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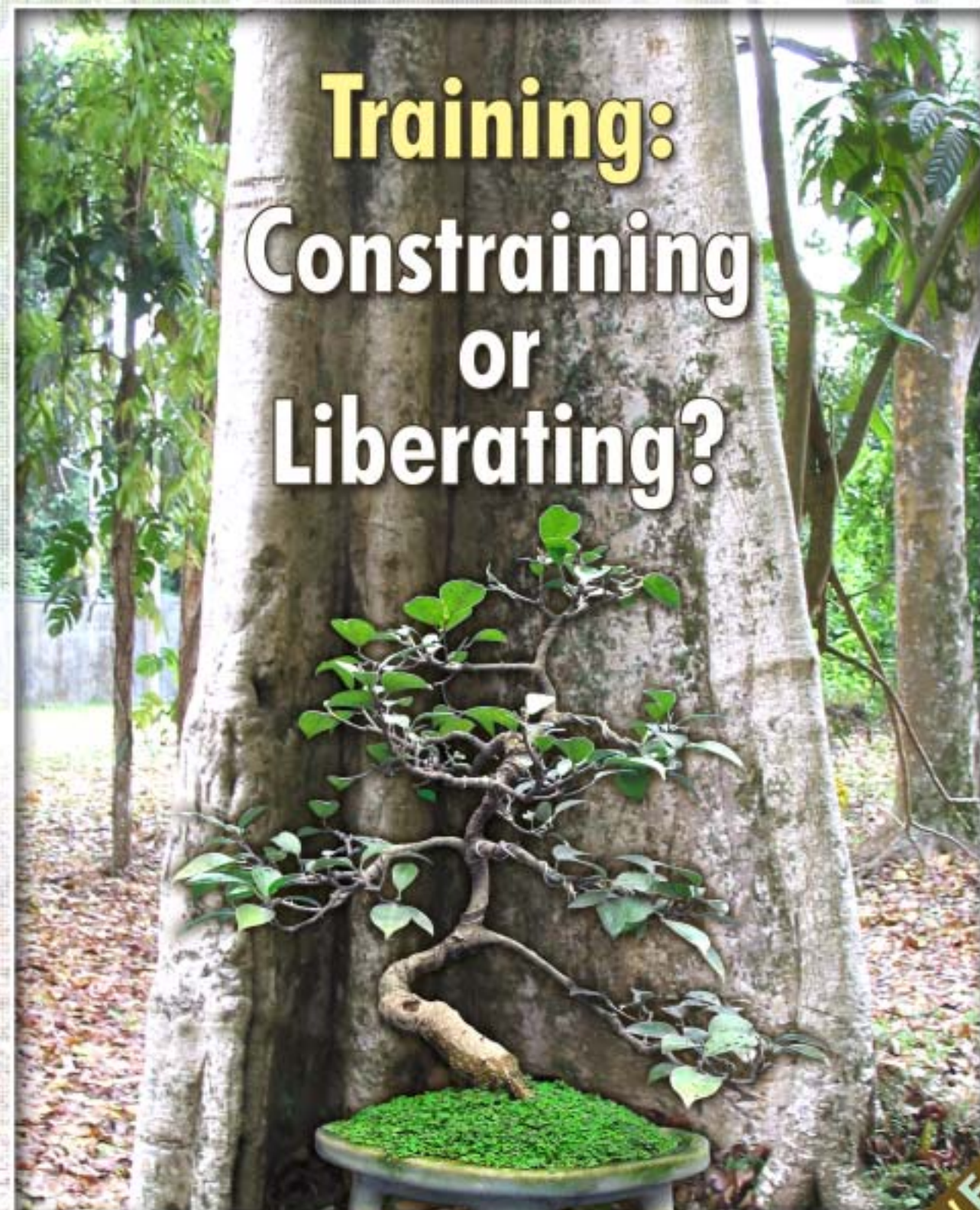
Biodiversity



The newsmagazine of the ASEAN Regional Centre for Biodiversity Conservation
A joint cooperation project between ASEAN and the European Union
and a contribution to the ASEAN Environmental Education Plan, 2000-2005



Training: Constraining or Liberating?



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Plus! Focus
A pull-out section
on rare species



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Readers' Corner



Dear Co-Directors,

Thank you for sending me a copy of ASEAN Biodiversity, January-June 2001 issue. The magazine certainly provides diverse but in-depth information on biodiversity conservation. It will certainly be a valuable reference for our social science course, which includes the study of the environment.

My students at the College of Education found the rare species section exciting. Like most Filipino students, they're visual learners and so enjoyed that and the Profiles section. Perhaps you can add more visuals to "lighten" the articles (such as that by McNeely in the Jan-June 2001 issue).

The list of websites is a big help since it readily provides easy access to more information resources on environment-related issues.

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Dear Co-Directors:

We are interested in receiving ASEAN Biodiversity on a regular basis and would like to propose an exchange agreement between your publication and Tigerpaper (featuring Forest News).

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Dear Co-Directors,

Thanks for your newsmagazine ASEAN Biodiversity (Vol.1, Nos. 1 & 2, 2001) and ARCBC Annual Report to the Public. It is very interesting. I'd like to receive the next issues.

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Call for Papers

Conservation Dividends?

Within donor agencies and among policy-makers the widespread views are that everybody should benefit from biodiversity conservation, that natural resources should be preserved for the present and future generations, that sharing of such benefits should be equitable among stakeholders; and that conservation should involve the active participation of all concerned stakeholders. Whilst it is difficult enough to put such policies into practice with directly derived benefits, it is even harder to take into account the widespread environmental services provided by natural ecosystems. Although these are often immensely valuable, they are frequently overlooked, non-quantified or taken for granted until they get scarcer or poorer hence valuable and more expensive.



Efforts are ongoing worldwide to assess the costs and benefits of biodiversity conservation in order to make conservation pay. A number of ethical and practical questions arise:

- Who bears the costs and who gets the benefits? Are the costs and benefits arising from conservation and/ or environmental services equally shared?
- What revenue-sharing mechanisms are currently in place and how successful have these been in improving local participation in active conservation or in changing attitudes and perceptions? Who defined these mechanisms? Can we draw any lesson from success or failure?
- Would the proper accounting of environmental services help justify compensating poor local people for protecting a resource rather than "harvesting" or depleting it?

These are the topics we would like to raise in the June 2002 issue of ASEAN Biodiversity. Abstracts should be submitted before the end of April and draft final articles by the end of May 2002 in digital (MS Word) format. Articles should have a maximum of 4,500 words or less in length. No formatting is needed except using headings, bold and italics if necessary. Drawings, diagrams and color pictures are welcome either as prints or in digital format. The latter should be scanned at high resolution (300 dpi, 200%) and saved in *.TIF format. Please note that the editors reserve the right to edit and revise submitted articles.

For inquiries and submission of abstract, please contact Giacomo Rambaldi at gambaldi@arcbc.org.ph

Letter from the NBRU of Vietnam

Dear Readers,

I take this opportunity to express my appreciation for this interesting publication which will certainly contribute to the global effort aimed at conserving biodiversity in Southeast Asia.

Last September, Vietnam had its first national roundtable to review the status of its protected area system. The event is the first of a series of workshops and roundtables, which will lead to assessing the current approaches to protected area management in Vietnam and investigate ways to integrate them more effectively with socio-economic development. The findings will be incorporated into a regional report embracing Cambodia, Lao PDR, Thailand and Vietnam. The document will be presented at the World Parks Congress in September 2003. This exercise is undertaken through a partnership of governmental and non-governmental organizations.

We do appreciate the offer to us by ASEAN Biodiversity to share with a wider audience the results of the first round table, thus soliciting reactions and contribution from a wider community.

Considering that this issue focuses on "biodiversity-related training" I would like to take this opportunity to express my satisfaction for the exercise conducted in Pu

Mat National Park, Nghe An province, Vietnam last November. Some 76 members from Thai and Dan Lai and Kinh communities worked jointly with protected area staff, representatives from different Vietnamese institutions, the ASEAN Centre for Biodiversity Conservation, the Social Forestry and Nature Conservation Project (Nghe An) and NGOs to manufacture a scaled relief model covering 700 sq. km of the national park and its buffer zones. The participatory 3-D Modelling process has proven to be extremely efficient in bringing people together and in generating and visualizing community knowledge. We wish that this innovative method be adopted in other protected areas to foster local participation in sustainable natural resource management.



Mr. Tran Lien Phong

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4th Quarter in a Nutshell

December 26 – Bangladesh environment officials announced a ban on the production and use of polythene bags starting January 1, 2002 to protect the environment and promote the use of jute products. Polythene shopping bags threatened to choke the flood-prone country's drainage system, with reports of a layer of polythene on the bed of the Buriganga River in Dhaka. The ban will close small factories making polythene bags, but hundreds hailed the government ban. About 4,000 people may lose their jobs, but thousands of jobs will be created in the jute and other sectors to benefit the country's economy and the environment. Jute exports were once Bangladesh's major foreign exchange earner but the sector has lost out to artificial packaging in recent years.

December 24 – The Brussels-based International Crisis Group (ICG) reported that uncontrolled exploitation of Indonesia's vast natural resources would destroy some of the country's largest forests within a decade. Since the downfall of former President Suharto in 1998, there has been an upsurge in illegal logging, mining and fishing. Large-scale timber felling combined with a lack of respect for local communities also led to conflicts with indigenous peoples. The report recommended that donors should consider linking future loans to curbing resource exploitation. A firmer line taken by the Department of Forestry against illegal loggers and the dedication of some non-government organisations also provide some hope for natural resource conservation in the country.

December 24 – The Wildlife Society of Orissa reported that more than 1,300 endangered sea

turtles have been killed in the past few days as they approached East Indian beaches for their annual nesting season. Every winter, thousands of Olive Ridleys come ashore to lay eggs at three major nesting sites along the coast of Orissa state, one of the world's major nesting grounds. But large numbers of the turtles die after becoming trapped in fishing nets or are slashed to death by the propeller blades of fishing trawlers. Other threats include pollution and poaching.

December 21 – Global Witness (www.globalwitness.org), United Kingdom-based environmental and human rights organisation that has been campaigning against illegal logging in Cambodia since 1995, announced that due to mounting criticism relating to the destruction of Cambodia's forests, Prime Minister Hun Sen has declared the suspension of all logging operations, effective 1 January 2002. Illegal logging has been steadily increasing since late 1999 with the majority of cases being committed by logging concessionaires. Global Witness, which has been working with the government as the independent monitor of the forestry sector, adds that for the suspension to be meaningful, it is imperative that logging companies that have committed serious contractual breach, particularly with regard to illegal logging, should not be allowed to resume activities.

December 17 – Fisheries ministers from European Union member states discussed the proposal of the European Commission (EC) to cut fish catches by up to 58% to save popular fishes from extinction. A dozen species are near the level of collapse compared to only four in 2001. Negotiations will likely result in cuts

lower than that proposed by the EC in a bid to compromise sustainability and ensure a livelihood for the regions' quarter of a million fishermen.

December 14 – Beijing is on a major migration route of many wild birds that are often captured and sold at markets or restaurants, or die due to industrial pollution of waterways and widely used agrochemicals. To care for these animals, the City witnessed the opening of its first specialised rescue and rehabilitation centre for birds of prey, the Beijing Raptor Rescue Center (BRRC), with representatives from the State Forestry Administration, Beijing Forestry Bureau, ornithological experts, members of environment groups and embassy personnel from the United Kingdom and the United States in attendance. The International Fund for Animal Welfare (IFAW) funded the project.



Eurasian Eagle owl being cared for at the Beijing Raptor Rescue Center
(Photo courtesy of IFAW/B.Callahan)

December 14 – The Bazaruto Archipelago, an area characterised by translucent waters, unique coral reefs and rare marine species, was declared a national marine nature reserve by Mozambique. The area supports a variety of migratory seabirds, but their real riches are marine with coral reefs, diverse fisheries and the largest and only viable dugong population left on the East African coast. The Archipelago also supports humpback whales,

dolphins, sawfishes, lobster and marine turtles. Grants from the World Wide Fund for Nature (WWF), the South Africa Nature Foundation and the Endangered Wildlife Trust support park management and efforts to crack down on illegal shark fishing and shark finning.

December 14 – UNESCO declared two World Heritage Sites in Brazil. The first is the Fernando de Noronha and Atol das Rocas archipelagos, which lies more than 160 kilometres off Brazil's Atlantic coast, and offers near-pristine conditions to an exuberant array of marine life, including a large number of rotator dolphins. The second is the protected savannah areas, Chapada dos Veadeiros and the Emas National Parks, in the midwestern state of Goias, which include some of the last untouched remnants of a tropical savannah habitat known as a cerrado. The cerrado covers much of central Brazil, and has one-third of Brazil's plant and animal species. Today, only about 30% of the original cerrado is standing.

December 14 – An Orientation and a Participatory Research, Monitoring and Evaluation Workshop held in Palawan, Philippines jumpstarted preparations for the formation of a local Coastal Resources Management Network (CRMNet). The Workshop brought together 35 participants from non-government organisations, bilateral projects, local government units and the academe to discuss the historical perspective of community-based coastal resource management (CBCRM), ongoing CBCRM efforts, the relevance of the CRMNet, and Participatory Monitoring and Evaluation (PME) concepts and issues. The CBCRM Resource Center and the Palawan Network of NGOs (PNNI), Inc. sponsored the activity.

December 13 – Six new sites have been added to the World Heritage List and extensions were given to three others. The new sites include snow-capped Swiss Alps, Brazilian tropical grasslands in the Cerrado ecoregion, the Caribbean's richest mountain forest in Eastern Cuba, and the forests of the Siberian tiger. There are now 167 sites on the World Heritage List. Information on the World Heritage Convention can be accessed through <http://www.unesco.org/whc/>

December 11 – A global treaty addressing overfishing in the high seas entered into force with the ratification of Malta. Officially known as the "1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea, Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks", the treaty aims to ensure sustainability by setting new, compulsory standards for managing highly migratory and shared fishery resources. Participating countries will cooperate in the collection and exchange of data, and contribute to regional fisheries management organisations. The Fish Stocks Agreement can be read at: http://www.un.org/Depts/los/convention_agreements/convention_overview_fish_stocks.htm

December 11 – Jacques Diouf, Director-General of the Food and Agriculture Organization (FAO), launched the 2002 International Year of Mountains at the United Nations headquarters in New York to increase awareness of the global importance of mountain ecosystems, the challenges faced by mountain people and to stimulate long-term on-the-ground action. Mountains are crucial to all life on earth, providing sources of biodiversity,

minerals, freshwater and forests. More than 3 billion people rely on mountains and account for the poorest sectors of society. Throughout the world, many mountain ecosystems are being degraded by unsustainable forestry and agriculture practices, often a result of poverty, urbanisation and growing population. Information on efforts towards the protection of mountain ecosystems can be obtained at <http://www.mountains2002.org>

December 11 – The United Nations Environment Programme (UNEP) launched the Post-Conflict Assessment Unit, which will conduct environmental assessments in any of the world's many post-conflict zones. Areas of immediate concern include Afghanistan, which has experienced over 20 years of conflict.

December 6 – Environmental management in the Lao People's Democratic Republic will be improved with a US\$20 million loan approved by the Asian Development Bank (ADB) for the Environment and Social Program. The Program will enable the Government to take a proactive approach that integrates environmental and social considerations in all development activities, allowing for more sustainable development. Focus will be on energy and transport, key sectors for economic growth but which also have wide-ranging social and environmental impacts. The Program aims to support the Government's policy reform agenda by strengthening the national frameworks for environmental management; enhancing policy implementation; improving compliance and enforcement; promoting multi-sectoral planning; and establishing sustainable financial mechanisms.

December 6 – More than 300 people will take part in one of the world's largest tiger census operations in eastern India's Sunderbans

delta. India has the largest tiger population in the world. However, the country's population has fallen to 3,500 from about 4,300 just 11 years ago. The last census in 1999 recorded 284 Royal Bengal tigers in the protected mangrove forests of the Sunderbans reserve. Conservationists estimate that the country is losing about 200 to 300 tigers a year due to poaching and development projects.

December 6 – The Kenya Wildlife Service (KWS) announced that poachers have killed four black rhinos in the first attack on the endangered animals in the country's national parks in eight years. Kenya's black rhino population has fallen to about 460 from an estimated 20,000 in 1970, mainly due to poaching. Authorities have managed to control poaching more recently by concentrating the rhinos in smaller areas, making it easier to protect them. In the last two decades, Africa's black rhino numbers have fallen by 90%, and the animals are now only found in reasonable numbers in Kenya, Zambia, Zimbabwe, South Africa, and Namibia.

December 5 – The Government of Vietnam announced its partnership with the IUCN Water and Nature Initiative to establish sustainable water management in the Perfume River. The 80-kilometre river covers 5900 km² and contains the largest lagoon of Vietnam, which supports extensive fisheries. Another major concern is the deforestation and degradation of upstream ecosystems, which have reduced the water retention capacity of mountain slopes and increased the risk of flooding. Intended activities include the establishment of a river management board, development of an integrated management plan, restoration of critical areas in degraded uplands and poverty alleviation through community-based activities.



December 3 – The IUCN-World Conservation Union launched The Red Book: The Extinction Crisis Face to Face, which aims to raise awareness of the spectacular and important species the Earth is rapidly losing. It describes the extinction process, its causes, and the measures needed to reverse it in easily understandable terms. The book was produced by CEMEX, one of the world's largest cement companies, in partnership with IUCN and Agrupación Sierra Madre, a Mexican conservation organization.

December 3 – Mexican environment officials reported that a new study of satellite images suggested that Mexico is losing forest cover almost twice as fast as previously estimated, making it the country with the second-highest deforestation rate in the world. Satellite images taken between 1993 and 2000 show that forest loss averaged about 1.12 million hectares, suggesting that forests could disappear within decades.



An adult female Jaragua lizard from Beata Island, on a U.S. dime
(Photo © S. Blair Hedges)

Scientists estimate that Brazil has the world's highest deforestation rate, followed by Mexico and Indonesia.

December 3 – Scientists announced the **discovery of the world's smallest lizard** on Beata Island, located off the coast of the Dominican Republic. It is the smallest of the Earth's 23,000 species of reptiles, birds and mammals, according to a paper published in the December issue of the "Caribbean Journal of Science." The 0.6 inch-lizard *Jaragua sphaero*, or dwarf gecko, is believed to exist only on Beata Island and nearby areas in the Dominican Republic's Jaragua National Park. It was discovered by Pennsylvania State University evolutionary biologist Blair Hedges and University of Puerto Rico biologist Richard Thomas.

November 28 – More than 300 officials, experts, and activists met in Phnom Penh to hammer out **Asia's agenda for the 2002 World Summit on Sustainable Development** in Johannesburg, South Africa. Home to more than half the world's population and a region of great biodiversity, Asia has the largest land area affected by soil degradation, the greatest depletion of water for agriculture, and air pollution levels eight times those of cities in developed nations. Representatives from the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) stated that Asia faces every conceivable challenge in attaining sustainable development. ESCAP cited six initiatives for the region, which include poverty alleviation, reduction of energy consumption, biodiversity protection, better management of water resources, conservation of the marine environment, increased environmental awareness, and establishment of institutions that can translate goals into action.

November 27 – The **World Wide Fund for Nature (WWF) Philippines launched a primer on the conservation of blue crabs** (*Portunus pelagicus*), which are the 6th most important fishery export of the country. Threats to the blue crab industry include over-harvesting, habitat destruction, inappropriate management, inadequate marine law enforcement, and insufficient policies to enable the sustainable management of the resource. The primer is a result of a project by WWF Philippines to promote the sustainable management of the blue crab fishery of Negros Occidental.

November 27 – The Marine Aquarium Council (www.aquariumcouncil.org) launched an **international certification system to protect coral reefs and ensure the quality of marine organisms in the aquarium trade** at the 2nd International Marine Ornamentals Conference in Orlando, Florida. The certification system will allow consumers to identify certified facilities and organisms by looking for the MAC certification label on store windows and retail aquarium tanks.

November 26 – The United Nations Environment Programme began a **review of the "Global Program of Action for the Protection of the Marine Environment from Land-based Activities"**, a November 1995 agreement by 108 governments and the European Union to protect and preserve the coastal and marine environment. The programme of action calls for preventing or controlling land-based activities that produce sewage, heavy metals, radioactive substances, sediment, and other waste materials harmful to oceans and coastal areas. Factors that cause environmental damage to coasts and seas include poverty, poorly managed social and economic development, and

unsustainable consumption patterns.

November 25 – A team of scientists from the Royal Botanic Gardens, Kew, UK; the Vietnamese Institute of Terrestrial Ecology in Hanoi; the Komarov Botanical Institute in St Petersburg, Russia; and the Missouri Botanical Garden discovered a **new conifer in the forests of northern Vietnam**. The tree, a new species in a new genus, has been named the Golden Vietnamese cypress, and is said to be the missing link between true and false cypresses. Although the tree is new to science, it is already critically endangered, and only a few individuals exist. The new cypress is a small tree with unusual foliage - the mature trees carry both needle leaves and a scale-like form, which are usually found only in juvenile individuals.

November 23 – The World Wide Fund for Nature (WWF) announced that the **United Kingdom has become the first country to certify its entire state forests area under the effective management processes of the Forest Stewardship Council (FSC)**. Launched in 1993, the FSC is the leading forest certification scheme with close to 25 million hectares certified worldwide. The UK's achievement has been recognized by WWF as a Gift to the Earth from the Forestry Commission and Forest Enterprise, which have been instrumental in promoting certification in the UK.

November 16 – The **number of marine animals found beached around the United Kingdom's coastline in 2001 is the highest since 1913**. Last year, 421 marine animals were stranded around Britain, including 45 whales, 120 dolphins and 197 porpoises. By August, the number had already exceeded that figure. Strandings are largely



attributed to sickness, disorientation, extreme weather and injury. Factory ships involved in winter "pair fishing" (where giant nets are strung between two ships) are blamed for a growing number of dolphin deaths. Efforts to decrease sea mammal deaths include wildlife trusts as well as a Wildlife Conservation Bill that aims to give marine wildlife the same protection as land-based creatures.

November 14 – Experts gathered in Vologda, Russia at an IUCN World Commission on Protected Areas (WCPA) meeting to evaluate the performance of the **Russian North National Park**, which was selected to **test the new WCPA framework to assess the management effectiveness of protected areas**. The methodology examines the performance of a protected area taking into account its biological and social significance, threats and stresses, management systems and processes and the extent to which objectives have been achieved. The Russian park became the test case because, out of Russia's 14 protected areas, only 30% has been able to meet statutory objectives. The assessment will allow Russian protected area managers to determine measures to ensure the efficiency of protected area management.

November 14 – A report by the National Network Against the Trafficking of Wild Animals (RENCTAS) estimated that **smugglers steal an estimated 38 million animals from Brazil's forests each year**, earning traffickers about \$1 billion a year and causing untold losses to Brazil's natural habitat. The report

combines all data on animal trafficking in Brazil and detailed maps of traffickers' routes.

November 13 – The World Conservation Union (IUCN) has approved a **new strategy to ensure that future dams are planned, constructed, and operated in consultation with all stakeholders** to avoid environmental damage. The strategy is based on a comprehensive report of the World Commission on Dams (WCD). The report is the result of a thorough review of large dams and their impact on the environment, including the extinction of



many fish and other aquatic species, and huge losses of forest, wetland,

and farmland. Dams reduce water flow of river systems and change the landscape, thus affecting ecosystem species. Impacts upon people forced from their homes and lands include extreme economic hardship and community disintegration. Indigenous, tribal, and peasant communities have been particularly hard hit, since dams cause the loss of natural resources upon which their livelihoods depend.

November 9 – Chilean and Argentine conservationists are preparing to **release eight baby condors raised in captivity** in an attempt to keep the legendary bird from dying out. Andean civilizations called the birds "the spirit of the Andes," believing the winged giants to be an intermediary between earthly souls and God. The condor population, which once flourished in the Andean mountains, was gradually devastated after farmers started killing them off, thinking that they were a threat to livestock. In reality, condors, like

vultures, eat only carrion.

November 8 – **The Prime Minister of Vietnam signed Decision 174 confirming the conversion of the Pu Mat Nature Reserve to the Pu Mat National Park.** The park with a total area of 93,400 ha, is situated in western Nghe An Province on the border with Lao PDR. The area harbours one of the best remaining examples of the Annamite mountains ecosystems, and is of international conservation significance. 1,144 plant species have been identified of which at least three are new to science. Pu Mat is one of the most important sites for mammal conservation in Vietnam and the presence of three mammal species endemic to Indochina has been confirmed. A total of 295 bird species has been recorded, including 22 globally threatened or globally near-threatened species. With the support of the EC/GoV funded Social Forestry and Nature Conservation Project, the threats to biodiversity at Pu Mat are currently being addressed through the strengthening of the park management authority and improved enforcement of park regulations, supported by the development of alternative, sustainable, sources of income for communities in the buffer zone.

November 8 – The United Nations University in collaboration with the International Plant Genetic Resources Institute and the Secretariat of the Convention on Biological Diversity (CBD) recently held an **"International Symposium on Managing Biodiversity in Agricultural Ecosystems"** in Montreal, Canada from 8 – 10 November, 2001. The symposium discussed on-farm management of biodiversity and their relation with farmers' livelihoods, shared experiences in profitable management practices, and promoted the implementation of the CBD Programme of

Work on Agricultural Biodiversity. For more information, check www.unu.edu/env/plec/

November 6 – ICLARM – The World Fish Center held a **"Workshop on Mangrove Systems of South-east Asia: Diversity and Variable Contribution to Coastal Zone Fisheries"** from 6 – 8 November in Penang, Malaysia. The objective of the workshop was to characterize the diversity of mangrove systems in Southeast Asian countries to determine the variability of their role vis-à-vis coastal fishery resources. It also aimed to make an inventory of mangrove systems existing in each Southeast Asian country, as well as define relationships between mangrove systems and aquatic resources.

November 5 – The United Nations **Food and Agriculture Organization (FAO) approved the framework for the "International Convention on Plant Genetic Resources"**, which aims to ensure that plant genetic resources can be preserved and made available for research and plant breeding. The International Plant Genetic Resources Institute (IPGRI) estimates that more than 15 million hectares of tropical forest each year are destroyed, and eight percent of plant species run the risk of extinction in the next 25 years. The framework may provide the means to save the world's crops.

November 2 – **A planned highway linking the north and south of Vietnam, has been described as the biggest long-term threat to biodiversity in the country.** The highway will cut through the Vu Quang nature reserve and the country's oldest national park, Cuc Phuong. Vu Quang is in a narrow belt that runs along the north of the country's border with Laos, and is perhaps the largest remaining block of contiguous pristine habitat in

northern Indochina with dense jungle home to endangered snakes, tigers, leopards, bears, elephants, and guar - a large wild ox. Scientists have described the reserve as a "lost world seemingly untouched by the war," and possibly teeming with new plant and animal species. Cuc Phuong lies just south of Hanoi and is a global centre for plant diversity, as well as being a refuge for Delacour's leaf monkey, a critically endangered primate, the grey-headed fish eagle, elephants and the Indo-Chinese tiger. Government officials argue that the new highway will create thousands of jobs, and help resolve "problems" of unused land. Moreover, it will promote economic development across the provinces it passes through, as well as opening trade with Laos, Thailand and Cambodia.

November 1 - Malaysia's Primary Industries Minister Lim Keng Yaik said his country would reject all logs from Indonesia in a move to help the neighbouring country in its struggle against timber smuggling. Indonesia's tropical forests are the world's largest outside Brazil, but they are under serious threat by rampant illegal logging, as well as forest fires. Bowing to international pressure, Indonesia banned log exports in October to protect its dwindling tropical forests.

November 1 – **Australia has listed the whale shark as nationally threatened** under the Environment Protection and Biodiversity and Conservation Act. The whale shark can grow up to 18 meters (58 feet) long and weigh more than 20 metric tons. It reaches sexual maturity at around 30 years of age, when it is about nine meters (29 feet) long. Prior to the mid-1980s, there were only 350 confirmed reports of whale sharks worldwide. Even now, only one pregnant whale shark has



Whale shark in the Eastern Tropical Pacific

(Photo courtesy of U.S. National Oceanic and Atmospheric Administration)

ever been recorded and it is not known where they breed.

November 1 - Conservationists warn that lions could disappear from West and Central Africa in the next decade

because their populations are fragmented and too small to survive. According to 1996 estimates by the International Union for the Conservation of Nature (IUCN), there are between 30,000 and 100,000 lions throughout Africa. A new IUCN report conducted by the African Lion Working Group states that present numbers are probably closer to 10,000-30,000. The report, which will be published on www.african-lion.org, calls for the establishment of a database on lion populations in West and Central Africa. The lion experts are also planning to prepare a lion management handbook and a scheme for the long-term conservation and monitoring of the lions of West and Central Africa.

October 30 – Environmentalists led by the Green Belt Movement are protesting a move by the government of Kenya to cut down 10% of the country's forest cover fearing that large-scale cutting of the forests will affect essential water catchments, agricultural and fisheries activities, and cause biodiversity loss.



Kenya's Great Rift Valley

(Photo courtesy of Kenyaweb.com)

October 26 – The **Hundred Islands National Park in the Philippines was declared a geological monument** by the Department of Environment and Natural Resources (DENR), the Philippine Tourism Authority (PTA) and the National Committee on Geological Sciences (NCGS). Two million years ago, the Hundred Islands were a cluster of corals submerged under the sea, which later consolidated into layers of limestone. As water levels decreased, the limestone hills were exposed, and its natural beauty made the Hundred Islands one of the most popular tourist destinations in the country. The declaration of national monuments highlights the need to protect and preserve geological structures with high scientific or aesthetic value and promotes public awareness for geology. There are now five geological monuments in the country, including Taal Volcano, Montalban Caves, Chocolate Hills in Bohol and the Sand Dunes in Ilocos Norte.

October 26 – Philippine President Gloria Macapagal Arroyo presented the **Manila Bay Comprehensive Coastal Strategy**, which aims to rehabilitate Manila Bay's ecosystem. Manila Bay's environment has degraded considerably due to pollution from manufacturing, mining, petroleum, chemical, shipping and commercial sectors that threaten the health and livelihood of 23 million Filipinos who are dependent on the Bay's resources for employment and sustenance. The Strategy emphasizes functional partnerships among various stakeholders, including government agencies, coastal and non-coastal provinces, industries, private sector and civil society. The strategy will be implemented by the Manila Bay Environmental Management Project (MBEMP), through the Department of Environment and Natural Resources (DENR), under the Global Environment Facility/

United Nations Development Programme/International Marinelife Organization (GEF/UNDP/IMO) Regional Programming on Partnership in Environmental Management for the Seas of East Asia (PEMSEA).

October 16 – Vietnam announced that an **additional 89,937 hectares of concentrated forest, mainly protective and special use forests, were planted by the end of September** as part of the national programme to plant five million hectares of forests. Since 1998, nearly 100 million scattered trees had been planted, including tens of millions of fruit trees. Aside from active implementation of the afforestation plan, local communities have also taken measures to protect forests effectively. Thousands of violations have been reported, such as illegal timber exploitation and trafficking, and the poaching of protected animals.

October 11 – An IUCN-The World Conservation Union "Wellbeing of Nations' report concludes that 37 countries are close to striking a good balance between a healthy population and a healthy environment. The report is a survey that ranks 180 countries by measuring human development and environmental conservation. It shows that all countries enjoying high standards of living are placing undue pressure on the environment. The best performing country is Sweden, even though the report considers it an "ecosystem deficit" country: it obtains an advanced standard of living through environmental damage. Germany ranks 13th, Australia 18th, Japan 24th and the United States 27th. In more than 140 nations, ecosystem stress is higher than human wellbeing - evidence that most people's efforts to improve their lot are inefficient and overexploit the environment. The report stresses that all countries need to recommit themselves

to sustainable development and find practical ways to combine human development with the protection of ecosystems. The report was published by the International Development Research Centre (IDRC) in cooperation with IUCN, International Institute for Environment and Development, Food and Agriculture Organization and UNEP World Conservation Monitoring Centre.

