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FAA 118/119 Report

CONSERVATION OF TROPICAL FORESTS AND BIOLOGICAL DIVERSITY IN THE PHILIPPINES 2008

Children in butanding costume (front cover)—
photo by Ruel Pine (ruel.pine@gmailcom), WWF/Philippines

FAA 118 / 119 REPORT

CONSERVATION OF

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AND

BIOLOGICAL DIVERSITY

IN THE PHILIPPINES

DECEMBER 2008

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ACRONYMS

A&D	-	Alienable and Disposable
ADB	-	Asian Development Bank
ARMM	-	Autonomous Region in Muslim Mindanao
AZE	-	Alliance for Zero Extinction
BFAR	-	Bureau of Fisheries and Aquatic Resources
BINU	-	Biodiversity Indicators for National Use
BRMF	-	Biodiversity Resource Management Framework
CADC	-	Certificate of Ancestral Domain Claim
CADT	-	Certificate of Ancestral Domain Title
CAS	-	Country Assistance Strategy
CBD	-	Convention on Biological Diversity
CBFMA	-	Community-Based Forest Management Agreement
CBNRM	-	Community-Based Natural Resources Management
CENRO	-	Community Environment and Natural Resources Office
CEPF	-	Critical Ecosystems Partnership Fund
CI	-	Conservation International
CITES	-	Convention on International Trade in Endangered Species
CRM	-	Coastal Resources Management
CTI	-	Coral Triangle Initiative
CPA	-	Conservation Priority Area
DA	-	Department of Agriculture
DENR	-	Department of Environment and Natural Resources
DILG	-	Department of the Interior and Local Government
DOT	-	Department of Tourism
ECAP	-	Energy and Clean Air Project
ECC	-	Environmental Compliance Certificate
EcoGov	-	The Philippine Environmental Governance Project
EIA	-	Environmental Impact Assessment
EIS	-	Environmental Impact Statement
EMB	-	Environmental Management Bureau
ENR	-	Environment and Natural Resources
ENRMP	-	Environment and Natural Resources Management Program
EO	-	Executive Order
ERDB	-	Ecosystems Research and Development Bureau
FAA	-	U.S. Government Foreign Assistance Act
FAP	-	Foreign-Assisted (loan) Projects
FASPO	-	Foreign-Assisted and Special Projects Office
FISH	-	Fisheries Improved for Sustainable Harvest
FMB	-	Forest Management Bureau
FPE	-	Foundation for Philippine Environment
GDP	-	Gross Domestic Product
GEF	-	Global Environment Facility

GOP	-	Government of the Philippines
HDI	-	Human Development Index
ICRMP	-	Integrated Coastal Resource Management Project
IFMA	-	Industrial Forest Management Agreement
IP	-	Indigenous Peoples
IPAF	-	Integrated Protected Area Fund
IPRA	-	Indigenous Peoples Right Act
IRA	-	Internal Revenue Allotment
IUCN	-	International Union for Conservation of Nature
KBA	-	Key Biodiversity Area
LGU	-	Local Government Unit
MFO	-	Major Final Output
MKBA	-	Marine Key Biodiversity Area
MOA	-	Memorandum of Agreement
MPA	-	Marine Protected Area
MTPDP	-	Medium Term Philippine Development Plan
NBSAP	-	National Biodiversity Strategy and Action Plan
NCIP	-	National Commission on Indigenous Peoples
NGO	-	Non-Government Organization
NIPAS	-	National Integrated Protected Areas System
NTFP	-	Non-Timber Forest Products
ODA	-	Official Development Assistance
OEE		Office of Energy and Environment
PA	-	Protected Area
PAMB	-	Protected Area Management Board
PAWB	-	Protected Areas and Wildlife Bureau
PAWS	-	Philippine Animal Welfare Society
PBC	-	Partnership for Biodiversity Conservation
PBCPP	-	Philippine Biodiversity Conservation Priority-Setting Program
PCSD	-	Philippine Council for Sustainable Development
PENRO	-	Provincial Environment and Natural Resources Office
PTFCF	-	Philippine Tropical Forest Conservation Foundation
RA	-	Republic Act
RED	-	Regional Executive Director
RIT	-	Regional Implementation Team
RTD	-	Regional Technical Director
SoW	-	Scope of Work
UNDP	-	United Nations Development Program
USAID	-	United States Agency for International Development
USG	-	United States Government
VEG	-	Volunteers in Environmental Governance
WB	-	World Bank
WWF	-	World Wide Fund for Nature

1.0 EXECUTIVE SUMMARY

Think Philippines. Think megadiversity. The Philippines is among seventeen countries on the planet that together concentrate over two-thirds of the world's biological diversity. With its thousands of islands and unique geological history, the country has one of the highest rates of mammal endemism in the world, rivaling biological storehouses like Brazil and Madagascar, neither of which has as many unique species on a per unit area basis as the Philippines. With twenty-five thousand kilometers of coastline and a quarter of Southeast Asia's reef area, scientists have recognized the Philippines as the "center of the center" of world marine biodiversity, located at the apex of the Coral Triangle, an area that has been described as the "Amazon of the Seas."

The flip side of these wonders is the sad side. The Philippines has been placed among the planet's biodiversity "hotspots" – a list of 25 areas of high terrestrial biodiversity that are seriously threatened (primarily) by human activity. The country's bounty of coastal and marine resources also is under intense human pressure and the growing threat of climate change. As such, given both the tropical forest and biodiversity assets of the Philippines, and the threats to those resources, the entire country should be considered as a priority for conservation and management activities.

This report is a U.S. Government (USG) mandated assessment prepared periodically to inform USG investment in conservation of tropical forests and biodiversity, as required by the Foreign Assistance Act Sections 118 and 119. United States Agency for International Development (USAID)/Philippines is currently preparing a new Country Assistance Strategy (CAS) that will guide USG development assistance to the Philippines over the period Fiscal Year (FY) 2009 - 2013. The report examines the inventory and status of forests and biodiversity within a socioeconomic, environmental policy and biophysical context, and discusses the institutions and policies that are in place to protect and manage them. The major threats to these resources are identified along with their underlying causes. Ongoing USAID activities aimed at addressing those threats are presented and discussed, as are the efforts of other donor agencies and the Non-Government Organization (NGO) community. The report concludes with a brief discussion of some primary opportunities for government and donor interventions, based on our findings and analyses. Finally, some specific recommendations are presented as potential areas for USAID investment under the new Country Assistance Strategy (CAS).

Analysis contained in this report identifies specific needs to adequately address the threats to sustainable conservation and management of biodiversity and tropical forestry. These threats are complicated to tackle as they emerge from multiple sectors, such as population, policy, energy, and livelihoods. The Philippines projects its population to top 90 million this year, with an annual growth rate still exceeding two percent. More than half of the population is concentrated in coastal areas, a transition zone between very steep uplands and seas. The economy of this transition zone feeds off the ridge and reef and too often leaves destruction in its wake. Overfishing, illegal fishing practices, industrial pollution, indiscriminately disposed solid waste and waste water are the main

threats to coastal-marine life of the urban environmental transition zone. Two of those threats, solid wastes and waste water, emanate from the urban transition zone, but impact the surrounding environment.

While total forests cover has been increasing overall, crucial natural forest, which serves as habitat for the most valuable terrestrial flora and fauna, is being depleted and fragmented by unsustainable cutting and conversion to agriculture by the growing population's need to secure livelihoods. The number of Philippine threatened species on the International Union for the Conservation of Nature's (IUCN) Red List has increased. The illegal wildlife trade continues to boom in the Philippines. Not only is Philippine wildlife being captured or harvested and sold, but other countries in the region use the Philippines with its poorly supervised ports and borders as a transshipment point for their own illegal trade in a broad range of threatened species.

Increased prices for energy and the world's increasing demand for coveted ores such as gold, nickel and iridium are creating major conflicts between the private sector seeking to exploit these resources, the government favoring the mining sector's development, and the citizens, environmental groups, and local governments on or near the sites that bear almost all the risks of associated with these activities. Landslides, sedimentation, loss of vegetative cover, mine tailings, pollution of water courses, estuaries and bays are among the direct risks. Mine tailing and pollution of water courses are major threats from both the large- and small-mining activities in the Philippines. A comprehensive and proper assessment of these threats and their proposed mitigating measures or support from the government (national and local) are critical in reducing their negative on-and off-site impacts especially to biodiversity in the coastal and transition areas and the resulting consequences on livelihoods.

Generally speaking, the Philippines has sound laws and policies that address most of the threats to biodiversity and tropical forests. The main weakness, and a major threat to conservation of these resources, is the ineffectiveness among the responsible institutions to implement and enforce these laws and policies. There are also conflicts among the established rules, especially at the local level, where the most urgent and responsible actions are needed. Budgets and trained manpower to support implementation of laws and policies and deliver environmental services are woefully inadequate. At the top, leadership is often short-lived, resulting in a lack of continuity of vision and direction.

The extent to which the Philippine government and its development partners have and can address the threats to biodiversity and tropical forests in the Philippines face serious challenges. This report's analyses point out that champions are needed from local to national levels if improved management and conservation of biodiversity and forests are to take hold in the Philippines. Many of the projects and programs examined in the course of this assessment, as well as the stakeholders interviewed, work successfully in activities at the local level. However, many of these site-specific projects operate in relative isolation, without a clear sense of where priorities lie, and what actions are needed for those habitats and species that are truly threatened. The report recommends a tool, the

use of “Key Biodiversity Areas”, as a means to bring conservation priorities into clearer focus.

