Developing Field Research Priorities in Negros and Panay Islands (West Visayas, Philippines) *with particular reference to key threatened endemic species*

TERMINAL REPORT

'Developing Field Research Priorities in Negros and Panay Islands (West Visayas, Philippines), with particular reference to key threatened endemic species

Terminal Report

September 2008

Prepared by
Marisol Pedregosa-Hospodarsky

Bristol Clifton and West of England Zoological Society
Fauna and Flora International – Philippines Biodiversity Conservation Programme
Philippines Biodiversity Conservation Foundation, Inc.

Acknowledgements

This project was made possible through the funding provided by the Bristol, Clifton and West of England Zoological Society (BCWZS) through Fauna and Flora International's Philippine Biodiversity Conservation Programme (FFI-PBCP), and technical support from Neil Maddison, Nigel Simpson and William Oliver, respectively.

To the Department of Environment and Natural Resources Region-6 and Region 7, Protected Area and Wildlife Division- Iloilo, PENRO Iloilo, PENRO San Jose, PENRO Kalibo, CENRO Sara, CENRO Culasi, CENRO Kalibo, Cebu Biodiversity Conservation Foundation, Bio-Resource Conservation Trust for the Philippines (BioCon), The Antique Outdoors (TAO), Negros Forest and Ecological Foundation, and Provincial Environment and Management Office of Negros Occidental (PEMO), for their invaluable support..

To the Rufford Small Grants for the Conservation of Nature (RSG) for funding the project "A faunal assessment of North Negros Natural Park, Negros Island, Philippines"

To Ideawild, for providing biometrical equipment, GPS etc

I am grateful to the following persons: Lormelyn Claudio, Arlene Dalawis, Damaso Fuentes, Jessie Vego, Vicente Sardina, Gerry Ledesma, Arlyn Ebalde, Davoy Castro, Noel Zamora, Ferit Temur, Kid Yray, Aldrin Mallari, Errol Gatumbato, Lisa Paguntalan, Godfrey Jakosalem, Orlyn Roxas and Pavel Hospodarsky; To my colleagues Renee Lorica, Clint Alvior, Em Lastica, Jean Utzurrum for the assistance and invaluable support. To Daniel Bennett for continuous support and lending his camera traps to the project.

To Edgar Sarrosa, Manolito Lopez, Milque Benedicto, Jossef Sagemuller and family for the continuous support to the project and to all I fail to remember to be mentioned, Maraming Salamat.

All photos in this report were taken by the author except for the plates with photo credits and the title page photo of the Negros bleeding-heart which was taken by Pavel Hospodarsky.

Summary

The West Visayan region of central Philippines is generally recognised as one of the world's highest conservation priority areas, both in terms of numbers of endemic species and degrees of threat. More than half of the critically endangered species listed in the Philippines occurs in the West Visayas. It is undoubtedly the most threatened of the six main faunal regions of the Philippines, since it has the least remaining forest cover and the highest numbers of severely threatened endemic species and subspecies

Much has been discovered in the West Visayas, the Panay cloudrat in 1996, the Panay Mabitang in 2001, and the two species of *Rafflesia* in 2002 and 2006 and new record of Negros bleeding-heart in Panay in 1998. With all these discoveries and new records in this faunal region for the last decade, this project aims to develop a new field conservation research programme in the West Visayas and other highest conservation priority areas in the Philippines. Specific objectives are as follows: Conduct and/or coordinate biodiversity or threatened species surveys in Negros, Panay and other designated areas and or facilitate applied research projects by other researchers intended to address key concerns; Formulate plans for possible future behavioral-ecology studies of selected threatened species in selected sites in Negros and Panay; Establish and maintain data bases on all relevant threatened habitats and species in the 'Negros-Panay Faunal Region'; Assist formulation and development of all salient species' conservation programmes, with particular emphases on the enhanced future conservation management of existing wild populations and/or species' reintroduction programmes; the latter to include organisation of relevant biodiversity surveys, public consultations (etc.) in collaboration with other salient local partner agencies.

The activities of this project include networking with local government units, indigenous peoples group and non-government organizations and other agencies within the priority areas; selection of priority sites i.e., research or conservation action sites; development of related proposal for the gratuitous permit application as well as research funding proposals; field research and other research projects done under the auspices of Philippine Biodiversity Conservation Programme and other related activities in Negros and Panay and related field research activities elsewhere.

Introduction

The West Visayan region of central Philippines is generally recognised as one of the world's highest conservation priority areas, both in terms of numbers of endemic species and degrees of threat. The 'West Visayas Faunal Region', otherwise (if somewhat misleadingly) known as the 'Greater Negros-Panay Faunal Region',collectively comprises the islands of Masbate, Ticao, Panay, Guimaras, Negros and Cebu (Figure 1).

There are 12 taxa that occur in the West Visayas faunal region (Table 1). More than half (52%) of the critically endangered species listed in the Philippines occurs in the West Visayas, 38% or 17 out of 45 taxa and 27% or 29 out of the 107 taxa listed under the Endangered and Vulnerable category, respectively, also occurs in the West Visayas. These include the highly threatened West Visayan endemic species Visayan warty pig (*Sus cebifrons*), Visayan spotted deer (*Cervus alfredi*), Philippine bare-backed fruit bat (*Dobsonia chapmani*), Panay cloud rat (*Crateromys heaneyi*), Negros Bleeding-heart Pigeon (*Gallicolumba keayi*), Negros Fruit Dove (*Ptilinopus arcanus*), Visayan Writhed Hornbill (*Aceros waldeni*), Negros Flame-templed Babbler (*Stachyris speciosa*), White-throated Jungle Flycatcher (*Rhinomyias albigularis*), and Panay monitor lizard (*Varanus mabitang*) among others.

It is undoubtedly the most threatened of the six main faunal regions of the Philippines, since it has the least remaining forest cover and the highest numbers of severely threatened endemic species and subspecies (see Appendices 1-4).

Table 1. Number of threatened (Critically Endangered, Endangered and Vulnerable) terrestrial vertebrate taxa occurring in the 6 faunal regions of the Philippines (based on IUCN 2004 and DAO 15).

Faunal Region	Critically Endangered	Endangered	Vulnerable	TOTAL
Greater Luzon	6	15	21	42
Greater Mindanao	3	15	18	36
Mindoro	6	4	10	20
Palawan	3	5	8	16
Negros-Panay (West Visayas)	12	17	29	58
Greater Sulus	5	5	10	20
TOTAL	23	45	107	175

The remaining forested areas in Negros and Panay are the last stronghold of these species, though not all of these areas have been thoroughly surveyed. Thus, there is a need for more field studies on the threatened doves and pigeons and other threatened endemic species of birds and mammals in Negros and Panay as well as biodiversity surveys in forested areas that have not been studied for over 30 years or have not been visited at all. The data that will be gathered from these studies will provide information useful to both governmental and non-governmental organizations and enable those agencies to develop relevant and practicable conservation measures. It will also enable local decision-making bodies to make better informed planning decisions that will (hopefully) also produce more positive and effective actions pertaining to the conservation of these habitats and species than has been the case up until now.

