division.

3. (c) The government's policy of preserving forests on 15 percent of Thailand's land area should rely primarily on acquisition of new parks and sanctuaries in coordination with the Watershed Classification System and Land Use Measures.

VII. RECOMMENDED ACTIONS OF HIGHEST PRIORITY

The following are recommended actions considered to be of highest priority and deserve urgent attention. They are listed in order of importance. Section 5 presents more detailed discussions of these recommendations.

1. Prepare NPD and WCD policy statements.

2. Develop and apply beneficial use analyses to qualify and quantify the role protected areas play in Thailand's socioeconomic development.

3. Develop comprehensive protection strategies.

4. Establish national training centers, one at a national park and the other at a wildlife sanctuary.

5. Develop model interpretive programs at one terrestrial park, one marine park, and one non-hunting area.

6. Enforce a moratorium on development of bungalows and other visitor service structures at all parks until zoning, carrying capacity, and tourism volume projections are determined.

7. Relocate NPD and WCD to a new, autonomous department independent of RFD, with each division maintaining its separate status

under the new department.

8. Exempt NPD and WCD from the governement ceiling on hiring of civil servants.

9. Amend NPA and WARPA to reflect present and emerging conservation needs.

10. Increase supplies of vehicles, radios, weapons, and field provisions to guard stations.

11. NPD should divest itself of profitable accommodation services, giving priority to local people either as concession operators or employees.

12. Establish and staff with trained people interpretation sections at all major parks and non-hunting areas.

13. Hire one community affairs officer for each major protected area.

VIII. LIST OF ACRONYM USED IN THE TEXT

FAO	United Nations Food and Agriculture Organization
IUCN	International Union for Conservation of Nature and Natural Resources
NESDB	National Economic and Social Development Board
NFLMD	National Forest Land Management Division
NP	National Park
NPA	National Park Act
NPD	National Parks Division
ONEB	Office of the National Environment Board
RFD	Royal Forest Department
RTG	Royal Thai Governemt

TAT	Tourism Authority of Thailand
WARPA	Wild Animals Reservation and Protection Act
WCD	Wildlife Conservation Division
WFT	Wildlife Fund Thailand
WS	Wildlife Sanctuary
WWF	World Wide Fund for Nature; World Wildlife Fund

1. INTRODUCTION AND DEFINITIONS

There are several different categories of protected areas in Thailand and each serves various functions according to its respective enabling legislation and operating objectives. Therefore, as a guide to the reader, this opening section presents an overview of the major characteristics which distinguish each category of protected area.

1.1 National Park and Forest Park

The definition of national park differs among countries depending on the country's conservation history and needs and on its environmental and socioeconomic status. The salient definition of national park in Thailand is presented below.

a) The National Parks Act of 1961 states that a national park is:

> "land, which means the surface of the land in general and includes mountains, streams, swamps, canals, marshes, basins, waterways, lakes, islands and seashores which has been declared a national park under this Act. The features of the land should be of natural interest and must not be owned or legally possessed by any party other than the public body. This land is preserved in its natural state for the benefit of public education and enjoyment."

b) The National Parks Division (NPD), which was created to administer and manage national parks, has established the following guiding principles for parks administration:

> "National parks are lands preserved for protection of the environment, especially forests, wildlife and unique scenery, which impresses the viewer as worthy of

> preservation in its natural state. National parks shall be protected from destruction, alternative uses and incompatible activities so that future generations may enjoy and study these natural treasures in perpetuity."

c) Professor Thiam Khomkris, former Dean of Faculty of Forestry, Kasetsart University, Director General of the Royal Forest Department (RFD), and who is generally regarded as the father of modern forestry in Thailand presented his perceptions of national parks in "Forestry in Thailand", 1965:

> "National parks are lands established to conserve scenic areas and conditions of natural beauty, including wildlife. These areas are protected by designation as national parks. National parks are areas which allow the public to enjoy and study the natural environment in perpetuity."

In summary, it can be stated that national parks in Thailand are lands which are gazetted in order to preserve and protect the natural environment, especially for the purposes of education, recreation and tourism.

As for "Forest Parks", the following definitions were stated by Thiam Khomkris (1965):

> "Forest areas that contain attractive scenery and 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 and when RFD has sufficient scientific knowledge, budget and manpower to do so."

NPD normally develops forest parks for public recreation in areas near population centers. Forest parks usually include limited attractions such as caves, waterfalls, beaches, etc. Because most forest parks are located in "reserved forest", RFD has full authority

to declare and establish these areas under the Forest Reserves Act and need not request Cabinet approval.

1.2 Wildlife Sanctuary and Non-hunting Area

a) A wildlife sanctuary as defined in the Wild Animals Reservation and Protection Act (WARPA) of 1960 is:

> "land declared for the conservation of wildlife habitat so that wildlife can freely breed and increase their populations in the natural environment. This will allow a certain proportion of the wildlife populations to disperse into areas adjoining the wildlife sanctuary."

The Wildlife Conservation Division (WCD), which administers and manages wildlife sanctuaries and non-hunting areas, has given the following reasons for establishing wildlife sanctuaries:

> "To conserve the habitat of various wildlife species, including conservation of essential requirements such as water, food, protective habitat, nesting habitat, breeding habitat and rearing habitat, as well as salt licks, wallows, dusting areas and sunning areas so that wildlife may freely exist and propagate."

Wildlife sanctuaries, therefore, are lands preserved and protected from human activity which may disturb wildlife. Tourists are generally restricted to areas designated as "Nature Education Center" within the sanctuaries.

In summary, both national parks and wildlife sanctuaries are established primarily to conserve wildlife and wildlife habitat. The main administrative distinction is that recreation and tourism are encouraged in national parks but discouraged in wildlife sanctuaries.

b) "Non-hunting Area" is another protected area designation and has been defined by WCD as:

> "Areas which have been designated by the government for protection of certain specified wildlife species. They are designated by the Ministry of Agriculture and Cooperatives according to Section 26 of WARPA. Non-hunting areas differ from wildlife sanctuaries in that: (i) they generally are of smaller size; (ii) only the specified wildlife species are protected; and (iii) other uses such as fishing, lumbering, recreation and tourism are permitted."

Thus non-hunting areas are lands designated for the protection of specified wildlife species but which do not proscribe other human activities.

1.3 Other Protected Area Designations

a) "National Forest Reserves"are areas which have been designated by the Forest Reserves Act of 1964 for protection of forests for multiple uses. At the present time forest reserves are divided into two categories, production and conservation forests. The latter includes not only national parks, forest parks, sanctuaries, and parts of non-hunting areas but also watershed areas which have special provision for protection through Cabinet resolutions.

b) "Botanical Gardens" are:

> "locations established to collect indigenous and exotic plant species that are considered rare or have economic value as ornamentals and are planted in taxonomic order for purposes of research and dissemination. These species are propagated for the benefit of the public and the country." (Khomkris, 1965)

c) "Arboretums" are:

> "smaller than botanical gardens and are established to collect various plant species, especially economically useful plants and flowering plants, which are indigenous to that area. The plants are not arranged in taxonomic order as in botanical gardens, although all plants are labeled. Arboretums contain roads and walkways for tourism, recreation and research." (Khomkris, 1965)

d) "Biosphere Reserves" are the newest and least well known of protected areas, and were created by the Man and the Biosphere International Co-ordination Committee. The objectives of biosphere reserves may be characterized as combining nature conservation with scientific research, environmental monitoring, training, demonstration, environmental education and local participation. They are included as a series of protected areas linked through an environmental network to demonstrate the value of conservation and its relationship with development.

2. HISTORY OF PROTECTED AREAS IN THAILAND: EVOLUTION AND DEVELOPMENT

2.1 Origins

The concept of "parks" and of "wildlife conservation" in Thailand dates back to the 13th Century Sukhothai Period when King Ram Khamhaeng the Great created a park known as "Dong Tan" for royal recreation. The public was also encouraged to create parks near Buddhist temples and other religious areas; because of Buddhist strictures against the taking of life, these parks in effect served a dual purpose as "wildlife sanctuaries". Also during the Sukhothai Period the capture of wild elephants was regulated due to the elephant's great economic, military and cultural value. This regulation continues, in modified form, to the present day.

2.2 Establishment of Conservation Laws and Protected Areas

From the end of the Sukhothai Period to the 19th Century,parks and conservation were neglected. But in 1896 the Royal Thai Forest Department was established, introducing modern management practices to forestry-- especially the teak industry-- though most conservation fields were not addressed. In 1900, after noticing an alarming decrease in the country's wild elephant population, the government promulgated "The Law Governing Conservation of Wild Elephants". Thus elephants became the first wildlife species to be protected by a special law. In 1921 "The Law for the Conservation of Wild Elephants" was created, superseding the previous Act; this was amended in 1960 to provide for levies on elephant capture.

During the early 1940s there occurred in Thailand a heightened awareness of the need for conservation and protection of nature. Two probable factors responsible for this were the deteriorating conditions

of forests and the examples set by America and Canada in establishing national parks. Thus RFD began turning its attention to conservation of forest areas that offered interesting scenery for recreational purposes and that provided wildlife habitat. Unfortunately, plans were put in abeyance due to the upheaval of World War II.

Following the war, RFD intensified efforts to establish protected areas and encourage wildlife conservation. The driving force behind this action was the rapid increase in the country's population resulting in great modification and loss of natural areas and a corresponding decrease (and in some cases complete extirpation) of many wildlife populations due to habitat destruction, market hunting and subsistence hunting. RFD therefore requested the government to protect several forest areas as national parks. But because of inadequate budget and trained manpower these areas were instead declared forest parks.

In 1958 Field Marshall Sarit Thanarat, then Prime Minister, displayed keen foresight by perceiving the importance of nature conservation to the country's welfare. As head of the Revolutionary Government he directed the Ministries of Agriculture and Interior to establish national parks and other protected areas and to draft enabling legislation for the areas.

In 1959 the Cabinet established two committees--the National Parks Committee and the Wild Animals Reservation and Protection Committee--to recommend lands for inclusion in a new protected areas system, to prepare legislation and to advise the government on matters relating to protected areas. The Permanent Under-Secretary of State for Agriculture was appointed chairman of both committees, and each committee contained not more than 14 appointed members, a system which remains unchanged to the present day. During this period the International Union for Conservation of Nature and Natural Resources (IUCN), following a government request, provided the services of Dr. George D. Ruhle of the U.S. National Park Service to assist RFD officers in selecting suitable areas and to offer

advice concerning laws to constitute and administer them. With Cabinet approval the Ministry of Agriculture on 7 October 1959 proposed 14 sites totaling 10,000 sq km for national park status.

In 1960 the government passed the Wild Animals Reservation and Protection Act (WARPA) and the following year passed the National Parks Act (NPA). The Acts provided regulations and procedures for establishing wildlife sanctuaries and non-hunting areas (under WARPA) and national parks (under NPA).

As concerns wildlife sanctuaries, Chapter 3, Section 19 of WARPA states:

> "When it is deemed appropriate to determine any area of land to serve as a haven for wildlife for purposes of species conservation. the government shall have the power to do so by Royal Decree. A map showing the boundary of the determined area shall be annexed to the Royal Decree. The determined area shall be called the "wildlife sanctuary."

As concerns non-hunting areas, Chapter 3, Section 26 of WARPA states:

> "For any area which is government owned or which is used by the public whether or not legally possessed, the Minister of Agriculture is empowered to declare the said parcel a non-hunting area for protection of any wildlife species by including it in the government gazette. After gazetting, no person shall be permitted to hunt or capture or endanger the eggs or nest of the wildlife species identified in the gazette."

It should be noted, however, that human activity such as fishing, harvesting of plants, etc., is permitted unless proscribed by other legislation (e.g. the Forest Reserves Act).

In addition to defining wildlife sanctuaries and non-hunting areas, WARPA also prescribes controls and penalties for hunting, capture and trade of specified wildlife species.The species are divided into two protected categories. Schedule 1 lists nine species which are completely protected, including Sumatran Rhinoceros, Javan Rhinoceros, Kouprey, Wild Water Buffalo, Eld's Deer, Schomburgk's Deer, Hog Deer, Serow and Goral.Schedule 2 is sub-divided into two classes for which hunting, capture and trade are limited. The first class contains 206 taxa that are not normally hunted for meat or sport, or which are considered beneficial (e.g. predator of crop pests). The second category contains 35 taxa that are traditionally hunted for meat or sport.

And concerning national parks, Chapter 1, Section 6 of NPA states:

> "When it is deemed appropriate to determine any area of land, the natural features of which are of interest and may be maintained with a view to preserving it for the benefit of public education and pleasure, the government shall have the power to do so by a Royal Decree. A map showing the boundary lines of the determined area shall be annexed to the Royal Decree. The determined area shall be called the "national park."

Passage of the Acts paved the way for official creation of Thailand's first national park, Khao Yai National Park, on 18 September 1962. Gazetting of three other parks occurred shortly thereafter. The country's first wildlife sanctuary, Salak Phra Wildlife Sanctuary, was declared on 31 December 1965. Also during this period RFD established 23 forest parks throughout the country.

2.3 Evolution of Administration and Management

Beginning in 1961, administration of WARPA and NPA and of the

new protected areas was under two "sections" of RFD's Silviculture Division; in 1965 the National Parks Section was upgraded to "sub-division" status. As their conservation responsibilities rapidly expanded and the number of protected areas increased, RFD with Cabinet consent upgraded the administrating agencies to the National Parks Division (in 1972) and the Wildlife Conservation Division (in 1975). Four sub-divisions were established in NPD: administration, technical, national park management and forest park management. Five sub-divisions were established in WCD: administration, technical, extension, law enforcement, and wildlife sanctuary.

The newly formed divisions began operations faced with stringent budget and personnel constraints. For example, during NPD's first year the personnel totaled just 29 people and the entire division operated on a mere 6 million baht budget for administration and management of 14 national parks and 30 forest parks. Furthermore, there was a paucity of professional ability and experience at all staff levels. Work tended toward gazetting of areas; boundary survey; construction of headquarters, workers'quarters, roads, bungalows, etc.; and basic protection. Other important considerations such as preparation of management plans to direct activities, development of quality interpretation programs, provision of adequate supplies and incentives for employees, and so forth received little attention. These deficiencies remain prominent to the present day and negatively affect NPD's and WCD's abilities to deal with important administrative and managerial concerns.

2.4 Foreign Assistance

Following IUCN's initial help in establishing Thailand's protected areas system there was a lull in significant foreign assistance for nearly two decades. But in 1975 Thailand's Office of the National Environment Board (ONEB) was established and, as part of its coordinating and consulting responsibilities, began playing a role in wildlife conservation and protected areas management. One of ONEB's first major acts in this role was to request and coordinate IUCN assis-

tance in preparing "Conservation for Thailand-Policy Guidelines" which was completed in 1979. The guidelines were adopted by the government and included in the Fifth Five-Year National Social and Economic Development Plan, 1982-86. The Fifth Plan stressed the need to substantially increase the number of protected areas before the opportunity to do so passed. But no provisions were made for developing the administrative structure or improving the quality of management and development of protected areas.

In 1982 the United Nations Development Programme (UNDP) and the Food and Agriculture Organization (FAO) of the United Nations presented a report titled "National Parks and Wildlife Management-Thailand: Project Findings and Recommendations" which represented the culmination of a one-year review by an FAO representative. This report was significant as it highlighted strengths and deficiencies of NPD's and WCD's conservation efforts, and suggested strategies for improvements. It also lent support to ONEB's requests for developing management planning and for establishing a training and research center at Huai Kha Khaeng Wildlife Sanctuary.

In 1984 World Wide Fund for Nature (WWF) and IUCN provided financial and technical support for the "Khao Yai Project" (WWF/IUCN Project 3001). One project component was development of Thailand's first protected area management plan at Khao Yai N.P., due to be implemented beginning in 1987. Planning team members represented a wide range of local expertise and included officials from NPD, WCD, Kasetsart University, ONEB and Mahidol University. The project also result in government financial support for management plan preparation at 23 other protected areas and creation of a new management planning subdivision for NPD and WCD as part of the Sixth Five-Year National Social and Economic Development Plan, 1987-91. The project also involved elephant research and helped establish a "rural development for conservation" pilot project at a village adjacent to Khao Yai N.P., integrating development with park conservation. Agro Action, a German donor agency

provided funds to implement the development/conservation projcet. Also in 1984 FAO provided support to WCD for a pilot project to develop wildlife farming with the goal of eventually transferring this skill to villagers living adjacent to protected areas.

In 1986, WWF (International) approved and is now funding a data base project at Mahidol University. The project is expected to significantly affect protected areas through the gathering and analyzing of information. Projects recently approved or pending approval from international donor agencies include: (i) a training and research center at Huai Kha Khaeng W.S.; (ii) a socioeconomic evaluation of selected protected areas; (iii) a management plan for Tarutao N.P. and guidelines for marine park management; (iv) provision for supply of technical information to environmentalists; and (v) in-service training for park officials.

2.5 International Conventions

a) Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Thailand acceded to CITES in 1984, and CITES remains the only international conservation of which Thailand is a Party. Through CITES, Thailand regulates export of plants and animals and their products. However, imports into Thailand of CITES-prohibited species are still allowed due to a lack of national legislation to serve as a foundation for enforcement of CITES. CITES is administered by WCD (for fauna) and by the Agricultural Regulatory Division, Department of Agriculture (for flora).

b) Convention concerning the Protection of the World Cultural and Natural Heritage (World Heritage Convention). The World Heritage Convention was adopted by UNESCO in 1972 and provides a means for identifying areas containing cultural and natural characteristics of universal importance; these areas are placed on the select "World Heritage List." The Convention aims to serve as a tool for international

cooperation, particularly through sharing of resources and expertise and through building a basic core of personnel trained in conservation of cultural and natural heritage. A "World Heritage Fund" helps member nationas to restore, protect and enhance their World Heritage Sites. Although Thailand has for several years considered becoming a Party to the Convention and two protected areas-- Huai Kha Khaeng W.S. and Thung Yai Naresuan W.S.--have been unofficially nominated for World Heritage status, little concrete action has yet been taken. The Ministry of Education would be the responsible agency in Thailand.

c) Convention on Wetlands of International Importance, Especially as Waterfowl Habitat (Ramsar Convention). The Ramsar Convention is an international treaty providing a framework for conservation of wetlands. The definition of "wetlands" as presented in the Convention is quite broad and includes "areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine waters, the depth of which at low tide does not exceed six meters." Coverage may also extend to riparian and coastal zones. Contracting Parties are obligated to include wetland conservation in national land use planning; to designate at least one site for inclusion in a List of Wetlands of International Importance; and to promote wetland conservation through establishment of nature reserves. Thailand has several wetlands which would qualify for inclusion in the "List" such as Thale Noi, Bung Boraphet and others. The Ramsar Convention could serve as a vehicle for improved conservation of Thailand's wetlands in general.

3. PRESENT STATUS OF PROTECTED AREAS IN THAILAND

3.1 Number, Size and Geographical Distribution

3.1.1 National Parks and Forest Parks

Following establishment of Khao Yai as Thailand's first national park in 1962, the parks system expanded slowly; only four parks, covering 3,581 sq km, existed by 1972. But the next decade witnessed rapid expansion. There were 16 parks (9,357 sq km) by 1979 and 45 parks (24,222 sq km) by 1982. As of September 1986 Thailand has 52 national parks covering 26,577 sq km or 5.18 percent of the country (Table 1 and 2). Of these , 38 are terrestrial (21,851 sq km) and 14 are marine (4,726 sq km). Significantly, 36 national parks (69 percent) and 17,220 sq km (65 percent) of the entire parks system has been established since 1980.

In addition, 15 new terrestrial areas totaling approximately 8,000 sq km are pending approval as national parks (Table 3). Park locations are presented as Figure 1.

There are 50 forest parks located throughout the country, covering 736 sq km. NPD administers 22 forest parks while regional and provincial forest offices administer the remainder (Table 4,5 and 6). RFD has approved creation of 22 new areas (ca. 780 sq km), but these have not yet been established due to lack of budget and personnel(Table7). Locations of forest parks are presented in Figure 1.

3.1.2 Wildlife Sanctuaries and Non-hunting Areas

Selection and gazetting of wildlife sanctuaries and of non-hunting areas began following passage of WARPA in 1960. Salak Phra became Thailand's first wildlife sanctuary in 1965, and by the start of the Fifth Five-Year National Development Plan (1982-86) RFD had established a total of 24 sanctuaries (19,938 sq km) and 22 non-hunting areas (2,351 sq km).

TABLE 1 LIST OF EXISTING NATIONAL PARKS

Order in which Established	Name of[1/] Park	Location[2/] (Province)	Date[3/] Established	Area[4/] (ha)	Biogeographical[5/] Province	Dominant[6/] Forest Type	Remarks
1	Khao Yai	Nakhon Nayok, Saraburi, Prachin Buri, Nakhon Ratchasima	18 Sep. 62	216,863	4.5.1	Moist evergreen	
2	Phu Kradung	Loei	23 Nov. 62	34,812	4.10.1	Mixed deciduous	
3	Khao Sam Roi Yot	Prachuap Khiri Khan	28 Jun. 66	9,808	4.5.1	Forest over limestone	Marine park
4	Nam Nao	Phetchabun	4 May 72	96,600	4.10.4	Hill evergreen, pine	
5	Tarutao	Satun	19 Apr. 74	149,000	4.7.1	Moist evergreen	26,000 ha terrestrial 123,000 ha marine
6	Khao Luang	Nakhon Si Thammarat	18 Dec. 74.	57,000	4.7.1	Moist evergreen	
7	Doi Khuntan	Lamphun, Lampang	5 Mar. 75	25,529	4.10.4	Mixed deciduous, Dry dipterocarp	

TABLE 1 (con't)

Order in which Established	Name of[1/] Park	Location[2/] (Province)	Date[3/] Established	Area[4/] (ha)	Biogeo[5/] graphical Province	Dominant[6/] Forest Type	Remarks
8	Namtok Phliu (Khao Sabup)	Chanthaburi	2 May 75	13,450	4.5.1	Moist evergreen	
9	Thung Salaeng Luang	Phitsanulok, Phetchabun	13 Dec. 72	126,240	4.10.4	Hill evergreen	
10	Phu Phan	Sakon Nakhon, Kalasin	13 Nov. 72	66,470	4.10.4	Dry dipterocarp	
11	Erawan	Kanchanaburi	19 Jun. 75	55,000	4.5.1	Mixed deciduous	
12	Khao Chamao - Khao Wong	Rayong, Chanthaburi	31 Dec. 75	8,368	4.5.1	Dry evergreen	
13	Khao Khitchakut	Chanthaburi	1 May 77	5,870	4.5.1	Moist evergreen	
14	Doi Inthanon	Chiang Mai	2 Oct. 72	48,240	4.10.4	Hill evergreen Dry dipterocarp	
15	Lansang	Tak	14 May 79	10,400	4.10.4	Dry dipterocarp	

TABLE 1 (con't)

Order in which Established	Name of Park[1/]	Location[2/] (Province)	Date[3/] Established	Area[4/] (ha)	Biogr[5/] Graphical Province	Dominant[6/] Forest Type	Remarks
16	Phu Rua	Loei	26 Jul. 79	12,084	4.10.4	Dry dipterocarp, Grassland	
17	Chaloem Rattanakosin (Tham Than Lot)	Kanchanaburi	12 Feb. 80	5,900	4.5.1	Dry evergreen, Mixed deciduous	
18	Ramkhamhaeng	Sukhothai	27 Oct. 80	34,100	4.10.4	Dry dipterocarp	
19	Sai Yok	Kanchanaburi	27 Oct. 80	50,000	4.5.1	Mixed deciduous	
20	Thaleban	Satun	27 Oct. 80	10,168	4.7.1	Moist evergreen	
21	Mu Ko Ang Thong	Surat Thani	12 Nov. 80	10,200	4.5.1	Forest over limestone	1,800 ha terrestrial 8,400 ha marine
22	Khao Sok	Surat Thani	22 Dec. 80	64,552	4.5.1	Moist evergreen	

TABLE 1 (con't)

Order in which Established	Name of Park[1/]	Location (Province)[2/]	Date Established[3/]	Area (ha)[4/]	Biogeographical Province[5/]	Dominant Forest Type[6/]	Remarks
23	Tat Ton	Chaiyaphum	31 Dec. 80	21,718	4.10.4	Dry dipterocarp	
24	Doi Suthep-Pui	Chiang Mai	14 Apr. 81	26,106	4.10.4	Hill evergreen, Mixed deciduous	
25	Ao Phangnga	Phangnga	29 Apr. 81	40,000	4.5.1	Mangrove	5,300 ha terrestrial 34,700 ha marine
26	Si Satchanalai	Sukhothai	8 May 81	21,320	4.10.4	Mixed deciduous	
27	Khao Sam Lan	Saraburi	2 Jun. 81	4,457	4.5.1	Mixed deciduous	
28	Kaeng Krachan	Phetchaburi, Prachuap Khiri Khan	12 Jun. 81	291,000	4.5.1	Mixed deciduous Semi evergreen	

TABLE 1 (con't)

Order in which Established	Name of Park[1/]	Location (Province)[2/]	Date Established[3/]	Area (ha)[4/]	Biogeographical Province[5/]	Dominant Forest Type[6/]	Remarks
29	Mu Ko Surin	Phangnga	9 July 81	13,500	4.5.1	Moist evergreen	3,300 ha terrestrial 10,200 ha marine
30	Khao Phanom Bencha	Krabi	9 Jul. 81	5,012	4.5.1	Moist evergreen	
31	Hat Nai Yang	Phuket	13 Jul. 81	9,000	4.5.1	Beach forest	2,200 ha terrestrial 6,800 ha marine
32	Mae Ping	Chiang Mai Lamphun, Tak	13 Jul. 81	100,300	4.10.4	Dry dipterocarp	
33	Kaeng Tana	Ubon Ratchathani	13 Jul. 81	8,000	4.10.4	Dry dipterocarp	
34	Khao Laem Ya - Mu Ko Samet	Rayong	1 Oct. 81	13,100	4.5.1	Dry evergreen	800 ha terrestrial 12,300 ha marine

TABLE 1 (con't)

Order in which Established	Name of Park[1/]	Location[2/] (Province)	Date[3/] Established	Area[4/] (ha)	Biogeographical Province[5/]	Dominant[6/] Forest Type	Remarks
35	Wiang Kosai	Phrae, Lampang	9 Oct. 81	41,000	4.10.4	Hill evergreen, Mixed deciduous	
36	Hat Chao Mai	Trang	14 Oct. 81	23,088	4.5.1	Mangrove	9,366 ha terrestrial 13,722 ha marine
37	Namtok Mae Surin	Mae Hong Son	29 Oct. 81	39,660	4.10.4	Dry dipterocarp	
38	Si Nakarin	Kanchanaburi	23 Dec. 81	153,200	4.5.1	Mixed deciduous	
39	Thap Lan	Nakhon Ratchasima Prachin Buri	23 Dec. 81	224,000	4.5.1	Moist and dry evergreen	
40	Ton Krabak Yai	Tak	23 Dec. 81	14,900	4.10.4	Semi evergreen, Mixed deciduous	
41	Pang Sida	Prachin Buri	24 Feb. 82	84,400	4.5.1	Dry evergreen	

TABLE 1 (con't)

Order in which Established	Name of Park[1/]	Location[2/] (Province)	Date[3/] Established	Area[4/] (ha)	Biogeographical Province[5/]	Dominant Forest Type[6/]	Remarks
42	Khao Pu - Khao Ya	Phatthalung, Trang	27 May 82	69,400	4.7.1	Moist evergreen	
43	Mu Ko Similan	Phangnga	1 Sep. 82	12,800	4.5.1	Semi evergreen	1,400 ha terrestrial 11,400 marine
44	Khlong Lan	Kamphaeng Phet	25 Dec. 82	30,000	4.10.4	Semi evergreen, Mixed deciduous	
45	Mu Ko Chang	Trat	31 Dec. 82	65,000	4.5.1	Moist evergreen	19,200 ha terrestrial 45,800 ha marine
46	Laem Son	Ranong, Phangnga	19 Aug. 83	31,500	4.5.1	Moist evergreen	4,800 ha terrestrial 26,700 ha marine
47	Hat Nopharat Thera-Mu Ko Phi-Phi	Krabi	6 Oct. 83	38,996	4.7.1	Mangrove, Beach forest	6,400 ha terrestrial 32,596 ha marine

TABLE 1 (con't)

Order in which Established	Name of Park 1/	Location (Province) 2/	Date Established 3/	Area (ha) 4/	Biogeographical Province 5/	Dominant Forest Type 6/	Remarks
48	Phu Hin Rong Kla	Phitsanulok, Loei	26 Jul. 84	30,700	4.10.4	Hill and dry evergreen	
49	Mu Ko Phetra	Satun	31 Dec. 84	49,438	4.7.1	Moist evergreen	2,600 ha terrestrial 46,838 ha marine
50	Phu Kao - Phu Phan Kham	Udon Thani, Khon Kaen	20 Sep. 85	32,200	4.10.4	Dry dipterocarp	
51	Mae Yom	Phrae, Lampang	1 Mar. 86	45,475	4.10.4	Mixed deciduous	
52	Khao Lam Pi - Hat Thai Muang	Phangnga	14 Apr. 86	7,200	4.7.1	Moist evergreen	Marine park

Source: 1/, 2/, 3/, 4/ NPD, RFD (1986)

5/ From IUCN (1985). First number (4) = Indomalayan Realm; middle number = Biogeographical Province: 5-Indo-chinese Rainforest, 7-Malayan Rainforest, 10-Thailandian Monsoon Forest; final number = Biome Type: 1-Tropical humid forest, 4-Tropical dry or deciduous forest.

6/ From "Questionnaire on Assessment of National Parks and Sanctuaries Development in Thailand" (1986).

TABLE 2 NUMBER AND TOTAL AREA OF NATIONAL PARKS BY REGION.

Region	Regional[1/] Area (ha)	Forest[2/] area (ha)	National Parks[3/]			
			No. of Parks	Total Area (ha)	Percentage of Regional Area	Percentage of Regional Forest
North	16,964,428.96	8,412,600	15	690,569.98	4.07	8.21
Central	6,739,869.92	1,722,800	6	560,056.99	8.31	32.51
East	3,650,249.92	799,023.84	6	190,187.92	5.21	23.81
Northeast	16,885,433.92	2,422,400	8	616,147.93	3.65	25.44
South	7,071,518.38	1,548,500	17	600,662	8.49	38.79
	51,311,501.6	14,905,323.84	52	2,657,624.82	-	-

Source: 1/, 2/ Forest Management Division, RFD (1985).

3/ NPD, RFD (1986).

