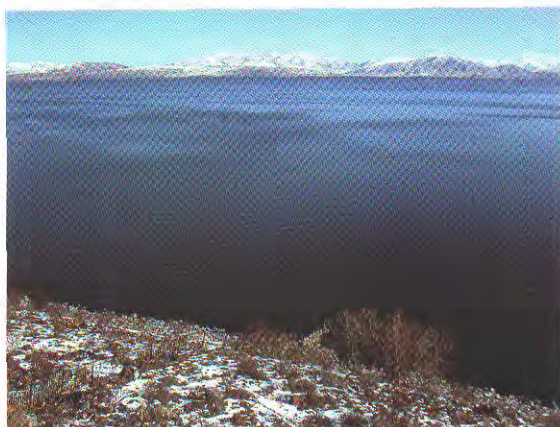


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Nagao Natural Environment Foundation

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Founded in 1989, the Nagao Natural Environment Foundation (NEF) is a non-governmental organisation dedicated to promoting nature conservation in developing countries. The activities of NEF are supported solely by private funds donated by Mr. Eijiro Nagao, the President of Marusan Securities Co. Ltd., and his family.

The NEF pursues its objective through two primary schemes: Research Grant Scheme and Scholarship Scheme. The Research Grant Scheme provides financial support to creative and committed local scientists and concerned citizens, allowing them to undertake research and related activities within the scope of nature conservation. The Scholarship Scheme provides financial support to students of the local university who study courses relevant to nature conservation with an aim to work towards it in the future.

Research Grant Scheme

Newly approved projects in 2004

The NEF Research Grant Scheme funded 17 projects in nine countries (as of Feb. 2005) in the Japanese fiscal year 2004 (April 2004–March 2005).

Field assessment of the population of Cobra (*Naja* spp.)

(Research Grant)

Apinya Chaitae

National Parks, Wildlife and Plant Conservation Department, Thailand

1,000,000 Japanese Yen

The cobras *Naja* spp. are listed in Appendix II of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). The international trade of the *Naja* species for commercial purposes is controlled in order to avoid utilisation that is incompatible with their survival. However, in Thailand, these species are not protected under domestic legislation in areas outside national parks. Consequently, they are often hunted for their skin and meat. The skins of the *Naja* species are traded at particularly high prices in the international market. This project aims to conduct field surveys to obtain basic scientific data regarding the *Naja* species in order to assess harvest and export quotas for the sustainable use of these species.

Reassessment of resources, phenology and distribution of the *Gracilaria* species with reference to some environmental changes in Thailand

(Research Grant)

Anong Chirapart

Department of Fishery Biology, Faculty of Fisheries, Kasetsart University, Thailand

1,000,000 Japanese Yen

Thailand is located on the Indo-China Peninsula between latitudes 5° 40' N and 20° 30' N and longitudes 97° 30' E and 105° 5' E. The geological changes in the country have led to the formation of a 3,219 km-long coastline with diverse seaweed flora. In the past, seaweed was found in significant amounts from the eastern to the southern coastal provinces. However, presently, a considerable amount of the seaweed has disappeared from areas where it was once recorded as abundant. The decline of seaweed has been caused partly by the introduction of otter trawl fisheries in shallow waters and the construction of shrimp culture ponds, which changed the environmental conditions of the coastal and mangrove areas in Thailand. Moreover, the over-exploitation of seaweed from wild stocks has resulted in dramatically decreasing natural production, particularly the *Gracilaria* species. This project aims to review the *Gracilaria* resources and their distribution in relation to environmental changes. This will contribute to the sustainable conservation of seaweed resources as well as the environment in Thailand.

Biodiversity and natural history of amphibians and reptiles in Kerinci Seblat National Park, Sumatra, Indonesia (Research Grant)

Hellen Kurniati

Zoology Division, Research Center for Biology, Indonesian Institute of Sciences, Indonesia

1,000,000 Japanese Yen

The mainland Sumatra is known to be inhabited by approximately 84 species of frogs including 14 endemic species (CI/CABS IUCN/SSC, 2002; Iskandar and Colijn, 2000; Mistar, 2003), 72 species of lizards including 16 endemic species (Iskandar and Colijn, in print), 133 species of snakes including 26 endemic species (Iskandar and Colijn, 2001) and 13 species of non-marine turtles (Iskandar, 2000). However, the past studies were concentrated only in some areas, and the herpetofauna remains poorly studied in many other areas in Sumatra. The large rainforest area (a total area of approximately 1,300,000 ha) that covers most of the Kerinci Seblat National Park (KSNP) area is an important habitat for amphibians and reptiles with some species relying on specific habitats for their survival. The main objective of this study is to survey all the major habitats in KSNP and consolidate information on the distribution and habitat preference of the herpetofauna and to furnish baseline information that can be used for species richness and as indicators of population change in the future.

Ecological assessment of Malaysia's last remaining wild population of the globally threatened Milky Stork *Mycteria cinerea* (Research Grant)

David Li

Wetlands International-Malaysia Office, Malaysia

1,000,000 Japanese Yen

This project was completed in Oct. 2004

The milky stork *Mycteria cinerea* is a globally threatened species identified as 'Vulnerable' by IUCN. The current population is restricted to Cambodia, Indonesia and Malaysia with the total number of birds estimated to be less than 5,550. In the beginning of the 20th century, this species was widely recorded along the west coast of Peninsular Malaysia (from the states of Kedah to Johor). However, the population has dwindled so significantly that they are now known to occur on only a mangrove island off the coast of Perak State. This study aims to conduct an ecological assessment of the wild population including:

- Monitoring breeding and non-breeding population
- Recording behavioural patterns, feeding guilds and food requirements
- Assessing the current habitat status and niches used by the species
- Identifying current and potential threats to the population
- Providing recommendations for species conservation
- Developing a conservation action plan for the species
- Promoting education and awareness on the threatened status and conservation needs of the species

Research on the ecological relation among wood-trunk plants in order to restore the dry open forest of Dipterocarps based on the biodiversity objective at Yok Don National Park, Dak Lak Province, Vietnam (Research Grant)

Cao Thi Ly

Faculty of Agriculture and Forestry, Tay Nguyen University, Vietnam

700,000 Japanese Yen

Yok Don, the largest national park of Vietnam, was established in 1992 in order to conserve the ecology of the dry open forest of Dipterocarps and the numerous species of large migrated animals that are adaptive to this habitat. Until 2002, the area of the national park expanded from 58,200 ha to 115,450 ha. However, approximately 50,000 ha of the expanded area was formerly owned by the forest enterprises, and timber was exploited in this area. In order to assist the sustainable development of the degraded forest resources, this research aims to:

- Classify Dipterocarp forests into groups according to landscapes and dominion groups
- Analyse ecological relation among tree species of each landscape and dominion
- Identify indigenous tree species of each landscape and dominion in order to restore Dipterocarp forests in accordance with the biodiversity objective, diversified uses such as feeding for animals, sources of herbal medicine and seasonal habitat



Towards the restoration of Yadua Taba Island: conserving the Crested Iguana (Research Grant)

Craig Morley
University of South Pacific, Fiji
800,000 Japanese Yen

Fiji has a number of invasive plants and animals that are threatening the survival of the indigenous flora and fauna as well as impacting the livelihood of the indigenous people. The crested iguana *Brachylophus fasciatus* is an endemic reptile classified as Critically Endangered. This iguana is one of the most unusual reptiles in the world, representing an ancient lineage of iguanids fairly distinct from those of the Neotropics and Madagascar. Approximately 95% of the remaining crested iguana population (some 6000) occur on Yadua Taba Island, Bua Province, Vanua Levu, a small uninhabited island (70 ha) currently administered by the National Trust of Fiji. The survival of the species is extremely vulnerable to a chance fire, major cyclone, severe drought, disease, ongoing poaching and the introduction of invasive species. The objective of this project is to increase understanding of the problems created by invasive species and the capability of Fijians to restore and manage their indigenous biodiversity. The purpose of this project is twofold:

- To ascertain the impact of rats on Yadua Taba Island, with a possible view of eradication
- To develop the capability of the Fijians to protect, restore and manage the crested iguana and its habitat in a sustainable way

Biodiversity and conservation of yeasts in Indonesia (Research Grant)

Wellyzar Sjamsuridzal
University of Indonesia, Indonesia
1,000,000 Japanese Yen

Although the richness of flora and fauna has caused Indonesia to be recognised as one of the mega-diversity countries, its microbial diversity has been largely unexplored. Fungal diversity has an extremely important role in ecosystems and it serves as a microbial genetic resource for agriculture, medicine, industry, environment and biotechnology; hence, fungal biodiversity should be conserved to ensure its sustainable use. This research aims to study diversity of yeasts to gather basic information on fungal resources by collecting and analysing samples from submontane tropical rainforests, mangrove forests and marine environment.