October 8 – Praphat Panyachatrak, Deputy Agriculture Minister of Thailand, announced in a meeting with representatives from the Northern Farmer Network and the Northern Community Forest Network that the government would start an **eight-billion-baht reforestation scheme in 2002**. He stated that the Royal Forestry Department would ask local communities to participate in the project and provide advice on the forest rehabilitation.

October 8 – A \$6 million rehabilitation effort funded by the United Nations Development Programme (UNDP) and the Global Environment Facility (GEF), has paved the way for the **ecological recovery of the overexploited Azraq oasis in Jordan's eastern desert**. The Royal Society for the Conservation of Nature (RSCN), an NGO devoted to the protection of nature in Jordan, announced that over 160 bird species have returned to the wetlands. The project has also enabled the creation of new jobs ranging from reserve management staff, rangers, ecologists, community liaison officers, to arts and craft workshop managers, which will hopefully ensure the support of local community members in the conservation effort. The area was designated a Ramsar Wetland of International Importance in 1977. But in 1980 the Amman Water Authority began pumping water to the city of Amman from the springs at Azraq. The springs dried up completely by 1991, and by 1993, fires burned across

the parched landscape. Now water is being pumped back to the oasis, providing habitats for water buffaloes, blue-necked ostriches, Nubian ibexes, dozens of varieties of dragonflies, and the re-introduction of the killifish, a fish species found nowhere else in the world.

October 5 – The International Maritime Organization (IMO) announced the ratification of the “International Convention on the Control of Harmful Anti-fouling Systems on Ships”, which bans the use of TBT (tributyltin) and other toxic organotins in ship paints. The chemicals prevent algae and other marine organisms from attaching themselves to vessels’ hulls, but have been found to leach from the paint and impair the immune system of marine organisms. They are also responsible for the disruption of the endocrine system of marine shellfish leading to the development of male sex characteristics in female marine snails. Once in the marine environment, TBT can travel far from the source of contamination and has been found in the tissues of cetaceans, seals, sea otters and water birds around the world. The treaty will be enforced starting January 1, 2003 and by 2008, organotin paint will have to be removed or securely sealed on all vessels.

October 3 – In Vietnam, the Prime Minister assigned the Ministry of Finance and other concerned agencies in relevant provinces to mobilise capital for an environmental project to

protect and develop areas surrounding the **Cau River**, which flows through six northern provinces: Bac Can, Thai Nguyen, Bac Ninh, Bac Giang, Thai Binh and Hung Yen. The River, which is the biggest in the Upper Thai Binh sub-basin, is seriously polluted due to industrial activities in and around the city of Thai Nguyen.

October 4 – South Africa launched the largest elephant relocation programme when it began a planned three-year transfer of 1,000 of the animals from Kruger National Park to Mozambique. The project was launched by South African President Nelson Mandela, who opened the gate on the border between the two countries, which sent the first batch of 40 elephants to Mozambique. The elephants will be relocated to the planned 35,000 km² Gaza-Kruger-Gonarezhou (GKG) trans-frontier park, which is slated to open over the next year or so. The park is so named because it includes Kruger and Zimbabwe’s Gonarezhou Park.

October 3 – China’s plans to develop the **Mekong River**, a major source of food and livelihood for 60 million people in Southeast Asia, are raising fears in the other five countries that share the **Mekong**: Vietnam, Thailand, Laos, Cambodia, and Myanmar. Construction of China’s 30-storey Dachashan dam, the second of eight planned hydroelectric dams, is expected to be completed in December. Critics warn that China is ignoring potentially disas-

trous effects on farms and fisheries in neighbouring countries. The dams will block migration routes of rare species, such as the giant freshwater catfish, as well as slow the river’s flow, which would raise water temperatures and possibly wipe out native fish species.

October 3 – Scientists from the Integrated Atmospheric Deposition Network (IADN) announced that the **Great Lakes**, which straddle Canada and the United States and hold 20% of the world’s fresh water, are cleansing themselves of pollutants. Tests since 1992 show that significant quantities of polychlorinated biphenyls (PCBs), and pesticides are being released into the atmosphere by the five Great Lakes — Erie, Superior, Ontario, Michigan and Huron. The project tracks some 20 atmospheric pollutants through IADN stations at each of the lakes, which are linked to a series of satellites. Since Canada and the United States began regulating the use of certain chemicals, levels in the atmosphere started dropping and the lakes then began their own process of cleansing — at twice the rate they took in. The same tests will be used to determine if the phenomenon is also occurring in the Arctic Ocean.

October 1 – A \$48,000 grant from the U.S. Fish and Wildlife Service to the **Asian Elephant Project**, initiated by the International Fund for Animal Welfare (IFAW), in Simao, China’s Yunnan Province, has



Only male Asian elephants carry the ivory tusks prized by poachers (Photo courtesy of U.S. Fish and Wildlife Service)

strengthened efforts to ease conflicts between humans and wildlife in the country. The grant coincides with a new five-year ban on hunting elephants, issued by the Simao Prefecture government. Asian elephants enjoy first class protection under the Wildlife Protection Law of China. The Simao area, located southwest of Yunnan province, has historically been an Asian elephant habitat. Since 1992, though, destruction of their natural habitats caused wild elephants to frequent villages in Simao, where they have destroyed crops, houses and injured people. The escalating conflict threatened the lives of about 20 of only 250 elephants in the country. To address the issue, IFAW initiated the Asian Elephant Project, which develops community economic programs to ease financial pressures caused by elephant activities. The project encourages local farmers to actively seek alternative farming and to reduce agricultural activities in the forest. ■

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Editorial

Training: Constraining or Liberating?

► By MIKE APPLETON

Conserving the rich biodiversity of the countries of ASEAN is an imposing challenge, requiring political commitment, adequate resources, widespread awareness, and innovative approaches to reconciling the needs of nature with those of people. It also requires a knowledgeable, skilled and committed workforce and training is generally seen as the major means of reaching this goal; few conservation plans and projects do not involve a training component.

In cultures where education has traditionally been a didactic process and where training programmes have often been designed and delivered by outsiders, training has often been a one-way process of 'show and tell'. However, as the value of participatory approaches becomes more widely recognised, both training providers and beneficiaries are approaching the design and delivery of programmes in a more open and responsive way. This is especially important for protected area staff, who cannot be simply trained to carry out repetitive and predictable tasks, but must be able to adapt and respond to ever-changing circumstances. What then should be the balance between 'constraining' trainees to fit pre-determined training needs, and releasing their potential to increase their skills and knowledge in other ways and to adapt what they have learned to local circumstances and new situations?

Contributions to this issue of ASEAN Biodiversity reflect on the experiences of training in ASEAN. Importantly, they consider the lessons learned from many years of training in the region and highlight many important issues:



- Identifying training needs, priorities and standards should not just be left to outside experts. Beneficiaries, employers and even communities can and should be involved in determining training needs and the content of training programmes.
- Attendance at a training course does not automatically improve performance and effectiveness. Trainee selection and individual motivation are crucial to the success of training; care should be taken to select participants who will be in a position to make the best use of the training.
- Training techniques should be appropriate both to the learning objectives and the culture and experience of the trainees. There is a role for all approaches, from formal classroom learning to on-the-job training, and trainers should identify the mechanism best suited to the training objectives.
- Training should not be seen as an afterthought or 'add-on' to management or research projects, but as a specialism in itself to which dedicated time and resources

should be allocated. The quality and impact of the training is significantly related to the skill and experience of the trainers and to the existence of a clear training strategy or plan.

- Training should be sustainable. Building staff capacity in a sustainable way is a long-term commitment and requires an investment of time, support and evaluation far beyond the time period of any individual training course or donor-aided project. The development of a set of widely recognised occupational standards for conservation could increase the quality and consistency of training programmes. It could also increase the profile of conservation management as a distinct and important occupation, providing encouragement to both employers and staff, present and future.

Training for biodiversity should not be viewed as just an activity; training courses are not just events to be attended; training is not a mechanistic process that simply 'stamps' new skills into a production line of trainees. Releasing the potential of individuals to carry out often difficult and complex work with limited resources requires sponsors, providers and employers to invest not just in fixed term courses or one-off workshops but in developing a 'learning environment' where there is a clear framework for personal development and where individuals are continually encouraged and supported to develop, use and share new skills, knowledge and understanding. ■

Mike Appleton is the Training Advisor at ARCBC and the Guest Editor of this issue.



Photo courtesy of National Integrated Protected Areas Programme (NIPAP)

PROTECTED AREAS TRAINING NEEDS:

Lessons from the Philippines

► By **PATRICK M. ROGERS & FRANCIA F.D. BUENO**

Introduction

The conversion of natural forest cover is a major contributor to the global loss of biodiversity and all deriving environmental problems.

Forest cover in the world has diminished alarmingly over the past century and Southeast Asia (SEA) is no exception. Historically, some 99.9% of the land in SEA was covered in forests, which have been disappearing quite rapidly. In the late 80s, loss accounted for 45% of the original cover and by the mid 90s,

it reached nearly 65%. This trend has been variable, ranging from 33% in Cambodia to over 90% in the Philippines (MacKinnon 1997).

Protected areas are the way forward in the struggle against biodiversity loss. As a reaction to rapid forest depletion, there has been an equally dramatic increase in the global coverage of terrestrial protected areas, which by the 1990s covered over 8% of the world's land area (Green & Paine 1997). That increase was also evident in SEA where the number of protected areas increased from 100 covering something over 11 million ha in 1980 to 476 covering over 51.3 million ha by 1996, (Fig. 1), which is around 12% of the total land in the region, 50% above the world figure.

The effectiveness of protected areas depends on a number of factors, such as adequate funding, political will and, fundamentally, the availability of trained staff.

The status of training and training facilities in SEA plays a major role in conservation efforts. This paper intends to make a preliminary assessment of how well existing training facilities fit current and future needs for staffing protected areas in the Philippines and to draw wider conclusions from this for the whole region.

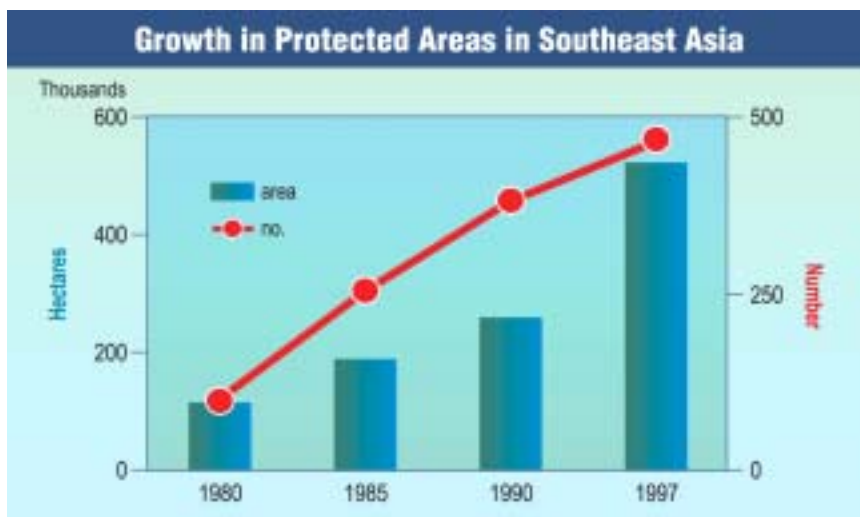


Figure 1

Staff in Philippines protected areas

An assessment of the staffing of protected areas in the Philippines (Table 1) provides some ideas of what training would complement environmental protection efforts. Budget limitations not only reduce the capability to hire adequate human resources to manage 209 protected areas (as initial components, per PAWB records), it also diminishes the opportunity to set other requirements in place to ensure effective protection. Funding is also not evenly distributed among protected areas, resulting in some being well managed, and others often existing only on paper. Staff shortages, chronic under-

funding, land-use conflicts and other factors prevent conservation efforts from becoming successful.

Aside from sheer numbers, staff's qualifications and training in conservation and protected area management are equally important. The protected area superintendent (PASu), as the linchpin of the protected area, should be armed with the qualities necessary to manage both human and natural resources. An academic background in natural resource management would certainly be an asset, although this is usually not required of all PASus. Out of 167 PASus in the Philippines (PAWB, 2001), a sample of 23 reveals varied academic back-

grounds (Table 2), some appropriate, some less so. While a number of those sampled are equipped with degrees in administration, management or the environment, some appear – from an academic point of view - less suited for their role as PASu. More than half have degrees either in Public Administration, Management or environment-related courses such as Environmental Science, Forestry or Agriculture. On the other hand, educational backgrounds of others are either unsuitable (such as engineering or criminology) or unknown.

Training in administration is certainly relevant, and has played a significant role in improving the quality of management of some Philippine protected areas. Conversely, a biological background without any management experience may lead to good ideas but poor implementation. A number of other factors also affect the deployment of protected area superintendents in the Philippines. Lack of adequate compensation, poor administrative and financial support and the remoteness of protected areas are often disincentives to more qualified and trained resources.

The staffing details of two sites in the Philippines provide a sharp contrast in terms of educational qualifications. Both are relatively privileged areas (Table 3), receiving more than the average number of personnel from their parent agency.

The PASu of Mt. Malindang National Park (MMNP) who has an MSc in Public Administration has proven to be an effective manager. The remaining personnel have varied backgrounds; though some have received training in environmental protection, more is required to ensure that conservation needs are addressed.

Most of the staff of St. Paul Subterranean River National Park (SPSRNP) are not permanent or regular employees, mainly because

Table 1. Protected area staffing and budget in the Philippines

Protected Area Coverage Including terrestrial and marine components (Km ²)	Total Staff	Field Staff	Total Staff /1000Km ²	Field Staff /1000Km ²	Budget (US\$/Km ²)
52,765	1,246	733	24	14	63

Source: PAWB 2002

Table 2. Qualifications of 28 Philippines Protected Areas Superintendents, 2000

Course	Bachelor's Degree	Master's Degree
Environment (Agriculture, Forestry)	7	2
Others (Engineering, Criminology)	5	0
Unknown	5	0
Veterinary Medicine	1	0
Administration/Management	0	8
Total	18	10

Source: DENR 2001

Table 3. Educational Attainment of Staff of Mt. Malindang National Park (2000) and St. Paul Subterranean River National Park (1998)

	College	Vocational (2-3 yrs)	High School	Elementary	Totals MMNP	Totals SPSRNP
Park Superintendents	1 Biology 1 Public Admin. (MS) + Forestry				1	1
Assistant Superintendent	Forestry				1	
Assistant Superintendent		1 Radio operator 2 Forest ranger 1 Criminology 1 Public Admin. (MS) + Accounting 1 Commerce 1 Forestry	12 (of which 6 entered college but did not complete)	1	11	9
Visitor Management		1 Marine engineering	8	5		14
Information and Community Organization	1 Agriculture 1 History	1 Fisheries 1 Forest ranger				4
Research	2 Biology		2			4
Maintenance		2 unspecified	5	1		8
City Liaison Office	2 Business admin. 1 Education 1 Economics	1 Secretary 1 Forest ranger 1 Radio operator	3			10
Totals	11	15	30	7	13	50

they have not taken the civil service examination, a requirement that makes a person eligible for a position in government. Their numbers are adequate but their educational and training background are not. Until recently the supervisor was a biologist who had inadequate management skills and experience and could not count on insufficiently trained staff. No staff member has completed a college degree, and 11 have had vocational training, which is not a proper basis for protected area management. For some individuals, good motivation and long experience have made up for the lack of training. Overall, the park would benefit greatly from a coherent training programme spread over two or three years.

To improve capacity in protected area management, it is common in the Philippines for staff to attend various short-term training sessions, often as part of externally supported initiatives. The scope of these activities covers a number of relevant topics, but the duration is short (average about 4 days), their frequency is erratic and generally not part of a long-term training strategy and plan.

As detailed in **Table 4**, in the SPSRNP, there were 34 training delivered over a six-year period (averaging less than six per year), little more than half of which were on topics directly related to protected area management, such as biology and conservation of marine mammals; buffer zone development; wildlife inventory; and mapping and use of Geographic Information Systems.

Other programmes focused on information dissemination and education (science and art of teaching; preparation of educational materials on protected areas), staff development (training on working for excellence; moral values) and administrative functions (clerical/secretarial development course; financial and administrative system).

Table 4. Short-Term training courses attended by St. Paul Subterranean National Park Staff, 1992-98 (PAMB 1999)

Course	Number of Training	Average Length of Training (Days)	Average No. of Attendees
Protected Area Management	18	3.8	8
Information, Education and Communication (IEC)	7	2.8	4.6
Staff Development	5	7.4	14.4
Administrative	4	4.2	2
Total	34	4.5	7.25

Source: PAMB 1999

Table 5. Threats and constraints to protected areas

Immediate Direct Threats	Underlying Causes of Threats	Constraints
Encroachment by human settlements	International debt and the flow of resources from poor to rich	Lack of financial resources
Agriculture and overgrazing	Pressure for trade & development	Lack of staff and training
Forestry operations	Land tenure	Inadequate institutional capacity
Mining & fossil fuel extraction	Population	Lack of policy/legislative support
Bush meat hunting	Social relations	Lack of communication with local residents
Collection of exotic species for sale	Corruption	Residents not involved in management planning
Fire	Inequality	Lack of coordination among managing organisations
Pollution and climate change	Lack of capacity	Poor legal framework and lack of enforcement tools
Invasive species	Lack of education	Absence of comprehensive land-use plans
War	War and conflict	Poor definition of protected area boundaries
Tourism & recreational pressure		

Source: Stolton, S & N Dudley 1999

Training and the role of Protected Area staff

Although these two cases demonstrate the need for more intensive training, it does not automatically follow that the areas mentioned lack dedicated and competent staff. But where should training efforts be focused? A basic requirement for the staff is that they must be trained to respond to threats to protected areas. A recent global analysis (Stolton & Dudley, 1999) lists 11 key external direct threats, their underlying causes, as well as the many constraints that lead to ineffective protection (**Table 5**).

Generally, managers are tasked not only with countering these threats but also in dealing with the constraints. Dealing with the former demands a wide range of skills and knowledge, from land survey through wildlife population dynamics, to sociology and public health (**Table 6**).

An effective means for counter-

ing threats to protected areas is a clearly defined and appropriate management plan that should encapsulate the staff's responsibilities and define the training needs. Unfortunately, more often than not, the plan is inadequate, ignored or non-existent. In the Philippines, a standard format for Protected Area (PA) management plans has been developed, based on a commonly accepted pattern – Introduction, Description, Prescription (Rogers 2000). The plan emphasises the prescription, which is divided into a number of programmes dealing with threats to the protected area, such as boundary disputes, zoning, illegal activities, tourism, and visitor management.

Two programmes within the management plan deal with constraints rather than with threats. The first concerns the PA as an institution and the second, financial sustainability. Both programmes, particularly the second, are often

considered to be the responsibility of politicians or more senior civil service administrators rather than that of the staff. It is the former, after all, who assigns budgets, approves boundaries and so on, not the PA staff whose role is simply seen as being to implement the decisions. To address this, PA managers need skills in business administration – financial planning and control, accounting, personnel management, training, as well as professional fund-raising.

The training requirements will also depend both on why the park was established and what it is to be protected against. In some parks, there will be great emphasis on anti-poaching activities, whether of animals or of timber, or theft of other materials such as artefacts and genetic resources, and in others on

local community involvement. The trend is towards the latter, and away from repressive police-style management. Park administration is no longer confined to just “game” (wildlife populations) management and the control of illegal activities in remote areas. It has instead become a complex and demanding multidisciplinary exercise where, in most cases, it is “what one is protecting against” rather than “what one is protecting”, which determines the training need.

The size of the PA may provide additional challenges to PASus. Mt. Malindang National Park for example, has 34,000 hectares spread over three provinces in two different regions, and has a million stakeholders dependent on its natural resources. As a result, the PASu must

deal with two regional directors, three governors as well as the mayors of 30 municipalities. He exercises governance of land-use for thousands of hectares with a resident population of around 20,000 people. Such a huge responsibility is unfairly placed on a middle-ranking forester, a common situation in the Philippines. The skills required range from field research on wildlife, building maintenance or air-photo-interpretation, through business management including accounting, personnel supervision and development, finance and marketing, to the most important – public relations, which means understanding and working with local communities, and developing political support at all levels.

In general, for a fundamental understanding of what s/he is trying to protect, a PA manager must possess the following:

- Professional background in an appropriate subject;
- Management skills (senior level);
- Competent knowledge of protected areas’ subjects;
- Well developed technical capability; and
- Capacity to deal with different stakeholders.

The manager, no more than a manager of any other organisation, cannot be expected to be proficient in all concerns of the protected area. But he must have some general knowledge to make the right decisions. At the same time, the rest of the protected area staff must have the individual technical and specialist skills to run and implement the management plan.

The training requirements exist therefore at many levels. Senior managers should have a postgraduate qualification, and middle managers, an appropriate diploma or course certificate. At the lower levels, there will be a huge requirement for rangers’ skills development to cover a variety of tasks. A significant number of full-time protected area per-

Table 6. The range of subject matters in Protected Area Management

Conflicts and Threats		
Task	Requirements	Examples of skills/training required
Boundary identification and demarcation	Precise knowledge of boundary location Knowledge of critical PA elements May require negotiation	Land survey Air-photo & satellite image interpretation Law (local & national)
Zoning	Construction & maintenance of boundary markers Local resource requirements (firewood, food, grazing, etc.) Traditional/cultural practices Critical habitats Endangered species distributions Critical/endangered landscapes	Negotiation skills at all levels (village to national) Anthropology Sociology Rural economics Land-use planning Agricultural techniques Ecology
Enforcement	Knowledge of what is going on in the PA Public communication Field enforcement	Investigational skills Paramilitary or military techniques Law & arrest Negotiation with locals
Ecosystems management, research & monitoring	Known pattern of animal and plant distribution their ecological relationships and requirements	Community (plant) ecology Population dynamics Wildlife investigation techniques
Local community research, development & monitoring	All local community parameters	Rural economics Health and sanitation Human population dynamics and census Educational development Public awareness
Tourism & visitor management	Visitor requirements and pressures	Market development & advertising Business development and management Tourism product development Visitor control techniques
Regional integration	Development threats and opportunities	High-level intelligence gathering High-level negotiating skills
Constraints		
Institutional development	Staff capable of implementing programmes	Business administration Accounting Personnel management & development Training programme development & implementation Building maintenance & management
Financial sustainability	Money	Fund-raising Political support development High-level awareness programming

sonnel is not a requirement since there are a number of ways for meeting the manpower needs. But in all cases competencies must be enhanced, for which on-site training may be more appropriate. Trainers must also be developed to ensure that skills are passed on to the staff.

The discussion illustrates that a solid and appropriate background is needed for PA management, similar to that required of engineers or doctors. A protected area manager's task is no less demanding, and his or her training should match the rigours of administering protected areas.

Existing training facilities

The forestry sector is the most consistent source of protected area managers in the Philippines. This discipline has many aspects that are valuable for PA management but suffers from the fact that it used to focus on production. Forestry has come a long way in recent years with the introduction of social and community forestry, and an increased awareness of the value of forest diversity. However, that does not change its main purpose, which is to manage forests to produce a supply of timber, albeit within the concept of sustained yield. The United Nations Food and Agriculture Organisation (FAO) lists some 38 forestry-teaching institutions in SE Asia (FAO 1995, 2001) (Table 7). Some relevant SE Asian institutions, however, are not on FAO's database.

A review of the amount of teaching effort provided by each institution into various subjects demonstrates the commitment of forestry teaching to production (Table 8).

Some subjects have titles that may belie their content. Environmental conservation, for example is usually strongly orientated towards conservation of "useful" species. Less than one in three institutions includes watershed management as a subject, and less than a fifth includes wildlife (FAO 2001). More revealing is a rough calculation, which

Table 7. Number of Forestry Research, Education & Training Establishments in Southeast Asian Countries as listed by FAO

	Research Organisations	Education and Training Institutions	Research and Education/Training
Brunei	1	0	0
Cambodia	0	0	0
Indonesia	2	9	3
Laos	1	0	0
Malaysia	5	4	1
Myanmar	0	2	0
Philippines	7	12	6
Singapore	0	0	0
Thailand	6	0	1
Vietnam	1	0	0
SE Asia	23	27	11

Source: FAO 1995, 2001

Table 8. Proportion of teaching effort devoted to subjects in Forestry Training Institutions in Southeast Asia

Subject	Teaching Effort (%) [*]	Institutions teaching subject	
		Number	Proportion (%)
Forest management	9.9	29	78
Wood technology	9.0	23	62
Environmental conservation	8.8	21	57
Silviculture	8.0	23	62
Social forestry	6.9	14	38
Economics	6.4	9	24
Watershed management	5.4	11	30
Forest inventory	5.1	14	38
Forest protection	4.8	11	29
Forest industries	4.3	9	24
Wildlife	3.4	7	19
Non-wood forest products	3.0	5	14
Genetics	3.8	5	14
Wood science	3.4	10	27
Agroforestry	3.2	11	30
Wood structures/ construction	2.6	3	8
Wood preservation	2.6	3	8
Forest soils	2.3	5	13
Policy	1.7	4	11
Forest transport	1.7	6	16
Forest extension/training	1.5	6	16
Ergonomics	1.0	3	8
Forest research & methodology	0.4	3	8
Forest administration	0.3	3	8
Urban forestry	0.1	1	3
Landscape design/planning	0.1	1	3
Machinery	0.1	1	3
Total	100		

^{*}Number of institutions teaching the subject weighted for staff numbers, expressed as a percentage

indicates that only around 5% or less of teaching effort is devoted to both subjects. In other words broad environmental subjects tend to be an add-on to a forester's training. That is not unreasonable for forestry, but it does not meet the demands of protected area management. Wildlife biology training is more relevant for PA management since it concentrates on conserving nature in its entirety - the normal pattern of birth, life, death and decay. However, it ignores what one is trying to protect against - which is, directly or indirectly, people.

In fact training for PA management demands an understanding of

a number of disciplines that are already taught in schools and colleges around the world. One commonly finds business management taught alongside accounting, sociology alongside geography, etc., but it is unusual to find sociology taught in conjunction with wildlife investigation techniques, rural-health monitoring alongside procedures of arrest, and personnel (human resource) development with human population census and hydrology. There should be a way to allow those disciplines to come together.

An oft-neglected aspect of training is the need for land-use managers outside protected areas to be

more aware of the environmental implications of their work for biodiversity protection and management. Many protected areas are contiguous with similar undeveloped areas outside their boundaries, increasing their effective area enormously and contributing significantly to their value for biodiversity; if 8% of the world is inside PAs then 92% is outside. PA managers have to influence the decisions of other land-use administrators because it so often affects the viability of their PA. Other relevant groups include planning, agricultural, and forestry officers, and local government officials in general.

Further discussion on the presence of training facilities has not been possible due to the paucity of data. However, the number of institutions that offers relevant courses worldwide appears to be fairly small. Many organisations that teach wildlife biology or ecology fall far short of meeting the complex demands of a protected area manager. In the Philippines and elsewhere, many training resources are not well known even regionally. There is a pressing need for better information and coordination, perhaps from organisations such as the IUCN-World Conservation Union's World Commission on Protected Areas (WCPC) or the ASEAN's ASEAN Regional Centre for Biodiversity Conservation (ARCBC).

Conclusions

There are around 500 protected areas covering well over 50 million ha in SE Asia. If we take an arbitrary figure of one full-time permanent staff per 1,000 ha, not atypical of protected area management needs, that translates to a need for 50,000 trained people at all levels, from senior managers to the ranger on patrol. A nominal 10% annual turnover of staff translates to a need to train and recruit 5000 PA staff per year, a figure far in excess of current capabilities.

The paper did not intend to propose solutions to the training problem, but aimed to raise awareness of the importance of PA training and to provoke discussion. Based on our analysis of the situation in the Philippines, we thus note that:

- PA management is an exacting and demanding job;
- Senior PA managers often lack the technical background appropriate to the job;
- The need for skills enhancement exists at all levels, from senior managers, through rangers on patrol to part-time employees and volunteers, e.g. village or community rangers;
- Present training, where it exists, tends to be piecemeal and uncoordinated;
- Even when funds are available it is difficult to find appropriate training facilities;
- Skilled people are often not appropriately employed, if only because their managers are unaware of the need for specialised training;
- Many ingredients of potential PA instructional courses need to be coordinated and presented as coherent packages; and
- Some elements of training in biodiversity conservation must be made available to other professions involved in land-use, e.g. foresters, planners, agriculturists. ■

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RAISING THE STANDARD

The Use of Competence-Based Occupational Standards for Conservation Staff

► By MIKE APPLETON

Introduction to Occupational Standards

Occupational standards have long been used in many areas of work and are now becoming more widespread in the field of conservation and protected area management. An occupational standard can be described as:

'...a definition, usually developed and accepted by industry, of the knowledge and competencies required to successfully perform work-related functions within an occupation' (Alliance of Sector Councils, 2001)

Of course, employers have always set standards through the use of job descriptions and specified duties, while trainers and training institutions have set standards through the use of examinations and 'outcome' statements linked to training courses. However, the development of occupational standards has shifted the emphasis from qualifications and attendance at training courses as indicators of competence to actual performance in the workplace. It has also shifted the focus for determining what constitutes competence from trainers and training institutions to employers and broad based occupational sectors.

In some occupations, particularly where our welfare depends on the competence of individuals, this approach is nothing new. We expect doctors to be competent and their basic skills, knowledge and understanding will be similar wher-



Photo by Mike Appleton/FFI

Participants in training courses can help to improve standards. Biological survey trainees at Leuser National Park in Indonesia evaluating their course.

ever we are. The basic skills for a doctor are not normally defined by a particular lecturer, hospital or university, but by a national, or even international agency. Similarly specialists in car mechanics should have consistent skills, defined and taught by the particular car manufacturer. There are, of course, some bad doctors and poor car mechanics, but people often deal with this problem by assessing not just qualifications but also competence. We do this by asking friends and colleagues to recommend a doctor or mechanic whom they know to be good at his or her job.

Although the idea of an occupational standard is readily understood, describing what an occupational standard should consist of is more challenging. According to the company Integrated Business Compliance (2001), a standard will normally include:

- What a person should be able to do.
- The way in which one can judge how well a job was done.
- The conditions under which the person must demonstrate his or her competence.
- The types of evidence necessary to assure that what was done was carried out in a consistent manner, based on effective knowledge.

Potential Benefits of Occupational Standards in the Conservation and Biodiversity Sectors

If it is natural for us to expect doctors and mechanics to have universal standards of competence, irrespective of where they studied and whom they work for, should we not also expect those who care for unique and irreplaceable species

and ecosystems to have such standards? The conservation sector is relatively young. There are still few technical or vocational qualifications available in conservation and ecosystem management. As well as helping to ensure that the staff are truly competent at their jobs, the use of occupational standards in conservation would provide a much wider set of benefits.

Recognising a profession

‘Protected Area Managers’ or ‘Conservation Technicians’ are still not widely accepted professions in much of the world. Staff in these positions often come from a wide range of backgrounds and frequently these jobs are stepping stones in a civil service career. Since this type of work has no clear professional structure, it is often not recognised seriously by policy and decision makers and frequently does not attract high calibre new recruits. A sector that develops and promotes occupational standards gives a clear message that it is concerned with competence and expects its workers to be professional and effective.

Assisting training providers and beneficiaries

A set of common standards could provide a basis for the design and delivery of education and training programmes for biodiversity conservation, and ensure that providers work according to common standards and help trainees to assess the scope of courses offered to them. This does not mean that all training courses or curricula should be the same, but that they should lead to common standards. A recognised set of standards would also help employers to judge the suitability of applicants for jobs.

