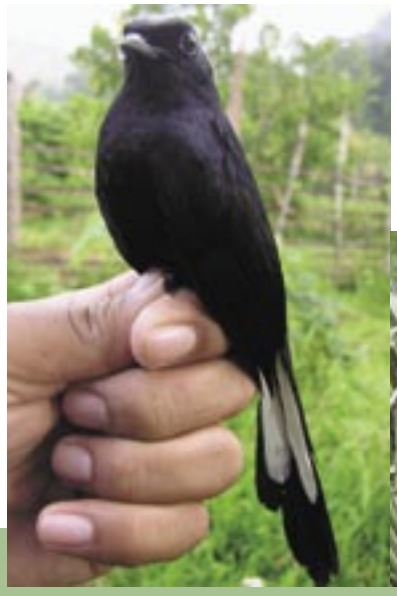
Nagao Natural Environment Foundation

NEF NewsLetter

ISSUE No. 15
March 2006



Nagao Natural Environment Foundation (NEF)

Founded in 1989, the Nagao Natural Environment Foundation (NEF) is a non-governmental organisation dedicated to promoting nature conservation in developing countries. The NEF pursues its objectives through two main schemes: ***Research Grant Scheme*** and ***Scholarship Scheme.***

The ***Research Grant Scheme*** provides financial support to creative and committed local scientists and other concerned people, allowing them to undertake research and related activities within the scope of nature conservation in their respective countries.

The ***Scholarship Scheme*** provides financial support to local university students who intend to study courses relevant to nature conservation in their respective countries, so as to work in this field in the future.

- **Research Grant Scheme**
  - Research Grant Programme
  - Small-scale Research Grant Programme
  - Conservation Activity Programme
  - Publication Programme
- **Scholarship Scheme**
  - Scholarship Programme
  - Exchange Programme

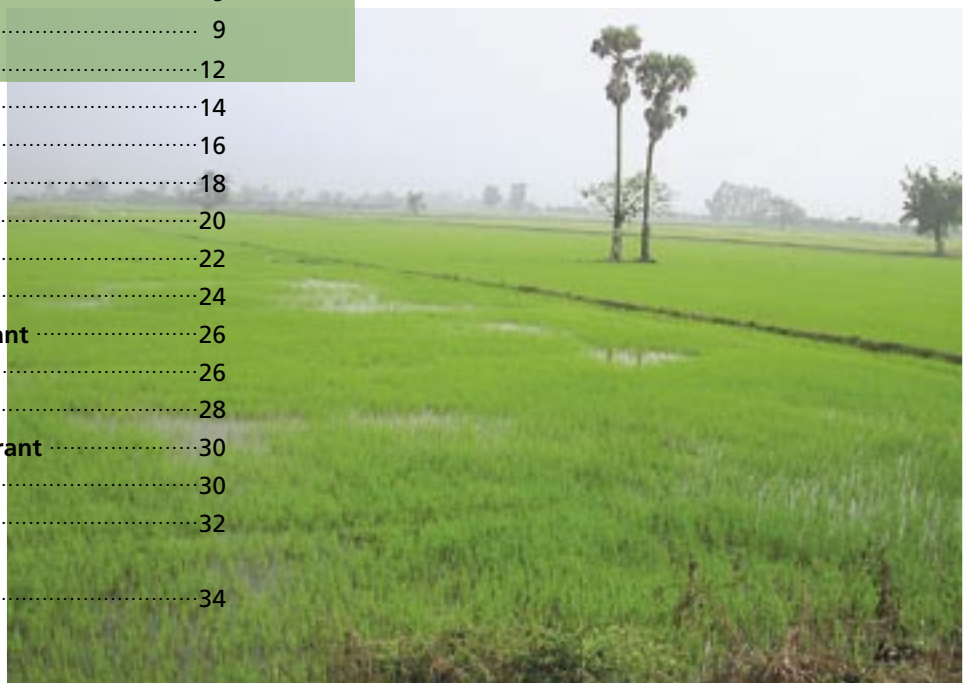
Photo:Jeremy Holden

NEF NEWSLETTER ISSUE No. 15 March 2006

Contents

Profile

Name: Nagao Natural Environment Foundation (NEF)
Address: 3-10-10, Shitaya, Taito-ku, Tokyo 110-8676, Japan
Tel: +81-3-5824-0771
Fax: +81-3-5824-0772
Website: http://www.jwrc.or.jp/NEF/
E-mail: nef@cronos.ocn.ne.jp
Date established: 21 November 1989
Jurisdiction: Ministry of the Environment, Japan



1

Outlines of the new projects in FY2005

In FY2005, NEF funded 19 projects in eight countries including 10 new projects and nine continued projects (as of Feb. 2006). Outlines of the newly approved projects are shown in the following pages.

(1) Research Grant

Indigenous forest management: A case study of sacred forest "common pool resource"

Research Grant

Souksompong Prixar
National University of Laos (NUOL), Lao PDR
620,000 Japanese yen

The villages surrounding the Dong Khaibokhan sacred forest in Bolikhamxay Province of Laos were anecdotally established in 1914. People have used the natural resources in this forest for many decades, governed by traditional regulations. People follow these regulations strictly and carefully to use these resources in a sustainable way. It is very important to study how the regulations work to control use of the forest and to conserve the approach. This study plans to trace the indigenous forest management system and codify how local people establish local institutions to control the use of forest resources in this sacred forest.
Research area: Dong Khaibokhan sacred forest, Bolikhamxay Province

Workshop on taxonomy assessment and identification of priorities in Indonesia towards 2010 target

Research Grant

Elizabeth Widjaja
Research Center for Biology, Indonesian Institute of Science (LIPI), Indonesia
950,000 Japanese yen

As one of the world's largest biodiversity countries, Indonesia has to take full account of taxonomic capacities in achieving the goals of the Convention of Biological Diversity, and support taxonomic activities toward the 2010 target. A network and collaboration between the herbaria is needed to compile the information for listing and assessing endemic and endangered species within the country. This project plans to hold a workshop in order to: help identify the flora of Indonesia for implementing the CBD's Strategic Plan; provide the rationale for the operational targets chosen, with opportunities indicated for further elaboration of the program of work; and serve as a guide for all biodiversity stakeholders on specific objectives toward which they can contribute individually or collectively, at the local, national, or international level.

Conservation of gaur (*Bos gaurus*) and banteng (*Bos javanicus*) in Cat Tien National Park and Ea So Nature Reserve

Research Grant

Nguyen Manh Ha
Vietnam National University of Ha Noi, Vietnam
1,000,000 Japanese yen

The bovid (Bovidae) family in Vietnam includes four genera with six species. Among them, gaur *Bos gaurus* and banteng *Bos javanicus* are the most globally threatened wild cattle due to loss of habitat and extensive hunting (Vietnam Red Data Book). It is thus imperative to assess the status of and threats to these cattle, as well as to provide a long-term conservation plan for the species. This study plans to: investigate the current status of gaur and banteng; specify the local distribution of gaur and banteng in Cat Tien and Ea So; identify the causes of threat posed to gaur and banteng; and make recommendations for the conservation plan for gaur and banteng.
Research area: Cat Tien National Park (73,878 ha. Located in Dong Nai, Binh Phuoc, and Lam Dong Provinces in southeastern Vietnam), and Ea So Nature Reserve (22,000 ha. Located in Dak Lac Province in the Central Highlands)

Risky aquaculture in vulnerable mangrove ecosystem: environmental monitoring and suggested biological solutions for sustainable development

Research Grant

Phan Nguyen Hong
Vietnam National University of Ha Noi, Vietnam
850,000 Japanese yen

A coastline of 3,260 km, favourable natural conditions, abundant labour, and government support policies have promoted the development of lucrative aquaculture in Vietnam, particularly shrimp (*Penaeus* spp.) farming for exports. Such development, however, has adversely affected the mangrove ecosystem of high biodiveristy due to its conversion to aquaculture ponds and the resulting water environmental pollution. The overall goal of this project is to conserve the coastal mangrove environment in risky aquaculture areas by mitigating pollution. The research plans to: assess environmental pollution inside and outside laboratory and in the field.
Research area: Giao Thuy District, Nam Dinh Province

N E F

(2) Publication Grant

"Butterflies of Bogor Botanical Garden, Indonesia: their importance and significance"

Publication

Dewi M. Prawiradilaga
Division of Zoology, Research Center for Biology, Indonesian Institute of Science (LIPI), Indonesia
980,000 Japanese yen

Contrary to the occurrence and diversity of butterflies in Indonesia, there has been no affordable guidebook on Indonesian butterflies. This project aims to publish a guidebook on butterflies in Bogor Botanical Garden in both English and Indonesian languages. The objectives are to: provide users with basic knowledge about butterflies; offer an easy and affordable guide on local species; inform workers in nature reserves about the existence of butterflies and rich biodiversity in those areas; and increase public knowledge about this natural environment and public participation in environmental conservation.
Research area: Bogor Botanical Garden (87 ha)

Publication on "Guidebook on the Birds of Lore Lindu National Park, Central Sulawesi"

Publication

Djunijanti Peggie
Museum Zoology Bogor, Research Center for Biology, Indonesian Institute of Science (LIPI), Indonesia
980,000 Japanese yen

Lore Lindu National Park is located in central Sulawesi. The park was established in 1977 and covers an area of 217,991 ha at an altitude of 200 to 2356 m.
Lore Lindu National Park has the richest biodiversity, and 267 bird species (70%) out of the total 384 bird species in Sulawesi can be found in the area. Moreover, 71% of endemic species or 15 out of 16 endemic genera inhabit this park. On the other hand, 60 Sulawesi threatened bird species including 23 globally threatened species that should be monitored also live there.
A complete guidebook for the island of Sulawesi has not been available until now, while Lore Lindu National Park has become a focal point for various biodiversity research studies and biological monitoring, as well as a destination for ecotourism. Therefore, there is an urgent need to provide guidebooks on biodiversity in the area including a bird guidebook.
The Lore Lindu Bird Guidebook will provide an excellent tool for bird monitoring by local NGOs and park rangers, while promoting conservation awareness and visitor education.
Research area: Lore Lindu National Park (217,991ha)

Publication of "Contributions to the Terrestrial Mammals of the West Indies"

Publication

Rafael Borroto-Paez
Instituto de Ecologia y Sistematica, Cuba
700,000 Japanese yen

This book will contribute to the study of fossils and recent mammals in terms of systematic aspects, ecology, paleontology, anatomy, natural history, collections, behaviour, parasitology, and conservation. All descriptions will be written in English with abstracts given in both English and Spanish. Also, a complete database listing more than 1,300 bibliography references, with analysis and comments will be added as an annexe to the book.

Publication on "Proceedings of the National Conference on Environment and Sustainable Development" and "Abstracts of Scientific Works conducted by CRES and Affiliates"

Publication

Truong Quang Hoc
Vietnam National University of Ha Noi, Vietnam
900,000 Japanese yen

The Centre for Natural Resources and Environmental Studies (CRES), Vietnam National University, Ha Noi was established in 1985. CRES plans to publish a series of books including:
- Proceedings of the National Conference on Environment and Sustainable Development
- Abstract of Scientific Works conducted by CRES and Affiliates

N E F

(3) Conservation Activity Grant

Enhancing our understanding about high-altitude wetlands in Nepal

Conservation Activity

Bishnu Bhandari
Forum for Ecosystem Management, Nepal
300,000 Japanese yen

* This project has been completed.

Wetlands are biologically rich ecosystems on the Earth. They represent the interface between land and water, and thus the home to terrestrial and aquatic flora and fauna. Because of these values, a multitude of benefits can be drawn from the use of wetlands and their resources. However, little is known about the uses, functions, and values of wetlands that are called high-altitude wetlands. The study is intended to provide a discussion forum for individuals engaged in the study and management of the high-altitude wetlands of Nepal. Its specific objectives are to: review the current status of high-altitude wetlands, focusing on biological, hydrological, cultural, and socio-economic values and benefits; identify the need for information (knowledge gap) on the wise use and conservation of these wetlands; and explore the means of collaborative work among organisations and agencies on the sustainable uses of high-altitude wetland resources.

Biodiversity Week 2005 "Global Warming and Biodiversity"

Conservation Activity

Imran Tumora
Lembar, Indonesia
230,000 Japanese yen

Universitas Nasional Jakarta, Indonesia, in cooperation with Lembar (NGO), will celebrate Biodiversity Week 2005 under the theme of Global Warming and Biodiversity. Activities include a workshop, exhibitions, and a poster design contest. The purposes are to: raise awareness among the local community (especially students) about global warming and its impact on biological diversity; increase community awareness about reducing the use of chemical compounds that affect global warming and biodiversity; and introduce nature-friendly behaviour to help reduce the impact of global warming.