USAID’s tropical forestry and biodiversity investments over the past decade have been successful in bringing about behavioral change and making inroads to conserve important biological resources. Programs have focused on the local government units and the needs of their constituents derive and improve their livelihoods from the natural resource base. Forests, forestlands, coastal zones and marine resources, together with the people that depend on them, have benefited. This report, in consideration of the strong foundation laid by current and previous USAID investment, as well as the pressing challenges for success, recommends the following eight points to continue efforts to mitigate, reduce, and eliminate threats to biodiversity conservation and tropical forestry:

- Increase investment tied to activities which address improved solid waste management, water and wastewater sanitation, and pollution in coastal areas and inland waterways that threaten biodiversity.

- Use investment to leverage and promote innovative financing mechanisms and partnerships for conservation and management of biodiversity and tropical forestry.

- Identify priority conservation areas for biodiversity and tropical forestry and invest in their champions.

- Invest in integrated program designs that address multiple root causes of direct threats to biodiversity conservation and tropical forestry.

- Biodiversity and tropical forestry policy harmonization and continuing support of devolution process remains a critical area for investment.

- Demand-driven and flexible programming will yield a more sustainable return on investments in technical assistance for biodiversity conservation and tropical forestry.

- Use the momentum of successful activities and invest in scaling up and institutionalizing best practices of biodiversity conservation and tropical forestry.

- Assume a leadership role with investments in local climate change initiatives that develop strategies and actions that will mitigate threats to marine and terrestrial biodiversity and tropical forests.

2.0 INTRODUCTION

2.1 Purpose and Methodology of the Analyses

This document represents the assessment of the Philippines Biodiversity and Tropical Forest Conservation in 2008. It describes the status and major actions necessary to conserve biodiversity and tropical forests in the Philippines.

It provides an examination of:

- The current state of biodiversity and forest conservation in the Philippines;
- The principal actions necessary in the Philippines to conserve tropical forests and biological diversity; and
- The extent to which the actions may be addressed by USAID/Philippines given its support to current and past programming initiatives and experience, and those of other donors, NGOs and the Government of the Philippines.

This analysis will also provide USAID/Philippines facts and analyses about biodiversity and tropical forestry conservation as it enters its next planning period. It is intended as a tool for USAID to use in integrating environmental concerns into its programming portfolio in the short- and medium-term future. This report also provides the information necessary for USAID to comply with Sections 118 and 119 of the U.S. Government Foreign Assistance Act (FAA) of 1961, as amended (see Annex A), to guide and inform USAID/Philippines as it develops its Country Assistance Strategy.

This report was developed and assembled over a three month period (July to September 2008) by forestry and biodiversity conservation practitioners from the Philippines Environmental Governance Phase 2 Project, USAID/Philippines Office of Energy and Environment (OEE) staff, USAID/Washington biodiversity specialists, and independent natural resource specialists. The primary inputs came from consultations with government (mainly the Department of Environment and Natural Resouces, local government units, and the Bureau of Fisheries and Aquatic Resources) stakeholders in the field and in Manila, from discussions and debate with other international donors and NGOs operating in the Philippines, and from documentation and reports on forestry and biodiversity generated over the past five years in the Philippines. A list of the institutions and persons consulted can be found in Annex B attached to this report. Reports, documents and internet sources are listed at the end of the document.

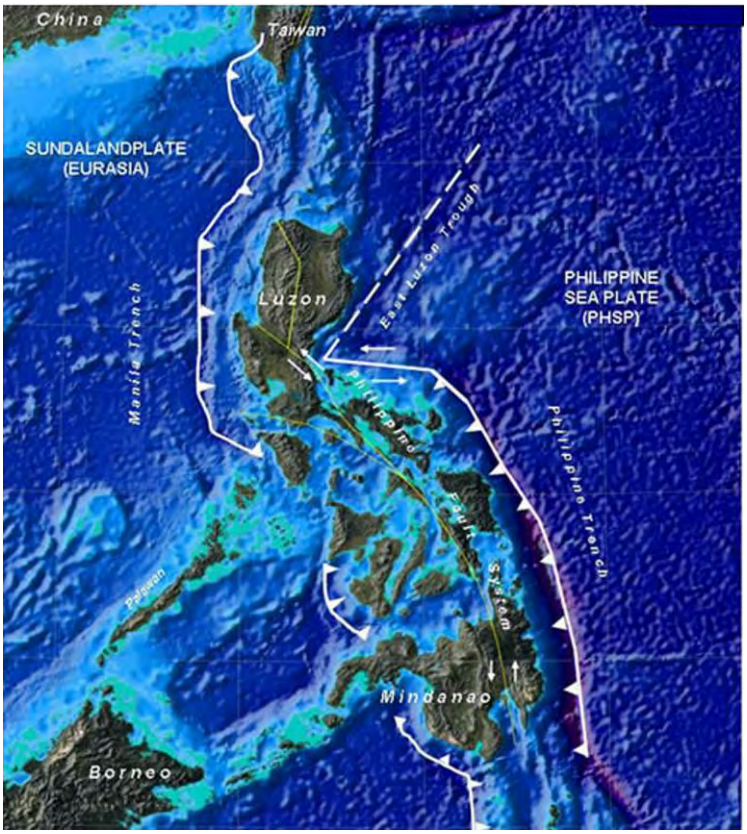
Following this introduction and a general discussion of the Philippine context for the 118/119 analyses, this document examines the general status of biodiversity and tropical forestry conservation in the country (Section 3), assesses the principal threats, opportunities and issues confronting these resources (Section 4) and reviews recent and current efforts by the Philippines government, donors, NGOs and the private sector aimed

at addressing the identified threats. The analysis concludes with a review of potential entry points for the Philippine government and donors to consider for future action and with specific actions recommended for USAID/Philippines as it prepares its next country assistance strategy.

2.2 The National Context of the Analysis

2.2.1 Biophysical

The Philippines (see Figure 2.2) is an archipelago composed of 7,107 islands, located slightly north of the equator, between latitude 5 ºN and 21ºN and between longitude 116 ºE and 127 ºE. It is essentially composed of a basement of metamorphosed sedimentary and volcanic rocks of unknown age, cut by ultrabasic to intermediate plutonic intrusives, and a thick upper Tertiary marine sequence. Continuity of structure, geographic position, and similarities of Tertiary development indicate a close relationship between the Philippine islands and the Indonesian archipelago (Irving, 1952). The small Philippine plate is located between the major Eurasian and Pacific tectonic plates (see Figure 2.1). It is a place where the configuration of present day islands of the Philippines were determined as the Ice Age ended and shorelines receded. New islands emerged which "harbored their own unique set of species in their rain forests". Each of these islands remained permanently isolated from the others giving rise to an extraordinary biological richness of unique life forms (ARCBC, 2001).



Source: http://www.bahaykuboresearch.net/images/article/library/1/galgana_fig1.jpg

Figure 2.1 Map showing tectonic plates in the Philippines.

Topography. The general topography of the Philippines consists of narrow coastal plains which rise to moderately steep and very steep mountains. This is characteristic of island arcs formed by volcanic processes such as the Philippines.

Elevations reach up to 3,144 meters above sea level in Mindanao at the peak of Mount Apo. The second highest elevation is Mt. Pulag at 2,930 m on Luzon. Using 18 percent slope as the limit of the lowlands, around 48% of the total landmass can be classified as lowland. The remaining are uplands, dominated by areas with more than a 50 percent slope. The country's four major lowland plains are the Central Luzon Plain and Cagayan Valley, also on Luzon, and the Agusan and Cotabato Vallies, both in Mindanao.

The islands are one of the, if not the, main defining characteristics of the Philippines, land masses interacting with the sea. The country has the world's longest discontinuous coastline: 34,000 km, more than twice the length of the coastline of the United States.

Climate. The Philippines climate is characterized by a relatively high average temperature, high humidity, and abundant rainfall. It is generally known as a tropical and maritime climate under the Koeppen climate classification. The mean annual temperature of all the country's weather stations (excluding Baguio) is 26.6º C. In the cooler months, the lowest mean temperature is 25.5º C.

High humidity or high moisture content of the atmosphere is an attribute of the Philippines climate, owing to its archipelagic configuration, surrounding bodies of water and the high temperature. The average monthly relative humidity varies between 71 percent in March and 85 percent in September. The combination of warm temperature and high relative and absolute humidity gives rise to high sensible temperature throughout the country.