Recognising different modes of learning

Implicit in the use of occupational standards is the recognition that people can become competent at

their work in many different ways, shifting the emphasis away from just paper qualifications. The skills and knowledge of conservation staff who lack formal training opportunities, may be recognised through a variety of routes:

- **Academic Qualifications:** A relevant academic qualification helps to provide all or some of the knowledge needed to do a job, but often not in specific occupational skills. Many jobs require multi-disciplinary skills that no single qualification can easily deliver.
- **Vocational Training:** Training is probably the most widely recognised means for improving skills and increasing knowledge and has been defined as ‘a systematic development of knowledge, skills and attitudes required for an individual to perform adequately a given task or job’ (Stone, 1997).
- **Learning on the Job:** Many people improve their skills and competence by learning from experience and from colleagues.
- **Self-learning:** Committed and professional staff take an interest in their job and are likely to read relevant books, follow news stories and discuss topics of interest with friends and work colleagues

Recognising changing demand

The modern world of mobile labour forces and rapid rates of change makes it difficult for qualifications to keep up with the demands of the workplace. As Dr. N. Ishwaran, Senior Programme Specialist for the UNESCO World Heritage Centre stated in 1999: ‘The (Protected Area) manager needs new knowledge and skills to communicate, negotiate and resolve conflicts and to establish agreements and cooperative mechanisms for implementing Integrated Conservation and Development Projects, quite differ-

ent from the knowledge and skill-set he had acquired for policing protected areas, restricting resource use by local people and studying the unique fauna and flora found within the boundaries of the protected area’.

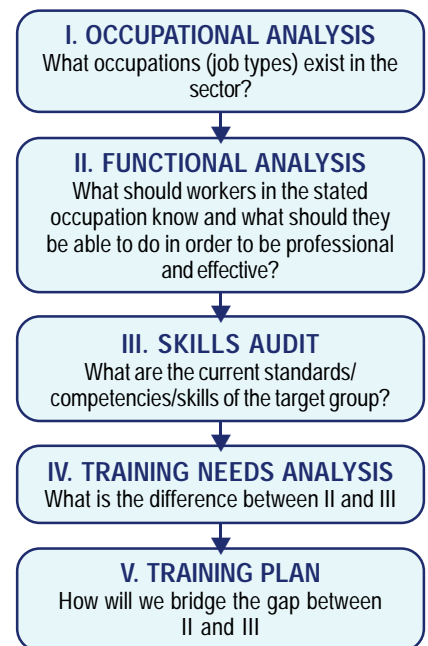
Whereas 20 years ago a higher degree in biology or forestry may have equipped a protected area manager with many of the skills and knowledge needed for the job, currently such a qualification is likely only to cover a small part of the demands of the job. Occupational standards should assist employers in planning and implementing continuing professional development programmes for staff.

Enabling transferability of and regional recognition of skills and courses

Common standards help to ensure that qualifications are ‘portable’, that is equally relevant in different areas. This helps potential staff find jobs and provide a common ‘language’ of competence, thus promoting better communication and international recognition of skills

Helping to analyse training and development needs

There are normally 5 stages of a typical Training Needs Analysis process



Once a set of standards and competences is in place, the identification of training needs and the design of training courses, materials and activities become much more logical and objective. In addition, common standards help to collect and collate training needs information, nationally and internationally, enabling the efficient targeting of resources and the provision of training tools and programmes.

To reflect the real needs for a particular occupation, occupational standards are normally defined and agreed upon with extensive inputs from industry and employers rather than by training providers alone.

Examples of the use of Occupational Standards in Biodiversity Conservation

Standard setting is not new in conservation. It has evolved from outcome-based training courses through the development of national occupational job descriptions and training syllabi, and through the development of national and even international competence-based standards. It is worth looking at some examples of this evolution.

Standards in terms of defined occupational duties

Most protected areas authorities have defined the main duties of their staff. The NIPAS Act in the Philippines, for example, defines a clear set of occupational duties and responsibilities for protected area superintendents (DENR 1992). These include such responsibilities as:

- Establish a productive partnership with the local community, including groups, in the planning, protection and management of the protected area.
- Assure the proper utilization of annual budget allocations and the proper disposition of fees and other funds generated within the protected area.
- Develop and implement a park information, education

Table 1. Competences identified by forest guards in Nepal (Dearden, 1999)

By the end of the programme, the trainees will be able to

1. Explain past and present ...forest policies
2. State the tasks and duties of Forest Guards in both community and national forestry
3. Explain the importance of national forestry
4. Explain the importance of community forestry
5. Explain the role of people in community forestry
6. Explain the process of identification and organisation of user groups
7. Explain the importance of forest operation plans
8. Explain the importance of monitoring forest operation plans
9. Apply the techniques of effective extension
10. Perform basic survey techniques
11. Perform basic mensuration techniques
12. Construct, maintain and operate a forest nursery
13. Perform basic silvicultural techniques
14. Explain the techniques of plantation establishment and management
15. Identify the causes of forest degradation
16. Identify forest offences
17. Explain the ways and means of checking forest offences
18. Apply the procedures of reporting forest offences and other development activities
19. Apply fire control measures
20. Perform basic harvesting techniques
21. State the ways and means of minimising fuel wood consumption
22. Apply basic soil and water conservation techniques
23. Explain the importance of wildlife conservation
24. Apply basic principles of first aid

and visitor programme.

- Act as a peace officer for the purpose of maintaining peace and order within the protected area.

This type of job specification is useful, but it describes what the employee should do, rather than what skills and knowledge they need to be able to work efficiently and effectively.

Standards in individual training courses

It has long been good practice for the design of training courses to include clear outcome statements along the lines of '*At the end of the course, the participant should be able to...*'

These are standards, normally defined by the training programme designer in consultation with the employer of the trainees. However, different trainers and organisations can have different views of what is required. This can lead to inconsistency in training programmes and confuse participants. In Cambodia trainees have criticised contradictions and overlaps between training programmes delivered by different

international conservation NGOs.

An interesting example of how to address this issue is the Nepal experience, where forest guards were encouraged to set their own standards and design their own curriculum based on their perceptions of the needs of their occupation. The set of competences agreed on is shown in **Table 1** above.

National Occupational Standards

In the United Kingdom, Canada and Australia, programmes are underway to develop and encourage the use of national occupational standards and competences for all conservation staff including volunteers. Each system has taken a slightly different approach and encountered some common problems and different solutions.

Since 1985, the **United Kingdom** has been developing national standards and National Vocational Qualifications (NVQs) for almost every occupation, including environmental conservation. Developing conservation standards was not a straightforward process, mainly because the initial functional analysis

rapidly revealed the following main issues:

- Many of the skills for conservation workers overlap with those from other sectors.
- The range of skills demanded across the whole sector was vast, ranging from construction work to biological surveying to business management.
- Management staff are expected to have and use a range of practical and technical skills.

Consequently early drafts of the standards were highly complex and off-putting to many employees and trainers; the solution was to simplify the system. At level 1 (entry level), a common set of standards was established for land-based workers in all sectors (agriculture, conservation, horticulture) with some specialist options to accommodate local and vocational variations. At levels

2 (supervised staff) and 3 (technical and supervisory staff), specific NVQs for Environmental Conservation were developed, including several elective units in order to reflect the variety of specialist skills of conservation. At levels 4 (managerial) and 5 (strategic), generic management NVQs are used, and tailored to meet the specific needs of senior conservation managers. A detailed manual for the NVQs is available via www.lantra.co.uk. **Table 2** below shows details from one standard.

In **Canada**, the development of occupational standards is being led by the Canadian Council for Human Resources in the Environmental Industry, founded in 1993 with a mission "to ensure an adequate supply of people with the demonstrated skills and knowledge required to meet the environmental human resource needs of the public and private sectors" (Canadian Council

for Human Resources in the Environment Industry, 1996/7)

The main occupational levels used are 'Technician' and 'Graduate Level'. Standards currently available and relevant to biodiversity conservation include the following (**See Table 3**).

Unlike the UK system, which focuses on the skills and knowledge required for competence, the Canadian system also considers the total skills requirements of the national workforce for each occupational sector, defines the relative importance of the various skills and indicates the proportion of required practitioners in a particular sector. Details of the Canadian standards can be found on www.cchrei.ca

In **Australasia** a slightly different approach has been taken. The Australian and New Zealand Environment and Conservation Council has introduced a Benchmarking and Best Practice Programme, resulting in the compilation of best practice guidelines on a wide range of topics including: Visitor Risk Management and Public Liability (ANZECC n.d.); Staff training practices (ANZECC 1996); Performance reporting on natural resource management (ANZECC 1997); Park education and interpretation (ANZECC 1999); Protected area management planning (ANZECC 2000b); and Cultural heritage management (ANZECC 2001).

Many of these include recommendations for standards and competences and the Staff Training Practices document recommends a competence-based approach to staff training needs analysis. All of these volumes are available on <http://ea.gov.au/parks/anzecc>

International Standards

There have also been some attempts to define standards at the international level, particularly for the occupation of ranger. At an international seminar investigating the potential development of international ranger training programmes

Table 2. Edited Example of a National Standard from the UK (Lantra 2000)

Unit 22, Element 22.2 CONSULT AND COLLABORATE WITH THE LOCAL COMMUNITY

Performance criteria. You must ensure that you:

1. Identify and use opportunities for **consultation and collaboration** with the **local community**
2. Establish and maintain contacts with relevant sections of the **local community**
3. Actively seek reactions and opinions using appropriate methods
4. Gather and evaluate information where **conflicts** arise, and develop recommendations for action
5. Obtain organisational agreement before resolving **conflicts**
6. Keep relevant people informed of the outcomes of work and consultation

Knowledge and understanding: In *consulting and collaborating with the local community* you will need to show that you know and understand the:

1. Types of opportunities available for collaboration and consultation with the local community
2. Ways in which contact with the local community can be maintained
3. Reasons for and importance of contact with the local community
4. Likely impact of the work of the organisation on the local community
5. Methods of gauging community opinion
6. Potential and actual conflicting interests:
7. Methods for resolving conflicts
8. Importance of only acting within ones own agreed authority, keeping others within the organisation informed, and knowing when to ask for intervention from others

Table 3. Occupational Standards available for protected areas staff in Canada

<i>Technician Level</i>	<ul style="list-style-type: none"> • Fisheries and Wildlife Management
<i>Graduate Level</i>	<ul style="list-style-type: none"> • Parks and Outdoor Recreation • Fisheries and Wildlife Management • Parks and Outdoor Recreation • Integrated Natural Resource Management • Environmental Education • Environmental Communications • Environmental Research

Table 4. The Losehill principles

- All rangers should:
- Have an awareness of international / national designations, wider environmental ethics and sustainable resource management, including the history of national parks and other protected areas, and the development of rangers in such areas. A code of ethics for all rangers could be included.
 - Have good communication skills, including an awareness of the variety of techniques for communicating messages, information and values (field studies, guided walks, role play, earth education, written word).
 - Understand the dynamics of and relationships between local landscape, biodiversity and culture, and the resulting conflicts of use.
 - Have the knowledge and ability to deal with visitor safety and countryside emergencies.
 - Have the ability to survey, monitor and report on the natural resource, as the 'eyes and ears' of the organisation.
 - Have knowledge of habitat and facility management techniques, with skills in such techniques as an optional specialism.

held at Losehill Hall, Peak National Park, UK in 1997, six essential elements of a ranger's skills were identified. These have subsequently become known as 'The Losehill Principles' (See Table 4).

One problem with the Losehill principles is that they are more readily applicable to the highly trained and relatively well-educated multi-tasking rangers of Europe and America than to the more field-based rangers of many developing countries, whose duties often include more direct protection and enforcement work and who frequently act as a para-military force.

The Third World Congress of The International Ranger Federation held at Kruger National Park, South Africa (Sept. 10-17, 2000) identified three levels of ranger: Entry or novice level; Full performance level (sometimes referred to as "professional" or "journeyman") level; and Master level. The conference agreed on the "universal essential competence" in terms of knowledge and skills/abilities for Rangers initially at the 'Master' level (See Table 5).

Table 5. Universal competences of a Master Ranger. (International Ranger Federation, 2000)

Knowledge Requirements	Skill/Ability Requirements
1. Basic Ecology and Conservation	
<ul style="list-style-type: none"> • The principles, functions and processes of natural and cultural landscapes, to include and recognise humans and their role in influencing landscapes • What is natural • Methods and mechanisms of self-discovery • Basic monitoring and measuring techniques 	<ul style="list-style-type: none"> • Observe and detect changes in the landscape and take appropriate conservation action, including recording, reporting and, as appropriate, managing
2. Ensuring Ecosystem Integrity (Resource Protection, Legislative Purpose/ Framework and Relationship of Protected Area to other Relevant Resources)	
<ul style="list-style-type: none"> • Relevant and applicable international, national, state, cultural, strategies, treaties, laws, conventions and policies. 	<ul style="list-style-type: none"> • Enforce existing legislation appropriately while exercising personal safety and protection of others. • Exercise legislative and administrative procedures and processes, including collection of information and preparation for court, etc.
3. Interpretation, Education and Information	
<ul style="list-style-type: none"> • Philosophy of interpretation and education as to their importance and their roles in safeguarding protected area resources. • Methods and techniques of interpretation and education. 	<ul style="list-style-type: none"> • Communicate effectively using a wide range of methods, and at a professional and global level.
4. Relationships with all Relevant Communities, and Other Stakeholders	
<ul style="list-style-type: none"> • Who the neighbours and those living in the protected areas are and what knowledge and expectations they have (their culture). • Local political agendas, and "key players" in the communities. 	<ul style="list-style-type: none"> • Demonstrate political, social and cultural sensitivity and tolerance. • Involve and integrate the communities in issues of managing the protected area. • Listen effectively and engage in facilitation, conflict resolution and problem solving.
5. Technology and Infrastructure Maintenance	
<ul style="list-style-type: none"> • How it works, what it does and how it should be maintained. 	<ul style="list-style-type: none"> • Manage, maintain and safely operate a range of infrastructure and equipment.
6. Emergency Responses	
<ul style="list-style-type: none"> • How to care for oneself and safely travel in wild or undeveloped areas characteristic of the protected area. • Emergency procedures pertaining to people, flora and fauna, etc. • Inter-agency responsibilities. • Agency responsibilities and limits of one's responsibilities. • Leadership/management structure and hierarchy relevant to a particular emergency. 	<ul style="list-style-type: none"> • Respond appropriately to emergencies and incidents characteristic of one's protected area, including such things as search, rescue, fire suppression, first aid, and environmental and natural disasters.
7. Office, Project and Financial Management and Operational Planning	
<ul style="list-style-type: none"> • Basic business principles. • Basic office skills such as filing, correspondence, etc. • Applicable and appropriate reporting procedures. • Relevant administrative procedures. 	<ul style="list-style-type: none"> • Write effectively. • Management of budgets and projects, including preparation, monitoring, evaluating and reviewing. • Demonstrate how, where and what to plan, implement, evaluate and update or revise.
8. Workplace Communication and Relations	
<ul style="list-style-type: none"> • Tenets of human resource management. • Team participation. 	<ul style="list-style-type: none"> • Operate effectively as a member of a team.

For the Occupation of ‘Protected Area Manager’, the Protected Area Conservation Strategy (PARCS) project in Africa defined 12 main responsibilities and accountabilities for Protected Area Managers and invited managers in 10 countries to assess their skills against them (See Table 6).

The work of Stone (1997), also in Africa, successfully attempts to clarify and explain many of the issues and processes related to staff development, needs assessment and standards for protected area staff. This work is aimed specifically at ‘Protected Area Training Officers’, an unfamiliar occupation in Southeast Asia, but it contains a great deal of useful guides for managers and staff in developing, implementing and maintaining high standards in protected area management.

The European Project ‘Training of Protected Area Staff’ (TOPAS) is developing occupational standards for protected area staff in 9 European countries. The project is identifying existing national training courses and testing them in other

Table 6. Generic responsibilities and accountabilities of Protected Area Managers in Africa (Pitkin 1995)

- Ensure availability of a competent and well-motivated staff.
- Ensure appropriate infrastructure within budget.
- Ensure financial and accounting integrity of the protected area.
- Ensure development and achievement of tactical plans and budgets and contribute to protected area strategic planning.
- Ensure that all activities within the protected area comply with laws and regulations.
- Ensure optimum levels of visitor satisfaction.
- Ensure agreed intervention programmes are completed to budget and timetables.
- Ensure harmonious relationship with neighbouring communities.
- Be aware of research activities and progress against plan.
- Represent the protected area and its interests in public meetings.
- Ensure an appropriate balance between resource conservation and use in the protected area.

countries in order to ascertain their regional relevance and to update them accordingly. This will lead to a network of deliverers of training programmes that together meet a common set of standards. Information on TOPAS can be found on www.topas.mtnforum.org.

Institutional Standards

The IUCN Management Effectiveness Task Force (Hocking et al, 2000) has developed a useful set of criteria for evaluating and monitoring the management effectiveness of protected areas. While these are not occupational standards, they could provide a useful framework for international standard setting (See Table 7).

Developing Standards for ASEAN

Opportunities and issues

The examples above illustrate the growth in interest in standard setting for conservation staff around the world. The question to be asked is if this approach is appropriate to the countries of ASEAN. One approach would be to adopt one of the systems from Canada, Australia or the UK, but these present some problems:

- They have all been developed for national use only and therefore reflect the experience, administrative structures and culture of one country. In all three cases, there is an extensive professional and career structure in the country that is not reflected in most ASEAN countries.
- They were all produced at significant expense in terms of staff resources and consultancy time. Most ASEAN conservation authorities are unlikely to be able to resource such an extensive process.
- They are all very complex and highly detailed and reflect working practices and organisational capacities that

Table 7. Main functions of protected areas used for evaluation of effectiveness (Hocking et al, 2000)

<p>General</p> <ol style="list-style-type: none"> 1. Legislation 2. Law enforcement 3. Planning 4. Resource inventory 5. Resource management 6. Maintenance 7. Neighbours 8. Economic benefits to local communities 9. Communication 10. Management systems
<p>For IUCN Category I Protected Areas</p> <ol style="list-style-type: none"> 11. Control over access/use of the protected area
<p>For IUCN Category II, III, V Protected Areas</p> <ol style="list-style-type: none"> 12. Resident communities and/or traditional landowners 13. Visitor opportunities 14. Visitors 15. Commercial tourism
<p>For IUCN Category IV Protected Areas</p> <ol style="list-style-type: none"> 16. Management intervention
<p>For IUCN Category V Protected Areas</p> <ol style="list-style-type: none"> 17. Control of land uses and activities
<p>For IUCN Category VI Protected Areas</p> <ol style="list-style-type: none"> 18. Sustainable production

simply do not exist in many ASEAN countries. The UK standards document runs to nearly 300 pages and is highly detailed. The standards have been criticised nationally for this, although they have been simplified from first drafts.

- The use of nationally or regionally validated qualifications linked to the standards and based on independently verified work place assessment (the UK NVQ model) is probably unrealistic in the short to medium term.

Accordingly, although these examples provide an excellent basis for analysing occupations and defining standards, the approaches taken would not be appropriate for an ASEAN wide system.

More applicable potentially may be the exercises carried out

by PARC in Africa and by the International Ranger Federation, both of which have attempted to define international generic standards, and to provide a clear definition of the occupation and the standards to be expected without being too specific or prescriptive. The development of a set of occupational standards for conservation staff in ASEAN using this type of approach has the potential to deliver many of the benefits listed in the introductory section of this article as well as some specific benefits in the context of the region. The standards would:

- Assist trainers and training providers to design and assess courses to a common and consistent standard across the region.
- Support those states that are still developing national parks systems and services.
- Facilitate the assessment of training needs both nationally and regionally by providing universal benchmarks for competence.

However the development of such a set of standards also presents a number of challenges. They need to be:

- Based around a set of occupations that are commonly recognisable across the re-

gion. The logical starting point is the set of occupations associated with protected areas, but even here there are differences in job specifications.

- Clear and specific enough to be useful without being so prescriptive as to exclude national differences in approach or specific local contexts.

ARCBC and Regional Standards

In its 2002 work plan, ARCBC plans to conduct a regional standard setting programme, principally for protected areas staff. This will involve three main stages.

Standards Review

ARCBC is collating a full review of existing work on standards from around the world in order to gain a fuller understanding of the use of standards around the world. This paper partly summarises that review. ARCBC is then planning the following programme:

- National review of existing protected areas staff standards, job profiles and qualifications in the 9 ASEAN countries that are ARCBC partners.
- Site-based review of qualifications and standards at one representative protected area

in each country, possibly an ASEAN Heritage Park.

Standards Development

Following the review process, the development team will produce a set of draft standards for a number of priority occupations in protected areas management and will also investigate the development of a set of knowledge standards for key biodiversity decision makers in the ASEAN region. A regional workshop will be organised to review these drafts and to agree on the final draft standards, which will then be tested at the representative protected areas in each country.

Standards Dissemination

The set of standards to be agreed upon will be launched across the region in a number of ways:

- Setting up a standards area on the ARCBC web site.
- Holding an official ASEAN launch event.
- Using the standards to classify the materials on the ARCBC's web based training resources centre.
- Working with national and regional training providers to link training courses and curricula to the new standards.
- Explaining and promoting the standards in ARCBC partner countries. ■



Photo by Mike Appleton/FFI

Modern park management brings with it many demands. Armed Rangers in Thailand's Western Forest complex inspect an elephant salt lick.

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Note. As a reflection of how much information is now available on the internet all but one of the references cited are available for viewing or downloading free of charge from the websites shown. In order to increase accessibility of these and many other important references on biodiversity training all of these documents are also available at the ARCBC training resources databases on a single site: <http://www.arcbc.org.ph>

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Small Grants Programme for Operations to Promote Tropical Forests

The "Small Grants Programme for Operations to Promote Tropical Forests" (SGP PTF) was officially launched through the Regional Inception Workshop in early December 2001 in Los Baños, Laguna, Philippines. Funded by the European Commission (EC), the SGP PTF is managed by the United Nations Development Programme (UNDP) through the Executing Agency, the SEAMEO Regional Centre for Graduate Study and Research in Agriculture (SEARCA).

The overall operation is for five years with EC contribution via the Tropical Forest Budget Line of 15,132,500 Euros. Operations will take place initially in four countries (Pakistan, Philippines, Vietnam, Thailand) with the possible expansion to other countries in South and Southeast Asia when conditions are propitious.

The SGP PTF will complement the existing Global Environment Facility Small Grants Programme (GEF SGP) and related financing instruments to benefit poor and underprivileged forest user groups by pursuing the following key objectives: (a) act as catalyst to promote and demonstrate community-based management and resource-use in tropical forests; (b) draw lessons from local experience and support the spread of successful community-level strategies and innovations; and (c) build grassroots level capacity to tackle problems that are contributing to forest destruction and degradation through partnerships and networks.

The principal thrust of the SGP PTF will be the execution by civil society organisations at country level of small (20,000 – 200,000

Euros) forest-related projects. The programme will benefit from the experience acquired both by the GEF SGP and by EC forestry programmes in the region. The SGP PTF will further enhance its community focus through extensive networking and collaboration to draw on the expertise of a number of institutions in the region with rich experience in community-based tropical forestry.

The SGP PTF will be implemented in two phases with an initial start up phase that will finalise the technical, administrative and financial framework for its operations. This phase, which will be completed by March 2002, will draw up country-specific guidelines for the selection of local project proposals. PTF Coordinators will manage this process in close collaboration with local stakeholders, and coordinated through National Steering Committees. Once this phase is completed, there will be a formal call for proposals detailing eligible organisations and thematic areas; the application and selection procedures; and the roles and responsibilities of the grantees and the SGP PTF.

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Photo by R. Vu Thi Quyên

ENVIRONMENTAL EDUCATION IN VIETNAM

Building Sustainability into a Training Programme

► **By VU THI QUYEN**

Like many other developing countries, Vietnam is facing serious environmental dilemmas. Forest cover over the past fifty years has decreased due to war and human encroachment. Biodiversity now remains in isolated islands that are still under serious threat due to agricultural expansion, forest clearance and hunting of wildlife.

Early government recognition of the problems has resulted in the establishment of a network of national parks and protected areas in the 1960s. The government has also issued laws and policies on nature conservation and environmental

protection. However, the capacity of various agencies to respond to the vast destruction of Vietnam's natural heritage lags behind the upward curve of exploitation.

In addition, Vietnam must address human needs. The country must begin the process of building greater appreciation and awareness among its people to ensure their commitment to the preservation of the environment.

Education at Cuc Phuong National Park

Cuc Phuong was established in 1962 as Vietnam's first national park. The park is located 120 km southwest of Hanoi and covers an

area of 220 sq km with rich evergreen forest on limestone mountains. Cuc Phuong is home to 2000 species of flowering plants, 88 mammal species and many endangered species that include the Delacour langur, Asiatic black bear, and Owston's palm civet.

There are about 50,000 people living along the border of the park, 90% of whom are members of the Muong ethnic group, and depend upon the park's resources for their livelihood. Firewood collection, timber harvesting, livestock grazing, hunting, and shifting cultivation remain serious threats to Cuc Phuong's forest ecosystem and its wildlife.

Although protection efforts of the park continue to be strengthened, these alone cannot address the conservation and protection needs of the park.

In 1996 Fauna and Flora International (FFI), in cooperation with the Ministry of Agriculture and Rural Development, established the Cuc Phuong Conservation Project (CPCP) to address these issues. The project involved social, economic and biological field research, as well as a major environmental education initiative focusing on local communities and visitors of the park.

The Cuc Phuong Conservation Awareness Program (CAP) aims at raising the level of awareness and understanding about nature, and the need to protect the park through activities carried out in local schools, within villages, and for visitors of the Park.

The Program has focused on students at the primary, middle and high schools in communities bordering the Park. The students may have limited impacts on natural resources, but these efforts represent a long-term investment in changing attitudes and behaviour necessary for the Park's sustainable conservation. Today's students are tomorrow's decision-makers. At their age, the students' minds are fresh, their atti-

tudes are just beginning to form, and are willing to learn new things. Students are also natural links between local communities and the Program. They share their knowledge and other educational resources with their parents, friends and other people in their communities. In this way the Program's impact goes beyond just the participating schools.

Currently, over 15,000 students from 43 schools in the four districts surrounding the park voluntarily participate in the school-based Conservation Club programme. The Conservation Club leaders include specially trained staff of the national park, graduates of area teacher training colleges, and members of the local Youth Union. Each day, five or six teams organise Club meetings, and work in cooperation with a counterpart teacher from each school. They hold sessions between school hours, and administer roughly 25 sessions each week. Club meetings follow prepared lesson plans focusing on a relevant theme (e.g. Endangered Species or Tropical Forests). Lesson plans are made up of discussions, stories, games, and other activities that reinforce the main message of the lesson. In addition, the Conservation Clubs hold a variety of special events to encourage greater student interest and partici-

pation in conservation, including puppet shows, visits to the park, tree-planting activities, and other organised events.

Students are very active and play a central role in the programme. Every day, Conservation Club leaders receive many letters where students either ask questions about the park or express their feelings about wildlife, nature and the environment. They can also share their thoughts through the *Green Forest* student newsletters, which are distributed to students at Cuc Phuong. In addition, they can get involved in environmental education programmes at other parks and protected areas.

Feedback from parents, teachers, and other members of the community suggest that the Conservation Clubs have not only increased environmental awareness, but have also encouraged greater interest in school, as evidenced by reported increases in attendance, and improved grades. The Conservation Clubs may have also influenced changes in the quality of education at the local level. The programme has exposed local teachers to a participatory style of teaching, which is new to the educational system in Vietnam. District education departments have subsequently used the programme to showcase the participatory teaching approach, bringing teachers from district schools to observe the Clubs in action.

Local participation by teachers is essential to the programme's sustainability and success. Education staff regularly organise teacher training workshops where participants discuss the strengths and weaknesses of the programme, provide input to improve its content and management, as well as plan for the coming months. The teachers are also provided with knowledge and understanding about nature and the environment.



Photo by R. Vu Thi Quyên

The programme at Cuc Phuong has so far focused on adults through Participatory Rural Appraisal-style meetings in local communities. In co-operation with village leaders and key local organisations (e.g. Women's Union, Farmer's Union, etc.), a "Village Programme" is carried out from one community to another community within the park's buffer zone. Since late 1998, around 25,000 participants have attended the 82 village-level meetings organised.

Two meeting plans have been developed: the first includes a slide show introduction to the park's values, followed by a presentation of the environment-focused play "A Kitchen God Comes Late", written and performed by local Conservation Club members.

The second programme revolves around a video filmed within the Cuc Phuong communities featuring local residents talking about the values of and also the threats to the Park, as well as some economic alternatives that have been applied successfully (e.g. bee farming, improved rice agriculture, fish raising). The video is followed by a 40-minute discussion about changes in the park, its benefits, as well as suggestions on how residents can get involved in its protection. The programme ends with a comedy about a man who became rich by cutting and selling timber, but was arrested by rangers. He has since learned a very important lesson and never destroyed the forest again.

Park visitors represent a lower risk to the park and its environment, but their activities and impacts are often more visible, such as littering, carving on trees, and collecting plants and flowers. To increase visitor awareness, the Conservation Awareness Programme has developed Vietnam's first nature interpretation centre. The visitor centre, completed in August 2000, provides a place for more than 40,000 annual visitors to learn about the values of the



Photo by R. Vu Thi Quyen

Bat and moth game

Park, as well as key national issues relating to conservation and biodiversity. It is also an important resource for local educational programmes and activities for school children, teachers, and members of the communities bordering the Park.

With its success, the Conservation Awareness Programme at Cuc Phuong has earned national recognition as a model for community-based environmental education in Vietnam. The Programme has also set standards of excellence and motivated other individuals and organisations to improve their educational programmes. In essence, it has provided a benchmark for the country's future environmental programmes.

Vietnamese Efforts

One of the notable successes of FFI's efforts at Cuc Phuong has been the transfer of the education programme's leadership to Vietnamese hands, the development of the capacity of its national staff and local partners to sustain the Programme, as well as the utilization of local knowledge and experiences to improve environmental education initiatives.

In late 1999, the Cuc Phuong Education Programme carried out its

first training initiative for staff of the Pu Mat National Park education programme in Nghe An Province (Central Vietnam). It was a hands-on eight-week intensive training where the trainees were given the opportunity to develop and manage a successful environmental education programme.

Trainees were paired with project staff to organise conservation club meetings, prepare lesson plans, and discuss issues with local counterpart teachers. In addition to teaching at schools, they organised teacher workshops, student visits and other special events. Moreover, the trainees were provided with knowledge on the important concepts in biology and ecology. All this had prepared the trainees on the different aspects of running an education programme.

After their training at Cuc Phuong, they started their own environmental education programme in Pu Mat, which now covers over 40 schools bordering the National Park.

The success of the Pu Mat training programme resulted in the establishment of a local non-government organization that provides greater sustainability to environmental education efforts at parks and protected areas in Vietnam. Built

upon the success and experience of the Cuc Phuong effort, Education for Nature - Vietnam (ENV) has become the country's first environment-focused NGO in 2001. ENV provides experience-focused training, technical assistance, and other support to community-based programmes.

While ENV continues to support education efforts at Cuc Phuong, it also develops educational resources, distributes a national student newsletter (Green Forest), and helps to train, develop, and support programmes at five national parks and four protected areas. ENV also plays a central role in an informal network of environmental education programmes in Vietnam that are made available to other projects through cooperation and support.

A Change in Perceptions

In 1996 when the programme was initiated at Cuc Phuong, education was not considered an important method in strategic conservation and protection of national parks and protected areas in Vietnam. Traditional enforcement was believed to be the only way to protect forests, so buying more equipment for rangers was a priority, despite the rangers' inadequate training. In addition, park management did not recognise the relationship between local communities and natural resources, and thus did not realise that strong community involvement would translate into better park protection.

Six months after the education programme was initiated, the park managers began receiving feedback from students and local community members. They asked questions about the park, determined the responsibilities of the rangers, and even reported cases of forest destruction. The education programme has evolved as an important link between local communities and the park. Moreover, this has helped the park managers to understand the importance of community involve-

ment as well as the role of education in protecting the park.

This new perception has grown and expanded quickly among managers of other parks and protected areas in Vietnam. During a workshop in February 2001, many park directors expressed the need to carry out environmental education at parks and protected areas.

The Secret Keys to Success Setting a Precedent

Setting a precedent on a particular way of working is absolutely essential, but this can sometimes lead to loss of cooperation. For instance, the Cuc Phuong Conservation Awareness Programme in 1996 started in five schools. After a couple of months, the programme was only active in two schools because the other three would not cooperate unless the programme agreed to their requests, such as a library and sofas for teachers. A year later, the programme had expanded into many other schools. The three schools that initially rejected the project have renewed their interest in it. Setting a precedent is one way of identifying the level of cooperation of counterparts to avoid any misunderstanding about the programme and its objectives.