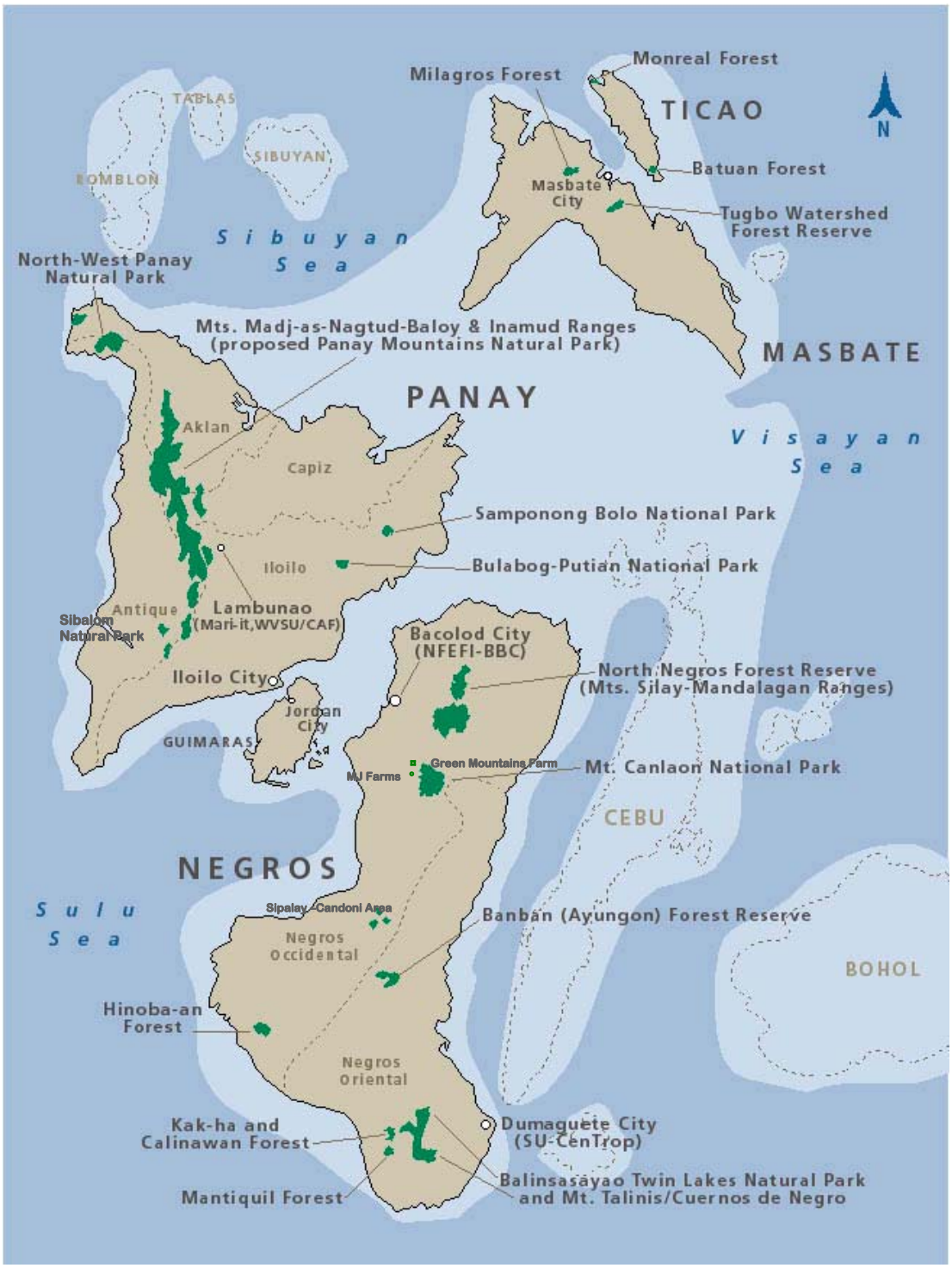


Figure 1. Approximate extent of remaining forest cover, existing protected areas and location of currently proposed project sites in West Visayas.

Background to the current project:

Biological explorations in Negros island started over a century ago with A. H. Everett in 1877. John Whitehead of British Museum expedition in 1895 collected extensively in Mt. Kanlaon. D. S Rabor in 1953 then with Silliman University, followed suit and collected almost the same areas where Whitehead worked. The results of the latter expedition were reported in Ripley and Rabor 1956, which report included the description of the Negros Fruit dove *Ptilinopus arcanus.* In 1952, the Negros naked-acked fruit bat, Dobsonia chapmani and Negros shrew Crocidura negrina were both described by Dioscoro Rabor.

The increased levels of research activity in Panay in recent years have produced many new species. In 1993 a survey by the Cincinnati Museum of Natural History, lead to the discovery of *Crateromys heaneyi* which was formally described by Gonzales and Kennedy in 1996. Diesmos and Pedregosa in 1994 and Lastimoza (1999) surveys in Panay secured the first reports of G. keayi and Varanus mabitang, respectively – both were confirmed by Klop *et al* in 1998 and by Gaulke and Curio in 2001, respectively.

Taxonomic review of the Philippine deer by Grubb and Groves (1983) revealed that this species is monotypic but two genetically isolated populations exist on Negros and Panay whilst Groves (1992 and 1995) recognizes two species of Philippine suids, *Sus cebifrons* and *S.* philippensis. These comparative studies of *C. alfredi* and *S. cebifrons* from Panay indicate important differences between Panay and Negros populations.

On the other hand, there are two new species of *Rafflesia* which was recently discovered in Panay. *R. speciosa* was described by Barcelona and Fernanado (2002), and *R. lobata* by Galang and Madulid (2006). In Negros, *R. speciosa* was recently recorded in Mt. Kanla-on during the study conducted by the Philippine National Oil Company in 2007. With all these discoveries and new records this project aims to develop a new field conservation research programme in the West Visayas and other highest conservation priority areas in the Philippines.

Objectives and Methods

This project aims to provide information useful to both governmental and non-governmental organizations and to assist those agencies to develop relevant and practicable conservation measures. The specific objectives of this project are as follows:

- Conduct and/or coordinate biodiversity or threatened species surveys in Negros, Panay and other designated areas and or facilitate applied research projects by other researchers intended to address key concerns;
- Formulate plans for possible future behavioral-ecology studies of selected threatened species in selected sites in Negros and Panay, using both traditional (where possible non-invasive) methods, as well as camera trapping and other more sophisticated techniques
- Establish and maintain data bases on all relevant threatened habitats and species in the 'Negros-Panay Faunal Region'.
- Assist formulation and development of all salient species' conservation programmes, with particular emphases on the enhanced future conservation management of existing wild populations and/or species' reintroduction programmes; the latter to include organisation of relevant biodiversity surveys, public consultations (etc.) in collaboration with other salient local partner agencies

Selection of current and future priority projects and sites are base on its relevance to other FFI/PBCFI PBCP conservation programmes focused on most threatened species or species' group (deer, pigs, dove and pigeons, hornbills, etc), proposed future reintroduction programmes, and hence also development of new protected areas (Local Conservation Areas or LCAs, private nature reserves, etc.) Areas under NIPAS include most (but not all) existing lowland and /or old growth forests and are crucial therefore need biodiversity surveys and applied field research

studies whereas areas that are non-NIPAS such as privately owned lands, municipal or provincial lands with forests are more likely to result in more tangible outcomes such as increased protection and forest restoration activities.

In reference to BCWEZS's particular interest in threatened columbids, and hence: particular reference being paid to these species in salient field research and education/awareness campaigns; whilst there are current plans to replace the former Memorandum of Agreement (MOA) covering 'Philippine Bleeding Heart Pigeons Conservation Programme' signed between the DENR and BCWEZS with a new MOA entitled "Philippine Threatened Endemic Pigeons and Doves Conservation Programme' ; thereby enhancing and extending the official mandates of this project, etc.

Activities

a) Networking:

Linkages with the following local government units, indigenous peoples group and non-government organizations and other agencies within the priority areas were established. These stakeholders issue the Prior Informed Consent Certificates (PIC) needed by all researchers in doing studies/researches (with or without specimen collection), as a requirement for the application of gratuitous permit.

These are the key organizations, agencies and persons that were coordinated and linked with for the following research and/or conservation action sites:

For North Negros Natural Park
- DENR Provincial Environment and Natural Resources Office, Bacolod City
- NNNP Management Council
- Provincial Environment and Management Office (PEMO), Office of the Governor, Negros Occidental
- Office of the Mayor, City of Silay
- Office of the Mayor, City of Victoria
- Indigenous Peoples Group Sibatu Clan

For Mt. Kanlaon Natural Park
- MKNP – Office of the MKNP Protected Area Superintendent
- MKNP Protected Area Management Board
- Ms. Ruby Sueño - Iliranan Tribal Council representative

For Sipalay- Candoni area
- Office of the Mayor, City of Sipalay
- Office of the City Environment and Natural Resources

Hinobaan area
- Yanson IFMA manager
- DENR-Region 7 Cebu City

For Sibalom Natural Park
- DENR Antique Provincial Environment and Natural Resources Office
- DENR Sibalom Community Environment and Natural Resources Office
- Office of the SNP Protected Area Superintendent
- SNP Protected Area Management Board

For Northwest Panay Peninsula Natural Park
- DENR Antique Provincial Environment and Natural Resources Office
- Biological Resource Conservation Trust of the Philippines (BioCon)

- Office of the NWPPNP Protected Area Superintendent
- NWPPNP Protected Area Management Board

Liaison and presentation of the proposed study with the above mentioned organizations, agencies and relevant persons resulted in the following Prior informed consent certificate from private land owners in Bago and Murcia (Green Mountains), Hinobaan (Yanson IFMA) and Sibatu Tribal Council. Resolutions from the Protected Area and Management Board of Mt. Kanlaon Natural Park, Northwest Panay Peninsula Natural Park, Sibalom Natural Park and a resolution from the Management Council of North Negros Natural Park (NNNP) were also approved after the presentation of the project proposal to all members of the PAMB (including all barangay captains, etc) and NNNP management council. Submission of the written board and council resolutions will depend entirely on the PAMB and council secretariats' release and submission of the minutes and resolutions made during the meeting to the office of the Protected Area and Wildlife Division to the DENR regional office in Iloilo.