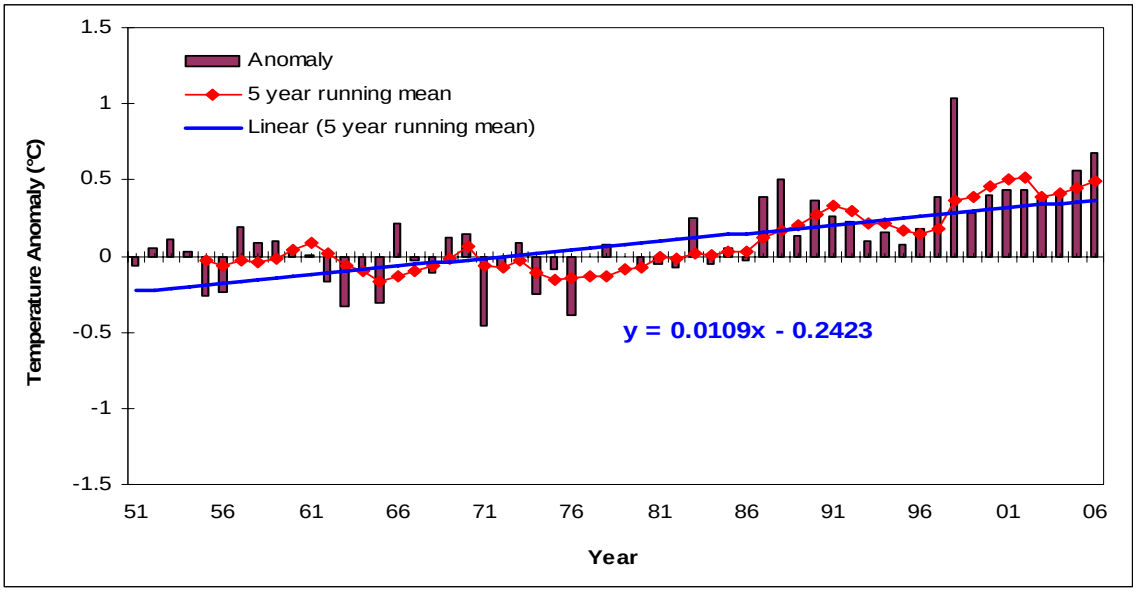
Amount of rainfall varies across the country and through the wet and dry seasons. The mean annual rainfall varies from 965 to 4064 millimeters. The lowlands of the Philippines experience roughly two meters of rain annually, but at 900 meters elevation (about 3,000 feet), rainfall is approximately two and a half times higher. Farther up in the mountains, at about 2,000 meters elevation, rainfall is often five times higher than in the adjacent lowlands. (Heaney, 2007) The rainfall experienced in the different regions of the country is dependent on the direction of moisture-bearing winds and the location of the mountain systems. Baguio City, eastern Samar, and eastern Surigao receive the greatest amount of rainfall while the southern portion of Cotabato receives the least amount of rain.

The country experiences an average of 20 typhoons per year and in some years the number exceeds 30. Storm surges sometimes accompany typhoons and cause severe damage to coastal areas. Extreme droughts have occurred during the El Niño-Southern Oscillation in 1982, October 1989 to March 1990, October 1993 to May 1994. Tsunamis also affect the country's coastal areas up to four meters above sea level (coastal areas of southwestern Mindanao are most vulnerable). About a quarter of the country is vulnerable to drought, alternating with yearly floods and typhoons that result in serious land degradation and declining land productivity.

Source: http://www.ac.wwu.edu/~fasawwu/resources/maps/philippines.htm

Figure 2.2 General map of the Philippines.

The temperature data in Figure 2.3 illustrate that there has been observed anomalies of the mean annual mean temperature in the Philippines from 1951-2006. There has also been an increasing trend of mean annual temperatures which may be the result of warming of the atmosphere.



Source: Hilario, 2008.

Figure 2.3 Observed mean annual mean temperature anomalies in the Philippines, 1951-2006 (departures from the 1961-1990 normal values).

2.2.2 Socioeconomic

Population. The 2007 Census of population reports that the total population of the Philippines as of August 2007 is 88.57 million with projected growth to 90.4 million in 2008. The average annual population growth rate for the period 2000 to 2007 was 2.04%, the lowest since the 1960s. There has been a downward rate in the annual growth rate over the past decade and this is projected to continue to 1.90% in 2010 and to 1.82% by 2015. Overall fertility rates have followed the same trend, with number of children per female falling from 6.0 in 1970 to 3.5 in 2001, a rate that is still considered high relative to other countries in Southeast Asia. Fertility rates are lower in urban areas than in rural areas (3.0 versus 4.3 children per female).

More than half of nation's 88 million Filipinos (52 million) reside mainly in 915 municipalities and cities located on these narrow coastal areas that are the transition zone between the uplands and the sea. Population density in the Philippines remains very high at 295 persons/km^2 (3 persons/ha) in 2007 compared with 255 persons/km^2 in 2000. And the urban population is growing by more than 5% annually (World Bank, 2000). Coastal zone population densities are highest at 286 persons/km^2 2000 compared to non-coastal areas (229 persons/km^2).

Health indicators. Life expectancy in the Philippines increased in the past decade from 67.61 to 68.81 years for the males and 73.14 to 74.34 for females (NS0, 2008). Infant mortality has been declining from 34 deaths per 1,000 live births in 1990 to 29 deaths in 2000. At current mortality levels, 40 of every 1,000 children born in the Philippines die before their fifth birthday. Mortality levels in urban areas are much lower than those in the rural areas (24 deaths per 1,000 live births compared with 36 deaths per 1,000 births).

According to sources in 2005, the ten leading causes of morbidity in the Philippines included several environment-related causes: acute upper respiratory track infection, bronchitis, diarrhea, dengue, and influenza. Diarrhea is recognized as having a high correlation with health and waste water sanitation practices.

Table 2.1 lists several other health-related statistics for the Philippines.

Table 2.1 Related health indicators of the Philippines

Parameter	Level
Physicians (per thousand people), 2002	1.2
Health expenditure, total 2003 (as % of GDP)	3.2
Improved water source, rural. 2002 (% of rural population with access)	77.0
Improved sanitation facilities, rural, 2002 (% of rural population with access)	61.0

Religion. The Philippines remains a predominantly Christian, Roman Catholic (81%) nation (NSO, 2000). Muslims constitute 5.10% of the total population and are concentrated in the provinces and municipalities of Lanao del Sur, Basilan, Sulu, Maguindanao, and Tawi-Tawi. It should be noted that these provinces are located where very high coastal and marine biodiversity is also found – in the Moro Gulf and Sulu-Sulawesi seascape. Peace and order problems in these regions remain unsolved.

Economic indicators. The Philippines economy has been growing at a rate that is comparative to other countries in the region (Malaysia, Thailand, Vietnam). Recent energy price increases, the global financial crisis and the incipient slowdown of the world's economies will affect the nation's economy. The downward trend of the agriculture sector's contribution to the national economy is something that bears monitoring especially given current trends worldwide in terms of food production and the nation's population growth rate. In 2007 the contribution of the agriculture sector to Gross Domestic Product (GDP) was less than 14%. Industry contributed 31 percent and services, 55percent for the same year. The Philippines GDP per capita is also on the lower end of the spectrum for other countries in the region. (CIA, 2008). Table 2.2 provides a quick summary of the main economic indicators for the Philippines.

Table 2.2 Key economic indicators of the Philippines.

Indicator (reference date)	Rate
Inflation Rate (June 2008)	11.4%
Balance of Trade (April 2008)	$-531M
Exports (May 2008)	$4.224B
Imports (April 2008)	$4.856B
Unemployment (April 2008)	8.0%
Underemployment (April 2008)	19.8%
Average Family Annual Income (2006)	$3,371.6[1]
Gross Domestic Product (GDP) (2007)	$144.1B
Gross Domestic Product/capita (2007)	$3,400

[1]Based on a 2006 average Peso-US Dollar exchange rate of : $1. = P51.31

Source: CIA, 2008; NSO, 2008.

Household income, livelihoods and expenditure. Considerable poverty exists in the Philippines. In 2003, eleven percent of Filipinos lived on US$1 or less, 44% on US$2 or less per day. The 2007 Human Development Index (HDI) for the country was 0.771 making it 90th out of 177 countries, while the Poverty Index of 15.3 placed it 37th out of 108 developing countries (UNDP-HDR, 2008). Based on the new poverty line for Asia-Pacific of $1.35 a day developed by the Asian Development Bank, about 23 million Filipinos (27 percent of the population) are living below the poverty level, making it worse off than Vietnam in the Southeast Asia region. The Philippines has a gender-related development index of 0.771, which ranks it 26th out of 156 countries.

Over a million of the coastal communities' population (more than 52 million out of 88 million) reside in the coastal areas and over a million of them depend on coastal and marine areas for their source of livelihood. The fishing industry provides 3% of the nation's labor force (ADB 2003), but fishing households earn an average annual income equivalent to only half of the national average (WB, 2005). In 1996, it was estimated that 80% of coastal households were living below the poverty threshold (DENR et.al., 2004). Furthermore, the size of fisherfolk households is larger than the national average and bulk of their income goes to food expense, leaving very little to improve their social and economic well-being.

Another large portion of the impoverished population (at least 22 million) resides in the uplands. In general they have little education, receive limited or no basic services, and are highly dependent on upland farming, harvesting forest products, processing and other related livelihood activities.

Table 2.3 shows little change in family incomes between 2000 and 2006 and that family savings actually diminished in the period.

Table 2.3 Family income and expenditures.