Taking Pride

For a project to succeed, making the staffs and counterparts feel their importance to the job as well as to the project would motivate them. Instilling pride helps make up for the difficulties of breaking new ground in environmental education.

Focus on Training

Training is crucial to the success of any education programme. The level of knowledge and understanding of any staff is a major factor in the outcome of a program. Usually, very little is accomplished during the first year. The programme only truly works when the staff have had more experience. Training is essential to a long-

term investment. It helps the staff improve themselves; the more they understand, the more the programme benefits. If the staff cease to improve, so will the Programme.

Striving for Excellence

The programme needs to be updated and regularly reviewed. New teaching methods, topics and materials would ensure the programme's popularity and success, while monitoring and evaluation would highlight necessary improvements.

Prospects for Environmental Education in Vietnam

Various methods are being employed to look at the sustainability of environmental education in Vietnam. The government has just signed an important document to integrate environmental education into all the levels of the school system. Today, a growing number of young Vietnamese has the capability to carry out quality environmental education. Cuc Phuong is just one of many environmental education programmes that focus on specific protected areas and target groups, and will remain an important effort to protect the country's natural heritage well into the future.

ENV also seeks to broaden its activities through coordination with teacher training colleges and a partnership with Hanoi National University to develop an Environmental Education degree programme.

Environmental education in Vietnam is gaining recognition and legitimacy as a valuable tool in protected area conservation and management. While many obstacles remain to be overcome, the growing interest among young professionals in the field of environmental education is an encouraging sign for the future of the country's natural heritage. ■

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TRAINING FOR FIELD CONSERVATION STAFF IN INDOCHINA

Lessons Learned

► By RAMESH BOONRATANA

Over the last decade, the Lao People's Democratic Republic, the Socialist Republic of Vietnam, and the Kingdom of Cambodia have experienced significant gains in the conservation of wildlife habitats and biodiversity. A number of concerned government and non-government individuals and agencies has endeavoured to address the issue, but given the constraints in human and financial resources, efforts have focused on the declaration of protected areas. Many more areas are in the process of receiving similar status. However, conservation efforts should not end there. There are other

issues to be resolved, including continued biodiversity loss, illegal trade in wild flora and fauna, need to balance development with conservation, management of communities within protected areas, low national capacity and capability in protected area management, and conservation education and awareness.

A successful protected area depends on the effective management of its wildlife, its habitats and the people who use it (Boonratana, 1998b, c & d; 1999a). Despite the number of protected areas in Laos, Vietnam, and Cambodia, most of these often lack management plans or the qualified staff to implement them. When these do exist, management plans are frequently not

workable. Still, measures to protect such critical areas have to be set in place. Thus appropriate management plans have to be developed, qualified staff provided, and other issues properly addressed.

The training of field conservation staff is one of several approaches being used to promote effective management (Boonratana, 1998b & c; 1999a). Since rural or ethnic communities are found in most protected areas in the region, and depend on the area's natural resources for subsistence (Boonratana, 1998b & d; 1999a & d), they must be encouraged to participate in conservation and management efforts. Successful integration of local communities' needs and the objectives of protected area management are critical to both the areas and the communities (Chape, 1996).

This article highlights the experiences and lessons learned from training field conservation staff in some of the region's protected areas. The trained staff have a wide



Photo by R. Boonratana/LUCN

Participatory conservation means involving the local communities and winning their support. A reception ceremony for the field team in a village that requires two full days hiking to access, Nakai-Nam Theun NBCA, Lao PDR.

range of educational backgrounds, and include protected area, wildlife and forestry staff; members of the militia, military and police; villagers (mainly from ethnic minorities), graduate students, and extension staff. Their primary responsibility is to protect and manage natural resources that includes conducting surveys, monitoring, patrolling and other law enforcement activities, and establishing local conservation rules and regulations (Boonratana, 1997; 1998a, b, c & d; 1999a & d; 2000; 2001). These field-based management activities are the minimum requirements to ensure that natural resources within any protected area are effectively protected and conserved.

The Training Programme

Preparing field conservation staff for future responsibilities did not follow any rigid curriculum, given the trainees’ varying professional and educational backgrounds. The training programme (Boonratana, 1997; 1998a, b, & c; 1999a, c & d; 2000; 2001) had been highly flexible and tailored to the target group(s), the individual trainee’s aptitude, available resources, and to meet the objectives of the project. The programme had intensive, progressive, and well-defined classroom-based theory and field-based on-the-job components. The duration of the training programme varied but was usually over a three-month period. The training had been repeatedly conducted in the same protected area, and was adapted and strengthened accordingly (Boonratana, 1998b; 1999d; 2000; 2001).

The training programme started with a main classroom-based theory session, lasting about eight days. The topics and skills imparted in the classroom are summarised in **Table 1**. Some topics such as reporting and filing were briefly covered during the initial classroom-based session, but were subsequently discussed in ses-

Major Topics	Sub-Topics/Skills
Introduction	Introduction of the trainer, trainees, the project, and the purpose of the training
Conservation Basics	Conservation and sustainable management of natural resources Description, history and legal framework of protected areas Description, significance and benefits of protected area (where training is being held) Protected area management Conservation biology and general ecology Wildlife ecology and animal behaviour
Wildlife and Impact Surveys, and Monitoring	Introduction (semi-structured interviews/rapid biodiversity appraisal, ethics) Wildlife survey and census Wildlife identification Impact surveys Monitoring (purpose, methods, focal species and habitats, interpretation)
Recording Techniques	Note-taking, sketches and measurements Wildlife and wildlife/habitat impact activity data recording sheets Mapping trails and significant finds Photography of evidence and habitats Plaster-casting of tracks Scat analysis Collecting and labeling specimens
Map, Compass, GPS and Altimeter	Familiarity with map features (distance, directions, contours, slope and gradient, landforms, hydrographic features, travel routes, campsites) Use of compass and altimeter Use and care of GPS
Field Trips and Field Equipment	Ideal camp locations and set-up Field equipment, care and maintenance Basic first-aid and emergency evacuation Pre- and post-survey activities Ethics
Data Compilation	Compilation and tabulation of wildlife records, wildlife/habitat impact records, and unit’s efforts.
Reporting and Filing	Reports should include survey objectives, schedules, significant finds, tabulation of wildlife data and human activities, and maps of routes and locations of important finds Filing by area/sub-division, trip report, wildlife data sheets, impact data sheets
Analysis, Interpretation and Presentation	Accuracy and completeness of records. Data on wildlife presence, impacts, key wildlife species, impacts and patrolling and monitoring activities by year and area/sub-division Yearly assessment of coverage in terms of time and space Trail maps for each area/sub-division and the protected area Annual thematic maps for key wildlife evidence for each area/sub-division and the whole protected area Thematic map for agricultural activities

sions that followed every field trip. Some topics (e.g., estimating wildlife density) were not discussed fully because they were then not feasible for the staff, while others (e.g., GPS) were delivered only to a specific group. Some seemingly mundane topics such as field trips and field equipment were actually essential, particularly for the government staff with little or no camping experience. Others (e.g., analysis and interpretation) were delivered only after 12 months of data had been collected (Boonratana, 1999d), or at the end of a specific project (Boonratana, 2000).

Time devoted to each topic/skill depended primarily on the trainees’ aptitude. Training sessions would

progress only after participants had achieved a fair grasp of each topic or skill. This was imperative, as every topic/skill built on the earlier ones. Frequently, certain topics were emphasized for particular groups of trainees. For trainees from stakeholder communities, the sub-topic “conservation and sustainable management of natural resources” was particularly important. Understanding how their activities impact on the ecosystem, which in turn affects their lives, often draws strong support for proposed conservation measures (Boonratana, 2001) and increases environmental awareness. Where feasible, videos on habitats and wildlife were shown in the evenings.

Field-based on-the-job training immediately followed classroom sessions, as it was essential for trainees to practise acquired knowledge and skills. This training usually had three sessions, each varying from one to three weeks, depending on the objectives and accessibility to different sites. Every field session had emphasised skills development in conducting field surveys and assessing wildlife and key habitats; evaluating human impacts on wildlife and habitats; trail mapping; data gathering for inputs to land use plans and for monitoring; recording and reporting information correctly; patrolling and law enforcement; and improving field craft.

In the field, individuals and teams have been allocated responsibilities such as patrols, surveys, and monitoring on pre-determined routes, from a little after dawn to just before dusk. Night patrols and surveys have been carried out only when feasible or under specific circumstances. Each day, the trainer had to accompany each team on a rotational basis, ensuring that survey, monitoring, observation and recording skills have improved and strengthened. In addition, several field techniques, such as detecting and correctly identifying wildlife and wildlife signs, and orienteering, could only be clarified in the field.

Each night, all sub-teams had to report their observations, highlight significant finds, and plan for the following day. A three-day classroom-based session followed every field activity; the teams sorted and compiled all information, which they summarised in a report with relevant tables and maps. The field conservation staff maintained this reporting system for regular patrolling and monitoring activities.

In summary, the training has been designed to assist conservation staff in planning field trips efficiently, making and recording accurate observations, and reporting their



Photo by R. Boonratana/UICN

On-the-job-training: Trainees dismantling a cable snare in the Nam Theun Corridor, Lao PDR.

findings in a detailed format. It has also aimed to assist them in using information to monitor trends in wildlife abundance and human impacts, formulate land use plans and land allocation, and establish management zones in the protected area.

Lessons Learned

The process of carrying out training in the region, and often under trying conditions and by trial and error, has become an opportunity to learn, improve and strengthen training. Sharing experiences and observations of other field training

programmes with colleagues also provided significant insights. This section discusses some errors that should have been avoided, obstacles that could have been prevented, as well as the elements that have contributed to a successful transfer of knowledge and skills to field staff, and their translation into meaningful field management activities.

Choice of trainer

The successful transfer of knowledge and skills to conservation staff largely depends on a competent trainer. Some trainers have delivered courses without considering the trainees' aptitude, while others have been unable to credibly discuss certain topics (e.g., conservation basics). In addition, while almost all trainers have taught map reading, compass use, and orienteering, many have not been able to determine actual locations and navigate in the field.

Some trainers who are biologists had a tendency to teach topics and skills beyond the staff's capabilities, and still expect the same level of competence and commitment. The protected area system in the region is fairly recent, and existing protected area staff generally have a background in traditional forestry. In addition, the staff in some areas in-



Photo by R. Boonratana/UICN

Trainees in Nam Poui NBCA, Lao PDR recording evidence of wildlife poaching.



Photo by R. Boonratana/UCGN

The field conservation team comprising Protected Area staff, Forestry staff, District and Provincial Police, Militia and Village Forestry Volunteers. Nakai-Nam Theun NBCA, Lao, PDR.

clude members of stakeholder agencies and communities, who have little or no formal education.

There have also been negative impacts on training when trainers have demonstrated unethical behavior, such as partaking of the spoils of poached wildlife or violating protected area regulations and conservation agreements.

Unfortunately, expatriate and foreign trainers had to be recruited because of a lack of qualified nationals. Some have conducted the training in the local language, but many had to rely on interpreters. This has frequently reduced effectiveness because the content is either watered down or misunderstood by the interpreter. Occasionally, misinterpretation or the interpreter's attitude can lead to animosity towards the trainer (Boonratana, 1999a). The use of interpreters also makes the training impersonal, and can distance the trainer from the trainees.

Trainee Selection

At times, selected trainees included individuals who are not from the target groups and are uninterested in the training (Boonratana, 1999c; 2000; 2001). Oftentimes, they are simply instructed to attend,

while others, particularly government staff, frequently view training programmes as opportunities for collecting allowances (Boonratana, 2001). The training neither benefits these individuals nor benefits from them. Selection of trainees using predetermined criteria can achieve expected results, and justify invested efforts and funds (Boonratana, 2001).

Most protected area staff, despite a background in traditional forestry, face major obstacles in wildlife identification. They may be able to distinguish major taxa or large species but they usually have difficulty identifying several medium-sized or closely related species, even with the aid of field guides (Boonratana, 1998a; 1999d; 2000; 2001). In contrast, field conservation staff from stakeholder communities are natural wildlife observers, although correctly identifying animals using field guides is still problematic. Also, preparing the trainees, particularly government staff, for the outdoors (camping and set-up) before field trips reduces some of the problems that could arise (e.g., flooded tents and damaged supplies). The trainees will gradually overcome their fear of the forest and related supersti-

tions only through further exposure and experience (Boonratana, 1998b, 2000).

A planned, focused and balanced training programme

Balancing theory with practice when conducting training for field conservation staff is important. Short classroom-based theory training generally does not achieve a desired level of competence (Timmins, 1998; Boonratana, 1999b). Carefully equipping the staff with appropriate knowledge and skills reduces the need to start from scratch when in the field. Similarly, extensive theory training without any practical applications (Evans & Sengsavanh, 1997) will not achieve the desired result (Boonratana, 1998b). Likewise, a poorly planned and executed on-the-job training results in unqualified staff and wasted efforts and resources (Claridge *et al.*, 1998).

Lack of information on many existing and proposed protected areas results in a tendency for field training to be carried out in conjunction with biodiversity surveys. However, one cannot be carried out without compromising the other, particularly when the surveys are of short duration and the trainees have

had no training or experience (Timmins, 1998; Boonratana, 1999b). On the other hand, biodiversity surveys are excellent opportunities for hands-on experience and additional training for those with a requisite level of competence.

Some training modules (e.g., radio telemetry) are currently not relevant given the present capacity of the field conservation staff and the regional context. Hence, trainers should develop skills in using basic, but essential equipment (e.g., compass, map, and binoculars). Likewise, some manuals tend to be too broad or too specific, and should only be used as training references. In general, trainers should rely more on their professional judgement and experience, particularly when field conservation staff have varying backgrounds. While standardising training is desirable, diversity in content and approach may be more appropriate given the current context.

Support materials

Drawing on many local and regional examples and relating these to local protected areas allow the trainees to better understand conservation basics and training objectives. Slide presentations and relevant video programmes are useful teaching aids and frequently have some impact on conservation education and awareness (Boonratana, 1997; 1998b & d). However, there is clearly a shortage of video programmes on wildlife and their habitats in the region, in a language understandable to the trainees. In the field, staff were frequently handicapped by a shortage of basic field equipment like binoculars, compass and maps (Boonratana, 1997; 1999a; 2001), or were supplied with basic field gear

that only lasted the trip (Boonratana, 1998a; 2001).

Honest evaluation

Effective training should be measured in terms of how well trainees are able to perform assigned tasks (Claridge *et al.*, 1998). Not many reports on field training in the region provide an assessment of the training's effectiveness, and only a handful (Timmins, 1998; Boonratana, 1998a; 1999a, b & d; 2000, 2001) provide unbiased evaluations of the training and the trainees. Even fewer are those that report a training programme's lack of success in achieving desired goals (Timmins, 1998; Boonratana, 1999b). Presumably, some trainers feel that such reporting would mar their capabilities. Some implementing agencies (consulting agencies and conservation NGOs) actually discourage trainers from giving honest assessments, possibly to prevent their reputation from being ruined and/or to avert risks to chances of securing funds in the future. Objective appraisals and reporting are essential to improve and strengthen trainers, trainees, and train-

ing programmes, and identify future needs at the individual or institutional level. Nevertheless, such reporting should clearly explain reasons why the training was unsuccessful.

However, in most reports, experts have described providing on-the-job training while accompanying local support staff and counterparts in carrying out biodiversity surveys. At best, this should only be called "work experience", as proper on-the-job training is a process that includes having a clear set of goals and objectives, a structured training programme, as well as proper evaluation and documentation (Claridge *et al.*, 1998).

Motivation and commitment

Experiences have shown that interest is the greatest motivation for learning and fulfilling responsibilities. Lack of interest in fieldwork among trainees especially some government staff is a major reason for failure in achieving desired results (Boonratana, 1998b; 2000). This is partly because of the hardship involved and the lack of rewards. Often, allowances of field staffs do not compensate for long hours, difficult working conditions, and the risks involved. The protected area management system is often viewed as outside the career structure, so it is common for the staff, lacking in capacity and capability (including those not favored by their superiors), to be assigned to protected areas. Frequent staffing changes also result in protected areas that are staffed with inexperienced and unqualified individuals (Boonratana, 1998a & b, 2000).

A significant achievement of the training of field conservation staff is the establishment of Village Conservation Monitoring Units in



Classroom-based theory training at the Nakai-Nam Theun NBCA, Lao PDR.

Photo by R. Boonratana/UCN

three sub-upland zones in the Nakai-Nam Theun National Biodiversity Conservation Area, in Lao PDR (Boonratana, 2001). These units, composed of villagers from the respective zones, received both classroom and field training. Soon after, one unit established simple rules and regulations regarding the management and use of terrestrial and aquatic life for its zone, which comprises 23 villages. The rules and regulations may be far from perfect, but the unit has taken a major step towards decentralized protection, conservation, and sustainable natural resource management. These rules and regulations were later extended to a military unit based in the zone. This clearly shows the value of the training, and the importance of making stakeholder communities understand their role in the ecosystem by encouraging their participation in protected area management.

The Broader Picture

Training and capacity building for protected area staff and stakeholders are important processes towards the effective implementation of conservation and management activities. The training has shown that, once equipped with the necessary knowledge, skills and tools, the staff can carry out their assigned tasks and sometimes even take conservation

efforts a step further. However, having skilled and knowledgeable staff alone is not sufficient. They need to be reinforced with strong leadership, motivation, and institutional implementing capacity. Lacking these factors will more likely constrain the implementation of field management activities than the lack of funds.

Experience has shown that training and capacity building of conservation staff can only be achieved through intensive long-term support accompanied by applied training and refresher sessions. A 'one-off' training event at this level would have limited success, as it may not be adequately absorbed or acted upon. Regular reinforcement and supervision allow the staff to further improve their skills and knowledge. Training and capacity building are likely to be significantly more effective when provided systematically over a period of several years within each protected area, rather than delivered in a centralized 'one-off' training event (Boonratana, 1998a, b, c & d; 1999a & d; 2000; 2001).

In addition, all training programmes must have equally strong components of theory and practice. Without practice under field conditions and exposure to real situations, field conservation staff would not be able to carry out designated tasks and responsibilities

(Boonratana, 1998b). On-the-job training, integrating specific requirements of the protected area, can build the capacity of the staff and simultaneously address the area's conservation needs. Hence, training programmes should be integrated into protected area management. Furthermore, skills acquired should immediately be translated into meaningful activities, carrying forward the processes initiated during the training. Otherwise, much of the efforts, despite a successful transfer of knowledge and skills, will be wasted.

Recommendations

Training activities are costly and time-consuming, but essential for building local capacity to protect and conserve natural resources and heritage. Some recommendations for the successful training of field conservation staff in the region include:

- Capacity building activities should be carried out over several years, with the first refresher session repeated six months after the initial training programme. Afterwards, it should be provided annually, with topics and skills strengthened and added accordingly.
- Training programmes should comprise both theory and practise with a right mix of knowledge, skills and attributes, and the practise component built into structured on-the-job training.
- Training can overlap with biodiversity surveys when these are conducted over several months, or when field staff have had adequate training and experience.
- Training should include potential national trainers, such as faculty members of a national university, as well as those interested in conservation, research and protected area



Photo by R. Boonratana/IUCN

Accessing remote areas allows field teams to spread awareness materials (Nam Theun Corridor, Lao PDR).

management, such as biology students from local universities.

- Trainers should possess an excellent grasp of the topics and skills to be taught, extensive field experience, and strong leadership.
- Trainers must (and should be allowed to) provide an honest assessment/evaluation of the training and the trainees, and describe their strengths and weaknesses.
- Training should be delivered in the local language. Otherwise, trainers should have a fair command of the local language should an interpreter be necessary.
- Interpreters should have a good knowledge of protected areas and field management activities, some background in relevant sciences, and a pleasant personality.
- Trainees should be selected according to predetermined criteria and qualities.
- Field conservation staff should spend at least a week (under supervision, as part of the training programme) at established zoos in the country or in the region, and carry out exercises and assignments in wildlife identification, track observation, and other related activities.
- Exchange and joint field efforts should be held between field conservation staff of different protected areas.
- Study tours (under supervision, as part of an advanced training programme) to protected areas with successful field management activities should



Trainees, comprising military and protected area staff burying poached animal in Nam Poui NBCA, Lao PDR and witnessed by a village headman, his deputy and the leader of a local women's union.

Photo by R. Boonratana/IUCN

be provided for staff that have excelled at training.

- Videos of wildlife, habitats, protected area management activities, and others should be developed or translated to the local language. These should preferably be from the region or areas with a similar context.
- Government agencies must re-evaluate the career structure in relation to protected area management and to recruit and retain qualified people in significant positions. ■

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STARTING FROM SCRATCH

Training for Protected Area Management in Lao PDR

► By **KLAUS BERKMÜLLER** and **SANGTHONG SOUTHAMMAKOTH**

Background

Protected area establishment in Lao PDR has a relatively short history. A systematic search for areas with high conservation value began in 1988 under the Lao Forestry Department and the Conservation Sub-Programme (LSFCP) of the Lao-Swedish Forestry Programme. In 1993, the Lao Government declared 18 National Biodiversity Conservation Areas (NBCA) covering over 10% of the country's land area (Lao Government, 1993). Two additional areas declared in the following years raised the coverage by 2% (Southammakoth, 1999; Robichaud et al., 2001). While

these had the essential attributes of a protected area under IUCN categories I and II (Strict Nature Reserve or National Park), they were then unmanaged Multiple Use Areas. Having been declared at the national level, the NBCAs came under the authority of the Division of Forest Resource Conservation in the Lao PDR Department of Forestry.

As a follow-up to the formal protected area declaration, an appropriate and sustainable management system had to be developed. The first management trial involved the small and degraded forest reserve of Houei Nhang (FRCP, 1988), close to the capital Vientiane. Other areas followed from 1993 onward until, by the year 2000, sixteen NBCAs had come under

some form of management (Robichaud et al., 2001).

To be appropriate, the management system had to take account of the following:

- Laos lacked trained personnel in all sectors and the capacity for conservation management in the civil service was low (Sawathvong, 1997). Training had to impart basic skills that had to be sufficiently practised in order to attain acceptable standards. Technical assistance was necessary in devising a management system. Guidelines for basic staffing and essential training had been proposed in the 1995 Protected Area System Status Report (Berkmüller & Southammakoth, 1995).



Photo by Klaus Berk Müller

- Most Lao people live in a subsistence economy where forest products gathered in open access wildland provide a significant proportion of the family income and are part of the fabric of rural life and culture (Raintree & Sodyara, undated). Participatory management structures and consideration of people's dependency on protected area resources are therefore essential for effective management. At any rate, the low staffing levels of Laos would be insufficient for adequate protection through law enforcement alone.
- Government funding for protected areas is minimal and bound to remain low for the foreseeable future. For any management system to be sustainable, it has to co-exist with low inputs in investment and personnel while drawing reliable funding from an external source for an extended period of time.

Virtually, donors supported all of the protected area management trials. The Lao government assigned different regions of the country to different donors to avoid conflict and overlap. All projects (and donors) acknowledged, with varying emphasis, the need for participatory management structures. Projects differed considerably in design, ranging from management support embedded in a larger forestry sector programme, to the small project focused on one area. There were significant differences in the amounts spent on investment, the available advisor time for each protected area, and the administrative/bureaucratic procedures, most notably the operating cost disbursement policy. For several years, a Technical Advisory Group for Protected Areas and Wildlife Conservation had met at three- to six month-intervals to facilitate information exchange between projects

and to establish an *esprit de corps*' among protected area personnel (CPAWM, 1998). However, projects tended to focus on their internal problems thus limiting intra-agency coordination. This was true also for capacity building although projects sometimes delegated staff to participate in training events organised by other programmes. The major projects and donors supporting protected area management included the:

- Conservation Sub-Programme of the Lao-Swedish Forestry Cooperation Programme (LSFCP) funded by the Swedish government,
- Global Environment Facility (GEF)-financed conservation component of the Forest Management and Conservation Project (FOMACOP) funded by the World Bank and the Finnish government, and
- Biodiversity Conservation Project (BCP) funded by the Netherlands government.

The World Conservation Union (IUCN), Wildlife Conservation Society (WCS), and the World Wide Fund for Nature (WWF) provided significant inputs to protected area management. The private sector contributed in hydropower project planning and implementation.

Training

Training needs had been anticipated early on although no formal training needs assessment had been carried out then. In 1988, the LSFCP commissioned the design of a 10-week course covering essential topics on protected area management (Berkmüller, 1989). Beginning in 1989, Huay Nhang offered the course for three consecutive years. An evaluation (Ebutt, 1991) found the course structure and content appropriate but noted shortcomings in the delivery, which had almost totally omitted fieldwork. The problem was traced to the instructors who were not full time trainers, but offi-

cial in what was then the Bureau for Wildlife and Fisheries Conservation, and who - once a year - put on the 'trainer's hat'. The evident lack of Lao trainers specialising in protected areas continues to hamper protected area management to this day.

Protected areas training remains essentially project driven. Projects generally contract out their training needs to NGOs or consultants, but some are conducted in-house. The training of trainers is frequently emphasised but rarely sustained to produce competent resources. Furthermore, there are no institutional homes that would absorb protected area training specialists once a project has ended. Contracting out is complicated by the almost complete absence of local NGOs and compounded by lengthy and unpredictable approval procedures for foreign consultancies. An accredited local NGO providing development extension training, was in great demand to train project staffs. Variable emphasis was placed on study tours and short or long-term training or degree studies abroad.

Unfortunately, there was no evaluation of the effectiveness of the approaches taken by various projects. Most projects published several training manuals. FOMACOP produced two highly detailed and comprehensive documents (Bonita & Payuan, 2001) on village forestry, parts of which have application in protected area management. LSFCP generated two protected area manuals; one on land use planning (Jones, 2001) and another on eco-tourism (Craig, 2001). Both manuals also appeared in a protected area manager's guide (DoF, 2001), a collaborative effort between BCP, LSFCP, and IUCN. Protected area management training should thus be reviewed to find out the extent these documents are used in formal training or in self-directed learning.

Claridge (1998) assessed the training needs in the overall context

of conservation and human resources management. Several of his recommendations addressed the problems inherent in project driven training, such as (i) maintaining a central register for planned project training and records of completed training, (ii) and establishing a clearing house for all training materials. To increase training capacity, Claridge stressed the need for an appropriate institutional home especially for the participatory management aspects of training, and the importance of motivation of staff and working environment.

Training under the Biodiversity Conservation Project

Among the protected area management projects, the 5-year 'Biodiversity Conservation Project' (BCP) in Champassak Province of southern Laos, funded by the Dutch government and implemented with technical assistance by IUCN was provided adequate and timely funding. A full time advisor also provided a favourable working environment that included quarterly evaluations of progress participated in by all staffs. The project supported management implementation in two NBCAs involving 14 staffs in each

area, of which two thirds were assigned to monitoring and patrolling, and one-third to extension. About two thirds of the staff were delegated civil servants with a forestry background. The project hired several female extension workers and villagers that included ethnic minorities, for monitoring and patrolling. All staff were literate and a few had participated in vocational training courses in agriculture.

The training approach

Training for both the resource protection and the extension staffs differed but the approach was identical.

- Each training was short term, conducted on site with field practice, and aimed at the immediate application of skills resulting in concrete outputs that were clearly relevant to management.
- The number of trainees per training event was kept below 20 to allow adequate individual attention and minimise logistical problems in the field.
- Management application and outputs were frequently supervised and regularly evaluated. Good performance was

- recognised and rewarded.
- There was a deliberate progression in the complexity and focus of the training. Each training course reinforced and built on the previous one. The first training concentrated on data gathering techniques and the underlying purpose. The second training reviewed the work done so far, to improve skills, and to present information in graphs and on maps. The third training compiled the existing information and discussed insights and experiences in a structured way. All this has led to the formulation of a monitoring system and its use for work planning and problem solving.
- Outputs were regularly evaluated. Each extension and resource protection staff shared his or her experiences. Good performance was rewarded. Evaluations clearly showed whether shortcomings were caused by a lack of skills and understanding or were unrelated to training.
- All staffs were eligible for study tours to enhance motivation.

The above training approach was adhered to although the timing was not always optimal. Staff transfers and unrealistic expectations by local and central government with respect to project and staff capacity for providing development assistance complicated matters. The training content (see **Box 1**) is largely reflected in 'A Manager's Guide to Protected Area Management in Lao PDR' (DoF, 2000).

Initial orientation for all staff

Since all staffs were beginners in protected area work, they were first oriented on protected areas and their



Photo By Klaus Berkmueller

Box 1. Manager's Guide: Summary of Contents

The guide has six chapters. Chapter 1 contains general information. The other chapters mainly contain advice on specific tasks and activities.

Chapter 1: Getting started

This chapter provides an introduction to protected area management. It explains their functions and benefits and the basic strategies for management. It also strongly emphasises a participatory approach. Other basic topics covered include sources of information, laws applying to Lao protected areas and the institutional setting.

Chapter 2: Staffing and organisation

This chapter discusses organisational matters that lay the foundation for all management activities. It contains advice on how to allocate responsibilities and suggests ways to avoid problems by agreeing on rules for attendance, vehicle use, per diem payments, etc.

Chapter 3: Planning and reporting

This chapter goes through the steps of preparing an annual workplan. It provides details on tasks ranging from logbook maintenance to monthly summaries and progress reports. It also explains how to prepare for management performance evaluations and suggests methods for problem solving.

Chapter 4: Participatory land use planning and management

This chapter focuses on the tasks of staff dealing mainly with villages. It describes the sequence of activities necessary for developing partnerships with villagers in managing protected areas. The key lies in developing agreements on boundaries between neighbouring villages and the protected area, and on local rights and responsibilities. Villagers usually welcome assistance in zoning their own lands and recognise the need for local rules that are consistent with the law, provide protection to key species and habitats, and also confer rights for the sustainable use of some wildlife and non-timber forest products. Activities described here are closely linked to the on-going national process of Land Allocation.

Chapter 5: Resource inventory, monitoring and protection

This chapter focuses on the tasks of each staff and villagers and deals mainly with habitat and wildlife. It starts off with a task overview as well as the training required. Specific activities include trail surveys, violation reports, and patrolling records. Also discussed are files, maps, and statistics that need to be kept for monitoring.

Chapter 6: Livelihood development and conservation education

The last chapter introduces approaches for improving village livelihoods that would reduce dependence on natural resources from the protected area. It does not attempt to describe the technical interventions that may be involved - there are other sources of information on this - but rather how to design a programme that links development to conservation objectives. Education plays a key role in this, so some ideas on how to promote conservation awareness among villagers and in local schools have been included.

purpose. The trainers stressed the problem-solving nature of management but avoided discussions of the causes of problems and the complex solutions so as not to discourage or confuse the trainees.

The trainees were also briefed about their responsibilities, the rules and procedures to be followed, the purpose and process of evaluations, field allowance entitlements, vehicle use, and work planning and reporting. These seemingly mundane 'housekeeping' issues are essential for a good working environment.

The topics were not exhaustively dealt with in one session. Internal rules and procedures evolved and

relevant topics were frequently brought up in evaluation sessions.

The evaluations started with a review of the daily logbook and the monthly summary reports. A report and discussion of activities by both the resource protection and the extension sections followed. Actions to be taken were recorded and discussed at the next session. The orientation combined with subsequent evaluations and structured monthly reporting achieved its dual purpose, namely: creating a basic understanding of project area management tasks, and establishing a functional working environment with acceptable standards of accountability.

Resource protection staff

The foresters among the staff at first thought their role focused on law enforcement alone although they felt inadequate for it. Trainers did not cover topics on weapons training, arrest, or tactical approaches to apprehending suspects, for two reasons. Rigorous law enforcement was not feasible then, and the participatory management approach implied that law enforcement was to be low-key especially during the initial years of management. This is not to say that law enforcement is superfluous. On the contrary, staff morale quickly declines if serious offences are allowed to go on despite their best effort in detecting and reporting these. Instead, the trainers stressed the importance of building a credible monitoring system.

Initial instructions in field orientation and trail mapping were conducted in-house, and each staff was obliged to do fieldwork immediately. The resulting map of foot trails and vehicle tracks was widely recognised to be helpful in other management activities, notably wildlife survey and patrolling. Detailed knowledge of the trails helps in drawing boundaries of protected area sub-divisions (blocks) for which monitoring data are collected and filed.