TABLE 3 AREAS PENDING APPROVAL AS NATIONAL PARKS

No.	Proposed Name[1/]	Location (Province)[2/]	Area (ha)[3/]	Biogeo-graphical Province[4/]	Dominant Forest Type[5/]
1.	Phu Chong Nayoi	Ubon Ratchathani	25,443	4.10.4	Dry evergreen, Mixed deciduous
2.	Si Lanna	Chiang Mai	57,632	4.10.4	Mixed deciduous Dry dipterocarp
3.	Huai Huat	Sakon Nakhon	92,000	4.10.4	*
4.	Khao Laem	Kanchanaburi	56,000	4. 5.1	*
5.	Si Phangnga	Phangnga	48,000	4. 5.1	*
6.	Bang Lang	Yala	54,750	4. 7.1	*
7.	Mae Wong	Kamphaeng Phet	50,000	4.10.4	Mixed deciduous Dry dipterocarp
8.	Su-ngai Padi-Budo	Narathiwat	30,150	4. 7.1	Moist evergreen
9.	Khao Nam Khang	Songkhla	22,000	4. 7.1	*
10.	Khlong Phlao	Chumphon	44,470	4.5.1	*
11.	Doi Luang	Chiang Mai, Phayao, Lampang	51,416	4.10.4	*
12.	Namtok Chat-Trakan	Phitsanulok	49,800	4.10.4	Hiil evergreen
13.	Mukdahan	Mukdahan	4,926	4.10.4	Dry dipterocarp

TABLE 3 (con't)

No.	Proposed Name 1/	Location (Province) 2/	Area (ha) 3/	Biogeo-graphical Province 4/	Dominant Forest Type 5/
14.	Namtok Lam Ru	Phangnga	15,000	4. 5.1	Moist evergreen
15.	Doi Phu Kha	Nan	**	4.10.4	Hill evergreen
		Total	586,587		

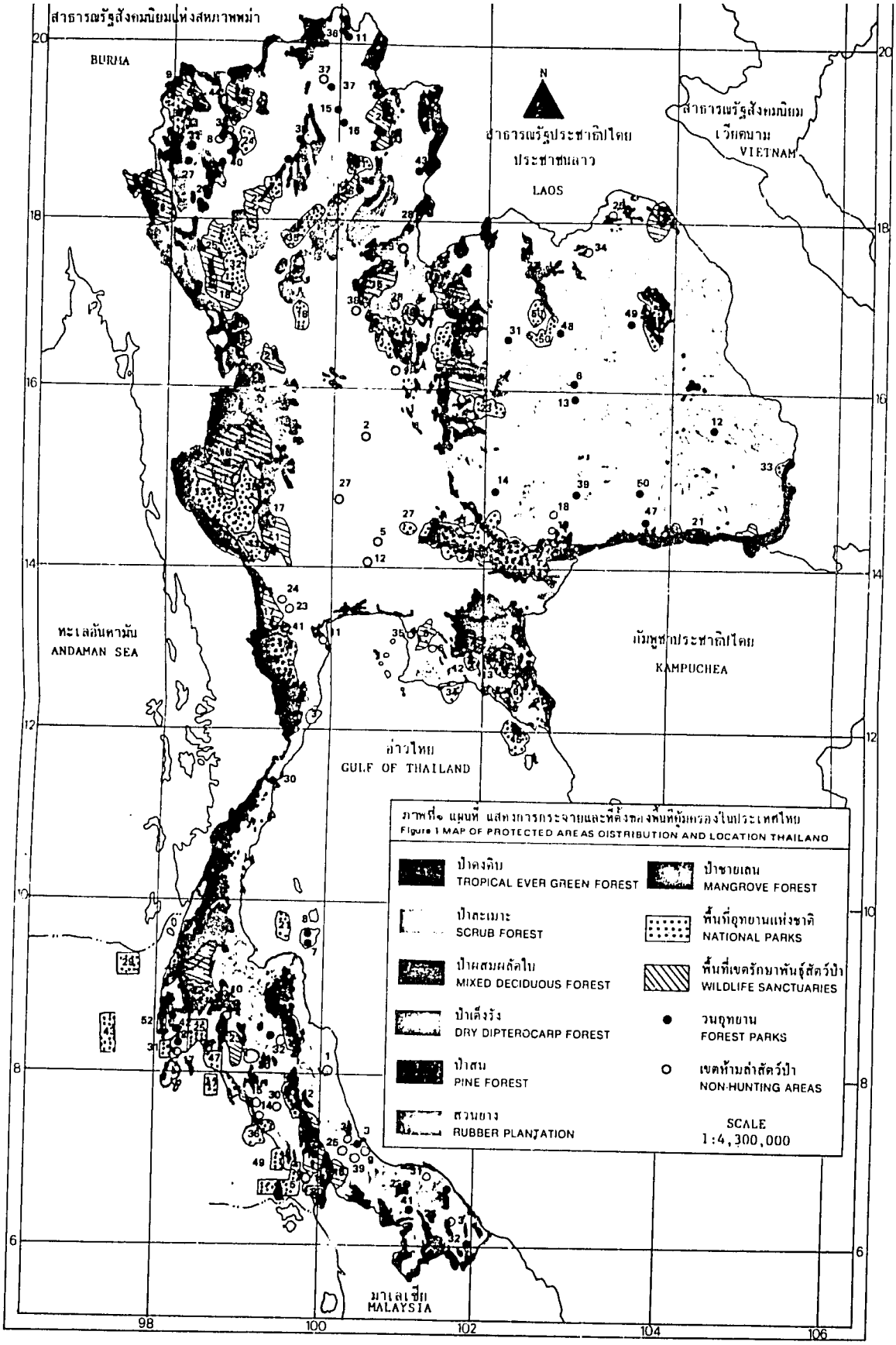
Note : * No information available on forest types

** Boundary not yet determined

SOURCE : 1/, 2/, 3/ NPD, RFD (1986)

4/ from IUCN (1985), see Table 1

5/ from "Questionnaire on Assessment of National Parks and Sanctuaries Development in Thailand" (1986)



ภาพที่ ๑ แผนที่ แสดงการกระจายและที่ตั้งของพื้นที่คุ้มครองในประเทศไทย
Figure 1 MAP OF PROTECTED AREAS DISTRIBUTION AND LOCATION THAILAND

TABLE 4 FOREST PARKS UNDER THE NATIONAL PARKS DIVISION

No.	Name	Province	Year Established	Area(ha)
1.	Namtok Ngao	Ranong	1960	293
2.	Namtok Ton Sai	Phuket	1960	96
3.	Namtok Boriphat	Songkhla	1962	1,750
4.	Namtok Yong	Nakhon Si Thammarat	1967	1,600
5.	Namtok Huai Yang	Prachuap Khiri Khan	1972	944
6.	Kosam Phi	Maha Sarakham	1976	20
7.	Namtok Na Muang	Surat Thani	1977	1.6
8.	Namtok Phaeng	Surat Thani	1977	2,400
9.	Namtok Pha Sua	Mae Hong Son	1980	400
10.	Namtok Cham Pa-Thong	Phayao	1980	192
11.	Namtok Pu Kaeng	Chiang Rai	1980	1,600
12.	Phu Mu	Nakhon Phanom	1980	400
13.	Chi Long	Maha Sarakham	1980	19
14.	Namtok Jed Sao-Noi	Nakhon Ratchasima	1980	80
15.	Pha Klet Nak	Phayao	1980	160
16.	Namtok Phu Sang	Phayao	1980	192
17.	Tham Nam Lot	Mae Hong Son	1980	1,000
18.	Phra Thaen Dong-Rang	Kanchanaburi	1982	1,520
19.	Tham Mae Usu	Tak	1982	3,100
20.	Pranburi	Prachuap Khiri Khan	1982	317
21.	Huai Mae Takrai	Chiang Mai	1982	23,610
22.	Khao Laem Sing	Chanthaburi	1983	1,520

Source : NPD, RFD (1986)

TABLE 5 FOREST PARKS UNDER REGIONAL FOREST OFFICES

No.	Name	Province	Year Established	Areas(ha)
1.	Namtok Sai Khao	Pattani	1954	300
2.	Namtok Ka Po	Chumphon	1958	96
3.	Namtok Than To	Yala	1960	160
4.	Ob Luang	Chiang Mai	1966	6,500
5.	Bo Nam Ron Fang	Chiang Mai	1969	3,104
6.	Ton Sak Yai	Uttaradit	1969	200
7.	Mon Phraya Chae	Lampang	1969	192
8.	Pa Klang Ao	Prachuap Khiri Khan	1974	192
9.	Tham Pha Phuang	Khon Kaen	1974	500
10.	Namtok Chi Po	Narathiwat	1976	100
11.	Nayung-Nam Som	Udon Thani	1976	2,098
12.	Tham Pha Thai	Lampang	1978	372
13.	Wang Kaeo	Lampang	1978	900
14.	Namtck Khun Korn	Chiang Rai	1980	160
15.	Namtok Pong-Phrabat	Chiang Rai	1980	540
16.	Sa Nang Manora	Phangnga	1980	29
17.	Khao Kradong	Buri Ram	1983	1,280
18.	Pong Duat	Chiang Mai	1983	1,600
19.	Namtok Pong Pong	Pattani	1984	248
20.	Namtok Raman	Phangnga	1983	20
21.	Namtok Prasart-Nang Pom Hom	Pattani	1984	400

Source : NPD, RFD (1986)

TABLE 6 FOREST PARKS UNDER PROVINCIAL FOREST OFFICES

No.	Name	Province	Year Established	Area (ha)
1.	Tham Pla	Mae Hong Son	1978	50
2.	Tham Pha Tup	Nan	1978	93
3.	Phae Muang Phi	Phrae	1981	80
4.	Pa Nong Hua Khu	Surin	1982	1,000
5.	Ba Luang	Khon Kaen	1983	192
6.	Phu Phra	Kalasin	1983	10,384
7.	Phanom Sawai	Surin	1984	2,903

Source : NPD, RFD (1986)

TABLE 7 FOREST PARKS ALLOWED TO OPERATE BUT LACKING BUDGET ALLOCATION

No.	Name	Province	Area (ha)
1.	Hat Pak Khlong	Phangnga	40
2.	Khao Pong	Saraburi	96
3.	Phu Khao Kam Pan	Yala	112
4.	Namtok Na Bon	Nakhon Si Thammarat	1,600
5.	Wang Sam Mo	Udon Thani	3,000
6.	Don Chao Pu	Ubon Ratchathani	416
7.	Namtok Phra Mai Phai	Songkhla	8,412
8.	Namtok Tat Thong	Kalasin	5,500
9.	Pa Pung Si Long	Maha Sarakham	27
10.	Mon Hin Lai	Chiang Mai	10,500
11.	Phu Rang Ka	Nakhon Phanom	7,045
12.	Phu Phra Bat Bua Bok	Udon Thani	7,500
13.	Phu Lat Chao Fa	Udon Thani	11,500
14.	Namtok Than Ngam	Udon Thani	12,500
15.	Phu Pha Lek	Sakhon Nakhon	4,800
16.	Namtok Kham Cha-I	Mukdahan	73
17.	Phu Muang	Suphan Buri	276
18.	Thale Song Hong	Trang	1,000
19.	Tham Lom - Tham Wang	Sukhothai	1,800
20.	Ang Manora	Kalasin	200
21.	Tham Phu Nok	Mukdahan	1,020
22.	Pa Hin Ngam	Chaiyaphum	1,000

Source : NPD, RFD (1986)

Under the Fifth Plan, RFD was directed to increase the total coverage of wildlife sanctuaries to 20,480 sq km. They have actually exceeded this, and presently administer 28 sanctuaries totaling 21,638 sq km or 4.22 percent of the country (Table 8). A further five areas of nearly 2,000 sq km have been proposed for inclusion as new sanctuaries (Table 9).

Existing wildlife sanctuaries are spread throughout the country (Table 10). Of the five proposed sanctuaries, two are in the south (1,197 sq km) and one each in the north (160 sq km), central (154 sq km) and northeast (400 sq km) regions. The locations of existing and proposed wildlife sanctuaries are presented in Figure 1.

There presently are 41 non-hunting areas covering a total of 2,958 sq km (Table 11). Most are located in the southern and central/eastern regions (Table 12 and Figure 1).

3.1.3 Other Protected Areas

3.1.3.1 Forest Reserves

Government policy establishing forest reserves was first enacted in 1916, and enabling legislation was promulgated in 1938. However, this legislation proved complicated and unwieldy; from 1938 to 1954 only seven forests, covering 435 sq km, were included in the forest reserve system. To expedite inclusion of more forests the legislation was amended in 1954 and, by 1965, the number of forest reserves increased to 194, covering ca. 30,934 sq km.

In 1964, during the First Five-Year Development Plan (1962-66), the legislation was again revised. According to the First Plan the country was divided into two categories, each allotted approximately half of Thailand's land area. One category included land for agriculture, human habitation, public use and other miscellaneous uses. The second

TABLE 8 LIST OF EXISTING WILDLIFE SANCTUARIES

Order in which Established	Name of Sanctuary[1]	Location[2] (Province)	Date[3] Established	Area[4] (ha)	Biogeographical Province[5]	Dominant[6] Forest Type
1	Salak Phra	Kanchanaburi	31 Dec. 65	35,355	4.5.1	Mixed deciduous
2	Khlong Nakha	Ranong	26 May 72	48,000	4.5.1	Moist evergreen
3	Phu Khieo	Chaiyaphum	26 May 72	156,000	4.10.4	Dry evergreen
4	Khao Soi Dao	Chanthaburi	4 Sep. 72	74,502	4.5.1	Moist evergreen
5	Huai Kha Khaeng	Uthai Thani, Tak	* 1972	257,464	4.5.1	Mixed deciduous Dry dipterocarp
6	Lum Nam Pai	Mae Hong Son	13 Dec. 72	119,400	4.10.1	Hill evergreen Mixed deciduous
7	Thung Yai Naresuan	Kanchanaburi, Tak	24 Apr. 74	320,000	4.5.1	Dry evergreen Mixed deciduous
8	Khao Khiec-Khao Chomphu	Chon Buri	2 Jul. 74	14,470	4.5.1	Mixed deciduous Dry dipterocarp
9	Khlong Saeng	Surat Thani	18 Dec. 74	115,615	4.5.1	Moist evergreen
10	Phu Luang	Loei	18 Dec. 74	84,799	4.10.4	Hill evergreen
11	Phu Wua	Nong Khai	2 May 75	18,650	4.10.4	Mixed deciduous

TABLE 8 (con't)

Order in which Established	Name of Sanctuary[1/]	Location[2/] (Province)	Date[3/] Established	Area[4/] (ha)	Biogeographical Province[5/]	Dominant Forest Type[6/]
12	Khao Banthat	Trang, Phatthalung, Satun	4 Sept. 75	126,699	4.7.1	Semi-evergreen
13	Yot Dom	Ubon Rachathani	11 Oct. 77	20,255	4.10.4	Dry dipterocarp
14	Khao Ang Ru Nai	Chachoengsao	11 Oct. 77	10,810	4.5.1	Dry evergreen
15	Phu Miang-Phu Thong	Uttaradit, Phitsanulok	31 Dec. 77	54,500	4.10.4	Hill evergreen Dry evergreen
16	Ton Nga Chang	Songkhla, Satun	14 July 78	18,200	4.7.1	Moist evergreen
17	Maeram Phachi	Ratchaburi	1 Aug. 78	48,931	4.5.1	Semi-evergreen Dry evergreen
18	Mae Tun	Tak	10 Aug. 78	117,300	4.10.4	Dry dipterocarp
19	Doi Chiang Dao	Chiang Mai	24 Aug. 78	52,100	4.10.4	Hill evergreen Dry evergreen
20	Salawin	Mae Hong Son	24 Aug. 78	87,500	4.10.4	Mixed deciduous Dry dipterocarp
21	Khao Phanom Dong Rak	Si Sa Ket	15 Dec. 78	31,600	4.10.4	Mixed deciduous Dry dipterocarp

TABLE 8 (con't)

Order in which Established	Name of[1/] Sanctuary	Location[2/] (Province)	Date[3/] Established	Area[4/] (ha)	Biogeographical[5/] Province	Dominant[6/] Forest Type
22	Doi Pha Muang	Lamphun, Lampang	16 Jul. 80	56,320	4.10.4	Hill evergreen
23	Khlong Phraya	Krabi	12 Nov. 80	9,500	4.7.1	Moist evergreen
24	Doi Pha Chang	Phayao, Nan	31 Dec. 80	57,675	4.10.4	Hill evergreen
25	Omkoi	Chiang Mai	19 Aug. 83	122,400	4.10.4	Mixed deciduous Dry dipterocarp
26	Doi Luang	Phrae	1 Oct. 84	9,700	4.10.4	Mixed deciduous
27	Khao Sanam Phriang	Kamphaeng Phet	1 Dec. 85	10,100	4.10.4	Mixed deciduous
28	Mae Yuam Fang Khwa	Mae Hong Son	1 Mar. 86	29,200	4.10.4	Mixed deciduous

Note * Day and month established is uncertain.

Source: 1/, 2/, 3/, 4/ WCD, NPD (1986).

6/ IUCN (1985).

5/ "Questionnarie on Assessment of National Parks and Sanctuaries Development in Thailand" (1986); "Directory of Indomalayan Protected Areas: Thailand, IUCN" (1985).

TABLE 9 AREAS PENDING APPROVAL AS WILDLIFE SANCTUARIES

	Proposed Name 1/	Location 2/ (province)	Area 3/ (ha)	Biogeographical Province 4/	Remarks
1	Umphang	Tak	16,000	4.10.4	
2.	Sap Langka	Lop Buri	15,400	4.5.1	There is as yet no
3.	Sadet Nai Kromaluang Chumphon Park	Chumphon	61,300	4.5.1	information on forest types for
4.	Pa Hala - Pa Bala	Narathiwat, Yala	58,400	4.7.1	any proposed
5.	Huai Sala	Si Sa Ket	40,000	4.10.4	sanctuary

Source: 1/, 2/, 3/ WCD, RFD (1986).

4/ IUCN (1985)

TABLE 10 NUMBER AND TOTAL AREA OF WILDLIFE SANCTUARIES BY REGION.

Region	Regional[1/] Area (ha)	Forest[2/] Area (ha)	Wildlife Sanctuaries[3/]			
			No. of Sanctuaries	Total Area (ha)	Percentage of Regional Area	Percentage of Regional Forest
North	16,964,428.96	8,412,600	11	722,590	4.26	8.59
Central	6,739,869.92	1,722,800	5	868,249.98	11.88	50.4
East	3,650,249.92	799,023.84	3	99,782	2.73	12.49
Northeast	16,885,433.92	2,422,400	4	155,304	0.92	6.41
South	7,071,518.88	1,548,500	5	317,924.99	4.49	20.53
	51,311,501.6	14,905,323.84	28	2,163,850.97	-	-

Source: 1/, 2/ Forest Management Division, RFD (1985).

3/ WCD, RFD (1986).

TABLE 11 LIST OF EXISTING NON-HUNTING AREAS

Order in which Established	Name of[1/] Non-Hunting Area	Location[2/] (province)	Date[3/] Established	Area[4/] (ha)	Biogeographical Province
1	Thale Noi	Nakhon Si Thammarat, Phatthalung, Songkhla	29 Apr. 75	45,700	4.7.1
2	Bung Boraphet	Nakhon Sawan	15 Jul. 75	21,280	4.5.1
3	Pa Phru	Narathiwat	11 Nov. 75	16,000	4.7.1
4	Nong Thung Thong	Surat Thani	2 Dec. 75	2,956	4.7.1
5	Wat Tan En	Phra Nakhon Si Ayutthaya	8 Mar. 76	16	4.5.1
6	Ang Kep Nam Bang Phra	Chon Buri	8 Mar. 76	1,856	4.5.1
7	Tham Lawa-Tham Daoadung	Kanchanaburi	8 Mar. 76	4,150	4.5.1
8	Doi Suthep Special Forest Reserve	Chiang Mai	8 Mar. 76	1,750	4.10.4
9	Thale Sap	Songkhla, Phatthalung	8 Mar. 76	36,467	4.7.1
10	Khao Tha Phet	Surat Thani	26 Jul. 77	463	4.7.1
11	Wat Ratsattha Krayaram	Samut Sakhon	13 Sep. 77	8	4.5.1

TABLE 11 (con't)

Order in which Established	Name of[1] Non-Hunting Area	Location[2] (province)	Date[3] Established	Area[4] (ha)	Biogeographical Province
12	Wat Phai Lom - Wat Amphuwararam	Phathum Thani	29 Aug. 78	12	4.5.1
13	Bung Kroeng Kawia-Nong Nam Sap	Kanchanaburi	1 Jan. 79	51,200	4.10.4
14	Mu Ko Libong	Trang	27 Mar. 79	44,750	4.7.1
15	Khao Nam Phrai	Trang	27 Nov. 79	2,080	4.7.1
16	Khao Phra Thaeo	Phuket	8 Jul. 80	2,228	4.5.1
17	Nong Plak Phraya - Khao Raya Bang Sa	Satun	22 Jul. 80	2,043	4.7.1
18	Ang Kep Nam Huai Chorakhe Mak	Buri Ram	22 Jul. 80	620	4.10.4
19	Ang Kep Nam Sanam Bin	Buri Ram	22 Jul. 80	571	4.10.4
20	Ang Kep Nam Huai Talat	Buri Ram	7 Oct. 80	709	4.10.4

TABLE 11 (con't)

Order in which Established	Name of[1] Non-Hunting Area	Location[2] (province)	Date[3] Established	Area[4] (ha)	Biogeographical Province
21	Nong Waeng	Chaiyaphum	7 Oct. 80	17	4.10.4
22	Khao Kradong	Buri Ram	4 Nov. 80	232	4.10.4
23	Tham Rakhang - Khao Phra Non	Ratchaburi	15 Mar. 82	17	4.5.1
24	Tham Khang Khao - Khao Chong Phran - Wat Khao Chong Phran	Ratchaburi	15 Mar. 82	12	4.5.1
25	Pa Krat	Songkhla	9 Nov. 82	412	4.7.1
26	Bung Khong Long	Nong Khai	29 Dec. 82	1,094	4.10.4
27	Bung Chawak	Chai Nat, Suphan Buri	29 Mar. 83	320	4.5.1
28	Tham Pha Tha Phon	Phitsanulok	26 Jul. 83	284	4.10.4
29	Khao Yai-Khao Na Pha Tang-Khao Taphrom	Uttaradit	8 Mar. 84	2,400	4.10.4
30	Khlong Lam Chan	Trang	8 Mar. 84	5,400	4.7.1

TABLE 11 (con't)

Order in which Established	Name of[1/] Non-Hunting Area	Location[2/] (province)	Date[3/] Established	Area[4/] (ha)	Biogeographical Province
31	Pa Rang Kai	Pattani	8 Mar. 84	25	4.7.1
32	Pa Len Pak Phanang - Pa Len Ko Chai - Pa Laem Ta Lum Phuk	Nakhon Si Thammarat	8 Mar. 84	5,673	4.5.1
33	Mae Lao - Mae Sae	Chiang Mai	16 Oct. 84	24,500	4.10.4
34	Nong Hua Khu	Ubon Ratchathani	1 Mar. 85	11	4.10.4
35	Khao Chi On	Chon Buri	12 Mar. 85	368	4.5.1
36	Khao Pa Chang - Laem Kham	Songkhla	21 May 85	23,500	4.7.1
37	Thale Sap Nong Bong Khai	Chiang Rai	6 Jun. 85	434	4.10.4
38	Nong Nam Khao	Phitsanulok	* 1986	58	4.10.4
39	Phru Khang Khao	Songkhla	* 1986	61	4.7.1

TABLE 11 (con't)

Order in which Established	Name of[1/] Non-Hunting Area	Location[2/] (province)	Date[3/] Established	Area[4/] (ha)	Biogeographical Province
40	Khao Kho	Phetchabun	* 1986	1,152	4.10.-
41	Khao Prathap Chang	Ratchaburi	* 1986	203	4.5.1

Note: * Day and month established is uncertain.

Source: 1/, 2/, 3/, 4/ WCD, RFD (1986).

5/ IUCN 1985).

TABLE 12 NUMBER AND TOTAL AREA OF NON-HUNTING AREAS BY REGION.

Region	Regional[1/] Area (ha)	Forest[2/] Area (ha)	Non-hunting Areas[3/]			
			Number of Areas	Total Area (ha)	Percentage of Regional Area	Percentage of Regional Forest
North	16,964,428.96	8,412,600	8	51,858	0.31	0.62
Central	6,739,869.92	1,722,800	9	55,938	0.83	3.25
East	3,650,249.92	799,023.84	2	2,224	0.06	0.28
Northeast	16,885,433.92	2,422,400	7	3,254	0.02	0.13
South	7,071,518.88	1,548,500	15	187,757.98	2.66	12.13
	51,311,501.6	14,905,323.84	41	301,031.98	-	-

Sources: 1/, 2/ Forest Management Division, RFD (1985).

3/ WCD, RFD (1986).

category included permanent forest land (i.e. land to be included as forest reserves) totaling ca. 160 million rai. But as of 1964 only 12.35 percent of the target for forest reserves had been reached.

In 1981 the National Rural Development Committee, chaired by the Prime Minister, recommended a policy whereby villagers already settled in existing forest reserves would be granted permission to stay on the land without receiving land tenure. This policy was adopted in a Cabinet directive of 22 June 1982, and RFD was subsequently ordered to inventory all of the country's remaining forests and include them in the forest reserve system by 1985. The number and coverage of forest reserves as of July 1986 are presented as Table 13.

3.1.3.2 Botanical Gardens and Arboretums

These are under administration of RFD's Silviculture Division and serve dual functions as sites for plant collections and as recreational areas for the general public. The two designations differ primarily in that botanical gardens are a repository for both native and exotic species while arboretums hold rare and economically useful plants native to the region in which the arboretum is located. Thailand has five botanical gardens totaling 10 sq km (Table 14) and 42 arboretums totaling 32.5 sq km (Table 15).

3.1.3.3 Biosphere Reserves

Presently there are three biosphere reserves in Thailand. Locations, dates of establishment and other details are presented as Table 16.

TABLE 13 TOTAL AREA OF EXISTING AND PENDING FOREST RESERVES BY REGION AS OF 3 JULY 1986.

Region	Existing Forest Reserves		Pending Forest Reserves	
	No. of Forests	Area (ha)	No. of Forests	Area (ha)
North	220	9,327,876	14	923,214
Central	162	4,650,165	8	151,214
Northeast	334	5,358,238	34	935,286
South	461	2,703,073	17	159,020
Total	1,177	22,039,352	73	2,168,734

Source: NFLMD, RFD (1986).

TABLE 14 LIST OF BOTANICAL GARDENS

No.	Name	Province	Area (ha)
1	Northern Region Botanical Garden (Mae Sa)	Chiang Mai	320
2	Central Region Botanical Garden (Pu Kae)	Saraburi	296
3	Eastern Region Botanical Garden (Kao Hin Son)	Chachoengsao	64
4	Western Region Botanical Garden (Bhudha Monthon)	Nakhon Pathom	160
5	Southern Region Botanical Garden (Khao Chong)	Trang	160

Source: Silviculture Division, RFD (1986).

TABLE 15 LIST OF ARBORETUMS

No.	Name	Province	Area (ha)
	Northern Region		
1	Huai Chomphu	Mae Hong Son	192
2	Huai Kaeo	Chiang Mai	8
3	Cho Hae	Phrae	8
4	Saku Nothayan	Phitsanulok	160
5	Muang Kao	Sukothai	16
6	Huai Sai Khao	Phrae	48
7	Pong Sali	Chiang Rai	100
8	Huai Thak	Lampang	8
9	Huai Rong	Phrae	15.2
10	Phra Thatu Chae Haeng	Nan	11.5
11	Pha Muang	Phetchabun	192
12	Sap Chomphu	Phetchabun	24
13	Pong Khae	Mae Hong Son	160
14	Huai Nam Un	Nan	100
15	Mae Surin	Mae Hong Son	160
	Northeastern Region		
1	Phru Yai	Nakhon Ratchasima	24
2	Khao Chakan	Prachin Buri	48
3	Ubon Wanarom	Ubon Ratchathani	4
4	Phutha Monthon	Maha Sarakham	144.3
5	Phon Sai	Roi Et	16
6	Don Hua Nak	Roi Et	32
7	Dong Baki	Mukdahan	16

TABLE 15 (con't)

No.	Name	Province	Area (ha)
8	Wang Po Phon	Nakhon Phanom	40
9	Dong Fa Hon	Ubon Ratchathani	560
10	Tha Song Khon	Maha Sarakham	1.6
	Central & Eastern Region		
1	Khai Bang Rachan	Sing Buri	9.6
2	Don Chedi	Suphan Buri	8
3	Tham Chomphon	Ratchaburi	8
4	Huai Yang	Prachuap Khiri Khan	8
5	Muak Lek	Saraburi	16
6	Phe	Rayong	100
7	Kanchana Kumar	Phichit	32
8	Khu Muang	Sing Buri	80
9	Somdet Phra Bin Klao	Chachoengsao	32
10	Nong Sanom	Rayong	48.5
11	Wang Kan Luang	Lop Buri	300
12	Kamphaeng Saen	Nakhon Pathom	80
13	Cha-am	Pethchaburi	100
	Southern Region		
1	Than Bokkharani	Krabi	80
2	Rak Sawarin	Ranong	80
3	Tham Khao Nui	Songkhla	16
4	Phutthathong	Surat Thani	160

Source : Silviculture Division, RFD (1986).

TABLE 16 LIST OF BIOSPHERE RESERVES

No.	Name	Province	Date Established	Area (ha)	Biogeographical province	Forest Type
1	Sakaerat	Nakhon Ratchasima	1976	7,200.00	4.10.4	Dry evergreen Dry dipterocrap
2	Huai Thak	Lampang	1977	4,700.00	4.10.4	Dry dipterocrap Mixed deciduous Dry evergreen
3	Mae Sa - Kok Ma	Chiang Mai	1977	14,200.00	4.10.4	Dry dipterocrap Mixed deciduous Pine

Source : "Directory of Indomalayan Protected Areas : Thailand" IUCN, 1985

3.2 Trends in Utilization of Protected Areas

3.2.1 Protection of the Environment and Living Resources

A major objective for both WCD and NPD is protection of the natural environment, which is accomplished mainly through law enforcement. The two divisions have traditionally responded to increased illegal exploitation of protected areas by augmenting the number of guards and guard stations.

All protection operations at individual parks and sanctuaries are directed by a law enforcement section under authority of the superintendent. The sections are in turn supported by the law enforcement (in WCD) and national park management (in NPD) subivisions in Bangkok under ultimate supervision of the division director (see 3.3). In addition, police officers and regional forest officers are nominally responsible for enforcing protected areas legislation, though this is rather uncommon in practice.

Guards and their immediate supervisors are primarily responsible for carrying out law enforcement directives. Generally speaking, patrols are not run on regular schedules nor are patrolling routes established, though there are exceptions. Rather, guards tend to patrol most often following reports of poaching/encroachment in a specific area. (For further discussion see 4.3)

Conservation education also plays a role in protection of Thailand's parks and sanctuaries, particularly when directed at nearby villagers. Khao Yai N.P. has established an "out-reach" program to educate rural people about the importance of protected area conservation, and WCD has established Nature Education Centers. In addition, Wildlife Fund Thailand has received WWF (International) support for a mobile information unit. But on the whole,conservation education has thus far played a minor role in protection strategy.

Another WCD activity which is not normally regarded as in the realm of protection, but which has been established for this purpose, is wildlife breeding in captivity. With FAO assistance, WCD has established a captive breeding program at Khao Soi Dao. They hope to show that captive breeding of native wildlife can be an economically viable operation in Thailand and thus reduce hunting pressure in protected areas by encouraging private agencies to meet the market demand for venison and other wildlife products. WCD is also pushing for amendment of WARPA to allow marketing of captive bred native species.

WCD also administers CITES, but deals only with fauna; the export of plant species listed under CITES is regulated by the Department of Agriculture. The Foreign Relations sub-division within WCD was created in 1984 specifically to review export permit requests and is assisted by the Law Enforcement and Technical sub-divisions. Although Thailand's accession to CITES has undoubtedly resulted in a reduction of exports of endangered species from Thailand, a deficiency in manpower and training (i.e.species identification) allows considerable illegal trade to continue. Of equal concern, Thai law does not prohibit import or in-country trade of CITES-listed species. As a result, species listed in the CITES Appendices are openly sold in Bangkok and other cities; WCD is powerless to halt such trade.

Some attention has recently been given to encouraging rural development in villages near parks and sanctuaries. The idea is to address rural poverty as one major reason for illegal use of protected areas and to encourage programs that will make significant progress in relieving poverty, thus negating the villagers' need to exploit protected area resources. This approach is still in infancy, but two notable programs have been established, one at Phu Khieo W.S. and one at Khao Yai N.P. These are discussed further in 4.7 .

3.2.2 Research and Education

No statistics are available on the volume of use protected areas receive from researchers. However, it is evident that national parks, wildlife sanctuaries and non-hunting areas are attracting increasing numbers of scientists and students representing a wide range of disciplines. Universities, colleges and research agencies, both in Thailand and from abroad, rely on protected areas to gather important information that cannot be readily found elsewhere. Approximately 20 Thai protected areas have served as sites for major research efforts, some of which could have tangible, near-term impacts on Thailand's socioeconomic development. Research has included the fields of medicine, socioeconomics, ecology, biology, culture and others.

Within recent years worldwide interest has begun to focus on the pressing need to expand research efforts in the tropics and subtropics, especially in areas with minimal human disturbance. Therefore, Thailand's protected areas can be expected to attract increasingly more research programs with national and international implications.

Unfortunately NPD and WCD have expended relatively little effort to encourage and/or coordinate research activities; the National Park Act, in fact, regards many types of otherwise legitimate research activities as harmful to park objectives. There are indications that the two divisions may be attempting to correct this situation. For instance, WCD has requested international assistance to establish a research and training center at Huai Kha Khaeng W.S., and Khao Yai N.P. has requested government permission to place a research officer at the park to coordinate research projects.

Use of protected areas as educational sites has also been increasing. Nearly all parks with convenient access are used by universities and schools for educational purposes. NGOs offer educational-cum-recreational excursions to parks, sanctuaries, and non-hunting areas. Paradoxically, virtually no protected area offers adequate educational

programs to meet this demand. A few partial exceptions are WCD's Nature Education Centers and a handful of national parks, but even these fall short of reaching their potentials. There appears to be a growing concern by park visitors about the paucity of educational programs, and this concern will assuredly grow as tourism increases.

3.2.3 Recreation and Tourism

Table 17 and Figure 2 display the volume of visitation to national parks and forest parks during a ten-year period, 1976-85. Visitation to national parks has increased substantially over the past decade, from 1.08 million in 1976 to 4.05 million in 1985 for a jump of nearly 400 percent. This increase has not been gradual. The number of visits actually decreased by seven percent in 1980 compared with the previous year and again by five percent in 1984, while large increases were recorded in 1978 (27 percent), 1979 (20 percent), 1981 (21 percent), and 1982 (33 percent). The major reasons for this recorded uneven growth are: (i) lack of systematic data collection among parks; (ii) failure of some parks to report visitation for certain months, or in some cases, the entire year; (iii) varying economic conditions such as high or low fuel prices, cost of living, etc.; and (iv) sudden increases in the number of parks and subsequent tourism development.

Non-hunting areas do not keep statistics on visitation although many do receive a substantial number of visitors, particularly local people, due to non-hunting areas' locations near population centers.

As mentioned previously, general visitation to wildlife sanctuaries is proscribed by WARPA. In practice, however, some visits are allowed under close supervision of sanctuary personnel, though these are very limited in comparison with parks and non-hunting areas. Nonetheless, there has been an increasing demand by the public for expanded recreational and tourism use because of numerous natural attractions found at many sanctuaries.

TABLE 17 VISITOR STATISTICS FOR NATIONAL PARKS AND FOREST PARKS, 1976-1985 *

Year	National Parks	Forest Parks
1976	1,082,063	-
1977	1,229,430	-
1978	1,689,578	-
1979	2,120,299	-
1980	1,982,082	-
1981	2,494,831	727,456
1982	3,723,694	1,260,934
1983	4,199,788	1,551,496
1984	3,979,494	1,268,542
1985	4,050,313	1,130,414

Note : * Actual visitation figures are higher than given due to incomplete compilation by certain parks.

Source : NPD, RFD (1986)

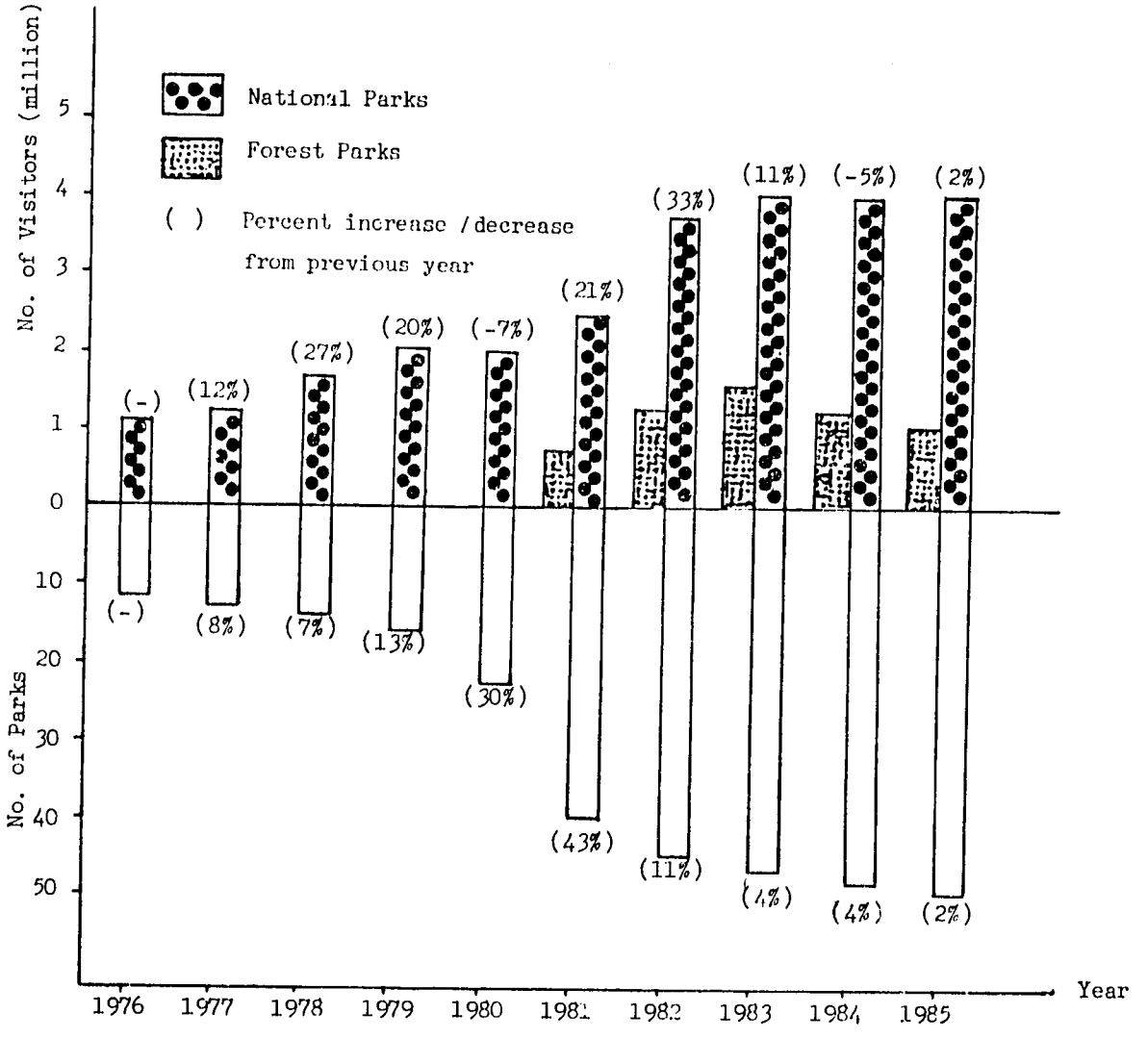


FIGURE 2: VISITOR STATISTICS FOR NATIONAL PARKS AND FOREST PARKS COMPARED TO INCREASES IN THE NUMBER OF PARKS, 1976-1985

Tourist profiles and use patterns have not been adequately studied, but there have been on-site surveys at three popular parks: Khao Yai (Chompradit and Chettamart, 1985), Phu Kradung (Prompitak and Chettamart, 1985) and Doi Suthep-Pui (Wirularat, 1983). A strong pattern has emerged from these studies. The average park visitor is equally likely to be male or female; is young and unmarried; is either a student, a civil servant or engaged in business; has a level of schooling higher than the national average; and resides in a large community or city. About half of those surveyed were Bangkok residents. Most visitors come in large groups of 10 or more and tend to travel in "friendship groups" or in mixed "friend/family groups" and participate in park activities as a group, not individually. Park activities that are most popular include visiting view points and other areas of aesthetic beauty, forest hiking and camping. More on-site surveys will be needed before firm conclusions can be drawn from these initial studies, and there will undoubtedly be some variation among parks depending on their respective attractions, visitor service development and overall level of park management.