FAMILY INCOME AND EXPENDITURE (at current prices)	2006[1]	2003[2]	2000[3]
Annual average family income	$3,352.2	$2,728.6	$3,287.7
Annual average family expenditure	$2,864.9	$2,282.1	$2692.3
Annual average family saving	$487.2	$446.5	$595

[1]Based on a 2006 average Peso-US Dollar exchange rate of $1. = P51.31
[2]Based on a 2003 average Peso-US Dollar exchange rate of $1. = P54.20
[3]Based on a 2000 average Peso-US Dollar exchange rate of $1. = P44.14

Source: NSO/FIES, 2008

Income level disparity is marked in the country, with the *Gini coefficient*, or the measure of income equality, being 0.4580 in 2006. A *Gini coefficient* ranges from 0 to 1, with 0 indicating perfect income equality among families, and 1 indicating absolute income inequality. Incidence of rural poverty is remarkably higher than that of urban poverty, with 47% of rural households reported to be living below poverty line in 2000, compared with 20% of urban families.

2.2.3 Legislative, political and institutional framework

This section provides information relevant to the legal framework and jurisdictions pertaining to forest and biodiversity conservation and management in the Philippines. The reader can find additional background information that contributes to this framework in Annex C. As summarized below, there are multiple laws and policies in place for the purpose of responsible management of natural resources at both the national and local levels. The decentralization of responsiblites associated with the existing laws and policies has localized a large extent of the management. However, the challenge remains for the implementation of the legal framework within the confines of the existing institutional structure.

Key Biodiversity and Tropical Forestry Policy and Legislation

The major laws that directly impact biological resources conservation include the National Integrated Protected Area System (NIPAS) Act, Wildlife Resources Conservation and Protection Act, Executive Order (EO) 578 (Establishing the National Policy on Biological Diversity, Prescribing its implementation throughout the Country, Particularly in the Sulu Sulawesi Marine Ecosystem and the Verde Island Passage Marine Corridor), and the Revised Forestry Code (Presidential Decree No. 705, as amended).

Additional Key Policies and Legislation

An extensive national legal framework guides the management and conservation of natural resources in the Philippines. The list includes:

- Local Government Code of 1991
- The Philippine Fisheries Code of 1998
- National Caves and Cave Resources Management and Protection Act
- Philippine Environment Code
- Philippine Mining Act of 1995
- Philippine Small Scale Mining Act
- Philippine Clean Water Act of 2004
- Philippine Environmental Impact Statement Law

The NIPAS Act provides the legal framework for the establishment and management of a national system of protected areas. It recognizes the existence of previously declared conservation areas and treats these as *initial components.* The intention is to rationalize the previous site-specific delineations of various parks, reserves and the like into a national system of classified protected areas, and to remove previously proclaimed areas which, upon ground verification, no longer satisfy the new criteria. However, verification requires the same number of 13 labor-intensive steps as the establishment of protected areas. Only two PAs have been removed from the system, although several existing PAs are of questionable status. The Ninoy Aquino Parks and Wildlife Center has been reestablished as a result of the process.

The Wildlife Resources Conservation and Protection Act governs the gathering and use of wild flora and fauna. This law complements NIPAS in establishing critical habitats that may not qualify as protected areas because of their small size or location in private lands. Dovetailing this Act, Section 3 of EO 578 provides for the establishment of critical habitats within key biodiversity areas (KBA) which are known to harbor habitats and ecosystems critical for the survival of threatened, restricted-range, and congregatory species. The establishment of critical habitats can provide legal protection to KBAs that are not part of NIPAS.

The Revised Forestry Code (Presidential Decree No. 705, as amended) is decades old, dating back to the time when the Philippines was a major exporter of timber products. Currently, the law is primarily used for enforcement against illegal loggers. Much of the policies on the utilization of forest resources have been updated through administrative issuances. The USAID-funded EcoGov 2 project provided assistance to DENR in drafting the Omnibus Forestry Guidelines which is a consolidation and harmonization of all valid forestry laws, executive orders, and administrative issuances on forest management. EcoGov 2 also worked with the DENR in drafting EO 318 which aims to promote sustainable forest management in the Philippines. Such issuances, however, are merely stopgap measures designed to provide interim guidelines while the Congress deliberates on the Sustainable Forest Management bill.

An unfortunate effect of the extensive web of legislation and policy are laws that overlap and confuse roles and mandates of agents in implementing conservation of tropical forests and biodiversity at the local, regional and national levels. For example, the implementation of the Mining Law runs at cross purposes with elements of the Local Government Code, IPRA, and NIPAS laws. A similar kind of institutional conflict is seen between NIPAS law, Local Government Code, IPRA/CADT holders, and Energy Law as efforts to intensify energy exploration and agricultural expansion continue, especially in Mindanao where vague policies have also rendered inaction and indifference at the local level. Over the last 3-5 years, examples of major conflicts emanating from overlapping or unclear institutional mandates include:

- Protection and management of the Lanao Lake Watershed, which is part of the initial component of NIPAS, is within the ARMM region and yet under the jurisdiction of the national DENR with undefined or unclear roles of local

governments, DENR/ARMM, and the National Power Corporation. This situation has rendered conservation efforts at a stalemate despite the fact that the Lanao Lake Watershed is a recognized priority biodiversity area and is the natural reservoir of six hydroelectric power plants of the National Power Corporation that generate and supply at least 60% energy needs of Mindanao.

- In the Mt Apo Protected Area, a nationally recognized PA, 80 percent of the area is under three CADTs. Here, the roles and mandates of LGUs, DENR, NCIP/CADT holders, and legitimate migrants inside the protected area need to be clarified, delineated and agreed upon among the key players. This same issue also applies to Mt. Kitanglad, Quirino Protected Landscape, Sierra Madre Mountain Range, among others.

At the national level, EO 533 (Adopting Integrated Coastal Management as a National Strategy to Ensure the Sustainable Development of the Country's Coastal and Marine Environment and Resources and Establishing Supporting Mechanisms for its Implementation) - is an attempt set up a national institutional framework for coastal management following the ICM approach. EO 533 mandates the creation of an inter-agency, multi-sectoral mechanism to coordinate the efforts of different agencies, sectors and administrative levels. Actually getting the EO into a cogent and effective and doable policy implementation instrument is a commendable initiative but remains a difficult challenge.

Institutional Framework for Management Responsibility

Within the Government of the Philippines, it is the Executive branch that has the general role of implementing laws. A cabinet-level office, the Department of Environment and Natural Resources (DENR) administers all forest and mineral lands and national parks, as well as the Environmental Impact Assessment (EIA) system. The functions of the DENR are provided generally in the Administrative Code and specifically in various environmental laws.

In 1987, several government agencies dealing with environmental concerns under the DENR were consolidated. As spelled out under EO 192, the Forest Management Bureau (FMB), the Ecosystems Research and Development Bureau (ERDB) and the Protected Areas and Wildlife Bureau (PAWB) are the DENR staff bureaus with direct forestry and biodiversity-related functions. FMB is responsible for managing, developing, conserving and protecting forests. PAWB has mandate on biodiversity conservation including establishing and managing an integrated protected areas system. ERDB has specialized research functions relating to ecosystems and natural resources such as coastal zones, grasslands and degraded ecosystems, forests, and uplands. In addition, the DENR Environmental Management Bureau and the Mining and GeoSciences Bureau are line bureaus whose regional directors are expected to coordinate and work with the regional executive directors (REDs) on matters that pertain to EIA system and mining-related activities especially those that impact conservation of biodiversity and tropical forests.

DENR field personnel are led by a regional executive director (RED), who is assisted by five regional technical directors (RTDs); the Provincial Environment and Natural Resources Offices (PENROs); and the Community Environment and Natural Resources Offices (CENROs). The RTDs for Forest Management Service, Ecosystems Research and Development Service, and Protected Areas and Wildlife Management Service have functions that impinge on tropical forestry and biodiversity conservation. PENROs serve as the strategic link of the DENR to the different heads of local and national agencies, and civil society groups operating in the province. CENROs are considered to be the front-liners and at the cutting edge of the DENR in terms of managing the environment and natural resources, including forestry at the municipal/community level.

Under Section 10 of NIPAS Act, DENR has control and administration of the NIPAS. DENR exercises its control at the national level through the Secretary and the Protected Area and Wildlife Bureau (PAWB). The latter serves as the technical coordination, system wide planning and policy implementation arm of the DENR. At the field level, management responsibility rests with the DENR regional offices with the strong participation of different local stakeholders through the Protected Area Management Board (PAMB). The RED chairs the PAMB, a multisectoral body composed of government officials, local government unit, community, NGO and private sector representatives tasked with local management of NIPAS protected areas. In regions where there are protected areas, a Protected Areas and Wildlife Division (PAWD) under the supervision of a RTD for Protected Areas and Wildlife is created. A Protected Area Superintendent (PASU) serves as the DENR's chief operating officer at specific PA site.

As of 2003, there are 159 PASUs managing 169 protected areas. It means that some PASUs cover several protected areas, while some protected areas do not have a PASU assigned to them. Protected area activities require technical and managerial competence. However, the legal and organizational capacities for protected areas management within DENR and PAMB are quite limited. Budget of the DENR for protected area management has also not increased in real terms. It should be noted also that the DENR's budget only covers protection and management of conservation activities in declared protected areas and watershed reservations and not those outside them. The effectiveness of this agency in discharging its biodiversity and forestry management functions, particularly in the light of the emerging trend on decentralization and network governance, and the need to implement sustainable financing at each PA site is weakened by lack of appropriate training and skills of DENR personnel required of their new roles.