Recognising, recording, and filing evidence of wildlife and extractive use impacts followed. Trip preparation, field craft, the process of recognising and observing signs and evidence were discussed during several theory classes, and then practised in two one-week field camps with daily discussions around the campfire. Activities were closely supervised to ensure that the data obtained was adequate for monitoring. The third training reinforced the first and second by checking individual staff's competence in producing adequate field records and improving capacity in compiling, analysing, and presenting data. The main training output at this stage was a monitoring report compiled and

tabulated from the existing data, quarterly data summaries, thematic maps, and finally, the presentation of findings on impact types and distribution, key species records and extent of coverage.

Foreign consultants closely supervised the wildlife survey work. They were required to provide daily instructions for the assigned local staffs; make structured observations about staff motivation, interest, and competence; and conduct daily debriefings.

A regional Thai/Lao-speaking consultant with extensive field experience conducted the training. Used to university student-trainees, the consultant had to adjust the teaching style and content. The experience showed that village-hired staff and government officials could train together and complement each other.

The training of resource protection staffs succeeded in imparting basic monitoring skills, a prerequisite for effective management. Data collected by local staff permitted the mapping of encroached areas. These were corroborated later by satellite imagery and constituted a persuasive argument in briefings for local decision makers.

Extension staff

A foreign NGO conducted a Participatory Rural Appraisal that focused on methods and approaches and identified those staff most suitable for extension work.

Lao trainers carried out the second training for the extension staff. It was a learning experience for the trainees, as they had no prior exposure to protected area management needs. Their terms of reference were therefore spelled out. A major output was a guiding document for the first year of extension work. It detailed the information to be obtained from all user villages, which would determine whether a village is a potential ally or a potential threat, or both a threat and ally, to the protected area. Selected villages

were to receive development assistance in line with a participatory management approach.

The third training consequently dealt with land use assessment and development planning at the village level. A fourth training focused on teamwork, village organisation, and small project planning and supervision.

Information from the initial village contacts yielded a better understanding of people's dependency on protected area resources and the likely locations of conflict with protected area interests. Some staff were able to facilitate a debate on land use rules to be adopted by village clusters. This debate underlined the participatory nature of management. The rules formalised by district government had increased village control over and responsibility for wildland resources. However, both activities were highly structured and, occasionally, showed little evidence that staff would develop their abilities beyond strictly following a series of instructions.

This was true also for development extension. Noting the generally disappointing results, the trainers tried seeking out opportunities where tangible incentives could be tied to conditions that would yield demonstrable conservation benefits. The resulting consultancy report (Flint, 2000) noted several concrete options for high priority villages.

The incentives identified were improvements in indigenous rice irrigation systems, village control over, and increased returns from forest products, and investments for village-operated ecotourism. The conditions included abandoning of clearings in sensitive areas and protecting use forest formally allocated to village control. Although not conceived as training, discussions at the villages and district offices provided a great deal of learning.

Lessons learned

The systematic collection and compilation by local staff of infor-

mation on key species and impacts was a major achievement of the Biodiversity Conservation Project. However, maintaining acceptable quality standards, the drafting of regular summary reports, and the transfer of data to maps required frequent if not constant supervision. The training was evidently unable to convey the intellectual curiosity and critical thought needed for the proper treatment and analysis of the data. The effectiveness of the training thus depends on the presence of strong and competent leadership and consistent supervision and evaluation.

Protected area extension tends to be vaguely associated with rural development or community forestry in a buffer zone. High government expectations for the project to provide development assistance meant that relevant topics were prominent in the training of extension staff. The distinction between protected area extension and development extension was blurred, a problem that is probably not unique to Laos.

Protected area extension workers should help set the priorities for and devise the framework for integrating conservation and development. Competent state organisations or NGOs should then take over the development aspects while protected area staffs monitor the implementation and verify the anticipated conservation benefits. Development extension is best left to the professional services of the government or a competent NGO. Where these do not exist, a crash course in development extension would not be the answer, as drawn from BCP's experience.

Discussion between the local people, protected area staff, and district officials about concrete 'opportunities' for integrating conservation and development, generated considerably more interest than previous attempts at overall village land use planning and development. Facilitating the latter process proved too complex for an extension worker.



Photo by Klaus Berk Müller

On hindsight, the expectations placed on extension staff were unrealistic, as the qualities of a skilled facilitator could evidently not be conveyed in a series of short trainings. Grooming effective extension workers from scratch would be difficult during a project's lifespan. This underlines the need for permanent local training institutions that would provide experienced protected area professionals who can function as both trainers and training consultants.

Projects that have a weak extension capacity should start to seek out and focus extension efforts on 'opportunities', and 'learn while doing' under the guidance of an experienced resource person. To be on the safe side, extension capacity should be assumed weak if it has to be created by the project. An alternative would be for government or NGO partners with the necessary extension capacity to be included in the project design of integrated conservation and development in buffer zones.

Quarterly evaluations demonstrated that the newly acquired skills of trainees should be practised under close supervision and reinforced by refresher training. As such, the short term training as described could ably impart the necessary knowledge and skills required for gathering useful field data. On the other hand, the commitment necessary to produce better than acceptable results could not be taught.

The evaluations also showed that motivation is perhaps a more decisive factor in generating results than training. Most of the government staff could not stay overnight in the field. Village-hired and a few exceptionally motivated government staffs collected most of the field records. This suggests that an effective team could consist of dedicated government staffs assisted by part- or full time staff hired in local villages.

Attendance was at times erratic and, at one stage, the average number of days spent in the field

dropped to as low as two days per month. Lack of motivation and resulting absences were largely due to low pay as evident from substantial differences between staff. To boost morale and increase commitment and accountability, BCP developed a simple and effective system for recording individual attendance and the amount of fieldwork done. It also provided modest material incentives for overnight stays in the field by individuals. Public recognition of good work, especially from high-level officials, was another powerful motivating force.

An aerial inspection of hot spots arranged for high officials and key staff was highly successful and cost-effective in generating interest and action in protected area monitoring. A teaching package and a teacher's training in using it soon spread to numerous schools at a minimal investment of time and effort by protected area extension workers. Such innovative ways to keep manage-

ment issues in the public eye were probably more effective motivators than organising study tours for a few selected participants.

Conclusions: Variables that Determine the Effectiveness of Training

The trainee himself or herself is the main variable in the effectiveness of training. Thus the more influence one can bear on trainee selection, the better.

The manner of delivery and appropriateness of the training content are also essential to a successful training. It is appropriate if it concentrates on the skills that are needed at the time and are within the ability of the trainees to learn. The manner of delivery is suitable if it avoids abstractions and incorporates immediate field application.

New skills need time to be absorbed and experience needs time to grow. Supervision, reinforcement, and evaluations are essential for a working environment with acceptable accountability standards. Without accountability, systematic management is not possible and any training will be in vain.

Perhaps most important of all is motivation. Recognising individual accomplishments or good work increases staff morale, especially when occasionally combined with material or financial incentives. Not the least, staffs become motivated when they know that they are making an important contribution to overall management.

The forestry schools financed by forestry sector programmes for the training of technicians and middle level foresters could become institutional homes for conservation-related training.

Project driven training has a limited lifespan and a short institutional memory except where international conservation NGOs and inter-government organisations employ instructors and document course outlines and materials. Generally, it is

tailored to meet project needs rather than standardised to meet general protected area requirements. In the process, wheels are re-invented several times over, while existing course outlines and materials are rarely considered or totally unknown. Modest but long-term protected area training would achieve more for management implementation and full time trainers would be more competent in all aspects of protected area training. Projects would then have access to a reliable training institution, which could be partially financed from services provided. ■

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Review¹ of the Protected Area System of Vietnam

► By **GIACOMO RAMBALDI, SAHLEE BUGNA and MARTIN GEIGER**

BACKGROUND INFORMATION

Vietnam has a landmass of 329,566 km² and is bordered by China on the north, and Laos and Cambodia on the east. Most of the country consist of hills and mountains reaching up to over 3,000 meters above sea level, a 3,260-km long coastline harbouring a variety of marine and coastal habitats, inland lakes and rivers, tropical rainforests, monsoon savannah, sub-alpine scrubland and two important river deltas. These habitats are home to more than 12,000 plant species of which 10,484 have been identified and 2,300 are used for food, medicine, construction timber and others. Fauna includes 280 mammal, 828 bird, 180 reptile, 80 amphibian, 471 freshwater fish, 2,500 saltwater fish and many insect species (Hoang Hoe, et al, 2001).

The World Conservation Monitoring Center rated Vietnam as the 16th most biologically diverse country in the world (WCMC, 1994). About 40% of inventoried plant and 10% of animal species such as mammals, birds and fish, are endemic to Vietnam (Hoang Hoe, et al, 2001). The country also harbours globally important populations of some of Asia's most threatened animals, such as Javan Rhinoceros, Crested Argus, Douc and Delacour Langurs, Edwards Pheasant, Green Peafowl and Tonkin Snub-nosed Monkey²

¹ This article draws information from existing literature duly referenced which has been verified for accuracy, updated and complemented in collaboration with agencies and professionals operating in Vietnam.

² Before its 1992 re-discovery in Ba Be National Park, the species was thought to be extinct.

(*Rhinopithecus avunculus*). The global significance of the country's biodiversity has been reinforced by the discovery of four new species of large mammals between 1992 and 1994: the Sao Ia (*Pseudoryx nghetinhensis*), the Giant Muntjac (*Muntiacus vuquangensis*), the Truong Son Muntjac (*Muntiacus truongsoneensis*) (Hoang Hoe, et al, 2001; Birdlife, FIPI, 2001; Pham Nat, et al, 2000), and the Annamite Striped Rabbit (*Nesolagus timminsi*) (Timmins and Duckworth in Baltzer et. al., 2001).

Forest vegetation suffered significant degradation in the 20th century, decreasing from 45% of the total land area in 1945 to 30% in 2000 (Hoang Hoe, et al, 2001). There are many threats to the country's terrestrial biodiversity but the most important has been deforestation due to logging, clearance for agriculture, forest fires, war damage, shifting cultivation, firewood collection and overgrazing. The remaining area of good quality forest continues to decline. Apart from deforestation, many individual species are endangered or have been eliminated due to massive over-utilization. Collection of rare medicinal plants and timbers, over-hunting and collecting of wildlife for trade are all common threats.

Marine ecosystems consist of mangroves (252,000 hectares), coral reefs (40,000 ha), tidal marshes and mudflats (290,000 ha), and saline and brackish aquacultural ponds (200,000 ha). Recent inventories show that more than 11,000 species of marine flora and fauna thrive in these waters, including seagrass (15), seaweed (653), fish (2,175) reptiles (21), marine

mammals (21) and migratory waterfowl (200). Some 617 species of coral have also been identified (NEA/MOSTE, 2001[1]). Important marine fisheries are based on shrimps, lobsters, crabs, squid, mackerel, pomfret, sardines, bream and bass.

Freshwater and marine habitats are threatened by siltation, industrial and domestic pollution, over-fishing, destructive fishing methods, pollution from agricultural pesticide run-off, land reclamation, physical disturbance, and introduction of exotic species.

Habitat fragmentation also has major impacts on biodiversity. As habitat patches become encroached and split, their capacity to support species declines. Many larger, low density or species with wide range requirements may soon vanish.

THE PROTECTED AREA SYSTEM Legal Framework

In 1945, then President Ho Chi Minh signed Ordinance No. 49, which transferred the management of the Forest Service, including the Forest Protection Department (FPD), to the Ministry of Agriculture. The FPD tasks have largely concentrated on managing forest use to assist the war effort and meet general public demand, and did not consider the development of protected areas (Hoang Hoe, et al, 2001).

Legislation specific to protected areas can be traced back to Ordinance No. 18/LCT, the Law on Organization of the Government Council of the Democratic Republic of Vietnam, which established the General Department of Forestry in 1962. The Department became responsible for managing and developing plans for the national forestry sector. In the same year, the Department declared Cuc Phuong Protected Forest as the first National Park, which became the first component in the country's Special-Use Forest system. In the following years, the Department continued to under-

The **Australia Vietnam Science-Technology Link** - supported by Coombs Computing Unit at the Australian National University - provides online access to electronic versions (English and Vietnamese) of a number of key environment-related laws. Simply browse to <http://coombs.anu.edu.au/~vern/luat/luat.html>

take forest surveys in northern Vietnam, and designated 49 Special-Use Forests. However, high wartime demand for timber and lack of resources meant that these areas received few management inputs and forest degradation continued (Birdlife, FIPI, 2001).

In 1976, the General Department of Forestry was upgraded to Ministry of Forestry. Decision No. 41/TTg of the Prime Minister also established the category of Prohibited Forests and gazetted 10 forest areas, which together covered 44,310 ha. Several protected areas were designated in the following years, including Nam Cat Tien National Park in 1978, Mom Ray Nature Reserve in 1982, Con Dao National Park in 1984, and Cat Ba National Park in 1986 (Birdlife, FIPI, 2001).

In 1986, Decision No. 194/CT decreed the establishment of 73 new Special-use Forests nationwide, most of which lacked management boards, budgets or investment plans. This situation was corrected by Decision 1171/QD, which defined Special-Use Forest categories as well as management regulations.

Expansion of the Special-Use Forests system continued in the early 1990s, bringing the total number of Special-Use Forests to 93 with a total area of 985,280 ha. A 1991 review of the forestry sector, however, revealed that many Special-Use Forests were too small and/or too degraded to meet conservation objectives. The review proposed a significant increase in the areas set aside to conserve the nation's biodiversity (WCMC, 1994).

In 1995, the government approved the Biodiversity Action Plan (BAP), which was the country's response to its ratification of the Con-

vention on Biological Diversity. Major programmes of the BAP include the establishment and management of protected areas and the development of their buffer zones; creation of marine and wetland protected areas; establishment of gene banks; and the enhancement of measures to protect agricultural biodiversity. In line with BAP objectives, the Ministry of Agriculture and Rural Development (MARD) announced plans to expand the Special-Use Forest system to 2 million hectares.

In 1997, MARD hosted a national conference on the Special-Use Forests network, after which the Forest Protection Department (FPD) prepared what became known as the '2010 list.' The list proposes the addition and removal of certain sites from the system to bring its total coverage to 2 million hectares by 2010, covering over 6% of the national land area (Birdlife, FIPI, 2001). The list has yet to be submitted to the government for approval and is currently being revised by the FPD based on the Sourcebook of

Protected Areas developed by the Forest Institute for Planning and Inventory (FIPI) and Birdlife, a comprehensive set of classification criteria and a Protected Area Strategy both developed by the National Protected Area Working Group under MARD.

The latest regulations on the management of the three types of forests, including Special-Use Forests, have been promulgated through Decision No. 08/QD-TTg, which defined protected area categories, and prescribed the institutional structure that would manage the Special-Use Forest system.

Other legislations significant to the management of Special-use Forests are listed in **Table 1**. Legal instruments directly affecting wildlife protection are found on **Table 2**.

In addition, Vietnam is also party to a number of international agreements related to biodiversity conservation. The Decree 20/2002/ND-CP regulates the signing and implementation of international agreements.

Table 1. Directives significant to the management of Special-Use Forests

Legal Document	Date
Decision No. 08/QD-TTg on the management of Special-Use Forest, Protection Forest and Production forest	11 January 2001
Decree 163/ND-CP on allocation and lease of forest land to organisations, households and individuals for long-term forestry purposes	16 November 1999
Circular 56/1999/TT-BNN-KL guiding the elaboration of village and hamlet conventions on protecting and developing forests	30 March 1999
Decision 34/1999/QD-BNN-TCCB by MARD promulgating the regulation on working relationships between the Forest Protection Department and the National Parks under MARD	12 February 1999
Decision 245/QD-TTg of the Prime Minister on state management responsibility of all levels on forest and forestry land	21 December 1998
Decision 661/1998/QD-TTg on objectives, tasks, policies and organisation of the 5 Million-Hectare Reforestation Program	29 July 1998
Directive 286/TTg by the Prime Minister on urgent measures to protect and develop forests	2 May 1997
Decree No. 77/CP on penalties/fines in forest protection and forest resources management	29 November 1996
Directive No. 130/TTg on protection and management of endangered plant and animal species	27 March 1993
Decree No. 14/CT on penalties/fines in forest protection and management	5 December 1992
Decision No. 327/CT on use of open land, bare hills, forest, coastal alluviums and water bodies	15 September 1992
Decree No. 18/HDBT on endangered species and management and conservation mechanisms	17 January 1992
Decree 58/LCT/HDNN by the State Council on the Law on forest protection and development	19 August 1991

Table 2. Legal Instruments for Wildlife Conservation

Legal Instrument	Year
Decree 11/2002/ND-CP on management of export, import and transit of wild animals and plants	2002
Document 637/KL-BTTN of MARD instructing the management of wild fauna and flora	2000
Official Letter No. 2472/NN-KL-CV on strengthening wildlife protection and development	1996
Directive No. 359/TTg on urgent measures to protect and develop wild animal species	1996
Government instruction on protection and administration of precious, rare floral and faunal species	1993
Decision 18 of the Council of Ministers on a total ban on logging or hunting of 13 species of trees and 36 species of animals and a limited ban on logging/harvesting of 19 plants species and 10 animals	1992
Decision 276 of Ministry of Forestry forbidding hunting of 38 wildlife species	1989
Law on Forest Protection including articles of administration of forest wildlife	1973
Government regulations on forest wildlife hunting	1963
Government instruction forbidding elephant hunting	1960

Protected Area Categories

Forestland in Vietnam is divided into three categories, namely Production, Protection and Special-Use Forests. Production Forests are earmarked for exploitation in compliance with approved management plans while Protection Forests are designated to protect land and water sources in critical areas (Nguyen Van San, et al, 1999) and their exploitation is restricted to mainly non-timber forest products in natural forests. Special-use Forests are designated on the basis of their importance for

Ratification of International Agreements

Convention on Biological Diversity
Signature Date: 28/05/1993
Ratification Date: 16/11/1994
CITES - 1994
RAMSAR Convention - 1988
WHC - Signed 19 October 1987

the conservation of Vietnam's biodiversity, science, tourism or cultural and historical heritage. In January 2001, Decision No. 08/QĐ-TTg, classified Special-use Forests into the following categories:

- National Parks
- Nature Reserves - this was further divided into two sub-categories: 'nature reserves' and 'habitat/species management areas'; the latter, however, is not clearly defined
- Cultural, Historical and Environmental sites (Landscape conservation areas).

These protected areas (**Table 3**) comprise mainly terrestrial forest sites but also include a small number of wetland and major marine sites like Con Dao, Bai Tu Long and Cat Ba.

Some of these protected areas have also gained worldwide recog-

nition as:

Ramsar Sites - Xuan Thuy was designated as the first (1988) and currently the only Ramsar Site in the country. Proposed Ramsar Sites include Tram Chim National Park, Thai Thuy proposed nature reserve, the wetlands of Cat Tien National Park and Tam Giang-Cau Hai proposed marine protected area.

World Heritage Sites - There are currently four in Vietnam: Ha Long bay, the complex of Hue monuments, Hoi An ancient town and My Son sanctuary.

Man and the Biosphere (MAB) Reserves - The mangroves of Can Gio, in Ho Chi Minh City, and Cat Tien were designated as Man and the Biosphere Reserves in year 2000 and 2001 respectively. Can Gio has been directly categorised as a MAB reserve, while Cat Tien has been already decreed since 1992 and still is a National Park. In addition, discussions have been initiated to classify Hoang Lien mountain range (Yen Bai, Lai Chau and Lao Cai provinces) as a future MAB reserve.

Institutional Arrangements

In terms of biodiversity conservation, the 1995 Biodiversity Action Plan (BAP) decreed that the Ministry of Science, Technology and Environment (MOSTE) is the key organisation that would implement the BAP through concerned Ministries, sectors and local agencies. Under MOSTE, the National Environment Agency (NEA) is responsible

Table 3. Protected Areas in Vietnam (Year 2002)

Category	Number of Protected Areas	Distribution of Categories on total number of Protected Areas	Total Land Area (ha)*	Distribution of Categories on Total PA's Land area (%)	Distribution of Categories on the country's landmass (329,566 km ²)
National Parks	16	16.8%	476,621	22%	1.5%
Nature Reserves	61	64.2%	1,528,751	71%	4.64%
Cultural, Historical and Environmental sites (Landscape conservation areas)	18	18.9%	141,599	7%	0.43%
Total	95	100.0%	2,146,971	100%	6.51%

(* Total Land Area includes wetlands and excludes marine components. This computation allows for establishing a correct ratio with respect to the country's landmass. The Total Area (including the marine components of Con Dao NP, Bai Tu Long NP and Cat Ba N) is 2,176,029 ha.

Sources: "Number of PA" and "Total Land Area" have been provided by Nguyen Huu Dzong, Director of the Conservation Division, Forest Protection Department (2002). Marine components have been calculated on the basis of figures provided in the Sourcebook of Existing and Potential Protected Areas in Vietnam (Birdlife & FIPI, 2001)

for assisting the Ministry in the unified management of environmental protection activities throughout the country. Tasks include review of environmental protection policies, appraisal of Environmental Impact Assessment (EIA) reports, development and management of environmental monitoring, assessment and forecasting systems, and promotion of international relations on environmental protection, among others. The Policy Department of NEA is the focal point for the Global Environmental Facility. NEA also serves as the Vietnam National Biodiversity Reference Unit (NBRU) for the ASEAN Regional Centre for Biodiversity Conservation (ARCBC).

The Ministry of Planning and Investment (MPI), based on domestic sources and foreign aid, following the main objectives of the Biodiversity Action Plan (BAP) and in close coordination with MOSTE, is responsible for laying out annual implementation plans of each component of the BAP for the mandated agencies (BAP, 1995).

The Ministry of Agriculture and Rural Development (MARD), the Ministry of Fisheries (MOFI) and the National Centre of Natural Science and Technology are the major implementing organisations of the BAP. These organisations shall work closely with MOSTE and MPI on the annual implementation plans and inform MOSTE about the outputs of their components (BAP, 1995).

The Forest Protection Department (FPD) of MARD, has overall management responsibility of the Special-use Forest network, although various organisations are involved at the provincial, district and site levels (Birdlife, FIPI, 2001). Currently, 9 national parks are managed by the central government through a management board under the FPD in Hanoi and 7 by Provinces. The criteria for the management level are currently being developed. Members of the centrally-managed management

boards are usually drawn from staff of the relevant provincial FPDs.

Nature Reserves are largely the responsibility of provincial governments. These are administered by management boards under the supervision of provincial People's Committees, through the provincial Forest Protection Sub-Departments (FPD) or Departments of Agriculture and Rural Development (DARD). Members of the management boards are also often from the staff of relevant provincial FPDs, or, in some cases, from other organisations such as forest enterprises (Birdlife, FIPI, 2001).

According to Decision No. 08/QD-TTg (2001), the Ministry of Culture and Information, in cooperation with MARD, is responsible for establishing and managing cultural, historical and environmental sites.

Marine resource management has been initially under the responsibility of the MOSTE according to the Law on Environment Protection (1993). In addition, MOSTE prepared the list of wetlands of national importance (NEA/MOSTE, 2001 [2]). A few of these are already included in the Special-Use Forests and are mainly managed by Forest Protection Sub-Departments. The MOFI has recently been assigned the responsibility for establishing and

managing the marine protected areas system. Through the Fisheries Protection Department (FiPD), MOFI is responsible for implementing the Ordinance on Conservation and Management of Living Aquatic Resources. This ordinance provides a legal basis for establishing fisheries protection zones, which have some conservation objectives without being yet classified as protected areas.

Examples of Ongoing Conservation Projects and Donor Support

A number of international organisations have made significant contributions to protected area management and biodiversity conservation in the country (See **Table 4** for list of protected area-based projects). These include, among others:

Asian Development Bank (ADB) - In the past the Bank's assistance has focused on agricultural policy reform, rural infrastructure, rural credit, water resources, forestry and fisheries. In recent years it has increasingly supported Government's priority programmes for poverty reduction, reforestation and sustainable resource management. The ADB is the third largest donor to Vietnam, after the Japan International Cooperation Agency (JICA) and the World Bank. ADB contributed with

Table 4. List of Ongoing Major ICDPs in Viet Nam

Location	Donor/Executant	Year Began
Cuc Phong NP	FFI	1996
Pu Mat NR	EU	1997
Cat Tien NP	WWF	1997
Na Hang NR TCP	Munster Zoo	1997
U Minh Thuong NR	DANIDA/CARE Denmark	1998
Phong Nha NR	WWF	1998
Ba Be & Ke Go NTFPs	IUCN	1998
Ba Be/Na Hang NP/NR	UNDP	1999
Yok Don NP	UNDP	1999
Cat Tien NP	WB	1999
Chu Mon Ray NR	WB	1999
Ke Go NR	DANIDA	2000
Cat Ba NP	FFI	2000
Hon Mun Marine PA	DANIDA/IUCN	2001
Small-Grants Facility	UNDP/GEF	2000
Song Thanh NR	WWF	2001
Pu Luong Nature Reserve	FFI	2002

their South China Sea pilot study in Con Dao and other major technical assistance to the development of a marine protected area system in Vietnam.

CARE International - Since 1990, CARE has focused on agriculture and natural resources development, small enterprise development, as well as health and emergency assistance. More recently it ventured into biodiversity conservation, including the Ngoc Lac Natural Resources Conservation (1999-2003) project.

Danish Agency for Development Assistance - DANIDA supports a number of initiatives related to natural resource management and biodiversity conservation, in particular the Strengthening Protected Area Management (SPAM) Project. DANIDA also assists TRAFFIC in implementing CITES, as well as the development of marine protected areas.

European Commission (EC) - Over the period 1997-2005, the European Commission has committed 30 million Euro to support Vietnam's efforts to protect its environment and sustainably manage its natural resources, as prioritised in the National Strategy for Environmental Protection (2001-2010) and the Forest Sector Support Programme (FSSP) (2001, EU Delegation, Hanoi). Other significant contributions include projects on "Expanding the System of Protected Areas in Vietnam for the 21st Century (1996-2001) and the recently approved Community-based Conservation of the Hoang Lien Son Mountain Ecosystem (2002-2005).

Global Environment Facility (GEF) - United Nations Development Program (UNDP) and World Bank are implementing agencies for GEF in Vietnam³ and supervise the development of medium and full size GEF proposals (e.g. Ba Be - Nahang, Yok Don, Pu Luong and others under

preparation). On the Vietnamese Government side, NEA is the focal point reporting to an inter-ministerial National GEF Steering Committee. The GEF Small Grants Programme (SGP) managed under UNDP provides funding to community-based organizations and local non-government organisations for activities that address issues related to the GEF focal areas: biodiversity, climate change, international waters and ozone layer. Activities involve conservation of bird sanctuaries, national parks, endemic species, indigenous bamboo forest, and medicinal plants (2000-2004).

IUCN - The World Conservation Union - IUCN is working with government and national non-government agencies to implement a number of biodiversity-conservation initiatives in the country including a Biodiversity Awareness Project (2000-2001) and the development of a National Center for Non-Timber Forest Products (NTFP) under the Forest Science Institute with two field sites at Ba Be National Park and Ke Go Nature Reserve. Furthermore, IUCN, together with WWF, Wildlife Conservation Society, Birdlife and others, is coordinating the Critical Review of Protected Areas and their Role in Socio-Economic Development in the lower Mekong region (2001 - 2003).

Ministry of Economic Co-operation and Development: The Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) - GTZ is active in the sector of protection and sustainable management of natural resources, with particular emphasis on the forestry sector. GTZ cooperated with MARD in the reform of the forestry administration (2000), and assists the provinces of Son La and Lai Chau on social forestry (1993-2004) and the Mekong River Secretariat on the Sustainable Management of Resources in the Lower Mekong Basin. Two new projects in this sector have been recently approved: Rural Development in Dak

Lak Province and Management Support to the Tam Dao National Park, the latter being the first direct contribution to biodiversity conservation. The Kreditanstalt für Wiederaufbau (KfW) is supporting a series of afforestation projects in north and north central Vietnam.

Royal Netherlands Embassy - The Royal Netherlands Embassy finances and co-finances a multitude of projects in environment and forestry: Cat Tien National Park project implemented by WWF, Local Environment Fund and a Forestry Project in Thua Tien Hue managed by SNV Netherlands Volunteer Organisation, Forest Protection and Rural Development Project (WB), ADB Forest Sector Project, the upcoming GEF Conservation Sinking Fund under WB Forest Sector Development Project, and various other relevant projects and initiatives, in particular the Forest Sector Support Program.

Swedish International Development Agency (SIDA) - SIDA supported Vietnam's National Environment Agency (NEA) and MOSTE through a Strengthening Environmental Management Authority (SEMA) Technical Assistance project, which established the foundation for the proposed upgrading and re-organising of NEA to a General Department of Environment.

United Nations Development Program (UNDP) Vietnam - The UNDP has provided assistance to Vietnam since 1977 through projects that seek to eradicate poverty, promote the advancement of women and foster development that balances economic progress with environmental protection for the benefit of present and future generations. Projects include Creating Protected Areas for Resource Conservation (1998-2003), Environmental Management in Coastal Aquaculture (2000-2003) as well as Environmental Education in the Schools of Vietnam (1999-2004).

World Bank - World Bank assistance includes the design and financ-

¹ Recently, ADB also acts as implementing agency for GEF.

ing of development projects, policy analysis and advice, technical support, poverty reduction and sustainable resource management. In its Forest Protection and Rural Development Project (1998-2004), WB supports the management of Chu Mom Rey Nature Reserve and buffer zone development in the forest complex of Cat Tien and Cat Loc National Park. In the framework of the planned Forest Sector Development Project, a major GEF conservation sinking fund is being prepared with the Government of Vietnam. Co-financing is provided by the Royal Netherlands Embassy. WB also financed a Conservation of Limestone Biodiversity Project (initiated in 2001) executed by Flora and Fauna International (FFI).

World Wide Fund for Nature (WWF) - WWF is working in proposed marine protected areas in Con Dao, Phu Quoc and other sites on species conservation and with support from the Danish Government and the Asian Development Bank in policy development for marine conservation. WWF implements a tiger conservation project in several provinces. Together with FFI, it has supported the development of an elephant action plan for Vietnam, adopted by the government in 1996. WWF is also active in Phong Nha - Khe Bang National Park, Vu Quang and Cat Tien (with funds from the Netherlands) National Parks and Song Thanh Nature Reserve. These projects aim to integrate conservation with sustainable development in and around the protected areas, to ensure the long-term survival of their wild fauna and flora. Currently, WWF develops, with seven Provinces in the Central Annamites, a Landscape Conservation Initiative and Strategy. Through funding from DANIDA, WWF implements with the Forest Protection Department under MARD and four provinces, the major policy project on Strengthening Protected Area Management (SPAM) aimed at the development and pilot

implementation of a national protected area strategy.

An increasing number of local non-government organisations are involved in protected areas. These include among others the Vietnam National Parks and Protected Areas Association (VNPPA), the Center for Environment, Tourism and Development (CETD) and Education for Nature Vietnam.

ASSESSING THE PROTECTED AREA SYSTEM

A number of reviews have been conducted in the past to assess the protected area system in Vietnam. In 1990, a study by John MacKinnon provided inputs to the Tropical Forestry Action Plan (TFAP). The study revealed that many protected areas were too small or too damaged to satisfy conservation goals, lacked tangible levels of infrastructure and had poor management standards. In addition, management plans were often little more than biological descriptions. Institutional and legal arrangements for wetland sites and marine protected areas at the time had yet to be finalised (WCMC, 1994). As a result, the TFAP proposed doubling the area of nature reserves and adopted the target of two million hectares of nature reserves set by the Ministry of Agriculture and Rural Development (MARD).

A more recent assessment was carried out by the EC and BirdLife International co-funded project "Expanding the Protected Areas Network in Vietnam for the 21st Century," which began in 1999. The project provided the Forest Inventory and Planning Institute (FIPI) support to identify and prioritise areas for inclusion in an 'expanded' Special-use Forests network, as well as to improve the equitability of the system in terms of representation of different forest types, ecoregions, elevation zones and globally threatened species. A major output of the project is a "Sourcebook of Existing and Proposed Protected Areas in

Vietnam", which was produced with financial support from the ASEAN Regional Centre for Biodiversity Conservation (ARCBC). The Sourcebook provides a comprehensive overview of Vietnam's protected areas network and is aimed at a broad audience, including protected area planners, research institutions, government and non-government organizations, and funding agencies.