On the other hand, the application of a gratuitous permit for the survey in Yanson IFMA Basay was submitted on June 2007 and was granted by the office of DENR Region 6 in Cebu City on August 2007.

b) <u>Selection of priority sites</u>:

Identification of study sites for this project was based on the following criteria: a). areas with forests as well as fragmented forest patches; b) areas that have not been previously or adequately surveyed; c) areas with forest that have not been studied for over 30 years; and d) presence of threatened endemic species of columbids.

Possible study / research sites for Negros

Mt. Kanlaon Natural Park

Plate 1. Forest within MJ Farms in Maao, Bago City that is contiguous to Mt Kanlaon Natural Park

Mt. Kanlaon National Park (Plate 1) was declared a National Park by Presidential Proclamation No. 721 on August 8, 1934 and revised by Proclamation No.1005 0n May 8, 1997. Mt Kanlaon is the highest peak on Negros, and lies c.35 km southeast of Bacolod City. Forests within the park is estimated to cover 11,475 ha or 46.7% of its total area. Other habitats include open grassland and cultivated land occupied by settlers. (Mallari *et al*, 2001).

The Negros fruit dove *Ptilinopus arcanus,* is known only from a single specimen collected in Mt. Kanlaon on May 1953. It is now almost 55 years since this fruit dove was collected, and this project is an opportunity to search for this species.

Adjacent and contiguous to Mt Kanlaon forest is the MJ Farms, a private property with at least 50 hectares of secondary old growth forest owned and managed by Milque Benedicto. This area can serve as one research area for Mt. Kanlaon.

North Negros Natural Park (NNNP)


Plate 2. North Negros Natural Park, Patag, Silay City

Mt. Silay (Plate 2) and Mt. Mandalagan are the two mountains peaks in North Negros Natural Park. These mountains have old growth forests and secondary forests in the higher (1000-700 m a s l) and lower (700-400 m a s l) slopes, respectively. Threatened species recorded in this area are the following; White-winged cuckoo shrike *Coracina ostenta*, Visayan Flowerpecker *Dicaeum haematostictum,* Flame-templed babbler *Stachyris speciosa,* Negros bleeding heart *Gallicolumba keayi*, Writhed-billed hornbill *Aceros waldeni,* Visayan tarictic hornbill *Penelopides panini,* Rufous-lored kingfisher *Halcyon winchelli,* Blue napped parrot *Tanygnathus lucionensis,* Philippine hawk-eagle *Spizaetus philippensis,* Visayan spotted deer *Cervus alfredi,* Visayan warty pig *Sus cebifrons,* Philippine tube-nosed bat *Nyctimene rabori* and Philippine pygmy fruit bat (*Haplonycteris fischeri*).

Sipalay-Candoni-Hinobaan Area

The forest in Sipalay is highly fragmented and of lowland limestone forest type (Alcala *et al.,* 2004). Calatong, a logged-over dipterocarp forest with many patches of agriculture, is located in Manlucahoc where most of the hunters reportedly poach (Cariño, 2006). This area is also a candidate conservation action site. Information, education and communication activities are most appropriate in the area.

The forest area in Hinoba-an is relatively small and is considered as the last remaining forest patch in southern Negros Occidental (Mallari *et al.,* 2001). Paguntalan *et al*. made a study on this forest patch on 2000 and recorded the following threatened bird species: *Spizaetus philippensis* Philippine Hawk Eagle, *Ducula poliocephala* Pink-bellied Imperial Pigeon, *Mearnsia picina* Philippine Needletail, *Halcyon winchelli* Rufous-lored Kingfisher, *Penelopides panini* Visayan Tarictic Hornbill, *Coracina ostenta* White-winged Cuckooshrike, *Stachyris speciosa* Flame-templed Babbler and *Rhinomyias albigularis* White-throated Jungle Flycatcher.

Green Mountains Farm

Green Mountains Farm is privately owned area located in Bago City. It is a mosaic of old growth secondary forest (Plate 3), *Gmelina* and mahogany plantation, coffee plantation with a small area planted to vegetables and various fruit bearing trees.


Plate 3. Green Mountains Farm Secondary Forest

Yanson Integrated Forest Management Agreement (IFMA)

Adjacent to Hinobaan forest patch is the 757.5 hectares Yanson IFMA, located at Brgy. Cabatuanan, Basay, Negros Oriental. The Yanson IFMA is a potential release site of some species for reintroduction because of its accessibility and proximity to the adjacent forest.

Possible species for reintroduction in this area will be identified after a biological survey of the IFMA and its adjacent areas.

Possible conservation action sites for Negros

Banban Forest

Banban forest is located in the central portion of Negros island, under the jurisdiction of the Municipality of Ayungon. It is a disturbed lowland forest which is divided into 3 blocks by a built up road being continually used by people going to and from the municipalities of Mabinay and Bindoy.

In 1999, Bristol, Clifton and West of England Zoological Society (BCWEZS) co-sponsored a group of biologists from Silliman University-Center for Tropical Studies (SU-CenTrop) and University of the Philippines at Los Baños to conduct a biological survey in Banban forest. The team recorded the following threatened bird species in the area: Visayan Tarictic hornbill, White-winged cuckoo shrike, Flame-templed babbler and White-throated jungle flycatcher while Columbid species recorded were Amethyst brown dove *Phapitreron amethystina,* White-eared brown dove *Phapitreron leucotis,* Black-chinned fruit dove *Ptilinopus leclancheri,* Pink-bellied imperial pigeon *Ducula poliocephala,* Metallic wood pigeon *Columba vitiensis,* Reddish cuckoo dove *Macropygia phasianella* and Common emerald dove *Chalcophaps indica.* As per recommendation of their study, the forest of Banban is a candidate for conservation action, and it was recommended that a habitat rehabilitation, information education and communication campaigns, and forest protection activities be implemented in the area (Paguntalan, *et.al*, 2000).

Mt Talinis-Twin Lakes Forest Reserve (MTTLFR)

Plate 4. Mt Talinis-Twin Lakes Forest Reserve

MTTLFR, also called Cuernos de Negros range, is located at the southeastern mountain ranges of Negros Island with the highest point of 1,800 meters above sea level. Primary and secondary lowland forests are found in Mt. Talinis whilst patches of secondary lowland and second growth areas are found in the Twin Lakes -Lake Balinsasayao and Lake Danao (Plate 4).

This site is well studied by SU-CenTrop biologists, and PENAGMANNAK Federation of People's Organizations led by Apolinario Cariño, is actively involved in habitat rehabilitation, reforestation, and forest protection efforts.

This area is a possible conservation action site for a continuous information education and communication activities using a participatory approach. Conservation efforts in MTTLFR should be done in collaboration with the existing people's organization in this area.

Possible research and conservation action sites for Panay

Sibalom Natural Park-San Remigio area

Sibalom Natural Park (SNP) is located in the southern portion of Antique with an area of 5,511.47 hectares (Plate 5). It was established as a protected area on April 23, 2000 by virtue of Presidential Proclamation 282. SNP has about 1,035 hectares of forest cover although the municipality of Sibalom still has ca. 800 hectares not covered by the boundaries of the protected area. Habitat types such as old growth forest, lowland and mid-montane forests, mixed secondary forests, grassland and reforestation areas can be found within SNP.

Plate 5 . Sibalom Natural Park

The forest of San Remigio is adjacent to but not contiguous to SNP. No biodiversity survey has been conducted in the area, and this patch of lowland forest may still reveal new species. This area is a research priority area for this project.