Decentralizing Institutional Management Responsibility

During the last decade there has been an increased emphasis on laws and policies aimed toward decentralization that have moved management responsibility of certain environment and natural management functions over to communities and LGUs. The provinces, cities, municipalities and barangays (villages) of the country constitute the LGUs. The LGUs were given substantial powers and responsibilities to manage local affairs with the passage of the Local Government Code (Republic Act 7160) in 1991, including environment and natural resources that were devolved to them by the DENR.

LGU roles in natural resource management gained further traction in 1995 when the President promulgated EO No. 263 that adopted community-based forest management as the national strategy for the sustainable development of the country's forestlands and when the Indigenous Peoples Rights Act (IPRA) was enacted in 1997. Both the Local Government Code [R.A. No. 7160 (1991)] and the Philippine Fisheries Code of 1998 provide the framework for local government responsibilities over environment and natural resources management. Under Sec. 17 of the Local Government Code, "Pursuant to national policies and subject to supervision, control and review of the DENR," municipal and city governments have responsibility for "implementation of community-based forestry projects, which include integrated social forestry programs and similar projects; management and control of communal forests with an area not exceeding fifty (50) square kilometers; establishment of tree parks, greenbelts, and similar forest development projects." Provinces also have responsibility for enforcement of forestry laws. The local government code also provides for continuing devolution of environment and natural resource (ENR) functions.

LGUs Take Initiative in PA Management

Because DENR has a very limited budget and personnel for protected area (PA) management, many enlightened local governments have stepped forward to support PA management in their areas. In Mt. Kintanglad Natural Park, local governments take turns hosting Protected Area Management Board (PAMB) meetings, while in Mt. Apo Natural Park, local governments are poised to take the lead in management planning for the parts of the protected area under their political jurisdiction, subject to coordination and integration at the PAMB level.

Under the Philippine Fisheries Code of 1998, the primary responsibility of protecting and managing fisheries and coastal resources (except for NIPAS and wildlife species) has been devolved to local governments. The Fisheries Code provides the framework for local legislation on establishing marine protected areas (not under NIPAS) and sanctuaries, requiring that as much as 15% of the total coastal area of a municipality should be set aside as fish sanctuaries (Sec. 81, RA 8550).

As a result of these Codes, LGUs have been playing very active roles in natural resource management and biodiversity conservation over the past several years. As an example, the Provinces of Bohol (Prov. Ord. No. 1998-01), Masbate (Prov. Ord. No. 2001-003), Zamboanga del Sur (Prov. Ord. No. 2002-012) and Albay (Prov. Ord. No. 2003-12) are among many local governments that have enacted an Environmental Code through local legislation. Local initiatives in conserving and developing forests, forestlands, and coastal resources continued to increase over the last five years as a result of several donor-supported initiatives — the World Bank Community-Based Resource Management Project (CBRMP), USAID-supported projects such as the CRMP, EcoGov 1 & 2, FISH, SCOTIA, among others. The LGU environmental code covers the whole range of issues from biodiversity conservation, environmental management to waste management. Special local laws to protect particular resources are common, and include for example, the protection of trees in Vigan (City Ordinance No. 2005-08), thresher sharks in Batangas City, or whale sharks in Donsol. Another common local legislation concerns coastal management and establishment of marine protected areas. This can either cover a single municipality or several contiguous municipalities enacting similar complementary ordinances to govern a shared coastal area such as a bay.

In addition, many local governments are insisting on their right to regulate activities that may pose a danger to biological resources or habitats in their area, even if these activities are subject to national regulation. Samar led many local governments in imposing a 50-year moratorium on mining activities (Prov. Ord. No. 2003-541). However, DENR is challenging the authority of local governments to decide on large scale mining issues, considering that it is under the management discretion of DENR. A few local governments, including Bohol (Prov. Ord. No. 2003-101) and Negros Occidental (Prov. Ord. No. 2007-07) have also banned entry of genetically modified organisms to protect local biological resources.

The important element underlying the above discussion is that resource areas which are managed locally and for which the returns are evident and more immediate are more likely to demonstrate good governance. The national government's effectiveness to oversee, manage and enforce governance rules on vast areas where they lack both the manpower and fiscal resources has been one of the main reasons why they have been failing to adequately conserve the nation's tropical forests and its biodiversity (La Vina, 2008, Guiang, et. al., 2008). It is not because they lack the legal jurisdiction to do so, only that they cannot be an effective absentee landlord with the resources at their disposal. The law passed in 1991 that aimed at decentralizing authority and management functions to the LGUs is slow in being implemented on the ground (Guiang, et. al, 2008; de Rueda, 2006, Pulhin, et. al., 2007). Current successes are still limited mostly to those areas with local champions and /or where there has been unique circumstances of natural resources and a dynamic LGU staff and a willingness of DENR regional and local staff to be proactive in the process. However, the revolving leadership door at the DENR over the past 6 years has had the indirect benefit of providing opportunities to decentralize further to the LGUs and permitted the development of more participatory and collaborative approaches to tropical forest management and biodiversity conservation (De Rueda, 2006; Guiang et al., 2008).

3.0 STATUS OF BIODIVERSITY AND TROPICAL FORESTRY CONSERVATION IN THE PHILIPPINES

3.1 Biodiversity

The combination of the Philippines' complex geological origins and its location in the warm tropics between the bio-rich regions of Sundaland Southeast China and New Guinea have given rise to an extraordinary biological richness of unique life forms (ARCBC, 2001). Ancient geological history and the climate of the Philippines are the main factors largely responsible for its exceptional array of biological diversity.

Internationally recognized as a country that has an important role in global biodiversity conservation, it is among the seventeen areas globally important for their mega-biodiversity (CI, 2006, Mittermeier et al (1997)). It is also viewed as a global "hotspot" and one of the top conservation priority areas in the world because of the threats to its tropical forests and biodiversity (Myers, 2000; Mittermeier et al, 2001).

Within its seas and coastal areas are marine habitats with unparalleled biodiversity. The Philippines is second in the world in terms of coral diversity and is a member of the six-country Coral Triangle Initiative (CTI), which recognizes the area as the global epicenter of marine species diversity and is one of the top priorities for marine conservation (Carpenter and Springer 2005).

In addition to the CTI, the Philippines is part of the Alliance for Zero Extinction (AZE) and a signatory to the Convention of Biological Diversity (CBD) and the Ramsar International Convention on Wetlands.

The country has four Ramsar Sites, two on inland waters (Naujan Lake National Park and Agusan Marsh Wildlife Sanctuary), and two marine sites: Olango Island Marine Sanctuary and Tubattaha Reefs National Marine Park. (The latter is also a World Heritage Site).

The Philippines is also an active party in ASEAN agreements on the environment, such as the Agreement on the Conservation of Nature and Natural Resources (1985) and the ASEAN Declaration on Heritage Parks that include the Mt. Apo and Iglit-Baco National Parks as ASEAN Heritage sites. The Turtle Islands Heritage Protected Area is the world's first trans-boundary marine protected area.

3.1.1 Terrestrial biodiversity

Heaney and Regalado's (1998) description of the Philippines as "the Galapagos Islands times ten" is apt. Its ancient geological history has made it a unique center of diversity. Roughly 80 percent of the non-flying mammals on Greater Mindanao are found nowhere

else in the world and at least 70 percent of the non-flying mammals on Greater Luzon are found nowhere else. And because of their isolation from each other similar statistics of endemism hold for the other Ice Age-formed islands. On Palawan, 48 percent of the mammals are unique; on Mindoro, 44 percent; and on Negros-Panay, 50 percent. This tremendous endemism for terrestrial fauna is shown in the current inventory listed in Table 3.1.

As a comparison, consider Brazil (another mega-diversity country and often referred to as the storehouse of biological diversity) which has 725 endemic terrestrial vertebrate species, but in a country 28 times larger than the Philipines which has 529 (Alcala, no date). And Madagascar, also famous for its biodiversity, has fewer species of unique mammals than the Philippines (90 versus 111), but with twice the land area (ibid).

Table 3.1 Terrestrial vertebrate fauna in the Philippines

Taxa	Total species	No. endemic	Percent endemic	No. of threatened species	No. of threatened endemic species
Mammals	204+	111+	54	51	41
Breeding land birds	576+	195+	34	74	59
Reptiles	258+	170+	66	8	4
Amphibians	101+	79+	78	24	24
Total	1139+	555+	49	157	128

Source: DENR-FMB, 2007

There is poor knowledge on the level of endemism of invertebrates but it is suspected to be high. For instance, of the six insect orders inventoried, endemism has a mean of 64% and ranged to as high as 87%. While more than 20,000 species of insects have been identified, they have not been fully inventoried. Knowledge is still incomplete, since more than 75% of those discovered so far are new to science and their habitats have not been fully explored.

Flora diversity in the Philippines is equally amazing. It is ranked fifth in the world in terms of number of plant species and is estimated to have at least five percent of the world's flora (Ong, 2002). Species endemism among the 8,000 species of flowering plants (1,600 genera, 119 families) and almost 6,500 species on non-flowering plants is also high, estimated at between 30 and 40 percent (Digital Herbarium Library, 2008).