Provision for recreation and tourism at Thailand's protected areas (except wildlife sanctuaries) has been an important consideration since the system was established. The increase in tourism is expected to continue at a significant rate and will be fueled by growth of large communities and cities; industrial development; improved communication routes; and expansion of tourist facilities at protected areas. The Tourism Authority of Thailand (TAT) has recognized the important role protected areas will play in development of Thailand's tourism industry. TAT recently budgeted 4.95 million baht to assist NPD in improving the recreation and tourism infrastructure of selected parks.

3.2.4 Other Uses

3.2.4.1 Legal Uses

Besides uses traditionally associated with parks and sanctuaries such as those already discussed, Thailand's protected areas are utilized in a variety of other ways. Because of their unique legislative status, non-hunting areas allow such economic activities as freshwater fishing and timber extraction. Many national parks contain autonomous or semi-autonomous institutions within their boundaries. For instance, Doi Suthep-Pui N.P. contains several government offices, a royal palace, a large temple, over 50 shops and private living quarters, and two hill-tribe villages. Reservoirs and military installations are located in sanctuaries and parks.

The demand on parks and sanctuaries for uses unrelated to protected area objectives has been growing during the past few years. This trend is expected to continue as indicated by the increasing volume of requests presented to RFD by outside agencies.

3.2.4.2 Illegal Uses

Illegal uses occur throughout the protected areas system; the question is one of degree, not of presence or absence. There is scant information concerning the level of illegal exploitation from encroachment, logging, hunting and so forth. The number of reported arrests and convictions is of limited value because the numbers that go unreported are undoubtedly higher by several orders of magnitude. Data collection to indicate resources deterioration would be of much greater value, but this information is lacking.

There seems to be general agreement among professionals that illegal exploitation of natural resources has increased during the past 25 years, though the majority of protected area lands remain relatively

intact due to law enforcement efforts. However, it is thought that several important protected areas are facing serious deterioration or loss of resources due to illegal exploitation, and this pressure is certain to increase. Thailand's population is projected to reach 75 million by the year 2000 compared to the present 52 million. This will spur greater pressures on protected areas even as the present and coming generations are filled with the increasing material expectations that Thailand's emerging industrialization will bring.

People who benefit from illegal use of protected areas represent the entire social spectrum and include wealthy businessmen, politicians and government officials as well as hilltribes, landless Thais and local villagers. Illegal activities are often a collaborative effort among rich and poor, such as a business executive paying a villager to collect orchids or timber. But poor villagers who live in the vicinity of protected areas, landless Thais and hilltribes may be responsible for a large (perhaps the largest) proportion of illegal activities because of economic necessity and lack of alternative income sources.

3.2.5 Benefits from Protected Areas

The benefits gained by Thailand through conservation of protected areas are considerable. IUCN (1985) has prepared a list of benefits that protected areas can provide. This list is fully applicable to the situation in Thailand.

1) Natural balance of the environment
2) Stabilization of hydrological functions
3) Protection of soils
4) Stability of climate
5) Protection of genetic resources

6) Preservation of breeding stocks and population reservoirs
7) Conservation of renewable harvestable resources
8) Promotion of tourism
9) Creation of employment opportunities
10) Provision of research facilities
11) Provision of educational facilities
12) Provision of recreational facilities
13) Maintenance of high quality living environment
14) Advantages of special treatment
15) Preservation of traditional and cultural values
16) Regional pride and heritage value

These benefits affect the people of Thailand at all social levels but to differing degrees and in different ways. Some of the benefits have already been fully realized from individual protected areas. Some await new policies, improved management and sufficient development budgets before their full impacts will be felt. Nonetheless, the accumulative effects of these benefits, both actual and potential, are enormous and will increase as Thailand becomes further industrialized. Very little consideration, however, has been given to evaluating these benefits and determining what can be done to maximize them.

An emerging topic of concern is how to bring tangible benefits from protected areas to villagers who live near, and who are most affected by, protected areas. Two projects have recently begun to address this issue. As part of a "Rural Development for Conservation" pilot project at Khao Yai N.P., villagers are given good wages to serve as guides and porters for tourists who take extended treks through the park; the tourists are encouraged to make donations to the village as well. This supplements a multi-faceted effort to improve village living standards while enhancing park conservation (Appendix). At Phu Khieo W.S. sanctuary officials are cooperating with a Royal Project to more fully incorporate the development needs of surrounding villagers into sanctuary management.

3.3 Administration and Management

3.3.1 National Parks and Forest Parks

3.3.1.1 Administrative Infrastructure and Responsibilities

National park operations are overseen by the National Parks Committee Which includes representatives from:

- Ministry of Defense
- Budget Bureau
- TAT
- Fisheries Department
- Royal Irrigation Department
- Mineral Resources Department
- ONEB
- Faculty of Forestry, Kasetsart University
- National Parks Division
- Local Administration
- Permanent Secretary, Ministry of Agriculture and Cooperatives
- Land Department
- RFD
- Mr. Pong Leng-EE (specified by name)
- Legal advisor

NPD contains seven sub-divisions with the following main responsibilities (Figure 3):

a) Administration: administrative affairs

b) Technical: (i) survey and study terrestrial and marine ecosystems; (ii) survey and study historical sites; (iii) study environmental effects of park establishment; (iv) collect scientific information and statistics.

c) National Park Management: (i) survey and collect information pertaining to establishment of proposed parks; (ii) law enforcement; (iii) permits for use of park lands; (iv) establish and maintain regulations concerning park management.

d) Forest Park Management: (i) survey areas for establishment as forest parks; (ii) oversee regulations pertaining to forest parks; (iii) law enforcement.

e) Extension: prepare and distribute information about the importance of national parks and forest parks to the public.

f) Planning : establish policies and plans for national parks and forest parks management and monitor their implementation.

g) Construction and Maintenance: develop construction plans and construct/maintain structures at national parks and forest parks.

The extension, planning, and construction and maintenance sub-divisions were recently established through an internal RFD directive. They are not yet officially recognized by the Civil Service Board.

Individual national parks are headed by a superintendent who receives direction from the central office. National parks do not have a systematic administrative infrastructure, but most have established administrative sections (e.g. law enforcement, administration, construction and maintenance, etc.). The number of sections at each park depends on the number of park personnel and the amount of work for which the park is responsible; none of these sections have received official recognition. All major administrative and managerial decisions for each national park are either made or approved directly by the NPD director.

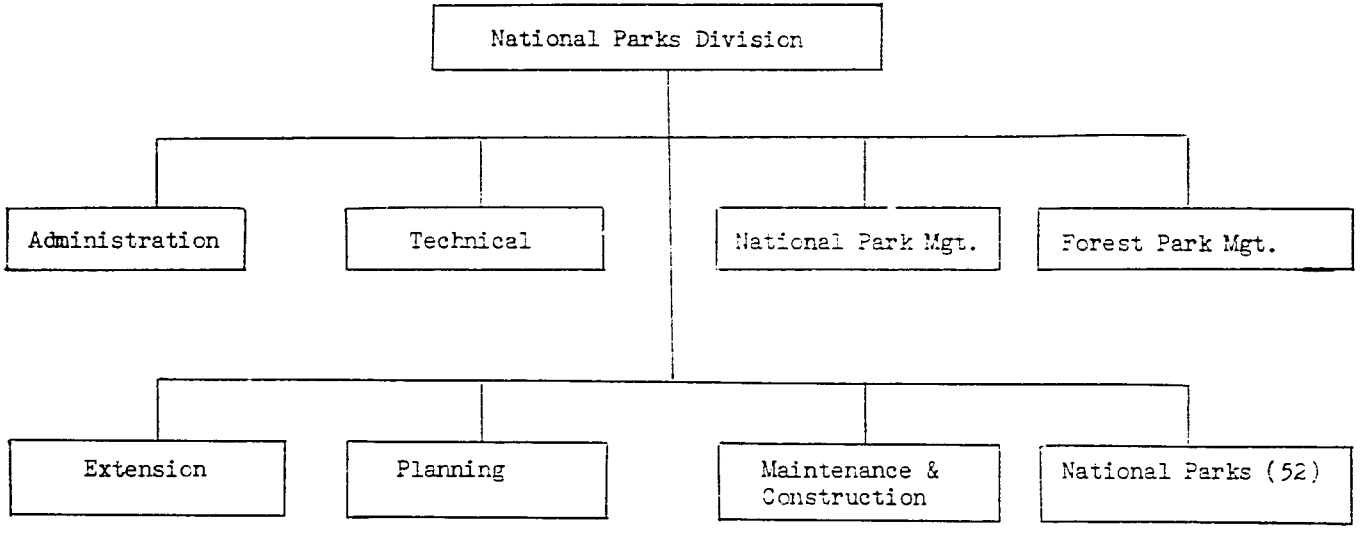


FIGURE 3 ADMINISTRATIVE DIVISIONS WITHIN THE NPD

Source : NPD, RFD (1986)

3.3.1.2 Personnel

Permanent NPD personnel can be divided into three major groups according to educational background: (i) university graduates; (ii) technical school certificate holders or equivalent; and (iii) lower than technical school certificate holders (Table 18). NPD personnel who have received university diplomas number 128, the majority of whom studied forestry. Of the 128 university graduates, one person holds a Ph.D., 18 hold M.Sc. degrees and the remainder hold B.Sc. degrees. Three officials have participated in post-graduate degree programs in park management and wildlife management from abroad. Ten officials have received a B.Sc. in outdoor recreation or wildlife management from Kasetsart University.

Eighty-seven officials have received technical school diplomas or equivalent. Of these, 69 are graduates of Phrae Forestry School and are considered forest technicians. Most of the remaining 19 officials have certificates in vocational fields and serve in administration.

The final category includes 539 officials, most of whom have not graduated from high school. Of these, 414 are forest guards who have undergone law enforcement training given by NPD. The remaining 125 officials include drivers, radio operators and the like.

The NPD director is ultimately responsible for all division activities and holds a C-8 civil service rank. Sub-division chiefs hold a C-7 rank except for chief of the administration sub-division who is C-5. Park superintendents range from C-4 to C-7. Superintendents with higher ranks are placed at large or important parks. Due to a shortage of university graduates, several park superintendents are forest technicians with previous experience serving at other parks. Superintendents of forest parks are usually forest technicians; some forest parks do not have civil servants permanently stationed but rely on supervision from superintendents of nearby parks.

TABLE 18 EDUCATIONAL BACKGROUNDS OF NPD STAFF, 1986.

Educational Level	Total No.	%	Staff Categories					
			Forestry Technical Officers	Other Technical Officers	Forest Technicians	Administration	Guards	Workers
University degree	128	(13%)	121	7	-	-	-	-
- Ph.D.	1	(0.1%)						
- M.Sc.	18	(2%)						
- B.Sc.	109	(11%)						
Certificates	88	(9%)	-	-	69	19	-	-
- Phrae Forestry School	69	(7%)						
- Others	19	(2%)						
Lower than certificate	539	(56%)	-	-	-	-	414	125

Source: NPD, RFD (1986).

The number of personnel at individual parks depends on such factors as park size, number of tourists and size of work load. Of the 62 parks (existing and proposed) which returned survey forms, there was reported a total of 164 civil servants and 412 permanent employees (not including civil servants) for a total of 576 permanent park officers. From these figures, the ratio of total park land to civil servants is 51 sq km/1.

Parks also hire daily-paid workers. Each guard station is allowed 10 daily-paid workers, or no more than 30 stationed at headquarters if the park has no guard stations. These employees are generally recruited from local villages and perform law enforcement or general tasks such as maintenance. In 1985 there was a total of 3,243 daily-paid workers throughout the park system.

3.3.1.3 Budget

The annual NPD budgets for 1982-86 received from the government and NPD budget allocations are presented as Table 19. The NPD budget increased 80 percent during this period, from 70 million baht in 1982 to 125 million baht in 1986. A forty percent increase occurred in the first year, but the increases dropped to 14, 8 and 4 percent in 1984, 1985 and 1986, respectively. The large increases occurred during the period of rapid expansion of the park system. More than half the entire budget during these five years went to paying employees' salaries. The budget allocated for durables, land and construction decreased during this period.

NPD budget allocations to individual national parks (Table 20) has increased from 30.5 million baht in 1982 to 57.6 million baht in 1986, or nearly 90 percent. The pattern of increases paralleled that of NPD's budget increases. But interestingly, the allocation dropped by nearly 2 million baht in 1986 when compared with the previous year. Budget allocations to national parks ranged from 43 percent of NPD's total budget in 1983 to 49 percent of the total in 1985 for a

TABLE 19 NPD BUDGET ALLOCATIONS FOR VARIOUS EXPENDITURE CATEGORIES, 1982-86

(unit - baht)

	Fiscal Year				
	1982	1983	1984	1985	1986
Total Budget	70,146,600	98,565,100	112,360,000	121,501,200	125,448,500
Civil Servant & Permanent Worker Salaries	-	-	19,047,100 (17%)	23,583,500 (20%)	25,055,600 (20%)
Seasonal Worker Salaries	-	-	37,922,200 (34%)	44,962,200 (37%)	46,602,000 (37%)
Per Diem, Expendables, etc.	-	-	17,611,200 (16%)	20,683,700 (17%)	22,369,700 (18%)
Utilities, Postage, etc.	-	-	263,800 (-)	263,800 (-)	263,800 (-)
Durables, Land & Construction	-	-	37,294,700 (33%)	31,827,000 (26%)	30,976,400 (25%)
IUCN Membership Fees	-	-	221,000 (-)	181,000 (-)	181,000 (-)

Source: NPD, RFD (1986).

five-year average of 46 percent. The baht per ha ratio in 1986 was 21.67:1, excluding salaries and durables/ construction materials.

National parks also derive an income from entrance fees, bungalow rental and fines, as shown in Table 21. This income has increased from 8.7 million baht in 1982 to 15.9 million baht in 1985 and is used by NPD for national park related business of various kinds.

3.3.1.4 Status of Parks Development

a) Headquarters and guard stations

All existing national parks have permanent headquarters. Most proposed national parks and existing forest parks do not have permanent headquarters. Housing and other buildings for official and tourist use around headquarters are generally much fewer than the demand warrants especially at popular national parks.

As for guard stations, NPD has established only one quarter of their stated goal for the number of guard stations in the park system. The same is true concerning housing for park guards. These deficiencies are aggravating the mounting problems of protecting parks from encroachment and poaching. Table 22 presents a comparison of NPD's established goals and the actual numbers of headquarters and guard stations.

b) Materials

This includes vehicles, weapons, radios, etc., used in park protection. The amount of materials varies from park to park depending on the intensity of encroachment and hunting and the park's size. Generally, most parks still lack adequate supplies of essential materials.

TABLE 20 NPD BUDGET ALLOCATIONS TO NATIONAL PARKS AS A PROPORTION OF NPD's TOTAL BUDGET, 1982-86.

Unit : Baht

	Fiscal Year				
	1982	1983	1984	1985	1986
Total NPD Budget	70,146,600	98,565,100	112,360,000	121,501,200	125,448,500
Budget Allocated to Parks*	30,471,690	42,366,728	53,359,350	59,498,300	57,600,790
% of Total Budget	43.5	43.0	47.5	48.9	45.9

Note: *Does not include salaries and durables/construction materials.

Source: NPD, RFD (1986).

TABLE 21 NPD INCOME DERIVED OUTSIDE OF ANNUAL GOVERNMENT ALLOCATIONS, 1982-85.

Unit : Baht

	Fiscal Year			
	1982	1983	1984	1985
Entrance Fees	-	6,440,947	7,205,126	7,649,982
Accommodation Rental	-	7,389,260	6,458,200	7,178,394
Fines	-	210,850	237,110	294,145
Donations and Others	-	121,102	449,890	768,043
Total	8,710,185	14,162,159	14,350,326	15,890,564

Sources: NPD, RFD (1986).

c) Communications and utilities

This deals with roads, trails, telephones, electricity and water supply. Nearly all parks have reasonably good access and all important parks can be reached by metalled roads. As concerns internal road systems, more than half the parks reported the presence of metalled roads, but these merely link headquarters with highways outside the park. Otherwise roads are gravel or dirt, presenting problems for park patrols and tourists especially during the rainy season. Most park trails are those used by animals and/or villagers; very few trails have been developed for use by tourists and park patrols.

Nearly all national parks have electricity provided either by on-site generators or by regional generating plants. Most parks do not have telephone service for internal or external communication.

The water supply in most parks comes from rain water and streams. Water supply is a serious problem in many parks.

d) Visitor services

Most popular parks provide a certain level of visitor facilities some that are fully adequate to meet demand and some that are inadequate. Most parks however do not yet possess visitor facilities and services of sufficient quality (Table 23). Certain parks encourage the public to assist in offering visitor services, but these are generally very small operations run by local people.

e) Nature education and interpretation

Nature education is very primitive or absent in national parks. This is due mainly to small budget allocations, paucity of trained or experienced officials and a lack of interest on the part of high-ranking officials. Only 18 parks have visitor centers and few of these offer such items as slide programs, park news bulletins, etc.

TABLE 22 COMPARISON OF ACTUAL VS RECOMMENDED NUMBERS OF VARIOUS PARK STRUCTURES

National Parks (56)	NPD Recommended Standards Per Park 1/	Total NPD Recommended Number for All Parks 1/	Actual Number 2/
Headquarters	1	56	50 (89%)
Civil servant housing	6	336	170 (51%)
Worker housing (family)	30	1,680	275 (16%)
Garage/storage	1	56	29 (52%)
Forest Parks (50)			
Headquarters	1	50	8 (16%)
Civil servant housing	2	100	1 (1%)
Worker housing (family)	12	600	41 (7%)
Guard Stations			
Headquarters	1	464	120 (26%)
Civil servant housing	1	464	46 (10%)
Worker housing (family)	11	5,104	126 (2%)

Source: 1/ NPD, RFD (1981).

2/ Project questionaire (1986) and NPD, RFD (1986).

TABLE 23 VISITOR SERVICES AT NATIONAL PARKS

		Accommodation (capacity per park)					Other Services										Interpretive Services			
		Bungalow	Dormitories	Large Tents	Camps	Small Tents (rented)	Tenting Areas	Restaurants (total capacity)	Souvenir Shops (No. of shops)	General Stores (No. of stores)	Picnic Tables (No. of tables)	Viewpoints (No. of places)	Ports (No. of places)	Parking Areas (No. of places)	Visitor Centers	Nature Trails	Information Signs	Slide Programs	Outdoor Presentation Platforms	Group Activities
1	Khao Yai	236	-	-	340	-	1,200	450	1	-	6	3	-	6	/	/	/	/	/	/
2	Phu Kradung	110	120	*	*	*	*	-	2	1	1	7	-	2	/	-	/	/	-	-
3	Thung Saleang Luang	95	-	40	120	60	-	160	-	-	5	2	-	1	/	/	/	-	-	-
4	Khao Sam Roi Yot	116	-	25	-	100	-	*	-	-	3	5	1	2	-	/	/	-	/	/
5	Nam Nao	245	-	25	-	290	300	60	-	1	-	4	-	1	-	/	/	/	-	/
6	Doi Inthanon	60	-	20	-	-	*	-	-	-	13	-	-	3	-	/	/	-	-	-
7	Phu Phan	-	50	25	-	-	*	-	-	-	2	3	-	1	-	-	-	/	/	-
8	Tarutao	48	164	-	-	*	*	300	1	2	2	2	4	-	/	/	/	/	-	-
9	Khao Luang	28	-	60	-	100	*	-	-	-	-	2	-	-	/	/	/	/	-	-
10	Doi Khuntan	100	-	-	-	100	40	60	-	1	-	5	-	1	-	/	/	-	-	-
11	Namtok Phliu	24	-	-	70	-	-	-	-	1	6	2	-	1	/	/	/	-	-	-
12	Erawan	156	-	25	90	-	200	416	2	1	15	1	1	2	-	/	/	-	-	/
13	Khao Charao-Khao Wong	80	80	-	80	60	-	400	-	-	-	1	-	2	-	/	/	-	-	-
14	Khao Khitchakut	75	-	-	40	20	20	65	-	-	-	3	-	2	-	/	/	-	-	-
15	Lanang	40	-	-	-	50	-	50	-	-	-	-	-	2	-	/	/	-	-	-
16	Phu Rua	40	-	20	50	160	200	30	-	-	30	3	-	3	-	/	/	/	-	-
17	Chaloem Rattanakosin	96	-	-	-	56	150	130	-	-	15	2	-	1	/	/	/	-	-	/
18	Ramkhamhaeng	-	-	-	50	100	*	-	-	-	3	1	-	2	-	/	/	-	-	/
19	Sai Yok	235	-	-	160	-	200	500	-	1	2	2	-	1	/	/	/	-	-	-

TABLE 23 (con't)

	Accommodation (capacity per park)						Other Services									Interpretive Services			
	Bungalows	Dormitories	Large Tents	Camps	Small Tents (rented)	Tenting Areas	Restaurants (total capacity)	Souvenir Shops (No. of shops)	General Stores (No. of Stores)	Picnic Tables (No. of Tables)	Viewpoints (No. of places)	Ports (No. of Places)	Parking Areas (No. of places)	Visitor Centers	Nature Trails	Information Signs	Slide Programs	Outdoor Presentation Platforms	Group Activities
20 Mu Ko Ang Thong	100	-	-	-	22	*	*	-	1	2	2	-	-	-	-	-	-	-	-
21 Khao Sok	-	-	-	-	-	200	-	-	-	-	-	1	-	/	/	-	-	-	-
22 Tat Ton	90	-	-	-	120	*	-	-	1	10	4	-	3	/	/	/	/	/	/
23 Doi Suthep-Pui	150	100	25	-	-	-	50	-	-	-	5	-	2	-	/	/	-	-	-
24 Ao Phangnga	110	-	-	-	-	*	-	-	-	-	-	-	-	-	-	/	-	-	-
25 Si Satchanalai	150	-	30	-	-	300	-	-	1	10	5	-	4	/	/	-	-	/	-
26 Khao Sam Lan	30	120	10	100	-	*	-	-	-	15	6	-	2	-	/	/	-	/	-
27 Kaeng Krachan	147	-	25	-	10	-	*	-	-	-	-	1	3	/	/	/	-	-	-
28 Mu Ko Surin	-	90	-	-	100	150	30	-	1	-	-	-	-	-		/	-	-	-
29 Khao Phanom Bencha	10	-	-	-	-	350	-	-	1	8	5	-	3	-	-	/	-	-	-
30 Hat Nai Yang	150	-	-	-	90	-	50	1	-	2	1	-	2	/	-	/	-	/	-
31 Mae Ping	60	-	-	-	-	100	-	-	-	8	-	-	2	-	/	/	-	-	-
32 Kaeng Tana	38	-	-	-	-	60	40	-	-	4	3	-	3	-	/	/	-	-	-
33 Khao Laem Ya-Mu Ko Samet	53	-	30	25	-	*	50	2	1	-	-	-	2	/	/	/	/	-	-
34 Hat Chao Mai	50	-	*	-	-	-	-	-	-	10	3	-	2	/	-	-	-	-	-
35 Namtok Mae Surin	20	-	-	-	-	100	-	-	-	4	4	-	1	-	/	-	-	-	-
36 Si Nakarin	100	-	-	200	-	*	50	-	-	-	1	1	1	-	-	-	-	-	-
37 Thap Lan	-	-	-	-	-	-	-	-	-	5	-	-	1	-	-	-	-	-	-
38 Ton Krabak Yai	-	-	-	-	30	-	-	-	-	-	3	-	2	-		-	-	-	-

TABLE 23 (con't)

	Accommodation (capacity per park)						Other Services									Interpretive Services			
	Bungalows	Dormitories	Large Tents	Camps	Small Tents (rented)	Tenting Areas	Restaurants (total capacity)	Souvenir Shops (No. of shops)	General Stores (No. of Stores)	Picnic Tables (No. of Tables)	Viewpoints (No. of places)	Ports (No. of Places)	Parking Areas (No. of places)	Visitor Centers	Nature Trails	Information Signs	Slide Programs	Outdoor Presentation Platforms	Group Activiti
39 Pang Sida	-	-	-	-	-	200	20	-	-	10	2	-	3	-	/	/	-	-	/
40 Khao Pu - Khao Ya	45	-	-	-	-	100	-	-	-	3	-	-	1	-	/	/	-	-	-
41 Mu Ko Similan	-	-	-	-	99	*	60	-	1	-	-	-	-	/	/	/	-	-	-
42 Khlong Lan	100	-	-	-	-	*	-	1	1	50	2	-	3	-	/	/	-	-	-
43 Mu Ko Chang	-	-	120	-	-	*	-	-	*	-	*	-	*	/	-	/	-	-	-
44 Laem Son	80	-	-	-	40	1,000	20	-	1	20	1	-	1	-	-	/	-	/	/
45 Hat Nopharat Thara - Mu Ko Phi-Phi	50	-	-	-	80	100	50	-	-	10	-	1	-	/	-	/	-	-	-
46 Phu Hin Rong Kla	75	-	220	-	84	-	140	-	2	6	3	-	3	/	/	/	/	/	/
47 Phu Kao - Phu Phan Kham	20	-	-	-	-	500	-	-	-	-	3	-	1	-	/	/	/	/	/
48 Khao Lam Pi - Hat Thai Muang	30	-	-	-	-	*	-	-	-	-	4	-	2	-	/	/	-	-	-
49 Mae Wong	45	-	20	-	-	*	-	-	-	3	-	-	1	-	/	/	-	-	-
50 Su-ngai Padi - Budo	-	-	-	-	-	*	-	-	-	-	-	-	1	-	-	/	-	-	-
51 Phu Chong Nayci	-	-	-	-	-	*	-	-	-	1	2	-	1	-	/	/	-	-	-
52 Namtok Chat Trakan	35	-	-	-	40	100	-	-	-	1	-	-	1	-	-	/	-	-	-
53 Mukdahan	-	-	-	-	-	*	-	-	5	-	5	-	1	-	/	/	-	-	

TABLE 23 (con't)

	Accommodation (capacity per park)					Other Services										Interpretive Services			
	Bungalows	Dormitories	Large Tents	Camps	Small Tents (rented)	Tenting Areas	Restaurants (total capacity)	Souvenir Shops (No. of shops)	General Stores (No. of Stores)	Picnic Tables (No. of Tables)	Viewpoints (No. of places)	Ports (No. of places)	Parking Areas (No. of places)	Visitor Centers	Nature Trails	Information Signs	Slide Programs	Outdoor Presentation Platforms	Group Activities
54 Si Lanna	-	-	-	-	-	*	-	-	-	-	-	-	1	-	-	-	-	-	-
55 Namtok Lam Ru	-	-	-	-	-	200	54	-	-	-	1	-	1	/	/	/	-	-	-
56 Doi Phu Kha	-	-	-	-	-	-	-	-	-	-	5	-	-	-	/	-	-	-	-

Note: *The service is present but no figures are available on capacity or number of units.
/ = service is present. - = service is not present.

Source: Project questionnaire

According to superintendents of parks that have hiking trails, information signs and other interpretive structures, these are not presently of sufficient quality to have a positive impact on nature education in the parks (Table 23).

f) Research management and services

Research management at nearly all parks is either absent or primitive. This is primarily because: (i) research done in the park is not analyzed for its potential use in helping to manage the park; (ii) the parks lack officers to liaison with research institutions; and (iii) most parks do not have adequate facilities for visiting researchers.

3.3.2 Wildlife Sanctuaries and Non-hunting Areas

3.3.2.1 Administrative Infrastructure and Responsibilities

WCD operations are overseen by the Wild Animals Reservation and Protection Committee which includes representatives from:

- Ministry of Agriculture and Cooperatives
- Royal Forest Department
- Land Department
- Department of Animal Husbandry
- Department of Foreign Trade
- Department of Customs
- Department of Mineral Resources
- Office of the National Environment Board
- Budget Bureau
- Dusit Zoo
- WCD
- A law consultant from the Ministry

The committee acts as an advisory/decision-making body and serves as a conduit for WCD proposals that must receive official sanction from the Ministry and Cabinet. It is also meant to facilitate communications among various government agencies in matters concerning wildlife conservation.

WCD administration and management operates from the central office in Bangkok and from sanctuary and non-hunting area headquarters; there are no regional offices. WCD's central administrative structure is presented as Figure 4. The primary duties of the seven administrative sub-divisions are as follows:

a) Extension: (i) coordination, preparation, presentation, and distribution of conservation education materials and programs; (ii) maintenance of nature education centers.

b) Technical: (i) biological surveys at sanctuaries and non-hunting areas; (ii) provision of biological expertise for law enforcement, such as identifying species in the wildlife trade.

c) Wildlife Sanctuaries: (i) general management support and supervision for field staff; (ii) proposing new sanctuaries and non-hunting areas, including delineation of their boundaries.

d) Law Enforcement: regulation and enforcement of the wildlife trade.

e) Administration: administrative affairs

f) Propagation: establishment and supervision of wildlife propagation programs

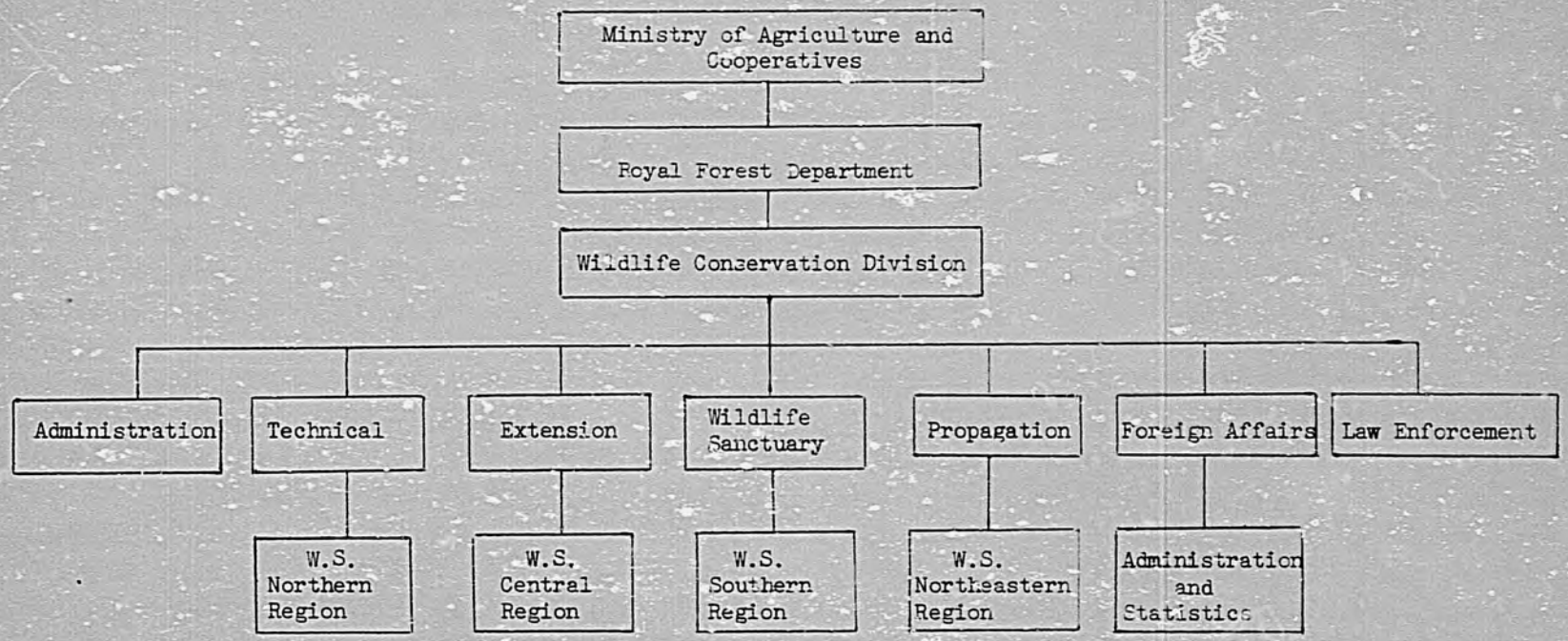


FIGURE 4 : ADMINISTRATIVE DIVISIONS WITHIN THE WCD

Source : WCD, RFD (1986)

g) Foreign Affairs: administration of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

The administrative infrastructure at individual wildlife sanctuaries is as follows:

a) Extension: same duties as (a) above.

b) Technical: (i) biological surveys; (ii) improving wildlife habitat as regards water and food supplies; (iii) survey areas for development of public education centers.

c) Law Enforcement: (i) all protection activities inside the sanctuary; (ii) surveying and preparing sites for construction of guard stations; (iii) demarcating the sanctuary boundary.

d) Administration: administrative affairs

e) Guard Stations: duties are generally the same as (a)-(d) but on a limited scale, and they are supported by the sections at headquarters. However, most emphasis is placed on law enforcement.

The administrative infrastructure of non-hunting areas is similar to that of wildlife sanctuaries. But in some cases one non-hunting area will act as the administrative center for one or more other non-hunting areas due to their small size.

3.3.2.2 Personnel

WCD professional and sub-professional staff are classified according to their civil service rank and/or their educational background. WCD staff academic/training backgrounds are presented at Table 24.

TABLE 24 EDUCATIONAL BACKGROUNDS OF WCD STAFF, 1986.

	Forestry Degree			General Science			Other Degree			Phrae Forestry School Certificate	Other Certificate	Officials That Have Received Training , Others	Totals
	Ph.D.	M.Sc.	B.Sc.	Ph.D.	M.Sc.	B.Sc.	Ph.D.	M.Sc.	B.Sc.				
Division Director	-	1	-	-	-	-	-	-	-	-	-	-	1
Administration	-	-	-	-	-	-	-	-	-	-	10	-	10
Technical	-	2	2	-	4	2	-		-	-	1	-	11
Law Enforcement	-	1	4	-	-	-	-	-	4*	13	1	-	23
Extension	-	2	7	-	1	3	-	1	7	6	3	-	30
Propagation	-	3	1	-	1	2	-	-	4	11	2	4	28
Foreign Affairs	-	-	1	-	-	1	-	-	1	-	2	-	5
Wildlife Sanctuary	-	2	45	-	-	-	-	-	-	140	3	401	591
Totals	-	11	60	-	6	8	-	1	16	170	22	405	699

Note: *Also received a Phrae Forestry School certificate.

Source: Wildlife Conservation Division, RFD (1986).

A key point regarding the academic background of the senior WCD staff as a whole is that less than 2 percent have had appreciable training in the wildlife field, and only two have received some sort of exposure (mainly attending seminars) to principles of protected areas management. Officials who have university degrees in forestry and biology number 71 and 14, respectively. A further 170 officials have received diplomas from the two-year Phrae Forestry School, and 22 officials hold other types of diplomas. All 482 permanent guards have undergone law enforcement training: In addition, there is a sizable but unreported number of daily-paid guards without training.

3.3.2.3 Budget

The WCD budget for 1986 was 116.2 million baht of which 49.89 million baht or 43 percent was allocated to wildlife sanctuaries and non-hunting areas, 28.67 million baht (25 percent) to salaries and 21.69 million baht (19 percent) to durables, land and construction (Table 25).

As concerns budget allocations to individual sanctuaries during the past four years (1983-86), Phu Khieo W.S. received the largest portion, averaging 2.68 million baht per year (3.45 million baht in 1986). Salak Phra received an average of 2.27 million baht. Thale Noi received the largest budget of all non-hunting areas, an average of 1.4 million baht over the past several years.

During the 1986 fiscal year the government spent 37.02 million baht to administer wildlife sanctuaries covering a total area of 2.16 million ha, or 17.11 baht per ha per year. During the same year the government spent 12.86 million baht to administer 0.29 million ha of non-hunting areas, or 43.49 baht per ha per year. Neither of the above costs include administrative costs in the central WCD office.

TABLE 25 WCD BUDGET ALLOCATIONS, 1986.