2

Progress of the projects in FY2004

Progress reports for some projects funded in FY2004 are shown in the following pages.

(1)Research Grant

Biodiversity and natural history of amphibians and reptiles in Kerinci Seblat National Park, Sumatra, Indonesia

Research Grant

Hellen Kurniati
Research Center for Biology, Indonesian Institute of Science (LIPI), Indonesia

Approximately 91 species of frogs are known to exist in mainland Sumatra, of which there are 17 endemic species. Moreover, there are approximately 72 lizard species (16 endemics), 133 snakes (26 endemics), and 13 species of non-marine turtles. However, many new species are being discovered and described due to limited sampling efforts in many areas to date. Generally, the herpetofauna (amphibians and reptiles) of Sumatra remains poorly studied; only certain areas have been comprehensively studied, including Leuser National Park.

Kerinci Seblat National Park (KSNP) is the huge national park in Sumatra (with a total area of about 1,400,000 hectares). The park spans following counties and provinces (Figure 1): Pesisir Selatan and Solok (West Sumatra Province); Batanghari, Sorolangun Bangko, and Kerinci (Jambi Province); Bengkulu Utara and Rejanglebong (Bengkulu Province); and Musi Rawas (South Sumatra Province). The park area within Jambi Province is much larger than that within the other three provinces. The large area of rain forest that covers most of KSNP is an important habitat for amphibians and reptiles, with many reptile and amphibian species relying on specific habitats for survival. The purpose of biodiversity studies are focused on surveying all major habitats, reporting the distribution and relative abundance of all species recorded, consolidating information on the distribution and habitat preferences of herpetofauna in KSNP, and providing baseline information that can be used as indicators of the abundance of species and population changes in the future.

Field surveys of herpetofauna (amphibians and reptiles) communities were conducted in KSNP (Jambi Province) from January to March 2005. Surveys included observation, lighting, collection by hand, and trapping in all major amphibian and reptile habitats at six survey sites (Tapan, Lumayang, Sungai Durian, Gunung Tujuh, Rawa Bento, and Renah Kayu Embun).

Four general herpetofauna habitat types were identified within the areas surveyed including:

Cultivated land: Consisting of paddy fields, land for growing vegetables and fruit, and sweet wood plantations.

Highland hill forest: This area is characterized by dominant laurels and oaks trees. Moss and fern festoon the trunks, limbs, and branches of tress and shrubs (Figure 2).

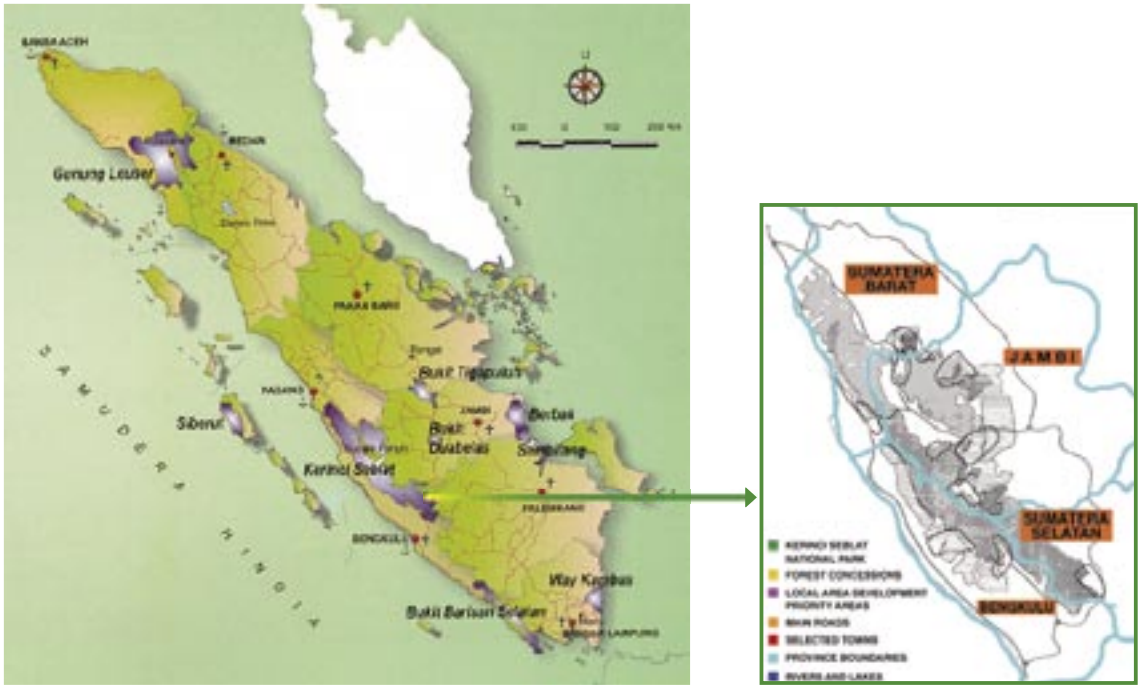


Figure 1: Location of Kerinci Seblat National Park (KSNP)

Lowland hill forest: This area is the most widespread and abundant in types of vegetation that occurs from about 500 meters to 1000 meters above sea level. *Dipterocarpacea* are the dominant trees in this forest.
Marshland: This is one type of wetland that consists of grassy and weedy areas, and a few small trees.

During the field work, a total of 65 species of herpetofauna were found, consisting of 48 species of amphibians and 17 species of reptiles, and including five families of frogs, one family of snake, and three families of lizards. The encounter with species differed substantially between sites. Survey site summaries are outlined below.

Tapan: Twenty species were observed (14 species of amphibians and six species of reptiles). The family Ranidae was dominant (nine species) at this site. The most abundant amphibian species were *Rana chalconota, R. crassiovis*, and *R. siberu*; and for reptiles, *Mebuya multifasciata.*
Lumayang: Thirteen species were observed (nine species of amphibians and four species of reptiles). The family Ranidae was dominant (five species) at this site. The most abundant amphibian species were *R. chalconota* and *R. hosii*; and for reptiles, *M. multifasciata*.
Sungai Durian: Thirty species were observed (24 species of amphibians and six species of reptiles). The family Ranidae was dominant (seven species), followed by the families Microhylidae (six species) and Rhacophoridae (six species). The most abundant amphibian species were *Kalophrynus pleurostigma, Huia sumatrana, Limnonectes kuhlii, R. chalconota,* and *R. hosii.*
Gunung Tujuh: Thirty-one species were observed (25 species of amphibians and six species of reptiles). The family Rhacophoridae was dominant (11 species). The most abundant amphibian species were *Microhyla superciliaris, Fejervarya cancrivora, F. limnocharis, Limnonectes barisani, R. chalconota, R. crassiovis, R. nicobariensis, Philautus sp, P. leucomystax,* and *Rhacophorus achantharrhena;* and for reptiles, *M. multifasciata* and *M. rudis*.
Rawa Bento: Six species were observed (of amphibians). The family Ranidae was dominant. The most abundant amphibian species were *F. cancrivora, F. limnocharis, R. chalconota, R. nicobariensis, P. leucomystax*, and *R. bifasciatus*.
Renah Kayu Embun: Sixteen species were observed (13 species of amphibians and three species of reptiles). The families Ranidae and Rhacophoridae were dominant (six species each). The most abundant species were *R. chalconota, R. crassiovis, Rana nicobariensis, Philautus* sp, and *P. leucomystax;* and for reptiles, *M. multifasciata*, and *M. rudis*.

The results of Jaccard's Coefficient of Similarity index calculation showed that two distinct groups were apparent from the highland survey, as were at lowland survey sites (Figure 3). The sites where rain forest covered most of the areas located at an altitude between 500 and 700 meters above sea level (Tapan, Lumayang, and Sungai Durian) were clustered as one group. Another group included the sites where disturbed forest covered most of the areas located at an altitude between 1200 and 2000 meters above sea level (Gunung Tujuh, Rawa Bento, and Renah Kayu Embun) were also clustered as one group. About half

Figure 2 : Characteristic of highland hill forest in KSNP Photo:Jeremy Holden

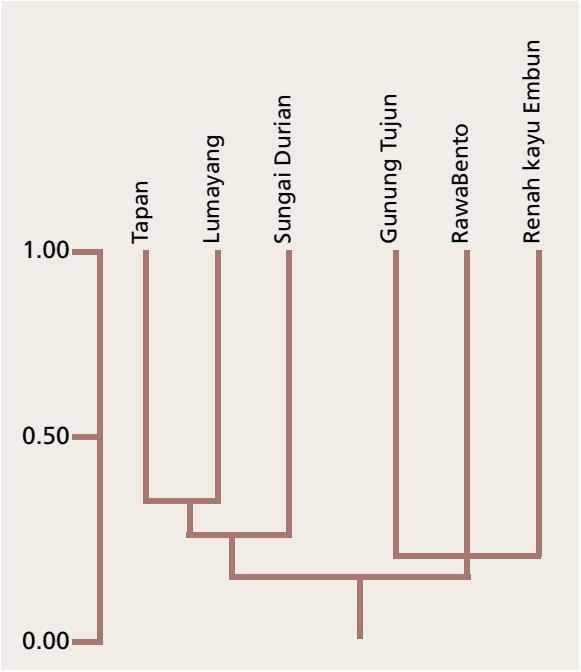


Figure 3 :UPGMA diagram comparing relative similarities in diversity on Jaccard's Similarity Coefficient between amphibians and reptiles communities at six survey sites in KSNP Jambi Province area, Sumatra

the herpetofauna species encountered at the survey sites were found only in forested areas (29 species; 44.6%); only 16 species were found in disturbed habitats, including cultivated land and human habitations; and an additional 20 species occurred in both forest and disturbed habitats.

There were six unknown frog species (including four taxon of the family Rhacophoridae, one taxon of the family Bufonidae, and one of the family Microhylidae) and one snake of the family Colubridae, respectively. However, nine species endemic to the Sumatra mainland were collected: *Rana crassiovis, Rana siberu, Rhacophorus achantharrena, Rhacophorus bifasciatus, Rhacophorus catamitus, Rhacophorus poecilonotus, Dendragama boulengeri, Draco sumatrana*, and *Lophocalotes ludekingi*.

The most important collections from the nine endemic species are *Rhacophorus bifasciatus* or the Kerinci Tree Frog (Figure 4) and *Lophocalotes ludekingi* or Ludeking's Lizard (Figure 5). The Kerinci Tree Frog is a distinct and very beautiful tree frog that has only been recently rediscovered after an absence of 80 years. This is a species endemic to Sumatra, to date only known from the Mount Kerinci area at an elevation between 1200 and 1400 m above sea level. Ludeking's Lizard is a lizard endemic to Sumatra and thus far was only recorded in a small area in western Sumatra (near Mount Singgalang in West Sumatra). Finding Ludeking's Lizard at the Gunung Tujuh survey site thus suggests a much wider distribution than previously believed.

Figure 4: Male of *Rhacophorus bifasciatus* or Kerinci Tree Frog Photo:Jeremy Holden

Figure 5: Female of *Lophocalotes ludekingi* from Gunung Tujuh survey site
Photo:Jeremy Holden

References

Alcala, A.C. and W.C. Brown. 1998. *Philippine amphibians. An illustrated field guide*. Bookmark, Inc. Makati City.

Bauer, A.M. 1994. *Famili gekkonidae (reptilian, Sauria). Part 1. Australia and Oceania.* Walter de Gruyter. Berlin.

Berry, R.f. 1975. *The amphibia fauna of Peninsular Malaysia.* Tropical Press. Kuala Lumpur.

Buden, D.W. 2000. The reptiles of Pohnpei, federal States of Micronesia. *Micronesica* 32 (2): 155-180.

CI/CABS IUCN/SSC. 2004. Global amphibians assessment. Document 2.0. Southeast Asia Workshop, Bangkok, 30th – 4th October 2004. <http://globalamphibians.org>.

Das, I. 2004. *Lizards of Borneo*. Natural History Publication. Kota Kinabalu.

De Rooij, N. 1915. *The reptiles of the Indo-Australian Archipelago I. Lacertilia, Chelonia, Emydosauria*. E.J. Brill. Leiden.

De Rooij, N. 1917. *The reptiles of the Indo-Australian Archipelago II. Ophidia.* E.J. Brill. Leiden.

Gardner, T. 2001. Declining amphibian populations: a global phenomenon in conservation biology. *Animal Biodiversity and Conservation* 24 (2): 25-44.

Harvey, M.B., A.J. Pemberton and E.N. Smith. 2002. New and poorly known parachuting frogs (Rhacophoridae: *Rhacophorus*) from Sumatra and Java. *Herpetological Monograph* 16: 46-92.

Inger, R.F. 1966. *The systematics and zoogeography of the amphibian of Borneo*. Field Museum Press. Chicago.