3.1.2 Marine and coastal biodiversity

The reef area of the Philippines, more than 25,000 km², represents about one quarter of the total reef area of Southeast Asia and the diversity of the country's coral reefs and their associated species is reported to be the highest in the world (World Bank, 2004). Carpenter and Springer (2005) state that the global maxima of marine biodiversity is in the Indo-Malay-Philippines archipelago and that there is a higher concentration of species per unit area in the Philippines than anywhere in Indonesia, including Wallacea. They further conclude that special attention to marine conservation efforts in the Philippines is justified because of the identification of it as an epicenter of biodiversity and evolution.

A recent species count for the nation's marine ecosystem numbered more than 17,000 (World Bank, 2005). This includes a seagrass ecosystem where more than 190 species have been recorded; 150 of these are considered economically important. There are 50 species, within 26 families, of mangroves that extend over more than 100,000 hectares. Hard stony corals (scleractinians) in Philippine coral reefs number 488 (Nemenzo, 1981), which far surpasses the 70 species found in the Carribbean (Werner and Allen 2000), and represent more than half of the world's 700 stony coral species.

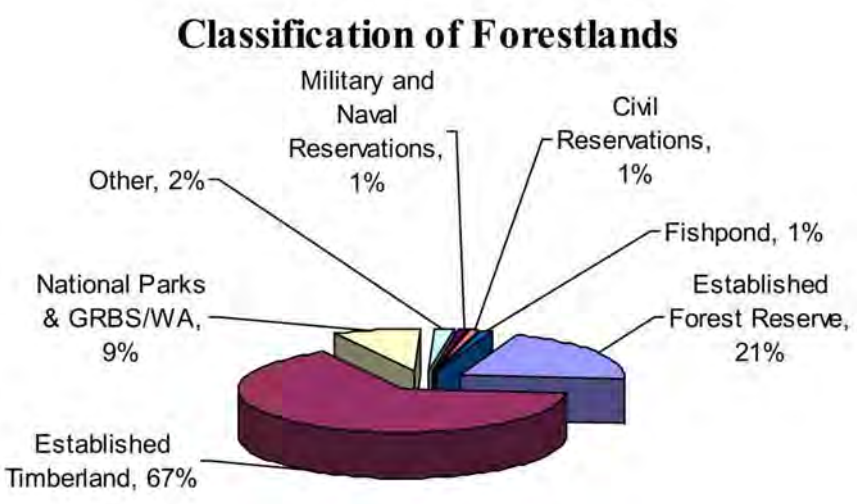
In 2004, a survey in Panglao, Bohol observed 1,200 decapod crustaceans or different species of crabs and shrimps; some 6,000 mollusk species, including sea slugs and microshells; and hundreds of other previously unrecorded marine species (http://www.panglao-hotspot.org/Templates/new.html).

The full extent of the Philippines' marine biodiversity is not known, but the information available reveals an astounding variety of marine life. In addition to the corals mentioned above 5,000 species of clams, snails and mollusks (Springsteen and Leobrera, 1986) have been catalogued along with more than 980 species of bottom-living algal organisms (Silva et.al., 1987). Five of the seven sea turtle species known to exist in the world today occur in Philippine waters. The lists are likely to grow. In 1953, Herre, recorded 1,815 marine fish species (out of a total of 2,145 fish species) in the Philippines; today, about 2,824 marine fish species are listed for the Philippines at FishBase (February 2006), including 33 endemic (one of which is endangered), 1,729 reef-associated, 169 pelagic, and 336 deepwater species.

3.2 Philippine Forests

There are about 15.8 million hectares (roughly half the land area of the Philippines) of public domain lands classified as forestland area which together with national parks and mineral lands must remain under government control (DENR-FMB, 2007, Hyde et.al., 1997). Areas classified as agricultural lands can be subject to private ownership. The size of the public domain lands relative to alienable and disposable (A&D) land depends on the progress of land classification. In the 1980s there were 13.269 million ha A&D lands as against 16.731 million hectare public domain lands which include forestlands. The on-going process for the identification, delineation and demarcation of protection and production forestlands is hoped to determine once and for all the final forestline of the country. However, the process is deemed too slow, bureaucratic and lacks needed logistical support.

While forestlands are controlled by the government, in reality, most public domain forests and forest land are under *de facto* open access to every citizen of the State, some are occupied or claimed by forest residents and communities, others are covered by some kind of tenure arrangement, or proclaimed by the State as set-aside to protect biodiversity and ensure the sustainability of environmental services from watersheds (Guiang and Castillo, 2006). Figure 3.1 shows public domain lands are managed under different categories — established timberland, national parks, watershed areas and forest reserves.



Source: DENR-FMB, 2005

Figure 3.1 Summary of General Classification of Forestlands

Based on land classification definition, forestlands are part of lands of public domain that have been classified as such and all unclassified lands of the public domain. However, this does not mean that all forestlands have forest cover. Based on the 2003 satellite image of the country, there are around 7.2 million hectares of forest cover, which are distributed in different category/allocation of public domain lands – forest lands, national parks, CADTs, reservations, etc. Some 6.5 hectares are within the forestland, while 0.7 million hectares are within alienable and disposable land. This means that are around 8.7 million hectares, or 55% of the forestlands, that are either devoid of trees or forests, (and may also be degraded forest and brush, or in grasslands).

In terms of forest cover (natural and plantations), there has been an increase in the overall cover (both inside and outside the protected areas) in the Philippines from 18.3 percent in early 1990s to about 24 percent in 2004 (Acosta, 2005; Acosta, 2008). Most of the increase in cover is attributed to increased tree plantations and expansion of high value tree crops (rubber, bananas, coconut, mango, etc.). Table 3.2 shows the regional distribution of forest cover based on the latest (2004-5) forest assessment data. The categories used in this latest assessment follow the Forest Resource Assessment guidelines of the Food and Agriculture Organization which was adopted by DENR (through Memorandum Circular 2005-005—Adopting Forestry Definitions Concerning Forest Cover/Land Use. Issued May 26, 2005) and summarized in Box 3.1.

The recent national data on forest cover are partly validated by a study supported by the USAID-funded EcoGov Project (2005). Table 3.3 shows a comparison of natural forests (old growth/closed canopy forests and residual/open canopy forests) in 1988 to recent 2004 assessment. It shows that the forest quality has continued to decline over the years with the loss of natural forests. In Mindanao using Landsat imagery, there had been a

decline in natural forest cover by at least 40,000 ha per year and an increase in tree plantation cover by an average of 70,000 ha/year in this area. The map in Figure 3.2 shows the estimated natural forest losses in the period 1988 to 2004. The losses cited above for Mindanao are easily seen.

Table 3.2 Regional distribution of forests by canopy density, 2005.

Region	Closed canopy	Open canopy	Forest plantation	Natural mangrove	Total	Percent of PHIL total in the region
	--- '000 ha ---					
CAR	384.9	246.8	40.6	----	672.3	9%
NCR	----	2.8	----	----	2.8	0%
R-01	37.7	117.2	34.5	0.2	189.8	3 %
R-02	503.1	604.5	33.6	8.6	1149.8	16%
R-03	226.2	304.2	58.7	0.4	589.5	8%
R-04-A	117.2	161.2	----	11.3	289.7	4%
R-04-B	484.9	604.2	48.5	57.6	1195.1	17%
R-05	50.6	90.3	2.1	13.5	156.5	2%
Subtotal-Luzon	**1,804.6**	**2,131.2**	**218.0**	**91.6**	**4,245.5**	**----**
Percent of cat. Total	**70%**	**53%**	**66%**	**37%**		**59%**
R-06	105.9	104.7	49.4	4.6	264.5	4%
R-07	2.2	43.0	17.8	11.8	74.9	1%
R-08	36.5	410.1	34.5	38.8	519.8	7%
Subtotal Visayas	**144.6**	**557.8**	**101.7**	**55.2**	**859.2**	**----**
Percent of cat. Total	**6%**	**14%**	**31%**	**22%**	**----**	**12%**
R-09	29.7	126.8	3.5	22.3	182.2	3%
R-10	107.1	226.4	1.5	2.5	337.5	5%
R-11	177.5	241.0	0.5	2.0	421.0	6%
R-12	126.4	218.9	2.6	1.4	349.2	5%
R-13	64.7	431.8	----	26.7	523.3	7%
ARMM	106.3	96.7	1.6	45.8	250.3	3%
Subtotal-Mindanao	**611.7**	**1,341.6**	**9.7**	**100.7**	**2,060.5**	**----**
Percent of cat. Total	**24%**	**33%**	**3%**	**41%**	**----**	**29%**
TOTAL – PHIL	**2,560.9**	**4,030.6**	**329.6**	**247.4**	**7,168.4**	**100%**
Percent of PHIL total	**36.0%**	**56.0%**	**5.0%**	**3.0%**	**100.0%**	

Source: Acosta, 2005.