(unit = baht)

No.	Categories	Salaries for Seasonal Employees	Per Diem, Transport Cost, Etc.	Expendables	Total
1	Wildlife Sanctuaries (30 areas)	22,578,000	6,863,000	7,581,000	37,022,000
2	Non-hunting Areas (36 areas)	7,578,000	2,369,000	2,919,000	12,866,000
3	Nature & Wildlife Education Centers (7 areas)	2,314,000	852,000	1,224,000	4,390,000
4	Wildlife Parks (2 areas)	654,000	228,000	366,000	1,248,000
5	Wildlife Research Station	300,000	72,000	168,000	540,000
6	Wildlife Propagation Centers (8 areas) & Wildfowl Propagation Unit (1 area)	2,796,000	570,000	1,626,000	4,992,000
7	Central Office	1,596,000	1,396,200	1,550,800	4,539,000
8	Utilities, etc.	-	-	-	164,600
9	Durables, Land & Construction	-	-	-	21,687,000
10	CITES dues	-	-	-	50,000
11	Salaries	-	-	-	28,671,800
			TOTAL BUDGET		116,170,400

Source: WCD, RFD (1986).

3.3.2.4 Status of Sanctuary and Non-hunting Area Development

a) Headquarters

WCD has stated that each protected area be properly equipped with accommodation for staff, transport, field equipment, etc. However, a survey of superintendents taken in June 1986 shows that the vast majority of sanctuaries and non-hunting areas are deficient in materials considered essential for proper administration and management (Table 26).

b) Communication routes

Most roads in the vicinity of sanctuaries are dirt roads, and bridges crossing streams are made of logs, creating adverse and often impassable conditions during the rainy season. Internal systems for patrolling are in nearly all cases animal trails--very few road systems for patrolling are located in sanctuaries. Most non-hunting areas are located near towns and cities so external communication is normally good, but patrolling routes inside are poorly developed.

c) Guard stations

Because many sanctuaries and non-hunting areas cover vast areas, one headquarters for protection is not sufficient. Therefore, providing permanent official presence in areas of importance is a primary need. However, there remains a deficiency in the number of guard stations, and existing guard stations are generally understaffed with insufficient supplies.

d) Weapons

From the survey it appears that WCD weapons are both too few and too old and undependable (Table 26). This is in contrast to many poaching parties who carry new and highly powerful weapons. Sanctuaries and non-hunting areas are frequently used by gangs as hide-aways and by

TABLE 26 QUANTITIES OF ESSENTIAL MATERIALS AT SELECTED WILDLIFE SANTUARIES AND NON-HUNTING AREAS

	Communication Routes				Vehicles / Boats							Radios / Phones				Weapons			Electricity	
	Foot Trails	Metalled Rd.	Laterite Rd.	Dirt Rd.	Pick-up Trucks	Heavy Duty Trucks	Patrol Vehicles	Motorcycles	Long-tailed Boats	Speed Boats	Small Carry Boats	Walkie-talkies	Long-distance Radios	Long-distance Phones	Inter-park Phones	Automatic Weapons	Shotguns	Pistols	Generators	Main Stream
WILDLIFE SANCTUARIES																				
1 Maenam Thachi	/	-	-	-	-	1	4	6	-	-	-	-	-	-	-	2	23	-	/	-
2 Khlong Phraya	/	-	/	-	1	-	-	3	-	-	-	-	-	-	-	-	-	-	/	-
3 Doi Pha Muang	/	-	/	-	4	1	-	4	-	-	-	15	1	-	-	3	27	-	/	-
4 Khao Khieo-Khao Chorphu	/	-	/	/	4	1	1	8	-	-	-	-	-	-	-	-	18	-	-	/
5 Khlong Nakha	/	-	/	/	3	-	1	5	-	-	-	-	-	-	-	-	12	-	-	/
6 Khao Ang Ru Nai	/	-	/	/	2	1	-	5	-	-	-	-	-	-	-	1	16	-	/	-
7 Salawin	/	/	/	/	1	-	3	4	-	-	-	-	2	-	-	1	7	-	/	-
8 Phu Luang	/	-	-	/	6	2	4	11	-	-	-	-	2	-	-	3	40	-	/	-
9 Yot Dom	/	-	-	/	2	-	-	3	-	1	1	-	1	-	-	2	8	-	/	-
10 Phu Miang-Phu Thong	/	/	/	/	2	1	-	3	-	-	-	-	-	-	-	-	5	-	/	-
11 Khao Sanam Phriang	/	-	/	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12 Doi Pha Chang	-	/	/	-	3	-	-	3	-	-	-	-	-	-	-	1	5	-	/	-
13 Mae Yuam Fang Khwa	/	-	-	/	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14 Khao Phanon Dong Rak	/	-	-	/	1	1	1	3	-	-	-	-	-	-	-	-	7	-	/	-
NON-HUNTING AREAS																				
1 Khao Nam Phrai	/	-	-	-	1	-	-	2	-	-	-	-	-	-	-	-	3	-	/	-
2 Bung Chawak	-	-	/	-	1	-	-	1	-	-	-	-	-	-	-	-	2	-	-	/
3 Tham Pha Tha Phon	-	-	/	-	1	-	-	1	-	-	-	-	-	-	-	-	2	-	/	-

TABLE 26 (con't)

	Communication Route				Vehicles / Boats							Radios / Phones				Weapons			Electricity	
	Foot Trails	Metalled Rd.	Laterite Rd.	Dirt Rd.	Pick-up Trucks	Heavy Duty Trucks	Patrol Vehicles	Motorcycles	Long-tailed Boats	Speed Boats	Small Cargo Boats	Walkie-talkies	Long-distance Radios	Long-distance Phones	Inter-park Phones	Automatic Weapons	Shotguns	Pistols	Generators	Main Stream
4 Nong Plak Phraya-Khao Raya Mang Sa	/	-	/	-	1	-	-	2	-	-	-	-	-	-	-	-	2	-	/	-
5 Nong Thung Thong	/	-	/	/	1	-	-	1	-	-	3	-	-	-	-	-	-	-	/	-
6 Bang Phra	/	/	/	/	1	1	-	1	-	1	1	1	-	-	-	-	2	-	-	/
7 Wat Phai Lom - Wat Amphu Wanaram	/	-	/	/	-	-	-	1	-	1	-	-	-	-	-	-	3	-	-	/
8 Khao Yai, Khao Na Pha Tang & Khao Tha Phrom	/	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9 Thale Sap Nong Bong Khai	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
10 Kha Kho	/	/	/	/	1	1	-	1	-	-	-	1	2	-	-	-	5	2	-	-
11 Tham Rakhang	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12 Tham Khang Khao	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	1	-	-	/
13 Khlong Lam Chan	/	-	/	-	1	1	-	1	-	-	-	-	-	-	-	1	4	-	-	/
14 Thale Noi	-	-	-	-	1	1	-	5	-	5	3	1	-	-	-	2	12	-	-	/
15 Thale Sap	/	/	/	/	1	-	1	1	2	2	-	-	-	-	-	-	7	-	/	/
16 Bung Krung Krawia	/	/	/	/	2	1	1	3	-	1	-	-	-	-	-	1	16	-	/	/

Source : Project questionaire (1986)

those who sell illegal products, so there are frequent clashes with WCD officials when patrolling.

e) communication equipment

This includes long distance radios and walkie-talkies. Not all sanctuaries have radios and only two sanctuaries have walkie-talkies. This lack of communication equipment inhibits efficiency and safety when patrolling the forest. No sanctuary is equipped with telephone service (Table 26).

f) Vehicles

Most sanctuaries and non-hunting areas have at least one truck at headquarters while most guard stations have at least one motorcycle. However, most of these vehicles are extremely old and often out of service for repairs (Table 26).

g) Utilities

Each sanctuary and non-hunting area has electricity and water pumps but few guard stations do.

h) Technical information for officials

Virtually no sanctuary or non-hunting area provides for technical information to improve officials' knowledge of their duties.

i) Visitor services

Because of WCD policy and priorities, few areas provide visitor services as do all national parks.

j) Services for researchers and scientists

Nearly all sanctuaries provide basic services to visiting researchers, e.g. accommodation, guides and protection. But the level of research is low when considering the length of time various sanctuaries have existed. Basic research which would allow better management and knowledge of the area has generally not been sufficient. This is due to many factors, some main ones of which are: (i) officials stationed at the protected area who are responsible for research activities are not properly trained or informed; (ii) they are not supplied with necessary equipment; (iii) responsible agencies in RFD do not lend sufficient support and direction; (iv) domestic and foreign research agencies have not provided appropriate support.

k) Management plans

Neither sanctuaries nor non-hunting areas have management plans or statements for management. Nearly all prepare annual administrative plans to receive their annual budget, but these have minimal impact on management of the areas. Management strategies basically rest with the superintendent. Because superintendents normally stay in one area for only a few years, management aims tend not to be long-range or consistent.

3.3.3 Administration and Management of Other Protected Areas

3.3.3.1 Botanical Gardens and Arboretums

These are under administration of RFD's Silviculture Division. Due to the fact that only 25 of the division's 265 staff positions have been allotted to botanical gardens and arboretums, there is minimal administration.

Budget allocations were very small during the Fourth National Development Plan (1977-81). But for the Fifth Plan the Ministry of Agriculture and Cooperatives called for locating arboretums in every provincial district throughout the country. These areas are now used for recreation and tourism as well as information centers. Budget details are presented as Table 27.

3.3.3.2 Biosphere Reserves

a) Sakaerat

Located in Nakhon Ratchasima Province, Sakaerat Environmental Research Center is administered by the Office of the National Research Council but was established under Royal Forest Department laws governing forest reserves. There are 15 permanent staff positions and 30 seasonal positions; budget details are unclear, but Sakaerat receives support both from the Thai government and from UNESCO.

b) Huai Thak

Huai Thak was established under forest reserve laws in 1964 and is administered by RFD. It is divided into four substations, each with permanent RFD officials, including just six full-time positions. RFD officials from nearby areas occasionally assist in law enforcement patrols. Initially Huai Thak was used to research teak and later received aid from Denmark to establish a Teak Improvement Center.

c) Mae Sa-Kok Ma

Most of this area is governed by forest reserve laws, but certain portions have been declared for use by the military and for "national security". Mae Sa-Kok Ma is administered as an "Integrated

TABLE 27 BUDGET ALLOCATIONS TO BOTANICAL GARDENS, 1977-1986.

Fiscal Year	Budget Allocation (baht)
1977	3,997,000
1978	4,610,600
1979	4,703,800
1980	5,910,300
1981	7,094,800
1982	10,669,400
1983	12,970,700
1984	14,001,000
1985	13,545,500
1986	12,821,500

Source: Planning Division, RFD (1986).

Watershed and Forest Land Use Project" with FAO support. There are 21 permanent positions.

3.3.3.3 Forest Reserves

Forest reserves were established some 50 years ago (3.1.3.1). A true administrative and management infrastructure was created in 1975 with establishment of the National Forest Land Management Division (NFLMD). The division has seven sub-divisions to administer various programs: (i) Forest Land Development; (ii) Forest Land Use; (iii) Survey and Planning; (iv) Land Use Cooperation; (v) Construction; (vi) Forest Improvement; and (vii) Administration (Figure 5). NFLMD has a total of 522 officers both in Bangkok and in the provinces (Table 28). It is also supported by staff from Regional Forest Offices (Table 29).

Budget allocations for NFLMD can be broken down as follows:

a) Forest land acquisition and declaration budget

Over the past decade the budget for this item has increased steadily in relation to the total area of forest reserves. There was a large budget increase in 1981 and again in 1982 following Cabinet declaration in 1981 that 50 percent of Thailand's land area should be forested. Budget details are presented as Table 30 .

b) Forest Village Budget

In 1975 the Cabinet directed that forest reserves that have been heavily degraded due to villager encroachment be developed into "forest villages" Forest village budgets are presented as Table 31 and the number of villages are presented as Table 32.

c) Usufructuary budget

This program came into being following a survey of forest

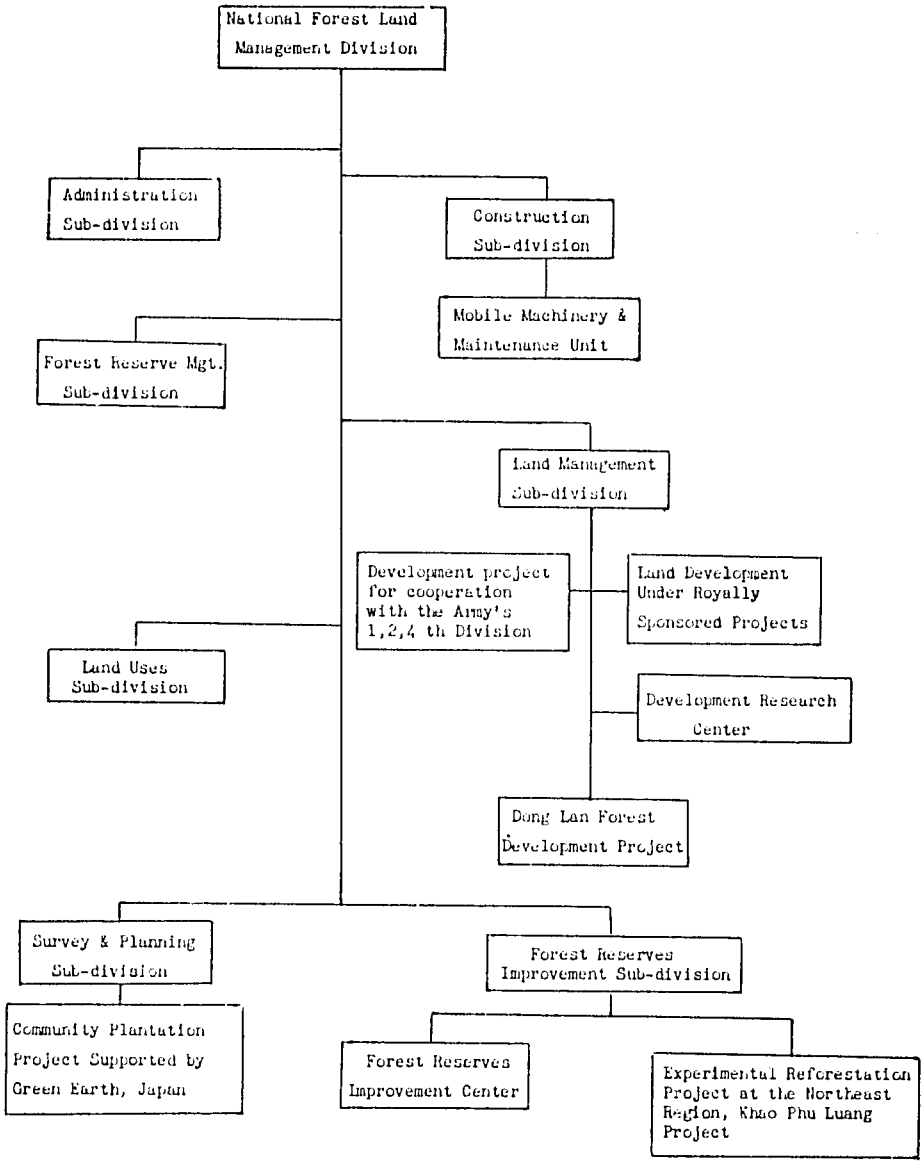


FIGURE 5 ADMINISTRATION FLOW CHART FOR MANAGEMENT OF FOREST RESERVES UNDER THE NATIONAL FOREST LAND MANAGEMENT DIVISION

Source : NFLMD, RFD (1986)

TABLE 28: NFLMD STAFF STRENGTH , 1985

Staff Category	Staff No.
Civil Servants	249
Permanent Employees	186
Seasonal Employees	87

Source : NFLMD, RFD (1985)

TABLE 29 STAFF STRENGTHS OF REGIONAL FOREST OFFICES THAT WORK IN FOREST RESERVES

Regional Office	Staff No.
Saraburi	12
Prachin Buri	17
Sri Racha	10
Nakhon Ratchasima	24
Ubon Ratchathani	29
Khon Kaen	6
Udon Thani	41
Phrae	16
Lampang	11
Chiang Rai	23
Chiang Mai	22
Mae Sariang	19
Phitsanulok	23
Tak	19
Nakhon Sawan	15
Ban Pong	17
Phetchaburi	7
Surat Thani	12
Nakhon Si Thammarat	9
Songkhla	13
Pattani	6
Total	351

Source: NFLMD, RFD (1986).

TABLE 30 NFLMD BUDGET ALLOCATIONS FOR FOREST RESERVES, 1977-86.

Fiscal Year	Allocated Budget (baht)
1977	24,464,800
1978	21,747,700
1979	18,522,600
1980	19,278,700
1981	20,189,800
1982	38,592,400
1983	44,483,500
1984	46,189,200
1985	48,523,598
1986	50,327,400

Source: Planning Division, RFD (1986).

TABLE 31 NFLMD BUDGET ALLOCATIONS TO FOREST VILLAGES 1977-86

Fiscal Year	Budget Allocation (baht)
1977	55,124,000
1978	92,779,600
1979	112,315,100
1980	67,421,100
1981	74,176,300
1982	59,678,000
1983	66,922,500
1984	56,424,200
1985	57,032,500
1986	51,731,900

Source. Planning Division, RFD (1986).

TABLE 32 DETAILS CONCERNING FOREST VILLAGES FUNDED UNDER THE NATIONAL FOREST RESERVES DEVELOPMENT BUDGET TO 1986

	Program	Northern Region			Central Region			Northeastern Region			Southern Region		
		No. of Projects	Total Area (ha)	No. of Families	No. of Projects	Total Area (ha)	No. of Families	No. of Projects	Total Area (ha)	No. of Families	No. of Projects	Total Area (ha)	No. of Families
1.	National Security (14 projects)	-	-	-	-	-	-	13	10,447	6,829	1	643	215
2.	King's Direction (10 projects)	1	388	200	8	2,893	1,379	1	-	-	-	-	-
3.	RFD (63 projects)	30	8,266	6,274	10	3,966	2,202	17	9,758	5,888	6	1,644	1,036
	Total	31	8,654	6,474	18	6,859	3,581	31	20,205	12,717	7	2,287	1,251
	Country Totals: 87 projects; 38,005 ha; 24,023 families												

Source: NFLMD (1986).

encroachment in 1977-78 when it was found that up to one million families had encroached on reserved forest land. To assist these families, the Ministry permitted them to reside on this land for an unlimited period, and each family receives 15 rai. Those eligible for this program must have been on the land before 1 January 1982. Presently about 474,000 families, occupying 4.8 million rai,have officially taken part in the program.Budget details are presented as Table 33.

TABLE 33 BUDGET ALLOCATIONS TO ESTABLISH LAND FOR VILLAGERS IN FOREST RESERVES , 1982-86.

Fiscal Year	Allocated Budget (baht)
1982	73,737,500
1983	70,663,300
1984	67,191,700
1985	64,709,100
1986	56,813,800

Source: NFLMD, RED (1986).

4. TRENDS

4.1 Budget

During the past five years, budgets allocated to national parks, wildlife sanctuaries and non-hunting areas have increased at a substantially higher rate than increases in area of land. Between 1983 and 1986 budgets allocated directly to national parks increased at an average annual rate of 18.5 percent while the total area of land in the national parks system increased by an annual average of just 2.2 percent. Average annual budget and land increases for wildlife sanctuaries showed a similar pattern, i.e. 15.2 percent and 2 percent, respectively. This reflects an attempt to bolster unrealistically low budget allocations of the past (Table 34 and Figure 6).

However, annual budget increases for national parks have been dropping during the past five years and appear to be heading towards a plateau. On a baht/rai basis, the increase from 1982 to 1983 was 35 percent, dropping to 22 percent in 1984 and 10 percent in 1985; the 1986 baht/rai ratio actually decreased by 5 percent from 1985. Budget allocations to wildlife sanctuaries have not followed this pattern. Annual increases, which have remained between 13-15 percent during the past three years, are expected to continue until achieving parity with the parks system. Although non-hunting areas are generally considered of less conservation value than national parks and wildlife sanctuaries, they have been receiving, on a baht/ha basis, larger budgets than parks and sanctuaries. In 1986 the baht/ha ratio for non-hunting areas was 43.49/1 compared with 21.67/1 for parks (excludes salaries and durables) and 17.11/1 for sanctuaries.

The proportion of NPD's total budget that is allocated directly to national parks has remained relatively constant at ca. 46 percent during the past 5 years. During the same period, WCD has increased

TABLE 34 PROTECTED AREAS BUDGET COMPARED TO AREA ADMINISTERED, 1982-86.

NATIONAL PARKS						
YEAR	BUDGET (baht)	% INCREASE	AREA (rai)	% INCREASE	฿/RAI	% INCREASE
1982	30,471,690	-	15,138,221	-	2.01	-
1983	42,366,728	39	15,578,821	3	2.71	35
1984	53,359,850	26	16,079,683	3	3.31	22
1985	59,498,300	12	16,280,933	1	3.65	10
1986	57,600,790	-3	16,610,151	2	3.46	-5

WILDLIFE SANCTUARIES						
YEAR	BUDGET (baht)	% INCREASE	AREA (rai)	% INCREASE	฿/RAI	% INCREASE
1982	21,094,400	-	12,461,823	-	1.69	-
1983	24,297,100	15	13,217,823	6	1.83	8
1984	27,873,500	15	13,278,448	0.5	2.09	14
1985	32,282,000	16	13,341,573	0.5	2.41	15
1986	37,022,000	15	13,524,073	1	2.73	13

NON-HUNTING AREAS						
YEAR	BUDGET (baht)	% INCREASE	AREA (rai)	% INCREASE	฿/RAI	% INCREASE
1982	4,990,200	-	1,479,021	-	3.37	-
1983	5,975,500	20	1,482,796	0.3	4.02	19
1984	2,485,000	-140	1,720,283	16	1.44	-179
1985	9,883,800	298	1,872,240	9	5.27	266
1986	12,866,000	30	1,881,453	0.5	6.83	30

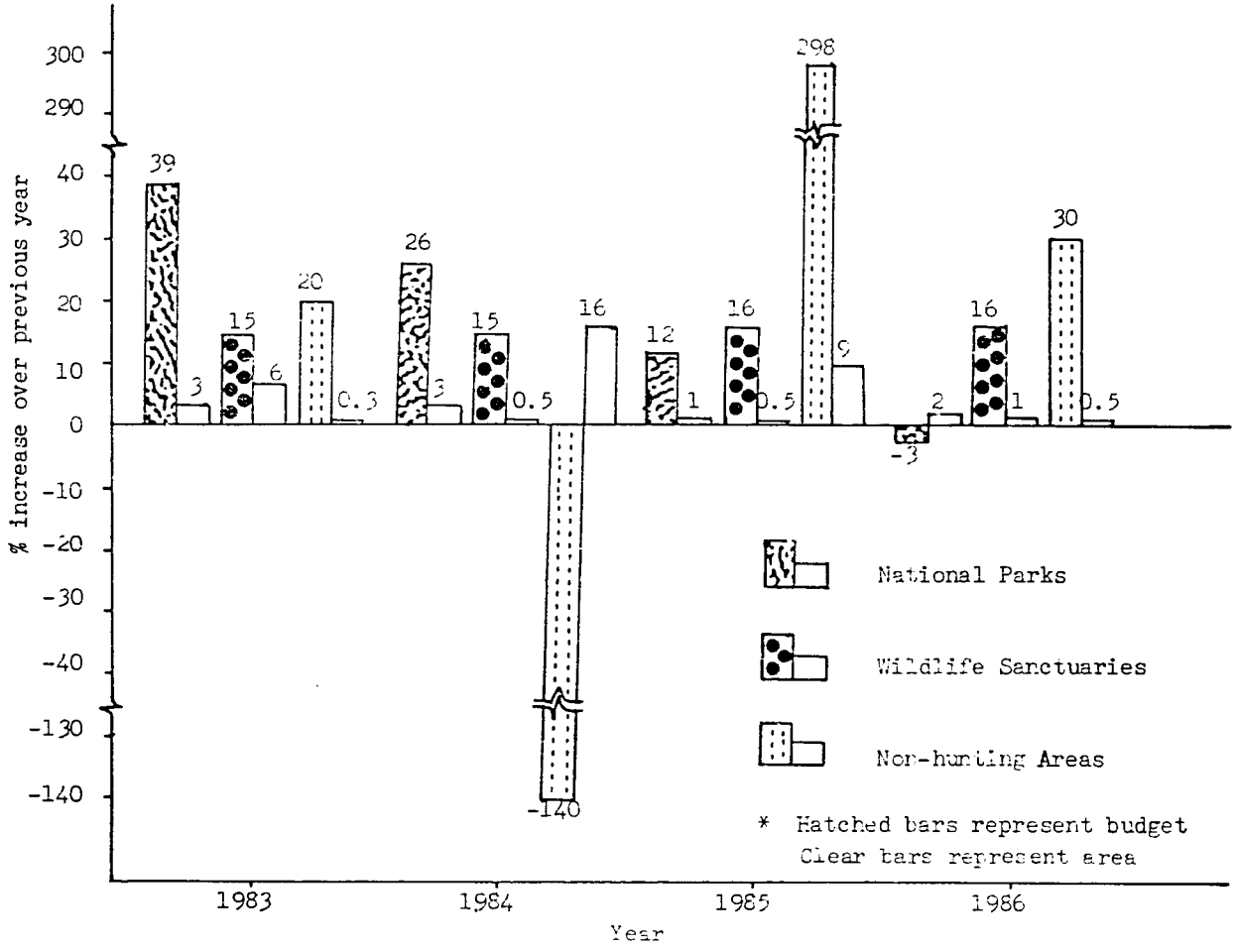


FIGURE 6 COMPARISON OF BUDGET INCREASES TO INCREASES IN THE TOTAL AREA OF NATIONAL PARKS, WILDLIFE SANCTUARIES AND NON-HUNTING AREAS, 1983-1986

direct allocations to wildlife sanctuaries and non-hunting areas from 32 percent of its total budget in 1982 to 43 percent in 1986.

Non-governmental sources of income have increased in recent years, a trend that is expected to continue. Although it remains at a relatively low level, international assistance to NPD and WCD from 1984-86 was in excess of Bht 6 million, reversing a pattern of virtual neglect during the previous decade. National park income derived from accommodation rental and entrance fees totaled Bht 15.1 million in 1985, an increase of 9 percent over 1984, and equivalent to one-quarter of their 1985 fiscal budget.

4.2 Personnel

NPD and WCD manpower levels have risen in response to increases in the number of protected areas, but this has done little to rectify serious understaffing. The ratio of all permanent employees to hectares of protected areas is 1:4,300 The present number of all NPD employees is only 23 percent of that which NPD has determined is necessary to fully meet its responsibilities. There is little indication that this trend will be rectified in the near future, especially in light of the government cap on hiring (Table 35).

Education levels of protected areas staff have been rising during the past decade. Presently, 35 percent have had post-secondary school education and 14 percent possess university degrees. But only 38 university graduates have degrees in fields directly relevant to protected areas management and administration, the remainder (83 percent) having been trained in forestry fields that emphasize extractive practices such as silviculture and timber management.

In recent years Kasetsart University's Faculty of Forestry, which produces most of the protected areas system's senior staff, has been upgrading its natural resources curricula to include a more diverse range of disciplines with direct applications to protected areas. More

TABLE 35 COMPARISON OF PRESENT NPD STAFF STRENGTH WITH REQUESTED INCREASES

Staff Category	NPD	
	Present No.	Requested No.
Forestry Technical Officers	128	284
Forest Technicians	69	538
Guards	414	1,810
TOTAL	611	2,626

Source : NPD (1986)

of these graduates are now becoming available to NPD and WCD as a result. However, two factors are expected to retard significant absorption of trained graduates into the protected areas system for many years to come. One is the government cap on hiring of civil servants, set at 2 percent annually. The other is the structure of existing staff. Most protected areas staff, particularly superintendents, are relatively young and can be expected to remain in the system for another decade or longer.

4.3 Protection

Reports from protected area officials and from scientists with extensive field experience strongly indicate that encroachment and poaching pressures have been markedly increasing since the protected areas system was established in 1962. These pressures have been fueled by a rapidly expanding human population and by chronic economic problems in rural areas. The traditional response to increased abuse of protected areas has been focused on law enforcement. Although these efforts have undoubtedly helped to minimize outright habitat destruction at parks and sanctuaries in comparison to other types of protected/regulated areas, deterioration of park and sanctuary resources does not appear to be abating and now represents the foremost threat to the protected areas system.

This situation can be traced partly to the fact that emphasis on law enforcement has not been fully implemented at the field level. NPD and WCD combined have less than 900 trained guards (plus an unknown number of untrained, daily-paid guards) to protect 5.1 million ha of land; NPD now has only one-quarter of the number of trained guards it estimates are needed for effective law enforcement. Furthermore, there is a scarcity of essential equipment that would allow guards to be more efficient and effective. For instance,at the 14 wildlife sanctuaries surveyed for this report, only 4 had short wave radios, just 6 had patrol vehicles other than motorcycles, and only 1 was equipped with

walkie-talkies. The national parks system has been able to provide only 5 percent of the recommended number of living accommodations for guard stations. Tents, backpacks, cooking utensils, weapons, and other field essentials are in short supply. In addition, incentives for guards are nearly nonexistent: pay is low (averaging Bht 1,800/month), no uniforms or other symbols of pride and position are provided, and there is no reward system for guards who do an exemplary job.

The demand on parks and sanctuaries for uses unrelated to protected area objectives, such as reservoirs, continues to grow and is expected to continue as evidenced by the increasing volume of requests presented to RFD by outside agencies.

Within the past few years, there has been a growing realization that conservation education, involvement of local people in protected areas management, and similar initiatives must also be considered in protection strategies. This is discussed further in 4.7.

4.4 Tourism and Recreation

National park visitor volumes increased nearly 400 percent between 1976 and 1985, and 62 percent from 1981 to 1985 (Figure 2). In 1985 the number of visits topped 4 million. This trend toward dramatically increasing tourism is expected to continue due to higher per capita incomes, more urbanization, improved communication routes and possibly increased promotional activities. Most park visitors will,as in the past, come from Bangkok and other large population centers, but the proportion of visitors who come from rural areas will likely remain high. The number of foreign visitors, which now does not exceed 5 percent of total park visitors, should increase if TAT follows through on its intention to improve promotion of national parks as tourist destinations.

Despite this considerable tourism volume, NPD with few exceptions has expended little effort to introduce high quality interpretive programs for visitors. There has recently emerged a perceptible demand

by Thai visitors for expanded and improved interpretive programs. This demand is expected to increase as visitor volumes increase. Likewise, public demand for tourism and recreational use of wildlife sanctuaries appears to be increasing.

NPD has responded to increasing tourism by rapidly developing the most popular parks, mainly in the form of construction of bungalows and other accommodations. Many new parks have also been devoting considerable manpower and budget to construction of accommodations. However, this has not been preceded by plans but rather by a vague perception of visitor demand, and construction has in all cases been carried out in the absence of zoning. The trend towards rapid expansion in development of accomodations may be slowing, as evidenced by a 17 percent decrease in expenditures for durables, construction and land during the past three years; management plans for 16 parks during 1987-91 will emphasize zoning of park lands. Nonetheless, it is reasonable to expect that construction of accommodations at many parks will continue at a relatively brisk pace and mostly without prior zoning.

4.5 Management and Administration

NPD and WCD continue to function under enabling legislation that was promulgated in the early 1960s and based heavily on concepts developed in the West. In many cases this legislation is anachronistic and quite vague concerning NPD/WCD responsibilities. It does not clearly indicate the justifications for and objectives of establishing protected areas beyond nebulous references to preserving habitat for wildlife conservation and setting aside areas of scenic beauty for the enjoyment of present and future generations of Thais. In particular, little mention is made of protected areas' role in national development. It should be noted, however, that NPA and WARPA remain the strongest existing legislation for forest protection, and parks/sanctuaries will remain the most effective mechanism for forest protection in Thailand. Moves have recently been made to amend all legislation concerning forests, including NPA

and WARPA, with the intention of further strengthening forest conservation.

The policy- and decision-making structures of NPD and WCD have always been highly centralized and restricted. Virtually all decisions are made in Bangkok by the division director with only limited staff and committee input. Major fluctuations in division policy have tended to occur, reflecting the attitudes and judgment of the current director.

At the park and sanctuary level, a realization is developing for the need to provide long-term goals and continuity of operations and objectives through management planning. A recently completed WWF/IUCN project supported ONEB and NPD efforts to effect systemwide management planning at parks and sanctuaries. The government has now provided funds for establishment of a new management planning office serving NPD and WCD, and plans will be prepared for 23 protected areas by the end of 1991 (Tables 36 and 37).

4.6 Expansion of the Protected Areas System

Sixty-five percent of park lands and 69 percent of all existing national parks have been created since 1980. Fourteen percent of the total area of wildlife sanctuaries have been added during the same period. Protected areas are expected to increase in total area by a further 13 percent in the near future (Figure 7).

Both NPD and WCD have included in the system a good representation of most major habitat types found in Thailand. Notable exceptions to this include lowland evergreen forest (of which only small remnants remain), marshes and mangroves/mudflats.