Inger, R.F. and R.B. Stuebing. 1989. *Frogs of Sabah*. Sabah Park Publication No. 10. Kota Kinabalu.

Inger, R.F. and R.B. Stuebing. 2005. *A field guide to the frogs of Borneo*. Natural History Publication (Borneo). Kota Kinabalu.

Iskandar, D.T. 1998. *The amphibians of Java and Bali*. Research and Development Center for Biology. Bogor.

Iskandar, D.T. and E. Colijn. 2000. Preliminary checklist of southeast asian and new guinean herpetofauna. I. Amphibians. *Treubia* 31 (3) supplement : 1-133.

Iskandar, D.T. and E. Colijn. 2002. *A checklist of southeast asian and new guinean reptiles. Part I. Serpentes.* Binamitra. Jakarta.

Iskandar, D.T. and E. Colijn. (in press). *A checklist of southeast asian and new guinean reptiles. Part II. Lacertilia*. Binamitra. Jakarta

Keng, L.L and M.L. Tat-Mong. 1989. *Fascinating snakes of Southeast Asia-An introduction*. Tropical Press. Kuala Lumpur.

Krebs, C.J. 1989. *Ecological methodology*. Harper & Row Publisher. New York.

Kurniati, H. 2001. Keanekaragaman dan kelimpahan jenis herpetofauna Taman Nasional Bukit Tiga Puluh, Riau, Sumatra: Daerah Camp Granit, Desa Siambul dan Desa Rantau Langsat. Laporan teknik. Proyek Inventarisasi dan Karakterisasi Sumbardaya Hayati. Pusat Penelitian Biologi-LIPI. Bogor.

Kurniati, H. 2003. *Amphibians and reptiles of Gunung Halimun National Park, West Java, Indonesia*. Research Center for Biology-LIPI. Cibinong.

Kurniati, H., W. Crampton, A. Goodwin, A. Locket and A. Sinkins. 2001. Herpetofauna diversity of Ujung kulon National Park: An inventory results in 1990. *Journal of Biological Researches* 6 (2): 113-128.

Liem, D.S.S. 1973. The frogs and toads of Tjibodas National Park, Mt. Gede, Java, Indonesia. *The Philippine Journal of Sciences* 100 (2): 131-161.

Lim, K.K.P and F.L.K. Lim. 1992. *A guide to the amphibians & reptiles of Singapore*. Singapore Scientific Centre. Singapore.

Manthey, U. and N. Schuster. 1996. *Agamid lizards*. TFH Publications, Inc. Neptune City.

Mistar. 2003. *Panduan lapangan amfibi kawasan ekosistem Leuser*. Gibbon Foundation-PILI-NGO Movement.

Musters, C.J.M. 1983. Taxonomy of the genus *Draco* L (Agamidae, Lacertilia, Reptilia). *Zoologische Verhandelingen* (199): 1-120.

Stuebing, R.B. and R.F. Inger. 1999. *A field guide to the snakes of Borneo*. Natural History Publications (Borneo). Kota Kinabalu.

Tweedie, M.W.F. 1983. *The snakes of Malaya*. National Press. Singapore.

Van Kampen. 1923. *The amphibia of the Indo-Australian Archipelago*. E.J. Brill. Leiden.

NEF NEWSLETTER
ISSUE No.15 March 2006

Towards the Restoration of Macuata Island: Conserving the Crested Iguana

Research Grant

Craig Morley
The University of the South Pacific, Fiji

Key Objectives

- Determine the impacts of Pacific rats on regeneration of the dry-forest, weed invasion, and crested iguana numbers on Macuata Island, Fiji.
- Increase the capability within Fiji to restore and manage the dry-forest habitat and its resident crested iguanas.

Progress

I have erected ten treatment and control rat exclosure plots (2 m x 2 m x 1 high) on Macuata. This work is being done to determine if rats are a pest species (that is, are they seed predators which may alter or change the food types available for the iguanas?). If rats are a problem then we can make a decision to eradicate them, or not. Furthermore, establishing whether rats are a problem is especially important if we wish to translocate some iguanas to another island. Having all the iguanas in only two locations could spell disaster if a disease or fire swept through these two islands (Yadua Taba and Macuata).

September Trip 2005

A team of five people (including Dr. Peter Harlow, an iguana expert from Taronga Park Zoo in Sydney, Australia) went to the island, along with five locals from Vunitogoloa Village to survey the iguanas for two nights. We located 22 crested iguanas (21<10 m from the transect line) in 800m of transect. Transect 1 was 480 m long and in the forest remnants on the NNW side of the island (20 iguanas seen), and Transect 2 was 320 m long and on the western side (just north of the sandy beach: two iguanas seen). DNA samples were taken from 11 of the iguanas – to determine if they are the same species as on Yadua Taba or are indeed a sub-species as we believe they are. The samples have been sent to Dr. Ross Sadlier at the Australian Museum for analysis.

Two of the people in our survey team (Dr. Tom Gillispie, from the Department of Biogeography, UCLA, USA, and Gunnar Keppel, a PhD candidate from the University of Queensland, Australia) were botanists and they will help me prepare a plant list of most of the species seen in the undisturbed sections of the island. This should be available in 2006.

All exclosure plots were checked for any rat breaches and photographs were taken of each exclosure. No vegetation measuring was done at this stage as we did not want to trample on the plants – I aim to measure the plants early in 2006. However, we did see a significant physical difference in appearance between the treatment and control plots with most treatment exclosures having much more vegetation than the control plots (see figures attached).


1


2


3


4


5

1) Picture of treatment and control plots. Treatment in the foreground and control in the rear.
2) A few weedy species growing on treatment plot 3.
3) Virtually no growth in control plot 3.
4) Plants growing in treatment plot 6.
5) No plants growing in control plot 6.

We have erected signs up on the island for people not to light fires because this is the greatest threat to the island and the iguanas. So far the people are abiding by this request. However, as we are not out there all the time, I cannot guarantee that this will not happen. If it is burnt this will set us back and the iguanas will face an even greater threat of extinction – which is our major concern. I would like to construct firebreaks across the island dividing the island into quarters. Hopefully if a fire did occur a firebreak will at least stop the fire from covering the whole island. This work is planned for 2006. I will also try and train the local people, with help from the fire brigade, on how to react if a fire does occur.

December Trip 2005

We surveyed the island again and did three transects, averaging 200 m each night. I had four locals helping me out. I set a limit on the survey time of two hours. On the first night we saw eight iguanas in the same part of the island we surveyed in September. The transect length was 175 m (However, I only got one DNA sample as the iguanas we saw were very high in the canopy). The captured iguana received a PIT identification tag (as did all the iguanas caught on this trip).

On the second night we went into a completely new area of forest on the island. It was a good habitat, although the vegetation was very dense. We saw five iguanas and three DNA samples were collected in a transect of 200 m. On the third night (and this was the most surprising night), I decided to do a transect on the other side of the island in a very isolated and disturbed forest patch. The transect was 225 m long. This area had been regularly burnt in the past. We captured seven iguanas and saw one other. The iguanas were not always in dense forest. In fact, one iguana was in a vaivai tree out in the open surrounded by grass, which goes against everything we had previously known about these iguanas. Interestingly, all these iguanas were low down in the vegetation.

Using the Software Program "Distance" (which helps us estimate the density of iguanas present in an area), we estimate that there could be an average of 25.6 iguanas per hectare, and 95% confidence limits of from 14 - 46.9 iguanas per hectare. However, our conservative estimate is that there are around 14 iguanas per hectare. Larger samples (more survey trips in the next few years would produce smaller confidence limits). However, I must stress, this estimate is probably only useful for "good" forest cover, not the burnt out areas or scrubland which accounts for over half the island.

Future work and progress

I plan on going out to Macuata Island for three to four days every four months to continue the rat exclosure plot work and to carry out some night surveys, so we can get a better insight into the behaviour and ecology of the iguanas. At present we know virtually nothing about spatial behaviour, eating habits, reproductive physiology, or survival. If possible, I would really like to get students interested in this work, so they can do their MSc. on some of the issues I have raised above.

We believe from this preliminary data that the population of iguanas on Macuata Island is the second largest in Fiji, but it is also extremely vulnerable. We thought we had a secure population of iguanas in the Yasawas but they have all but disappeared, and if we are not careful this will happen on Macuata Island as well. I would like to once again thank the Foundation for the funding and opportunity to learn more about Fiji's crested iguanas.

Crested Iguana

Field Assessment of the Cobra (*Naja* spp.) Population in Thailand

Research Grant

Apinya Chaitae
Division of Wild Fauna and Flora, Protection under the Convention, National Park, Wildlife Conservation Department, Thailand

Cobras (*Naja* spp.) were reclassified from Appendix III to Appendix II of CITES in 1990. They were selected as species of urgent concern in implementing the provision of Res. Conf.12.8 upon the review of significant trade in specimens of Appendix II species to ensure that survival of the species is not detrimentally affected, with the population maintained at a level consistent with the role of the species in its ecosystem.

As with most species of snakes, there is a scarcity of information about the biology, ecology, and use of cobras (*Naja* spp.). Three Thai members of the genus *Naja* that inhibit a very large range in various habitats are the Monocled Cobra (*Naja kaouthia*), Black and White Spitting Cobra (*Naja siamensis*), and Golden Spitting Cobra (*Naja sumatrana*). Cobras are known to be very adaptable, surviving in a variety of habitats such as forests, agricultural lands (i.e., paddy fields, oil palm and sugar cane plantations), and other areas of human activity, even houses and settlements. *N. kaouthia* is common and widespread throughout Thailand, and the most traded and exported species of cobra. Preferred habitats for *N. kaouthia* are low-lying areas, such as cultivated rice fields. *N. siamensis* is found in areas higher than *N. kaouthia*, especially in some districts of Nakornsawan province. This species is usually sold for local consumption. *N. sumatrana* is found in upland areas of southern Thailand. Cox (1932) indicated that *N. sumatrana* is the least common of Thai cobras, associated with cobra trader information. Only one or two *N. sumatrana* have been caught in a one-year period in the mountainous areas of Nakorn Srithammarat province.

Measuring of captive bred cobra

Cobras are mainly exploited for consumption as wild meat, with other cobra parts (gall bladder, skin, etc.) being used as by-products. This manner of cobra use is dictated by economic value. *N. kaouthia* is mainly used for its skin, because *N. siamensis* and *N. sumatrana* do not produce good quality leather (Cox.1932). Due to the large body size of *N. kaouthia* and its abundance, it constitutes an opportunity for exploitation. Data obtained in 2001 to

The rice paddy field in central region, main harvesting area for cobra.

2003 that is available from CITES Management of Thailand indicates that approximately 2,000 skins were exported per year. This data excludes other exported products of cobra skin, such as shoes, handbags, wallets, and key chains.

Shine *et al*. (1998a) showed that it is virtually impossible to obtain reliable information on the population densities of snakes inhabiting complex tropical habitats, as they remain immobile for long periods. The tropical climate eliminates any need for the snake to bask in the open to raise its body temperature. Thus, adaptive techniques such as examining harvested animals are needed. These techniques were previously employed for several species of snakes (i.e., cobra, python, rattlesnake, file snake) and varanids, by studies on the biological perspectives of commercial harvesting and harvesting techniques (e.g. Shine *et al*. 1995, 1996, 1998a).

The first step was examining and compiling existing information related to the cobra from various sources, especially from the perspectives of exploitation and assessment methodology. The information obtained suggested that harvest practices are dictated by market demand and the availability of snake catchers. Snake catchers need special skill in catching cobras since the cobra's bite is venomous and potentially fatal. Due to the cobra's biology and applicable harvest factors, areas of study were restricted to the main harvest locations in the low-lying areas of central and southern Thailand. It was found that collecting harvest data remains the most appropriate way to monitor the cobra trade.

Objectives:

1. To assess the status of *Naja* spp., a particularly harvested species,
2. To collect biological and ecological data on the species both from wild and harvested animals,
3. To assess current levels of harvest and gather data on domestic and international trade in the species, and
4. To make recommendations for the sustainable management of harvesting *Naja* spp., including export quotas.

Methodology:

1. Field study to investigate aspects of biology and other important parameters. Capturing wild snakes would enable an assessment of the age-class structure of wild populations, and could then be compared with that found in restaurants, shops, and collected stock, including breeding captive stock.
2. Interviews and observations with collectors, traders, and exporters will provide the basis for analysing the impact and level of present and past trade, including methods of harvesting, harvesting period, and sizes of snakes brought in to be killed.
3. Examination of harvested animals (dissections in shops/restaurants) will provide data on basic biology and characteristics (sex and reproductive status). Data collection will consist of examining, measuring, and weighing snakes brought in to be killed, to obtain data on reproduction and consumption habits.
4. Collection of data on trade history, annual quantities of whole snakes, skins, and other products including other aspects from the CITES Office.
5. Monitoring the growth rates of captive bred cobra.