Promoting community-based eco-tourism for sustainable management of community forests in Northern Thailand (Research Grant)

Sopon Thangphet
Northern Development Center, Faculty of Social Science, Chiang Mai University, Thailand
600,000 Japanese Yen

This research project aims to investigate the potential and limitations of community-based eco-tourism in forest conservation and community development in northern Thailand. The issue is of great significance for the future development of community forest conservation. Three community-based eco-tourism sites in Chiang Mai and Lamphun will be selected for intensive study. Various research techniques will be used for collecting data, including semi-structured interviews, participant observation, oral histories and on-site observation. A semi-structured interview guide will serve as a major tool for data collection. Only key informants will be selected in this study for an in-depth analysis of each issue.

Study on fish fauna in the Huong River and Tam Giang Lagoon

(Research Grant)

Phap Ton That

Department of Biology, Hue University of Sciences, Vietnam

900,000 Japanese Yen

Thua Thien Hue Province, Vietnam, has a long coastline of over 125 km with a system of vast lagoons. Among these lagoons, Tam Giang Lagoon covers a large portion of the coast with an area of about 22,000 ha and a length of 70 km; approximately 300,000 inhabitants have settled around this lagoon. The Huong River (Perfume River) is a major source of fresh water and serves the demands of local people for livelihood and provides water for irrigation for agriculture. The life of the local communities depends on the fish in the lagoon, the Huong River and its tributaries, which are the main aquatic resources. However, these resources are threatened by human activities such as intensive fishing that cause species depletion. Moreover, aquaculture activities have rapidly developed in pond areas of 4,000 ha imposing a serious detrimental impact on the fish habitats. This study aims to identify the fish species of the Tam Giang Lagoon and the Huong River and map their distributions. The result will be useful in suggesting some solutions to conserve the fish diversity in Tam Giang Lagoon and the Huong River as well as in outlining methods to mitigate the impacts of human activities.

Study on non-timber products in Phongsaly Province, Lao PDR

(Research Grant)

Khamleck Xaydala

Faculty of Forestry, National University of Laos, Laos

990,500 Japanese Yen

This study aims to clarify the present situation of the non-timber forest products (NTFPs) in Phongsaly Province, Lao PDR, through a comprehensive survey that will include the collection of specimens and interviews with villagers on their use of the NTFPs. At present, the NTFPs can possibly be divided into four categories: 1) edible plants, 2) medicinal plants, 3) fiber plants and 4) extractive plants. They are essential to villagers as items of consumption and as a source of income. This study will contribute to the facilitation of the production of NTFPs in the region in order to improve the living standards of local people not only in Phongsaly Province but also in the entire country. The field guidebook of the 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 whole country in order to raise interest in the NTFPs and increase awareness of environmental conservation in the younger generation.

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

(Research Grant)

Sengdeuane Wayakone

Department of Forestry, Faculty of Forestry, National University of Laos, Laos

1,000,000 Japanese Yen

This study will assess the residents' perceptions of the impact of tourism development on their resources in terms of importance in Don Deth and Don Khone, Khong District, Champasack Province, Lao PDR. The study will involve analysis of the use of natural resources of the area by the residents and propose some policies for sustainable development of tourism. It will be the first research in Champasack Province, and can be used as a guideline for other areas or tourist spots for tourism development. The outcomes of the research will be a useful decision-making tool for better tourism management and monitoring. Planners, managers and policy makers can become familiar with some aspects related to tourism development impacts and its resources to understand the requirements of residents; this can help in formulating a future strategy for sustainable development of tourism, particularly in the Khong District, Champasack Province and Lao PDR in general.

Philippine Biodiversity: Principles and Practice

(Publication)

Corazon Sinha

University of Western Australia, Australia

1,000,000 Japanese Yen

The Philippine Islands have one of the world's largest concentration of endemic animals and plants; however, the country is also ranked as one of the greatest hotspots of threatened species. Information about biological diversity within the country and the means to conserve it has recently increased in number. However, the information is widely scattered, and a majority is in technical literature that is unavailable to even most biologists and biodiversity managers. This project aims to compile the available information and publish a book entitled 'Philippine Biodiversity: Principles and Practice'. This will contribute to a better and broader understanding of biodiversity and to its effective management in the Philippines.

Identification manual for frequently traded animal species in Thailand

(Publication)

Jeerawat Jaisielthum

National Parks, Wildlife and Plant Conservation Department, Thailand

1,000,000 Japanese Yen

This project aims to publish 1,000 copies of an identification manual (guidebook) for frequently traded animal species (mammals, birds, reptiles, amphibians etc.) in Thailand. The scientific name, distribution, characteristics and legal status will be described for each species with illustrations.

Mangrove ecosystem in the Red River coastal zone: biodiversity, ecology, socio-economics, management and education

(Publication)

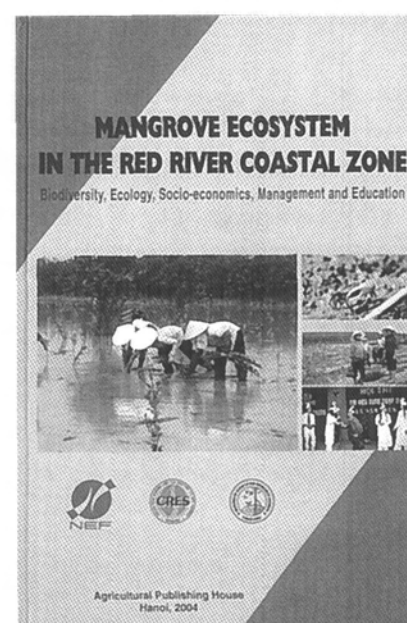
Phan Nguyen Hong

Mangrove Ecosystem Research Division, Vietnam National University, Vietnam

1,000,000 Japanese Yen

Mangrove forests play an important role in the life of local people in coastal areas and in environmental protection as well as natural disaster control. Vietnam, with a 3260 km-long coastline and numerous river mouths, had a fairly large area of mangroves (408,500 ha). However, due to the lack of understanding of the varied values of this resource-rich ecosystem or because of the need for immediate benefits, the area of the mangrove forests have been narrowed and decreased in quality. In the past 50 years, more than two-third of the mangrove forests in Vietnam have disappeared due to economic and population pressures. The consequent decline in tidal marine resources and erosion of the coastline and river banks has greatly affected the lives of millions of poor people in coastal and estuarine areas. This project aims to publish a book titled 'Mangrove Ecosystem in the Red River Coastal Zone: Biodiversity, Ecology, Socio-economics, Management and Education' in order to be used as a reference for further research to form a scientific basis for better conservation and management of the mangrove ecosystem.

This project was completed in Dec 2004



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

Janak Raj Khatiwada
Central Department of Zoology, Tribhuvan University, Nepal
300,000 Japanese Yen

The snow leopard *Uncia uncia* is a legendary elusive species inhabiting the mountains of central Asia. It is classified as Endangered on the IUCN Red List and listed in Appendix I of CITES. It is legally protected in Nepal under the National Parks and Conservation Act (1973). Intensive studies of the species have been conducted in western Himalayas, Nepal (Jackson 1996, Oli 1988, Ale, Gurung 1995, Shah 1998) and in Langtang National Park of central Nepal (Adhikari, 2004 and Khatiwada, 2004). However, only few studies have been performed in the Kanchanjunga Conservation Area, which is thought to be an extremely good habitat for the leopards. This study aims to investigate the status and distribution of the leopards in this conservation area as well as to discuss their existent conflict with the local people, particularly due to the leopard's predation on livestock. Direct field observation, sign observation and questionnaires will be used for the survey.