Northwest Panay Peninsula Natural Park (NWPPNP)

Northwest Panay Peninsula straddles two provinces, Antique and Aklan. The municipalities of Pandan and Libertad are under the jurisdiction of the Province of Antique, whilst Malay, Buruanga and Nabas are of Aklan. A large part (c. 12,000 ha) of the remaining lowland forest in this region was declared as the North-West Panay Peninsula Natural Park in April 2002. Mt. Gubulon-Malumbati in Pandan, Mt. Sibaliw in Libertad and Mt Tinagtacan in Malay and Nabas can be found in the NW Panay, and most of these areas are lowland forests. This area is a priority for a mammalian survey and, awareness campaigns targeting upland communities.

Central Panay Mountains

The Central Panay mountain range has three major mountains namely, Mt. Baloy, Mt. Nangtud and Mt. Madja-as. It is bounded by the four provinces of Panay, namely, Iloilo, Antique, Aklan and Capiz. It retains an extensive forest cover including montane, mossy and lowland forest, and is the biggest chunk of forest in the entire West Visayan region. Threatened species found in this mountain range include the Japanese Night Heron, Philippine Duck, Negros Bleeding-heart, Visayan Tarictic, Writhed-billed Hornbill, White-winged Cuckoo Shrike, Flame-templed Babbler, White-throated Jungle Flycatcher, Visayan Flowerpecker, and the Scarlet-collared Flowerpecker *Dicaeum retrocinctum* (Mallari, *et al* 2001). The Visayan spotted deer, Visayan warty pig and the Panay bushy-tailed cloudrat are also found in this mountain range.

In Iloilo, West Visayas State University (WVSU) has a land reservation area of ca. 3000 hectares located in the municipalities of Lambunao and Calinog. This area is part of the remaining forests of Central Panay Mountains. Mt. Baloy range is located within the provinces of Iloilo and Antique. It has two major peaks, and below Baloy-iki, one of the peaks, lies the the forest of Makbak (Pedregosa, 2005). There has been no biological survey done in Mt. Baloi nor in Makbak forest hence these area are research priority sites within Central Panay.

The Municipality of Valderrama, Barbaza and Culasi in Antique are the starting points in climbing Mt. Baloi, Mt. Nangtud, and Mt. Madja-as, respectively. Tree plantations of *Gmelina* and mahogany are found in some areas in these municipalities. Secondary forest, scrubland, grassland, agricultural areas and kaingin areas are found below 1000 masl, where the forest line

starts (Pedregosa 2005). Conservation education in schools and communities residing in the municipalities of Valderrama, Barbaza and Culasi is crucial in this part of Central Panay as well as forest restoration activities.

d) Development of related proposals

The Philippine Government requires issuance of a Gratuitous Permit before any field studies (with or without collection of specimens) can be done. In order to secure a GP, the applicant has to provide all of the following documents a) Letter of application b) Research proposal c) Endorsement letter from the head of institution and d) Free and Prior Informed Consent (from Indigenous People's Groups) and/or Prior Clearance (from Local government units, Protected Area and Management Board, private owner, etc). A research proposal was made for the purpose of Gratuitous Permit (GP) application under DENR Region 6. This proposal included all the possible (research and conservation action) sites under this region. The same was prepared for DENR Region 7 for the Tree Kings Inc. (Yanson) IFMA in Basay, Negros Oriental site. All NIPAS areas in the Philippines have its own Protected Area and Management Board (PAMB), and a GP applicant must present his/her research proposal to the PAMB for approval through a written Board Resolution. The process of securing these prior informed certificates and board resolutions takes quite a long time.

A GP for the North Negros Natural Park and Mt. Kanlaon Natural Park was released by the DENR Region 6 on April 2008.

A project funding proposal for a biodiversity survey on Mt. Kanlaon Natural Park was submitted to a local funding agency, Ford Ecogrants. The project was short listed last September 2007 but eventually not accepted by its grants committee. Another proposal, entitled: "A faunal assessment of North Negros Natural Park, Negros Island, Philippines", was submitted to Rufford Small Grant for the Conservation of Nature (RSG) and was recently accepted by the RSG trustees

e) Research activities done in Negros and Panay

1. field research activities

a. A faunal survey on North Negros Natural Park (Patag Area)

Plate 6. Mock viper from NNNP
Psammodynastes pulverulentus

Plate 7. Philippine tube-nosed fruitbat from NNNP
Nyctimene rabori

b. Rapid site assessment of Tree Kings Inc. - Integrated Forest Management Agreement (IFMA) in Basay, Negros Oriental (A separate report is currently being reviewed by A. Carino)

The IFMA area is a mosaic of grassland, rice fields, sugar fields, with small gulley areas with native trees and dominated by tree plantations of exotic species, such as Eucalyptus, Mahogany, Gmelina, etc.

A total of 60 species of terrestrial vertebrates were recorded in the area. There are 6 species of amphibians, 40 species of birds, 6 species of bats and 8 species of reptiles were recorded.

Plate 8. Setting up mist nets at Tree Kings IFMA, Basay, Negros Oriental (Photo by J. Utzurrum)

Plate 9. Surveying and checking the area map of the Tree Kings IFMA (Photo by J. Utzurrum)

Plate 10. The Tree Kings IFMA: A mosaic of grassland, rice fields, sugar fields, tree plantations of exotic species and small gulley areas with native trees (Photo by J. Utzurrum)

Camera trapping at GM Farms, Tabukol, Bago City, Negros Occidental

Plate 11. Setting a camera trap in the secondary forest of Tabukol

Plate 12. Setting a camera trap in Tabukol with FFI-PBCP Researcher, Renee Lorica,

2. other research projects under the auspices of the PBCP

Reintroductions project – direct involvement in the biodiversity survey of Sicogon island and identification of other possible reintroduction sites in Panay, e.g. the Sibalom Natural Park – San Remigio area.

Foster parenting of Luzon bleeding hearts from NFEFI BCC to the Negros bleeding heart chicks in Silliman University-CenTrop.

f) <u>Other related activities in Negros and Panay</u>

1. Advising/assisting other agencies

Marine and Wildlife Camp – the camp was organize by the Philippine Reef and Rainforest Foundation, assistance was given as a resource person to the youth campers

Biological Monitoring and Evaluation Training - together with the Negros Occidental Provincial Environment and Management Office, advice and technical assistance was provided to the Bantay Bukid Brigade of North Negros Natural Park,

Plates 13 & 14. Bird identification using binoculars (left) and mist netting (right) with NNNP Bantay Bukid

Field Techniques training – field techniques training such as setting up mist nets, capture release and processing of volant mammals and birds were accomplished. Training was given to NFEFI volunteers and staff


Plates 15 & 16. Field techniques training to NFEFI volunteers and Staff (Photos by P. Hospodarsky)

2. Advising/assisting PBCP education projects/awareness campaigns

Wildlife Month Celebration 2007 in the Province of Negros Occidental – advice and assistance were given to the PBCP Education Officer and NFEFI- BCC Curator on the celebration of Negros Occidental Wildlife Month with the following activities: Animals of Negros parade, Extemporaneous speech contest, Province-wide wildlife quiz contest and essay contest. The same advice and assistance is given to the current PBCP Education Officer and NFEFI- BCC Curator for the 2008 Wildlife Month celebration.

h) <u>Proposed new research projects in Negros and Panay</u>

1. Biodiversity surveys and other activities in existing National Integrated Protected Areas System (NIPAS) site
   - Biodiversity Survey on Mt Kanlaon Natural Park

2. Biodiversity surveys and other activities in non-NIPAS sites
   - GIS mapping and development of site management plans for any proposed new Local Conservation Areas (LCAs), private nature reserves such as the San Remigio area in Antique

3. Implementing DENR requirements re. proposed threatened species' reintroduction projects
   - Biodiversity survey, GIS mapping, development of site management and habitat restoration plans re. any proposed species' reintroduction sites - e.g. Sicogon, Tree Kings, etc.)