References

Boeadi, Shine, R., Sugardijto, J., Amir, M. and Sinaga, M.H. (1998b). Biology of the commercially-harvested rat snake (*Pytas mucosus*) and cobra (*Naja sputatrix*) in central Java. *Mertensiella 9*: 99-104.

Cox, M.J. 1932. The Snakes of Thailand and their husbandry. Krieger Publishing Company, Florida, USA. 288-313 pp.

Shine, R., Harlow, P., Keogh, J.S. and Boeadi (1995). Biology and commercial utilization of acrochordid snakes, with special reference to Karung (*Acrochordus javanicus). J. Herp. 29(3)*: 352-360.

Shine, R., Harlow, P.S., Keogh, J.S. and Boeadi (1996). Commercial harvesting of giant lizards: the biology of water monitors, *Varanus salvator*, in southern Sumatra. *Biol. Conserv. 77*: 125-134.

Shine, R., Harlow, P.S., Ambariyanto, Boeadi, Mumpuni and Keogh, J.S. (1998a). Monitoring monitors: a biological perspective on the commercial harvesting of Indonesian reptiles. *Mertensiella 9*: 61-68.

Shine, R., Ambariyanto, Harlow, P.S. and Mumpuni (1998b). Ecological traits of commercially harvested water monitors, *Varanus salvator*, in northern Sumatra. *Wildl. Res. 25*: 437-447.

Shine, R., Ambariyanto, Harlow, P.S. and Mumpuni (1999a). Reticulated pythons in Sumatra: biology, harvesting and sustainability. *Biol. Cons. 87*: 349-357.

A female *N. kaouthia* is caught with a noose after digging.

Measuring of *N. kaouthia* found in gatherer stock

NEF NEWSLETTER
ISSUE No.15 March 2006

Status Overview and Recommendations for Conservation of the Milky Stork *Mycteria cinerea* in Malaysia: Final Report of the 2004/2005 Milky Stork Field Surveys in the Matang Mangrove Forest, Perak, Malaysia

Research Grant

David Li, Zuo We, John Howes, Siti Hawa Yatim, Rahmah Ilias
Wetlands International Malaysia, Malaysia

The Milky Stork *Mycteria cinerea* is a large waterbird with distribution restricted to Indonesia, west Malaysia, Cambodia, Thailand, and possibly Vietnam. Globally, the species has been listed by IUCN/BirdLife Interntional as "Vulnerable" with an estimated World Population of only 5,550 birds (Wetlands International 2002). Within Malaysia, the Matang Mangrove Forest in Perak has always been a stronghold for the species, with a highest count of 115 Milky Storks found there in 1983. Monitoring results of the species indicates that Milky Stork populations have undergone a massive decline (90%) over the last 20 years in the Matang Mangrove.

The main goal of the 2004/2005 Milky Stork Field Surveys in Malaysia jointly undertaken by Wetlands International and the Department of Wildlife and National Parks (PERHILITAN), with support from Malaysian Nature Society (MNS) volunteers, was to reassess the status and population size of Milky Stork in at the Matang Mangrove Forest and adjacent coastal areas. In consideration of the future reintroduction of the species in Malaysia, an inventory of the captive breeding of the Milky Stork was also conducted in Malaysia and neighboring countries.

Findings of the study

Decline of Milky Stork and overall waterbird populations in Matang Mangrove Forest and adjacent coastal areas. The maximum number of Milky Stork recorded were nine individual birds during the study, thus the Milky Stork population in Malaysia has been undergone a steady decline to less than ten birds. The total numbers of wintering waterbirds represent a decline of between 75% to 95% over a period of between 10 to 16 years.

Status of Milky Stork habitats. The lake at Pulau Kelumpang was confirmed to be the most important area for Milky Stork in the Matang Mangrove Forest and adjacent coastal areas. The lake at Pulau Terong appears to provide an important alternative site for the Milky Stork population during periods when the lake at Pulau Kelumpang is too disturbed or dry. The hydrology of the lakes at Pulau Kelumpang and Pulau Terong are more heavily influenced by rainfall than by tidal events. Lack of successful breeding at Matang (and in Malaysia) is probably related to a lack of large tracts of undisturbed, tall, mature mangrove forest. Large numbers of natural predators, particularly raptors, such as Brahminy Kite, may threaten the survival and breeding success of Milky Stork in the Matang Mangrove Forest.

Human Impact. Milky Storks are wary of the presence of humans and very sensitive to disturbance. During eight

Milky Storks at Pulau Kelumpang Lake Photo: Lim Kim Chye

Waterbirds at Pulau Kelumpang Lake Photo: Cheang Kum Seng

survey visits to the lake at Pulau Kelumpang during which storks were present, on seven occasions they took flight at the approach of the survey team. Forestry activities, fishing activities, and hunting were noted as potentially having a significant impact on the Milky Stork population and breeding success at Matang.

Other issues. In captive and free-flying zoo flocks, hybridization between Milky Stork and Painted Stork has been reported at Zoo Negara in Kuala Lumpur, and potentially occurring at Singapore Zoo and Dusit Zoo in Bangkok. If this occurs, the wild gene pool of any remaining wild Milky Stork populations, or even a future reintroduced population, could be negatively impacted. The fact that two species of *Mycteria* have bred with *L. javanicus* might make it possible that hybridization is also occurring in the wild given limited con-specific partner choice. Lessons learned from the joint PERHILITAN/ Zoo Negara/MNS captive breeding and reintroduction programme for Milky Stork at Kuala Selangor underline the long-term and costly conservation effort. Better information on wild populations and their ecological requirements, and coordinated planning of any future release programmes should be priorities.

Recommendations

Increase the Global Conservation Status for the species from "Vulnerable" to "Endangered" and use Milky Stork as a "flagship" conservation species to underline the need to protect and conserve coastal wetlands, particularly inter-tidal mangroves and mudflats, throughout Malaysia and the surrounding region.

Enlarge the "Protective Forest" and stork lake buffer zone at Pulau Kelumpang and Pulau Terong.

Have PERHILITAN and the Forestry Department formalize the designation of "Protective Forests" proposed under the Matang Mangrove Forest Working Plan under the Wildlife Act (1972). This may be in the form of gazettement of Wildlife Sanctuaries to include Pulau Kelumpang and Pulau Terong and the entire coastal fringe along their shorelines. In view of its importance as the last refuge for the Endangered Milky Stork in Malaysia and its contribution to local livelihoods and the national economy, the Matang Mangrove Forest should be nominated as a Wetland of International Importance under the Ramsar Convention (1971).

Have PERHILITAN implement a "Milky Stork patrolling and management schedule" and establish a new office at Kuala Sepetang to facilitate such operations.

Further investigate the potential to erect and manage suitable artificial nesting platforms for Milky Storks at Pulau Kelumpang and Pulau Terong.

Continue monitoring the existing and future population at Matang Mangrove Forest and adjacent areas to further increase our understanding of the population, its habitat preferences, predators, and threats.

Conduct specific research recommendations at Matang Mangrove Forest for conservation and future reintroduction of the Milky Stork.

Carefully consider any future attempts to initiate a Milky Stork reintroduction programme in Malaysia in terms of long-term costs and benefits. Furthermore, the risk of hybridization with free-flying zoo-bred populations of Painted Stork must be carefully monitored.

Milky Stork poster was produced

NEF NEWSLETTER
ISSUE No.15 March 2006

Impact of tourism development and resource assessment in Don Det and Don Khone Islands, Khone District, Champasack Province, Lao PDR

Research Grant

Sengdeuane Wayakone
Faculty of Forestry, National University of Laos, Lao PDR

Introduction

Tourism in Context of Laos

Tourism in Lao PDR is entering a new phase. Economic and social changes in the different geographic market segments have caused some major shifts in the tourist markets. Laos has become a new tourism destination on the world map since just over a decade ago. Tourist arrivals to Laos have increased from 14,400 in 1990 to almost 900,000 in 2004 – an average growth rate of almost 30% per annum. However, tourism dropped by 20% in 2003 due to concerns over SARS and international terrorist incidents.

In recent years, tourism (including kinds of environmental tourism) has officially become one of the country's key areas of emphasis. It is one of the most important and rapidly expanding sectors of the Lao economy; it has the potential to become a major earner of foreign exchange for the country, while also providing direct economic benefits at the local level. Nature-based tourism, in particular, holds vast promise in Laos, given the extent and wide distribution of protected areas, the variety of possible ecotourism activities, and the high biodiversity and landscape value of large parts of the country.

The future outlook for the Lao tourism industry is extremely positive. The Greater Mekong Sub-region is recognised to be the fastest growing tourism destination in the world, and Laos offers an array of unspoiled natural and cultural resources.

The government of Laos has chosen not to develop mass tourism, but to target small-scale tourism of the socio-cultural and ecological types, and appeal to up-market tourists interested in religion, history, nature, and culture coming to Laos on small guided group tours. Laos will become a world-renowned destination specialising in forms of sustainable tourist that, through partnership and cooperation, benefit natural and cultural heritage conservation, local socioeconomic development, and the spread of knowledge regarding Lao's unique cultural heritage around the world (Lao Vision).

Tourism in Champasack

Champasack is one of the major tourist attractions. Between 1997 and 2003, the number of visiting tourists grew rapidly from 23,260 to 65,827. Aside from a drop in tourist arrivals in 2002 (most likely due to outside influences), growth has been quite strong in Champasack. Tourist arrivals in Champasack Province have grown at an average annual rate of 20%, which is higher than the national average (10%).

Champasak Province has a variety of historical, cultural, and natural attractions. The most famous are Vat Phou and Khon Pa Paeng, each regularly appearing in national tourism promotions. Vat Phou, a World Heritage Site, attracts tourists for day visits to its impressive temple grounds. However, many of the site's ancient ruins have

Khon Pa Paeng Waterfall, the largest waterfall in Southeast Asia

House of local residents in Ban Hangkhorn

yet to be developed for tourism, and there is a lack of interpretative information at the site, limiting both the amount of time that tourists spend in Champasack district (location of Vat Phou) and the overall benefits to local people. Khon Pa Paeng, the largest waterfall in Southeast Asia, attracts a wide variety of tourists, who typically view the waterfall briefly before returning the same day. The site, which provides some benefits to local people through the sale of food and souvenirs, will soon be managed as a concession by a Singaporean company.

The Siphandon (four thousand islands), offering tourists a unique experience of relaxed island life on the banks of the Mekong River, is another major attraction of the province. Many tourists travelling between Cambodia and Laos stop at the islands to see the freshwater dolphins, whose habitat is located in this transboundary area of the Mekong. Some tourists also choose to use the Mekong River to travel by boat from site to site through the province, following the river tourism network. Some areas along the river, most notably north of Pakse, have yet to be developed for tourism and have the potential for completing this river network.

Given the province's strategic asset of being a major gateway to Cambodia and Thailand, in addition to possessing three major, internationally recognized attractions (Vat Phou World Heritage Site, Kon Pa Paeng Waterfall, and Four Thousand Islands), it is likely that Champasack will continue to attract a large portion of the country's visitors and grow at least at a modest rate in the future.

Abstract of the study

Concerns over the importance of residents' attitudes about tourism development have created significant demands for comprehensive planning, including the assessment of local support for tourism. This study is concerned with the assessment of residents' attitudes towards the impact of tourism development as related to socio-cultural, economic and physical impact, and the assessment of resources in terms of importance for their livelihood in the Don Khorn Don Det Islands, Kong District, and Champasack Province. Residents of more than 90% of the five villages of the Don Khorn Don Det Islands were interviewed, totalling 395 households. Various statistical and non-statistical tools were used to analyse the data. The profiles of the respondents, their attitudes and perceptions are indicated in terms of frequency, percentage, means, and standard deviation. Factor analysis was also used to examine the perceptions of residents related to the impact of development and resources.

The results reveal that the perception of residents in the Don Khorn Don Det Islands is quite similar to those of other studies. The residents perceive that tourism will bring several changes to the social, economic, and physical environments of the area. They feel that most changes are beneficial for their community. Moreover, the residents have given higher priorities to issues related to businesses like guesthouses, food stalls, agricultural products, handicraft sales, and boat services, since these help increase their family income and improve their standard of living. However, they are less enthusiastic about the attributes of the social and environmental impact of tourism development. Residents also feel that the local government, especially the district tourism authority, should strictly control the physical development in the Don Khorn Don Det Islands, immoral activities, and the prices of foodstuffs. The results suggest that the residents are sensitive to the future impact caused by tourism and are able to judge the nature of said impact in relation to their needs and desires.