The birds of Lake Manguao, Taytay, Palawan, Philippines (Small-scale Research Grant)

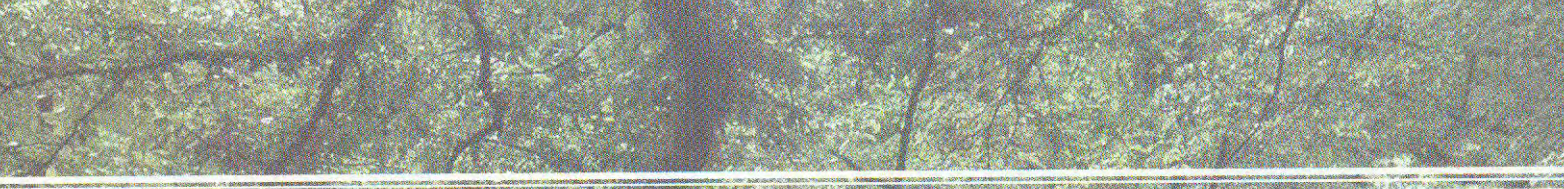
Joie D. Matillano
Western Philippines University, Puerto Princesa Campus, Philippines
300,000 Japanese Yen

Palawan is listed as one of the key conservation sites in the Philippines particularly for birds (Mallari et al. 2001). One of the Important Bird Areas (IBA Site) of the country is the San Vicente-Roxas-Taytay forest, which constitutes the largest forest blocks in northern Palawan and harbours Lake Manguao and its watershed. Lake Manguao is the only freshwater lake in mainland Palawan. Marsh and swamplands exist within the periphery of the lake, and they are known as a vital habitat of waterbirds. Since it is located in a remote area surrounded by hilly lands and is relatively inaccessible by public transport, there has never been a comprehensive study of birds in the area. This study aims to fill in the knowledge gaps in the information of the birds of Lake Manguao and its catchment area by surveying the bird population for at least two wintering seasons. The results of this study will be used not only to raise awareness of the local people and government offices regarding the avian fauna of the lake and their importance but also to formulate local conservation measures for the lake in general and for the water-birds in particular.

Environment conservation awareness programme, Nepal (Conservation Activity Programme)

Ritu Gurung
Wildlife Conservation Nepal, Nepal
220,000 Japanese Yen

The recent rapid urbanisation and population growth in Nepal and the consequent increase in the carrying capacity of land in Kathmandu have literally taken a toll on the environment and the forests. Forests and cultivated fields have been transformed into housing complexes due to which wildlife habitats have disappeared or become fragmented. At the same time, landscape development in conjunction with vehicular and industrial pollution has result in the deterioration of the environment. It is necessary to understand that the environment is being degraded at a fast pace and may possibly be lost forever. In order to address these issues among young people who are the caretakers of our environment, this project will conduct an environment conservation awareness programme through participatory approach and campaigns (planting trees, bird watching, urban wildlife, newsletters and media).



Abstracts of the projects from 2003 (summary of interim/final report)

Monitoring research of Javan leopard in Gunung Halimun-Salak National Park, Indonesia (Research Grant)

Syahrial Anhar Harahap
Biodiversity Conservation Indonesia (BCI)
Indonesia

The Javan leopard *Panthera pardus melas* is an endemic subspecies distributed only in Java and a small neighbouring island in Indonesia. The leopard is regarded as one of the keystone species in the tropical rainforest ecosystem because of its significant role as a predator at the top in food chains, which controls and maintains other wildlife populations, particularly herbivorous mammals (Harahap & Sakaguchi 2003). However, due to fragmentation and degradation of their habitats, it is listed as 'Endangered' in the IUCN Red List of Threatened Animals (Hilton 2000) and is also included in CITES Appendix I.

Gunung Halimun-Salak National Park (GHSNP) is one of the Javan leopard's remaining habitats in Java. The previous research was conducted from September 2001 to March 2003 to study and monitor the population and behaviours of the leopards in Cikaniki area (20 km²), as a part of Biodiversity Conservation Project by Japan International Cooperation Agency (JICA). The research collected baseline information, and seven leopards including five adults and two cubs were identified (Harahap & Sakaguchi 2003). Consequently, an additional and a more detailed ecological research of leopards was strongly recommended in order to develop further conservation activities.

This monitoring research was conducted from September 2003 to September 2004 in collaboration with GHSNP Management, the local people, the university authorities and Biodiversity Conservation Indonesia (BCI) in order to identify individuals, analyse for their sex and age, and to clarify their home range. Fourteen camera traps were set for a total of 2230 trap days in the research area in Cikaniki (30 km²). A total of 54 photos of the leopards were taken during this period, and four adult individuals including three males and one female were recorded. By analysing their spot pattern especially on the tail and chin, posture, and body size, they were all identified as the same individuals that were already recorded in the previous research. Two juveniles and one sub-adult, who were identified in the previous research, were not recorded in this research. It may be possible to suggest that they had weaned from their parents and moved to another home range, however, this assumption needs further studies for confirmation.

The four identified individuals are:

M-02,
Adult male. Specific spot patterns on its chin and rare large spot patterns on its shorter tail.

F-01,
Adult female. Smaller body size and long and thin tail.

M-03,
Adult male. Black leopard.

M-04,
Adult male. Larger posture and small spot patterns on its large and long tail.



M-02

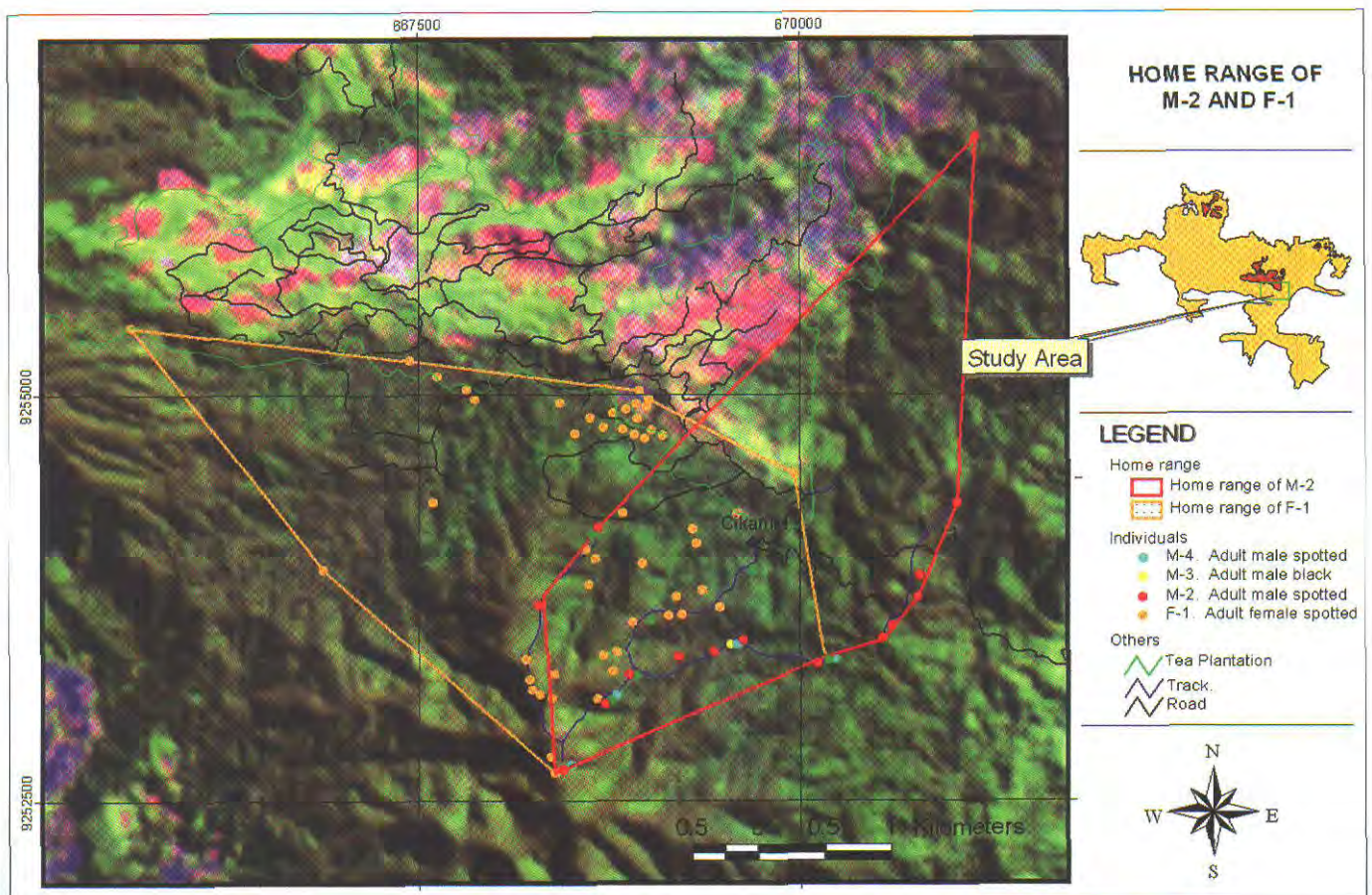


F-01



M-04

Radio tracking was conducted to map the movement of an adult male (M-02) and an adult female (F-01), who were inferred to be resident individuals by the previous research. By combining this data with the data obtained by the camera traps, the home range of M-02 was estimated to be approximately 7.81 km², while that of F-01 was estimated to be approximately 9.82 km². It is also indicated that the home ranges of these two individuals overlapped in an area of approximately 3.48 km².