4. Radio-telemetry and other species' research projects
   - radio-tracking of Visayan leopard cats or marals, camera trapping of selected species in selected sites e.g. taricitcs, marals in Tabukol Green Mountains Farm, tarictics and cloud rats in Mari-it, etc.

h) <u>Related field research activities done elsewhere</u>

- Conservation of the Dinagat Tarsier (*Tarsius syrichta carbonarius*) and other Threatened Endemic Mammals of Dinagat Island, Surigao del Norte, Philippines

Ethnobiological interviews were done in 3 municipalities namely Loreto, Tubajon and Malinao. Six camera traps were operated for 14 days at Acoje area, Umasdang-daku, Panamaon, Loreto, Dinagat island on March to April 2007

Plate 17. Setting Camera traps at Acoje, Loreto, Dinagat island

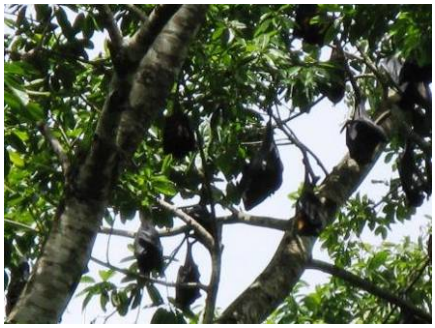
Plate18. Forest of Loreto, Dinagat island, Surigao del Norte, Philippines

Ethnobiological interviews in the southern part of Dinagat Island and in Siargao and Bucas Grande Islands on February – March 2008.


Plates 19 & 20 . Indigenous peoples in Malinao, Tubajon (left) and interviewees' children in Acoje area, Panamaon, Loreto, Dinagat

Plate 21. Del Pilar, Cagdianao, Dinagat Island.

Plate 22. A Malay civet *Viverra tangalunga* captured by the hunter interviewed in Siargao Island

Plates 23 & 24. Flying foxes roosting site, Nueva Estrella, Socorro, Bucas Grande Island

i) <u>Proposed new field research activities elsewhere</u>;

- Biodiversity survey in the remaining forest patches in Masbate City
- Faunal survey in the remaining forests in the islands of Calamianes group

References

Balete, D. S., H. C. Miranda, L. R. Heaney, and J. F. Rieger. (1992). Diversity and conservation of Philippine land vertebrates: an annotated bibliography. Silliman Journal 36:129-149.

Barcelona, J. & E. Fernando. (2002): A new species of Rafflesia (Rafflesiaceae) from Panay Island, Philippines. Kew Bulletin 57(3):647-651.

Cadeliña, A. M., Cariño, A .B. and Dolino, C. N. (2004): Saving a physically challenged ecosystem: who takes charge of the Mt. Talinis – Twin Lakes Forest Reserve? *Silliman Journal* 45/2: 237-250.

Carino, A.M. (2005): Conservation Of The Critically Endangered Negros Bleeding Heart Pigeon *Gallicolumba Keayi* On The Island Of Negros, Philippines. (Unpubl)

Carino, A. C., Cadelina, A. M. & Tiempo, F. A. (2005): Ethnobiological survey of vertebrate wildlife hunters on Negros Island, Philippines. Unpubl. rep.: 33 pp.

Collar, N.J., N.A.D. Mallari, and B.R. Tabaranza Jr. (1999): *Threatened Birds of the Philippines*. Haribon Foundation/BirdLife International Red Data Book. Bookmark, Inc. Makati City.

Cox, R. (1987): The Philippine spotted deer and the Visayan warty pig. Oryx 21(1): 37-42

DENR Administrative Order (DAO) No. 2004-15. (2004): "Establishing the list of threatened species and their categories, and the list of other wildlife species under the jurisdiction of DENR pursuant to Republic Act No. 9147, otherwise known as the Wildlife Resources Conservation and Protection Act of 2001

DENR (2007): Implementing Rules and Regulation of Republic Act 9147

Diesmos, A. C. and Pedregosa, M. DG. (1995). The conservation status of threatened species of bleeding-hearts (Columbidae) and hornbills (Bucerotidae) in the Philippines. (Unpubl.) rep., WBL, UPLB: 68 pp.

Dolino, C. N., Cariño, A. B. and Cadeliña A. M. (2004): Threatened wildlife of the Twin Lakes Balinsasayao and Danao Natural Park, Negros Oriental. *Silliman Journal* 45/2: 160-208.

Dupont, J. E. (1971) *Philippine birds*. Greenville, U.S.A.: Delaware Museum of Natural History.

Gaulke, M. & E. Curio (2001): A new monitor lizard from Panay Island, Philippines (Reptilia, Sauria, Varanidae). Spixiana 24, 275-286

Grubb, C., and C. P. Groves (1983): Notes on the taxonomy of the deer (Mammalia: Cervidae) of the Philippines. Zoologischer Anzeiger; 210 (1-2): 119-144

Heaney, L. R. (1985): Zoogeographic evidence for middle and late Pleistocene land bridges to the Philippine islands. *Quaternary Res. S.E. Asia* 9: 127–143.

Heaney, L. R. (2002): A decade of research on Philippine mammals: progress and challenges. *Silliman Journal* 42(1) (2001):88-108

Heaney, L. R., Balete, D. S., Dollar, M. L., Alcala, A. C., Dans, A. T. L., Ingle, N. R., Lepiten, M. V., Oliver, W. L. R., Ong, P. S., Rickart, E. A., Tabaranza, B.R. Jr. and Utzurrum, R.C. B.

(1998): A Synopsis of the mammalian fauna of the Philippine Islands. *Fieldiana: Zoology, New Series* 88: 1-61

Heaney, L.R., P.D. Heideman and K.M. Mudar, 1981. Ecological notes on mammals in the Lake Balinssayao region, Negros Oriental, Philippines. *Silliman Journal* Vol 28, No.3-4

Heaney, L. R. and J. C. Regalado, Jr. (1998): *Vanishing Treasures of the Philippine Rain Forest.* The Field Museum, Chicago: 88 pp.

Heideman, P.D., L.R. Heaney, R. L. Thomas and K.R. Erickson (1987): Patterns of faunal diversity and species abundance of non-volant small mammals on Negros island, Philippines*. Journal of Mammalogy*, 68(4):884-888

Ingle, N. R. and L. R. Heaney (1992): A key to the bats of the Philippine Islands. *Fieldiana Zoology (new series)* 69:1-44.

IUCN. 2004: *IUCN Red List of Threatened Species*. (*www.redlist.org*)

Kennedy, R.S., P.C. Gonzales, E.C. Dickinson, H.C. Miranda Jr., and T.H. Fisher. (2000): *A Guide to the Birds of the Philippines*. Oxford University Press. 369 p.

Klop, E., E. Curio & Y. de Soye (1998): A new population of bleeding-heart pigeon (*Gallicolumba* sp.) and its conservation relevance on Panay, Philippines. J. Ornithol. 139, 76-77

Mallari, N.A.D., B.R. Tabaranza, Jr., and M.J. Crosby (2001): *Key Conservation Sites in the Philippines.* Haribon Foundation and Birdlife International. Bookmark, Inc., Makati City, Philippines. 485 pp.

Oliver, W. O. and L. R. Heaney (1997): Biodiversity and conservation in the Philippines. *Philippine Red Data Book,* Wildlife Conservation Society of the Philippines and Bookmark Inc., Manila

Paguntalan, L.M.J., J.C.T. Gonzales, M.J.C. Gadiana, A.T.L. Dans, M.dG. Pedregosa, A.B.Cariño, and C.N. Dolino (2002): Birds of Ban-ban, Central Negros, Philippines: Threats and Conservation Status. *Silliman Journal*, 43(1):110-13

Pedregosa, M. dG (2005): Panay Island: The Dwindling Forest and Its Threatened Wildlife, an Ethnobiological survey. (Unpubl.); rep., NEZS, FFI-PBCP pp54

Rabor, D.S. (1952): Two new mammals from Negros Island, Philippines. Nat. Hist. Misc. (Chicago Acad. Sci.), no. 96, 7pp.

Ripley, S.D. and D.S. Rabor. (1956): Birds from Canlaon Volcano in the highlands of Negros Island in the Philippines. Condor 58:283-291.

Tabaranza, B.R. and N.A.D. Mallari. (1997): Birds. Pp. 99-136. In the *Philippine Red Data Book*. Wildlife Conservation Society of the Philippines. Bookmark, Inc., Makati, Philippines.

Turner, C.S., Slade, E.M. & Ledesma, G. (2002): The Negros Rainforest Conservation Project: Past, Present & Future. Silliman Journal, 42 (1), 109-132.

Wildlife Conservation Society of the Philippines (1997): *Philippine Red Data Book*. Bookmark Inc. Makati City. 262 pp.