Locally used fish trap

Guest house on the bank of the Mekong River

Study on Non-Timber Forest Products in Phongsaly Province, Lao PDR

Research Grant

Khamleck Xaydala
Faculty of Forestry, National University of Laos, Lao PDR

Short summary of the project

This study intends to clarify the present situation of non-timber forest products (NTFPs) in Phongsaly province, Lao PDR, through a comprehensive survey including the collection of specimens and conducting interviews with villagers on their use of NTFPs. At present, NTFPs, possibly divided into four categories such as 1) edible plants, 2) medicinal plants, 3) fiber plants, and 4) extractive plants, are essential to villagers as items for self-consumption and cash income. This study will help facilitate the production of NTFPs in the region and, as a natural consequence, improve the living standards of local people not only in Phongsaly province but also throughout the entire country.

The field guidebook on NTFPs in Phongsaly province, which is planned to be published as an outcome of the research, is expected to be used in educational institutions, such as high schools and universities, throughout the country to raise interest in NTFPs and awareness of environmental conservation in the younger generation.

Objectives, scientific problems/hypothesis, and expected output of proposed research project

It is generally believed that Laos is one of the world's most prominent "forest countries", endowed with abundant forest resources. Even though the Lao forests were considerably destroyed in the second half of the last century, most villagers still live in close proximity to the forest. In reality, Lao people have used various kinds of forest resources in their daily lives since ancient times. At present, NTFPs, possibly divided into four categories such as 1) edible plants for making supplementary food, dessert, seasoning, etc., 2) medicinal plants for treating diarrhea, and making febrile, analgesic, etc., 3) fiber plants for making furniture, baskets, mats, brooms, paper, etc., and 4) extractive plants for making torches, perfume, insecticide coils, incense sticks, etc., are essential to villagers as items for self-consumption and cash income.

The use of the NTFPs in Phongsaly province, the northernmost part of the country, which is limited in cultivable acreage due to its mountainous terrain and lacking in any significant industry, is much more crucial to the local people than in any other province. Though all 13 ethnic minority groups in the province (Phounoi, Khamu, Thai Dam, Thai Deng, Hmong, Yao, Leu, Akha, Yang, Bid, Lolo, Hor, and Eko), have passed on their knowledge and experience on the use of NTFPs from generation to generation, that knowledge still remains to be shared with each other due to a lack of serious overall research and documentation. If we are able to accumulate this valuable information from each ethnic minority group and place it at general disposal, this would help facilitate the production of NTFPs in the region and, as a natural consequence, improve the living standards of local people not only in Phongsaly province but also throughout the country. This is also coincident with the governmental policy for the "eradication of poverty" in underdeveloped regions of the country.

Moreover, because the northeastern region of the country (i.e., Phongsaly, Xiangkhuang, and Houphan provinces) has many similarities in its vegetation due to common natural conditions such as high altitude and cool climate, the result of this study would be significantly benefit future studies on NTFPs in the region above, which have never been seriously considered. The plant specimens collected in the course of this field survey will be kept in the herbarium of the Faculty of Forestry, National University of Laos, and are expected to be used as basic materials for studies on the flora in Lao PDR.

Methodologies and Activities

Interviews will be conducted with local people from various ethnic minority groups in the three districts (Phongsaly, Boun Neua, and Khua in Phongsaly province) for collecting basic data on NTFPs in the areas above to cover traditional ways of cultivation, collection and use, distributional range, local names, state of conservation, and other topics. Moreover, pictures would be taken of NTFPs, with NTFPs collected from the areas above and specimens prepared. Then the species would be identified and classified, with the data collected during the course of the field survey analysed.

Schedule for data collection in Year 2005: Mar. Field Survey (1); Apr. Species identification & classification; Jul. Field Survey (2); Aug. Species identification & classification; and Nov. Field Survey (3); **in Year 2006:** Jan. Field Survey (4); Mar. Species identification & classification; May. Field Survey (5); Jun. Species identification & classification; Aug. Writing report; and Sep. Field Survey (6).

Outputs / Results

The main focus of the interviews conducted is related to the species of edible vegetables in each village forest, primarily during the season of flowering and bearing fruits. A total of 77 species were collected, among these 18 species are essential to villagers planting for self-consumption and cash income.

List of some important species

Amomum villosum

Broussonetia papyrifera

Cinnamomum porrectum

Dendrobium wardianum

Dendrobium lindleyi

Ficus auriculata

Indosasa sinica

Ludisia discolor

Prunus cerasoides

Radermachera ignea

Promoting Community-Based Ecotourism for Sustainable Management of Community Forests in Northern Thailand

Research Grant

Sopon Thangphet
Northern Development Center, Faculty of Social Sciences,
Chiang Mai University, Thailand

Introduction

To date the problem of deforestation in Thailand is far from resolved. Despite the government's concerted efforts on forest conservation, illegal forest encroachment continues to occur and has been reported by local newspapers, particularly in northern Thailand. In response to continuing deforestation, the government has been actively promoting community forest development. Although such a development strategy corresponds well to existing forest management in the region, much work is needed to strengthen the existing indigenous forest communities in order to cope with external threats in a changing environment. My previous study on indigenous forest communities in northern Thailand, supported by the Nagao Natural Environment Foundation (NEF), clearly demonstrates the local community's capability in managing its forest resources in a sustainable manner. Through the course of the study, community-based ecotourism is identified as having the potential to offer both forest conservation and income generation for local villagers (Sopon 2004).

In Thailand, tourism has played a major role in the economic and social development of the country. Various tourism packages have been promoted to help boost the country's popularity and foreign currency earnings. Based on data from the Tourism Authority of Thailand (TAT), the number of international tourist arrivals increased from 7.19 million people in 1996 to 10.80 million people in 2002, with an increase in total revenue from 219.364 million baht to 323,484 million baht in the same period (TAT 2004). Although the country has enjoyed the benefits of tourism, the rapid growth of tourism poses a significant threat to cultural and biological diversity. Thus, more attention is now given to a sustainable form of tourism that emphasizes the demands on an unspoiled environment and benefiting local people.

Since the economic crisis in mid-1997, the government has actively promoted community-based ecotourism to mitigate the economic impact of the crisis and generate employment and income among local people. In 1998, the National Ecotourism Policy was officially proclaimed and followed by the National Ecotourism Action Plan 2002-2006 in 2001. Since then, the practice of ecotourism has been spreading throughout the country. It has become one of the national strategies for achieving the national development agenda on sustainable development. However, few studies are currently available to help understand the impact of community-based ecotourism in enhancing the sustainability of community resources and well-being of local people.

Research Objectives

The general objective of this study is to investigate the potential and limitations of community-based ecotourism in protecting and enhancing community forest conservation in northern Thailand. Specifically, this research is intended to achieve the following objectives:

1. To understand the development and management of community-based ecotourism in northern Thailand,
2. To identify the potential and limitations of community-based ecotourism for conservation and sustainable

Community Ecotourism Training

Cotton Weaving as an Income Generation Opportunity among Local Villagers

management of community forests, and

3. To identify development strategies to strengthen the management of community-based ecotourism for the sustainability of community forest conservation and local income generation in northern Thailand.

Research Methodology

An inventory of existing community-based ecotourism in Chiang Mai and Lamphun was conducted during the first two months of the study. The first month was devoted to reviewing related literature and collecting secondary data. The Community Development Department and the Regional Thailand Research Fund Office are the main sources. The site visit took one month to complete. The leader and committee members of each community-based ecotourism group were interviewed using an inventory form. At some sites, tourists were also interviewed. The results of the inventory showed that there were 14 communities running community-based ecotourism in Chiang Mai and six communities in Lamphun in 2004. Some communities cover more than one administrative village. The development of these community-based ecotourism enterprises occurred in response to deforestation, a declining traditional economic base, emigration, external promotion, and income generation. After comparing field data and following consultation with the organizations concerned, three sites of community-based ecotourism were selected for intensive study: two in Chiang Mai and one in Lamphun. These were Ban Mae Kam Pong and Ban Tam-Nong Bia in Chiang Mai, and Prabaht Huai Tom community in Lamphun.

Research Findings

Many factors account for the development of community-based ecotourism in northern Thailand. These include deforestation, a declining traditional economic base, emigration, income generation, external promotion, and local economic diversification. However, leadership and the internal viability of ecotourism business prove to be critical for the active operation of community-based ecotourism.

The development of community-based ecotourism has important implications for local economies and community natural resource management, particularly with respect to community forests and biodiversity conservation. This development plays an important role in raising the awareness of local villagers in protecting their community resources. Usually, community ecotourism provides an opportunity for local villagers to earn supplementary income, thereby reducing the pressure on forestland and forest resources. In addition, revenues generated from community ecotourism have funded various development activities, ranging from infrastructure development to community biodiversity conservation.

However, community ecotourism in each area has different levels of ability in terms of internal governance and management capacity. Such variance in internal governance capacities also reveals itself in the differing levels of reinvestment in natural resource management and conservation of each community-based ecotourism organization. As community ecotourism is new to local villagers, capacity building programs, such as local guide training, visitor handling, and homestay management need to be continuously provided to empower local villagers to take advantage of commercial interest in their resources and avoid being bypassed by outside interests. In addition, local control and management of community ecotourism should be given priority in promoting community ecotourism. Income generation should not be the principal goal of developing community ecotourism development. The emphasis should be on diversifying the economic activities of the community and building local capacity in the management of community resources for tourism. The application of the philosophy of "sufficiency economy" bestowed by His Majesty the King as the guiding principle of developing community ecotourism is critical to the sustainability of community ecotourism enterprises. This development principle will help foster balanced development by integrating both economic development and conservation in community ecotourism development. As community ecotourism is a combination of community business and community resource management enterprises, local government support and linkage are of great significance for future development of this local initiative.

Note

1. Sopon Thangphet, (2004). Strengthening Community-Based Forest Management for Income Generation and Biodiversity Conservation: A Case Study of Two Indigenous Forest Communities in Northern Thailand. Research Report Submitted to the Nagao Natural Environment Foundation (NEF).
2. Tourism Authority of Thailand (TAT), 2004. Tourism in Thailand 1996-2005. Bangkok.

Community Handicrafts for Tourists

Wat Prabaht Huai Tom as the Main Tourist Attraction Site in the Community

NEF NEWSLETTER
ISSUE No.15 March 2006

Cetacean species inventory in the northwestern waters of Palawan and the Mindoro Strait (South China Sea)

Research Grant

Theresa R. Aquino
Western Philippines University, Philippines

Rationale

South China Sea is a significant marine habitat that borders several countries including the Philippines and Vietnam. Thus, its natural resources are of a high importance to these countries. Being a vast habitat containing various life forms, it is naturally difficult to monitor and manage properly. Thus the governments of the Philippines and Vietnam have come together to assess this marine habitat in an attempt to determine proper policies which would help protect and manage the resources found within.

As a major component of this joint exercise, the need for a cetacean survey in the northwestern portion of Palawan up to Mindoro Strait was deemed necessary. Cetaceans, being a top marine predator that is visible above water, have to be studied so that a clearer perspective of conservation management needs of the habitat may be achieved. Due to its close relationship with its habitat, cetaceans are a distinct reflection of the conditions of its habitat and are thus considered good bioindicators of the marine environment.

The Philippines, together with government of Vietnam, has been conducting a baseline survey of the South China Sea for about 2 years now. As part of its joint exercise and as a major component of it, a cetacean survey has initially established the presence of 5 species in the Southwest portion of Palawan, Philippines (Nillos *et al*, 2003). However, to complete the picture, the information gap that exists in the Northwestern waters need to be filled up. Thus this particular study aims to (1) establish a cetacean species inventory of the Northwestern waters of Palawan and Mindoro Strait, (2) identify problems that pose a threat to cetacean populations in the area and (3) outline recommendations to protect and manage the cetacean populations and its habitat. It is hoped that the results of the survey will assist the legislators and managers alike in drafting appropriate management policies for the conservation and protection of the South China Sea. As a corollary to this, it is also anticipated that this survey would help enhance the skills of local researchers and students.