TABLE 36 PARKS AND SANCTUARIES SCHEDULED TO PREPARE MANAGEMENT PLANS (1987-1991)

No	Name	Location	Year
1	Doi Inthanon N.P.	Chiang Mai	1987
2	Doi Suthep-Pui N.P.	Chiang Mai	#
3	Mae Ping N.P.	Chiang Mai, Lamphun, Tak	#
4	Huai Kha Khaeng W.S.	Uthai Thani, Tak	#
5	Thung Salaeng Luang N.P.	Phitsanulok, Phetchabun	1988
6	Nam Nao N.P.	Phetchabun	#
7	Phu Kradung N.P.	Loei	#
8	Phu Phan N.P.	Sakhon Nakhon, Kalasin	#
9	Thung Yai Naresuan W.S.	Kanchanaburi	#
10	Erawan N.P.	Kanchanaburi	1989
11	Sai Yok N.P.	Kanchanaburi	#
12	Sri Nakarin N.P.	Kanchanaburi	#
13	Ton Nga Chang W.S.	Songkhla, Satun	#
14	Kaeng Krachan N.P,	Phetchaburi	1990
15	Phangnga Bay N.P.	Phangnga	#
16	Khao Luang N.P.	Nakhon Si Thammarat	#
17	Salawin W.S.	Mae Hong Son	#
18	Om Koi W.S.	Chiang Mai	#
19	Thap Lan N.P.	Nakhon Ratchasima	1991
20	Pang Sida N.P.	Prachin Buri	#
21	Khlong Lan N.P.	Kamphaeng Phet	#
22	Phu Luang W.S.	Loei	#
23	Khao Soi Dao W.S.	Chanthaburi	#

Source : NESDB (1986)

TABLE 37 BUDGET REQUESTS FOR PREPARATION AND IMPLEMENTATION OF MANAGEMENT PLANS

unit = million Baht

Budget Category	Fiscal Year					
	1987	1988	1989	1990	1991	TOTAL
Project development	2.508	0.868	0.868	0.868	0.868	5.980
Plan preparation	2.215	2.772	2.217	2.768	2.729	12.701
Plan implementation	1.095	4.688	23.854	49.357	67.992	146.986
TOTAL	5.818	8.328	26.939	52.993	71.589	165.667

Source : NESDB (1986)

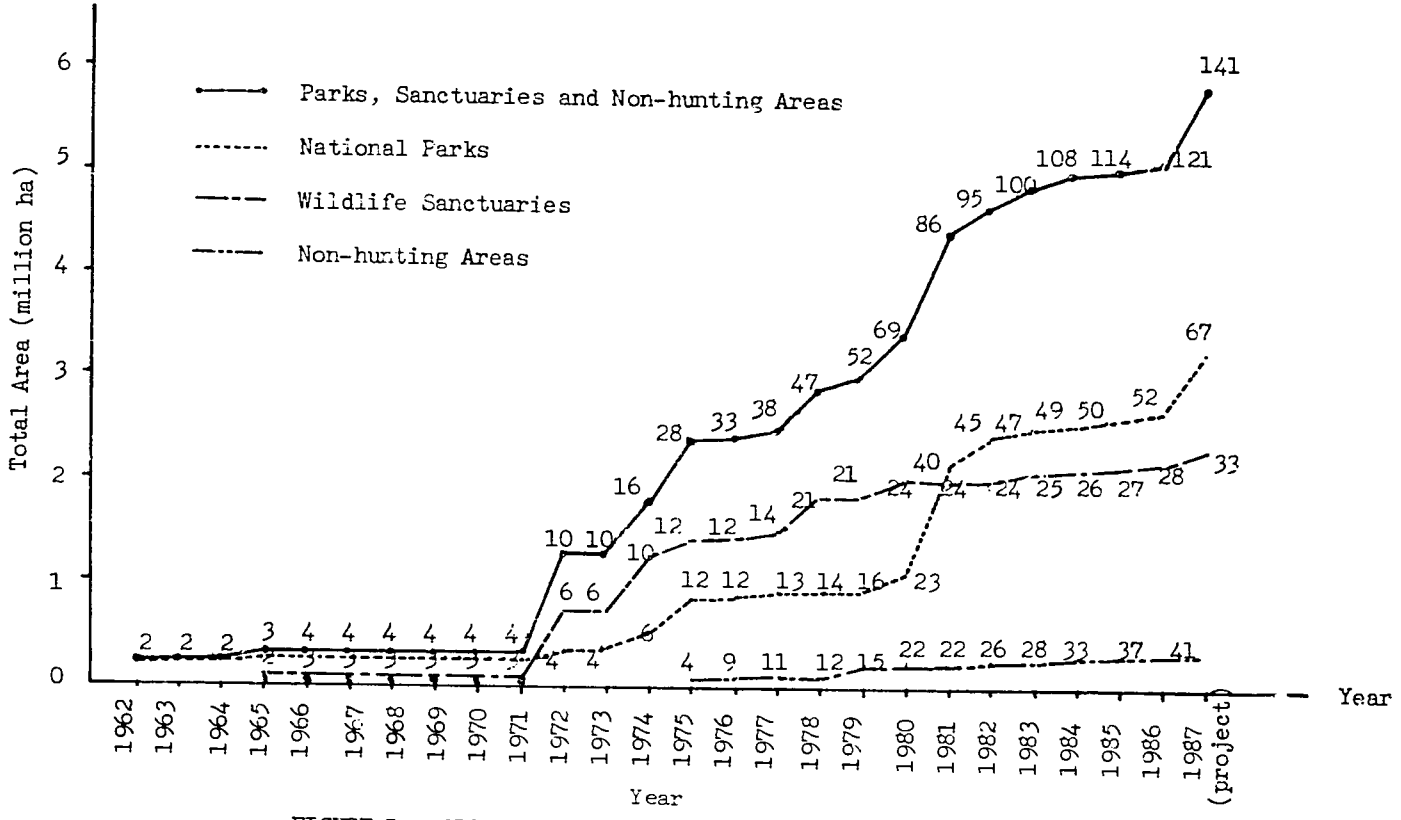


FIGURE 7 GROWTH OF THE PROTECTED AREAS SYSTEM, 1962-1986

4.7 Integration of Protected Areas Management with Socioeconomic Development

There has traditionally been minimal consideration given to the role that parks and sanctuaries can play in local and national socioeconomic development. The relationship between local people and protected areas has in general been adversative, with parks and sanctuaries relying almost exclusively on law enforcement measures to preserve natural resources; protected area officials and local people have been involved in numerous armed clashes over the years. The majority of local people perceive protected areas as being detrimental to their welfare. As a result, parks and sanctuaries in general have been faced with antagonistic, distrustful local populations.

Recently though, some protected areas have begun to develop closer, supportive contacts with local people. For example, Khao Yai N.P. now invites local village leaders to participate in seminars in which park objectives are explained and dialogue concerning villager/park interactions is encouraged. In addition WWF/IUCN Project 3001 was responsible for promoting a pilot project in a village bordering the park that incorporates socioeconomic development of the village with park conservation. Administered by the Population and Community Development Association and Wildlife Fund Thailand with support from Agro Action of Germany, the project has shown encouraging signs of turning a once major problem area into a center for promotion of park conservation. Similar activities are occurring at Phu Khieo W.S. under the auspices of a royally-sponsored project. With FAO support, WCD is now testing the feasibility of wildlife farming for introduction to communities located near wildlife sanctuaries. Through this program WCD hopes to alleviate hunting in sanctuaries and at the same time bolster villagers' incomes.

On a national level, statements made by senior government officials and in the Sixth National Economic and Social Development Plan are beginning to address the need for better integration of protected areas management with socioeconomic development. Unfortunately, few efforts have yet been made to qualify or quantify benefits contributed by protected areas to socioeconomic development.

5. MAJOR ISSUES/CONSTRAINTS AND RECOMMENDATIONS

5.1 Budget

Budget restriction are considered the primary issue in the protected areas realm, and one that is also strongly related to all other issues.

Budget allocations to protected areas are limited, hampering efforts to provide enhanced benefits to local, regional and national development. The portion of NPD's budget that goes directly to national parks is only Bht 3.46 per rai or Bht 2,170 per sq km annually. Allocations to wildlife sanctuaries are even less, Bht 1,700 per sq km annually. It appears that government funding is beginning to level-off and that major budget increases will not be forthcoming without rational, compelling and properly presented justification. The best way to provide this justification is by demonstrating how protected areas are playing a vital role in Thailand's socioeconomic development and how this role can be further strengthened through adequately funded activities. This can be done by qualifying and quantifying the beneficial uses of parks and sanctuaries through benefit/cost analyses. Such analyses would help identify the most appropriate ways to manage protected area resources and would also more clearly illustrate the importance of properly maintaining protected areas. By doing so, beneficial use analyses would promote enhanced social and economic development around protected areas, thereby ensuring their long-term maintenance.

Nevertheless, it is unrealistic to expect that government funding can ever be sufficient to allow implementation of all necessary projects. Other steps must be taken so that priority activities receive adequate financial support. NPD and WCD should ensure that available funds are used efficiently and to maximum effect through improved administration and management at the central offices as well as at

individual protected areas; this is discussed further in 5.5. Another step that can be taken is to identify and actively solicit funding from outside sources. There are several ways to accomplish this, but one that could prove fruitful is establishing a funding library at a government or NGO agency. The library would contain files on donor agencies, including their field(s) of interest; types of projects funded in the past and average level of assistance granted; the category of recipients they will assist (e.g. government agencies, universities, NGOs); and so forth.

5.2 Personnel

This report identifies three major issues concerning personnel: (i) staff training; (ii) the government ceiling on hiring of civil servants: and (iii) services provided to protected area personnel.

5.2.1 Training

A deficiency in the number of appropriately trained officials, especially at senior levels, is a severe impediment to improved operations. Given the scarcity of expertise in protected area administration/management and the likelihood that most existing senior officials (guard station chief to division director) will remain in positions of authority for many years to come, it is imperative that these officials receive training in essential skills they are now lacking. This training should build on and supplement the valuable practical experience they now possess.

Training should be provided at 3 levels, emphasizing public relations/community development, administration and management techniques, practical field techniques, law enforcement training, and interpretation/education techniques (Appendix) At least one national training center needs to be established in or adjacent to a major park or sanctuary. It is recommended that the proposed center at Huai Kha Khaeng be open

to staff from both divisions and, as intended, concentrate on field techniques such as wildlife research/management and law enforcement. An additional center should be developed in or near a major national park. The center would be opened to officials from both divisions but would offer training in the fields of protected areas administration and management, public relations/community development, visitor services, and interpretation/education. A national park would be more appropriate than a wildlife sanctuary for offering hands-on training in the latter two fields mentioned above. In addition, universities offering resources conservation and related courses should be contacted to arrange special training for both senior and junior officials.

As part of any training program, technical information must be provided in a form that is readily understood. This will require identification of key publications, many of which are now available only in English. In addition to existing Thai publications, appropriate parts of selected English publications should be translated into Thai. This translation could best be done by involving university professors and graduate students who are experts in various fields pertinent to protected areas Management (see Appendix)

5.2.2 Cap on Hiring Civill Servants and NPD/WCD Hiring Practices

The government cap on hiring of civil servants is a major constraint to the quality and quantity of protected area personnel. As such, it is indirectly inhibiting provision of increased benefits from protected areas through improved management and administration. University graduates with backgrounds in diverse disciplines directly related to protected area management/administration are now available in Thailand, but only a small minority are being absorbed into WCD and NPD positions. Futhermore, the present senior level staff strength is only approximately one-quarter of that deemed appropriate for proper administration.

The two divisions have recently requested a special exemption from the cap on hiring, and the government is encouraged to give serious consideration to this request. This would not only serve to strengthen protected area administration but would also prevent collapse of new and valuable undergraduate and graduate programs at several Thai universities--if students are unable to find jobs, these programs will face an uncertain future. In a related issue, NPD and WCD should revise their present selection process for new staff to reflect their multidisciplinary needs rather than emphasize forestry skills as is done now. Such a revision should be considered a prerequisite to exemption from the civil servant cap.

5.2.3 Services for Protected Area Personnel

Scant attention has been given to basic needs of NPD and WCD field personnel. for instance, civil servant and labor housing at national park headquarters is just one-fifth of that necessary; housing at guard stations is even less adequate. This situation undoubtedly affects staff morale and, by extension, the efficiency and effectiveness of protected area programs. Future budget allocations must take this into account.

5.3 Protection

Despite commendable efforts of field staff, degradation of protected area resources remains a major problem. A primary factor for this unsatisfactory condition is an almost total reliance on law enforcement to deal with problems of encroachment and poaching, activities which for the most part are done by subsistence farmers and needy villagers who live near protected areas. Future law enforcement measures should be developed as just one component in a comprehensive protection program that also includes provision for enhanced flow of (legally obtained) benefits from the protected area to local communities, grass roots conservation education, and increased participation of local

people in protected area management; these are discussed further in 5.4, 5.5 and 5.6.

The minimal support provided to park and sanctuary guards is another principal deterrent to improved protection capabilities. The following measures are recommended.

a) When allocating budgets, NPD and WCD should urgently begin to address the wide discrepancy that now exists between recommended and actual infrastructure development at guard stations.

b) Provision of essential equipment such as field supplies, vehicles, weapons and radios is urgently needed. In particular, all guard stations should be equipped with radios to allow contact with other stations and with headquarters, and each station should be provided with a minimum of two walkie-talkies.

c) Protected areas that do not have law enforcement sections should establish and staff them; these sections would coordinate law enforcement efforts and liaise with local law enforcement bodies.

d) Improved patrolling access inside protected areas should be implemented where practicable. This may include developing forest trails for regular foot patrol routes and establishing networks of dirt tracks for vehicular patrolling.

e) Each park, sanctuary and non-hunting area should determine whether major problem areas are covered by guard stations. If not, stations should be established in these areas.

f) Although it may be virtually impossible to substantially increase guard salaries to reflect the risks and hardships that law enforcement entails, special incentives could be provided to law enforcement staff: (i) provide for a hierarchy of ranks to reward productive workers; (ii) provide uniforms as a symbol of pride and identity; (iii)

use a portion of entrance fees or solicit outside donations for an annual "outstanding guard station" award at individual protected areas.

g) Training programs should attempt to reach a higher proportion of guards, and the programs should introduce public relations techniques.

5.4 Tourism, Recreation and Education

5.4.1 Facilities Construction and Carrying Capacity

The expected rise in park tourism will inevitably affect park ecology and is already responsible for isolated problems in some heavily visited parks. These problems are mainly in the form of disturbance to plants, animals and scenery from high concentrations of people in confined areas and from development of visitor service infrastructure such as roads and bungalows. The following recommendations are made to prevent or minimize adverse impacts from tourism.

a) Each park that now receives or is expected to receive substantial visitation should determine visitor carrying capacities for the park in general and for specific tourism sites (existing and potential) within the park. This would entail combining existing ecological knowledge of the park with precedents from similar areas that have been degraded due to overuse by tourists. Projections of tourism increases during the next 10-15 years should be developed so that suitable strategies can be produced in light of carrying capacity versus expected tourism volume.

b) Parks should be surveyed for development of new recreation sites,especially in areas along the park periphery located near guard stations. This would help relieve congestion and could provide local people with additional income through operation of concession stands.

c) NPD should give serious consideration to restricting all major tourism development -- particularly accommodations and large restaurants -- to areas outside park boundaries. This would occur at selected parks as determined by NPD's policy statement. Visitor facilities development inside the park would be limited to interpretive displays, small food stalls, small-scale development of waterfalls, vistas and the like. Such an approach would be doubly advantageous by: (i) limiting disturbance to park resources; and (ii) providing increased opportunities for significant local benefits from tourism through provision of transportation into the park, quide services, accommodations, etc.

d) Detailed studies on visitors to individual parks should be encouraged. The studies might include visitor profiles, motivations, recreation patterns, satisfaction levels and preferences for future park development. Other statistics such as visitor counts should be standardized for all parks.

e) Visitor services, such as accommodations, now operated by the parks should be opened to concessionaires to free park officers for more important duties (see 5.6).

5.4.2 Interpretive/Educational Programs

National parks receive visitation in excess of 4 million annually, representing all levels of society. This presents a splendid opportunity for offering conservation education at relatively low cost to a substantial proportion of the Thai population. It is therefore unfortunate and surprising that no national park possesses an interpretive program of high quality. Paradoxically, WCD has done a comparatively superior job to NPD in some regards.

An immediate effort should be made to rectify this situation, beginning at Thailand's most popular parks and non-hunting areas. This can be accomplished by

- using existing NPD and WCD expertise to develop broad guide-lines and plans for interpretive programs that can be applied by less-experienced officers in the field,

- soliciting outside expertise and funding to develop model interpretive programs at one terrestrial park, one marine park and one non-hunting area, and to support efforts at other protected areas,

- providing training to existing personnel as part of activities outlined in 5.2.1,

- recruiting trained university graduates, and

- establishing interpretive sections, headed by a trained individual, at major parks and non-hunting areas.

Guard stations are in effect "mini-headquarters" and their proximity to local people places them in the forefront of park/village relations. Therefore, public relations, recreation and education programs should be established at large, strategically located guard stations.

Support should be given to develop more interpretive programs such as the one at Khao Yai N.P. that brings local community leaders to the park for several days to learn about park objectives and discuss avenues of cooperation. If possible, more parks should be encouraged to establish mobile units that show slides and films at surrounding villages.

5.4.3 Tourism at Wildlife Sanctuaries

There has been considerable debate about opening wildlife sanctuaries to tourism, particularly in light of public demand. The only precedent for this action is at Phu Luang W.S., which allowed tourism beginning in 1982 following strong requests from provincial

officials. The results thus far have been quite unfavorable in terms of ecological damage and uncontrolled development.

It is recommended that the status quo concerning sanctuary tourism be maintained for at least the next several years. This may be reconsidered following preparation of sanctuary management plans with strong emphasis on management zoning and resulting evaluations of their implementation. If the sanctuaries have demonstrated a capability for satisfactorily implementing plans, then addition of limited tourism programs in the management plans should be considered by WCD. Tourism programs at wildlife sanctuaries, if properly devised and implemented, could provide a public service in terms of recreation and education and also provide further justification for keeping the sanctuaries free from incompatible alternative uses.

5.5 Administration and Management

The lack of cohesive, long-range and systematic administration/management for the protected areas system backed by explicitly defined objectives is second only to budgetary constraints as a limiting factor in effectively integrating protected areas into overall national socioeconomic development. Similarly, it is an issue strongly related to all other issues.

5.5.1 Division Level

In 1986 seperate attempts were made to: (i) combine NPD and WCD into one division within RFD; and (ii) to relocate the two divisions into an autonomous department independent of RFD, with each division maintaining its separate status under the new department. This report strongly recommends implementation of (ii). Justification for combining the divisions can be summarized as follows:

- The major conservation objectives of the two divisions are not different,

- the rationales for being and the mandatory functions required for the two divisions are also similar,

- contiguous parks and sanctuaries of similar characteristics are managed as separate units,

- combining the two divisions into one department would allow for a new reform of organization, and

- the fact that NPD and WCD administer 10 percent of Thailand's total land area should in itself be sufficient cause for upgrading to department or equivalent status.

For the following reasons, these advantages could be seriously compromised if the divisions are combined under RFD.

a) Although NPD and WCD conservation objectives are similar, they are far removed from RFD objectives, which primarily deal with commercial exploitation.

b) Innovations that would allow fuller integration of protected areas into national development would be hindered by divisional status under RFD, one of Thailand's oldest bureaucracies.

c) There is little reason to believe that combining NPD and WCD into one division under RFD would provide a more rational distribution of qualified staff and funds. Rather, the new division could easily be asked to do more with fewer resources.

Whether or not the two divisions are separated from RFD, they should immediately produce policy statements. The first step in formulation of a policy statement would be to cogently state major objectives

of the park system and of the sanctuary/non-hunting area system; outline how these objectives can be accomplished; and clearly define responsibilities of the divisions and their component sections.

Following the statement of objectives, there would an assessment of existing conditions to evaluate what is already protected. The evaluation would be used to identify gaps and/or inconsistencies in the system and finally, it would be determined what appropriate action need be taken to fill the gaps and rectify the inconsistencies. This would allow the divisions to: (i) establish a rational acquisition policy; (ii) create a priority list of protected areas to be used when dispersing funds, equipment and personnel; and (iii) identify existing national protected areas that are worthy of being upgraded to higher status or that should be downgraded and placed at the disposal of local or provincial authorities. Criteria for a priority list may include, but should not be limited to:

- size of the protected area
- presence of rare and endangered species
- presence of uncommon or critical habitats
- presence of major watersheds
- contribution the area makes or can potentially make to development of the surrounding region, and
- presence of outstanding opportunities for tourism, education and research.

Another output of policy statements should be plans for decentralization of administration and decision-making. At least four regional offices should be established and headed by an officer with authority to make important decisions. Superintendents would not then be compelled to spend inappropriate amounts of time in Bangkok as is now the case. Regional offices could also provide far more efficient support to field operations.

The policy statements would become indispensable frameworks for administration and management of the protected areas system. A special committee should be formed to oversee preparation of policy statements for both divisions and should include senior representatives from the following agencies:

- NPD
- WCD
- ONEB
- Faculty of Forestry, Kasetsart University
- RFD's Law Division
- TAT
- Chulalongkorn University's Environmental Research Institute
- An advisor from IUCN, UNEP or other international agency with experience in this field.

The final recommendation is to amend protected area legislation, i.e. NPA and WARPA, to reflect present and emerging national needs especially concerning protected areas' roles in socioeconomic development. The amendments should include, among other things, new categories of protected areas that would help promote: (i) appropriate management suitable to the characteristics and values of particular types of areas: (ii) enhanced flow of benefits to regional communities; and (iii) significant local participation in management.

5.5.2 Protected Area Level

Management plans will be prepared for 23 protected areas between 1987 and 1991. Senior protected area officials must be held accountable for significant implementation of the plans. This can be achieved through independent annual monitoring of management plan implementation. Monitoring by a public or private agency outside RFD should therefore be considered an essential component of the management

plans themselves. Monitoring costs will be minimal, probably no more than 1-2 percent of the annual implementation budget.

All protected areas not scheduled to prepare management plans within the next year or two should be required to prepare statements for management. These would briefly outline major management objectives for the protected area over a 2-5 year period. They however would not carry the same weight as bona fide management plans and should not be considered as license for large-scale development.

As a general rule, development at protected areas that have not prepared management plans should be restricted to the essentials such as a central office and employee housing. A possible exception may include visitor service development at a restricted number of parks as discussed in 5.4.1.

Closely related to park management is research. Establishing research sections at parks and sanctuaries is in most cases infeasible and inappropriate. However, all larger protected areas should hire a research coordinating officer to coordinate research efforts by Thai and foreign scientists and to facilitate incorporation of results into management programs. Management plans should give due consideration to provision of adequate facilities for researchers.

NPD and WCD should consider preparing regional or subregional macro plans that would help coordinate conservation activities and visitor facilities among proximate protected areas. Because the newly established planning section will be fully occupied with management plan preparations at individual parks and sanctuaries, significant assistance such as equipment, manpower and funding would be required from outside sources.

5.6 Integration of Protected Area Management with Socioeconomic Development

A major limiting factor in bringing illegal exploitation of protected areas down to tolerable levels is villager attitudes and perceptions of the role these areas play in their lives as well as their reliance on resources present in protected areas. Therefore, it is critical that protected areas place emphasis on increasing the flow of benefits to local and regional communities.

NPD and WCD should make strong efforts to encourage public participation in protected area management. Recommended actions to accomplish this are presented below.

a) Programs which link conservation and rural development, such as those presently being implemented at Phu Khieo W.S. and at Ban Sap Tai near Khao Yai N.P. (see Appendix) should be evaluated, the concepts modified if necessary, and the programs expanded. Significant expansion would be a highly ambitious undertaking requiring substantial support from government and aid agencies.

b) NPD should divest itself of most visitor services, particularly profitable accommdation services. Local people or organizations should receive priority consideration as operators and laborers. Collection of concession fees would maintain a flow of monies to the parks, though popular parks would undoubtedly suffer a drop in revenue. This, however, should be more than compensated for in the long-term by freeing park officials to devote precious time to protection, interpretation and other critical programs; by improving relations with local people; and by ridding the park of costly construction and maintenance operations. NPD would, of course, need to provide strict supervision over the concessions. Also, all small concessions at recreation spots should be reserved for local people whenever practicable.

c) NPD should as a matter of policy allocate a certain proportion of entrance fees collected at the more popular parks to small-scale rural development projects and other community services.

c) The needs of villagers and opinions of local officials should be addressed in management plans and programs. All management plans should devote a separate section to community relations/development.

e) Support for WCD's wildlife farming program should be continued with a view to expediting research and ultimately providing animals to local villagers, enabling them to establish their own farms. The government should amend WARPA to permit closely supervised trade in captive bred species.

f) The recent surge in interest by nature-based tour groups should be cultivated by NPD with emphasis on employing local people as forest guides, laborers, etc.

g) Benefit/cost analyses should be conducted at all major protected areas. This would help identify benefits of greatest value and suggest how management can be improved to fully achieve these benefits.

5.7 Expansion of the Protected Areas System

Acquisition policies should be developed as part of the policy statements. Priority in acquisition should be given to land that: (i) links existing protected areas; (ii) holds significant parcels of under-represented habitat types; and/or (iii) covers large areas. Collaboration with Mahidol University's new data base could ease information, budget and manpower requirements. FAO (1981) offers guidelines for land acquisition in Thailand based on ecosystem and genetic conservation.

Because national parks and wildlife sanctuaries have demonstrated that they are the most effective of all forest conservation programs in Thailand, the government's policy of preserving forests on 15 percent of Thailand's land area should rely primarily (if not exclusively) on parks and sanctuaries. This could be coordinated with the National Watershed Classification System. WCD and NPD might in the future consider using the proposed beneficial uses analysis to justify an increase in the 15 percent target if feasible.

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APPENDICES

APPENDIX A

QUESTIONNAIRE

QUESTIONNAIRE

"Assessment of National Parks and Wildlife Sanctuaries Development in Thailand"

by

The Faculty of Forestry, Kasetsart University

in co-operation with

Royal Forest Department

and

Office of the National Environment Board

sponsored by

U.S. Agency for International Development

(USAID)

Part 1 Respondent's profile

1. Name _____ Surname _____

2. Age _____

3. Highest degree earned : _____ from _____
   year ___ _____

4. Professional experience, training, etc.

No.	Training Subject	agency	year
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			

5. Present position _____

6. Time in present position _____ (year/months)

Part 2 General description of protected area

7. Classification of protected area

1 ◯ marine park 2 ◯ terrestrial park

3 ◯ wildlife sanctuary 4 ◯ non-hunting area

8. Name of protected area _____

Location (district/province) _____

9. Year gazetted _____

10. Size of the area _____ (rai)

11. Please briefly describe the area's "uniqueness" or important attributes (eg.wildlife, wildlife population, scenery, beach, coral, etc.)

_____

_____

_____

_____

_____

_____

12. Vegetation types

12.1 Forest

Forest	Approximate percentage of total forest area
1. moist evergreen forests	
2. dry evergreen forests	
3. hill evergreen forest	
4. mixed deciduous forests	
5. dry dipterocarp	
6. mangrove forest	
7. beach forest	
8. other types-specify	

12.2 Rare and endemic plant species found in the area

1. rare spp. _____

_____

2. endemic spp.* _____

_____

12.3 Rare and endemic animal spp. found in the area

1. rare spp. _____

_____

2. endemic spp.* _____

_____

3. Animal species found in the area (classify in the "remark" space whether it is estimated data or survey data gathered by individuals, groups or organizations.)

Species	No. of species	Remarks
1. birds		
2. mammals		
3. reptiles		
4. amphibians		

* Remark : The endamic species of vegetation and animals means those species which can be found nowhere in Thailand nor other parts of the world but in this area.

Part 3 Administration, management and activities development

13. Number of personnel working in the area (current fiscal year)

1) Government officials Total No. _____

1.1 professional foresters and scientists " _____

1.2 forestry officials " _____

1.3 other government officials " _____

2) Permanent employees Total No. _____

2.1 forest guards " _____

2.2 clerks " _____

2.3 drivers and boatmen " _____

2.4 other permanent employees " _____

3) temporary employees Total No. _____

3.1 patrol officers " _____

3.2 laborers " _____

14. Budget allocated for area administration and management.

Fiscal year	Budget(baht)	Revenue(baht)	Remark
1982			
1983			
1984			
1985			
1986			

15. Number of ranger stations, offices, employee accommodations and services for officials and employees (until present)

1) ranger stations Number _____

2) offices " _____

3) employee accommodations " _____

4) services for personnels

Items	No	Yes	Condition		Remark
			sufficient	insufficient	
1. Service board					
2. Coop.stores					
3. Sports facilities					
4. Other (describe) _____					

16. Essential equipment and maintenance problems

1. firearms

1.1 machine gun	number	_____
1.2 rifle	"	_____
1.3 pistol	"	_____

2. vehicles

2.1 motorcycles	number	_____
2.2 automobiles	"	_____
- small trucks	"	_____
- heavy duty truck	"	_____
- Jeep/Land Rover	"	_____
2.3 boats		
- speed boat	"	_____
- long-tail boat	"	_____
- small cargo boat	"	_____

3. radio

3.1 single side band	"	_____
3.2 walkie-talkie	"	_____

4. problems of equipment maintenance

1. ◯ no 2 ◯ yes (describe the problem)

_____

_____

17. Number of court cases involving violations of the National Park Act and the Wild Animals Reservation and Protection Act

year	Type				
	fining cases	Investigative cases			
		logging	Encroachment	hunting	other crimes
1982					
1983					
1984					
1985					

18. Management and development plans

1. Annual action plan

1 ◯ yes 2 ◯ no

2. Preliminary management plan

1 ◯ yes 2 ◯ no

3. Management and development plan

1 ◯ yes 2 ◯ no

19 Area management in terms of "zoning" for recreational activities and conservation

1. ◯ Already finished in (year) _____
2. ◯ Still being implemented. Expected completion date (year) ____
3. ◯ Not yet started but expected to be finished in (year) _____
4. ◯ No plans for implementing.

<u>Remark</u> : In case of answer 2,3,4 go to question 21

20. The protected area is divided into _____ zones as follows

1. _____

2. _____

3. _____

4. _____

5. _____

21. Research carried out in the area.

Datails of study	yes	no
1. flora species listing		
2. fauna species listing		
3. vegetation mapping		
4. wildlife location mapping		
5. survey on the number and demand of tourism		
6. other-describe _____		

23. Types of employee training needed

1. ◯ nature interpretation

2. ◯ public relations

3. ◯ security and visitor service

4. ◯ law enforcement

5. ◯ resource management and monitoring

6. ◯ training on research and monitoring

7. ◯ others (describe) _____

24. Development of tourism and recreation infrastructure

24.1 Infrastructure development

1) road (in the protected area only) length _____ km.(approximately)

a. asphalt length _____ km. "

b. laterite " _____ " "

c. unimproved " _____ " "

2) trails " _____ " "

3) electricity

1. ◯ no electricity

2. ◯ electricity supplied by local or regional power board (outside the area)

3. ◯ electricity supplied by a generator in the protected area. The generator's power _____ kilowatt.

4) water supply

	Source		Distribution method	
	from inside area	from outside area	untreated	cleaned by purifying process
a. drinking water				
b. domestic water				

5) telephone

1. ◯ no telephone

2. ◯ have only within-area telephone

3. ◯ have only outside-area telephone

4. ◯ both

24.2 Provision of other facilities for recreational activities (parks only)

1) lodging

kind of lodging	no	yes	q'ty	capacity (persons)	remark
1. bungalow					
2. row accommodation					
3. communal tents					
4. organized camp					
5. tent for rent					
6. camp ground					

2) visitor center

1 ◯ no 2 ◯ yes - number _____

3) food service provided in park

1 ◯ no 2 ◯ yes - number _____

capacity

place 1 No. _____ persons

2 " _____ "

3 " _____ "

4 " _____ "

5 " _____ "

4) souvenir shop

1. ◯ no 2 ◯ yes - number _____

5) general goods shop

1 ◯ no 2 ◯ yes - number _____

6) picnic table

1 ◯ no 2 ◯ yes - number _____

7) viewpoint

1 ◯ no 2 ◯ yes - number_____

8) dock

1 ◯ no 2 ◯ yes - number _____

9) parking lot

1 ◯ no 2 ◯ yes - number _____

10) interpretive program

Items	No	Yes	Present condition		Remark
			good	needs improvement	
1. nature trail					
2. signs					
3. slide program					
4. amphitheater					
5. group activities (nature study)					
6. other - (describe) _____					

24.3 General characteristics of people living around the area and their opportunity for employment in the park

1) people's occupation (majority)

- major occupation _____

- minor occupation _____

2) development plans to improve the people's standard of living

1 ◯ no 2 ◯ yes(briefly describe the plan)

_____

_____

3) provision for park employment

1. ◯ no (go to question no. 24.4)

2. ◯ yes

4) type of park employment

Kind of service	Q'ty (unit)	Capacity (person)	Remark
1. accommodation service (bungalow)			
2. restaurant			
3. grocer's shop			
4. souvenir shop			
5. luggage carrying service			
6. tour guide service			
7. others (describe) _____ _____			

24.4 activities for tourists

Activity	No	Yes	Rank popularity	Remark
1. pinic				
2. driving for pleasure				
3. walking for pleasure				
4. photographing				
5. wildlife viewing (bird-watching)				
6. hiking and climbing				
7. fishing				
8. seaside swimming				
9. sailing				
10. diving				
11. snorkeling				
12. windsurf				
13. fresh water swimming				
14. rafting or row-boating				
15. campfire				
16. other(describe) _____ _____ _____				

24.5 Entrance fee

1 ◯ no 2 ◯ Yes

Part 4 Impact and problems resulting from development and other causes

25. Problems and impact on natural resources and management

Problems and Impact	No (0)	Yes			Cause			Location			Remark
		little (1)	moderate (2)	severe (3)	by man	by nature	both	outside	inside	both	(specify the location if you can)
(1) Water and water resource											
1. Inadequate water											
2. Erosion											
3. Chemical pollution											
4. Organic pollution											
5. Indequate rain											
6. Removal of vegetation											
(2) Air											
1. Dust											
2. Smoke											
(3) Soil											
1. Erosion											
2. Inadequate cover of vegetation											

Problems and Impact	No (0)	Yes			Cause			Location			Remark (specify the location if you can)
		little (1)	mode-rate (2)	severe (3)	by man	by nature	both	out-side	inside	both	
3. Loss of soil nutrients											
4. Chemical pollution											
5. Compaction											
(4) **Vegetation**											
1. Removal of vegetation											
2. Fire											
3. Trampling											
4. Exotic plants											
5. Plant succession											
6. Inadequate water supply											
7. Flooding											
8. Chemical pollution											
(5) **Wildlife**											
1. Illegal removal											
2. Human harrassment											

Problems and Impact	No (0)	Yes			Cause			Location			Remark (specify the location if you can)
		little (1)	mode-rate (2)	severe (3)	by man	by nature	both	out-side	inside	both	
3. Loss of habitat											
4. habitat Change											
5. Fire											
6. Flooding											
7. inadequate supply of food											
8. Inadequate water supply											
9. Near extinction of specific species											
10. Overpopulation of species											
11. Exotic animals											
12. Blocked migratory routes											
13. Insufficient area											
14. Damage to coral											
15. Excessive fishing											

Problems and Impact	No (0)	Yes			Causes			Location			Remark (specify the location if you can)
		little (1)	mode-rate (2)	severe (3)	by man	by nature	both	out-side	inside	both	
(6) Administration and Management											
1. Lack of personnel											
2. Lack of funding											
3. Lack of equipment											
4. Lack of trained personnel											
5. Local attitude											
6. Unlawful entry											
7. Undefined boundaries											
8. Unsafe conditions											
9. Too much building development											
10. Too many visitors											
11. Lack of agency coordination											
12. Lack of policy statements											

Remark: In (6), Administration and Management, answers to cause and location are not necessary.

26. Other Issues and problems you want to state. (apart from 25)

27. Based on your significant experience in the Reserve's administration and management, what is your opinion about the present situation of Thailand's reserves as well as management and development in the future ? What do you think is an appropriate model ?

TABLE 1 STAFF STRENGTH AT INDIVIDUAL NATIONAL PARKS, 1986.