Appendices

Appendix 1. List of threatened amphibian and reptile species occurring in the Philippines (based on IUCN 2004 and DENR-DAO 15)

Scientific Name	Common Name	Status	Distribution
Amphibians			
Barbourula busuangensis	Philippine Discoglossid Frog	VU	Palawan
Ansonia mcgregori		VU	Mindanao
Ansonia muelleri		VU	Mindanao
Pelophryne albotaeniata	Palawan Toadlet	EN	Palawan
Pelophryne lighti		VU	Greater Mindanao
Megophrys ligayae	Palawan Horned Frog	EN	Greater Mindanao
Megophrys stejnegeri	Southeast Asian Horned Toad	VU	Greater Mindanao and small islands
Kaloula kalingensis	Smooth-fingered Narrow-mouthed Frog	VU	Central Cordilleras and Sierra Madre Mountains
Kaloula rigida	Luzon Narrow-mouthed Frog	VU	Found in the mountains of the Central Cordilleras and Sierra Madres, northern Luzon Island, Philippines
Oreophryne anulata		VU	Camiguin Sur
Limnonectes acanthi		VU	Philippine island s of Balabac, Busuanga, Culion, Palawan
Limnonectes diuatus	Eastern Mindanao Frog	VU	Mts. Diwata and Kitanglad, Mindano
Limnonectes parvus	Philippine Small-disked Frog	VU	Mindanao
Limnonectes visayanus	Giant Visayan Frog	VU	West Visayas
Occidozyga diminutivus	Small-headed Frog	VU	Mindanao, Basilan, Sulu
Platymantis banahao	Banahao Forest Frog	VU	Mt Banahao
Platymantis cagayanensis		EN	north coast of Luzon Island
Platymantis cornuta	Horned Forest Frog	VU	Central Cordilleras, northern Luzon
Platymantis guentheri		VU	Greater Mindanao
Platymantis hazelae	Hazel's Forest Frog	EN	Negros and Masbate
Platymantis indeprensus		VU	Mt Banahao
Platymantis insulata	Island Forest Frog	CR	South Gigante island
Platymantis isarog	Isarog Forest Frog	VU	Mt. Isarog, Luzon
Platymantis lawtoni		EN	Romblon, Tablas, and Sibuyan Islands, Philippines.
Platymantis levigata	Smooth-skinned Forest Frog	EN	Romblon, Tablas, and Sibuyan Islands, Philippines.
Platymantis montana		VU	Mt. Makiling
Platymantis naomiae		VU	Mt. Banahao
Platymantis negrosensis	Negros Forest Frog	EN	Negros and Panay
Platymantis panayensis	Panay Forest Frog	EN	Western Panay
Platymantis polillensis	Polillo Forest Frog	EN	Polillo Island and the adjacent coast of Luzon Island, Philippines
Platymantis pseudodorsalis		VU	Mt. Banahao and Mt. San Cristobal, Luzon Island
Platymantis pygmaea	Pygmy Forest Frog	VU	Central Cordilleras and Sierra Madres, northern Luzon Island, and in Sibuyan Island, Philippines.
Platymantis rabori	Rabor's Forest Frog	VU	Bohol, Leyte, Mindanao
Platymantis sierramadrensis		VU	Sierra Madre
Platymantis spelaea	Negros Cave Frog	EN	Negros island
Platymantis subterrestris	Mt. Data Forest Frog	EN	Mt. Data, Cordilleras
Platymantis taylori		EN	Sierra Madre

Scientific Name	Common Name	Status	Distribution
Rana igorota		VU	Cental Cordilleras, Northern Luzon
Rana mangyanum		EN	Mindoro
Rana tipanan		VU	Sierra Madre, northeastern Luzon
Nyctixalus spinosus	Spiny Tree Frog	VU	Mindanao, Samar, Leyte, Bohol
Philautus acutirostris		VU	Mindanao, Jolo, Basilan
Philautus leitensis	Leyte Tree Frog	VU	Biliran, Bohol, Leyte, Maripipi, Mindanao
Philautus poecilius	Mottled Tree Frog	VU	Mindanao
Philautus schmackeri	Mindoro Tree Frog	EN	Mindoro
Philautus surrufus		EN	Northwestern Mindanao
Philautus worcesteri		VU	Mindanao
Rhacophorus bimaculatus		VU	Luzon, Bohol, Mindanao
Reptiles			
Crocodylus mindorensis	Philippine Crocodile	CR	Widespread but Philippines only
Varanus mabitang	Panay Monitor Lizard	CR	Panay
Varanus olivaceus	Gray's Monitor Lizard	VU	Polillo and Southern Luzon
Varanus salvator cumingi	Mindanao Water Monitor	VU	Mindanao, Sulu
Varanus salvator marmoratus		VU	Luzon, Palawan, Mindoro, Sulu
Varanus salvator nuchallis		VU	Negros, Panay
Heosemys leytensis	Philippine Pond Turtle	CR	Palawan
Heosemys spinosa	Spiny Terrapin	EN	Mindanao and Sulus

Appendix 2. List of threatened birds occurring in the Philippines (based on IUCN 2004 and Kennedy *et al.* 2000).

Scientific Name	Common Name	Status	Distribution
Anthracoceros montani	Sulu Hornbill	CR	Jolo, Tawitawi and Sanga Sanga
Sterna bernsteini	Chinese Crested-Tern	CR	NE China, Thailand, Sarawak and Halmahera; Luzon
Pithecophaga jefferyi	Philippine Eagle	CR	Luzon, Mindanao and Samar
Gallicolumba keayi	Negros Bleeding-heart	CR	Negros
Gallicolumba menagei	Sulu Bleeding-heart	CR	Tawitawi
Gallicolumba platenae	Mindoro Bleeding-heart	CR	Mindoro
Phapitreron cinereiceps cinereiceps	Dark-eared Brown-Dove	CR	Tawitawi
Ptilinopus arcanus	Negros Fruit-Dove	CR	Negros
Dicaeum quadricolor	Cebu Flowerpecker	CR	Cebu
Cacatua haematuropygia	Philippine Cockatoo	CR	All throughout the Philippines
Aceros leucocephalus waldeni	Writhed Hornbill	CR	Guimaras, Negros and Panay
Centropus steerii	Black-headed Coucal	CR	Mindoro
Penelopides mindorensis	Tarictic Hornbill	EN	Mindoro
Penelopides panini affinis	Tarictic Hornbill	EN	Dinagat, Mindanao and Siargao
Penelopides panini basilanica	Tarictic Hornbill	EN	Basilan
Penelopides panini manillae	Tarictic Hornbill	EN	Luzon, Marinduque and Catanduanes
Penelopides panini panini	Tarictic Hornbill	EN	Guimaras, Masbate, Negros and Panay
Penelopides panini samarensis	Tarictic Hornbill	EN	Bohol, Leyte, Samar, Calicoan and Biliran
Penelopides panini subnigra	Tarictic Hornbill	EN	Polillo
Penelopides panini ticaensis	Tarictic Hornbill	EN	Ticao
Gorsachius goisagi	Japanese Night-Heron	EN	Japan, China, Taiwan, Sulawesi, and the Moluccas; Luzon, Mindanao, Negros, Siquijor, Semirara and Palawan
Tringa guttifer	Nordmann's Greenshank	EN	NE India, SE Asia esp. Malay Peninsula; Cebu and Luzon
Gallicolumba criniger bartletti	Mindanao Bleeding-heart	EN	Basilan
Gallicolumba criniger criniger	Mindanao Bleeding-heart	EN	Mindanao and Dinagat
Gallicolumba criniger leytensis	Mindanao Bleeding-heart	EN	Leyte and Samar
Rhinomyias albigularis	White-throated Jungle-Flycatcher	EN	Guimaras and Negros
Hypsipetes siquijorensis cinereiceps	Streak-breasted Bulbul	EN	Romblon and Tablas
Stachyris nigrorum	Negros Striped-Babbler	EN	Negros
Stachyris speciosa	Flame-templed Babbler	EN	Negros
Copsychus cebuensis	Black Shama	EN	Cebu