Research for the publication of the book 'Biodiversity Conservation at Central Asia' (Publication)

Eldar Rustamov
Institute of Zoology of Academy of Science
Turkmenistan

One important part of the project that we are carrying out pertains to the creation of an inventory of the information of strictly protected areas in Turkmenistan. Such areas are called 'zapovednik'. This is a Russian word meaning 'an area where any human activity is prohibited'. This territory is totally protected by special guards and nobody can cross their borders without special permission. There are eight strictly protected areas within the territory of Turkmenistan: Repetekskiy, Khazarskiy, Badkhyzskiy, Kopetdagskiy, Sunt-Khasardagskiy, Kaplankyrskiy, Amudariinskiy and Kugitanskiy. The protected areas have a total area of 819,000 ha. The special scientific studies dedicated to conservation of untouched areas have been carried out in every zapovednik.

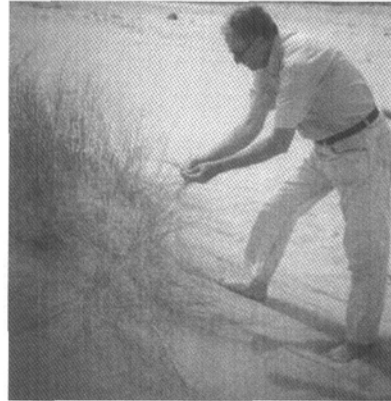
Territorial protection (in-situ) is basic and one of the most effective measures for biodiversity conservation. Zapovedniks provide highly important habitats for rare and endangered species. The untouched sand desert has been conserved within Repetekskiy zapovednik and wetlands having international importance are located within Khazarskiy zapovednik (on the Caspian Sea). Badkhyzskiy zapovednik also has a worldwide value for the conservation of unique species. Fifty-two species are included in the Red Data Book and 53% of all rare and endangered species were registered within this territory. However, one of the most important functions of the Badkhyzskiy area for fauna conservation is the restoration of Koulan species. During the early 1940s, the population of Turkmen Koulan was close to extinction—almost the entire population (mostly populated in Badkhyzskiy zapovednik) did not exceed 250. However, the protected population had bred successfully for several years; as a result, Koulans were introduced after the 1940s to other regions of Central Asia—Meana-Chaachinskiy reserves (foothills of Central Kopetdag Mountains), Sunt-Khasardagskiy zapovednik (West Kopetdag Mountain) and Sarakamysh reserve (northern part of the country). During the second half of the last century, the numbers increased and reached 5,000 by the early 1990s.

Further, the role of Khazarskiy ornithological temporarily protected area in the protection of the flamingo, *Francolin francolinus francolinus*, purple swamp hen *Porphyrio porphyrio* and some other rare and endangered species is noteworthy. The Kopetdagskiy and Sunt-Khasardagskiy zapovedniks are important for unique and original fauna conservation, primarily for the ungulate and carnivora species.

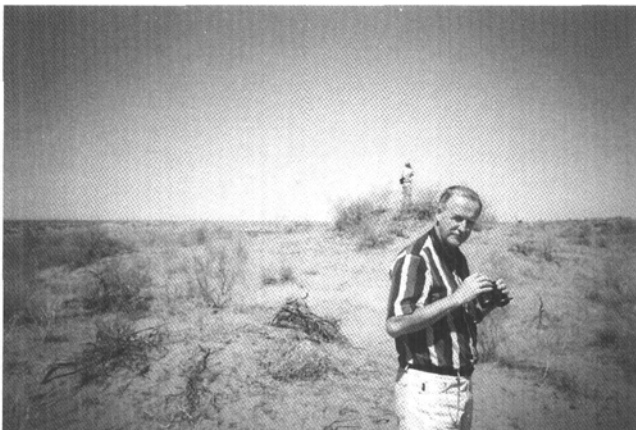
We travelled to Khazarskiy zapovednik to gather information on present state of avifauna in December 2004. The weather was favourable and helped us to attain our goal (to see wintering bird populations): the temperature changed from + 5EC to 15 EC. This high temperature characterises a warm winter in Turkmenistan. Special importance was given to the survey of waterbirds—ducks, swans, gees, gulls, herons, flamingos and waders. The landscapes are picturesque and diverse: blue plains of sea shoals and gulfs, sandy littorals and low steepes of Gubadag mountains. Numerous waterfowl fly to this territory from Siberia and Kazakhstan during wintertime. It is possible to observe tens or hundred or thousand wintering waterbirds here. In the winter of 2004–2005, we counted 40,000 waterfowl. The most interesting finding was 8,000 individuals of greater flamingo. The greater flamingo is a charismatic species for the aboriginal people and has often been mentioned in folklore, literature, arts and family life. Due to an increase in anthropogenic activity, waterfowl species suffered high anthropogenic influence. The number and status of the greater flamingo populations was not clear and there has been an opinion that the species number had declined during last ten years. However, our data supports the assumption that some populations of greater flamingos are still numerous.



The survey of waterfowl on the eastern shore of Caspian Sea (Khazar Strictly Protected Area). The greater flamingo (*Phoenicopterus roseus*), mute swan (*Cygnus olor*), common coot (*Fulica atra*), red-crested pochard (*Netta rufina*) etc. are the most spectacular.



Selin (*Afistida pennata*)—pioneer among plants, which fixed the sand dunes, Repetek Strictly Protected Area, eastern Turkmenistan.



The fixed sand habitats—Repetek Strictly Protected Area, eastern Turkmenistan. Among these, reptiles—Middle Asian land turtle (*Testudo horsfieldi*), lizards (*Teratoscincus scincus*, *Agama sanguinolenta*, *Phrynocephalus mystaceus*, *Phrynocephalus interscapularis*), and desert adder (*Echis carinatus*); birds—crested lark (*Galerida cristata*), streaked scrub warbler (*Scotocerca inquieta*), saxaul desert jay (*Podoces panderi*), saxaul sparrow (*Passer ammodendri*), long-legged buzzard (*Buteo rufinus*), little owl (*Athene noctua*); mammals—hare-tolai (*Lepus tolai*), ground squirrel (*Spermophilopsis leptodactylus*), gerbils (*Rhombomys opimus*, *Meriones meridianus*, *Meriones libicus*), fox (*Vulpes vulpes*), and desert cat (*Felis margarita*).



Grey varan (*Varanus griseus*)—inhabitant of the undulating ground and deserts of Turkmenistan (Repetek Strictly Protected Area, eastern Turkmenistan).



Biology of three species of mangrove-associated porcellanid crabs (Porcellanidae: Petrolisthes) in Puerto Princesa Bay, Palawan, Philippines (Research Grant)

Roger G. Dolorosa
Western Philippines University-Puerto Princesa Campus
(former State Polytechnic College of Palawan)
Sta. Monica, Puerto Princesa City, Palawan,
Philippines

The study was conducted at a fringing mangrove forest with a relatively deep muddy substrate (09°46.886' N latitude and 118°43.365' E longitude) in Puerto Princesa Bay, Palawan, Philippines. Crabs were collected every month from January 2003 to March 2004 either by hand or by using traps. Numerous crabs belonging to the genus *Petrolisthes* (*P. teres*, *P. bifidus* and *P. kranjiensis*) were collected. One individual of an undescribed species under the genus *Enosteoides* was also found within the area and its biology could not be described.