Results of the assessment mirrored those of the 1991 study: a number of Special-use Forests no longer retain any natural forest cover, are too small or heavily degraded. Some actually contain large areas of non-forest land, principally agricultural land, scrub and non-natural grassland. The institutional arrangement for the management of the Special-use Forest network is also a cause for concern. The assessment recommends that management boards of protected areas involve a diversity of stakeholders, with suitable incentives in place to foster effective management. Local communities should also be assured of a share of benefits derived from conservation, to foster support for zonation-based management. These strategies would allow communities to consider the benefits derived from environmental conservation through protected areas. The assessment also states the lack of institutional arrangements and ad-hoc legislation for wetland, coastal and marine protected areas. Some wetland and marine areas have been protected, but have been lumped into the Special-use Forest category. The government is currently working on proposals that would set up a system of wetland and marine protected areas (Birdlife, FIPI, 2001).

The WWF/MARD project "Strengthening Protected Areas Management" has been completing its comprehensive consultancy programme of policy research, review and recommendations. The reports generated by 12 consultancies (e.g. legal framework,

Table 5. Conservation Strategies and Action Plans

Policies	Year
National Protected Area Strategy 2002 – 2010 under preparation	2002
Forest Development Strategy 2001 - 2010	2002
National Strategy for Environmental Protection (2001-2010) to be approved	2001
Environmental Action Plan (2001-2005) to be approved	2001
Biodiversity Action Plan For Vietnam (1995 - 2000) approved	1995
National Plan on Environment and Sustainable Development (1991-2000) approved	1991
Strategy on Nature Conservation not approved	1985
Strategy on Forest Protection	1972

institutional analysis, buffer zone management, biodiversity assessment methodologies, law enforcement and forest protection) will form the basis for the development of the national Management Strategy for Protected Areas in Vietnam.

IUCN is currently implementing under the UNDP/GEF funded project in Ba Be, Nahang and Yok Don a study to develop financial plans for the three protected areas involved.

Another multilateral ongoing initiative is the "Critical Review of Protected Areas and their Role in Socio-Economic Development of the Four Countries of the Lower Mekong Region" (<http://www.mekong-protected-areas.org>). The (2001-2003) review examines approaches for integrating protected area management with socio-economic planning for the sustainable development of the region's natural resources. Results of the review will be presented at the World Parks Congress in Durban, South Africa in September 2003. It also cites a number of achievements in the protected area system including:

- Establishment of an extensive national network of protected areas soon to include wetlands and marine areas;
- Introduction of zonation-based management planning;
- Resolutions and decisions providing greater protection to natural resources within protected areas;
- Improvements in terms of awareness of the biodiversity

and the economic importance of protected areas; and

- Government recognition of the contribution of protected areas to socio-economic development.

These positive policy trends have not yet been put into practice at the local level and will take considerable time to be fully implemented and consolidated.

Sustaining the management of protected areas requires that the needs of the protected area system be integrated into national financing mechanisms. Vietnam has been very supportive in this regard, largely through a number of environment plans such as the Biodiversity Action Plan (1995), which institutionalised the goal of attaining 2 million hectares of protected areas. It determined the locations and size of the system of forest, marine and wetland areas that have to be protected. This has become the essential foundation for development planning towards ensuring the sustainable development and conservation of ecological systems and valuable species (Tran Lien Phong, 2001).

The National Strategy for Environmental Protection (NESP) 2001-2010 reiterates the importance of protected areas and stresses that future efforts in this area will focus on protecting biodiversity in areas with international and national significance, harbouring endemic and threatened species. Implementation of the priority programmes of NESP 2001-2010 is detailed in the Environmental Action Plan 2001-2005,

which includes several actions that directly affect protected area management. These include a review of the 1995 Biodiversity Action Plan, a priority of which is capacity building for protected area planning, establishment and management. Research and strategies that will provide inputs into the development of marine and wetland protected areas are also indicated, as well as a plan to upgrade the National Environment Agency (NEA) to a General Department of Environment within the Ministry of Science, Technology and Environment (MOSTE).

The Forest Development Strategy 2001 - 2010 addresses a number of issues related to special-use forest and forest ecosystems. It proposes that sound management of special-use forests requires strengthened and encouraged cooperation between the Management Boards and the local communities. Besides depending on the particular conditions of each special-use forest, attention and support should be given to the establishment and socio-economic development of its buffer zone. The institution and staffing of already approved special-use forests should be completed and new nature reserves in Northeast, Northwest, Northern Central, Central Highland have to be created. In addition, the proposed strategy should pay attention to wetland areas in the Red River and Mekong River Deltas.

The Draft National Management Strategy for Protected Areas developed under MARD will address issues for terrestrial, wetland and marine areas and is scheduled for completion in April 2002. A national workshop will follow in late May.

These programmes of action, as well as a number of national programmes (such as the Five Million Hectare Reforestation Programme - 5MHRP) require substantial financial resources and technical assistance for their implementation. While inclusion of plans for protected areas in national environment strategies and

the forest development strategy should ensure adequate support, this is often not the case since competing needs often far outweigh the capabilities of the national budget. The Forest Sector Support Programme (FSSP), which has been developed as a comprehensive partnership in the forestry sector (broader than the 5MHRP), will provide an important mechanism for enhanced support and cooperation in the forestry sector.

Since protected areas are largely under the jurisdiction of the Ministries of Fisheries (for the marine protected areas to be decreed) and of Agriculture and Rural Development (terrestrial and a few marine - e.g. Con Dao, Phu Quoc, Ca Ba), management needs are addressed in the respective ministries' annual, 5-year or long-term development plans. The proposed budget for the special-use forests comes from the overall budget for the forest sector (around 350 hundred billion VND or 23 million USD) and for marine protected areas, from the Ministry of Fisheries (nearly 60 billion VND or 4 million USD). The support is meant for infrastructure, staffing, working facilities, surveys, boundary demarcation, monitoring, supervision, support to community development and education. Still, the budget is not enough to meet all protected area management requirements. Infrastructure and staffing, in particular, currently constitute the major part of actual costs (Phan Thu Huong, 2001).

A mix of financing mechanisms to support the implementation of the strategies relevant for protected areas should then be considered to ensure effective management. One such option is tapping into local environment funds, which developed as a result of the country's shift to a market-based economy, and from centralized to decentralized governance (Phan Thu Huong, 2001). The fund can encourage enterprises to use clean technology, and improve

the capability of important environmental institutions in terms of environmental monitoring, research and project development. Environmental responsibility may also be encouraged among local communities if the fund is used for revenue sharing or for compensating participation in the implementation of environmental protection efforts.

A number of financial instruments have also been used to support protected areas, including financial supports, tax exemptions or deductions and the application of different types of environmental taxes, such as the natural resource tax and the water tax, which are already in place. The collection of service fees (such as entrance fees in protected areas) is a means for generating income, which can be used for maintenance and operational activities. Soon it will be necessary to analyze and assess various experiences in applying these tools so that positive lessons may be learned and replicated elsewhere (Phan Thu Huong, 2001).

THE WAY FORWARD

The various assessments conducted on Vietnam's protected area system pose a number of challenges for environmental managers and planners. Pressing issues include:

- * Funding - more investments from the public and private sector and an appropriate pattern of distribution are necessary to address the cost of establishing and managing the expanded protected area system, in particular the nature reserves under provincial management;

- * Institutional arrangements - should be re-focused to remove overlaps and gaps in authority and regulated for the management boards. The establishment of a National Conservation Agency should be studied;

- * Stakeholder participation - multi-sectoral representation should be encouraged in protected area management, mainly at the level of provincial conservation strategies and

in the protected area management boards;

- * Harmony between development and conservation - has to be clearly established so that the environment, the community and the economy would all benefit from conservation efforts. Conservation of biodiversity has to be promoted and integrated into overall development planning; and

- * Migration - people moving in to exploit resources significantly adds to protected areas threats. Socio-economic development in priority conservation landscapes has to consider population growth and movements.

The actions undertaken by the government at the conclusion of the various assessments seem to indicate its commitment to dealing with biodiversity depletion by working towards the establishment of a functional and representative protected area system. Given the preponderance of terrestrial protected areas, attention must now be paid to wetland and marine ecosystems. New proposals by NEA/MOSTE on the protection of critical wetlands represent an important step forward. Wetlands are among the most threatened habitats in Vietnam, and support some of the most threatened species. Fifteen of Vietnam's 33 globally threatened bird species are wetland-dependent, including White-shouldered Ibis (*Pseudibis davisoni*), Black-faced Spoonbill (*Platalea minor*), Lesser Adjutant (*Leptoptilos javanicus*) and Bengal Florican (*Houbaropsis bengalensis*) (BirdLife, FIPI, 2001). Proposed areas should be representative of wetland habitats in the country and have the appropriate management structure in place to ensure their sustainability. Although wetlands are not recognised as a separate conservation management category, the NEA/MOSTE has already identified 79 areas of national importance, which, when approved, may form the basis of a wetland protected area system

in the country. Responsibilities for the actual management of these wetland conservation areas have then to be clearly defined and take into consideration the management capacities at provincial and local level.

The legal and institutional status of marine protected areas is under discussion, with particular effort in developing collaboration between different government stakeholders. The Ministry of Fisheries (MOFI) is likely to have overall management responsibility for this particular protected areas system but the Ministry of Agriculture and Rural Development (MARD) and Ministry of Fisheries (MOFI) will jointly manage sites with terrestrial and marine components. Management regulations for marine protected areas are also under discussion but these are likely to be broad and flexible to allow management regulations to be tailored to specific geographical areas and management requirements (Birdlife, FIPI, 2001). Efforts have been underway for several years to develop a legal and institutional basis for marine protected area establishment and management with ADB and DANIDA support. The government has set a target to formally establish 15 marine protected areas by 2010 (NEA/MOSTE 2001 [1]).

The success of ongoing plans directed at protected area management also entails the full involvement and participation of local communities. Since global experience largely reflects the leadership of communities, citizens' groups and NGOs in environmental protection, new government strategies (NESP 2001-2010, Environmental Action Plan 2001-2005, Forest Development Strategy 2001-2010) have given greater emphasis to "encouraging public participation" in environmental and forestry programmes. The strategies also stress the need to improve institutional effectiveness, to ensure that government agencies tasked with natural resource management have the capability to do

so. Existing technical assistance programmes to both government and community-based organisations provide some hope that environmental goals will be met.

However, the management effectiveness of the existing protected area system, mainly forests, should be further assessed and improved with support from international donors, NGOs and Government under the recently signed Memorandum of Agreement to implement the Forest Sector Support Program Partnership.

What is quite interesting about the protected area system in Vietnam is the concerted effort made by both local and international organizations towards its improvement. The fuel for change and innovation has been provided. Let's hope it will lead to a fruitful ride. ■

Giacomo Rambaldi and Sahlee Bugna are staff consultants working at the Communication Unit of the Visibility and Outreach Division of ARCBC, **Martin Geiger** is Forest Program Coordinator for WWF Indochina and recently conducted a study on institutional and financial arrangements for protected areas in Vietnam.

Acknowledgements

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ASEAN Member Countries Consolidate Regional Training Needs

► **By DR. MONINA URIARTE**

Representatives from member countries of the Association of Southeast Asian Nations (ASEAN) (see Box 1) attended the ASEAN Training Needs Assessment (TNA) Workshop organised by the Office of Environmental Policy and Planning, which is the National Biodiversity Reference Unit (NBRU) in Thailand. The ASEAN Regional Centre for Biodiversity Conservation (ARCBC) supported the workshop held on 25-27 April 2001 in Bangkok, Thailand.

The three-day workshop was the culminating event of a series of national Training Needs Assessments¹ conducted in Brunei (June 2001); Indonesia (February 2001); Thailand, (October 2000); and Vietnam (September 2000) with the support of ARCBC to determine priority training needs and to identify institutions which could better meet these. The regional assessments would contribute to identifying training gaps and qualified institutions, and provide concrete opportunities for streamlining ARCBC support and regional cooperation.

Plenary

The workshop unfolded through an initial plenary session with presentations by resource speakers from different countries, followed by working group sessions and panel discussions.

Each member country, except Brunei, presented a national outlook of biodiversity conservation, competency gaps, and proposed training programmes.

¹ The outputs of these national assessments are summarised in the next articles of the "Bookmarks" section.

International experts likewise shared their experiences and some of their ongoing activities.

Mr. Klaus Berkmueller, ARCBC's former Training Specialist, discussed the Training Role of ARCBC, which he said is to build a training network, provide opportunities for networking, actively search the region for good training concepts and materials, serve as a clearinghouse for training resources, and provide funding for training activities with a regional focus. He further stressed that ARCBC is not a funding agency, but implements activities through the network; the Centre's Training Programme is composed of activ-

ity packages having a common theme.

His second presentation focused on the requirements for protected area management training, emphasizing that all staff involved needs to be trained. He concluded that training that translates into action is the first step to improved management.

Aside from the Centre's training role, **Mr. Chen Nan**, a consultant to the Thai National Center for Genetic Engineering and Biotechnology, mentioned that ARCBC also aims to facilitate exchange of information and to promote international technical and scientific cooperation. This could be achieved

Box 1. List of Institutions Represented

Indonesia

- Web-based Training Resource Centre
- Institutional Co-operation and Scientific Services Research and Development Centre for Biology
- Indonesian Institute of Sciences
- Centre for Forestry Education and Training
- Forestry Trainer Network- Lembaga Alam Tropik
- Bogor Agricultural University
- Conservation and Marine National Parks
- Directorate General of Forest Protection and Nature
- Conservation\Birdlife- Indonesian Programme

Malaysia

- Forestry Department Peninsular Malaysia
- Ministry of Science, Technology and the Environment
- Department of Wildlife and National Parks

Philippines

- Department of Environment and Natural Resources
 - Protected Areas and Wildlife Bureau
 - Human Resources Management Service
 - Ecosystems Research and Development Bureau

- Department of Science and Technology
 - Philippine Council for Aquatic and Marine Research and Development

Singapore

- National Parks Board
- Raffles Museum of Biodiversity Research – National University of Singapore
- Nanyang Technological University

Thailand

- Department of Livestock Development
- Office of Environmental Policy and Planning
- Kasetsart University- Faculty of Forestry
- Royal Forest Department
- WWF Thailand Program
- Wildlife Conservation Society- Thailand
- The Forest Herbarium- Royal Forest Herbarium
- Wildlife Fund- Thailand

Vietnam

- National Environment Agency
- Vietnam National University
- Forestry University of Vietnam
- Vietnam National Parks and Protected Areas Association
- National Centre for Genetic Engineering and Biotechnology
- Panda House

Regional

- ASEAN Secretariat



through a Clearing House Mechanism that promotes the sharing of relevant information using the world-wide web.

Mr. Giacomo Rambaldi, ARCBC’s Information Communication Technology Advisor discussed the Use of Community-Based Mapping in the Planning and Monitoring of Protected Areas. He focused on Participatory 3-D Modelling (P3DM), a tool that merges local peoples’ knowledge with Geographic Information System (GIS)-generated data to produce a stand-alone relief models. The P3DM process and the model itself, he said, are the foundations upon which the GIS can increase the capacity of local stakeholders to interact with national and international institutions. Training in P3DM, which is an already well-tested and replicable method, has been one of the activities proposed by ARCBC and agreed upon by the forum.

Other ASEAN experts who contributed as resource speakers during the workshop were **Dr. Benito C. Tan** of the National University of Singapore; **Ms. Ester C. Zaragosa** of the Philippine Council for Aquatic and Marine Research and Development, and **Mr. Sirippong Thonongtho** of Thailand’s World Wide Fund for Nature.

Dr. Tan discussed the Assessment

of Training Needs and Manpower Development in Plant Biodiversity in ASEAN member countries, while Ms. Zaragosa shared the experiences of the Broad-Based Coastal Management Training Program in the Philippines. Mr. Thonongtho, gave an account of environmental education activities in the buffer zone of Hway Kha Khaeng, a Thai protected area, through the presentation of a paper entitled “Pilot National Park Management Audit”.

Workgroup sessions

Working group sessions followed the plenary. Participants were split into four working groups according to four main disciplines identified as needing support, namely Taxonomy, Database Management, Assessment and Management, and Biodiversity Awareness.

Each group brainstormed the various proposals and prioritised training needs as follows:

Group 1: Taxonomy

- Grass and marine species
- Biological resources in wetlands

Group 2: Assessment and Management

- Field survey techniques
- Biodiversity monitoring [Global Positioning System, Geographic Information System

Box 2. On-going training related activities

Information dissemination

- Web-based Training Resource Centre
- Training Resource Database
- Experts and Institutions Database
- Library Resources Database

Training Tools and Activities

- Training on Participatory 3-D Modelling (P3DM) for NRM
- Development and Publication of Guidelines on Applied Biodiversity Management
- Regional Access to Training Materials
- Production of a Flagship ARCBC Guide to Protected Area Management
- ASEAN Biodiversity Policy Development Support Project

Occupational Standards

- Standards Development
- Standards Implementation
- Standards Validation

(GIS), remote sensing in terrestrial / marine areas]

- Rapid biodiversity assessment
- Economic valuation of biodiversity resources

Group 3: Biodiversity Awareness

- Development of information, education and communication (IEC) materials
- Ecotour/ nature activities

Group 4: Database Management

- Establishment of data centre/network in biodiversity conservation
- Use of software for management, analysis and interpretation of biodiversity data
- GIS applications (including Participatory 3-D Modelling)
- Information sharing

The workgroups reviewed 62 proposals. Ten of these were recommended for implementation, and referred to the ARCBC Co-Directors for comments and action.

On-going training-related activities supported by ARCBC are listed in **Box 2.**

Dr. Monina Uriarte is the Head of the Training and Extension Branch of ARCBC training@arcbc.org.ph

Thailand's NBRU hosts TNA Workshop

► By **DUANGMAL SINTHUVANICH**

The Office of Environmental Policy and Planning (OEPP) under the Ministry of Science, Technology and Environment hosted the workshop on training needs assessment on biodiversity conservation and protected area management in Bangkok, Thailand on 11 October 2000.

Participants to the one-day workshop represented several government and non-government groups as well as international agencies (**See Box**) involved in biodiversity conservation and protected area management. They identified the stakeholders involved and their respective roles in conserving and managing national biodiversity and assessed their eventual training curricula and courses including references or educational materials.

During the workshop, the partici-

pants assessed the involvement of 15 government agencies and several private and non-government organisations in the conservation of biodiversity and management of protected areas.

Training programmes in biodiversity conservation and protected area management include those developed by the Department of Livestock Development, Royal Forest Department, Department of Fisheries, Biodiversity Research and Training Program and the Regional Community Forestry Training Centre for Asia and the Pacific. Most of the programmes are supported with instructional materials and training manuals.

Staff of the various agencies teach most of the topics while experts from the university or related agencies are invited as lecturers for some specific issues. Experts from international organisations are oc-

asionally invited to share their experiences. The background and capabilities of the instructors are quite adequate for the country's current training programmes.

The training courses being offered include the following:

For officers and staff of the Royal Forest Department:

- Development of community forest organisations in buffer zones
- Tourist service in protected areas
- Research and management of marine national parks
- Wildlife
- Seminars for section heads of the Wildlife Conservation Division and administrators
- Forest botany

For those outside the Department:

- Roles of communities in controlling and preventing forest fires
- Roles of youth in natural resources management
- Forest protection for youths
- Natural resources management for youths through community participation
- Organisations
- Roles of women in natural resources conservation

The participants proposed seven priority sectors deserving additional training inputs:

- Data management
- Taxonomy
- Biodiversity inventory and assessment
- *Ex-situ* conservation
- *In-situ* conservation and protected area management
- Biodiversity awareness
- Economic valuation

For more information, contact training@arcbc.org.ph or Ms. Duangmal Sinthuvanich, NBRU-Thailand at duangmal@oepp.go.th

Ms. Duangmal Sinthuvanich (duangmal@oepp.go.th) is the NBRU Coordinator for Thailand

List of Institutions Represented

- | | |
|--|--|
| <ul style="list-style-type: none"> • Faculty of Forestry, Kasetsart University • Forest Management and Economics Research Division • Department of Fisheries Aquatic Animal Natural Resources Museum Phuket Marine Biological Center • Department of Livestock Development-Animal Husbandry Division • Department of Agriculture National Bureau of Plant Species Protection Entomology and Zoology Division • Asian-Pacific Regional Training Center on Community Forest • Ministry of Education – External Relations Division • Department of International Organizations-International Development Affairs Division • Natural Resources and Biodiversity Institute • Agriculture Land Reform Office | <ul style="list-style-type: none"> • Royal Forestry Department • Mahidol University • Chulalongkorn University • Thammasat University • National Biological Control Center • Department of Environmental Quality Promotion • Office of Environmental Policy and Planning • Chulabhorn Institute • Thailand Environmental Institute • Science for Education Center • Thailand Institute of Scientific and Technological Research • Wildlife Fund Thailand under the Royal Patronage of H.M. The Queen • World Wide Fund for Nature • National Bird and Nature Conservation Society • The Wild Animal Rescue Foundation of Thailand |
|--|--|

Training needs assessed in Indonesia

Some 40 participants representing various Indonesian government institutions, non-government organisations, universities and research institutions (**See Box, right**) assessed the training needs of the various entities concerned with training on biodiversity conservation and protected area management in Indonesia.

The Research Center for Biology LIPI, which is the National Biodiversity Reference Unit of Indonesia, organised the workshop in February 2001 in collaboration with the ASEAN Regional Centre for Biodiversity Conservation (ARCBC). During the workshop, the participants identified and assessed the problems and issues affecting biodiversity conservation and protected area management; determined the competencies and gaps for the stakeholders involved; and then assessed both the training programmes and concerned institutions. Results of some of their assessment are summarised in the table below.

With regard to biodiversity-related courses and training offered,

degree courses on forestry, biology, biological conservation, environmental science, ecology community, and coastal and marine sciences are available. Certificate courses for environmental impact assessment, forest rangers, watershed management, and coastal management are also offered while training on protected area management for managers, rangers, community and community leaders and educators are likewise being conducted.

Training courses are supported with materials and manuals that include topics on biology (animal identification and plant determination); ecology; conservation education; tourism/ecotourism, trade, culture and laws. However, most of the materials do not seem to address the issues in the field. Thus the workshop participants proposed specific training needs for each target group. These are summarised in the table below:

For more information, contact training@arcbc.org.ph or Dr. J. Sugardjito, NBRU-Indonesia at ffi@indo.net.id ■

List of Agencies Represented

- LATIN (Indonesia Tropical Institute Foundation)
- Fakultas Kehutanan, University of Papua
- UNAND (Andalas University)
- UGM (Gajah Mada University)
- FFI-SECP (Fauna & Flora International-Indonesia Programme)
- PPLH (Centre for Environmental Studies)
- PROSEA (Plant Resources of South-East Asia)
- LIPI (Indonesian Institute of Sciences)
- Balai Latihan Kehutanan
- GEF-BCP (Global Environmental Facility-Biodiversity Conservation Project)
- FOKSI/TSI (Indonesian Forum for Conservation)
- KONPHALINDO (Indonesian Consortium for Forest Conservation)
- WCS-IP (Wildlife Conservation Society)
- NCICDitjen-PKA (Nature Conservation Information Centre, Dept. of Forestry)
- Litbang Hutan dan KA
- BIOTROP (Regional Centre for Tropical Biology)
- Dep. Kelautan & Perikanan
- Fak. Biologi, UNAS (National University)
- RMI (Indonesian Young Forester Foundation)
- Kompleks Baranangsiang
- ITB (Bandung Technological University)
- Bogor Zoological Museum
- Herbarium Bogoriense
- Pusdiklat Hutan
- WWF Indonesia

Training Needs Identified

Topics	Target Groups	Institutional Organiser
1. Non-destructive harvest techniques of biological resources	Communities surrounding parks, traders, concessionaires	Universities, research institutes, NGOs, Forestry Training Institutes
2. Identification of endangered fauna and flora	Rangers, NGOs, customs, community groups	LIPI, research institutes
3. Survey techniques of wildlife population density	Rangers, NGOs, community groups	Universities, Forestry Training Institutes, LIPI
4. Biological monitoring techniques	NGOs, university staffs, protected area staffs	LIPI, Forestry Research Institute, universities
5. Plant and animal taxonomy	Students, researchers	LIPI, universities
6. GIS application	Regional Planning Agency staffs, protected area managers	Universities, BIOTROP, LIPI, BAKOSURTANAL
7. Wildlife propagation	Community groups	Research Institutes
8. Database management	Database managers	ITB, LIPI, NGOs
9. Standardisation of data collection methods	Students, NGOs	LIPI, Research Institutes
10. Resources conflict management	Communities surrounding parks, corporate staff	NGOs, universities, Forestry Training Institutes
11. Information sharing	Journalists, database managers	LIPI, IPB, PKA
12. Information dissemination	Journalists	FOKSI, LIPI, universities
13. CITES list species identification	Customs, wildlife traders, quarantine staff	PKA, LIPI

Vietnam's Training Needs Assessed

► **By the NATIONAL ENVIRONMENT AGENCY**

The National Environment Agency, which is Vietnam's National Biodiversity Reference Unit, organised and hosted a biodiversity conservation Training Needs Assessment Workshop from 25 – 26 September 2000 in the Province of Ninh Binh, Vietnam.

More than 50 participants (**See Box**) representing government, non-government and international agencies met to assess the capabilities or competencies of institutions involved in protected area management and biodiversity conservation-related training. The evaluation included the review of the training curricula and/or courses offered.

According to the assessment, only three training centres located in Cuc Phong, Bach Ma and Cat Tien National Parks offer courses tailored mainly for foresters. In addition, these centres do not have any official training curriculum on biodiversity and the trainees have different qualifications.

The participants proposed a number of activities aimed to strengthen human resources and address fundamental biodiversity issues. The target audiences would be students, managerial staff, policy and decision makers and specialised researchers. Proposed lines of actions included:

- Development of curriculum and teaching materials on biodiversity for formal education and training.
- Updating information for staffs with specialised qualification and background.
- Training on specific fields such as:
 - Biological safety and risk management;
 - Management of exotic species;
 - Economic valuation of biodiversity;
 - Biodiversity monitoring;
 - Wetland management and utilization;
 - Marine biodiversity management;

- Use of information technology in biodiversity management.
- Short-term training courses organised by selected universities.

Additional information on the TNA may be obtained from the Vietnam National Biodiversity Reference Unit baoton@hn.vnn.vn or from the ARCBC Training Branch training@arcbc.org.ph. Full proceedings are available upon request from the ARCBC. ■

List of Agencies Represented

- Hanoi National University
- Tay Nguyen University
- Hue University of Sciences
- Thu Duc Agricultural Institute
- Hue Agriculture and Forestry University
- Hanoi Agricultural University No 1
- Thai Nguyen University
- Forestry University of Vietnam
- Nha Trang Aquaculture Institute
- Institute of Ecology and Biological Resources
- Institute of Biotechnology
- Institute of Agricultural Sciences and Technologies
- Institute of Agricultural Genetics
- Institute of Husbandry
- Research Institute of Aquaculture
- Institute of Aquaculture II, Ho Chi Minh City
- Hai Phong Institute of Oceanology
- Nha Trang Institute of Oceanology
- Research Centre for Fruit Trees
- Institute of Sociology
- Institute of Economics
- Institute of Ethnology
- Seedstock Company
- Pharmaceutical Cooperation
- Institute of Pharmaceutical Materials
- Ministry of Education and Training
- Ministry of Agriculture and Rural Development
- Ministry of Aquaculture- Ministry of Health
- Vietnam National Administration of Tourism
- Institute of Tourism Development Research
- IUCN, Hanoi Office
- WWF, Hanoi Office
- Birdlife, Hanoi Office



Cat Tien National Park

Brunei Assesses its Competencies in Protected Area Management

► **By the FORESTRY DEPARTMENT, BRUNEI DARUSSALAM**

The National Biodiversity Reference Unit of Brunei – Forestry Department of the Ministry of Industry and Primary Resources - completed the country’s Training Needs Assessment workshop for biodiversity conservation and protected area management in June 2001.

The Training Needs Assessment incorporated inputs from departments from the parent ministry such as Forestry, Fisheries, Museums, and Agriculture, and from both the Ministry of Development- Environmental Unit and the University of Brunei Darussalam. As key players in biodiversity conservation, they served as internal reviewers of institutional competences in protected area management.

The assessment revealed that the various stakeholders perceive their competencies in biodiversity conservation as inadequate, due to insuff-

icient training. It further disclosed a severe shortage of staffs to carry out effective biodiversity conservation and lack of active protected area management initiatives. Accordingly, these areas are merely delineated and left untouched.

The participants also reviewed the current training programmes, institutions as well as materials used.

Training Programmes

There is virtually no institution offering training on biodiversity conservation. The only university offering undergraduate courses in ecology, taxonomy and resource management is concentrating on the production of graduate teachers. The level of these courses is basic and not suitable for the professional management of protected areas or effective biodiversity conservation. The only course that would have some potential is the proposed Masters Programme in Resource Management offered by the Department of Management Studies.

The Forestry Department conducts two introductory courses but only for the junior uniformed staff and forest labourers.

As such, Brunei Darussalam requires a large input in specialised training for protected area management.

Training Institutions and Materials

A small number of training institutions offer courses directly relevant to biodiversity conservation. The University may have the best team of lecturers in biodiversity conservation but its policy is to produce graduate teachers. Unless the policy is changed, the university would have limited potential as a training institution for biodiversity conservation.

Recommendations

The participants recommended the setting up of a comprehensive training programme, encompassing both in-country and regional seminars and workshops for decision makers and senior managers as well as appropriate courses for junior managers, and field operatives. The programme should also include study tours and work attachments that would enhance the skills of the staff involved.

Participants called upon ARCBC to play a tangible role in the implementation of this programme (see Table 1) as source of funding, resource personnel, and support in identifying appropriate resource materials and organisations and in facilitating cross-visits and exchange programmes among Brunei, other ASEAN member countries, and the European Union

For more information, contact training@arcbc.org.ph or NBRU-Brunei Darussalam jphq@brunet.bn.

Table 1. Recommended Training Programmes

Training	Target Group	Possible Venue
Awareness & appreciation seminars and workshops	Decision Makers	In-country or regional, under sponsorship of ARCBC
Specific courses on formulation of management plans	Senior Managers of Protected Areas	Regional basis, under sponsorship of ARCBC
Postgraduate degree in Resource Management, Environment Conservation, or similar courses;	Junior Managers of Protected Areas	University of Brunei Darussalam; other universities in the region; In-country or on a regional basis, under sponsorship of ARCBC
Skill enhancement courses such as identification of flora & fauna; ecology; park management.		
Seminars/workshops on park management		Regional basis, under the sponsorship of ARCBC.
Specific courses on park guiding;	Field Operators (Field Assistants, Park Wardens, Park Guides)	Regional basis, under sponsorship of ARCBC
Courses on public speaking;		Regional basis, under sponsorship of ARCBC
Work attachment with established parks.		Parks within the region, such as those in Singapore & Malaysia.

Biodiversity Conservation Training for Teachers

The Philippine Association of Tertiary Level Educational Institutions on Environmental Protection and Management (PATLEPAM), in its pursuit to enhance environmental education at the tertiary level, jointly conducted with the Environmental Management Bureau (EMB) and the Protected Areas and Wildlife Bureau (PAWB) of the Department of Environment and Natural Resources (DENR), a four-day National Trainers' Training on Biodiversity Conservation and Sustainable Development Education at the Tertiary Level. The training was held on June 26-29, 2001 at the SEAMEO-INNOTECH, Quezon City. Funding assistance was provided by the ASEAN Regional Centre for Biodiversity Conservation (ARCBC).

The training strengthened the institutional capabilities of the 32 participants, particularly teachers who have interests in promoting biodiversity conservation and sustainable development and its institutionalisation in the existing curriculum through the prototype

syllabus for the proposed 3-unit course entitled "Environment and Sustainable Development" for the general education curriculum at the tertiary level. The training further produced more teacher-trainers in the various regions of the country, which could later establish links with other ASEAN countries and the European Union (EU).