Progress of the research

The first of a two-part cetacean survey in South China Sea was conducted from 26 September 2005 until 5 October 2005 covering a total trackline length of 296.6 km. Using a 16-footer outrigger that provided observers with an elevation from sea level of about 2 meters, the survey team followed the designated line transect starting from the municipality of San Vicente going north to Busuanga, Palawan in southwestern part of the Philippines (Figure 1). Waypoint 4, found within a restricted zone, had to

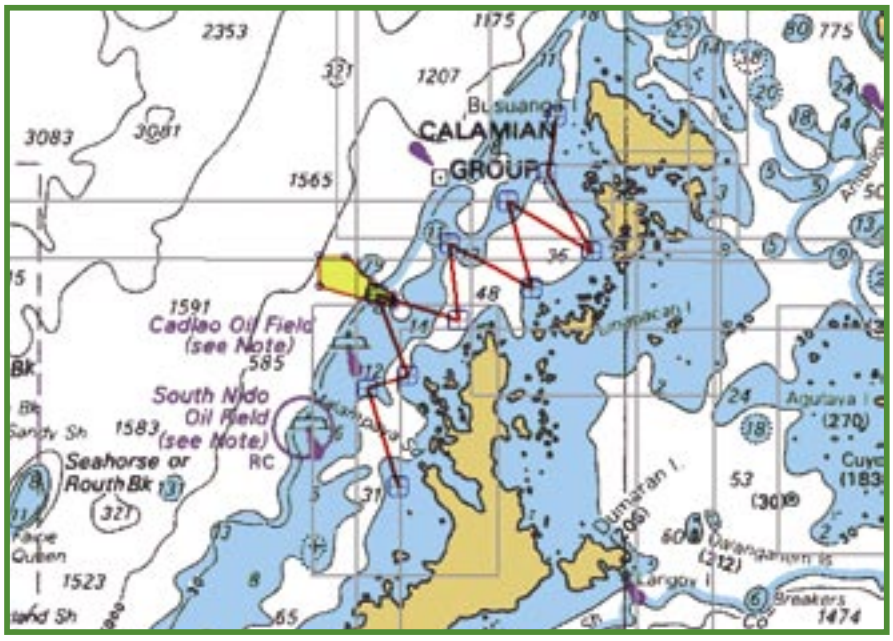


Figure 1: Trackline enter

be dropped when permission to enter the area was not obtained. Vessel speed during on-effort was maintained at 10-12 kph. Ecological parameter readings were recorded at every waypoint. These included data on water salinity and temperature and cloud cover. Water depth was not taken since this was to be covered by separate study altogether.

Active effort was suspended when cetaceans were spotted to attempt to fully document the sighting. Ecological readings were likewise taken at the area of the sighting. Attempts were made to photograph sightings for possible identification of individuals with unique markings. All throughout the survey, human activities observed while covering the trackline were noted.

Weather was mostly conducive for carrying out a survey although, towards the end of the survey, effort had to be cut short a few times due to rain and strong winds. Nevertheless, the survey team was able to cover the trackline in duplicate.

A total of 8 on-effort and 2 off-effort sightings were made. Four species were positively identified, namely: bottlenose dolphins (*Tursiops truncatus*), long-snouted spinner dolphins (*Stenella longirostris*), Risso's dolphins (*Grampus griseus*), and short-finned pilot whales (*Globicephala macrorhynchus*). All other sightings were unidentified including 1 sighting, possibly Fraser's dolphin (*Lagenodelphis hosei*), which disappeared before proper documentation could be done and another sighting of a mysticete about 4.2 km from the trackline. By the time the boat got near the area, the team had lost sight of the mysticete.

Most sightings were encountered near the vicinity of El Nido. It is possible that a bias was created since the team had to start at the middle of the trackline since the survey boat was stationed in El Nido. It is also possible that the high level of enforcement and protection in the area has an effect on condition of the marine environment thus making it more attractive for cetaceans to frequent the area. This observation can be further refined by the results of the second survey in the summer of 2006.

A total of 157 sightings of human activities were noted during the 8-day survey, averaging 23 of boats observed per day over an area of about 16,800 sq km. Most of the vessels were at various stages of fishing operation with only 43 boats seen traveling (27.39%). One commercial liner was also observed but was probably an international vessel given the distance from the survey site. In addition, a deep sea oil platform was observed in the area. It was difficult to assess whether this structure had any impact on the cetacean population since entry to the area immediately surrounding the platform was disallowed.

Although commonly seen all over the country, the spinner dolphins were only encountered near the islands of Busuanga and Linapacan during this survey and did not appear amenable to interaction.

Bottlenose dolphins were often encountered during the survey but mostly limited to the waters east of El Nido. It is possible that the frequency of their presence may be a reflection of the level of protection being to afforded the area

NEF NEWSLETTER
ISSUE No.15 March 2006

(2)Small-scale Research Grant

The Birds of Lake Manguao, Taytay, Palawan, Philippines

Small-scale Research Grant

Joie D. Matillano
Aquatic Biology Section, Western Philippines University, Philippines

Rationale

Palawan is listed as one of the key conservation sites in the Philippines, particularly for birds (Mallari *et al*. 2001). Considered as one of the Important Bird Areas (an IBA Site) of the country, within the province are at least 11 identified sites important for both bird studies and bird conservation. One of these areas is the San Vicente-Roxas-Taytay forest, which constitutes the largest forest block in northern Palawan and harbours Lake Manguao and its watershed.

Lake Manguao is the only freshwater lake on mainland Palawan. It is approximately more than a 1000-hectare body of water surrounded by a catchment area of at least 4,425 ha of high-quality lowland forest (Davies and Green 1990). Within the periphery of the lake are marshes and swamplands, which are known as a vital habitat of waterbirds.

Though the province's avifauna have been studied in the past, most bird studies are restricted to terrestrial species, while some are even island and species based (Widmann 2001). Very few studies have been conducted on migratory species and wetland birds. It is in this concept that the present study is being conducted.

The avifauna of the lake was surveyed from August to November 2005. We were not able to conduct fieldwork in December 2005 due to bad weather conditions brought by a typhoon that trapped us on the road going to northern Palawan. Mist netting, Mac Kinnon list surveys, and Point counts were used during the survey. Mist netting was conducted at different areas of the catchments to catch secretive or cryptic birds, while Mac Kinnon list surveys were conducted to assess the diversity of birds through encounter rates. Birds caught in mist nets were photographed prior to release after gathering biometric data. Point counts were used to estimate the population size of migratory waterbirds recorded within the lake's floodplains.

Panorama of Lake Mangauo, a 640 ha landlocked water body located in the hilly zone of Taytay, Palawan. The area is surrounded by high quality lowland forest

During the conduct of fieldwork for this research, at least five biology students from Western Philippines University were involved. The students received hands-on training on bird survey methodology and became research assistants in the subsequent surveys.

Interviews were conducted to assess whether the locals were aware of the conservation of the birds, as well as to determine whether there are indeed seasonal changes in the waterbird population. Interviews were also used to determine whether existing laws protecting birds are being observed in the lake, as well as to determine whether there is continuing pressure from hunting.

Based on the survey conducted in 2005, a total of 115 species were recorded thus far for Lake Manguao. Of these, 20 are migratory while 95 are resident species. Eight species are listed as Vulnerable in IUCN including the migratory Chinese Egret, Falcated ground babbler, Palawan hornbill, Palawan flycatcher, Palawan peacock pheasant, Blue-headed racquet tail, Grey imperial pigeon, and Philippine duck. At least four species recorded are being near-threatened. The record of Philippine duck in the lake constitutes the first record of this Philippine-endemic duck in northern Palawan, while the record of the Falcated ground babbler and Palawan flycatcher is the first record of both species in northern Palawan. We are still expecting the number of species to increase since some of the most commonly encountered birds (both migratory and residents) we believe to see in the lake were not yet recorded to date. We were also able to record bird calls within the lake during the first five months of the field survey.

Students participated in survey

The presence of the Falcated ground babbler, which is an indicator of good forest cover, is one of the major findings of the survey. We have also observed large numbers of Palawan Hornbills and based on our observations elsewhere in the province, Lake Manguao may boast the highest population density of this bird in an unprotected area. A group of seven individual birds is not uncommon in the lake. At least 15 Palawan-endemic birds including the ashy-headed babbler, Palawan flowerpecker, white vented shama, and Sulphur-bellied bulbul were present in the lake. Based on the classification of Mallari *et al*. (2001), the lake and its catchments will qualify both as an Important Bird Area (IBA) for conservation and as an Endemic Bird Area (EBA).

For population estimates, at least 50 individual Philippine ducks were observed in the lake. Three Chinese egrets were recorded in last November's survey, while not less than 500 egrets (including all white egrets) were counted at one of the roosting sites. Still, these numbers are expected to increase since we still do not have the data for January, which is the peak season for migration of these birds. Herons, rails, and other common waterbirds were also recorded during the survey.

As for exploitation, some locals admitted that they do catch some species of birds for consumption; however, these are birds that are of least conservation concern (e.g., quail and rails). It is also good to know that some of the residents do show a certain degree of awareness regarding which species of bird should not be hunted. For example, Palawan peacock pheasant was previously sought after but is now no longer hunted due to a ban on hunting this species. However, the ducks are still taken by some locals as ducks are perceived to be very common in the lake. We also found out that the critically endangered Philippine cockatoo is already extinct within the lake and its catchments. The locals revealed that there used to be thousands of cockatoos in the lake sometimes in the 1960s, with roosts on the two smaller islands near the northern coast of the lake. However, local trappers lured by buyers extirpated the remaining population in the 1980s to early 1990s. We have learned that the price of one cockatoo at that time was only PhP 50. We fear that the same fate of the cockatoo befell the Hill mynah population in the lake, which we have not encountered even once. According to the residents, mynahs used to be very common in the lake's catchments. Apparently there is existing hunting pressure on this species in the lake since it is a popular cage bird in the Philippines.

Regarding the destruction of habitats and encroachment of settlements, we have learned that the local government of Taytay is regulating illegal squatting by migrants. However, slash-and-burn farming practices are still ongoing within the lake's catchments, as well as large tracts of forest that were previously cleared for farming and residential purposes.

We are grateful that during the conduct of this research, the local government of Taytay, PCSD, and the local DENR office provided assistance. The WWF MSCCDP and Katala Foundation were also among those who shared their resources that helped a lot during the samplings. These shared efforts and resources proved to be very useful during the conduct of our fieldwork. The administration of Western Philippines University also provided much needed cooperation during the fieldwork, which significantly contributed to the positive progression of the research.

The Oriental dwarf kingfisher *Ceyx erithacus* is one of the most commonly seen birds along tributaries of Lake Manguao

The Palawan hornbill *Anthracoceros marchei* is endemic to Palawan Group of Islands. Listed as Vulnerable under IUCN Red List, this species is a common resident in the catchment area of the lake

The Philippine Duck *Anas luzonica* is a Philippine-endemic duck which is listed as Vulnerable under IUCN Red List

The Hooded pitta *Pitta sordida* is one of the most commonly heard birds in the catchments of the lake, particularly during dusk and dawn

NEF NEWSLETTER
ISSUE No.15 March 2006

Status of Snow Leopard (*Uncia uncia*) and the perception of conflict in Kanchanjunga Conservation Area, Eastern Nepal

Small-scale Research Grant

Janak Raj Khatiwada
M.Sc. in Zoology, Central Department of Zoology, Tribhuvan University, Nepal

Introduction

The Kanchanjunga Conservation Area in the northeast region of Nepal (27.15'-27.56' North to 87.32' to 88.65' East) is an extraordinary landscape of unique floral and faunal diversity, breathtaking scenery, and rich cultural heritage. Biogeographically, it lies in the eastern Himalayas (Olson and Dinerstein 1998).

The raising of livestock (goats, sheep, and yaks) is the major use of land in the Himalayan region of Nepal and drives the region's economy (Khatiwada 2004). Local people living in the area have high levels of conflict with the snow leopard. Each year snow leopards kill a significant number of livestock, resulting in significant economic losses for the poor people living in this area.

Unless this human-snow leopard conflict is more clearly understood and appropriate management activities are implemented, the long-term coexistence between people and the snow leopard will be in jeopardy.

The objectives of this project are to assess the present status of the snow leopard and the amount of livestock predation by snow leopards. The following is a summary of some of my findings from research conducted between August and November 2005.

Highly cryptic coloration, reclusive, and mostly solitary behavior, sparse distribution in relatively inaccessible mountains make the snow leopard an extremely difficult subject of surveys (Malik 1995). Therefore, a direct census of the snow leopard population is very difficult to conduct using currently available technological resources.

Mount Kanchanjunga, the third highest peak in the world

Therefore, an indirect census method was used to roughly estimate the population status, the habitat usage, and distribution of the snow leopard in the present study. The snow leopard leaves marks in the form of scrapes, scent spray (urine mark), scat (feces), and pugmarks (Riger 1978, Allborn and Jackson 1988). These marks can be indexed to derive information on abundance using a standardized methodology called the Snow Leopard Information Management System (SLIMS) (Jackson and Hunter 1996 and Jackson 2005).

By using the SLIMS protocol, sign surveys were conducted in three valleys on habitats ranging from high-to-low human usage (Khambachen, Lonak, Jimbubari, and Pangpema Base camp). Transect routes were plotted on available 1:500000 topographical maps, and were placed along terrain where leopard signs are likely to be found, such as on ridge lines and along the base of cliffs. To minimize transect variability, transects were short and rarely crossed habitats (i.e. forest, shrubland and grassland) boundaries. All transects were walked by a pair of observers and all signs were recorded according to type and number. At each site where snow leopard signs were encountered, various parameters including elevation, aspects, vegetation cover, dominant topographic features, ruggedness of terrain, and land use patterns were recorded. Such signs were considered as indicators of the leopard's preferred habitat. During data analysis, the sign density expressed in number of signs per kilometre of transect were calculated for each transect.