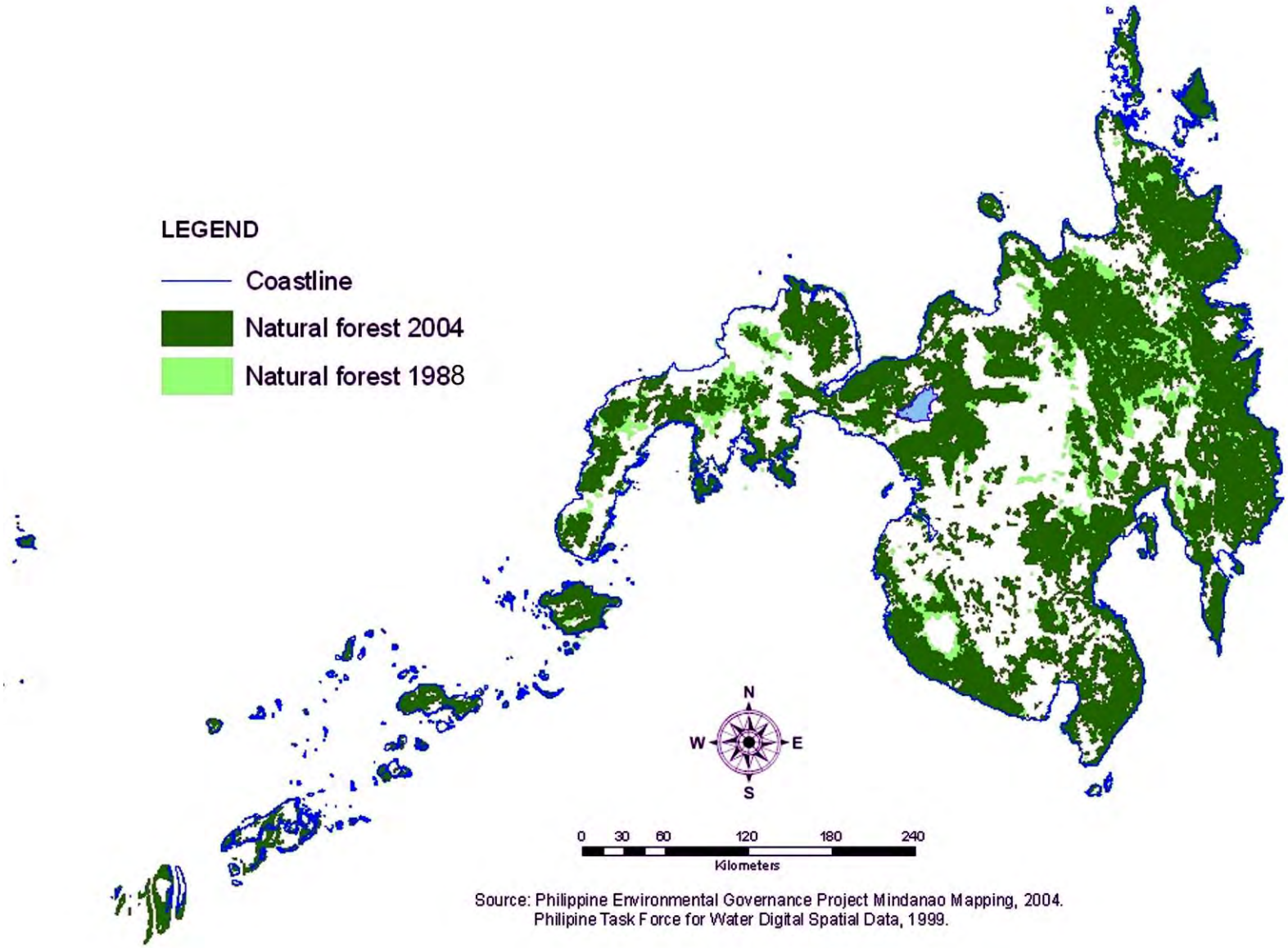


Figure 3.2 Forest Cover Change in Mindanao, 1988-2004

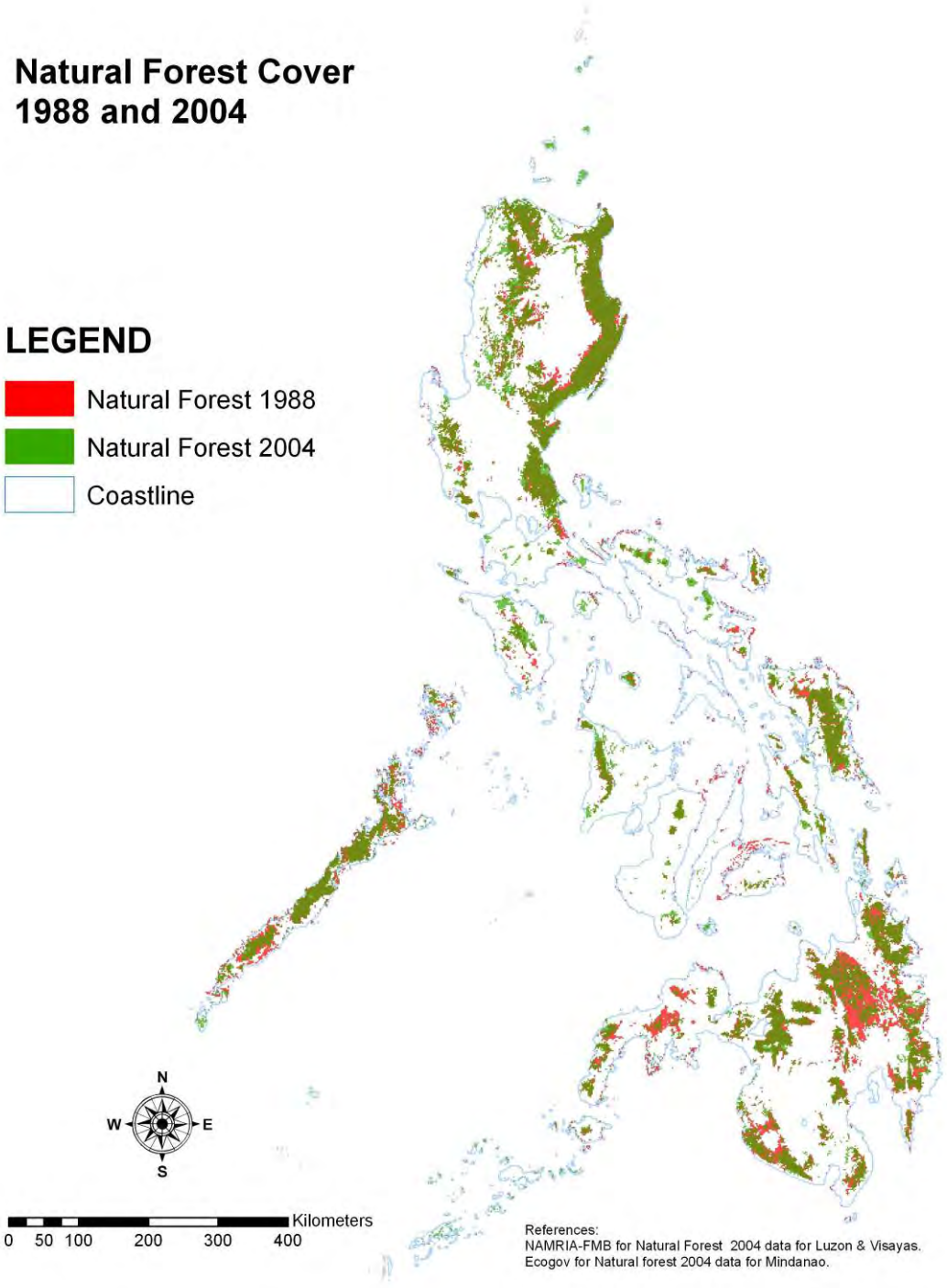


Figure 3.3 Forest Cover Change in the Philippines, 1988-2004

Box 3.1 Definitions of forest categories in the Philippines.

Closed canopy forests are formations where trees in the various storeys and the undergrowth cover a high proportion (>40 percent) of the ground and do not have a continuous dense grass layer. They are either managed or unmanaged forest, in advanced state of succession and may have been logged-over one or more times, having kept their characteristics of forest stands, possibly with modified structure and composition.

Open canopy forests are formations with discontinuous tree layer with a coverage of at least 10 percent and less than 40 percent. They are either managed or unmanaged forests, in initial state of succession.

Forest plantations are forest stands established by planting or/and seeding in the process of afforestation or reforestation. It may be composed of broadleaved, coniferous, and/or mixed forests.

A mangrove forest is a forested wetland growing along tidal mudflats and along shallow water coastal areas extending inland along rivers, streams and their tributaries where the water is generally brackish and composed mainly of *Rhizopora, Brugiera, Cerips, Avicenia, Aegiceras,* and *Nipa* species.

Source: **DENR, 2005; FAO, 2000; PD 795, 1975**

Table 3.3 Comparison of Forest Cover 1988 & 2004.

Forest Cover	1988 (ha)	2004 (ha)	Annual Change(ha)
Closed canopy	5,554,370	2,488,007	(204,420)
Open canopy	467,130	3,908,880	229,450
Mangrove	139,100	251,322	7,480

Source: Acosta, 2005.
Notes: Closed canopy figure for 1988 incorporates the old growth, mossy forest and pine forest closed.

The conversion of dipterocarp natural forest to other uses are attributed to commercial logging operations which was followed by slash and burn and migrant farming, and government's policy to expand agricultural production areas especially in settlement areas. In highly accessible areas such as those in regions 11, 12, 2, CAR, and 3, the decline in natural forest cover is mostly the result of the fragmentation of natural forest areas as a result of small scale timber poaching, slash and burn farming, and expansion of upland agriculture.