The three species share common habitats in the mangrove forest to some extent; however, *P. teres* occupies a wider range of microhabitats that include sponges and boulders within the heavily silted seagrass meadow (lower intertidal areas), while *P. bifidus* is only confined between mangrove roots or under the stones beneath the mangrove trees. *P. kranjiensis* is found together with *P. bifidus*; however, it can exist in stony mid-intertidal areas without mangroves. *P. bifidus* and *P. kranjiensis* inhabit the mid-intertidal areas only; hence, the degree of emersion is longer than that in *P. teres*.

The most abundant was *P. teres* with a total of 4899 individuals (ind.) collected, followed by *P. bifidus* (1187 ind.) and *P. kranjiensis* (264 ind.). The largest male and female *P. teres*, achieved a carapace length (CL) of 8.4 mm and 8.3 mm, respectively, the largest male and female *P. bifidus* achieved a CL of 14.7 mm and 14.0 mm, respectively and the largest male and female *P. kranjiensis* achieved a CL of 8.3 mm and 9.2 mm, respectively. The sex ratio of *P. teres* and *P. bifidus* formed a similar anomalous pattern where male individuals outnumbered females at the smallest and largest size classes. The female *P. teres* ($t = -5.031$, $P < 0.05$) were significantly larger than males. At the same time, the females significantly outnumbered the males ($\chi^2 = 13.07$, $P < 0.05$). The growth is faster at a younger age for the three species. The estimates of L_∞ and K for *P. teres* revealed values of 8.7 mm and 2.2/year, respectively, that for *P. bifidus* were 15.3 mm and 1.3/year, respectively and that for *P. kranjiensis* were 9.3 mm and 1.7/year, respectively. Reproduction is continuous in the three species as indicated by the presence of ovigerous females with peaks that coincide with the rainy season and early dry season. Fecundity and productivity were higher in *P. bifidus* (230 ± 216 eggs; 299 eggs/year) compared to *P. teres* and *P. kranjiensis* (82.65 ± 60.76 eggs; 125 eggs/year and 80.60 ± 46.10 eggs; 137.7 eggs/year). Relationships between CL and number of eggs for the three species are best described using exponential regression (*P. teres*: $y = 1.50403e0.6971x$; *P. bifidus*: $y = 0.6956e0.5495x$ and *P. kranjiensis*: $y = 1.628e0.5484x$). Entry of juveniles for the three species coincided with the period when a high percentage of females carried eggs near the hatching stage. Simulated recruitment pattern for the three species appeared in two pulses per year at different intensities. Parasite infestation varied among species (*P. teres* 0.04%, *P. bifidus* 2.79% and *P. kranjiensis* 10.24%).

Considering that the three species of *Petrolisthes* exist in great numbers in the mangrove forest, the conservation of their natural habitat would ensure their survival and those of other organisms dependent on them and the ecosystem as a whole. An in-depth study on the influence of siltation on species abundance (particularly on *P. teres*) might establish the importance of the species as ecological indicators.



Mangrove forest at high tide



Mangrove forest at low tide



Collecting porcelain crabs



Petrolisthes teres



Petrolisthes bifidus



Petrolisthes kranjiensis

Feeding habits of selected insectivorous bats in Perlis, Malaysia

(Research Grant)

Zubaid Akbar

School of Environmental & Natural Resource Science,

Faculty of Science & Technology,

Universiti Kebangsaan Malaysia

Malaysia

INTRODUCTION

Small vertebrates such as bats, rodents, birds and amphibians are among the most significant predators of insects (Coulson and Witter 1994); however, quantitative studies pertaining to bats are lacking. Knowledge of an animal's diet is important for interpreting its ecological role as a predator and its impact on local environments. The main problem with the study of the microchiropteran feeding habits is that bats thoroughly chew their food, making the identification of food items an extremely tedious affair. However, the study of their feeding habits is important as bats are considered to play an important role in influencing the insect populations both in agricultural habitats and forests (Benjamini 1987; Whitaker 1995). Whitaker (1995) estimated that a colony of 150 big brown bats eat approximately 600,000 cucumber beetles, 194,000 scarabaeids, 158,000 leafhoppers and 335,000 stinkbugs in a year; all of whom are serious pest species. This indicates that bats are an important biological control agent for some major insect pests that plague the agricultural sector.

Very little is known of the feeding habits of Malaysian microchiropterans, excluding some preliminary studies on *Hipposideros pomona* (Zubaid 1988a), *Hipposideros armiger* (Zubaid 1988b), *Taphozous melanopogon* (Zubaid 1990) and *Megaderma spasma* (Davison and Zubaid 1992). The objective of this study is to determine the feeding habits of selected insectivorous bats from Perlis—a state with extensive crop monocultures. By analysing the prey consumed, one can assess the potential value of bats as biological control agents of insect pests.

MATERIALS AND METHODS

All the observed insect remains were collected from beneath the diurnal roosts that were inhabited by a single species only. Most bats tend to cull (at the perch or in-flight) the wings, legs and heads of insects before ingesting as these parts are of low nutritional value. There was no attempt to determine prey selection versus prey availability. The samples from the various months were pooled due to small sample sizes. The insect remains were identified to the lowest possible taxonomic level (primarily family), and it varied from order to order. The remains were compared with identified pinned specimens at the Center for Insect Systematics, Faculty of Science & Technology, Universiti Kebangsaan Malaysia and MeAney et al. (1991). The proportions were estimated using the procedure followed by Seamark and Bogdanowicz (2002).

RESULTS AND DISCUSSION

Miniopterus schreibersii fed mainly on Orthoptera (32.9%), Lepidoptera (29.8%), Coleoptera (23%); *Hipposideros diadema* fed on Orthoptera (41.2%), Coleoptera (25.6%) and Lepidoptera (23.4%); *Hipposideros larvatus* fed on Orthoptera (40.4%), Coleoptera (17.5%) and Lepidoptera (17.6%); and *Nycteris tragata* fed on Orthoptera (33%), Lepidoptera (33.5%) and Coleoptera (25%). The major prey items consumed by the bats were orthopterans, lepidopterans and coleopterans. The dietary analysis suggests a combination of opportunism and selective predation. Large swarms of termites were also known to emerge at irregular intervals. The presence of termites in the diet suggests that the bats feed opportunistically as was noted by Gould (1978). Waters et al. (1995) suggested that by foraging on small insects in a swarm, a bat would be more likely to detect insects in a glint (maximum target strength) position simply because they are in large number. Bats (species unknown) were also observed feeding on insects swarming around street lights. Dietary flexibility has allowed these bat species to persist in a highly modified agricultural landscape. The presence of Coleoptera, Orthopteroids, Lepidoptera and Isoptera, which include many members considered to be pests, shows that the bats play an important role in managing the populations of these insects in the food chains of natural ecosystems (Elton 1973; Yunus and Balasubramaniam 1981). Most orthopteroids are phytophagous, while the coleopterans are considered to be among the most destructive insect pests (Coulson and Witter 1984; Khoo, Ooi and Ho 1991).

Although these bats occur primarily in small groups, and not big roosts, and have a limited range of prey, it is likely that the cumulative effect of Malaysia's bat species, each with its own dietary range, has a significant influence on insect dynamics. Moreover, they are known to consume an equivalent of 50-100% of their body weight in insects every night. Gould (1955) estimated that *Myotis lucifugus* consumed 1000 mg of arthropods per hour and this number could vary from 67 moths (each weighing 15 mg) to 5,000 chironomids (each weighing 0.2 mg). The importance of bats as a biocontrol agent is potentially quite high because they feed on the insects in the later stages of the life cycle i.e., adults rather than the insects in the early stages that are more abundant (Dent 2000). Bat colonies can be encouraged by 1) protecting existing colonies, 2) by establishing new colonies and 3) by introducing bats in some instances. Although several species of bats are susceptible to habitat disturbance, some species are highly adaptable and thrive in areas subject to anthropogenic change (e.g., *Scotophilus kuhlii*, *Taphozous melanopogon*). These bats readily dwell in roofs of buildings, artificial tunnels and culverts. Some species also roost in the dry palm fronds that often hang down and encircle tree trunks. However, there are places that seem very appropriate for bats to roost that still remain unoccupied. More detailed studies on the behavioural and microhabitat requirements are required to determine roost selection. The preference of these bats for utilising man-made structures makes them very appropriate for integration into pest management programs similar to that for the Barn Owl in controlling rats in oil palm plantations and rice fields. There is a great potential for increasing their numbers and effectiveness through habitat management. Despite the established and potential economic and ecological importance of bats, these animals are not adequately studied and are still largely misunderstood and persecuted.