Local herders and key residents were interviewed about the number and abundance of snow leopards and rate of livestock depredation. They were also questioned about land use practices, such as grazing and the overall usage of pastureland.

Results

Status of snow leopard

Between October and November 2005, sign surveys were conducted in the study areas. Altogether, eight transects were walked covering 9.44 km. Ninety-six (96) signs were discovered. Among the total signs (96), 75% signs were scrapes, 10% scats (fecal deposits), and others pugmarks and scent spray.

The density of snow leopard signs was not equal across all study areas. Lonak had a higher density of snow leopard signs (37.65 signs/km) than Jorkyu and other places. More

statistical analysis will eventually be conducted for the final report, when more data is collected.

Pugmark survey

Five different pugmarks of snow leopards were confirmed. The pugmark method has been used by many biologists (e.g. Choudhary 1971, McDougal 1997, Sunquist 1981, and Tamang 1982) to roughly estimate tiger population because it is reliable, easier, cheaper, and more precise than other methods. Similarly, this method was also employed to estimate the abundance of snow leopards in Langtang National Park (Khatiwada 2004).

Human-snow leopard interaction

Interviews with 26 households (herders/key residents) in Ghunsa, Khambachen, and Lonak (with traditional/ conservative animal husbandry practices) revealed that more than 51% had a negative attitude towards snow leopards due to its livestock depredating nature.

Livestock depredation

The livestock herding system of the Kanchanjunga Conservation Area features rotational grazing over various pastures in a year. Out of 26 households surveyed during August to September 2005, 20 reported that they lost livestock from snow leopards in the 2004 and up to October of 2005. Other respondents reported that they had no loss of livestock from snow leopards during the period although some were lost due to disease, winter snowfall, and accidents.

During the two-year period (2004-2005 up to Oct.), out of 38 livestock lost, 36 were killed by snow leopards in the Khambachen, Lonak, and Olangchungola areas. The snow leopard depredated their livestock during all months of the year, but 70% of the depredation occurred during the winter months (December to February).

Prey Species Survey

A total of 424 sightings of blue sheep were recorded during the study period in the Khambachen, Lonak, and Dudhpokari areas, and the Pangpema base camp. The Yamphudin and Yangma areas have yet to be explored. The age and sex of individual blue sheep could not be identified due to the lack of a spotting scope.

References

Choudhary, R.S. 1971. Tiger tracer, *Cheetal* 13 (1).

Jackson, R. and G. Ahlborn. 1998. A Radio Telemetry Study of the Snow Leopard Panthera uncia in west Nepal. In: *Tiger Paper*, April - June 1998, XXV (2):1-4.

Jackson, R.M. 2005. *Snow Leopard Survey and Conservation Hand Book*. Snow Leopard Conservancy, USA

Jackson, R.M. and D.O. Hunter. 1996. *Snow Leopard Survey and Conservation Hand Book* (IInd Edition). International Snow Leopard Trust Seattle, Washington, USA.

Jackson, R.M. 1996. *Home range. Movements and habitat use of Snow Leopard (Uncia uncia) Nepal*. Ph. D. Thesis, University of London. 233 p.

Khatiwada J.R. 2004. The status of Snow Leopard and relation with principal prey species in Langtang National Park, Nepal. MSC dissertation. Tribhuvan University, Kathmandu, Nepal.

Malik, M.M. 1995. Status and Conservation of Snow Leopard in Pakistan. *Procedings of the Eight International Snow Leopard Symposium Pakistan*, Nov. 12-16, 1995. International Snow Leopard Trust and World Wide Fund for Nature. Pakistan, International Snow Leopard Trust Seattle Washington, USA. p. 11-20.

Olson, D..M. & E. Dinerstein 1998. The global 200: A representation approach to conserving the earth's most biologically valuable ecoregion. Conservation Biology, Vol. 12(3): 502-515.

Sunquist, M.E. 1981. The Social Organization of Tiger in Royal Chitwan National Park Nepal. *Smith Sonian Contribution Zoology.* 336:14-98.

Tamang, K.M. 1982. *The Status of the Tiger (Panthera tigris) and its impact on principle Prey Population in the Royal Chitwan National Park, Nepal* Ph. D. Thesis, Michigan State University East Lansing. Michigan.

Researcher measuring snow leopard scent spray

(3)Conservation Activity Grant

Environment Conservation Awareness Program

Conservation Activity Grant

Ritu Gurung
Wildlife Conservation Nepal (WCN), Nepal

In developing countries like Nepal, rapid urbanization and population growth have taken a toll on natural resources. As population grows, people tend to move to metropolitan areas such as Kathmandu in search of better prospects. Today there is a need to understand that the environment is being degraded at a fast pace and we may perhaps lose the chance to revive it forever. Communication, education, and public awareness play a significant role in resolving the conflicts between man and biodiversity. Among different programs of Wildlife Conservation Nepal, the Environment Conservation Awareness Program (ECAP) is one of the programs designed to raise awareness about nature conservation and the environment at schools, among university students, and communities at large. Only since 1992 has the current curriculum for the higher levels in schools, colleges, and universities been designed with emphasis on the environment and related issues under the recommendation of the National Planning Commission.

WCN Environment Conservation Awareness Program believes that we need to address these issues, especially to young people who are the caretakers of our environment in the long run.

ECAP since its inception has been conducting various programs based on different environmentally related themes for school students as well as concerned organizations. The program has always stressed that conservation success stories that rely on better education and capacity building programs have become true while working with ECAP.

A student showing a picture of the dumping place near her school asking all her friends to take action

ECAP has designed an outreach workshop so that each student participates and come up with new ideas that they share with their friends and teachers. The outreach program has been highly appreciated in schools where it has been conducted. To date, the outreach program has been conducted in about 20 schools in its first phase, with a vision toward creating and generating greater awareness about nature conservation.

ECAP has given one-hour conservation education classes to 295 high school students in both rural and urban areas. ECAP has also developed its own curriculum to conduct conservation education classes for high school students. The curriculum consists of chapters on illegal wildlife trade, conventions, introduction to wetlands, and biodiversity conservation. In this regard, outreach workshops based on different environment-related themes were held in three districts (Kathmandu, Lalitpur, and Bhaktapur) in the valley. The students practiced photography, learned about arts, studied local plants, and made herbariums and inventories, drew green maps of their locality, and also prepared newsletters of the workshop. Apart from this they were engaged in wildlife games, attended classes on contemporary conservation issues, and watched documentaries. The major themes that the students focused on during the workshops were solid waste management, the 4 R's (Reduce, Reuse, Recycle, and Rethink), the sustainable use of resources, fashion and illegal wildlife trade, and religion and wildlife. The participants of the outreach workshop have conducted various case studies. Case studies to date have been on the Solid Waste Management of the Bhaktapur Municipality, Fisheries Development in Nepal, the Natural History Museum and its role in conserving biodiversity, the Faunal Diversity of Zoos, and the Conservation Plans of Zoo. Through these workshops participants have also conducted studies on the floral diversity of community forests in the valley. The students learned from hands-on experience about the conservation of nature that makes a lasting impression on their minds.

Students have embraced the awareness campaigns through artwork. Nine ECAP member schools participated in the poster painting competition that was moderated by Ms. Samridhi Shrestha. Durga Lal Shrestha, a grade 9 student, was awarded the "Poster of the Year" prize.

ECAP in the course of reaching out to a wider audience conducted a seminar on "Flowers, Insects, and the Culture of Godavari." Brilliant photographic evidence of the culture, insects, flowers, current status, and industrial activities in Godavari by Mr. Nripa Dhoj Khadka, a professor at the engineering campus, Patan, a nature photography enthusiast, and a young postgraduate student, Ms. Brinda Dewan, depicted the current status of one of the last remaining forests in Kathmandu Valley.

The seminar on Flower, Culture and Insects of Godavari

Conservation activity oriented programs like ECAP are essential to raise support and contribute to the conservation of our valuable resources. Education is usually perceived as a one-way delivery in classrooms, but at ECAP both the students and we learn at the same time. Communicative education and public awareness should be integrated and implemented so that we can value and protect biodiversity.


A student displaying a plant found near her school


Students engrossed in making a poster on a conservation theme


A student explaining his award winner poster on spirit of conservation

NEF NEWSLETTER
ISSUE No.15 March 2006

Urban Wildlife Program in Kathmandu

Conservation Activity Grant

Sanjeevani Yonzon
Wildlife Conservation Nepal (WCN), Nepal

Kathmandu Valley with an area of 639.68 sq. km consisting of three districts (Kathmandu, Lalitpur, and Bhaktapur) with five municipalities, one national park (Shivapuri National Park), one central zoological garden, one botanical garden, and many ecologically significant areas today faces enormous pressure from unplanned, rapid urbanization growth. The valley, primarily an agricultural based land with rich forest resources is experiencing a significant loss of forest cover and open land. Today, only about 427 sq. km of forest remain concentrated in the surrounding hills while the valley floor is becoming increasingly congested. A significant number of 20,000 houses are built every year in the valley while the Kathmandu Metropolitan Corporation alone issues more than 4,000 building permit certificates per year (Rising Nepal 2005).

This haphazard urbanization has resulted in habitat fragmentation for wildlife that faces problems compounded by population increases, vehicle pollution, water, air, and noise pollution, waste disposal problems, and traffic congestion.

The oldest woman inaugurating the tree plnatation project

The Urban Wildlife Program (UWP) of WCN is a pioneer case study that focuses on identifying and conserving the urban wildlife of Kathmandu Valley. It makes the city people take notice of wildlife at their doorsteps and provides opportunities for them to get involved in its conservation, because today every wildlife species is at risk in Kathmandu Valley.

WCN Urban Wildlife Program in Action

In Kathmandu Valley, an enormous number of species of wildlife exists, from leopards in the valley's peripheral hills to mongoose, porcupines, and birds ranging from kites, eagles, and vultures to numerous colorful weavers and warblers. UWP thus in its mission to conserve the urban wildlife of the valley has initiated three major conservational activities for society in general, students, government, and the scientific community since its inception in February 2005.

Urban Wildlife Research

The Urban Wildlife Program has initiated a pilot research project on the status of the house sparrows through the rapidly urbanizing Khokana Village Development Committee of Kathmandu Valley.

Familiar in appearance the world over and once abundant in number, today the house sparrow population has declined in many areas of the world. Traditionally (in newer communities) the houses of Khokana used to have specially built house holes on its walls for house sparrows. UWP's research showed that this tradition is fast disappearing in the new cemented houses that have been built during the past 15 years. Only 7.5 % of new houses have such holes for sparrows, thus undermining the importance of birds in the lives of residents. With this change, the house sparrows of Khokana have experienced a significant loss of habitat. UWP is continuing its research on house sparrows in other parts of valley and have conducted several dialogues with the residents of Khokana to continue the tradition of providing house holes for sparrows.

Tree Plantation Project

The main objective of UWP's tree plantation project is to revive degraded patches of the ring road (Green Belt) of the valley in accordance to this year's Environment Day slogan (June 5, 2005) of "Building Green Cities." UWP conducted one such project in Dhumbarai, Kathmandu Metropolitan City, Ward No. 4 in collaboration with a local youth club

representing the Dhumbarai community to promote urban avian fauna and the butterfly habitat, and also improve the quality of life in the area. The community members along with UWP's volunteers will take care of the plantations for a period of twelve months at the end of which a new extension program will be drawn up.

The tree and shrub species chosen for the plantation were shade providers, fruit bearers, flowering trees, and trees with ornamental value. Species included *Pescia* sp., *Prunus cerassides D. Don, Gardenia jasminoides Ellis, Callistemon lanceolata, Thuja orientalis,* and *Therus rubra L*. The plantation began with the most senior woman of Dhumabarai planting a cherry blossom tree sapling.

Urban Wildlife Awareness

Sensitivity towards the urban wild flora and fauna of Kathmandu Valley is generated by forming birdwatching groups, hiking groups, and wildlife groups who have been lobbying and motivating local governments to improve the environment of that area. Today two birdwatching groups are operating in conjunction with UWP.

A one-day program of nature hikes while enjoying birdwatching for young students is being conducted at Taudaha (a very important wetland that harbors migratory birds in winter). UWP is trying to conserve this ecologically important area, which is also rapidly urbanizing, through various programs in collaboration with the local organizations there. In February 2006, with five other conservational NGOs, Taudaha Nature Jamboree is being organized. UWP will be conducting nature hikes, making green maps with students, and stressing the importance of the Taudaha Pond ecosystem through a form of traditional Nepali art known as Mithila. About 500 people are expected to participate in this one-day event.