	Name of Parks	Civil Servant			Permanent Worker				Seasonal Worker	
		Technical Officers & Scientists	Forest Technician	Other Officers	Guard	Clerk	Driver	Other Worker	Forest Patrols	Worker
1	Khao Yai	4	4	1	27	-	2	3	102	101
2	Phu Kradung	3	2	1	25	-	1	3	40	60
3	Thung Salaeng Luang	2	2	-	1	-	1	1	10	60
4	Khao Sam Roi Yot	2	1	-	14	-	1	-	35	45
5	Nam Nao	1	2	-	16	-	1	7	50	30
6	Doi Inthanon	2	2	-	18	-	-	2	52	45
7	Phu Phan	1	4	-	14	-	-	1	-	60
8	Tarutao	3	2	-	18	-	-	3	80	-
9	Khao Luang	2	1	-	9	-	-	-	30	88
10	Doi Khuntan	2	2	-	21	-	-	3	30	38
11	Namtok Phliu	3	1	-	17	-	-	2	39	21
12	Erawan	2	3	-	7	-	-	1	50	50

TABLE 1 (con't)

	Name of Parks	Civil Servant			Permanent Worker				Seasonal Worker	
		Technical Officers & Scientists	Forest Technician	Other Officers	Guard	Clerk	Driver	Other Worker	Forest Patrols	Worker
13	Khao Chamao-Khao Wong	2	2	-	7	-	-	3	23	17
14	Khao Khitchakut	2	-	-	17	-	-	1	25	15
15	Lansang	2	-	-	13	-	-	-	30	22
16	Phu Rua	2	-	-	6	-	-	-	20	20
17	Chaloem Rattanakosin	2	-	-	16	-	-	1	20	31
18	Ramkhamhaeng	2	1	-	4	-	-	-	22	15
19	Sai Yok	-	2	-	3	-	-	-	---- 94 ---	
20	Thaleban	2	2	-	6	-	1	1	---- 54 ---	
21	Mu Ko Ang Thong	1	2	-	4	-	-	1	15	31
22	Khao Sok	2	-	-	8	-	-	1	13	28
23	Tat Ton	2	1	-	5	-	1	-	35	45

TABLE 1 (con't)

Name of Parks	Civil Servant			Permanent Worker				Seasonal Worker	
	Technical Officers & Scientists	Forest Technician	Other Officers	Guard	Clerk	Driver	Other Worker	Forest Patrols	Worker
24 Doi Suthep-Pui	3	3	-	14	-	1	7	--- 126 ---	
25 Ao Phangnga	1	2	-	1	1	-	1	15	20
26 Si Satchanalai	2	1	-	4	-	-	-	20	26
27 Khao Sam Lan	1	-	-	3	-	-	1	25	20
28 Kaeng Krachan	2	1	-	3	-	-	-	8	62
29 Mu Ko Surin	-	1	-	-	-	-	-	10	10
30 Khao Phanom Bencha	-	2	-	-	-	-	-	12	25
31 Hat Nai Yang	2	-	-	3	-	-	-	-	40
32 Mae Ping	1	1	-	3	-	-	-	20	40
33 Kaeng Tana	1	1	-	3	-	-	-	15	30
34 Khao Laem Ya- Mu Ko Samet	3	-	-	5	1	2	-	25	12

TABLE 1 (con't)

	Name of Parks	Civil Servant			Permanent Worker				Seasonal Worker	
		Technical Officers & Scientists	Forest Technician	Other Officers	Guard	Clerk	Driver	Other Worker	Forest Patrols	Worker
35	Wiang Kosai	2	2	-	1	-	-	-	---- 52 ---	
36	Hat Chao Mai	-	2	2	-	1	-	-	10	16
37	Namtok Mae Surin	1	-	-	1	-	-	-	10	15
38	Si Nakarin	2	1	-	1	-	-	1	15	35
39	Thap Lan	3	2	1	2	-	-	-	90	50
40	Ton Krabak Yai	1	-	-	4	-	-	-	16	9
41	Pang Sida	-	-	1	2	-	-	-	15	15
42	Khao Pu-Khao Ya	1	1	-	9	-	-	7	12	58
43	Mu Ko Similan	-	1	-	-	-	-	-	5	15
44	Khlong Lan	2	1	-	-	-	-	-	30	20
45	Mu Ko Chang	1	-	-	1	-	-	-	10	12
46	Laem Son	1	-	-	2	1	-	-	6	18

TABLE 1 (con't)

	Name of Parks	Civil Servant			Permanent Worker				Seasonal Worker	
		Technical Officers & Scientists	Forest Technician	Other Officers	Guard	Clerk	Driver	Other Worker	Forest Patrols	Worker
47	Hat Nopharat Thara-Mu Ko Phi-Phi	2	-	-	1	-	-	1	18	12
48	Phu Hin Rong Kla	2	1	2	-	-	-	-	16	21
49	Mu Ko Phetra	-	1	-	-	-	-	-	---- 81 ---	
50	Phu Kao-Phu Phan Khan	2	-	-	1	-	-	-	-	20
51	Mae Yom	1	1	-	-	-	-	-	---- 36 ---	
52	Khao Lam Pi-Hat Thai Muang	-	1	-	-	-	-	-	10	16
53	Mae Wong	1	-	-	1	-	-	-	40	-
54	Su-ngai Padi-Budo	-	1	-	1	-	-	-	---- 24 ---	
55	Khao Nam Khang	-	1	-	-	-	-	-	---- 14 ---	

TABLE 1 (con't)

	Name of Parks	Civil Servant			Permanent Worker				Seasonal Worker	
		Technical Officers & Scientists	Forest Technician	Other Officers	Guard	Clerk	Driver	Other Worker	Forest Patrols	Worker
56	Khlong Phlao	1	-	-	-	-	-	-	---- 36 ---	
57	Phu Chong Nayoi	-	1	-	-	-	-	-	11	21
58	Namtok Chat Trakan	1	-	-	3	-	-	-	7	15
59	Mukdahan	-	1	-	-	-	-	-	8	11
60	Si Lanna	1	1	-	-	-	-	-	6	9
61	Namtok Lam Ru	-	1	-	-	-	-	-	7	4
62	Doi Phu Kha	-	1	-	-	-	-	-	7	7
Total		87	69	8	345	4	11	52	-- 3,243 ---	

Sources : "Questionnaires on Assessment of National Parks and Sanctuaries Development in Thailand" (1986) ; NPD, RFD (1986)

TABLE 2 WILDLIFE SANCTUARIES STAFF STRENGTH ACCORDING TO CIVIL SERVICE CLASSIFICATION

No.	Name of Sanctuaries	Area (ha)	No. of Guard Station		Staff Strength			
			Permanent Unit	Temporary Unit	Forest Technician	Forest Technical Officer	Guard	Total
1.	Salak Phra	85,855	11	-	1	2	29	32
2.	Huai Kha Khaeng	257,464	10	-	10	1	25	36
3.	Khlong Nakha	48,000	4	-	3	1	13	17
4.	Phu Khieo	156,000	14	1	12	2	37	51
5.	Khao Soi Dao	74,502	4	1	5	1	16	22
6.	Lum Nam Pai	119,400	4	-	3	1	5	9
7.	Thung Yai Naresuan	320,000	2	1	2	1	9	12
8.	Khlong Saeng	115,615	4	-	4	1	18	23
9.	Khao Kheio-Khao Chumphu	14,470	5	1	5	2	19	26
10.	Phu Wua	18,650	5	-	3	1	13	17
11.	Phu Luang	84,799	8	2	9	1	30	40
12.	Khao Banthat	126,699	4	1	7	-	23	30

TABLE 2 (con't)

No.	Name of Sanctuaries	Area (ha)	No. of Guard Station		Staff Strength			
			Permanent Unit	Temporary Unit	Forest Technician	Forest Technical Officer	Guard	Total
13.	Thon Nga Chang	16,200	4	1	3	1	10	14
14.	Mae Tun	117,300	3	1	3	1	4	8
15.	Salawin	87,500	4	-	4	1	3	8
16.	Khao Ang Ru Nai	10,810	3	1	3	1	5	9
17.	Doi Chiang Dao	52,100	6	-	2	1	12	15
18.	Khlong Phraya	9,500	1	1	1	1	3	5
19.	Doi Pha Chang	57,675	2	-	3	-	1	4
20.	Yot Dom	20,255	2	1	1	1	4	6
21.	Maenam Phachi	46,931	3	2	3	1	10	14
22.	Khao Phanom Dongrak	31,600	1	2	2	1	3	6
23.	Doi Pha Muang	58,320	3	-	3	1	-	4
24.	Phu Miang-Phu Thong	54,500	1	1	1	3	2	6
25.	Omkoi	122,400	4	2	2	1	5	8

TABLE 2 (con't)

No.	Name of Sanctuaries	Area (ha)	No. of Guard Station		Staff Strength			
			Permanent Unit	Temporary Unit	Forest Technician	Forest Technical Officer	Guard	Total
26.	Doi Luang	9,700	-	1	2	1	1	4
27.	Huai Sala	40,000	-	1	1	1	-	2
28.	Khao Sanam Phriang	10,100	1	-	2	1	1	4
29.	Sadet Nai Kromaluang Chumphon Park	61,300	-	-	-	2	1	3
30.	Sap Langka	15,400	-	-	2	-	-	2
31.	Mae Yuam Fang Khwa	29,200	-	-	1	1	-	2

Sources : WCD, RFD (1986)

TABLE 3 NON-HUNTING AREA STAFF STRENGTH ACCORDING TO CIVIL SERVICE CLASSIFICATION

No.	Name of Non-hunting Area	Area (ha)	No. of Guard Station		Staff Strength				
			Permanent Unit	Temporary Unit	Forest Technician	Forest Technical officer	Guard	Other	Total
1.	Thale Noi	45,700	5	1	3	-	23	-	26
2.	Bung Boraphet	21,280	1	1	2	1	3	-	6
3.	Nong Thung Thong	2,956	-	-	2	-	-	-	2
4.	Ang Kep Nam Kuai Chorakhe Mak	620	-	-	3	-	2	-	5
5.	Ang Kep Nam Kuai Talat	709	-	-	1	-	1	-	2
6.	Ang Kep Nam Sanam Bin	571	-	-	2	-	-	-	2
7.	Ang Kep Nam Bang Phra	1,856	-	-	1	-	7	-	8
8.	Doi Suthep Special Forest Reserve	1,750	-	-	2	1	3	-	6
9.	Thala Sap	36,467	-	3	2	-	8	-	10
10.	Khao Tha Phet	460	-	-	-	1	-	-	1
11.	Khao Nam Phrai	2,080	1	-	1	-	4	1*	6

TABLE 3 (con't)

No.	Name of Non-hunting Area	Area (ha)	No. of Guard Station		Staff Strength				
			Permanent Unit	Temporary Unit	Forest Technician	Forest Technical officer	Guard	Other	Total
12.	Khao Phra Thaeo	2,228	1	1	-	1	1	-	2
13.	Nong Waeng	17	-	-	1	1	1	-	3
14.	Wat Phai Lom-Wat Amphuwararam	12	-	-	1	-	1	-	2
15.	Wat Tan En	16	-	-	-	-	-	-	-
16.	Bung Kroeng Hawia-Nong Nam Sap	51,200	1	3	3	-	3	-	6
17.	Mu Ko Libong	44,750	1	1	2	-	5	-	7
18.	Nong Plak Phraya-Khao Raya Bang Sa	620	-	-	1	-	1	-	2
19.	Tham Pha Tha Phon	284	-	-	1	-	1	-	2
20.	Bung Chawak	320	-	-	1	-	1	-	2
21.	Pa Phru	16,000	-	-	3	1	-	-	4
22.	Bung Khong Long	1,094	-	-	1	-	1	-	2

TABLE 3 (con't)

No.	Name of Non-hunting Area	Area (ha)	No. of Guard Station		Staff Strength				
			Permanent Unit	Temporary Unit	Forest Technician	Forest Technical officer	Guard	Other	Total
23.	Pa Len Pak Phanang-Pa Len Ko Chai-Pa Laem Ta Lum Phuk	5,673	-	-	1	-	-	-	1
24.	Mae Lau-Mae Sae	24,500	-	-	1	1	-	-	2
25.	Khao Pa Chang-Laem Khan	23,500	-	-	1	-	1	-	2
26.	Tham Khang Khao-Khao Chong Phran-Wat Khao Chong Phran	12	-	-	-	1	-	-	1
27.	Thale Sap Nong Bong Khai	434	-	-	1	-	-	-	1
28.	Khao Yai-Khao Na Pha Tang-Khao Taphrom	2,400	-	-	1	-	-	-	1
29.	Khlong Lam Chan	5,400	-	-	-	-	2	1*	3
30.	Khao Chi On	368	-	-	1	-	-	-	1
31.	Khao Moh	1,152	-	-	2	-	1	-	3

TABLE 3 (con't)

No.	Name of Non-hunting Area	Area (ha)	No. of Guard Station		Staff Strength				
			Permanent Unit	Temporary Unit	Forest Technician	Forest Technical officer	Guard	Other	Total
32.	Phru Khang Khao	61	-	-	-	-	-	1*	1
33.	Nong Hua Khu	11	-	-	-	-	-	-	-
34.	Wat Ratsattha Krayaram	8	-	-	-	-	-	-	-
35.	Tham Rakhang-Khao Phra Non	17	-	-	-	1	-	-	1
36.	Tham Lawa-Tham Daodung	4,150	-	-	-	-	-	-	-

Note: *Extension Officer.

Source: WCD, RFD (1986).

TABLE 4 ANNUAL BUDGET ALLOCATIONS TO NATIONAL PARKS, 1982-1984

UNIT : BAHT

	Name of Park	Fiscal Year				
		1982	1983	1984	1985	1986
1	Khao Yai	1,876,400*	3,253,500	2,980,000	3,331,000	3,491,000
2	Phu Kradung	1,277,900	1,270,000	1,468,000	1,545,000	1,665,000
3	Thung Salaeng Luang	725,600*	726,000	766,000	950,000	1,200,000
4	Khao Sam Roi Yot	666,105	785,000	830,000	1,315,820	1,028,000
5	Nam Nao	1,127,500*	1,518,000	1,394,600	2,398,520	2,442,800
6	Doi Inthanon	2,108,100	2,924,000	1,812,000	1,504,000	1,504,000
7	Phu Phan	934,330	957,228	804,650	1,130,000	1,130,000
8	Tarutao	2,074,100	2,075,000	2,436,000	2,630,000	2,590.000
9	Khao Luang	1,110,900*	1,751,700	2,722,250	2,212,000	1,995,100
10	Doi Khuntan	536,000	823,000	856,000	1,068,000	1,068,000
11	Namtok Phliu	825,700	827,000	906,000	970,660	941,000
12	Erawan	970,810	1,083,000	1,123,000	1,327,980	1,307,090
13	Khao Chamao-Khao Wong	690,000	691,000	691,000	740,620	756,000

TABLE 4 (con't)

UNIT : BAHT

	Name of Park	Fiscal Year				
		1982	1983	1984	1985	1986
14	Khao Khitchakut	520,000	520,000	694,000	759,000	759,000
15	Lansang	947,000	947,000	947,000	947,000	1,047,000
16	Phu Rua	456,500*	838,350	1,362,000	682,220	630,280
17	Cheloem Rattanakosin	671,700	673,000	708,000	955,000	918,620
18	Ramkhamhaeng	542,545	644,000	678,000	730,840	742,000
19	Sai Yok	663,100	755,000	794,000	1,063,000	1,063,000
20	Thaleban	707,900*	1,202,900	1,785,250	1,442,000	1,046,060
21	Mu Ko Ang Thong	733,600	826,000	869,000	952,000	952,000
22	Khao Sok	662,000	663,000	707,000	1,114,000	1,134,000
23	Tat Ton	534,400	536,000	564,000	798,000	798,000
24	Doi Suthep-Pui	939,400*	1,707,500	2,129,300	3,917,940	1,499,920
25	Ao Phangnga	584,400	592,000	647,000	862,000	862,000
26	Si Satchanalai	702,500	703,000	740,000	930,000	930,000

TABLE 4 (con't)

UNIT : BAHT

	Name of Park	Fiscal Year				
		1982	1983	1984	1985	1986
27	Khao Sam Lan	202,200	242,700	834,000	629,000	746,000
28	Kaeng Krachan	447,500*	1,595,200	2,294,200	1,573,520	1,290,290
29	Mu Ko Surin	-	347,000	910,000	408,000	413,000
30	Khao Phanom Bencha	611,400	447,000	787,400	509,000	509,000
31	Hat Nai Yang	843,300	1,079,500	731,000	713,000	557,000
32	Mae Ping	578,500	696,250	714,000	962,000	962,000
33	Kaeng Tana	424,100	445,000	468,000	681,320	671,180
34	Khao Laem Ya-Mu Ko Samet	629,200	630,000	663,000	726,000	726,000
35	Wiang Kosai	127,600*	491,150	1,218,550	920,720	586,450
36	Hat Chao Mai	112,300*	1,069,600	630,900	1,109,020	429,300
37	Namtok Mae Surin	347,000	347,000	347,000	413,000	413,000
38	Si Nakarin	617,900	637,000	670,000	914,000	914,000

TABLE [illegible] (cont'd)

UNIT : BAHT

Name of Park	Fiscal Year				
	1982	1983	1984	1985	1986
39 Thap Lan	173,500*	761,850	586,000	631,920	622,360
40 Ton Krabak Yai	336,000	341,000	350,000	357,000	357,000
41 Pang Sida	250,000	320,000	360,000	420,000	420,000
42 Khao Pu-Khao Ya	239,600*	1,617,900	1,362,750	1,506,980	1,155,000
43 Mu Ko Similan	-	-	1,524,600	413,000	413,000
44 Khlong Lan	629,300	653,000	686,000	940,000	940,000
45 Mu Ko Chang	-	721,400	1,118,700	481,120	5,689,400
46 Laem Son	156,900	347,000	378,000	593,000	593,000
47 Hat Nopharat Thara-Mu Ko Phi-Phi	-	-	360,000	413,000	413,000
48 Phu Hin Rong Kla	-	-	480,000	590,000	590,000
49 Mu Ko Phetra	-	-	743,400	653,020	403,300
50 Phu Kao-Phu Phan Kham	-	-	300,000	330,000	330,000

TABLE 1 (con't)

	Name of Park	Fiscal Year		
		1982	1983	1984
51	Mae Yom	-	-	754,150
52	Khao Lam Pi-Hat Thai Muang	-	-	310,000
53	Mae Wong	-	-	300,000
54	Su-ngai Padi-Budo	-	-	378,000
55	Khao Nam Khang	-	-	-
56	Khlong Phlao	-	-	988,150
57	Doi Luang	-	-	-
58	Phu Chong Nayoi	-	-	140,000
59	Namtok Chat Trakan	156,900	347,000	558,000
60	Mukdahan	-	-	-
61	Si Lanna	-	-	-
62	Huai Huat	-	-	-

TABLE 1 (con't)

UNIT : BAHT

Name of Park	Fiscal Year				
	1982	1983	1984	1985	1986
63 Khao Laem	-	-	-	-	-
64 Si Phang nga	-	-	-	-	-
65 Bang Lang	-	-	-	-	-
66 Namtok Lam Ru	-	-	-	157,280	280,000
67 Doi Phu Kha	-	-	-	-	235,000
Total	30,471,690	42,366,728	53,359,850	59,498,300	57,600,790

Note: Does not include budget allocations for construction materials and durables.

Source: NPD, RFD (1986).

TABLE 5 ANNUAL BUDGET ALLOCATIONS TO WILDLIFE SANCTUARIES AND NON-HUNTION AREAS, 1983-1986

UNIT : BAHT

No.	Name	Fiscal Year			
		1983	1984	1985	1986
	WILDLIFE SANCTUARIES				
1.	Salak Phra	1,955,800	2,331,000	2,336,000	2,474,000
2.	Huai Kha Khaeng	1,828,400	2,049,000	2,174,000	2,426,000
3.	Khlong Nakha	1,002,900	1,177,600	1,122,000	1,170,000
4.	Phu Khieo	2,236,300	2,347,600	2,676,000	3,445,000
5.	Khao Soi Dao	1,106,500	1,227,800	1,236,000	1,502,000
6.	Lum Nam Pai	815,600	972,400	1,049,000	1,125,000
7.	Thung Yai Naresuan	568,200	650,200	789,000	828,000
8.	Khlong Saeng	1,069,700	1,185,200	882,000	888,000
9.	Khao Khieo-Khao Chomphu	1,287,700	1,419,100	1,430,000	1,566,000
10.	Phu Wua	1,049,000	1,309,000	1,302,000	1,460,000
11.	Phu Luang	2,195,000	2,340,000	2,052,000	2,428,000

TABLE [illegible] (cont'd)

UNIT : BAHT

No.	Name	Fiscal Year			
		1983	1984	1985	1986
12.	Khao Banthat	1,280,400	1,349,900	1,250,000	1,364,000
13.	Ton Nga Chang	931,400	1,079,200	1,371,000	1,395,000
14.	Mae Tun	761,400	838,200	960,000	1,086,000
15.	Salawin	772,000	1,064,500	1,068,000	1,131,000
16.	Khao Ang Ru Nai	607,000	802,000	990,000	1,166,000
17.	Doi Chiang Dao	981,900	1,156,200	1,484,000	1,616,000
18.	Khlong Phraya	447,800	498,000	558,000	711,000
19.	Doi Pha Chang	373,300	456,000	728,000	794,000
20.	Yot Dom	343,000	552,000	746,000	914,000
21.	Maenam Phachi	904,300	1,072,000	1,176,000	1,344,000
22.	Khao Phanom Dongrak	291,400	492,000	650,000	798,000
23.	Doi Pha Muang	696,000	852,700	992,000	1,074,000
24.	Phu Miang-Phu Thong	-	240,000	522,000	741,000

TABLE 5 (con't)

UNIT : BAHT

No.	Name	Fiscal Year			
		1983	1984	1985	1986
25.	Omkoi	791,800	1,119,300	1,260,000	1,320,000
26.	Doi Luang	-	396,000	456,000	582,000
27.	Huai Sala	-	300,000	450,000	480,000
28.	Khao Sanam Phriang	-	-	360,000	426,000
29.	Sadet Nai Kromaluang Chumphon Park	-	-	-	318,000
30.	Sap Langka	-	-	-	318,000
	NON-HUNTING AREAS				
1.	Thale Noi	1,310,000	1,368,700	1,416,000	1,494,000
2.	Bung Boraphet	622,200	637,300	648,000	732,000
3.	Nong Thung Thong	179,500	336,000	372,000	396,000
4.	Ang Kep Nam Huai Chorakhe Mak	109,800	144,000	170,000	258,000
5.	Ang Kep Nam Huai Talat	109,800	144,000	156,000	192,000

TABLE 5 (con't)

UNIT : BAHT

No.	Name	Fiscal Year			
		1983	1984	1985	1986
6.	Ang Kep Nam Sanam Bin	109,800	156,000	170,400	210,000
7.	Ang Kep Nam Bang Phra	563,000	673,000	636,000	702,000
8.	Doi Suthep Special Forest Reserve	176,000	181,800	240,000	240,000
9.	Thale Sap	590,800	603,700	720,000	756,000
10.	Khao Tha Phet	123,400	127,400	135,000	168,000
11.	Khao Nam Phrai	135,100	264,000	438,000	530,000
12.	Khao Phra Thaeo	109,800	240,000	336,000	396,000
13.	Nung Waeng	109,800	210,000	87,000	108,000
14.	Wat Phai Lom-Wat Amphuwararam	234,000	242,000	216,000	243,000
15.	Wat Tan En	109,800	120,000	132,000	126,000
16.	Bung Kroeng Kawia-Nong Nam Sap	380,000	504,000	780,000	960,000
17.	Mu Ko Libong	547,200	607,200	684,000	750,000

TABLE 5 (con't)

UNIT : BAHT

No.	Name	Fiscal Year			
		1983	1984	1985	1986
18.	Nong Plak Phraya-Khao Raya Bang Sa	313,600	322,000	402,000	414,000
19.	Tham Pha Tha Phon	-	324,000	369,000	405,000
20.	Bung Chawak	-	321,000	312,000	336,000
21.	Pa Phru	-	312,000	348,000	348,000
22.	Bung Khong Long	-	144,000	288,000	336,000
23.	Pa Len Pak Phanang-Pa Len Ko Chai-Pa Laem Ta Lum Phuk	-	-	294,000	342,000
24.	Mae Lau-Mae Sae	-	-	222,000	318,000
25.	Khao Ta Chang-Laem Kham	-	-	150,000	324,000
26.	Tham Khang Khao-Khao Chong Phran-Wat Khao Chong Phran	-	132,000	81,000	96,000
27.	Thale Sap Nong Bong Khai	-	-	-	174,000
28.	Khao Yai-Khao Na Pha Tang-Khao Taphrom	-	-	-	180,000

TABLE 5 (con't)

UNIT : BAHT

No.	Name	Fiscal Year			
		1983	1984	1985	1986
29.	Khlong Lam Chan	-	-	-	174,000
30.	Khao Chi On	-	-	-	174,000
31.	Khao Koh	-	-	-	174,000
32.	Phru Khang Khao	-	-	-	174,000
33.	Nung Hua Khu	-	-	-	144,000
34.	Wat Ratsattha Krayaram	109,800	120,000	-	-
35.	Tham Rakhang-Khao Phra Non	-	132,000	81,000	-
36.	Tham Lawa-Tham Daoadueng	-	144,000	-	-

Source : WCD, RFD (1986).

TABLE 6 COMPARISION OF EXISTING VERSUS RECOMMENDED NUMBERS OF GUARD STATIONS AT NATIONAL PARK

No.	Name of Parks	Area (ha)	Guard Station	
			Recommended No.	Existing No.
1	Khao Yai	216,863	28	11
2	Phu Kradung	34,812	5	4
3	Thung Salaeng Luang	126,240	16	5
4	Khao Sam Roi Yot	9,808	3	2
5	Nam Nao	96,600	13	6
6	Doi Inthanon	48,240	7	6
7	Phu Phan	66,470	9	6
8	Tarutao	149,000	19	4
9	Khao Luang	57,000	8	4
10	Doi Khuntan	25,048	4	4
11	Namtok Phliu	13,450	3	2
12	Erawan	55,000	7	3
13	Khao Chamao-Khao Wong	8,368	2	2
14	Khao Khitchakut	5,870	2	2
15	Lansang	10,400	3	2
16	Phu Rua	12,084	3	-
17	Chaloem Rattanakosin	5,900	2	2
18	Ramkhamhaeng	34,100	5	4

TABLE 6 (con't)

No.	Name of Parks	Area (ha)	Guard Station	
			Recommended No.	Existing No.
19	Sai Yok	50,000	7	3
20	Thaleban	10,168	3	3
21	Mu Ko Ang Thong	10,200	3	3
22	Khao Sok	64,552	9	3
23	Tat Ton	21,718	3	3
24	Doi Suthep-Pui	26,106	4	4
25	Ao Phangnga	40,080	5	2
26	Si Satchanalai	21,320	5	2
27	Khao Sam Lan	4,457	1	-
28	Kaeng Krachan	291,000	31	5
29	Mu Ko Surin	13,500	3	1
30	Khao Phanom Bencha	5,012	1	-
31	Hat Nai Yang	9,000	2	-
32	Mae Ping	100,300	13	2
33	Kaeng Tana	8,000	2	2
34	Khao Laem Ya-Mu ko - Samet	13,100	3	-
35	Wiang Kosai	41,000	6	4
36	Hat Chao Mai	23,088	4	-
37	Namtok Mae Surin	39,660	5	-
38	Si Nakarin	153,200	20	3

TABLE 6 (con't)

No.	Name of Parks	Area (ha)	Guard Station	
			Recommended No.	Existing No.
39	Thap Lan	224,000	28	-
40	Ton Krabak Yai	14,900	3	-
41	Pang Sida	84,400	11	-
42	Khao Pu-Khao Ya	69,400	9	2
43	Mu Ko Similan	12,800	3	-
44	Klong Lan	30,000	4	1
45	Mu Ko Chang	65,000	9	1
46	Laem Son	31,500	4	1
47	Hat Nopharat Thara Mu Ko Phi-Phi	38,996	5	1
48	Phu Hin Rong Kla	30,700	4	1
49	Mu Ko Phetra	48,158	7	-
50	Phu Kao-Phu Phan Kham	16,500	3	-
51	Mae Yom	50,000	7	-
52	Khao Lam Fi-Pat Thai Muang	7,200	2	1
53	Mae Wong	50,000	7	-
54	Su-ngai Padi-Budo	16,500	3	-
55	Khao Nam Khang	22,000	3	-

TABLE 6 (con't)

No.	Name of Park	Area (ha)	Guard Station	
			Recommended No.	Existing No.
56	Klong Phlao	50,000	7	-
57	Doi Laung	51,416	8	-
58	Phu Chong Nayoi	25,443	4	-
59	Namtok Chat Trakan	122,280	14	1
60	Mukdaharn	4,926	1	-
61	Si Lanna	57,632	9	-
62	Huai Huat	92,000	14	-
63	Khao Laem	56,000	9	-
64	Si Phanmong	48,000	7	-
65	Bang Lang	54,750	8	-
66	Namtok Lam Ru	15,000	2	-
67	Doi Phu Kha	not yet demarcated	-	-

Note: *Recommended 1 guard station per 4,800-8,000 ha.

Source: NPD, RFD (1986).

TABLE QUANTITIES OF ESSENTIAL MATERIALS AT SELECTED NATIONAL PARKS

	Name of Park	Weapons			Vehicles		Boats			Radios	
		Automatic Weapon	Shotgun	Pistol	Motor-cycle	Automobile	Speed Boat	Long-tailed Boat	Small Cargo Boat	Long-distance Radios	Walkie-talkie
1	Khao Yai	7	85	2	24	16	-	-	-	15	-
2	Phu Khradung	-	21	-	6	3	-	-	-	2	-
3	Thung Salaeng Luang	1	25	-	6	6	-	-	-	1	-
4	Khao Sam Roi Yot	1	24	-	7	3	1	3	1	1	-
5	Nam Nao	1	34	-	4	6	-	-	-	3	1
6	Doi Inthanon	-	12	-	2	4	-	-	-	3	-
7	Phu Phan	-	22	-	10	7	-	-	-	5	-
8	Tarutao	4	46	-	4	6	2	7	2	7	1
9	Khao Luang	1	27	-	7	4	-	-	-	1	-
10	Doi Khuntan	1	9	-	5	5	-	-	-	1	-
11	Namtok Phlio	-	17	-	6	4	-	-	-	1	2
12	Erawan	-	27	-	4	4	-	1	-	2	4

TABLE 7 (con't)

	Name of Park	Weapons			Vehicles		Boats			Radios	
		Automatic Weapon	Shotgun	Pistol	Motor-cycle	Automobile	Speed Boat	Long-tailed Boat	Small Cargo Boat	Long-distance Radios	Walkie-talkie
13	Khao Chamao-Khao Wong	-	24	-	7	4	-	-	-	1	2
14	Khao Khitchakut	-	10	-	4	2	-	-	-	1	-
15	Lansang	-	8	-	4	2	-	-	-	1	-
16	Phu Rua	-	18	-	5	2	-	-	-	2	2
17	Chaloem Pattanakosin	-	13	-	3	3	-	-	-	1	-
18	Remkhamhaeng	1	16	-	5	2	-	-	-	1	-
19	Sai Yok	-	19	-	5	2	-	1	1	1	-
20	Mu Ko Ang Thong	-	11	-	1	2	1	4	1	1	-
21	Khao Sok	1	27	-	6	4	-	1	-	1	-
22	Tat Ton	1	22	-	3	7	-	-	-	1	-

TABLE 7 (con't)

Name of Park	Weapons			Vehicles		Boats			Radios	
	Automatic Weapon	Shotgun	Pistol	Motor-cycle	Automobile	Speed Boat	Long-tailed Boat	Small Cargo Boat	Long-distance Radios	Walkie-talkie
23 Doi Suthep-Pui	1	13	-	3	7	-	-	-	1	1
24 Ao Phangnga	-	10	-	4	3	1	1	-	1	-
25 Si Satchanalai	1	8	-	2	3	-	-	-	1	-
26 Khao Sam Lan	-	15	-	3	1	-	-	-	1	-
27 Kaeng Krachan	1	10	-	3	4	1	-	-	1	-
28 Mu Ko Surin	-	2	-	-	1	1	3	-	1	-
29 Khao Phanom Bencha	-	9	-	1	2	-	-	-	1	-
30 Hat Nai Yang	-	3	-	4	3	-	-	-	1	2
31 Mae Ping	-	13	-	2	4	-	1	-	1	-
32 Kaeng Tana	-	10	-	3	2	-	1	-	1	-
33 Khao Lamya-Mu Ko Samet	1	8	-	3	3	1	1	1	6	-

TABLE 7 (con't)

	Name of Park	Weapons			Vehicles		Boats			Radios	
		Automatic Weapon	Shotgun	Pistol	Motor-cycle	Automobile	Speed Boat	Long-tailed Boat	Small Cargo Boat	Long-distance Radios	Walkie-talkie
34	Hat Chao Mai	-	4	-	3	3	-	1	-	1	-
35	Namtok Mae Surin	1	5	-	1	1	-	-	-	1	-
36	Si Nakarin	-	14	-	3	3	1	2	-	1	5
37	Thap Lan	8	15	-	9	7	-	-	-	1	-
38	Ton Krabak Yai	1	10	-	1	2	-	-	-	2	-
39	Pang Sida	-	7	-	3	2	-	-	-	-	-
40	Khao Pu-Khao Ya	2	10	-	2	5	-	-	-	1	-
41	Mu Ko Similan	-	-	-	-	1	-	-	1	1	-
42	Khlong Lan	1	10	-	3	3	-	-	-	1	-
43	Mu Ko Chang	-	2	-	-	2	1	1	-	1	-
44	Laem Son	-	9	-	3	2	1	1	-	1	-
45	Hat Nopharat Thara Mu Ko Phi-Phi	-	10	2	-	2	1	1	-	1	-

TABLE 7 (con't)

	Name of Park	Weapons			Vehicles		Boats			Radios	
		Automatic Weapon	Shotgun	Pistol	Motor-cycle	Automobile	Speed Boat	Long-tailed Boat	Small Cargo Boat	Long-distance Radios	Walkie-talkie
46	Phu Hin Rong Kla	1	1	-	3	4	-	-	-	1	-
47	Phu Kao-Phu Phan Kham	-	3	-	1	2	-	1	-	1	-
48	Khao Lam Pi-Hat Thai Muang	-	3	-	1	2	-	-	-	-	-
49	Mae Wong	-	6	-	1	2	-	-	-	1	-
50	Su-ngai Padi-Budo	-	3	-	2	2	-	-	-	1	-
51	Phu Chong Nayoi	-	6	-	1	1	-	-	-	1	-
52	Namtok Chat Trakan	1	9	-	3	2	-	-	-	1	-
53	Mukdahan	-	7	-	1	1	-	-	-	-	-

TABLE 7 (con't)

Name of Park	Weapons			Vehicles		Boats			Radios	
	Automatic Weapon	Shotgun	Pistol	Motor-cycle	Automobile	Speed Boat	Long-tailed Boat	Small Cargo Boat	Long-distance Radios	Walkie-talkie
54 Si Lanna	-	-	1	-	1	-	1	-	-	-
55 Namtok Lam Ru	-	-	-	1	1	-	-	-	-	-
56 Doi Phu Kha	-	-	-	-	1	-	-	-	-	-

Source: "Questionnaires on Assessment of National Parks and Sanctuaries Development in Thailand" (1986).

TABLE 8 VISITOR SERVICES OPERATED BY PEOPLE OR ORGANIZATIONS OTHER THAN THE NATIONAL PARK

No.	Name of Park	Services						
		Hotel or Bungalow (total capicity)	Restaurant (total capicity)	General Store	Souvenir Shop	Porter	Guide	Other
1	Khao Yai	500	/	-	/	-	-	-
2	Phu Kradung	/	/	/	/	/	/	/
3	Thung Salaeng Luang	300	160	-	-	-	-	-
4	Khao Sam Roi Yot	/	/	/	/	/	/	/
5	Nam Nao	not recorded						
6	Doi Inthanon	-	180	/	-	-	-	-
7	Phu Phan	-	-	-	-	-	-	-
8	Tarutao	-	300	/	-	-	-	-
9	Khao Luang	-	-	-	-	-	-	-
10	Doi Khuntan	300	-	-	-	100	-	-
11	Namtok Phliu	-	600	/	50	-	-	-
12	Erawan	182	/	/	-	-	-	344

TABLE 8 (con't)

No.	Name of Park	Services						
		Hotel or Bungalow (total capicity)	Restaurant (total capicity)	General Store	Souvenir Shop	Porter	Guide	Other
13	Khao Chamao-Khao Wong	-	/	/	/	-	-	-
14	Khao Khitchakut	-	60	/	20	-	-	-
15	Lansang	-	50	-	-	-	-	-
16	Phu Rua	-	200	/	-	-	-	-
17	Chaloem Rattanakosin	-	180	-	-	-	-	-
18	Ramkhamhaeng	-	-	-	-	20	-	-
19	Sai Yok	300	1,500	/	-	-	240	250
20	Mu Ko Ang Thong	-	-	-	-	-	100	100
21	Khao Sok	not recorded						
22	Tat Ton	-	800	-	-	-	-	-
23	Doi Suthep-Pui	not recorded						

TABLE 8 (con't)

No.	Name of Park	Services						
		Hotel or Bungalow (total capicity)	Restaurant (total capicity)	General Store	Souvenir Shop	Porter	Guide	Other
24	Ao Phangnga	200	/	/	-	-	/	-
25	Si Satchanalai	-	-	-	-	-	-	-
26	Khao Sam Lan	no recorded						
27	Kaeng Krachan	200	300	-	-	-	200	20
28	Mu Ko Surin	no recorded						
29	Khao Phanom Bencha	no recorded						
30	Hat Nai Yang	200	200	-	-	-	-	-
31	Mae Ping	no recorded						
32	Kaeng Tana	-	-	-	-	-	-	-
33	Khao Laem Ya-Mu Ko Samet	/	/	/	/	-	-	-
34	Hat Chao Mai	no recorded						

TABLE 8 (con't)

No.	Name of Park	Services						
		Hotel or Bungalow (total capicity)	Restaurant (total capicity)	General Store	Souvenia Shop	Porter	Guide	Other
35	Namtok Mae Surin	20	/	/	-	-	-	-
36	Si Nakarin	3,600	-	-	-	-	-	-
37	Thap Lan	-	-	-	-	-	-	-
38	Ton Krabak Yai	no recorded						
39	Pang Sida	-	-	-	-	-	-	-
40	Khao Pu-Khao Ya	-	/	/	-	-	-	-
41	Mu Ko Similan	/	/	/	/	-	-	-
42	Khlong Lan	-	40	-	-	-	-	-
43	Mu Ko Chang	-	/	/	-	-	50	-
44	Laem Son	-	/	-	-	-	-	-
45	Hat Nopharat Thara-Mu Ko Phi-Phi	-	100	-	-	-	500	-

TABLE 3 (con't)

No.	Name of Park	Services						
		Hotel or Bungalow (total capicity)	Restaurant (total capicity)	General Store	Souvenia Shop	Porter	Guide	Other
46	Phu Hin Rong Kla	-	60	/	-	-	-	-
47	Phu Kao-Phu Phan Kham	-	/	-	-	-	-	-
48	Khao Lam Pi-Hat Thai Muang	-	-	-	-	-	-	-
49	Mae Wong	no recorded						
50	Su-ngai Padi-Budo	-	-	-	-	-	-	-
51	Phu Chong Nayoi	no recorded						
52	Namtok Chat Trakan	-	-	-	-	-	-	-
53	Mukdahan	-	-	/	-	-	-	-
54	Si Lanna	-	/	-	-	-	500	-
55	Namtok Lam Ru	-	30	-	-	-	-	-

TABLE 8 (con't)

No.	Name of Park	Services						
		Hotel or Bungalow (total capicity)	Restaurant (total capicity)	General Store	Souvenia Shop	Porter	Guide	Other
56	Doi Phu Kha	---------- no recorded ----------						

Note: / (*capacity not identified) = Service is presented

- = Service is not presented

Source: Questionnaires on Assessment of National Parks and Sanctuaries Development in Thailand" (1986).