Scientific Name	Common Name	Status	Distribution
Prioniturus verticalis	Blue-winged Racquet-tail	EN	Bongao, Sibutu and Tawitawi
Hypsipetes siquijorensis monticola (Ixos siquijorensis)	Streak-breasted Bulbul	EN	Cebu
Hypsipetes siquijorensis siquijorensis	Streak-breasted Bulbul	EN	Siquijor
Platalea minor	Black-faced Spoonbill	EN	Korea, Manchuria and probably E China; Luzon
Oriolus isabellae	Isabela Oriole	EN	Luzon
Phapitreron cinereiceps brunneiceps	Dark-eared Brown-Dove	VU	Basilan, Mindanao and Bukidnon
Grus antigone sharpii	Sarus Crane	VU	Assam east through mainland SE Asia; N and Central Luzon
Anas luzonica	Philippine Duck	VU	Catanduanes, Guimaras, Lubang, Luzon, Marinduque, Masbate, Mindanao,Mindoro, Panay, Samar& Ticao
Anthracoceros marchei	Palawan Hornbill	VU	Balabac, Busuanga, Calauit and Palawan
Spizaetus philippensis	Philippine Hawk-Eagle	VU	Basilan, Luzon, Mindoro, Negros, Palawan, Siquijor, Samar, Mindanao and Biliran
Egretta eulophotes	Chinese Egret	VU	E China, Malay Peninsula, Borneo and Sulawesi; Bohol,Cebu, Panay, Samar, Palawan, Luzon, Mindoro and Batan
Numenius tahitiensis	Bristle-thighed Curlew	VU	Alaska, Pacific Islands; Balabac
Ducula carola carola	Spotted Imperial-Pigeon	VU	Luzon, Mindoro and Sibuyan
Ducula carola mindanensis	Spotted Imperial-Pigeon	VU	Mindanao
Ducula carola nigrorum	Spotted Imperial-Pigeon	VU	Negros and Siquijor
Ducula pickeringii pickeringii	Grey Imperial-Pigeon	VU	NE Borneo; Cagayancillo, Cagayan Sulu, Jolo, Sibutu, Balabac, Calauit, Cavilli, Calusa
Actenoides hombroni	Blue-capped Wood-Kingfisher	VU	Mindanao
Alcedo argentatus argentatus	Silvery Kingfisher	VU	Basilan, Dinagat, Mindanao and Siargao
Alcedo argentatus flumenicola	Silvery Kingfisher	VU	Samar and Leyte
Ceyx melanurus melanurus	Philippine Dwarf-Kingfisher	VU	Luzon, Polillo, Alabat and Catanduanes
Todiramphus winchelli	Rufous-lored Kingfisher	VU	Basilan
Polypectron emphanum	Palawan Peacock Pheasant	VU	Palawan
Coracina ostenta	White-winged Cuckoo-shrike	VU	Guimaras, Negros and Panay
Chloropsis flavipennis	Philippine Leafbird	VU	Cebu, Mindanao and Leyte
Dicaeum haematostictum	Visayan Flowerpecker	VU	Guimaras, Negros and Panay
Dicaeum retrocinctum	Scarlet-collared Flowerpecker	VU	Mindoro
Emberiza sulphurata	Yellow Bunting	VU	Japan, SE China and Taiwan; Calayan and Luzon
Erythrura viridifacies	Green-faced Parrotfinch	VU	Luzon and Negros, recently Cebu
Eurylaimus samarensis	Visayan Wattled Broadbill	VU	Leyte, Samar and Bohol
Eurylaimus steerii steerii	Mindanao Wattled Broadbill	VU	Basilan, Mindanao and Malamaui
Ficedula platenae	Palawan Flycatcher	VU	Palawan
Muscicapa randi	Ashy-breasted Flycatcher	VU	Negros and Luzon

Scientific Name	Common Name	Status	Distribution
Rhinomyias insignis	White-browed Jungle-Flycatcher	VU	Luzon
Pitta kochi	Whiskered Pitta	VU	Luzon
Pitta steerii coelestis	Azure-breasted Pitta	VU	Bohol, Samar and Leyte
Pitta steerii steerii	Azure-breasted Pitta	VU	Mindanao
Acrocephalus sorghophilus	Streaked Reed-Warbler	VU	Manchuria nad NE China; Luzon and Bohol
Phylloscopus ijimae	Ijima's Leaf-Warbler	VU	Japan; Luzon
Ptilocichla falcata	Falcated Ground-Babbler	VU	Balabac and Palawan
Rhyacornis bicolor	Luzon Water-Redstart	VU	northern Luzon
Zoothera cinerea	Ashy Ground-Thrush	VU	Mindoro and Luzon
Dendrocopus ramsayi	Philippine Pygmy Woodpecker	VU	Bongao, Jolo, Tawitawi, Papahag, Sanga Sanga and Sibutu
Prioniturus platenae	Blue-headed Racquet-tail	VU	Balabac, Busuanga, Palawan, Culion, Calauit and Dumaran
Bubo philippensis mindanensis	Philippine Eagle-Owl	VU	Mindanao, Samar and Leyte
Bubo philippensis philippensis	Philippine Eagle-Owl	VU	Luzon and Catanduanes
Mimizuku gurneyi	Lesser Eagle-Owl	VU	Mindanao, Dinagat and Siargao
Aythya baeri	Baer's Pochard	VU	Siberia, E India, Burma, N Thailand, E China, Korea and Japan; Luzon
Pterodroma phaeopygia sandwichensis	Dark-rumped Petrel	VU	Pacific pelagic species; Negros (once)
Pelecanus philippensis philippensis	Spot-billed Pelican	VU	South and Southeast Asia; Luzon and Mindanao
Ducula mindorensis	Mindoro Imperial- Pigeon	VU	Highlands of Mindoro only
Ptilinopus marchei	Flame-breasted Fruit-Dove	VU	Luzon
Coracina morio mindanensis	Black-shouldered Cuckoo-shrike	VU	Basilan and Mindanao
Ficedula basilanica basilanica	Little Slaty Flycatcher	VU	Basilan, Mindanao and Dinagat
Ficedula basilanica samarensis	Little Slaty Flycatcher	VU	Leyte and Samar
Hypothymis coelestis coelestis	Celestial Monarch	VU	Basilan, Dinagat, Luzon, Mindanao and Samar
Hypothymis coelestis rabori	Celestial Monarch	VU	Negros and Sibuyan
Prioniturus luconensis	Green Racquet-tail	VU	Luzon and Marinduque

Appendix 3 List of threatened mammals occurring in the Philippines (based on IUCN 2004 and Heaney *et al*. 1998)

Scientific Name	Common Name	Status	Distribution
Dobsonia chapmani	Negros Naked-backed fruit bat	CR	endemic to Negros and Cebu Islands
Sus cebifrons	Visayan Warty Pig	CR	Negros-Panay Faunal Region only.
Bubalus mindorensis	Mindoro Dwarf Buffalo	CR	Mindoro Faunal Region only
Nyctimene rabori	Philippine Tube-nosed Fruit Bat	CR	Cebu Negros and Sibuyan
Crocidura negrina	Negros Shrew	CR	Endemic to Negros Island .
Chrotomys gonzalesi	Isarog Striped Shrew Rat	CR	Known only from Mt. Isarog, southern Luzon
Crateromys paulus	Ilin Bushy-tailed Cloud Rat	CR	Ilin Island
Crunomys fallax	Northern Luzon Shrew Mouse	CR	Sierra Madre, northern Luzon
Axis calamianensis	Calamian Hog Deer	EN	Busuanga and Culion .
Cervus alfredi	Visayan Spotted Deer	EN	Cebu, Guimaras, Masbate, Negros, and Panay
Acerodon jubatus	Golden-crowned Flying Fox	EN	Endemic to the Philippines; widespread with the exception of the Palawan faunal region and the Batanes and Babuyan groups.
Pteropus leucopterus	Mottle-winged Flying Fox	EN	Endemic to the Luzon Faunal Region and Dinagat
Podogymnura aerospinula	Dinagat gymure, Dinagat wood shrew	EN	Dinagat island .
Podogymnura truei	Mindanao gymnure, Mindanao wood shrew	EN	Mindanao Island (Bukidnon, Davao del Norte and Davao del Sur provinces
Crocidura grandis	Greater Mindanao Shrew	EN	Mindanao Island (Misamis Occidental Province).
Crocidura mindorus	Mindoro Shrew	EN	Mindoro and Sibuyan islands
Sundasciurus juvencus	Northern Palawan Tree Squirrel	EN	Palawan
Archboldomys luzonensis	Isarog Shrew Mouse	EN	Mt. Isarog, Camarines Sur Province, Luzon
Crateromys australis	Dinagat Hairy-tailed Cloud Rat	EN	Dinagat Island
Crateromys heaneyi	Panay Bushy-tailed Cloud Rat	EN	Panay only
Palawanomys furvus	Palawan soft-furred mountain rat	EN	Palawan, Mt. Mantalingajan
Tragulus napu (ssp. nigricans)	Greater Mouse Deer	EN	Southern Indochina to Java and Borneo. In the Philippines, recorded only on Balabac and adjacent small islands
Sus barbatus (ssp. ahoenobarbus)	Bearded Pig	VU	Malay Peninsula to Borneo and Palawan Faunal Region. Found on Busuanga, Balabac and Bugsuc, Calauit, Culion, Coron, and adjacent islands
Sus philippensis	Philippine Warty Pig	VU	Biliran, Catanduanes , Leyte, Luzon, Mindanao and Mindoro . Also reported from Basilan and Samar, and Camiguin
Mydaus marchei	Palawan Stink Badger	VU	Palawan Faunal Region. Recorded only on Busuanga Calauit and Palawan mainland.
Arctictis binturong	Binturong	VU	Northern Burma and Yunnan to Sumatra, Java, and Borneo. In the Philippines, known only from Palawan Island
Acerodon leucotis	Palawan Flying Fox	VU	Philippines only; endemic to the Palawan Faunal Region. Recorded from Balabac, Busuanga , and Palawan Islands.
Alionycteris paucidentata	Mindanao Pygmy Fruit bat	VU	Philippines only; endemic to Mindanao Island