Hipposideros diadema



Nycteris tragata

Mechanisms of qualitative and quantitative development of zooplankton and zoobenthos in two major lakes of Armenia (Research Grant)

Karen Jenderedjian
Division of Animal Resource Management
Agency of Bioresource Management
Ministry of Nature Protection
Armenia

From 1933, the outflow from Lake Sevan (40°28' N, 45°20' E, elevation 1897 m a. s. l.) was artificially increased to provide water for electricity and irrigation. As a result, the water level of the lake dropped by 20 m, the surface area decreased from 1416 to 1240 km² (12%) and the water volume decreased from 58.5 to 33.1 km³ (43%). This human intervention has caused a decrease in transparency and saturated oxygen, increase in nitrogen and worsening of water quality that affected the whole trophic chain, including zooplankton, zoobenthos and fish stocks. From 1937-1991, the biomass of zooplankton has changed from 2 to 14 g m⁻² with an annual net production of 30-300 g m⁻². The changes observed in the biomass of zoobenthos—from 3 to 37 g m⁻² with the annual net production 3-90 g m⁻² in 1928-1991.

The plankton fauna of Lake Sevan includes 14 pelagic species. Among them, *Daphnia* and Cladocera dominate in terms of the biomass, which in 2004 was an average 0.61 g m⁻³ with a calculated net production of 11.75 g m⁻³ or 320 g m⁻². The benthic fauna of Lake Sevan includes at least 167 species of 19 systematic groups. Among them, Oligochaeta (dominant species *Potamothrix alatus*) and Chironomidae (dominant species *Chironomus plumosus*) constitute up to 98% of the total biomass, which in 2004 was 7.46 g m⁻² on an average with a calculated net production of 10.30 g m⁻². The comparison of perennial literature data (1933-1991) shows that the ratios relating the energy values (Joule) of primary production (PP) with the production of the zooplankton (Pzp) and production of the zoobenthos (Pzb) in Lake Sevan are on an average as follows: PP:Pzp = 100:5 (from 2 to 8), and PP:Pzb = 100:0.15 (from 0.11 to 0.21).

The second largest lake of Armenia, Lake Arpi (41°03' N, 43°37' E) is located in the northwestern part of the country, at an altitude of 2023 m a. s. l. While the lake remained undisturbed, it had a surface area of 4.5 km², a volume of 0.005 km³ and an average depth of 1.6 m. After a dam was built from 1946-1950, the surface area of the lake increased up to 20 km² and the volume increased up to 0.105 km³. There is limited information on Lake Arpi, including zooplankton and zoobenthos. The number of recorded zooplankton species in natural conditions was 27; this number has decreased to 5 today (*Daphnia pulex*, *Diapanasoma brachyurum*, *Arctodiaptomus acutilobatus*, *Arctodiaptomus viridis* and *Cyclops vicinus*) with an average biomass of 0.5 g m⁻³. Main benthic animals are oligochaetaes, leeches, mollusks, crustaceans, aquatic ticks, larvae of dragonflies and mosquito grubs with an average total biomass of only 0.1 g m⁻².

Oligochaetes appear to be excellent indicators of the origin of organic matter in the sediments and hence the water quality. Naididae comprise approximately 100% of the oligochaete fauna on rocks covered by periphyton. *Limnodrilus hoffmeisteri* is the dominant species in river sediments polluted by sewage waste (80%) and *Tubifex tubifex* dominate the river sediments polluted by fertilizers. *Rhyacodrilus coccineus* constitutes up to 40% of oligochaetae biomass in the macrophyte zone. *Trichodrilus* sp. is found exclusively in the crystalline profundal. Yellow and black silt *Potamothrix alatus* is the dominant species (from 40-100% of the oligochaete biomass) on pure and silty sand.



Lake Sevan in winter; Astvatsatsin Monastery on Sevan Peninsula



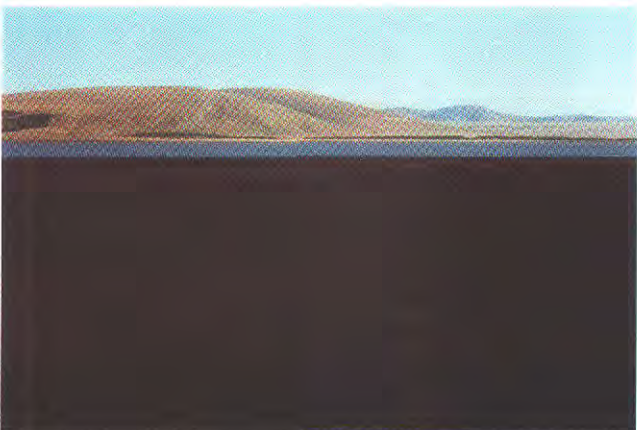
Lake Arpi is important for local inhabitants especially for livestock raising



Qualitative benthic data sampling by Karen Jenderedjian in the River Lichk, important tributary of Lake Sevan for fish reproduction



Qualitative data sampling by Susanna Hakobyan and Arpine Jenderedjian in the mouth of the River Gavaraget, most polluted tributary of Lake Sevan. The composition of zoobenthos is an excellent biological indicator of the water quality



Artificial water level decreases during the summer period for irrigation purposes affecting negatively on the development of bottom fauna in Lake Arpi



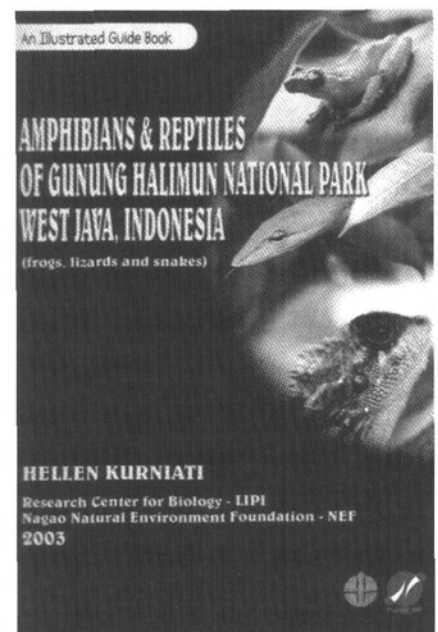
During 1930-1980's the water level in Lake Sevan was artificially decreased on 20 m, which affected on whole biological chain of the aquatic ecosystem, from primary production till fish resources

Publication of 'Amphibians & Reptiles of Gunung Halimun National Park, West Java, Indonesia' (Publication)

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Museum Zoologicum Bogoriense (MZB)
Research Center for Biology – LIPI
Indonesia

Gunung Halimun National Park lies approximately 100 km southwest of Jakarta, at altitudes between 500–2000 meters above sea level (asl.). The first herpetological survey was conducted by Sidik (1998) in the northern part of Gunung Halimun National Park. During this survey, 16 species of frogs, 12 species of lizards and nine species of snakes were identified. However, no further systematic survey on herpetofauna had been conducted since then. In order to review the amphibian and reptile species, distribution, habitat utilisation and abundance in Gunung Halimun National Park, an intensive field survey was carried out from October 2001 to August 2002, funded by NEF Research Grant. As a result, 24 species of frogs, 15 species of lizards and 16 species of snakes were found in the park.

In 2003, an illustrated fieldguide 'Amphibians & Reptiles of Gunung Halimun National Park, West Java, Indonesia' was published on the basis of this result to serve as a record of the amphibians and reptiles found currently in Gunung Halimun National Park. Many of these species are found only in the primary forest and may disappear with further loss and fragmentation of their habitats. This book contributes to stimulating interest with regard to the national park and can be used by any person interested in the biodiversity of amphibians and reptiles and their conservation currently and in the future.



Scholarship Scheme

The Scholarship Scheme funded 336 students in six countries (as of Feb 2005) in the Japanese fiscal year 2004 (April 2004–March 2005).