LIST OF PROJECT CONCEPTS

1. Assessment, Protection, and Management of Lowland Rain Forest in Thailand
2. Demonstration and Training in Wildlife Farming for Rural Development (Phase 2)
3. Developing a Socioeconomic Evaluation Methodology for Protected Areas to Enhance Government Support
4. Developing Model Interpretation Programs for National Parks and Non-hunting Areas
5. Developing Nature-based Tourism in Thailand's Protected Areas System
6. Developing Policy Statements to Guide Management and Administration of Thailand's Protected Areas System
7. In-service Training for Thailand's Park Personnel
8. Providing Technical Information to Thai Resource Conservation Professionals
9. Provision of Essential Equipment to Selected Major Parks and Sanctuaries in Thailand
10. Provision of Training/Research Centers for Thailand's Protected Area Staff and Scientists
11. Publication of a Conservation Education Booklet for Students and the General Public
12. Regional Development Plan for Protected Areas in Western Thailand (Phase 1)
13. Support for Thai Participation in the International Seminar on National Parks and Other Protected Areas
14. Training Protected Area Superintendents in Management Planning Techniques

15. Zoning, Carrying Capacity, and Tourism Volume Projections for Thailand's National Parks

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1. **Title :** ASSESSMENT, PROTECTION, AND MANAGEMENT OF LOWLAND RAIN FOREST IN THAILAND

2. **Proposed Project Developer :** Center for Wildlife Research, Mahidol University: International Council for Bird Preservation

3. **Proposed Project Executants:** Royal Forest Department; Faculty of Forestry, Kasetsart University; Center for Wildlife Research

4. **Proposed Project Duration:** 18 months

5. **Project Summary:**

Lowland rain forest is the richest and most diverse of Thailand's habitat types, yet it is on the verge of disappearing from the country due to logging and conversion to unsustainable cultivation. Recent documentation of the existence of Gurney's pitta (Pitta gurneyi), listed by IUCN as one of the world's 12 most endangered animals, and of numerous other lowland "specialist" species once feared extirpated from Thailand has generated national and international interest in protecting Thailand's remaining lowland rain forests. Immediate action must be taken to identify these forests and, based on criteria to be developed, reserve the most important as protected areas. The proposed project will concentrate mainly on four southern provinces (Surat Thani, Chumphon, Krabi, and Ranong) and will be divided into four subprojects: 1) A general indentification and assessment of remaining lowland rain forests: 2) Preparation of management plans for sites of national significance pursuant to establishment as nature reserves. This will include early preparation of a management plan for Khao Noi Chuchi where Gurney's pitta was rediscovered in 1986. A socioeconomic study of villages in the vicinity of Khao Noi Chuchi and formulation of a program to integrate villagers with management of the area will be done, with emphasis on promoting conservation of Gurney's pitta through village-based tourism; 3) Assessment of bird species diversity, study of Gurney's pitta during the 1987 breeding season and search for the species in other southern

forests; 4) An in-depth floral assessment of either the Khlong Mala forest or Khao Noi Chuchi.

6. **Outputs:**

Official protection of significant remaining lowland rain forests as national parks, wildlife sanctuaries, or non-hunting areas; preparation of management recommendations for forest sites of national significance; formulation of a program to give villagers a substantive role in management and protection of Khao Noi Chuchi, based in part on a similar concept developed at Khao Yai National Park; enhanced conservation of Gurney's pitta; publication of the floral list, representing perhaps the only in-depth study of lowland rain forest on Thailand's mainland.

7. **Estimated Budget:** $70,000

8. **Present Status:** Funding for portions of the proposed project has recently been sought from WCI, New York; no funding has yet been received. Senior officials from the Agriculture Ministry and the Royal Forest Department have indicated support for the concept.

9. **Concept Originators:** Center for Wildlife Research; International Council for Bird Preservation.

1. **Title:** DEMONSTRATION AND TRAINING IN WILDLIFE FARMING FOR RURAL DEVELOPMENT (Phase 2)

2. **Project Developer:** Wildlife Conservation Division

3. **Proposed Project Executant :** Wildlife Conservation Division

4. **Proposed Project Duration:** 24 months

5. **Project Summary:**

Many poor villagers living near protected areas hunt wild meat to supplement their protein intake or to sell at local markets, venison being especially prized. This demand has put severe pressure on deer, pheasants, and other species that occur in protected areas. The proposed project seeks to develop and support village wildlife farming schemes to maximize socioeconomic benefits accrued to local communities from rational use of wildlife resources; to enhance wildlife protection efforts by providing vilagers options to harvesting wild meat; and to restore depleted wildlife resources through reintroduction of captive bred wildlife Through an FAO sponsored project, WCD has already established much of the necessary infrastructure and has trained personnel. The proposed project would build on the progress already achieved, including the following activities: purchase of additional equipment; completion of the pilot deer farm begun in Phase 1; establishment of two deer farms to be owned and operated by rural villages under WCD supervision; a survey of potential markets for deer products; an intensive research program on the government deer farm; visits by a deer farming consultant, a wildlife veterinarian, and a communication specialist.

6. **Outputs:**

A fully operational demonstration/research wildlife farm at Khao Soi Dao W.S. to include native species of deer and pheasants; creation of village-owned deer farms to demonstrate the feasibility of utilizing captive-bred wildlife to improve villagers' welfare and lessen poaching;

indentification of national and international markets for venison and other deer products in anticipation of future wide-scale deer farming.

7. **Estimated Budget:** $102,000

8. **Estimated Budget:** The demonstration/research farm at Khao Soi Dao is now 40 percent operational and 5 WCD officials have received training. Funding for Phase 2 has been sought from FAO but not yet approved.

9. **Concept Originator:** Wildlife Conservation Division

1. **Title:** DEVELOPING A SOCIOECONOMIC EVALUATION METHODOLOGY FOR PROTECTED AREAS TO ENHANCE GOVERNMENT SUPPORT

2. **Project Developer:** National Environment Board

3. **Proposed Project Executants:** National Environment Board; Royal Forest Department

4. **Proposed Project Duration:** 13 months

5. **Project Summary:**

As fiscal constraints and development pressures continue to grow, Thailand's protected areas are coming under ever-increasing scrutiny and conservationists are being asked to demonstrate the value of protected areas to the country's socioeconomic development. Thus far they have not done so in a cogent and rational manner, forcing government to make ad hoc decisions in lieu of this information. As a result protected areas fail to compete for limited government funds and continue to suffer destructive exploitation. The proposed project will demonstrate how socioeconomic evaluations for decision makers can be prepared and presented. Experience gained from this project will be used to develop a methodology for benefit/cost analyses of protected areas throughout Thailand and, with modifications, throughout Asia and other developing regions. This methodology will help overcome one of six major obstacles to conservation identified in the "World Conservation Strategy", i.e. a lack of support for conservation due to a lack of awareness by governments and others. It will also provide protected area managers the necessary tools to obtain support from decision makers for adequate protection and management of protected areas and will guide wise use of those assets shown to be most valuable.

6. **Outputs:**

On-the-job training of NEB and RFD officials in socioeconomic analysis of protected areas; a handbook for preparation of socioeconomic analyses of protected areas in the humid tropics; a socioeconomic evaluation of Khao Yai N.P. and Khao Soi Dao W.S.

7. **Estimated Budget:** $87,000

8. **Present Status:** A project proposal has been submitted to WWF-International which has accepted it and is now attempting to locate funding.

9. **Concept Originator:** National Environment Board

1. **Title:** DEVELOPING MODEL INTERPRETATION PROGRAMS FOR NATIONAL PARKS AND NON-HUNTING AREAS

2. **Proposed Project Developer:** Faculty of Forestry, Kasetsart University

3. **Proposed Project Executants:** National Parks Division; Wildlife Conservation Division; Faculty of Forestry, Kasetsart University

4. **Proposed Project Duration:** 18 months

5. **Project Summary:**

Thailand's national parks receive over 4 million visits annually. Approximately 95 percent of park visitors are Thais both from urban centers and from surrounding rural areas. In addition, several non-hunting areas also receive a substantial number of visitors. Such a high Thai visitation volume offers an excellent opportunity for effective low cost conservation education through quality interpretive programs at parks and non-hunting areas. Unfortunately, present interpretation at protected areas is either inadequate or virtually non-existant. The proposed project would support creation of high quality interpretive programs at one terrestrial park, one marine park, and one non-hunting area, demonstrating to senior officials the value of supporting such programs at all major parks and non-hunting areas. Project activities would include selection of project sites that attract heavy tourism and also resemble other protected areas of its kind; development of plans for interpretive programs at the sites, possibly in cooperation with a short-term consultant; construction of interpretive structures such as visitor centers, posted trails, displays, etc.; in-country training in interpretive methods for 6 RFD officials; preparation of proposals for government and/or outside support for interpretive programs at other heavily visited parks and non-hunting areas.

6. **Outputs:**

Model interpretive programs at one terrestrial park, one marine park, and one non-hunting area; six RFD officials trained in interpretive techniques; proposals for establishing high quality interpretive programs at major parks and non-hunting areas; increased conservation awareness among a substantial number of Thai people.

7. **Estimated Budget:** $170,000

8. **Present Status:** A detailed proposal will be prepared following approval of the project concept.

9. **Concept Originators:** Kasetsart University; National Parks Division

1. **Title:** DEVELOPING NATURE-BASED TOURISM IN THAILAND'S PROTECTED AREAS SYSTEM

2. **Proposed Project Developer:** Faculty of Forestry, Kasetsart University

3. **Proposed Project Executant:** Faculty of Forestry, Kasetsart University

4. **Proposed Project Duration:** 24 months

5. **Project Summary:**

Thailand's protected areas system possesses considerable potential for nature-based tourism in terms of forest treks, diving, rafting, photography, etc. One of the park system's major goals is to provide opportunities for nature recreation and tourism, but this has been largely neglected in the past. Development of nature-based tourism would provide several conservation benefits, for example increased and dispersed use of parks which would help justify the cost of park maintenance; opportunities for conservation education; and increased revenue intake. The proposed project would survey the kinds and level of demand for nature-based tourism and determine how the protected areas system can be developed to meet this demand. Project activities would include survey domestic and foreign tourists to determine the amount of demand for nature-based tourism and the types of activities which would be most popular (market survey); survey the protected areas system to determine which areas have the best potential for significant tourism development; prepare tourism development plans for these areas; undertake initial, limited implementation of the development plans for one major national park.

6. **Outputs:** Determination of demand for nature-based tourism at protected areas and of the potential to meet this demand; tourism development

plans for protected areas with highest potential; limited plan implementation for purposes of demonstration.

7. **Estimated Budget:** $77,000

8. **Present Status:** A detailed proposal will be prepared following concept approval.

9. **Concept Originator:** Faculty of Forestry, Kasetsart University

1. **Title:** DEVELOPMENT OF POLICY STATEMENTS TO GUIDE MANAGEMENT AND ADMINISTRATION OF THAILAND'S PROTECTED AREAS SYSTEM

2. **Proposed Project Developers:** National Parks Division; Wildlife Conservation Division

3. **Proposed Project Executants:** National Parks Division; Wildlife Conservation Division; National Environment Board

4. **Proposed Project Duration:** 12 months

5. **Project Summary:**

The National Parks Division and the Wildlife Conservation Division collectively administer 10 percent of Thailand's total land area, but both divisions lack clearly stated objectives and goals to guide operation of the protected areas system. Under the proposed project, NPD and WCD would produce administrative policy statements that: 1) cogently state major objectives and goals of the protected areas system; 2) outline how they can be accomplished; and 3) clearly define responsibilities of the divisions and their component sections. Project activities will include formation of a special committee to oversee preparation of policy statements for both divisions; provision of a short-term consultant from an international agency with experience in this field; submission of the policy statements to the Cabinet for official government approval and recognition. The policy statements would address such issues as priority listing of parks and sanctuaries; plans for decentralization of administration and decision-making; personnel and development standards for parks and sanctuaries; protected areas role in socioeconomic development; acquisition policy; and others.

6. **Outputs:** More efficient and poroductive administration/management of the protected areas system through preparation and implementation of policy guidelines for NPD and WCD.

7. **Estimated Budget:** $15,000

8. **Present Status:** A detailed proposal will be prepared following approval of the project concept.

9. **Concept Originator:** National Parks Division

1. **Title:** IN-SERVICE TRAINING FOR THAILAND'S PARK PERSONNEL

2. **Project Developer:** National Parks Division

3. **Proposed Project Executants:** National Parks Division; Faculty of Forestry, Kasetsart University

4. **Proposed Project Period:** 10 months

5. **Project Summary:**

Thailand has more than 50 national parks under administration of the National Parks Division (NPD). NPD personnel number over 4000 individuals, yet no explicit training mechanism exists for this large staff. The proposed project would establish an in-service training program for various staff categories, with training actually being held in the field. Activities would include: discussions with NPD personnel to determine training requirements; design of curricula for at least three levels of personnel (managers and other senior staff, guards, and interpretation staff); compilation of materials, possibly based on IUCN models for Africa and for the Pacific; and preparation of a detailed project proposal for establishment of relevant training centers. The proposed project represents a necessary follow-up to WWF/IUCN Project 3001 which recently secured government funding for protected area management planning.

6. **Outputs:** Identification of training needs for the National Parks Division: curricula for courses for managers, guards, and interpretation staff; preparation of training materials; project proposal for major funding for a training center.

7. **Estimated Budget:** $36,000

8. **Present Status:** A detailed project proposal has been prepared and is now being considered for funding by WWF-International.

9. **Concept originator:** Jeffery McNeely

1. **Title:** PROVIDING TECHNICAL INFORMATION TO THAI RESOURCE CONSERVATION PROFESSIONALS

2. **Project Developer:** Faculty of Forestry, Kasetsart University

3. **Proposed Project Executant:** Faculty of Forestry, Kasetsart University

4. **Proposed Project Duration:** 24 months

5. **Project Summary:**

Over the past two decades Thailand has made significant progress in resource conservation, both practically and academically. However, technical knowledge and expertise is seriously lagging behind structural advances due in part to a shortage of available technical information. Books and journals are often prohibitively expensive for professionals, educators, and students. Available published material is invariably in English, precluding use by most professionals and sometimes of only marginal benefit to academics. Furthermore, many available publications present concepts with little application to the situation in Thailand. Under the proposed project, Kasetsart University will translate appropriate English technical books, periodicals, etc., into Thai. Project activities will include identification of key institutions that would most benefit from the project; determine the institutions' information needs; run an in-country search for required publications and acquire publications from abroad; translation, printing and binding; distribution of the translated material to all universities with natural resources programs, to numerous Agriculture Ministry departments, to NEB, to all conservation NGOs, etc.

6. **Outputs:** Five volumes, each covering a broad conservation topic, of translated technical information; enhanced achievement of conservation objectives through improved training, education, and awareness.

7. **Estimated Budget:** $36,000

8. **Present Status:** A detailed project proposal has been prepared and is now being considered by WWF-International.

9. **Concept Originator:** Jeffrey McNeely

1. **Title:** PROVISION OF ESSENTIAL EQUIPMENT TO SLELCTED MAJOR PARKS AND SANCTUARIES IN THAILAND

2. **Proposed Project Developers:** National Parks Division; Wildlife Conservation Division

3. **Proposed Project Executants:** National Parks Division; Wildlife Conservation Division

4 **Proposed Project Duration:** 3 months

5 **Project Summary:**

Due to budgetary constraints, national parks and wildlife sanctuaries suffer from a debilitating shortage of essential materials and equipment, seriously impeding effective protection and mangement of protected areas. For example, of 14 sanctuaries surveyed in 1986 , only 4 had short-wave radios, just 6 had patrol vehicles other than motorcycles, and only 1 was equipped with walkie-talkies. Tents, backpacks, binoculars, and other field supplies are inadequate at virtually all parks and sanctuaries. The proposed project will survey major parks and sanctuaries to determine the kinds and amounts of essential equipment needed but which are unlikely to be procured through expected government budget allocations. Needs will then be prioritized according to the importance of individual protected areas and of various types of equipment/materials. Finally, a detailed proposal will be prepared for donations from sources outside the Royal Thai Government.

6. **Outputs:** An inventory of existing equipment/materials at major parks and sanctuaries, and identification of the kinds and quantities of essential equipment which they now lack; preparation of a detailed proposal for donations of equipment/materials; successful solicitation of essential equipment will ultimately help improve management and protection at the targeted protected areas.

Estimated Budget: $1,200

Present Status: A detailed proposal will be prepared following approval of the project concept.

1. **Title:** PROVISION OF TRAINING/RESEARCH CENTERS FOR THAILAND'S PROTECTED AREA STAFF AND SCIENTISTS

2. **Proposed Project Developer:** Center for Wildlife Research, Mahidol University; Faculty of Forestry, Kasetsart University

3. **Proposed Project Executants:** Royal Forest Department; Mahidol University; Kasetsart University

4. **Proposed Project Duration:** 3 years

5. **Project Summary**

The paucity of park and sanctuary personnel who have received training in protected area management fields has been identified by national experts as a major inhibitor to improved protected area management. Presently, only 38 officials (17 percent) have had training in disciplines directly applicable to protected area management. Likewise, research training and opportunities for field studies are limited, precluding collection of basic data necessary for proper formulation of protected area management strategies. Under the proposed project, provision would be made for material support (e.g. equipment, buildings, publications) to a field center located at a national park. The center would be opened to RFD officials at three staff levels, from guards to division administrators, and to outstanding Thai scientists and promising university students. The center would be staffed by qualified university lecturers and government officials, with occasional guest instructors from the private sector who are recognized leaders in their field. Instruction and research would focus on protected area-community development integration, protected area administration/management, visitor services, and interpretation/education to compliment wildlife research, wildlife management, and law enforcement techniques that will be offered at the proposed Huai Kha Khaeng W.S. center.

6. **Outputs:** A fully staffed and equipped training and research center; increased understanding of protected area rural community dynamics; improved management and administration of protected areas; advanced opportunities for important floral and faunal research, and dissemination of this information to resource managers.

7. **Estimated Budget:** 600,000

8. **Present Status:** The Australian Development Assistance Board has offered support for a research center at huai Kha Khaeng W.S., but this offer is still being deliberated by the Royal Thai Government.

1. **Title:** PUBLICATION OF A CONSERVATION EDUCATION BOOKLET FOR STUDENTS AND THE GENERAL PUBLIC

2. **Proposed project Developer:** Pilai Poonswad, Faculty of Science, Mahidol University

3. **Proposed Project Executant:** Pilai Poonswad

4. **Proposed Project Duration:** 10 months

5. **Project Summary:**

Very few publications for students and the general public are available in Thailand that present educational material concerning Thai wildlife. The proposed project will provide support for preparation and publication of an educational booklet on four species of Thai hornbills and forest consoruation. The Booklet will be authored by Ms. Ms. Pilai Poonswad, a member of Mahidol University's Faculty of Science, based on her four years of intensive study at Khao Yai Park. Although educational in nature, the booklet will be written to appeal to a popular audience as well as students. A total of 10,000 copies, each approximately 30 pages in length with 20 color photos, will be printed. The booklets will be donated to major public and school libraries, and sold at national parks, zoos, ets.; proceeds from the sales will be put into hornbill conservation programs.

6. **Outputs:** 10,000 copies of an educational/popular booklet on Thai hornbills to increase public awareness of, and to provide funds for, hornbill conservation in Thailand.

7. **Estimated Budget:** $6,500

8. **Present Status:** A detailed proposal will be prepared following approval of the project concept.

9. **Concept originator:** Pilai Poonswad

1 **Title:** **REGIONAL DEVELOPMENT PLAN FOR PROTECTED AREAS IN WESTERN THAILAND (Phase 1)**

2 **Proposed Project Developers:** National Environment Board; Faculty of Forestry; Kasetsart University

3. **Proposed Project Executant:** Royal Forest Department

4. **Proposed Project Duration:** 12 months

5 **Project Summary:**

The western provinces of Kanchanaburi, Tak, and Uthai Thani contain seven parks and sanctuaries covering 925,000 ha. These areas provide habitat for a great diversity of wildlife, particularly endangered large mammals such as elephant, guar, banteng, tiger, and wild water buffalo. Among protected areas located here is the Huai Kha Khaeng-Thung Yai Naresuan sanctuary complex perhaps the most valuable protected area in Thailand and listed by IUCN as a reserve of high international significance. In addition, the seven areas are of critical importance to protection of several key western watersheds located above large reservoirs. Because of their high value as protection for wildlife and watersheds, their similar management needs, and their close proximity to each other, it is proposed that a master plan be developed for this region. The plan would address management and development of national parks, wildlife sanctuaries, forest parks, and forest reserves as an integrated whole, with special emphasis given to the role these areas play in regional socioeconomic development. The project would be divided into two phases. Phase 1 activities would include formation of a study team; preparation of a feasibility study; preparation of an interim regional development plan; and formulation of terms of reference for a comprehensive management plan. Phase 2 activities would include final development plan preparation and submission of a funding request to the Royal Thai Government for plan implementation.

6. **Outputs (Phase 1).** A feasibility study; an interim regional development plan for western protected areas; terms of reference for a comprehensive regional development plan.

7. **Estimated Budget:** $75,000 for Phase 1. $30,000 for Phase 2.

8. **Present Status:** A detailed proposal will be developed following concept approval.

9. **Concept Originators:** National Environment Board; National Parks Division

1. **Title:** SUPPORT FOR THAI PARTICIPATION IN THE INTERNATIONAL SEMINAR ON NATIONAL PARKS AND OTHER PROTECTED AREAS

2. **Proposed Project Developer:** Faculty of Forestry, Kasetsart University

3. **Proposed Project Executants:** Royal Forest Department; Faculty of Forestry, Kasetsart University

4. **Proposed Project Period:** 3 weeks (1988)

5. **Project Summary:**

The International Seminar on National Parks and Other Protected Areas is an annual gathering of senior conservationists from around the world. It is a three-week technical and professional course that examines policies, administration, planning, and other aspects of protected area management. The proposed project would provide travel costs, seminar fees, and other expenses for two senior level Thai resource managers to attend the seminar in 1988. The seminar emphasizes themes of particular relevance to Thailand's needs, such as staff development, interpretation and environmental education , resource management, and biological diversity. Attendance at the seminar would allow senior Thai resource managers to broaden their knowledge of protected area management and, ultimately, to put into practice methods and concepts learned.

6. **Outputs:** Senior level Thai participation in the 1988 International seminar on National Parks and Other Protected Areas; exposure of senior. Thai resource managers to new methods and concepts concerning protected area management that can be applied in Thailand's parks and sanctuaries.

7. **Estimated Budget:** $11,000

8. **Present Status:** A detailed proposal will be prepared following concept approval.

9. **Concept Originator:** Faculty of Forestry, Kasetsart University

1. **Title:** **TRAINING PROTECTED AREA SUPERINTENDENTS IN MANAGEMENT PLANNING TECHNIQUES**

2. **Proposed Developer:** Faculty of Forestry, Kasetsart University

3. **Proposed Project Executant:** Faculty of Forestry, Kasetsart University

4. **Proposed Project Duration** 8 months

5. **Project Summary:**

Under the Sixth Five-Year National Economic and Social Development Plan (1987-1991), the National Parks and Wildlife Conservation Divisions have been allocated government funds to establish a management planning unit and to prepare management plans for 23 major protected areas. There have been indications that the Royal Thai Government may consider increased support for plan preparation and implementation at more areas if NPD and WCD can demonstrate sufficient administrative capability. This would require that protected area superintendents be knowledgeable in management planning techniques, but presently only a very few have had any exposure to this field. The proposed project would provide support to Kasetsart University for development of instructional materials pertaining to principles and techniques of protected area managemant planning. These materials would form the basis for classes or workshops attended by protected area superintendents and jointly sponsored by Kasetsart, NPD, and WCD. Successful project implementation could lead to an accelerated rate of management plan preparation and implementation, with the planning unit playing a supporting and administrative role.

6. **Outputs:** Instructional materials for training protected area superintendents in management planning techniques; an increase in the number of protected areas preparing and implementing management plans.

7. **Estimated Budget:** $12,000

8. **Present Status:** A detailed proposal will be prepared following approval of the project concept.

9. **Concept Originator:** Faculty of Forestry, Kasetsart University

1. **Title:** ZONING, CARRYING CAPACITY, AND TOURISM VOLUME PROJECTIONS FOR THAILAND'S NATIONAL PARKS

2. **Proposed Project Developer:** National Parks Division

3. **Proposed Project Executant:** National Parks Division

4. **Proposed Project Duration:** 12 months

5. **Project Summary:**

Visitation to Thailand's national parks is over 4 million annually and is expected to rise appreciably in coming years. Seven parks receive in excess of 100,000 visitors per year. The expected rise in park tourism volume will inevitably affect park ecology at several locations and is already responsible for isolated problems at some heavily visited parks. The proposed project would determine visitor carrying capacities and tourism volume projections at each park that now receives or is expected to receive high visitation. Carrying capacity and tourism volume projections would be used to zone these parks for recreational/non-recreational uses. Also, recommendations would be made for development of new recreation sites at individual parks, especially along the park periphery; present recreational opportunities at most parks are mainly confined to the headquarters vicinity. The actions proposed are considered to be of high priority by national experts.

6. **Outputs:** Determination of carrying capacities and tourism volume projections for parks that experience or are expected to experience heavy visitor use; zoning for recreational and non-recreational purposes; recommendations for new recreation sites; minimized adverse impacts from park tourism.

7. **Estimated Budget:** $15,000

8. **Present Status:** A detailed proposal will be prepared following concept approval.

9. **Concept Originator:** Faculty of Forestry, Kasetsart University

PROGRAM OF ACTIVITIES

12 February 1987

All participants arrive and check in at Phuket Island Resort

13 February 1987

Morning session

08.30-09.30	Registration
09.30-10.00	Opening ceremonies : Suwannakarn Room, Phuket Island Resort Introductory Message : Dr. S. Sukwong Chairman, Organizing Committee Opening Address : Mr. Suthep Thueksuban Deputy Minister of Agriculture and Cooperatives H.E. William A. Brown U.S. Ambassador to Thailand Welcoming Address : Mr. K. Rakmanee Governor of Phuket
10.00-10.30	Coffee break
10.30-12.00	Chairman : Mr. P. Suwannakorn Rapporteur : Mr. S. Vejaboosakorn

10.30-11.00	Summary report on the status of national parks and other protected areas development in Thailand S. Sukwong
11.00-12.00	Major issues facing Thailand's national parks and other protected areas development and recommendations S. Chettamart U. Kutintara K. Pragtong S. Vejaboosakorn S. Vivajsirin
12.00	Lunch
Afternoon session	
01.00-02.30	Chairman : Dr. A. Wichiencharoen Rapporteur : Ms. J. Michalovic
01.00-01.30	Presentation by a representative from U.S.A.
01.30-02.00	Presentation by a representative from Australia
02.00-02.30	Presentation by a representative from Japan
02.30-03.00	Coffee Break
03.00-05.30	Chairman : Mr. K. Snidvongs Rapporteur : Mr. R.J. Dobias

03.00-03.30	Presentation by a representative from Costa Rica
03.30-04.00	Presentation by a representative from Canada
04.00-04.30	Presentation by a representative from New Zealand
04.30-05.30	Open discussion (based on today's presentations)
07.00	Dinner

14 February 1987

	Excursion to Pee Pee Marine National Park, Krabi
08.00	Leave the hotel by bus to the pier at Marine Biology Center and proceed to Pee Pee by boat
12.00	Lunch at Pee Pee Don and visit private recreation and tourism development site
03.00	Leave pee Pee Don for Phuket
07.00	Dinner

15 February 1987

Morning seesion

08.30-10.30	Chairman : Mr. S. Argaslerksh Rapporteur : Dr. N. Ruangpanit
08.30-09.00	Conclusions for management and development of national parks, wildlife sanctuaries, and other preserves in Thailand S. Sukwong
09.00-09.30	Proposal for international collaboration on Thailand's parks, sanctuaries and other preserves T. Prakobbo n
09.30-10.30	Open discussion
10.30-11.00	Coffee break
11.00-12.00	Chairman : Dr. S. Areekul Rapporteur : Ms. D. Emphandhu
11.00-11.15	Remarks and comments by K. Snidvongs
11.15-11.30	Remarks and comments by K. Chancharaswat
11.30-11.45	Remarks and Comments by P. na Patalung
11.45-12.00	Remarks and comments by S. Argaslerksh

12.00	Lunch
Afternoon session	
01.00-12.30	Chairman : Mr. P. Ruyabhorn Rapporteur : Dr. C. Yarwudhi
01.00-01.20	Remarks and comments by J. McNeely
01.20-01.40	Remarks and comments by N. Htun
01.40-02.00	Remarks and comments by J. Eriksson
02.00-02.30	Open discussion
02.30-03.00	Coffee break
03.00-03.20	Closing address by Dr. T. Thamrong- nawasawat

ORGANIZING COMMITTEE

Dr. Sutham Areekul Rector, Kasetsart University	Councellor
Mr. Pong Leng-Ee Inspector-general, Ministry of Agriculture and Cooperatives	Councellor
Dr. Somsak Sukwong Dean, Faculty of Forestry, Kasetsart University	Chairman
Mr. Seri Vejaboosakorn National parks Division, RFD	Vice-Chairman
Mr. Thammarong Prakobboon National Parks Division, RFD	Committee
Dr. Utis Kutintara Faculty of Forestry, Kasetsart University	Committee
Mr. Komon Pragtong National Forest Lands Management Division, RFD	Committee
Mr. Surin Vivajsirin Environmental Policy and Planning Division, ONEB	Committee
Mr. Nophadol Briksavand Wildlife Conservation Division, RFD	Committee
Mr. Robert Dobias	Committee
Mr. Surachet Chettamart Faculty of Forestry, Kasetsart University	Committee & Secretary

Ms. Noppawan Tanakanjana Faculty of Forestry, Kasetsart University	Committee & Asst. Secretary
Ms. Chatpet Dumrongkijkaset Faculty of Forestry, Kasetsart University	Committee & Asst. Secretary

INTRODUCTORY MESSAGE

BY

THE DEAN, FACULTY OF FORESTRY

KASETSART UNIVERSITY

Your Excellency the Deputy Minister of Agriculture and Cooperatives, the Honorable U.S. Ambassador to Thailand and distinguished participants:

On behalf of the organizing committee I would like to express our sincere gratitude to the Deputy Minister of Agriculture and Cooperatives for graciously accepting the position of conference chairman. This is indeed a great honor for all conference participants and reflects Your Excellency's keen interest in resolving the kingdom's conservation problems.

The country's forest resources have diminished rapidly during the past 25 years. We have lost 25 percent of our forests during this period; in 1961 forests covered 53.3 percent of the country but now cover only 29.05 percent.

This staggering forest loss has been due to pressures from a rapidly increasing population, from economic and social conditions and from political considerations. Nonetheless, we are attempting in many areas of the country to conserve wildlife and the environment in its natural state by establishing national parks, wildlife sanctuaries, forest parks and non-hunting areas. Presently these protected areas cover approximately 10 percent of the country and most are receiving protection to maintain their integrity.

Portected areas are providing many benefits to society, such as protecting watersheds that are the sources of streams and rivers which provide life to the Thai people; forest products; plant and animal genetic material;and natural attractions of great beauty that improve our quality of life and, through tourism, contribute to the national

economy. But the benefits that the country and its people receives from protected areas will not reach their full potentials or continue into the future in the absence of proper development of our protected areas system. Proper development is needed in order to counter the increasing problems plaguing our protected areas, especially the continual growth of the country's human population.

The Faculty of Forestry, Kasetsart University in cooperation with Royal Forest Department and Office of the National Environment Board, and with assistance from the U.S. Agency for International Development undertook a comprehensive assessment of the country's protected areas system as part of the project "Assessment of National Parks and Sanctuaries Development in Thailand." In order to provide a broad forum to present and discuss the assessment's findings, the Faculty of Forestry thought it appropriate to convene an international conference. The conference objectives are to build a common understanding of the problems and potentials of protected area development and to solicit from various government and private agencies opinions and recommendations that will be directly applicable to formulating protected area policy and management initiatives to help overcome present problems.

This conference is basad on a USAID-supported assessment of Thailand's protected areas and subsequent report detailing the assessment's findings. At this three-day seminar we have approximately 80 Thai participants from the following agencies: Kasetsart University; Royal Forest Department; Office of the National Environment Board; Office of the Permanent Secretary, Ministry of Agriculture and Cooperatives; Office of the Prime Minister; Ministry of Science, Technology and Energy; Ministry of Interior; Tourism Authority of Thailand; National Economic and Social Development Board; Land Department; Mahidol University; Environmental Reasearch Institute, Chulalongkorn University; Thai International Airlines; Electricity Genreating Authority of Thailand and Wildlife Fund Thailand.

Representatives from the press and various private organizations are also present.

Also participanting are representatives from the following foreign and international agencies: UNEP; IUCN; WWF-US; U.S. National Park Service; Sierra Club; University of Washington; USAID; Environment Agency, Japan; University of Victoria, Canada; Office of Tropical Science, Costa Rica; New Zealand National Parks and Reserves; Australian National Parks and Wildlife Service; IUCN Conservation Monitoring Center, England; and U.S. Fish and Wildlife Service.

The Royal Forest Department organized a pre-conference study tour for foreign participants. They visited parks in each region of the country and developed a list of issues and recommendations based on the tour. It is especially gratifying to see attendance at this conference of senior Thai administrators who have long experience with and a good understanding of problems facing the country as a whole.

The ideas and comments generated during the conference will be incorporated to in the final assessment report. This will be of great benefit in laying a proper foundation for and providing appropriate direction to protected area policy and efficient management of the system. It will also help build common understanding and cooperation among policy, planning and implementing agencies involved in conservation. Additionally, the conference will serve as a venue for exploring the possibilities of receiving appropriate aid from foreign and international funding agencies.