The participants formulated their action plans to strengthen biodiversity conservation and sustainable development education at the tertiary level. These include among others the following:

- Review of present environmental course offered in the university;
- Adoption of the 3-unit course entitled "Environment and Sustainable Development";
- Conduct of echo-seminar on biodiversity conservation and sustainable development education among biology and natural science instructors in the different colleges and universities; and

- Continuous build up and maintenance of linkages/network for data exchange and sharing of expertise on biodiversity conservation and sustainable development. ■

List of Agencies Represented

- Rizal Polytechnic College
- De La Salle University- Dasmariñas
- University of the Philippines- Baguio
- Camarines Sur State Agricultural College
- Batangas State University
- Camarines Norte State College
- Don Mariano Marcos State University
- University of the Philippines Los Banos- College of Forestry and Natural Resources
- Leyte Institute of Technology
- University of the Philippines- Visayas
- Xavier University
- Western Mindanao State University
- University of Southern Mindanao
- Central Mindanao University
- University of Southeastern Philippines
- Ateneo de Manila University
- Polytechnic University of the Philippines
- University of the Philippines- Manila
- University of Sto. Tomas
- Philippine Women University
- Pamantasan ng Makati
- Babilonia Wilner Foundation
- Isabela State University
- Commission on Higher Education
- Makiling Center for Mountain Ecosystem- UPLBCFNR
- Central Luzon State University
- NGOs for Integrated Protected Areas, Inc.
- South East Asia Regional Institute for Community Education
- Philippine Council for Aquatic and Marine Research and Development- DOST
- Department of Environment and Natural Resources
- Protected Areas and Wildlife Bureau
- Ecosystems Research and Development Bureau
- Environmental Management Bureau



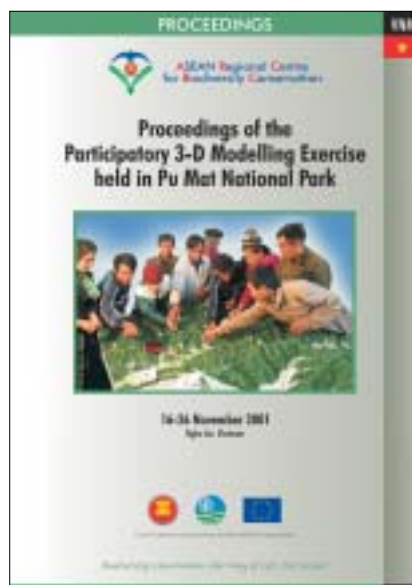
Orientation Seminar on Participatory 3-D Modelling

► By **LE VAN LANH**

The National Environment Agency (NEA) and the Vietnam National Parks and Protected Areas Association (VNPPA) organised an orientation on Participatory 3 Dimensional Modelling (P3DM) for Natural Resource Management in the afternoon of 29 October 2001 at the Nikko Hotel in Hanoi, Vietnam.

With financial support provided by the European Commission (EC) and technical input by the ASEAN Regional Centre for Biodiversity Conservation (ARCBC), the seminar was held in view of a 3-D modelling exercise to be conducted in Pu Mat Nature Reserve (Nghe An Province) during the month of November 2001. The training aims to build the capacity of institutions and project implementers active in Vietnam and the Philippines in using P3DM in the context of collaborative natural resource management. It foresees the construction of a 1:10,000 scale model of a 700-km² portion of Pu Mat Nature Reserve. The event has been planned by ARCBC in collaboration with the Social Forestry and Nature Conservation in Nghe An project, NEA and the VNPPA and will be featured in the next issue of ASEAN Biodiversity.

Speakers in the seminar included in order of appearance: Mr. Le Van Lanh (Secretary General of the VNPPA); Mr. Nguyen Khac Kinh (Deputy Director General, NEA); Mr. Tran Lien Phong (NBRU Vietnam Coordinator, Head of the Nature Conservation Division, NEA); Mr. Hoang Hoa Que (Director, Pu Mat Nature Reserve, SFNC), and Mr. Giacomo Rambaldi, (ARCBC, P3DM resource speaker).



Senior officers representing national and international organisations involved in natural resource management, environmental protection and community development attended the seminar (see Box 1).

After the opening speech by Mr Nguyen Khac Kinh, Vice Director of NEA, and an overview on the Pu Mat Nature Reserve by its Director Hoang Hoa Que, Mr. Giacomo Rambaldi, ARCBC Information

Communication Advisor, delivered a presentation on Participatory 3-D Modelling (P3DM) for Natural Resource Management. He focused on the experiences gained by practitioners in the Philippines, Thailand and Vietnam in using 3-D models as a communication means for surfacing people's "tacit knowledge" and for reproducing cognitive (mental) maps in a precise and geo-referenced cartographic format.

Community participation plays a key role in natural resource management because the management would be effective only when communities actively participate. P3DM is a method that allows communities to efficiently interact with institutions, and to manifest, in cartographic form, local knowledge, values, concerns and aspirations.

At present, Vietnam as well as many other countries advocates the full involvement of marginalised communities in the development process and in the sustainable management of natural resources.

Several organisations have been trying to develop and apply various



3-Dimensional Perspectives?

Photo by Le Van Lanh

methods to foster community participation. The cases presented by the resource speaker are evidence of the successful use of P3DM in involving different sectors of society in natural resource management and managing conflicts related to the territory. This approach helps outsiders and insiders learn from and interact with others.

An interesting open forum followed the presentation and participants had the chance to discuss possible applications of P3DM in Vietnam. Some participants expressed their concern regarding the ability of institutions and projects to sufficiently mobilise community members and stimulate participation in the prevailing Vietnamese socio-cultural context. Mr. Rambaldi recalled his personal experience, stating that 3-D modelling should only



Photo by Le Van Lanh

VIP audience

be used to assist communities in dealing with spatial issues of their concern. He added that P3DM requires thorough community mobilising and that if properly facilitated, the mapping activity would

be “self-igniting” and participants would enjoy visualizing their mental maps in a tangible format.

Others questioned the cost of applying the method. Mr. Rambaldi informed them that in the Philippines the total cost of conducting a P3DM exercise involving 70 informants and dealing with the production of a 1:10,000 scale model representing an area of approximately 700 km² corresponds to 2-3 USD/km².

Mr. Hoang Lan Anh from the Mountainous Agro-Ecosystem Research Project (SAM project), informed the forum that they successfully applied the method¹ while conducting a participatory analysis of livestock management patterns in Phieng Lieng village, Cho Don District, Bac Kan province, Vietnam, and that they intend to replicate their experience.

The event ended on a high note, with participants expressing interest and support for the approach and the wish that the technique would be pilot-tested in a protected area in Vietnam. They also recommended that the exercise in Pu Mat Nature Reserve be fully documented, paying careful attention to the communication dynamics intervening in the process and to the cost involved. ■

¹ The project facilitated the manufacturing of several 1:3000 scale models using the guidelines provided in the “Manual on Participatory 3-D Modelling for NRM” distributed by ARCBC.

Box 1. List of Participating Bodies

National Government Institutions

- National Environment Agency (NEA), MOSTE
- Vietnam Forestry Association (VFA)
- Forest Protection Department (FPD), MARD
- Vietnam CITIES Management Authority
- Forest Inventory & Planning Institute (FIPI)
- Department of Science and International Relations, General Department of Land Administration

National Parks

- Bach Ma National Park
- Ba Be National Park
- Cuc Phuong National Park
- Cat Tien National Park
- Pu Mat Nature Reserve

Aid Agencies

- Environmental Disaster Mitigation, UNDP
- Netherlands Development Agency (SNV)
- Development Cooperation Office, Canadian Embassy

NGOs

- Centre for Environment, Tourism and Development (CETD), Education for Nature (EFN)
- World Wide Fund for Nature (WWF Indochina)
- World Conservation Union (IUCN)

Academe

- Vietnam National University – Hanoi, College of Social Sciences and Humanities
- Center for Resources and Environmental Study (CRES)
- Faculty of Biology, Hanoi University of Science
- Faculty of Geography, Hanoi University of Science
- Faculty of Economy and Municipal Environmental Management, Hanoi National Economic University
- Institute of Ecology and Biological Resources (IEBR) of the National Centre for Natural Science and Technology (NCST)

Projects

- IUCN/UNESCO-Biodiversity Awareness Project
- MARD/GTZ “Song Da Social Forestry Development Project”
- MRC/GTZ “Sustainable Management of Resources in the Lower Mekong Basin (SMRP)”
- UNDP/GEF “Protected Areas Resources Conservation (PARC)” project
- IRRRI Mountainous Agro-Ecosystem Research Project (SAM project),
- MARD/EC-funded “Social Forestry and Nature Conservation in Nghe An

ARCBC SUPPORTS THE CONFERENCE ON PROTECTED AREA MANAGEMENT IN THE PHILIPPINES

Building on Lessons from the Field

The Philippines is set to host the 3rd Southeast Asia Regional Forum of the World Commission on Protected Areas (WCPA) in 2002, the results and recommendations of which shall be fed into the World Parks Congress in South Africa in 2003.

In preparation for the Regional forum, the Department of Environment and Natural Resources-Protected Areas and Wildlife Bureau (DENR-PAWB), Birdlife International, the Foundation for the Philippine Environment (FPE), and the HARIBON Foundation, with major support from the ASEAN Regional Centre for Biodiversity Conservation (ARCBC), organised a national conference on protected area management to showcase the different stories and lessons (both successes and failures) in the protection of biodiversity-rich areas. The event was held on November 12-

16, 2001 at the Royal Mandaya Hotel in Davao City.

The Conference was attended by more than 255 representatives from national government agencies, local government units, non-government and people's organisations, indigenous people's groups, the media, protected area managers, researchers, academicians, and community leaders.

DENR Secretary Heherson T. Alvarez, who was the Guest Speaker, stressed the need for heightened awareness building for all stakeholders of protected areas to combat issues leading to environmental degradation. Adding that efforts should focus on sustainable protected area management, he challenged the participants to finish projects that had been initiated even when international donors have ceased to provide assistance.

Selected regional and local experts and protected area managers shared and discussed their various experiences in relation to protected area management. Topics covered the following:

- Local governance;
- Project design;
- Protection initiatives outside the National Integrated Protected Area System (NIPAS) Act;
- Community organising and sustainable livelihood;
- Tenurial instruments;
- Resource management and protection measures;
- Sustainability factors in protected area management;
- Institutionalisation of protected areas; and
- Other topics relevant to protected area management.

RECOMMENDATIONS

The participants worked in smaller groups per topic and provided some recommendations to improve protected area management in the Philippines. Among these are:

Local Governance

- Build good relationships between DENR and local government units;
- Obtain internal and external support to sustain protected area management operations; and
- Involve local communities in designing projects and integrate local initiatives in conservation.

Project Design

- Encourage community involvement in project design and use local knowledge in conservation;
- Encourage the DENR to review its priorities on various aspects of protected area management;
- Develop communities' self reliance in terms of developing technical and financial



Photo courtesy of HARIBON Foundation

Participants at the Conference on Protected Area Management in the Philippines held in Davao City.

capabilities in project management; and

- Provide a clear indicator of a project's success (because it is important to know why marine biodiversity, for example, has not recovered in 20 years despite the presence of heavily-funded projects).

Protection Initiatives Outside the NIPAS Act

- Draw lessons from indigenous knowledge on how to conserve natural resources;
- Conduct continuing education for children and youth as future environmental protectors;
- Design and implement long term monitoring and documentation of learning; and
- Provide people's organisations with control of and access to areas immediately outside their community-based management jurisdiction.



Mt. Apo National Park

Community Organising and Sustainable Livelihood

- Allow the Protected Area Management Board to determine and approve the criteria for livelihood to be implemented in the protected area;
- Develop specific guidelines

- for sustainable livelihood;
- Ensure sustainable livelihood activities for people's organisations, local government units and local communities;
- Re-think livelihood approaches to consider existing livelihood activities;

National Biodiversity Reference Units (NBRUs) Directory

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- Reconcile community organising activities and livelihood in non-NIPAS and NIPAS areas;
- Determine, together with the people, their vision for their community;
- Engage various stakeholders in protected area management;
- Conduct Information, Education and Communication, and capability building activities;
- Review DENR policies and make necessary reforms for effective protected area management; and
- Allocate a portion of the Integrated Protected Area Fund (IPAF) for use by protected area communities in managing natural resources at their own discretion.

Tenurial Instruments

Plans and activities in this area should consider the following questions:

- What laws should prevail over a common protected area, NIPAS or the Indigenous People’s Rights Act (IPRA)?
- Should special laws prevail over general laws in areas such as Palawan and Mt. Kitanglad?
- What instrument would apply to ensure the rights of tenured migrants in land now being claimed by Indigenous Peoples?
- In Samar and Batanes, what tenurial instruments would apply for built-up areas in timberlands or zones?
- In ancestral domain claims within protected areas, what would be the proper management body or mechanism?
- How should existing management projects be harmonised within protected areas and ancestral domains?
- How can non-government organisations and other stakeholders introduce confidence-

building measures for indigenous groups?

Resource Management and Protection Measures

- Results of biodiversity monitoring for park management should be known to local communities;
- Support for facilities, transportation and personnel must be in place to ensure sustainability of protected area management;
- Local communities, aside from the army and the Philippine National Police, should be

- involved in protecting the area;
- The IPAF should go back to the protected area for its maintenance; and
- For management to be credible, managers must present evidence of incremental improvement.

A field trip to Mt. Apo National Park, specifically to the Philippine National Oil Company (PNOC) project within the protected area, and the Philippine Eagle Center at Kalinan, Davao culminated the conference. ■

Surfing the Web... of Life

The UNESCO **Information Programmes and Services (IPS)** <http://www.unescobkk.org/ips/> serves as a gateway to information resources on education, natural and social sciences, culture, and communication/informatics. Located at UNESCO, Bangkok and Regional Bureau of Education, IPS is mandated to ensure greater utilization of information by those who formulate policies and plans and implement programmes in order to achieve UNESCO’s mission and goals in its fields of competence. The excellent web site of IPS facilitates information searching and retrieval using resources such as Bibliographic Database, Electronic Virtual Library, Webcast, Portals, Electronic Articles and Electronic Publications and other web-based facilities.

ItrainOnline www.itrainonline.org is a joint initiative of six organisations experienced in computer and Internet training in the developing world. ItrainOnline responds to the need for a single source on the web containing a selection of the best and most relevant computer and Internet training resources for development and social change. The web offers materials and annotated links to high-quality resources in English, Spanish and French, and many other languages, on topics ranging from computer and Internet basics to highly technical areas, and the ways that civil society and development organisations can increase their impact using these tools.

The **Regional Community Forestry Training Center for Asia and the Pacific** (RECOFTC) provides professionals with new skills and capacities to successfully implement community forestry

activities. As part of its mandate to be a centre for exchange of information, RECOFTC produces and disseminates a range of publications and materials on community forestry. As the regional facilitator for the Forest, Trees and People Program (FTPP) of the Food and Agriculture Organization, RECOFTC also distributes various FТПP and FAO publications. It also has a range of materials from WWF, IUCN, and AFN. The Center has started disseminating information and publications through the Internet. More information is found at <http://www.recoftc.org/publications.html>

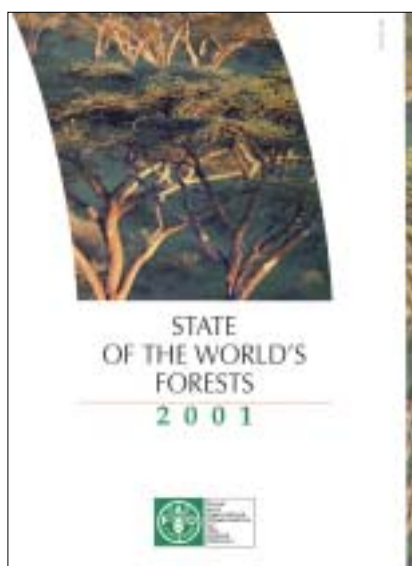
Oneocean.org (<http://www.ocean.org>) is widely recognised as the source of information on coastal management. It offers state-of-the-art guidance and training materials covering all aspects of coastal management, including planning, fisheries and habitat management, legal and jurisdictional issues, management of development impacts, and participatory management methods. A winner of major Internet industry awards (1999 Philippine Web Awards and 2000 Anvil Award of Excellence), it helps promote biodiversity conservation through its popular Ocean Ambassadors section, which promotes migratory and endangered marine species as international, rather than local, resources, the loss of which can have global repercussions. Oneocean.org was developed and is currently maintained by the six-year (1996-2002) Coastal Resource Management Project of the Philippines Department of Environment of Natural Resources (DENR), and supported by the United States Agency for International Development (USAid).

State of the World's Forests

The State of the World's Forests (2001) is a FAO Publication, now in its 4th edition. It presents a global picture of the forest sector, providing up-to date information on forest policy, activities and institutional developments worldwide. A full electronic version of the report is available in Arabic, Chinese, English, French and Spanish on the FAO Forestry Web Site (<http://fao.org/forestry/forestry.asp>). ASEAN Biodiversity has the pleasure to host on its pages two excerpts summarising information on forest cover and forest products (production and trade) by the two economic regions, which are part of the geographical coverage of the ARCBC.

Description of the Forest Sector

Many of the countries in the ASEAN region are globally significant in terms of biological diversity conservation. Nearly half of the ASEAN region is covered with tropi-



cal forest, accounting for about 6 percent of the world's total forest area. Three-quarters of the total wood production is used as fuelwood and charcoal. ASEAN is an important timber-producing region (particularly of tropical hardwoods), accounting for 5 percent of the world's industrial roundwood production. More than three-quarters of this comes from Indonesia and

Malaysia. These two countries are major producers and exporters of wood-based panels (mainly plywood), and together account for 19 percent (in value) of the world's export trade in panels. The region is rapidly developing its pulp and paper industry.

European Community

The treaty of Rome established the European Economic Community (ECC) in 1957. In 1993, the Treaty of Maastricht established the European Union (EU) as a broader framework that retained the ECC, now the European Community (EC), as a legal entity. The following countries are members: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom. The aims of EC include the abolition of restrictive trading practices and the free movement of capital and labour within the union. A single market with free movement

Production of wood-based products, 1998

Land area ('000 ha)	313,187
Total forest area, 2000 ('000 ha)	115,685
Percentage of land under forest	36.9
Forest area per capita (ha)	0.3
Annual change in forest area, 1990-2000	
Thousand hectares	317
Percentage	0.3

Production of wood-based products, 1998

Product	Quantity	% of world total
Woodfuel ('000m ³)	35,036	2
Industrial roundwood ('000m ³)	225,808	15
Sawnwood ('000m ³)	71,708	17
Wood panels ('000m ³)	36,866	24
Pulp of paper ('000 tonnes)	33,201	19
Paper and Paperboard ('000 tonnes)	77,598	26

International forest products trade: quantity and value, 1998

Product	Export value			Import value		
	Export quantity	US\$ thousands	% of world total	Import quantity	US\$ thousands	% of world total
Woodfuel ('000m ³)	789	27,340	19	869	38,732	55
Industrial roundwood ('000m ³)	13,169	1,072,553	16	42,051	3,380,880	40
Sawnwood ('000m ³)	30,021	6,848,781	29	38,786	9,842,302	39
Wood panels ('000m ³)	14,566	5,905,542	39	16,086	6,372,162	40
Pulp of paper ('000 tonnes)	7,792	3,515,436	26	14,421	7,242,329	46
Paper and Paperboard ('000 tonnes)	44,348	36,925,871	53	37,885	30,604,696	44

of goods and capital was established in January 1993.

Association of Southeast Asian Nations

The Association of Southeast Asian Nations (ASEAN) was established on 8 August 1967 in Bangkok with the signing of the Bangkok Declaration. Its present members are Brunei Darussalam, Cambodia, Indonesia, the Lao People’s Democratic Republic, Malaysia, Myanmar, the Philip-

pinos, Singapore, Thailand and Vietnam. The ASEAN declaration states that the aims and purposes of the Association are: i) “to accelerate economic growth, social progress and cultural development in the region through joint endeavours in the spirit of equality and partnership in order to strengthen the foundation for a prosperous and peaceful community of Southeast Asian Nations”; and ii) “to promote regional peace and stability through abiding respect for

justice and the rule of law in relationships among countries of the region and adherence to the principles of the United Nations Charter”.

Description of the forest sector

About one-third of the region is covered with forest, ranging from boreal to Mediterranean scrub forest. About 70 percent of the forests is located in four countries: Sweden, Finland, France and Germany. Although the EC has only 3 percent of the world’s forest area, it is a leading producer of wood-based products, in particular paper and panels. It is a major trader, accounting for 42 and 40 percent of the value of world exports and imports of wood-based products, respectively. Sweden, Finland, Germany, France and Austria are among the world’s top ten exporters of forest products, and Germany, the United Kingdom, France, Spain and Belgium and Luxembourg are among the top ten importers. ■

Reference

State of the World’s Forests, 2001, Food and Agriculture Organization of the United Nations (FAO)



Photo by Giacomo Rambaldi

Production of wood-based products, 1998	
Land area ('000 ha)	434,542
Total forest area, 2000 ('000 ha)	211,407
Percentage of land under forest	48.7
Forest area per capita (ha)	0.4
Annual change in forest area, 1990-2000	
Thousand hectares	-2,325
Percentage	-1.1

Production of wood-based products, 1998		
Product	Quantity	% of world total
Woodfuel ('000m ³)	298,711	17
Industrial roundwood ('000m ³)	74,200	5
Sawnwood ('000m ³)	9,880	2
Wood panels ('000m ³)	16,259	11
Pulp of paper ('000 tonnes)	3,084	2
Paper and Paperboard ('000 tonnes)	9,477	3

International forest products trade: quantity and value, 1998						
Product	Export value			Import value		
	Export quantity	US\$ thousands	% of world total	Import quantity	US\$ thousands	% of world total
Woodfuel ('000m ³)	2	301	n.s	1	57	n.s
Industrial roundwood ('000m ³)	6,654	674,807	10	945	171,545	2
Sawnwood ('000m ³)	4,227	1,248,149	5	2,272	470,398	2
Wood panels ('000m ³)	12,102	3,099,297	21	996	311,007	2
Pulp of paper ('000 tonnes)	1,933	598,054	4	1,671	738,265	5
Paper and Paperboard ('000 tonnes)	2,873	1,822,845	3	2,448	1,934,560	3



Brunei Darussalam

Tasek Merimbun

HERITAGE PARK

MUKIM RAMBAI, TUTONG DISTRICT, BRUNEI DARUSSALAM

Merimbun Heritage Park is a wildlife sanctuary, a conservation spot for flora and fauna, a recreational center, and a venue for research and education. It is the first to be declared a national park in Brunei Darussalam. The 7,800-hectare park was also declared an ASEAN Heritage Park on 29 November 1984, marking a significant era in its history. With this recognition, the government earmarked funds in the 6th National Development Plan for developing facilities at Tasek Merimbun to establish a national park that would incorporate extensive forest areas adjacent to the lake.

It is located about 32 km south of the Tutong-Kuala Belait coastal highway on the west bank of Sungai Tutong in Mukim Rambai, Tutong District. The park encloses catchments of small rivers feeding into the Tasek Merimbun Lakes, the largest black water body in the country that has two shallow lakes separated by a narrow channel. The water is black because the segment of the tributary that the locals call Sungai Meluncur flows through the peat

swamp forest. The western lake varies in surface area because a small river that connects with the Sungai Tutong drains it. The area however, has very poor drainage, causing the formation of several swamps and wetlands.

The black lakes including the fragile freshwater ponds, grass marshes and swamps are habitats rarely found in Borneo.

Much of the land within the park is flat, but the east side is undulating and hilly, with elevations ranging from 15 to 70 meters. Over 80% of the park has deep peat soil, sometimes overlain with a shallow soft gluey soil and alluvial soils; the eastern part is clayey or loamy.

Mixed dipterocarp is the main vegetation found in the park, especially to its south. *Combretocertus rotundatus* trees dominate the freshwater swamp forest around the two lakes and the Medit swamp, east of the park; a mixed peat swamp forest extends northeast of Sungai Tutong.

There is as yet no available list of plant species other than for trees, but one known

plant is native to Tasek Merimbun. Locally called purun, *Lepironia articulata* grows wild in abundance in the lake; its long stalk is so pliable, swaying so beautifully and creating natural patterns of movement, especially during low tide. It is one of the raw materials used by the Dusuns for their handicrafts. Because of its uniqueness, purun was selected for the park's logo; one of the park buildings - Balai Purun or Purun Hall - was even named after it.

The Brunei Museum staff has recorded over 70 bird species, including several water birds, and 17 species of freshwater fishes such as *Notopterus chitala*, *Chanda ranga* and *Rasbora sumatrana*. Among the 38 mammal species identified are cloud leopard, banded linsang, white-collared fruit bat, Bornean gibbon, Vordermann's flying squirrel and gray leaf monkey. Other fauna are still being studied.

Based on its surveys and studies, the Museum team drafted a preliminary park development programme. Then in 1986, the Negara Brunei Darussalam Master Plan Consultants produced the "Special Report on Wildlife and Conservation Management for Tasek Merimbun". They recommended, among other aspects, a revision of the park boundary, delineation of management zones to control visitor use, and the development of the park headquarters and other visitor use facilities in the vicinity of Kampong Merimbun.

The Ethno-linguistic Groups

Tutong District has a population of around 34,100 including Borneo's ethnic tribes: Tutong, Kedayan, Murut and Dusun. The park however is located in an area of low population density. However, over 580 people have settled close to the park's western, northern and eastern boundaries.

Tasek Merimbun is a traditional Dusun settlement. The Dusuns are known to have settled in the area 500 years ago. Local residents narrate that Imbun, a son of a Village Chief from Merangking, Belait District, discovered Merimbun while hunting for wild pigs; Imbun lost his way and reached this unfamiliar but beautiful lake. He became so fascinated with the view, the abundant fishes and bountiful jungle products that he decided to move and

settle there with his family and a few villagers. Thus, the name Tasek Merimbun. Another version relates that Merimbun may have been named after the remains of a ship (*tungkang*) that belonged to Eng Boon, a Chinese trader who had come to the place.

The Dusuns depended heavily on forest products, which provided them with food, water, traditional medicine as well as handicraft and building materials. Traditionally, they were hunters and gatherers of jungle products, as well as fishers and rice farmers. When they were introduced to the barter trade, they exchanged forest products such as rattan, damar, gahru (*Aquilaria* sp.) and sap of Jangkar and Jelutong trees (*Astonia* sp.) with kitchen utensils such as ceramic plates, brass rice pots; food supplements such as sugar and salt; cloth and cultural materials such as brass musical instruments, containers, and gold rings. They traded mainly with the Brunei Malay.

In the 1930s, the Dusuns were introduced to the cash economy. They started to rear poultry, buffalo and pigs; and plant rubber and fruit trees and vegetables, most of which they sold. A few years later, they reduced their dependence on the natural resources when they became employed in several enterprises.

How to get there

It takes about a half hour drive south west from Bandar along Brunei's coastal



highway to the Brunei-Muara District and into the gradually more rural landscapes of Tutong District, and towards its namesake town of Tutong.

Transport Services

Buses. Limited and infrequent services are available within the capital, Bandar Seri Begawan, and to a few destinations outside the capital.

Car Rental. Rental for Toyota Corolla (1.3 liters) by Avis (tel. 673-2-426345; fax:673-2-422971) costs \$99/day, \$594/week and \$1050/month with additional insurance at \$15/day and personal accident insurance at \$6/day. Domestic companies such as Qawi (tel: 673-2-65550, fax: 673-2-655553) often have lower rates for the same model car: \$79/day, \$474/week, \$1000/month; collision and personal insurance are inclusive.

Museum vehicles. These are available to transport guests between destinations such as the airport, Brunei Museum, Government Rest house, Merimbun Heritage Park, and shopping complexes.

Taxi service. Taxis do not cruise the streets but wait at the bus terminal close to the Government Rest House, or can be summoned by telephone (222214 between 0600-1900) for metered journeys within the capital, BSB. Be warned that taxi drivers charge additional fees for services at night. Most drivers do not speak English so ask Rest House staff to help.

Climate and Clothing

The park has a hot and humid climate, although rains sometimes occur in the morning. Visitors are advised to wear loose and light cotton clothing and to bring sun block lotion and a wide brim straw hat (locally available) as protection from the tropical sun.

What to see and do

Tasek Merimbun is a great destination for picnics. Fridays, Saturdays and especially Sundays are usually crowded so those who want to avoid the weekend crowd may come on other days. Visiting researchers have separate facilities, but visitors may wander by in their area.

There is no television, video machine, or radio at the guesthouse. Aside from the local radio station, two pop music radio stations of London are retransmitted to Brunei at 94.4 FM (Capital Radio: Top 10), and at 100.4 FM (Capital Gold: oldest).

In the Dusun house (described below), visitors could learn traditional crafts such as weaving mats and baskets from pandan (*Pandanus* sp.) leaves and making fish traps.

More importantly, one should always visit the **Special Exhibition** area, which houses both the Natural History and Archaeological sections, as described below:

Biodiversity Value. The Natural History Section of the Museum Department shows a collection of the park's rich biodiversity. A joint fieldwork by the Museum Department, Universiti of Brunei Darussalam and the Biology Department of the National University of Singapore has recorded about 47 species of freshwater fish. The findings are partly alarming because the survey documented the presence of the Kissing Gourami, an exotic species known to be aggressive and therefore a threat to the native species.

The Museum staff has also collected 111 specimens of plants and trees, and some 14 sting bees breeding in the park; it is usual to find four insect species nesting in one tree.

Over 40 morphospecies of beautiful and colorful dragonflies and damselflies from the park's aquatic habitats are shown in the museum. Their larval stages are aquatic and the varied species are interesting examples of how aquatic organisms live in a black water environment.

Historic Value. Although archaeological research at the park began only in 1988, the studies have unearthed rich archeological remains such as Chinese and European ceramic, bronze and brass wares. Based on their findings, the researchers made the following assumptions:

- Tasek Merimbun is among the earliest settlements in the interior of Tutong District. Chinese ceramics collected at several sites within the Park such as at Pulau Labi-Labi and Pulau Jelundong,

date to as early as the 15th century of the Ming dynasty. Common Chinese ceramic shards found at the sites include blue-and-white and white wares, celadon types and stoneware.

- The earliest inhabitants were pagan. Two types of burial practices have been discovered: jar and coffin burials. The Jar burial site at Pulau Jelundong, a small island west of Tasek Merimbun, is one of the earliest burial sites and among the oldest burial practices, perhaps dating to the 15th to the late 19th centuries. The Borneo tribes normally practise jar burial, also known as secondary burial. It is the final rite after the first burial step has been completed. This is the decomposing of the dead body. Skeletons from the decomposed body are then removed and put inside a jar and buried as a final process. The remains of the dead are normally buried together with other goods such as ceramics, bronze and brass objects.

The coffin burial site located at Nung Gunang, east of Tasek Merimbun is dated early 20th century. The burial practice is similar to the Islamic one. The dead is buried in the ground (*liang lahad*). The grave is sheltered and accompanied by burial goods such as export ceramics, bronze and brass materials and coins. The cemetery is still in use since a large majority of Dusun animists continue to bury their dead there.

- The unearthed ceramics and Brunei's Malay traditional bronze and brass objects suggest the existence of a barter trade between Tasek Merimbun and the coastal communities, in particular the Tutong and Brunei Malays. As mentioned earlier, Eng Boon, a Chinese merchant, brought merchandise to be exchanged with local products. Tasek Merimbun directly links with the outside regions through its inland river systems such as Sungai Merimbun, Sungai Rambai and Sunagi Tutong; the latter directly flows into the South China Sea.



- Tasek Merimbun was once inhabited. The locals were using the ecosystem as their means to obtain their daily needs and requirements. The lakes and rivers systems were used for fishing and washing. The locals obtain food, medicines and materials for buildings and handicraft from the forests. This tradition continues to this day, but on a smaller scale.
- The locals used the small islands around Tasek Merimbun as temporary shelter against the invading Iban and Kayan tribes. These tribal fights (*ayau*) occurred in the 18th to late 19th centuries. Pulau Labi-Lab was one of the islands used as an observation post to spot approaching enemies.
- Ceramics and housing poles are among the archaeological artifacts found on the island.