Scientific Name	Common Name	Status	Distribution
Haplonycteris fischeri	Philippine Pygmy fruit bat	VU	Endemic to the Philippines; widespread excluding the Camiguin, Palawan, Batanes/Babuyan, and Sibuyan faunal regions.
Otopteropus cartilagonodus	Luzon Pygmy Fruit Bat	VU	Luzon Island. Recorded from Abra, Aurora, Cagayan, Camarines Sur , Isabela , Laguna, Mountain, Nueva Viscaya, Quezon, Zambales provinces.
Pteropus pumilus	Little golden mantled flying fox	VU	Endemic to the Philippines, excluding Batanes/Babuyan and Palawan faunal regions. It is also on Miangas Island, Indonesia, adjacent to Mindanao. Records Balut (USNM), Camiguin , Leyte , Maripipi Masbate (SU), Mindanao (Zamboanga del Sur), Mindoro (MCZ), Negros , Palmas Panay (SU), Sibuyan , Siquijor (SU), and Tablas (AMNH).
Pteropus speciosus	Philippine gray flying fox	VU	Two islands in the Java Sea, Indonesia, and the Mindanao and Sulu faunal region. Reported from Basilan Malanipa Mindanao (Zamboanga del Sur Province), Sanga-sanga , Sibutu , and Tawi-tawi (AMNH).
Rhinolophus subrufus	Small Rufous Horseshoe Bat	VU	Philippines only; specimens from Camiguin , Catanduanes Luzon [Abra , Camarines Sur Isabela , Laguna , Pampanga (USNM), Rizal (BMNH), Sorsogon provinces], Mindanao [Davao del Sur and South Cotabato (AMNH) provinces], Mindoro .
Cynocephalus volans	Philippine Flying Lemur	VU	Philippines only; endemic to the Mindanao Faunal Region. Recorded from Basilan (AMNH), Biliran Bohol , Dinagat Leyte Mindanao (Agusan del Norte [UPLB], Bukidnon , Davao del Norte , Davao del Sur , Lanao del Norte , Lanao del Sur [DMNH], Misamis Occidental , Misamis Oriental [DMNH], South Cotabato , Surigao del Sur [UPLB], Zamboanga del Norte , and Zamboanga del Sur [DMNH] provinces), Samar , and Siargao . Also reported from Maripipi (Rickart et al., 1993)
Crocidura beatus	Common Mindanao shrew	VU	Endemic to the Philippines; widespread in Mindanao faunal region and on Camiguin. Recorded from Biliran , Bohol Camiguin , Leyte , Maripipi [UMMZ], and Mindanao [Agusan, Bukidnon , Cotabato [PNM], Misamis Occidental , Zamboanga provinces) (Heaney and Ruedi, 1994)
Crocidura grayi	Luzon Shrew	VU	Philippines only; widespread in Luzon and Mindoro faunal regions. Recorded from Catanduanes Luzon (Aurora [UPD], Benguet , Camarines Sur , Laguna [BMNH], Mountain [BMNH], and Rizal [AMNH] provinces), and Mindoro (MMNH). Also reported from Abra Province, Luzon (Lawrence, 1939).
Crocidura palawanensis	Palawan Shrew	VU	Endemic to the Palawan Faunal Region. Records are from Palawan and Balabac islands. Babuyan, Puerto Princesa, Mt. Mantalingajan
Sundasciurus philippinensis	Philippine Tree Squirrel	VU	Mindanao and adjacent islands. Recorded from Basilan Biliran, Bohol, Dinagat, Leyte, Mindanao, Samar and Siargao .
Sundasciurus rabori	Palawan Montane Tree Squirrel	VU	Palawan island only
Anonymomys mindorensis	Mindoro Climbing Rat	VU	Endemic to Mindoro: known only from Ilong Peak, Halcon Range.
Apomys gracilirostris	Large Mindoro Forest Mouse	VU	Known only on Mindoro
Apomys sacobianus	Long-nosed Luzon Forest Mouse	VU	Endemic to Luzon (Isabela, Mountain, Pampanga , and Zambales provinces).
Chrotomys whiteheadi	Luzon Montane Striped Shrew Rat	VU	Luzon only, records are from Benguet and Mountain provinces
Crateromys schadenbergi	Luzon Bushy-tailed Cloud Rat	VU	Known only from Benguet, Ifugao, and Mountain provinces, Luzon
Phloeomys cumingi	Southern Luzon Giant Cloud Rat	VU	Luzon Faunal Region only. Catanduanes and southern Luzon,Camarines Sur , Laguna, and Quezon provinces and Marinduque
Rattus mindorensis	Mindoro soft-furred rat	VU	Known only from Mindoro Island

Scientific Name	Common Name	Status	Distribution
Rattus tawitawiniensis	Tawi-tawi Forest Rat	VU	Known only from Tawitawi Island, Sulu Archipelago.
Rhynchomys isarogensis	Isarog Shrew Rat	VU	Known only from Mt. Isarog, Camarines Sur Province, Luzon
Tarsomys echinatus	Mindanao Spiny Rat	VU	Known only from Mindanao: Bukidnon, South Cotabato provinces
Tryphomys adustus	Luzon Short-nosed Rat	VU	Luzon Faunal Region; known only from Benguet, Laguna and Tarlac
Tupaia palawanensis	Palawan Tree Shrew	VU	Endemic to Palawan Faunal Region; recorded from Balabac, Busuanga, Culion, Cuyo and Palawan .
Urogale everetti	Mindanao Tree Shrew	VU	Endemic to the Mindanao Faunal Region. Recorded from Dinagat, Mindanao (Bukidnon, Davao del Sur, Misamis Occidental, Misamis Oriental, South Cotabato, Surigao del Norte, and Zamboanga del Sur provinces), and Siargao .

Appendix 4. Summary of the number of threatened terrestrial vertebrates occurring in the Philippines (based on IUCN 2004 and DENR DAO-15)

Faunal region	Critically Endangered					Endangered					Vulnerable					TOTAL				
	A	B	M	R	Total	A	B	M	R	Total	A	B	M	R	Total	A	B	M	R	Total
Greater Luzon	1	3	2	1	6	10	6	3	0	15	2	18	1	2	38	13	27	16	3	59
Greater Mindanao	1	2	0	1	3	10	6	6	1	15	1	18	13	1	59	31	26	17	3	77
Mindoro	1	3	2	1	6	4	1	1	0	4	3	6	13	1	17	5	10	10	2	27
Palawan	2	1	0	2	3	2	0	4	0	5	1	5	7	1	14	2	6	11	3	22
Negros-Panay (West Visayas)	2	5	4	2	12	1	10	3	0	17	1	11	3	1	13	5	26	8	3	42
Greater Sulus	1	4	0	1	5	1	3	1	1	5	1	9	5	3	17	1	16	6	4	27
TOTAL	1	11	7	4	23	15	11	14	5	45	32	42	29	4	107	48	64	50	13	175

A- Amphibians; B –Birds; M- Mammals; R- Reptiles

Note: The number of taxa differs (in **TOTAL** from Total) as some species are distributed not only to one faunal region.