Special report from Indonesian Programme

The NEF Scholarship Programme, Indonesia

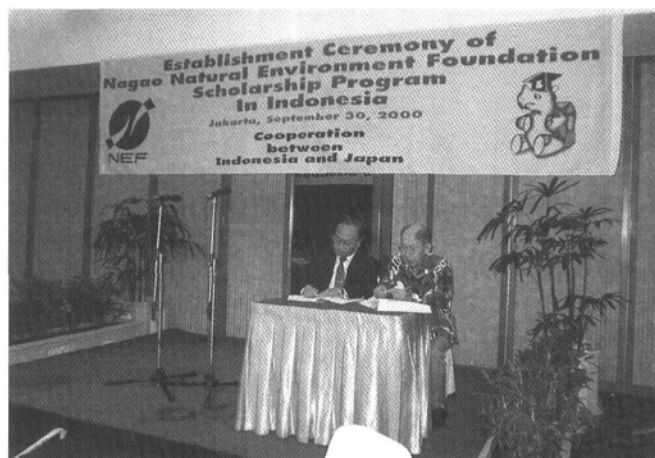
History

Many university students have been adversely affected due to the economic crisis that had happened in Indonesia since 1998. Most of the students were faced with the possibility of having to drop out from school since they could not afford to pay the university's annual tuition to the university, which had become very expensive.

The NEF Scholarship Programme was begun in Indonesia in 2000 to reduce some of this financial burden. After a long discussion with the officials concerned with national education, it was decided that in the initial stage, the NEF would execute this programme in four universities that have a faculty related to biological science. The universities are as follows:

- University of Indonesia (Government University)
- State University of Jakarta (Government University)
- Nasional University (Private University)
- As-Syafi'iyah Islamic University (Private University).

In order to actually implement this programme, the NEF made an agreement with its counterpart organisation called the Indonesian Committee for NEF Scholarship Programme, which has a dean and lecturer from each university led by the Assistant to the Minister for Environment. The agreement included the scheme of scholarship programme, committee's service and obligation of the NEF. It was signed in 2000 by and between Professor Emeritus Taisitiroo Satoo and Dr. Effendi Sumardja. Thus, the NEF Scholarship Programme in Indonesia began.



Prof. Dr. Satoo and Dr. Effendi signing the Agreement

Scholarship

The scholars for the Scholarship Programme are the new students entering the university. They must have a good record in biology, chemistry and mathematics from their high schools, and most importantly, the underprivileged are given special consideration. Lists of all the students who meet the above criteria are collected from each university by the Committee every September. After screening, discussion and consideration, a total of 30 students are selected to receive scholarship. Each student is provided with a scholarship equivalent to 3,000 Japanese Yen per month that is guaranteed until graduation, as long as they should not obtain a failing record (less than 2.5 points) in each semester.

In 2002, the NEF decided to expand the number of universities from four to five, with an additional university named 'Pakuan University' that is located in Bogor District. The number of scholars also increased from 30 to 40 per year since then. Approximately 189 students have been supported from 2000 until 2003.

Development

During this period, there have been certain improvements with regard to the implementation of the programme not only in education at university but also in extra-curricular activities such as field research and conservation activity, in which some students participated. Considering the importance of these activities, the committee and some students took the initiative to form a forum for the scholars, aiming to establish and strengthen communication among the students so that they could share information about research, study or other activities among universities. This forum is called 'The Nagao Forum for Conservation (NFC)'.

The momentum for NFC was provided in 2003, where the students had two opportunities to participate in the field activities with a Japanese lecturer and students. The first programme was conducted in Sumatra Island, with regard to the Sumatran tiger conservation. It aimed at providing information and raising awareness about the conflicts between local people and tigers living in the same location and deciding the methods of overcoming this conflict. The other activity was conducted in Baho Island, south-east of Sulawesi Province, on community-based ecotourism programme. In this programme, the students learnt from the local initiative that established an ecotourism programme based on the traditional culture and environment education.



Baho



Way Kambas

The NEF activities were extended in 2004. With the cooperation of NEF in Japan, we have been preparing another pilot project to enhance student's experience in field activities. It will be conducted in the Gunung Halimun Salak National Park in March 2005 in collaboration with the National Park Office, local NGOs, local community and student representatives (the recipients of the NEF scholarship). It is our aim to show good results in the forthcoming NEF newsletter.

New scholarship programme in Laos

In February 2004, the NEF President Prof. Dr. Taki and the Programme Officer visited Lao PDR to discuss the possibility of a new scholarship programme to support students opting for a bachelor's course related to nature conservation at the National University of Laos (NUOL). Thanks to the endeavour of NUOL led by Prof. Dr. Somkot Mangnomek, the President of NUOL, and valuable counsel and advice from the former Ambassador of Japan, the Resident Representative of JICA Laos Office and JICA experts, it proceeded to hold a signing ceremony for the launch of the programme in September 2004. A total of 100 undergraduate students, whose grades range from 2 to 5, were selected for the first year.



Prof. Dr. Taki and Prof. Dr. Somkot at the Signing Ceremony

New scholarship programme in Malaysia

A new scholarship programme began in Sabah, Malaysia in June 2004. Prior to the implementation of this programme, the NEF President and the Programme Officer visited Sabah to attend a signing ceremony organised by the Universiti Malaysia Sabah (UMS). Around thirty people participated in this ceremony, including Prof. Dr. Abu Hassan, Vice Chancellor, and Dr. Maryati Mohamed, Director of Institute for Tropical Biology and Conservation. At the end of the ceremony, the Agreement was successfully signed between the NEF and the UMS. A total of seven students opting for a master's course related to nature conservation at the UMS were selected as NEF scholars in 2004.

Progress in other countries

Myanmar

The NEF Programme Officer visited Myanmar in August 2004 to meet the members of Forest Resource Environment Development and Conservation Association (FREDA), the NEF's counterpart organisation of Myanmar programme. A total of 30 postgraduate and undergraduate students were supported by this programme in 2004.

Philippines

The NEF Programme Officer visited Palawan in January 2005 to meet Mr. Domingo Tabang, Programme Manager, Ms. Bing Era, Liaison Officer and NEF scholars of Palawan programme. A total of 38 postgraduate and undergraduate students were supported by this programme in 2004.



Mr. Domingo Tabang and NEF Scholars



4th year NEF Scholars

Vietnam

The NEF Programme Officer visited Vietnam National University in March 2005 to meet members of Centre for Natural Resources and Environmental Studies (CRES) led by Prof. Dr. Vo Quay, and Dr. Le Trong Cuc. A total of 24 postgraduate students were supported by this programme in 2004.

List of NEF Scholars in 2004

Indonesia

Adi Wibowo
 Muhammad L. Ubaidillah
 Puspita Dewi
 Rachmawati
 Rama Adeyasa
 Wulan Pusparini
 Yanuar P. Muchtar
 Dwi Agustina
 Endah Susianti
 Herna R. Wahyuni
 Srie R. Almaidah
 Vishnu Aditya
 Aan Aliyah
 Arny W. Nurvianti
 Dewi Suprobawati
 Dewi Murni
 Dwi Astuti
 Fikty Aprilinayati
 Kiki R. Awaliyah
 Liza Yanzalinda
 Ary Nurbaiti
 Dian Agustina
 Fathiah
 Mardayanti
 Rahma Shofiana
 Ratna S. T. Prihatini
 Rini Rachmatika
 Triani
 Yeni Sulistiwati
 Dian Juniarti
 Dianing S. Astuti
 Dwi Ramadhani
 Eva Fitriani
 Rita D. Hasikin
 Robby Anzil Firdaus
 Ronny Rianto
 Sri Surati
 Sukma Oktavianthi
 Yunita F. Anggraeni T.
 Aliman Hakim
 Anastias Nurdianti
 Asep Koswara
 Hilim Qodriyah
 Rini Agustini
 Santi Susilawati
 Sinta P. Ayu
 Dwi Hadiyansyah
 Fidyatun Khoriyah
 Jannatul Ma'wah
 Oki Laju Lanang
 Puspita Ningrum
 Rahmat D. Waluyo
 Ririn W. D. Sari
 Thoriq A. Faisal
 Tomi Ariyanto
 Turyadi
 Urip Rusnandi
 Veronica Y. Pagayanti
 Ciptaningsih