Of many innovative awareness modules, UWP has been using photography as an advocacy tool for promoting a greater awareness of nature and wildlife. It organized a week-long wildlife and nature photography workshop for seventeen amateurs from July 21, 2005, featuring five of the most prominent photographers of Nepal. While the participants learned various tips on better photography during the workshop, ideas were also actively shared regarding the importance of urban wildlife conservation and how pictures can be used as its powerful promotional tool. Following the workshop an exhibition entitled "Nature through Lens" was held, showing the best shot photographs by the participants.

THE FUTURE

UWP is planning to increase its already growing popularity by bringing out a bimonthly newsletter that will feature success stories about urban wildlife conservation, upcoming programs in which people can participate, answer "Frequently Asked Questions" regarding urban wildlife, and many more activities. Along with these efforts, UWP will continue to encourage research on wildlife in the city, examine the effects of pollution, and encourage people to care about wildlife in their backyards, terraces, and public gardens, and help them understand the benefits of conserving nature in our cities.

UWP is looking forward to initiating a management plan to encourage urban wildlife and examine solutions that reduce the conflicts between wildlife and people in Kathmandu Valley.

Degrading GREENBELT

References

Rising Nepal 2005 http://www.gorkhapatra.org.np/pageloader.php?file=2005/02/14/topstories/main10

MOPE, 1999. HMG, Environmental Planning and management of Kathmandu Valley

Shrestha, B., Pradhan, S. 2000. Kathmandu Valley GIS Data Bridging the data gap. ICIMOD.

Education Minister Radaha Krishma Mainali writing on a guest book after visting UWP

Hiking- enjoying nature

Householes for sparrows in Khokana

List of NEF Scholars in FY2005

In FY2005, NEF supported 373 students sitting a BSc-level or above in Indonesia, Laos, Malaysia, Myanmar, the Philippines, and Vietnam.

Indonesia
(160 undergraduates)

University of Indonesia
Dian Juniarti
Dianing Sri Astuti
Dwi Ramadhani
Eva Fitriani
Rita Damayanti Hasikin
Robby Anzil Firdaus
Ronny Rianto
Sri Surati
Sukma Oktavianthi
Yunita Fitri Anggraeni T.
Eka Viviantira
Erny Soraya
Eva Oktarina
Kholifah
Meilisha P. Pertiwi
Pipit Marianingsih
Poppy Y. Putri
Putri R. Ratri
Aditya Amrullah
Fika Afriyani
Mariska Astrid Kusumaningtyas
Mulyati Dewi Aisyah
Nur Mutiah Dewi
Suryani
Sutini
Tomi Dewi Khatimah
Rerin Santiana
Gita R Budiarti
Uswatun Khasanah
Asminatun
Dina Maryanti
Anggie Puspa Nurdiyati
Ayu Roossea Mustika Putri
Devri Ary Sinaga
Diana Agustina

Asysyafi'iyah Islamic University
Aliman Hakim
Anastias Nurdianti
Asep Koswara
Hilim Qodriyah
Rini Agustini
Sinta Puspita Ayu
Hajar Wahyudi
Isnamaini
Iswahyudi Zuliman
Sulus Setiawati
Wahyuni Budhiarsih
Yunitasari Amalia
Andam Dewi Melani
Dwi Widyanti Octavia
Hetty Jariah
Ridho Tahir
Sartika
Sapan
Syahrul Lail
Winanjar Restu
Septika Wijayanti
Dedy Rahman
Arif Saifudin
Cut Safrina
Fadlurahman
Sukriyanti
Dahliana
Adi Saputra
Juliana
Nur Khodimah
Sumarni

Nasional University
Dwi Hadiyansyah
Fidyatun Khoriyah
Jannatul Ma'wah
Oki Laju Lanang
Ririn Wednes Diana Sari
Thoriq Alif Faisal
Tomi Ariyanto
Turyadi
Urip Rusnandi
Veronica Yuni Pagayanti
Dina Fitria
Fauzan Abdul Mun'im Alkatiri
Nur Rohmawati
Rahayu Kurniangsih
Rahmalia Nurul Ahsani Amda
Rini Sukmawati
Etika Sayekti Hidayati
Dessy Sulistya Ashari
Fratiwi
Maysyaroh
Neneng Mardianah
Shafa Noer
Dian Fajar Vitianingrum
Windrati
Melinda Octaviana Kuswandari
Rebina Urfhy Zen
Mursyidah
Wulanita
Nusuki Atara

State University of Jakarta
Ciptaningsih
Dewi Wulandari
Ferry Anggriawan
Ika Retna Sari
Achmad Sobari
Ana Median K
Arif Syahrial
Aryani
Conny Fortuna
Endang Dwi L
Octaviano Samir
Rince Sinthauly
Subhan Pradana
Yuyun Yuliani
Daulat Yusuf Harahap
Fatyah Arfah
Fuji Setia Wati
Lutfiyah
Munah Murnianjari
Mutia Hardhiyuna
Putri Kesuma Wardhani
Rina Sofiyanti
Supri
Listiyanah
Maria Fajri
Evindika T.P
Nur Upik
Tinur Malasari
Muhamad Chanafi
Afdini Ridlatul
Desy Permatasari
Norma Rahmawati
Sari Setia Ningsih
Muhamad Pathoni
Retno Dyah

Pakuan University
Dase Suherman
Gumilar Priyana
Iroh Yulistiawati
Rismawati
Yati Apriyati
Yosep Rikiyadi
Abdurachman
Asep Yana
Dewi Agustina
Dina Agustina
Hesti Purnamasari
Iwin Sartika
Mimi Jamilah
Yuli Suprihartini
Yunis Tias Andriani
Enri Agus Setiani
Dian Sudianto
Marlina
Mita Fajriah Ibrahim
Muhamad Ahyad
Nurdiansyah
Nur Laela Fadhilah
Sanan Supriatna
Stephanie
Agustinus Sarira
Dzulfikar Failasufi
Budi Triyanto
Intan Kusumaningrum
Aam Amaliah
Ayu Septina Prasanti

Lao PDR
(100 undergraduates)

National University of Laos
Nongnouth PHANSA
Kongsy KHAMMAVONG
Khamsompong SINTHABANDITH

Payu THAMMAVONGSENG
Anouxay PHOMMALATH
Phoutsakhone OUNCHIT
Phongkeo BOUNNHAVONG
Soulaphon BOUTCHALEUAN
Sengthong SIFONG
Sinnakone SOUKSAVANH
Sensouly PHALEUKHAM
Laty PANGPASEUTH
Phonesavanh XAYALATH
Khaokeo LORVANXAY
Sayphin KHAMPANYA
Mai PHONVIXAY
Laongdao SISOMPHOU
Southanou MANISOTH
Kanchana CHANSINA
Xaysavang PHANDANOUVONG
Korakot PHOMMALIN
Somphet KHAMPHA
Nouannipha SOUTHIBORLOM
Kikeo XAYASITH
Khamboui SOUKHANTHA
Sisavath PHIMMASONE
Phangta BOUNTHAVANGKHAM
Kathingthong LATSAVONGXAY
Khamsing XAYLUEXIONG
Latsmi SOUPHAPMIXAY
Vinanda SIPHONXAY
Phouthong PHOTHISAK
Alunsavath CHANPHENGXAY
Kamphong PHONTHANA
Phetsomphone THAMMAVONG
Somphanith SIONECHANH
Sooksakhone BOUNPHAVONG
Outhay KEOCHAYYOM
Khamphong KAYALATH
Phouvone NORLADA
Bounmy SIBOUNPHAB
Chounnaphon SIBOUNHEUANG
Hongphakham INTHAVONG
Sengpasith HOUNGALOUNE
Kengchalith SOUKVOXAY
Soulisack VILAYPHONE
Inthanong SONEINTHAVONGSA
Menglor
Santy KHOUMPHONPHACKDY
Khampanly XAYAKHONG
Inthavong SOUKBOUAKHAM
Somxay PHONSAVATH
Nouthong ALOUNTHONG
Somsack KOUMBASITH
Mithouna THAMMANOUN
Phannoudeth PONGPANYA
Khamla PHETNAVONGXAY
Thavone KHOUNSIDA
Songkane SOMSAVANH
Phouthone PHAPHO
Phayvieng VONGKHAMHENG
Sengvilay SAETERN
Viengkhone XAYAVONG
Somchanh OUPHANXAY
Vilayvanh PHAISAVATH
Phoutsady OUDOMXAY
Vilaysack MAKKAPHON
Pasongsine KHAMCHANSANA
Sopa KEOINPHENG
Vanpaseuth PHOUTTHAVONG
Sonnasak PHAIPASITH
Vannapa PHOMMACHAN
Phetoudon PHANYAKEO
Phetdaraphone BOUTTAVONG
Somphit KINGSACKDA
Daovone BOUNMAVONG
Souksakhone PHANTHOULACK
Chathala VINTHAXAY
Somta SIHARATH
Ketsana SIRIVONG
Sadsada INTHAVONG
Thani PHIMMASONE
Sayson LUANGNOUNINTHONE
Sinongpheng BOUPHANOUVONG
Phetthouly PANYADA
Malailath LITSOUNTHONE
Khammany KHAMLEK
Lorsualin LORYEAR
Anousa AMPHONDOUNGCHITH
Lattana KEOPHOMMANIVONG
Vannavong SITHAMMALATH
Phengtavanh THAMMASITH
Inthavone SINGDALA
Soudaniame INTHISANE
Viengsavanh XOMVIMANE
Chindavanh SOULIYAPHAK
Oulavanh SINSAMPHANH
Soulichanh LAMXAY
Bounmany SOULIDETH
Taykeo SOMCHANMAVONG

Malaysia
(10 postgraduates)

Universiti Malaysia Sabah
Zuraida Zainudin
Siti Sarayati Abd. Mawah
Avelinah Julius
Ang May Yen
Aini Afifa Ismail
Hamilda Francisca Majit
Lau Foo Chwang
Elczah Olivia Jimmy
Kalsum Mohd. Yusah
Ching Fui Fui

Myanmar
(20 undergraduates and 20 postgraduates)

In the process of selection

Philippines
(33 undergraduates and 6 postgraduates)

Palawan State University
Acot-Acot, Darryl H.
Amanca, Kristhel Lourdes
Cabate, Fatima G.
Cobilo, Maureen Darling Joy F.
Gurtiza Maureen R.
Manzano, Juna R.
Rosacena, Jennifer E.
Abejo, Marvin R.
Aloria, Valentin Gerald II
Gubat, Quency Ann L.
Limos, Benjamin Christopher D.
Siason, Ramon r.
Matchico, Elsie I.
Sodila, Mark Anthony
Gabo, Astrid Korina
Garcellano, James A.
Jardinero John Rex N
Orge, Cedric Ian V.
Patigdas, Madel M.
Tenefrancia, Jonas G.
Alleda, Allan P.
Jalover, Cherry Lyn S.
Pablico, Riza Jane B.
Pagliawan, Ma. Retchie C.
Tan, Ken D.
Urqiola, Joan P
Villamor, Irish L.
Alaban, Ricardo Jr., V. (MSc)
Ramos, Nemrose B. (MSc)
Casia, Cristina T. (MSc)
Migallos, Jeffrey B. (MSc)

Western Philippines University
Castro Lyca Sandrea G
Gonzales, Sharon M
Agsamosan, Mercy G
Capadosa, Annielyn L.
Laxaman, Rajie Ann L.
Arizabal, Edmundo G. (MSc)
Sebido, Bernadette V. (MSc)

Vietnam
(24 postgraduates)

Hue University
Phan Thi Thuy Hang
Tran Thuy Cam Ha

Vietnam National University, Ho Chi Minh city
Vo Hai Thi

Ha Noi Univeristy of Pedagogy
Tran Huu Huy
Tran Duc Hau
Ta Thi Thuy
Dao Thi Hai Ly

Vietnam National University, Ha Noi
Ngo Duc Phuong
Nguyen Thi My
Ho Ngoc Giang
Vu Anh Tai
Vu Thuc Hien
Phan Thi Thu Hang
Nong The Dien
Hoang Van Chuyen
Le Duy Hung
Nguyen Thanh

Institute of Ecology and Biological Resources
Dang Huy Phuong
Dang Thi Thu Huong
Tran Thieu Du
Nguyen Thi Hien
Nguyen Quang Hung

Vietnam Forestry University
Le Van Thanh
Nguyen Thanh Ha
Asis, Jonnie A.

Nagao Natural Environment Foundation
www.jwrc.or.jp/NEF/

3-10-10, Taito-ku, Shitaya, Tokyo 110-8676, Japan
Phone: +81-3-5824-0771, Fax: +81-3-5824-0772
Email: nef@cronos.ocn.ne.jp