Finally, the organizing committee asks for your forgiveness for any problems you many encounter during the conference.

Thank you.

Remarks of the Honorable William A. Brown
for the Opening Session of
The International Conference on Management of National Parks
and Other protected Areas in Thailand
Phuket, Thailand
February 13, 1987

Your Excellency the Minister of Agriculture, Your Excellency the Governor of Phuket, Distinguished Participants from Thailand, and Distinguished Participants visiting Thailand:

This is a very significant occasion and I am very pleased to be able to be here with you and to represent the U.S. Government in opening this International Conference.

Although I am not personally an expert in management of National Parks or Other Protected Areas, I think you may already realize that all Americans are very proud of our National Parks, and all of us perhaps are at least expert in appreciating them. So I can at least share in claiming that relevant expertise.

I regret very much that I will be unable to remain with you for the entire conference, because this is a subject that is very much of personal interest and concern to me -- and of course one doesn't like to cut short an opportunity to combine business with the hospitality and natural beauty of Phuket.

I have had a chance to read through the draft report prepared by the Kasetsart University Faculty of Forestry -- which I must say I find to be well organized and highly readable; I am sure that it will provide a solid and useful foundation for the discussions that will take place here -- and I have had a chance to review the list of participants. in particular the distinguished visitors from the U.S. and from other participating countries.

I would like to use my remarks here this morning to welcome and introduce some of the American participants. I think this might be the best way for me to make several points for you to consider as you look at the topic of management of parks and other protected areas in Thailand.

But before I do that, I would like to elaborate briefly on why I think that this is such a significant meeting.

From the Assessment report I see that Thailand now has more than 50 national parks, some 30 national wildlife sanctuaries and 40 non-hunting areas. These areas are somthing over 11 percent of the land area of Thailand.

This is an extremely impressive accomplishment -- 11 per cent of Thailand has been set aside over the past three decades, set aside by the current generation, to be used not for very pressing and real immediate needs for agricultural lands and timber and minerals and other raw natural resources, but set aside for very non-economic -- not un-economic but mainly non-economic -- reasons: To preserve habitats and speciess in their natural state, and thereby to maintain ecosystems that are vital not only to the functioning of Thailand's ecology, but to the hydrologic cycles, the climatic stability, and the ecological well-being of the entire planet Earth; set aside not just for the sake of this current generation or any current government, but for your children and their children and all future generations.

Thailand is well noted for its rapid economic growth, and for its steady increases in agricultural output over the past several decades. I've heard it suggested that this increase in agricultural production, so important to meeting food needs at home and food and commodity needs for export abroad, has been a very land-extensive process. Some experts suggest that up to 90 percent of the increase in agricultural production over the past two decades has been due to

the opening up of new lands for agriculture, rather than increased output per rai. In other words, most of the increase in production has not been from higher yielding seeds or increased fertilizer, but from the conversion of forest and other lands to cultivation.

There is an obvious dilemma here. It is one that we faced in the history of our own country. For most of two centuries, farmers in America were always able to move West, to open up new land when they had worn out the old land, or when the population grew. But finally, most of the good agricultural land was filled, and the efforts turned to increasing the production of the farmland already in use.

Something of a similar process seems to be at work in Thailand today. Forested lands or wild lands, according to everyone's reports, have gone from 60 percent of Thailand's land area in 1950 to only half of that, 30 percent or less, today. Clearly the forested wildlands that comprise the 11 percent or so of area that has been set aside as parks is becoming increasingly valuable to the country, simply because such lands and their resources are becoming increasingly rare. To set aside such a significant portion of land for recreational, ecological, scenic and scientific purposes might well be considered a milestone of economic maturity for countries in the modern world. For many reasons then, I think Thailand, as a country should be commended for this.

I was struck while reading the Assessment report that there seems to be a profound awareness that this very impressive accomplishment is only a first step. The lines have been drawn on the maps, and now, beginning with the new Sixth National Socio-Economic Development Plan, the work must change significantly to protecting those areas, to managing them so that their benefits may be enjoyed by as many people as possible without impinging on the integrity of their natural systems. Some important initial steps have already been

taken in this regard, and this conference may hopefully help to further your progress.

With all this as context, I would like to introduce some of the American participants who are here.

First, there is Robert Baker, from the U.S. National Park Service. Bob Baker is the Regional Director for the Southeast Region, which I understand is the largest region in the U.S. National Park system. His region covers the eastern half of what has come to be called the Sunbelt in the U.S., the region of fastest economic growth for the last two or three decades. If you think you have problems with expanding populations and demands for lands, or rapidly increasing interest from the public for recreational areas, talk with him; he will understand.

Joanne Michalovic, now with the National park Service's Office of International Affairs, has previously been involved in preparing the management plans for some of our newer parks in the State of Alaska. Ask her about the problem of managing large areas with small staff, and coping with everything from a harsh climate to goldminers to fur trappers and native game hunters.

Dr. Mark Shaffer, from the U.S. Fish and Wildlife Service. The Fish and Wildlife Service also has responsibilities for protecting a large and critical land area, primarily of habitats for waterfowl and other wildlife. These wildlife sanctuaries in the U.S. have become increasingly important as recreational sites and sites of ecological services also, protecting wetlands and watersheds which have a larger role in the national water supply system for example.

Dr. Shaffer, incidentally, has been working for several years with our AID office in Washington to develop an Action Plan for the U.S. Government for conserving biological diversity. This is a relatively recent but very serious interest of our government, which

again extends the role and significance of parklands and other protected areas.

Dr. Grant Sharpe, from the University of Washington, in Seattle, and his wife are here, and represent the academic community. Several of the Thai participants here, I understand, have studied outdoor recreation and parks management under Dr. Sharpe. Schools such as the Faculty of Forestry and Natural Resources at the University of Washington play key roles in training and in research for America's parks and protected areas.

Dr. Gary Hartshorn, an American who has long resided in Costa Rica, is a forest ecologist, and so represents the more pure scientific side. It is from scientists like Dr. Hartshorn that we are learning how tropical forests work, so that we may understand how to protect and manage them.

And very significantly, I would like to welcome the representatives from the private environmental groups. Larry Williams is here from the Sierra Club, one of the oldest and certainly best known of our public interest groups. For about nine decades now, the Sierra Club has been a key actor in building the national public support, and occasionally providing the constructive criticism, that has been needed to develop our system of national parks and protected lands.

The Sierra Club's founder, John Muir, is almost synonymous with Yosemite, one of the real gems in our national parks system. And it was John Muir, through his strong personal love of wilderness and nature, his talents as a writer and a journalist, and his ability to tell stories and persuade not just the general public, but national leaders from business and government, including President Theodore Roosevelt, who really sparked the idea that protection of such wildlands was a worthy national enterprise. Muir's spirit and effectiveness live on the Sierra Club and others groups such as the National parks and Conservation Association or the Wilderness Society. They have

played and continue to play a very major role in sustaining our parks system.

Dr. Jeffery McNeely is here from the International Union for Conservation of Nature and Natural Resources (IUCN), and Dr. Bruce Bunting from the World Wildlife Fund (U.S.). Both of these are important international conservation groups, and I believe that both Jeff and Bruce are already known to many of you in Thailand.

I understand that Jeff mcNeely was once in the Peace Corps in Thailand, and that he worked with the near-legendary Dr. Boonsong Lekagul, considered by many to be the founding father -- the John Muir if you will -- of Thai nature conservation. Other former Peace Corps volunteers, such as Robert Dobias, who worked with the Kasetsart study team and is a participant here, also have contributed to parks and wildlife work in Thailand, and I hope may continue to do so.

My point in specifically mentioning all of these individuals and the groups that they represent, is to demonstrate that the consevation of parks and protected areas in the U.S. is very much of a team effort. The national and state governments, the public interest PVOs, and the public -- which as Americans and as foreign visitors to the U.S. -- all of us here represent. I don't believe that we have any concessionaires, the business people and entrepreneurs who run some of the hotel and visitor facilities in the parks represented here. But they are important also. All of these are the constituents for the national park system and for the wildlife refuges in the U.S.

I think you will be hearing more from the experience of other countries, and my strong guess is that you will find that their experience also points up the importance of involving the public and a wide variety of governmental and private agencies to develop and manage their parks systems.

Even given some considerable differences in culture, political, and economic conditions of our countries, I think that you would find that the same or similar sets of people need to be involved in managing and preserving a protected areas system, whether in Thailand or any other country in the world. I am quite sure that you will find that in this topic, we share common problems, and there is good opportunity for genuine sharing of experience.

As a final point, I would like to touch on why we, the U.S. Government, through our USAID program here in Thailand, is supporting this conference. As many of you know, the U.S. has had an on-going program of economic development assistance and cooperation with the Kingdom of Thailand for more than 36 years now. Over the years, our work has gradually shifted away from support to constructing highways and universities, and establishing health basic care and other essential services, to focussing more on key institutional and sector level development issues. Areas such as rural industries, and science and technology, which respond to Thailands current generation of problems and priorities.

As some of you know, USAID is actively exploring with the Thai government areas of mutual interest in the area of natural resources management and environmental protection. An obvious and important topic within this broad area is Thailand's commitment to establishing a strong system of national parks and wildlife sanctuaries. More than eleven percent of the land area is obviously a serious commitment.

The U.S. does have some considerable expertise and experience in this area, as I think is well demonstrated by the American participants in this meeting. But we are also very aware that some of the other countries represented -- Canada, Australia, Japan -- also have a rich experience and knowledge to share in this area.

Our USAID office has stressed to me that, despite the relatively large number of Americans present at this conference, they very much wish to promote the active involvement of other donor agencies in working with the Royal Thai Government in this vital area. They, and I, hope that this conference will be a forum for useful discussion and debate about current issues for management of Thailand's parks and protected areas. But we also hope that it will provide a useful introducttion to these issues for all of us foreign visitors, and that it will perhaps be a springboard for additional collaboration between Thailand and all of its many friends who are assembled here for this conference.

Again, I commend you, the Thai people, and your leaders who have established a magnificent system of parks and other protected areas. I wish you well in your future and efforts to manage and maintain, to sustain, that system. And I am confident that this meeting will be a useful step to helping you to do so.

Thank you.

Presentation
by
Robert M. Baker
Southeast Regional Director
U.S. National Park Service
13 February 1987

"Thank you Mr. Chairman, Minister Suthep, and Ambassador Brown. I'm indeed honored to represent the National Park Service of the United States at this International Conference on National Parks and Protected Areas. I want to compliment Thailand for hosting this conference. I think it is most appropriate that people from around the world in the business of managing parks and protecting resources get together periodically and share ideas and solutions to common problems. We all need solutions. Today, I would like to follow two themes. First I would like to share with you some observations on the pre-conference study tour, and then I would like to share some experiences that I've had in the southeast region of the NPS in the U.S. that are relevant to the issues you face today.

Our group on the study tour included staff from the NPS, USAID, the Sierra Club, the University of Washington, and the Tropical Science Center in Costa Rica. We had an opportunity to see a wide range of parks and park resources, ranging from Khao Yai, Doi Suthep, Doi Inthanon, and Mae Sa Valley in the north, to Tarutao and Thale Ban in the south. The resources we experienced in Thailand are truly outstanding and are surpassed only by the extraordinary hospitality and friendliness of the Thai people. We are all deeply impressed by the commitment of the National Parks Division here. The people are extremely committed and knowledgeable about their resources. In the 53 parks that I manage in the southeast region of the U.S., I'm not aware of superintendent who has used their money to buy radios to protect the park resources, and I compliment you. We had an opportunity to spend

10 days in the field and observe many issues that need special attention. Sunday, I will address 11 priority issues that we've identified, and I will also make some specific recommendations as to possible solutions.

In general, although we found the resources of each park to be outstanding, we also found severe negative impacts from commercial activities as well as surrounding community activities, such as poaching, slash and burn agriculture, and commercial fishing. I want you to know that you are not alone: that in my 53 parks I also have timber cutting, poaching, and encroachment of development. Other parks across the U.S. also share these problems. The answers are not easy, but I am encouraged, because as a result of the discussions we've had over the last several days, I think there are some solutions. And I have learned some answers to my problems that I will try to implement in the U.S.

In the U.S. parks are very, very important to its citizens. Last year, we had more than 350 million visitors to 337 national parks in the country. More than 20% are foreign visitors. Recently, a New York Times newspaper article contained the results of a survey of all the readers. The Times asked them to respond as to which U.S. federal agency they felt most supportive of and they respected the most. I am proud to say that the NPS was identified as number one. American people are very supportive of national parks, and I think people all around the world are very supportive of the idea of protecting natural and cultural resources of their countries. For more than 125 years, national parks have also been very important to high government officials in the U.S. Even during the Civil War in the 1860's, President Abraham Lincoln recognized the importance of protecting natural resources in America, and designated Yosemite Valley as a special area to be protected. It was then managed by the California park system, but subsequently became one of the primary and outstanding national parks in the U.S.

As many of you know, in 1872, Yellowstone National Park became the first national park in the world. President Gerald Ford was a park ranger there early in his career. As has already been mentioned, President Teddy Roosevelt was very concerned and very supportive of protecting the nation's resources, and visited a good many natural areas. He was also very supportive of the NPS. I find that in my own visits to parks, and in speaking with the visitors, many people indicate they are willing to pay even more money than they do to come to the national parks. This year, for the first time, we are going to have a revenue program which will increase the fees people pay to enter some of the parks. We have found people all across the country to generally be supportive of the idea. We hope to generate some 70 million dollars for three activities: resource protection, research, and interpretation, all very important to the national park system.

Parks in the U.S. have become somthing of a family tree, extremely important to all Americans, whether they visit and participate in activities in the parks, or whether they just stay at home. They like to know that there are grizzley bears roaming in Yosemite, and Florida panthers in Everglades National Park. The Organic Act of 1916 establishes the National Park Service to protect the nation's natural and cultural resources for the enjoyment of present and future generations. We have defined 41 natural regions in the U.S. that form the representative basis of the natural parks in America, including gulf coastal plains, central lowlands, the Rocky Mountains, the deserts, the Florida peninsula, and many others. We have defined America's cultural resources in the following nine ways: the original inhabitants of America, European exploration and settlement, development of the English colonies, the major American wars, political and military affairs, westward expansion, the industrial revolution, contemplative society, and social conscience. The nine cultural and 41 natural regions form the basic framework for our national park system. Each of these categories

is represented at least once. It is my strong belief that each country has its own indiginous natural and cultural heritage that should be preserved and interpreted for its citizens and for people of the world. These resources in each country are, in fact, a national family tree. Each country should define what that tree contains, and identify parts to preserve; it should not be modeled after another country's park system.

Another very important topic I would like to share with you is the relationship between preservation of natural and cultural resources with recreation. In the U.S. in 1950, there was an explosion of recreation activities across the country. People had more free time, more long week-ends and vacations, and more money. Recreation technology also expanded with SCUBA diving, hang gliders, motorcycles, recreation vehicles, and trailers that you attach to your car and drive to a campground. This caught many park departments by surprise. Some of these activities can be accomodated in national parks, such as camping and hiking, and are indeed complimentary with management objectives. Some of the activities I have mentioned can in fact, damage resources and impact negatively on the visitors experience. One example is that trailers are now so big, that people have television sets and air conditioners in them. In order to supply the electricity for this, they have their own generators on the front of their trailers. You can imagine what your experience must be like if you are interested in a wilderness or natural experience, and right next door you have a generator. This fundamental conflict is something that the NPS has been trying to deal with for a long time; trying to protect the natural and cultural resources while at the same time providing recreation. One thing we have done is to establish recreation areas, whose primary function is to meet the leisure needs of the citizens and not necessarily protect a unique or critical ecosystem. Perhaps you will find it interesting that the NPS is only one of nine federal agencies that provide recreation activities and opportunities to citizens.The U.S. Army Corps of Engineers provides more opportunities

for recreation than the entire national park system. There are also state parks, regional parks, and county and local parks that do the same. The NPS is fortunate in that while trying to protect resources, we have other levels of government that assist in serving the recreation needs.

In closing, I would like to share three of the most important lessons that we have learned in over 100 years of managing national parks. First, I believe is to clearly identify and protect representative examples of your nation's most important indiginous natural and cultural resources before they are lost forever. Recently, we did an analysis of the park system in America and found that we had gaps in what we were protecting. We are presently in the process of acquiring the missing components and incorporating them into the system. These include the tall grass prairie, and an example of a free-flowing river that is uninterrupted by dams or development from its source to the sea.

Second, we have found that non-profit advocate groups like the Sierra Club, Wilderness Society, and the National Parks and Conservation Association play a critical role in helping the NPS to protect its resources and carry out its mandate. They can be helpful in building strong public support for protecting your resources and in providing interpretive programs to the public. An outreach program to the surrounding communities, and to people who do not understand what you are trying to do is also very important. I was very impressed by the outreach program at Khao Yai where the Superintendent was meeting with communities outside the park to let them know what activities were occurring, and developing support for those activities.

And third, probably the most important lesson we've learned, is to not try to accomodate too many people and too many activities while you try to carry out your objective of protecting the resources.

Providing for non-compatable uses in other areas is something worthy looking into. And while accomodating uses and activities, it is important not to locate them in the middle of the resources you are trying to protect. Put them outside the park or along the periphery of the boundary.

I look foward to spending the next several days of the conference with you, and having a chance to speak to each of you. I also look forward to addressing the specific recommendations to address issues that we found here in Thailand.

Thank you very much.

U.S. NATIONAL PARK SERVICE RECOMMENDATIONS
15 FEBRUARY 1987

The following recommendations are made to the National Parks Division (NPD), Royal Forest Department, Ministry of Agriculture and Cooperatives for consideration in response to the report Assessment of National Parks, Wildlife Sanctuaries, and Other Preserves in Thailand. The recommendations correspond to priority issues identified by the U.S. NPS, and are intended for implementation by the Thai NPD.

ISSUE ONE: Not sufficient public support for parks, and inadequate public outreach program.

-Through public outreach in TV specials and articles, the NPD should show how parks and protected areas contribute to the Thai quality of life, including economics.

-NPD or other appropriate organization should sponsor a national essay contest for Thai students describing how Thai national cultural and natural resources, including parks and protected areas, contribute to the quality of life in the country.

-Each superintendent should develop an outreach strategy for communities surrounding the park. These programs should include both activities outside the park as well as inside the park.

ISSUE TWO: Lack of an explicit definition of protected areas leads to inappropriate use of park resources.

-The NPD should establish a "blue ribbon panel" to include cross sections of national leaders in business, universities, politics, and conservation. The panel would be responsible for developing a national policy statement on explicit objectives of national parks and protected areas.

-The NPD should establish a technical group to develop an implementation strategy for objectives outlined by the blue ribbon panel.

-Pertaining to an acquisition policy for protected areas, the NPD should define what it is they are trying to protect, what are the purposes of any new areas, what are the gaps in the system, and how natural and cultural resources should be represented in the system.

ISSUE THREE: Insufficient park management and resource management planning.

-The NPD should establish long range planning (10-15 years) capabilities to examine and develop a policy level strategy.

-The NPD should consider having a research and resource management program at each protected area. This will outline a year by year program on activities - on a project by project basis. Accomplishments can be measured on activities taking place presently on an ad hoc basis. For example, these include but are not limited to:

habitat manipulation
fire management
elephant management
endangered species inventory and monitoring program
effects on biological diversity from encroachment
exotic species control

-Regional planning should be limited to western Thailand. In other areas, concentration should be placed on implementing park programs, rather than taking time and resources to develop further plans.

-Statements for Management should be written for each park, not just for those having management plans. They should be short, succinct, and address what the purpose and objectives for management of the park are, and identify major and priority issues and actions. They should be revised about every two years.

-There should not be any ad hoc development or planning of any major development until a management plan has been finalized in each protected area.

-All management plans should have a section dealing with small scale rural economic development.

ISSUE FOUR: Lack of baseline data and resource inventories.

-Once the protected area system has been explicitly defined, begin a broad based inventory by reviewing existing literature. Identify what has been protected, how well, where are the gaps, and what remains to be done with priority resources.

-The NPD should identify what type of emphasis and priority to place on various types of research, i.e. management oriented, opportunistic, etc. Management oriented research should answer questions, solve problems, and guide decision-making.

ISSUE FIVE: Native communities are having a negative impact on park resources - both terrestrial and marine.

-NPD should work with one or two native communities (i.e. sea gypsies) to explore alternative life styles that are compatable with park resources and compatable with their cultures. Indiginous communities can develop a special interpretive program on their culture in tourist tours of villages to generate revenues.

-Rural community development programs should be linked to cost-benefit analysis. Each management plan should identify potential small scale rural development.

-Local peoples should either be responsible for concessions, or be hired to obtain benefits. They should be integrated into the very heart of tourism plans and management plans.

ISSUE SIX: Inadequate law enforcement and protective measures to protect park use.

-As part of the public outreach programs, generate support in local communities to help protect resources.

-Provide rewards for information leading to the arrest of poachers and others who damage park resources.

-Recruit local villagers with incentives to act as "undercover" persons in illicit activities.

ISSUE SEVEN: Lack of knowledge to obtain financial assistance.

-The NPD should establish a one or two person team with experience to pursue potential funding sources with a focus on resource protection.

-The NPD should consider setting up donation boxes at all parks as part of interpretive programs.

ISSUE EIGHT: Lack of in-service capability to train lower level guards. No "state of the art" refresher training available.

-A wildlife training center could be combined with a national park training center to maximize efficiency and utilization of funds. One training center for both should be considered to eliminate duplication of efforts.

-In-park training sessions could begin immediately. Superintendents could give "mini-sessions" to guards and wardens periodically to enhance knowledge and participation in park affairs on topics such as public relations, management planning, etc.

-Park staff should be involved in preparation of management plans and in identification of issues and solutions. This would give a sense of ownership of the plan.

-Staff development programs for individuals should be established. Training needs should be assessed, and individual and park-wide training programs identified and implemented.

-Addition of more staff will alone, not solve problems. The selection process and criteria for hiring guards and rangers should be re-examined. Minimum requirements for entry level positions should be established.

-Living conditions for park staff, both married and single, should be improved. If park staff are treated with the necessities of living, they are more likely to perform better on the job.

-Uniforms and badges, while seemingly minor, play a very important role in rangers feeling unified, having a sense of pride in their jobs, and sharing the goals and mission of the department.

-Terms of reference, describing daily duties for guards and rangers should be developed. In this way, accomplishments and successes can be measured and rewarded. Incentive awards for superior performance could be implemented.

ISSUE NINE: Lack of adequate visitor interpretation.

-The level of interpretation should not be aimed at the same level as US park interpretation.

-Interpretation at parks should not only describe what the beautiful plants and animals are. It should be aimed at explaining why the park is important, what would happen if it was not there, and how it is linked to/with people and local community lives.

-Interpretation, at a small scale, could be developed at guard stations - not only at major visitor centers.

MAJOR ISSUES AND RECOMMENDATIONS FROM PARTICIPANTS IN THE PRE-CONFERENCE STUDY TOUR

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MAJOR ISSUES

1. Insufficient public support for parks and sanctuaries.

2. Inadequate public outreach.

3. No appreciation for what a park "is supposed to be." Lack of definition of protected area categories leads to inappropriate uses of parks and sanctuaries.

4. Lack of institutional and management flexibility and authority to respond to problems. Outdated policy that is not implemented uniformly - and lack of regulations to interpret policy.

5. Insufficient park management and resource management planning.

6. Lack of baseline data - no resource inventories.

7. Native communities are having negative impacts on park resources - both terrestrial and marine.

8. Minimum law enforcement and protection capabilities.

9. Lack of knowledge and initiative to obtain financial assistance.

10. Inadequate inventory and protection of nationally significant cultural resources.

11. Lack of credibility and professionalism with government.

12. Insufficient equipment.

13. Lack of interagency cooperation.

14. Commercial exploitation of the resources.

15. Lack of in-service capability to train lower level guards. No "state-of-the-art" training for mid-to upper-level positions.

16. Visitor interpretation is inadequate.

RECOMMENDATIONS

A. EDUCATION/OUTREACH

1. Aggressively develop an environmental education program.

2. Park superintendents and Thai NGOs should keep close contact with sympathetic members of the press, taking every opportunity for exposure of parks and their roles in the nation's heritage.

3. NPD/WCD/RFD should work with the Education Ministry in developing resource conservation curricula for public schools.

4. Establish NPD/WCD/RFD public relations and education extension capability.

5. NPD should explore ways that Thai NGOs could work with US NGOs to develop public support and outreach.

6. Establish a nationwide "Friends of the National Parks", maybe with the help of WFT, or a national network of conservation clubs with major international NGOs serving as umbrella agencies.

7. Establish support organizations wholly made up of local people who live near the parks, at each major park or groups of parks.

8. See if TAT would be willing to promote a "Year of the Parks." This would involve encouraging Thais to visit parks and then international tourism to Thai parks the following year.

9. Establish a citizen advisory committee which would help promote the parks in cooperation with the government.

10. Emphasize well regulated and managed wildlife farming and trade

B. ADMINISTRATION AND MANAGEMENT AT THE SYSTEMS LEVEL

1. Evaluate the protected area system according to national and international criteria.

2. Assign a Peace Corp volunteer or an NGO volunteer for 1-2 years to help with contracts, proposals, etc.

3. Reconsider what a national park should be in the Thai cultural sense and encourage public participation in this process.

4. Give protected areas and environmental issues in general a stronger voice in government, perhaps using an ombudsman approach in which a senior level staff person is responsible for liaison between park superintendents and staff in other agencies.

5. Develop a countrywide park management plan that is general and offers maximum flexibility, followed by detailed plans for individual protected areas.

6. Some reserves may need special designation as cultural reserves in which native cultures can be encouraged.

7. All Thai resources management agencies should cooperatively define protected area categories (including goals) and either write new interagency policies or amend existing legislation.

8. NPD/WCD/RFD should be represented in major national and regional planning committees.

9. NPD/WCD/RFD should develop a formal policy, and all protected area legislation should be consolidated into one "organic act."

10. Promote cooperation between NPD and the Fine Arts Department to preserve, interpret and/or restore cultural sites.

C. LOCAL INVOLVEMENT IN PROTECTED AREAS MANAGEMENT

1. Encourage public involvement in the park planning process.

2. Explore means of stimulating permanence of native peoples without increasing their destruction of natural resources.

3. Involve the private sector in the park tourism industry, carefully regulated by NPD and WCD in the field; NPD and WCD should share in revenue generated and use it to support park development and conservation education.

4. When defining the protected area system, clarify how native populations should be handled.

5. Put local government, education and community leaders on a protected area advisory panel.

6. Emphasize and expand employment of locals for non-critical tasks.

D. MANAGEMENT AT THE PROTECTED AREA LEVEL

1. Conduct an ecological evaluation for each protected area.

2. At marine parks, encourage sea gypsies and local villagers to harvest fish on a rotational basis, leaving designated areas of reef habitat unharvested for 2-3 years.

3. Develop model management plans for various categories of protected areas.

4. Increase cultural/regional planning capacity.

5. Integrate protected area plans with national and/or regional development plans.

6. Develop buffer zones, emphasizing multiple use and sustained yield.

E. LAW ENFORCEMENT AND PROTECTION

1. Restrict or abolish commercial activities exploiting the natural resources within protected areas.

2. NPD and WCD may need to enlist support of the army in patrolling until the divisions are given the necessary manpower.

3. Provide uniforms; institute promotion schedule for guards; institute training program for guards.

4. Explore use of regular police for auxiliary enforcement.

5. Increase professional guard staff 100:1 or 200:1 in the next 5 years.

F. TRAINING/RESEARCH

1. Establish training centers.

2. Develop in Thailand a program similar to the AAAS Diplomacy and Congressional Fellowships.

3. Training in park planning should focus on mid-level NPD and NEB staff.

4. Use training centers to build a research assessment staff and to train individual protected area staff to develop inventory and assessment capacities.

5. Explore outcountry training such as at Deredoon.

6. Support Thai students' thesis work.

7. Review all available information on research already conducted.

8. Establish an incountry conservation data center and overall resource inventory capability and coordinate activities with emerging training centers.

G. INTERPRETATION

1. Place several Peace Corps volunteers at key parks to strengthen interpretive programs and capabilities.

2. Develop generic conservation brochures.

3. Encourage NGOs to take a lead role in developing appropriate interpretive facilities.

4. Explore a "seasonal ranger" or "volunteer" program.

5. Involve community leaders in informative site visits, park/community discussions of park development, concession problems. etc.

6. Encourage school children involvement through organized school visits.

H. FOREIGN ASSISTANCE

1. Superintendents should be encouraged to draft and sumit proposals to USAID for equipment purchase as part of the new resources management project.

2. Approach the International Council on Monuments and Sites and the Council on Historic Preservation about assisting with cultural resources assessments and inventories.

3. Encourage US natural resources faculties at U.S. universities to conduct research in Thailand.

4. Explore technical assistance from USAID/Washington

5. Explore grants to U.S. scientists that encourage international collaboration and find Thai scientists who might act as "hosts" for U.S. funded researchers (FWS, Fulbright, etc.)

6. Contact U.S. professional societies about donating back issues of journals to park libraries.

7. The Kenyan government could get a World Bank loan for its parks, so can Thailand.

8. Biodiversity Law funding opportunities should be explored by Thailand.

9. Establish a position in the public relations section to coordinate fund-raising/donation assistance in coordination with NGOs.

10. Put donation boxes in parks.

11. Re-examine entrance and concession fees.

12. Foreign tourists could pay more for entrance fees.

13. NGOs should establish an equipment fund for parks and sanctuaries.

14. Explore the possibility of obtaining Peace Corps volunteers for national park planning and interpretation.

15. Thailand should immediately accede to the World Heritage Convention.

16. Explore the possibility of getting the Sierra Club's international trips to visit Thai parks.

SELECTED COMMENTS FROM CONFERENCE PARTICIPANTS

A. BUDGET/FINANCIAL ASSISTANCE

1. Additional funds available from Members of Parliament, provincial coffers and other local sources are not being taken advantage of by RFD. (Somporn Klinpongsa)

2. Thailand's protected area managers should not become dependent on foreign assistance but should seek to build Incountry capabilities. (McNeely)

3. Wildlife Fund Thailand is attempting to support government efforts through fund raising. (Pisit na Patalung)

B. PERSONNEL

1. Personnel with appropriate qualifications are being placed in inappropriate positions where their skills cannot be used to maximum effect. (Kasem Snidvongs)

2. Protected areas need to bring in more university researchers. (Kasem Snidvongs)

3. There is a way to get an exemption from the 2 percent cap on hiring of civil servants if compelling justification is presented to the government. (Kasem Snidvongs)

4. Training is important at several levels, e.g. a translation program to provide technical information to protected area staff. (McNeely)

5. Australia has a "Personnel Development Section" that identifies training needs based on interviews with staff. (Ovington)

6. Thailand needs extensive training to develop incountry expertise. (Michalovic)

7. Incentives must be provided to field staff. (Michalovic)

8. Effective personnel management should be developed. (Lert Chantanaparb)

C. PROTECTION

1. Protection problems concerning hilltribes cannot always be solved by moving hilltribes out of protected areas. Efforts should concentrate on preventing them from expanding their destructive practices by getting them constructively involved in management. (Kasem Snidvongs and Eriksson)

2. Protected areas should not try to do too much other than protect resources. (Baker)

3. An increase in weapons is not the answer to improved law enforcement. Rather, programs such as providing awards for arrests and instituting undercover operations should be tried. (Baker)

D. TOURISM, RECREATION AND INTERPRETATION

1. There should be an evaluation of whether the pluses of tourism development outnumber the minuses. (Kasem Snidvongs)

2. In Australia, with the boom in tourism the parks are allotted more rangers (therefore more protection) and so park carrying capacity increases. (Ovington)

3. Increases in tourism must be accompanied by increased budgets and personnel. (Michalovic)

4. There should be a closer look at the relationship of tourism to national parks. (Ovington)

5. Local people must be trained in tourism related skills such as hotel management. (Ovington)

6. TAT should consider a "Visit Thailand's Parks Year." (Williams)

7. Use NGOs to help build political will by generating public support. (McNeely)

8. Build strong public support through interpretation and outreach programs to surrounding communities. (Baker)

9. A primary concern should be to increase public education and awareness; greater use should be made of traditional media, e.g. puppet shows and shadow plays, and of monks and their sermons. (Nay Htun)

10. Interpretation can play a very important role in overall park management. (Picha Pitayakajornwute)

11. Interpretation programs should have three goals: (i) increase public awareness, appreciation and understanding of the area; (ii) help achieve management objectives; and (iii) help to enhance visitor understanding of an agency's goals and objectives. (Sharpe)

12. An interpretation plan should be developed for each park. (Baker)

13. Interpretation should emphasize the value of the park to local communities. (Michalovic)

14. Environmental education is a part of the school system curricula in New Zealand. (McKerchar)

E. ADMINISTRATION AND MANAGEMENT

1. NPD and WCD need to put more reliance on others to help solve management problems, particularly people at the local level; the present situation of primary control from the central offices is counterproductive and is like trying to pick tomatoes with a long pole - the solutions can be found at the local level. (Somporn Klinpongsa)

2. Protected areas management is especially human management. (McNeely)

3. The needs of rural people should be an integral part of protected area management, and local people must be involved in park management. (several participants)

4. Australia has local people actually help write management plans, and where there are aborigines no development is undertaken without their approval. (Ovington)

5. Japan emphasizes cooperation with local people and government to solve management problems. (Arai)

6. Protected area managers should emphasize cooperation with local organizations. (Kirasak Chancharaswat)

7. Don't rely on foreigners to prepare management plans, and don't adopt - rather adapt - experiences from other countries. (McNeely)

8. Thailand should make a systems plan which reviews the existing system, develops objectives for the system and includes written policy statements. (McNeely)

9. Do a systems inventory and establish policy-level management for resources planning. (Baker)

10. Establish a blue ribbon panel of national leaders and conduct meetings at all provinces as part of a process to explicitly state protected area definition; establish a technical group to develop implementation strategies. (Baker)

11. Protected area objectives must be defined before doing management plans, and the objectives of parks and sanctuaries must be clearly separated. (Choompol Ngampongsai)

12. There should be an assessment of future impacts of development on protected areas and possible mitigation, and protected areas should be prioritized. (Nay Htun)

13. There should be more multi - ministry and multi - division project. (Nay Htun)

14. NPD and WCD should be moved to a department outside the Royal Forest Department. (Kasem Snidvongs)

15. NPD and WCD should not be merged as one division or as an independent department from RFD (Kirasak Chancharaswat)

16. Protected areas must put more emphasis on multiple-use and less on preservation. (Kirasak Chancharaswat)

17. The World Heritage Convention and other international conventions are important for several reasons, one of which is showing the government that these areas are special; the World Heritage Convention has funds to support protected area management. (McNeely)

18. Park development shouldn't go ahead until there are management plans, and the plans must be acceptable to the public. (Michalovic)

19. More freedom should be given to park superintendents to make management plans and decisions. (Ohta)

20. Management plans are not implemented because there is not enough public support. (Picha Pitayakajornwute)

21. There is not enough emphasis on the need for management plan implementation -- management plans must be implemented or they are worthless. (Kasem Snidvongs)

F. INTEGRATION OF PROTECTED AREA MANAGEMENT WITH SOCIOECONOMIC DEVELOPMENT

1. There is a need to expand conservation/rural development projects such as the one at Ban Sap Tai, and RFD should take a leading role in these projects. (Kasem Snidvongs)

2. The needs of rural people should be an integral part of protected area management. (several participants)

3. Investigate the contributions parks make to socioeconomic development. (McNeely)

4. Canada has created "National park Reserves" which allow native use of the reserve. (Dearden)

5. In Australia, aborigines are provided with special training courses. (Ovington)

6. Explore introduction of alternative life styles of native communities, e.g. teach sea gypsies new fishing techniques to get away from dynamite fishing. (Baker)

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PHUKET, THAILAND
13 - 15 FEBRUARY 1987

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