Dewi Wulandari
 Ferry Anggriawan
 Ika R. Sari
 Dase Suherman
 Gumilar Priyana
 Iroh Yulistiawati
 Rismawati
 Yati Apriyati
 Yosep Rikiyadi
 Eka Viviantira
 Erny Soraya
 Eva Oktarina
 Kholifah
 Meilisha P. Pertiwi
 Pipit Marianingsih
 Poppy Y. Putri
 Putri R. Ratri
 Rahma Prihatiningsih
 Hajar Wahyudi
 Isnaini
 Iswahyudi Zuliman
 Sulus Setiawati
 Wahyuni Budhiarsih
 Yunitasari Amalia
 Dina Fitria
 Fauzan A. M. Alkatiri
 Nur Rohmawati
 Rahayu Kurniangsih
 Rahmalia N. A. Amda
 Rini Sukmawati
 Achmad Sobari
 Ana Median K.
 Arif Syahril
 Aryani
 Conny Fortuna
 Endang Dwi L
 Octaviano S.
 Rince Sinthaulu
 Subhan Pradana
 Yuyun Yuliani
 Abdurachman
 Asep Yana
 Dewi Agustina
 Dina Agustina
 Hesti Purnamasari
 Iwin Sartika
 Mimi Jamilah
 Yuli Suprihartini
 Yunis T. Andriani
 Aditya Amrullah
 Fika Afriyani
 Mariska A. Kusumaningtyas
 Mulyati D. Aisyah
 Nur M. Dewi
 Suryani
 Sutini
 Tomi D. Khatimah
 Andam D. Melani
 Dwi W. Octavia
 Hetty Jariah
 Rido Tahir

Sartika
 Sapan
 Syahrul Lail
 Winanjar Restu
 Etika S. Hidayati
 Dessy S. Ashari
 Fratiwi
 Maysyaroh
 Neneng Mardianah
 Shafa Noer
 Daulat Y. Harahap
 Fatyah Arfah
 Fuji S. Wati
 Lutfiyah
 Munah Murnianjari
 Mutia Hardhiyuna
 Putri K. Wardhani
 Rina Sofiyanti
 Supri
 Enri A. Setiani
 Dian Sudianto
 Marlina
 Mita F. Ibrahim
 Muhamad Ahyad
 Nurdiansyah
 Nur L. Fadhillah
 Sanan Supriatna

Philippines

Abarollo, Cristian Glen B.
 Amandy, Erickson S.
 Casia, Cristina T.
 Dasmarinas, Roviejoy C.
 Diendo, Josarhanne B.
 Gadot, Elmer G.
 Acot-Acot, Darryl H.
 Amanca, Kristel Lourdes A.
 Cabate, Fatima G.
 Castro, Lyca Sandra G.
 Cobilo, Maureen Darling Joy F.
 Gonzales, Sharon M.
 Gurtiza, Maureen R.
 Manzano, Juan R.
 Rosacena Jennifer E.
 Abejo, Marvin R.
 Aloria, Valentin Gerald II
 Gubat, Quency Ann L.
 Limos, Benjamin Christopher D.
 Matchico, Elsie I.
 Sodila, Mark Anthony
 Siason, Ramon R.
 Agsamam, Mercy G.
 Capadosa, Annielyn L.
 Gabo, Astrid Korina
 Garcellano, James A.
 Jardinero, John Rex N.
 Laxamana, Rajie Ann L.
 Orge, Cedric Ian V.
 Patigdas, Madel M.
 Tenefrancia, Jonas G.
 Zapra, Cheryl A.

Ramos, Nemrose B.
Alaban, Ricardo V.
Arizabal, Edmundo G. Jr.
Sebido, Bernadette V.
Esmenda, Carolyn A.
Tupas, Janice M.

Malaysia

Aini Afifa Hj. Ismail
Ang May Yen
Avelinah Julius
Hamilda Francisca Majit
Lau Foo Chwang
Siti Sarayati Hj. Abd. Mawah
Zuraida Zaunudin

Myanmar

Myat Su Mon
Tin Tin Moe
Thida Swe
Yu Kay Thwe
Chaw Chaw Sein
Aye Thin Mu
Seng Aung
Hnin Khaing Aye
Ko Myint
Khin Lay Mu
Tin Tun
Cherry Aung
San San Khine
Saw Lwin
Saw Yu May
Thida Oo
Aye Aye Htun
May Lay Thant
Nyunt Khaing
May Thandar Myo
Thiri Aung
Thaw Thaw Ye Chan
Aye Ka Yi Phyu Phyu Thet
Pyae Soe Aung
Aar Kar San
Kyaw Sein Win Tun
Su Mon San

*Additional three scholars will be selected around mid-April 2005.

Laos

Nongnouth Phansa
Kongsy Khammavong
Khamsonpong Sinthabandith
Payu Thammavongseng
Anouxay Phommalaith
Phoutsakhone Ounchit
Phongkeo Bounnhavong
Soulaphon Boutchaleuan
Sengthong Sifong
Sinnakone Souksavanh
Sounthone Phimsithong
Sengphet Thanousone

Douangsamone Chanthavong
Ammalay Outhongkham
Sayphin Khampanya
Mai Phonvixay
Laongdao Sisomphou
Southanou Manisoith
Kanchana Chansina
Xaysavang Phandavong
Korakot Phommalin
Somphet Khampha
Nouannipha Southiborlom
Kikeo Xayasith
Vongpasith Chanthakhoun
Sikhaiphone soulinxay
Sila Champa
Kathingthong Latsavongxay
Khamsing Xayluexinong
Latsmi Souphapmixay
Vinanda Siphonxay
Phouthong Phothisak
Alunsavath Chanphengxay
Kamphong Phonthana
Kongkeo Inthavong
Soulinthone Keophila
Sooksakhone Bounphavong
Outhay Keochayyom
Khamphong Kayalath
Phouvone Nordalaseng
Bounmy Sibounmak
Sinxay Vongphachanh
Virakone Kasioudom
Sengpaseuth Houngaloune
Kengchalith Soukvoxay
Soulisak Vilayphone
Soulisack Omesab
Menglor
Satisouk Khoumphonphackdy
Khampanly Xayakhong
Inthavong Soukbouakham
Somxay Phonsavathm
Nouthong Alounthong
Somsak Koumbasith
Mithouna Thammanoun
Anou Phimmanoun
Layphone Vilaphone
Phonephasong Phonekeo
Kesone Knamhalikham
Sombat Bounlavong
Phayvieng Vongkhamheng
Sengvilay Saetern
Viengkhone Vannachack
Sisouphanh Xayavong
Vilayvanh Phasavath
Phoutsady Oudomxay
Vilaysack Makkaphon
Pasongsine Khamchansana
Sopa Keoinpheng
Santi Kongmany
Sonnasak Phapasith
Vannapa Phommachan
Phetoudon Phanyakeo

Phetdaraphone Bouttavong
Somphit Kingsackda
Daovone Bounmavong
Nounlaong Thammavong
Maliphone Douangchanh
Somta Siharath
Ketsana Sirivong
Sadsada Inthavong
Thani Phimmasone
Sayson Luangnouninthone
Sinongpheng Bouphanouvong
Phetthouly Panyada
Khammany Khamlek
Lorsualin Loryear
Anousa Amphondoungchith
Lattana Keophommany
Anochith Phanvongsa
Phaivichith Sensathit
Saphet Sengsuliya
Anolath Khamvongsa
Noynokeo Soukphachan
Chindavanh Souliyaphak
Malaylath Litsounthone
Soulichanh Lamxay
Bounmany Soulideth
Taykeo Somchanmavong

Vietnam

Bui Thi Nguyet Nga
Chu Thi Thu Ha
Doan Van Long
Hoang Quy Tinh
Le Thi Thanh Hoa
Le Van Hien
Ngo Thi Tram Anh
Ngo Xuan Tuong
Nguyen Quang Hung
Nguyen Quoc Huy
Nguyen Thi Kim Thanh
Nguyen Thi Thu Huong
Nguyen Thi Tuong Vi
Nguyen Thuy Duong
Nguyen Van Duy
Pham Dinh Sac
Pham Hong Thai
Pham Minh Hung
Tong Xuan Tam
Tran Dinh Hien
Tran Thi Binh
Tran Thi Mai Sen
Tran Thi Thu Thuy
Vo Dinh Ba



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