Facilities

Exhibition Hall. This spacious building is perched atop a hill to provide visitors with a spectacular and panoramic view of the lake environment. Large folding doors open onto a wrap-around veranda where one can simply enjoy the sweeping and impressive scenery that provides a tranquil feeling. One can also use long-range binoculars to observe some plants and animals.

Aquarium tanks displaying the fishes and plants in Tasek Merimbun and associated

waterways demonstrate the species richness of freshwater fishes.

The administrative office and workshop are housed in the building to serve as coordinating body between the park staff and the public.

Dusun House. Located close to the Exhibition Hall, this sturdy, traditional house is a two-family structure built entirely with materials from the forest, and without any nails. Over 42 species of forest products were collected and used as supports, walls, thatches and ties. It is intended to evoke the traditional lifestyle of the Dusuns, specially their handicraft skills. Various traditional crops have been planted around the house. Kitchen gardens that provide daily cooking stuff can be seen at the back of the house. Handicrafts and forest fruit seedlings are also sold. Illustrated booklets that provide an explanation of the plants used, names for the parts of the house, and furnishings are available. Visitors and researchers may stay at this house.

Villagers who helped build the house sometimes spend time during the weekends to provide information to visitors about the house and its contents.

Nature Trail. The trail is accessible from several points along the peninsular land that includes the Park Headquarter's area. Trail markers have been placed at intervals of 100 meters so visitors can determine their whereabouts at all times. Shelters evenly spaced along the trail afford protection from rain and encourage visitors to prolong their stay in natural surroundings. An illustrated booklet is available for those who want to take a self-guided tour.

Forest Camp Sites. There are three forest campsites: two along Sungai Meluncur and one at Sungai Merimbun. Each has separate shelters for sleeping, working and cooking. A full complement of camping equipment is available for use by visiting researchers.

Lakeside Gazebos. Shelters have been constructed along the trail leading from the Multi-Purpose Hall going to Kampong Merimbun. This trail, which is shorter and goes through woodland that has an open

and well-manicured understorey, is excellent for families with small children.

Environment-friendly boat rides.

Row boats provide a healthy recreational activity for visitors who would like to paddle in the lake close to park headquarters. Boats powered by electric motors would be the only viable transport to take visitors for further scenic rides in the eastern lobe of the lake, and along the rivers. Besides not polluting the aquatic environment, the electric motors provide a quiet ride, enabling passengers to hear the sounds of nature. Being slow movers, these boats will not disturb the aquatic vegetation much.

Laboratory building. The Laboratory is air-conditioned and divided into wet and dry areas. It has a separate office for researchers to process data. The back porch provides a large open space for outdoor activities.

Guest Researchers' Quarters. This building has four double bedrooms for a maximum of eight persons, two bathrooms, a large living room, a dining and cooking area, and laundry facilities. Each bedroom has ample storage space to organise personal belongings for a long visit, and a wide, covered veranda.

Multi-purpose Hall. Known as "Balai Purun", this building is intended for varied uses. One can view the natural beauty from the spacious veranda around the building.

Surau. Surau (prayer room) is provided near the car park area.

Rules and Regulations

The Park is managed by the Brunei Museum Department, which is now updating its services in line with the concept of "Museums Enterprises." Below are some of the rules and regulations and fees with regard to use of the park and its facilities:

Reservation of rooms/campsites/ multi-purpose hall

- Reservations should be made in writing to the Director of Museums at least two weeks prior to usage or arrival.
- Payment should be made at the Finance Section of the Museum Department.
- Reservation is on a first come first served basis.



Registration

- All guests are required to register/fill in the register form on arrival.
- Guests are required to show payment receipt upon checking in.
- Those exempted from payment should show an approved letter.

Use of rooms

- Only registered guests are allowed to enter the premises.
- No pets are allowed.
- No cooking in the bedrooms.
- No smoking in the buildings.

Reminders: Brunei Darussalam is a Muslim country and only halal foods and drinks should be consumed in its facilities; pork and pork products as well as alcoholic beverages should be avoided.

Fees / Charges

- Multi-purpose Hall
B\$100.00 per day
- Researchers' quarters:
Single occupancy B\$25.00 per day
Double occupancy B\$30.00 per day

Where to stay

The Researchers' Quarters within the complex is the only lodging place in the Park. But 25 km away, in Tutong Town, Tutong District, one could check out the following:

- Government Real House, which is managed by Tutong District Office (673-4-222491)
- Halim Plaza Hotel (Tel.: 673-4-26-688, Fax: 673-4.26-170)
- Ser Aman Complex (Fax: 673-4-222668)

Where to eat

There is no restaurant within the Park but there are many small Indian and Malay restaurants in the nearby villages at Lamunin, Pat Nunok, Kiudang, Pangkalan Mau, or way out into Tutong Town such as Sungai Basong Recreational Park, and Ser Kenangan Beach. ■

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Profiles



Photos courtesy of National Integrated Protected Areas Programme (NIPAP)

Mts. Iglit-Baco NATIONAL PARK MINDORO, LUZON, PHILIPPINES

Mts. Iglit-Baco National Park is the only place in the world where one can find the Tamaraw (*Bubalus mindorensis*), a type of water buffalo that is endemic to Mindoro Island. This was the major reason for its declaration as an ASEAN Heritage Park and its being considered for a World Heritage Site status. Also, the declining Tamaraw population necessitated the area's establishment as a game refuge and bird sanctuary covering 8,956 hectares. On 9 November 1970, its coverage was enlarged to 75,445 hectares and declared a National Park by virtue of Republic Act 6149.

The Heritage Park lies at the heart of Mindoro, about 130 km south of Manila. Accordingly, Mindoro, an island of Luzon, Philippines may have been part of the land bridge connecting Palawan, another island province, with Luzon by which some of the Philippine's ancestors migrated from mainland Asia and Borneo. Today, the island is divided into the provinces of

Mindoro Oriental and Mindoro Occidental and is home to the Mangyan who have long been known to be its caretakers.

Approximately 75% of the park lies in the province of Occidental Mindoro, which comprises the municipalities of Sablayan, Calintaan, Rizal and San Jose; the remaining 25%, within Oriental Mindoro. A rugged terrain of slopes, river gorges and plateaus characterise the park, encompassing at least eight major river systems and ten low mountains close to each other.

Mt. Baco, the highest mountain with an altitude of 2,488 meters above sea level, dominates the central portion of the park. Southwest of Baco is Mt. Iglit or *Fungso mangibok*, the second highest with an altitude of 2,364 meters, and where the most number of tamaraw roam its ranges.

The tamaraw is one of the most seriously endangered large mammals, and has become a principal concern of the Species Survival Commission, International Union for the Conservation of Nature and Natural Resources. Only 187 heads exist,

based on the most recent survey conducted by the combined team of Mts. Iglit-Baco National Park-Protected Area Office and the Tamaraw Conservation Program.

Aside from the Tamaraw, the Philippine Deer and the Wild Pig inhabit the grasslands, which are dominated by *Themeda triandra* and *Imperata cylindrica* species. The Large Mindoro Forest Mouse (*Apomys gracilirostris* Ruedas) and a number of other endemic bird species such as the Mindoro Bleeding heart pigeon (*Gallicolumba platenae*), Mindoro Imperial Pigeon (*Ducula mindorensis*), Mindoro Scops Owl (*Otus mindorensis*), Black-hooded Coucal (*Centropus steerii*), Scarlet-collared Flowerpecker (*Dicaeum retrocinctum*) and Mindoro hornbill (*Penelopides mindorensis*) are found in the mossy forest of the highlands and peak summits. The list includes the endangered Jade vine and other rare and endangered plant species.

Climate

The island of Mindoro receives the full impact of the southwest rain-bearing winds that blow during the southwest monsoon. From May to October, especially in August, the western half of the park receives torrential rain but, during the northeast monsoon when the prevailing winds shift northeast, the western part becomes a rain shadow area. This is the prolonged dry period for the western half of the park. The eastern half however experiences only a brief dry spell.

January to May would be the best months to visit the Park.

The Mangyan

Living harmoniously with the tamaraw and nature, the Mangyan is the major indigenous group in Mindoro and is classified into at least eight ethno-linguistic groups: Iraya, Batangan, Hanuno'ο, Alangan, Ratagnon, Tagaydan (or Tadyawan), Buhid and Pula. Some groups are believed to have been coastal dwellers, but have since moved into the remote forest interior to avoid religious conversion by migrants.

The Mangyan are traditionally no-

madic within their territory and settle temporarily where food is found. Extended families set up loose clusters of bamboo huts with thatched roofs and raised floors. There are no formal leaders or social classes, and elders settle community disputes.

The *Batangan Tau-buid* and the *Buhid* Mangyan directly depend on Mts. Iglit and Baco for their source of food and livelihood. They grow corn and sweet potato close to their huts; others supplement these with cassava, rice, bananas, papayas, avocados, squash, beans, taro, and other vegetables. They gather edible forest products, trap wild pigs and chickens and raise domestic stock.

Both tribes are distinguishable for their earthen-tobacco pipe-smoking habits, and



share a passion with their fellow Mangyan for the betel nut. The Buhid are said to be highly literate, and write in ancient scripts similar to the Tagbanua, an ethno-linguistic group of Palawan.

The Mangyan consistently stress their desire to maintain their cultural identity and ancestral domain, asserting their right to use resources for sustenance and cultural survival.

Park Management

The Protected Area Office headed by a Protected Area Superintendent, is the administrator of the Park. It provides information and services such as trail guides and camping guidelines. The office [Tel. (+63.43) 491-4200] is located at the

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LIUCP Bldg., Airport Road, San Roque 11, in San Jose, Occidental Mindoro, and maintains a guard post at Sitio Magtangcob, Calintaan, Occidental Mindoro

Visitors should inform the Protected Area Office about their travel itinerary, number of climbers or visitors and purpose of visit, a few days before their intended arrival.

Reaching the Park

The Park can be reached either by plane (40 minute-flight) from Manila via San Jose, Occidental Mindoro, followed by a long, bumpy and tiring drive from San Jose to Poypoy, Calintaan, Occidental Mindoro. From the nearest accessible barangay of Poypoy, Calintaan in the western side, and of the municipality of Bongabong in the eastern side, the interior of the park can be reached only through wild trails cutting across the grassland vegetation. It is convenient to visit the park during the dry season despite the hot and glaring sun. During the wet season, rivers and tributaries may overflow, and more often, trails become very slippery and impassable.

Travelling by Air, Land and Water

By air. Air Philippines [+63.2.843-7770] and Asian Spirit [+63.2.840-3811] alternate daily in flying passengers from Manila to San Jose, Occ. Mindoro. One-way fare costs between PhP1, 500 to PhP2,000/person or US\$ 30 – 40.

By land and water. The following buses from Manila reach the Batangas Port in

three to four hours: Tritran Bus [+63.2.925-1758] with terminals in Taft Avenue, Pasay and EDSA corner Timog Avenue, Quezon City; BLTB with terminals in Malibay St., Pasay City [02.8335501] and Ali Mall, Cubao [+63.2.9131525]; JAM Lines in EDSA corner Monte de Piedad St., Cubao, Quezon City [+63.2.4149925] and Buendia Avenue corner Taft Avenue, Pasay City [+63.2.8313178]. One-way fare ranges from PhP 118.00 to PhP 120.00/person (about US\$2.5-3).

From Batangas, Viva Shipping Lines [+63.43.7522486 or 7231422] and Montenegro Shipping Lines [+63.43.7232964] have daily trips to San Jose, Occidental Mindoro. From the San Jose port, the Viva Shipping Lines boat sails to the port of Sablayan, which is close to another entry point to the Park. Montenegro Shipping Lines has three daily trips from Batangas to Abra de Ilog from where the visitor can travel by land to Sablayan or San Jose. The Aboitiz Shipping Lines [+63.2. 5210240] has trips from Batangas to San Jose on Mondays only. The journey could take 12 hours. One-way fare costs between PHP 200 (economy) to PHP 400 (about US\$4-5).

At the San Jose Port, tricycles are available for a 15-minute ride to the Protected Area Office. From the Sablayan and Abra de Ilog ports, buses or jeepneys can bring visitors to the Protected Area Office; fare is about PhP 150/person (US\$3) (Sablayan to San Jose) and PhP 300/person (US\$6) (Abra de Ilog to San Jose).

By ship from Manila. M/V Nikki Moreta Shipping Lines [+63.2.7216480] leaves Pier 6, South Harbor in Manila once a week and reaches San Jose in 12 to 14 hours overnight travel. One-way fare costs PHP 350.00 (economy) and PHP 400 (about US\$6-8).

Access Routes to the Park

From the Protected Area Office (PAO), the easiest access to the Park is through a 30-40 km road to Barangay Poypoy, Calintaan, Occidental Mindoro, where motorcycles or jeeps follow the old national highway. Another route is through





the Tamaraw Gene Pool Area in Sitio Canturoy, Brgy. Manoot, Rizal, Occidental Mindoro, where one crosses the Busuanga River via Mt. Wood, then across Lumintao River, and finally to the Tamaraw habitat at Sitio Magawang. One can also trek through the Mangyan Alangan settlement at Sitio Kulasisi, Brgy. Batong Buhay, Sablayan, Occidental Mindoro up to the Mongpong River headwaters. Another route is along the Patrick River from Barangay Pag-asa, Sablayan, Occidental Mindoro to the Catherine River, which drains on the northern slope of Mt. Baco.

From Oriental Mindoro, one can cross the Bongabong River from Barangay Hagan, Bongabong, and then to the Rossana River, which leads to the eastern section of the Park.

Local Eco-tourism Destinations and Activities

In the profile of *Mts. Iglit-Baco National Park*, Balcita, et.al, (2001) described the major activities and local destinations that one can do and see at the park and its surrounding area. These are:

Tamaraw watching. Watching Tamaraw grazing in the wild is a relaxing activity. The visitor will be spell bound by the surrounding seascape on the west side.

Tamaraw observation in captivity at the Gene Pool. Visitors can observe the

Tamaraw breeding activities at the gene pool in Sitio Canturoy, Brgy Manuot, Rizal.

Bird watching. Birdwatchers will enjoy observing the birds endemic to the Park as well as other interesting ones like the Blue Shortwing, Island Thrush Tardus, Blue-headed Racket-tailed Parrot, Barred Graybird, Philippine Bulbul, and Mindoro Canegrass Warbler.

Mountain climbing. The climb to Mt. Iglit (2,364 m a.s.l.) starts with a one-hour trek from Barangay Poypoy, Calintaan, Occidental Mindoro to Station I at Sitio Magtangcob. Another three-hour hike brings one to Station II at the foot of Mt. Iglit. From there, one can start a four to five-hour ascent to the summit. Climbers can descend to Station III at Magawang, where Tamaraws may be spotted any time of the day. So far, there have been no recorded ascents to the peak of Mt. Baco (2,488 m a.s.l.) because of inaccessibility.

There are no fixed charges for porters or guides, although a fee ranging from PhP 300 (US\$6) to PhP 500 (US\$8)/day is considered fair. Aside from following the camping guidelines, visitors must observe and respect the culture and sacred sites of the Mangyan living within the area.

Attractions Outside the Park

Sablayan is the central town of mainland Occidental Mindoro, which is located

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91 km from Mamburao, and 73 km from San Jose. Before or after a visit to the Park, one can take a 2½-hour-jeepney or mini-bus ride to the many attractions around Sablayan.

Pandan Grande is a three-hectare islet, with a lagoon and white sand beaches. A French national developed the area into an international beach resort, which is listed in the International Tourist Guidebook as one of the "Philippines' Top 10". From Sablayan Port, one can take a 15-minute boat ride to the islet. The resort has 20 native cottages

and a restaurant serving international cuisine. Scuba diving facilities and instructors are available.

Pandan Piqueño is an islet with virgin forests. Like Pandan Grande, this is an atoll with scuba diving possibilities.

Apo Reef Natural Park is a protected area covering 15,792 hectares that includes both land and water, and encompassing three islands with white beaches: Apo Island, Apo Menor (Binangaan Island) and Cayos del Bajo. The islands are accessible by motorised banca. An astonishing site for snorkeling and scuba diving, its crystal blue waters and coral reefs teem with a wide variety of marine life. The reef is home to some 385 species of colorful marine fishes, including sharks, stingrays, mantas, tropical fish and morays, and over 500 species of soft and branching types of hard corals.

Parola Park. This Park is situated on the hilly coastal portion of Sablayan, where the early Sablayanons established a watchtower (*parola*) sometime in 1861 to guard against Muslim pirates who used to raid the area. Round-the-clock watchers would signal the people to hide whenever they sight Muslim vistas. In 1896, the *parola* was equipped with bells that rang musical chimes. In later years, a church was built but is now in ruins. The *parola* still stands as a historic landmark.



Park Entrance and Lodging Fees

The Protected Area Management Board as of this writing has not yet finalised the fees to be charged. However, the Board is proposing an entrance fee of about US\$3.00 or its equivalent of P150.00 for foreign nationals, and PhP 50 for Filipinos.

The Protected Area Office Station I in Sitio Magtangcob and Station II in Sitio Iglit rent out some of their rooms at PhP25.00 (about US\$.50) per person per day for both foreigners and Filipinos.

Where to Stay and Eat

In Sablayan, the more popular hotels and lodging inns are:

- **Emely Hotel.** This hotel is located close to the public market and along the coast of Sabang River, a potential tourist area. It has 20 rooms: 10 for single occupants, and six twin rooms with toilet and bath; the others share a toilet and bath. It has ample parking space, and 24 hours water and power supply.

- **La Sofia Apartelle.** This 9-room inn is located along the national road, close to the Municipal Plaza. It provides 24-hour water and power supply. It serves fine cuisine, offers a venue for parties, and has a Globe payphone.

- **Feliz del Mar Beach Resort, Stone Park Resort and Pandan Island Beach Resort** are other lodging options.

In San Jose, the recommended hotels are:

- **Mindoro Plaza Hotel.** Located along Zamora St., its daily room rates range from PhP700 to PhP1500 (about US\$15-30) for rooms with air-conditioning unit; ordinary rooms cost from PhP300 to P400 (US\$6-7). For more details, call Tel. No. (+63.43) 4914661.

- **Sikatuna Beach Hotel and Restaurant.** This is located along San Roque 11. For air-conditioned rooms, daily rates range from PhP670 to PhP1075 (US\$14-22); ordinary rooms: PhP270 (US\$5) (single bed); PhP300 (US\$6) (twin bed). Call Tel. (+63.43) 4912182 / 4914108 for more information.

- **Sikatuna Town Hotel.** Located along Sikatuna St., its daily room rates range from PhP190 (US\$4) (single bed)



to PhP280 (US\$5) (double bed) for ordinary rooms, and PhP595 (about US\$12) for air-conditioned rooms. For inquiries: Tel. (+63.43) 4911274.

- **Sea Coast Hotel and Restaurant.** It is located along Airport Rd., San Roque 11, with daily room rates ranging from PhP300 (US\$6) (ordinary) to PhP550 (about US\$11) (aircon). For inquiries: Tel: (+63.43) 4911202.

Aside from the above-mentioned restaurants, eateries in the different municipalities serve abundant fresh seafood and meat dishes. Each meal costs from PhP 40 to PhP 60 (more or less US\$1). Campers may cook their meals at the campsite. ■

Our special thanks to PASu Redante Diwa of Mts. Iglit-Baco National Park (MIBNP), and Ms. Julie Balogo, former NIPAP Protected Area Planning Assistant for MIBNP, for reviewing the article and providing valuable information.

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ARCBC goes Interactive

► By **BENJAMIN N. PENNELL JR. MCP** and **GENIE JOY D. MARFA**

In today's age of web-based computing, life has changed significantly through the extraordinary role of Information Technology. The Internet has made the world a lot smaller and the World Wide Web has enabled the building of global networks without the constraints of geographical time and space.

Hindrances to information collection and dissemination have been greatly alleviated and hundreds of records have been freed from the confines of file drawers and cabinets.

Through the Internet, the ASEAN Regional Centre for Biodiversity Conservation (ARCBC) has been able to disseminate a wealth of information through its website (<http://www.arcbc.org.ph>). With this in mind, ARCBC pursues to deliver

additional services through its new sub web, the ARCBC Interactive, which houses a number of databases serving the purpose of building global biodiversity-related networks. The following are some of the features of ARCBC Interactive:

- The **World Roster of ASEAN Biodiversity Specialists** is a database that contains contacts and related information on Specialists / Experts in the different areas of Biodiversity Conservation. It also provides openings for future collaboration in research, training, networking and resource management.
- The **Organisations Database** contains contacts and related information on Organisations/Institutions covering different

specialisations in Biodiversity Conservation.

- The **Training Resource Centre** (currently under development) is a web-based repository of resources and reference materials ranging from manuals to visual aids on biodiversity conservation, protected area management and other related fields that are available on the Internet and institutions in ASEAN.

ARCBC Interactive provides the option for users to register and input their information after accepting the privacy policy spelled out by ARCBC. Three types of registration are available to better suit the different needs – USER, SPECIALIST and ORGANISATION. Registered USERS have the privilege of availing of the ARCBC electronic newsletter. Those registering as SPECIALISTS are included in the Roster of ASEAN Biodiversity Specialists. They can input their geographic, subject and taxonomic areas of specialisation. Registered ORGANISATIONS benefit from similar privileges and are included in the Partner Organisations Database. Data entered by Specialists and Organisations are retrievable by interested parties through simple or special search facilities.

Those registered can edit their information online by supplying their login credentials. It is necessary to keep these confidential. Also, the site allows retrieval of one's credentials by sending them to the user's registered email in cases where these are lost or forgotten.

To know more of ARCBC Interactive and the web databases therein, visit <http://www.arcbc.org.ph/interactive>. For inquiries, comments and suggestions on ARCBC Interactive, please send an email to webdba@arcbc.org.ph. ■

Benjamin N. Pennell Jr. MCP is the Webmaster of ARCBC, **Genie Joy D. Marfa** is an SQL Programmer for ARCBC and the Web Database Administrator for ARCBC Interactive.



Training Materials Translation Project

Grants for Translating Biodiversity Training Materials to Southeast Asian languages

The ASEAN Regional Centre for Biodiversity Conservation (ARCBC) is offering grants for translating and publishing outstanding conservation training materials in local languages. We are inviting trainers, conservationists, authors and publishers to nominate materials that they think should be made more widely available. Our main criteria for selecting materials for this project are that they are of excellent quality and proven usefulness and, can readily be made regionally relevant.

Please visit ARCBC's website now to find out more and make your on-line nomination. Log on to <http://www.arcbc.org.ph/training/training.htm>

Note: If you cannot get access to our website, please email webmaster@arcbc.org.ph and we will send you an email based nomination form or write us at ARCBC Headquarters:

The Co-Directors
Attn. Training Branch
ASEAN Regional Centre for Biodiversity Conservation
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Biodiversity Information Sharing via the World Wide Web

► **By IMELDA C. PANGGA and EDMUND M. REVILLA**

The ASEAN Regional Centre for Biodiversity Conservation (ARCBC) through the Database Branch and the ARCBC Annex in Quezon City, Philippines manages and maintains the ARCBC website - www.arcbc.org.ph.

The website features a metadatabase and a web-based information sharing system called BISS or Biodiversity Information Sharing

System. BISS provides basic data on species and protected area descriptions, pictures, distributional data with maps, information on uses and conservation status of many thousands of species of flora and fauna across the ASEAN region (<http://www.arcbc.org.ph/biss.htm>). As of February 2002, ARCBC maintains data on ASEAN biodiversity, together with data on the protected areas, and socio-economic and demographic profiles of the 10 member countries as summarised below:

The Database Branch of ARCBC is also preparing other datasets. Most notable amongst these are the Plants and Reptiles of the ASEAN region, which are expected to be released on the web by April 2002. The branch also coordinates with several data holders from member countries of the European Union (EU) and the ASEAN to make them contributors to the ARCBC database network and/or to link their data to the ARCBC website.

Online Data (as of February 2002)													
Taxa	ASEAN Member Countries										Total No. of Species	% with Description	% with pictures
	PHL	SGP	BRN	IDN	MMR	THA	VNM	LAO	MYS	KHM			
Birds	668	388	480	1,530	997	932	787	628	667	457	2,386	95.93	68.82
Mammals	218	61	228	648	265	250	259	247	305	152	945	23.92	36.83
Amphibians	98	30	57	348	81	130	122	69	216	25	655	68.70	9.16
Freshwater Fishes	295	103	80	1,005	315	619	374	482	488	476	1,997	~99.65	Linked to Fishbase

Taxa	ASEAN Member Countries										Total No. of PAs	% with Basic Data	% Mapped
	PHL	SGP	BRN	IDN	MMR	THA	VNM	LAO	MYS	KHM			
Protected Areas and other areas of interest	246	10	15	300	20	242	117	25	50	30	1,055	77.07	70.52

Upcoming Data													
Taxa	ASEAN Member Countries										Total No. of Species	% with Description	% with pictures
	PHL	SGP	BRN	IDN	MMR	THA	VNM	LAO	MYS	KHM			
Reptiles	298	94	37	590	143	380	185	72	210	73	1,528	~83.01	~87.98
Plants	8,441	301	3,282	9,524	1,748	2,582	683	286	11,266	291	34,000	0.93	Linked to Leiden Herbarium
Snails		– working with Jaap Vermeulen, Leiden, Paris											
Fungi		– Prof. Tricita H. Quimio, UPLB, Philippines											
Butterflies		– working with Dr. Gapud, UPLB, Philippines, OEPP Thailand											
Freshwater Crustacean		– working with Daisy Wowor and Peter Ng, Singapore											
Dragonflies		– working with Dr. Gapud, UPLB, Philippines											
Freshwater Fish		– working with Dr. Maurice Kottelat, EU; ICLARM Los Baños											
Mosses		– working with Dr. Benito Tan, Singapore; OEPP Thailand											
ASEAN Palms		– Dr. Edwino S. Fernando, UPLB, Philippines; Dr. John Dransfield; Kew Gardens											
Philippine Plants		– Dr. Nestor Baguion, UPLB, Philippines											
Makiling Flora		– Dr. Roberto Cereno, UPLB, Philippines											
Indonesian Nature Conservation Database – Ed Colijn													

ARCBC also provides links to other biodiversity-related websites such as the Convention on International Trade of Endangered Species (CITES), World Conservation Monitoring Center (WCMC), RAMSAR, Birdlife International, Plant Resources of Southeast Asia (PROSEA), and Fishbase among others. As an example, 80% of the data on freshwater fishes resides in external links to the Fishbase website. For the plants data, Leiden Herbarium and other herbaria from the ASEAN and the EU will be linked to provide com-

plete information on ASEAN plants. ARCBC envisions to network onto the websites of the collaborating data holders and not to gather and maintain data at ARCBC. Ownership of data belongs to the data collectors.

ARCBC is continuously expanding the BISS network by collaborating with dataholders and websites. Should you have data, photos or drawings on biodiversity such as plants, economic plants (agricultural), birds, mammals, reptiles, lichens, insects

and so on, you are very welcome to share the data with us. In case you know some people who might be interested, please inform them about our desire to collaborate with them. Our contact information is as follows: Phone/fax +63-49 5364042; +63-49 5362865 or e-mail us at database@arcbc.org.ph. ■

Imelda C. Pangga is the Chief of the Database Branch, and Edmund M. Revilla, the SQL Programmer at the ASEAN Regional Centre for Biodiversity Conservation.



TRAINING RESOURCES DATABASE ENTRIES

Capsule Reviews

► By the TRAINING AND EXTENSION BRANCH, ARCBC

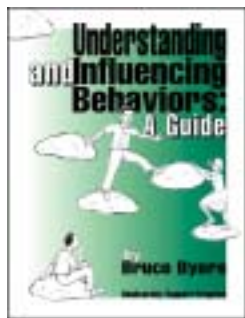
UNDERSTANDING AND INFLUENCING BEHAVIOURS: A GUIDE

by Bruce Byers

Biodiversity Support Program, 2000

This guide is the result of a six-year project of the Biodiversity Support Program (BSP) and intends to identify and communicate the best available methods for understanding and influencing human behaviours in conservation and natural resources management.

A number of case studies illustrate how the ideas have worked in real situations in Africa and Madagascar.



Although the examples presented are drawn from the African region, this guide can be applied elsewhere in the world, in both less and more

developed countries.

This guide is designed for people working with communities to promote the sustainable development of natural resources and makes suggestions on how to understand, collect, and analyse information about why people behave the way they do toward the environment. It also suggests simple methods that do not require much prior training.

For further information, contact:

Biodiversity Support Program
c/o World Wildlife Fund
1250 24th St. NW
Washington, DC 20037, USA
BSP@wwfus.org or
www.BSPonline.org

TRAINING OF TRAINERS COURSE IN MARINE PROTECTED AREAS

by the UNEP-Caribbean Environment Programme (UNEP-CEP/RCU) and the Coastal Zone Management Centre (CZMC)

This manual was designed to support the "Training of Trainers" programme, which arms Marine Protected Area managers with the necessary skills to train others at the local level.

The manual contains eight modules,



with the following topics: training & communication skills, the nature of the marine environment, uses and threats to the marine environment

and its resources, marine protected area overview, participatory planning, marine protected area planning and management, and research and monitoring.

The structure of the manual allows flexibility in undertaking future training opportunities, by using a flexible and adaptable format of self contained modules, each containing its own supporting information.

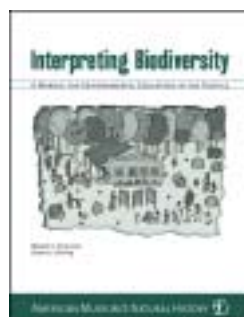
For more information, contact:

UNEP- Caribbean Environment Programme
Regional Co-ordinating Unit
14 - 20 Port Royal Street
Kingston, Jamaica
Coastal Zone Management Centre (CZMC)
P.O. Box 20907
2500 EX The Hague
Visiting address: Kortenaerkade 1,
The Hague, The Netherlands

INTERPRETING BIODIVERSITY: A MANUAL FOR ENVIRONMENTAL EDUCATORS IN THE TROPICS

by Margret C. Domroese & Eleanor J. Sterling
American Museum of Natural History, 1999
ISBN 1-930465-04-1

This manual is designed for educators and natural resource man-



agers who are establishing interpretive programmes in tropical regions, where the biodiversity is the richest and the most threatened in the

world.

It is based on the experiences of the American Museum of Natural History staff.

The five units of the manual are devoted to key steps in designing an interpretive programme. These are: programme development, interpretive exhibits, interpretive presentations, community outreach, and evaluation process.

For further information, contact:

Center for Biodiversity and Conservation
American Museum of Natural History
Central Park West at 79th Street
New York, USA
biodiversity@amnh.org or <http://www.amnh.org>. The manual can be downloaded from this site.

PROJECT DESIGN FOR PROGRAMME MANAGERS

by Ralph U. Stone, Seema S. Chauhan & Stacey Lissit, 1993

This is one of the Training Manual series of the Centre for Development and Population Activities (CEDPA). It enables trainers to conduct a workshop in all phases of project design. The workshop content is applicable to managers in any sector, and provides exercises that would help them improve their skills in planning, implementing and managing projects.

This manual is intended for trainers of project managers in non-government organisations and government agencies.

The manual is organised into a series of 11 sessions, which build upon each other. Each session engages participants in some type of experience and allows them to reflect on the experience to draw out key concepts and lessons, develop generalisations about the lessons learned, and apply the new material.

These are:

- Overview of the Project Life Cycle
- Community Needs Assessment
- Developing a Problem Statement
- Goals and Objectives
- Project Implementation Plan
- Job Descriptions, Staffing Patterns, and Training Plan
- Monitoring and Evaluation
- Record keeping and Reporting
- Field Visit
- Budgeting
- Project Sustainability

For more information, contact:

Centre for Development and Population Activities
1400 16th Street NW, Suite 100
Washington, DC 20036, USA
www.cedpa.org ■

ASEAN Regional Centre for Biodiversity Conservation

National Biodiversity Reference Units' Network



ARCBC is a joint cooperation project between ASEAN and the European Union