Table 3.4 provides a summary distribution of how the public forests and forestlands in the Philippines that are allocated (or designated) for different uses or objectives. It is obvious that most allocations of public forests and forest lands are for biodiversity conservation, watersheds, and forest management by community tenure holders to address social equity issues. The total area of forest lands under the tenure of the private sector has continued to decline. Almost 60% of the public forests and forest lands are now considered to be highly dependent on direct support from the government. This means budgetary support and management for protected areas and watershed reservations and subsidy or social safety net support for community tenure holders (CADT and CBFMA holders).

Table 3.4 Area and extent of forest lands, by allocation.

State allocation	Percentage of total forest lands and unclassified areas
Public goods (set-asides for protected areas and watershed reservations)	26% (>4 million ha)
Civil and military reserves	2%
Local government units	Very minimal
Communities (community-based forest management and ancestral domain areas)	34% (>5 million ha)
Private sector (timber license agreements, industrial forest management agreements)	11% (>1 million ha)
Unallocated forestlands (no tenure)	20% (>3 million ha)
Not yet allocated	7% (>1 million ha

Sources: FMB/DENR (2004); Guiang and Castillo (2005)

The Philippines is now a major importer of logs, importing 165,000 m^3 in 2005 while exporting 1,000 m^3 from plantation sources. Before 1990 most of the logs came from natural forests with a high of 1.5 million m^3 in 1980 and then down to 288,000 m^3 in 2005. Similarly veneer and plywood production, important inputs into the nation's furniture and construction industries, also decreased. (DENR-FMB, 2007).

The two important non-timber forest products with probably greatest economic value are rattan and bamboo. Rattan, which is habitat-dependent, has been declining with the decreases in forest cover. Bamboo has also been declining in the natural forests. For both of these products demand is expected to exceed supply within the next ten years. No data were available for this analysis, but it is suspected that other NTFPs such as those used in the production of popular organic and essential oils are also experiencing serious shortages as natural forest cover disappears. There are no reliable national estimates of important non-timber forest species in the Philippines.

Managing and protecting such a diverse resource and for different purposes, especially one with difficult and hazardous access posed by remote areas, steep slopes and high rainfall, is not only costly, but it also demands an effective, communication-oriented organization. The DENR is challenged on all these fronts. The total budget (excluding Mines and Geosciences and attached agencies and the Environmental Management Bureau) was only equivalent to US $90 million in 2005 (Guiang et.al., 2008) and the World bank (2003) notes that 80 to 85 percent of this amount goes to operating expenses — salaries, rents, utilities. This only left about US $20 million for operations of the forestry, protected area systems and research and development sectors. This is a woefully small amount given the management and conservation demands of the sector.

3.3 Managing Biodiversity and Tropical Forests in the Philippines

As mentioned earlier in Section 2 and also detailed in Annex D, the Forest Management Bureau (FMB), the Ecosystems Research and Development Bureau (ERDB) and the Protected Areas and Wildlife Bureau (PAWB) are the DENR bureaus with direct forestry and biodiversity-related functions. FMB is responsible for managing, developing, conserving and protecting forests. PAWB has mandate on biodiversity conservation including establishing and managing an integrated protected areas system.

Protection of flora within protected areas is generally recognized as DENR's exclusive domain. Wildlife species protection is not as straightforward. Wildlife resources management is shared by three agencies: DENR, Department of Agriculture (DA), and the Palawan Council for Sustainable Development. Recognizing the potential for overlaps and conflicts, the three agencies joined together in issuing the implementing rules of the Wildlife Act (Joint DENR-DA-PCSD Administrative Order No. 2004-01). This states in part:

> *DENR shall have jurisdiction over all terrestrial plant and animal species, all turtles and tortoises and wetland species, including but not limited to crocodiles, water birds and all amphibians and dugong. The DA shall have jurisdiction over all declared aquatic critical habitats, all aquatic resources, including but not limited to all fishes, aquatic plants, invertebrates and all marine mammals, except dugong. The Secretaries of the DENR and the DA shall review, and by joint administrative order, revise and regularly update the list of species under their respective jurisdiction. In the Province of Palawan, jurisdiction herein conferred is vested to the Palawan Council for Sustainable Development pursuant to Republic Act No. 7611.*

The Administrative Order goes on to state:

> *The management of wildlife resources found within protected areas shall be governed by RA 7586 (NIPAS Act); Provided that the use for scientific and/or commercial purposes, where appropriate, of aquatic and marine resources within protected areas listed under the jurisdiction of DA shall be governed by RA 9147 (Wildlife Act) and RA 8550 (Fisheries Code), as the case may be.*

Finally, with respect to ancestral domains, *"The utilization of wildlife resources found within ancestral domains/ancestral lands shall be subject to the issuance of a Free and Prior Informed Consent pursuant to the RA 8371 (Indigenous Peoples Rights Act of 1997 or IPRA)."*

Each agency provides similar procedures and requirements for permits and fees. For purposes of CITES, both DENR and DA provide the necessary permits and monitoring mechanisms. For bio-prospecting activities, especially by international commercial entities, DENR, DA and Palawan Council for Sustainable Development (PCSD) have issued rules, together with NCIP on permits and prior informed consent requirements,

consistent with the Convention on Biodiversity (CBD) and with domestic laws (Wildlife Act and IPRA). These rules are embodied in Joint DENR-DA-PCSD-NCIP Administrative Order No. 2005-01.

The National Integrated Protected Area System (NIPAS) grew out of the Government of the Philippines' initial responses as a signatory to the CBD and the development of the National Biodiversity Strategy and Action Plan (NBSAP) formulated in 1997. As of mid 2008, there are 202 initial components of NIPAS and an additional 181 being proposed for establishment. An additional 107 components have been proclaimed by the president, with 181 more have pending draft proclamation (PAWB, 2008). After presidential proclamation, the site undergoes congressional enactment and boundary demarcation which are the final two steps of PA establishment. Presently there are only ten protected areas (PAs) that are covered by congressional enactment, 34 more are lined up for enactment. The initial components and proposed PAs by type as of May 2008 are listed in Table 3.5 followed by the administrative jurisdiction and area protected by PA category in Table 3.6.

Table 3.5 Total number of protected areas in the Philippines by type.

Category of Protected Areas	Initial Component	Additional PAs proposed (as of May 2008)	All PAs	Percent of Total
Marine Reserves	0	1	1	<1
National Parks	66	1	67	17
Natural Biotic Area	0	3	3	1
Natural Monument/Landmark	0	3	3	1
Natural Parks	0	10	10	3
Protected Landscapes or/ & Seascapes	0	52	52	14
Resource Reserve		1	1	<1
Watershed Forest Reserves/ Forest Reserve	85	40	125	33
Wildlife/Bird Sanctuary/ Game Refuge	8	10	18	5
Mangrove Swamp Forest Reserve	27	0	27	7
Managed Reserve	0	1	1	<1
Wilderness Areas	16	0	16	4
Others (caves, falls, wetland, rivers, reefs, bays, straits, mountains, island, islet)	0	59	59	15
TOTAL	**202**	**181**	**383**	

Source: PAWB, 2008

Table 3.6 Administrative jurisdiction of existing initial components of NIPAS.

Category	DENR		Other government agency		Total	
	No.	Area (ha)	No.	Area (ha)	No.	Area (ha)
National park	62	489,978	4	2,310	66	492,288
Game refuge/ bird sanctuary	8	918,585	0	0	8	918,585
Wilderness area	16	3,297+	0	0	16	3,297
Watershed forest reserve	83	1,033,789	2	119,359	85	1,153148
Mangrove swamp forest reserve	27	Undetermined			27	Undetermined
TOTAL	**196**	**2,445,649**	**6**	**121,669**	**202**	**2,567,318**

Source: PAWB, 2008.

The location of the proclaimed terrestrial and marine PAs and those that already have congressional enactment are illustrated on the map in Figure 3.4.

Since 2004 there have been more marine PAs declared. It is also important to note here that the listing and areas contained in these tables (3.4 and 3.5 above) are only for nationally recognized or NIPAS sites. As mentioned already, municipalities/local government units (LGUs) in the Philippines also can declare/delimit and manage marine protected areas/marine sanctuaries (outside of NIPAS) within their local jurisdictions (municipal/city waters) through a local ordinance and they have done so in significant numbers. The basis for this as mentioned is the Fisheries Code. This is an important fact that will also be elaborated below and in subsequent sections of this analysis. Palawan alone, for example, has over 60 MPAs registered (Gonzales et al., 2008).

Country-wide the most recent estimate of MPAs is 1,169, with another 164 proposed; this is more than double the amount in 1997. This trend is attributed to an increase in awareness by decision-makers and local communities to address the degradation of marine habitats and to the greater assistance (see Section 5) from development projects (Arceo et. al., 2008). The same authors also report that for the MPAs with known areas, the size being protected is also increasing. In 2000 those with known areas of less than 10 ha comprised 93 percent of the inventory; in 2007 this figure was down to 35 percent, while almost 50 percent were registered as being in the 11 to 100 ha classification.

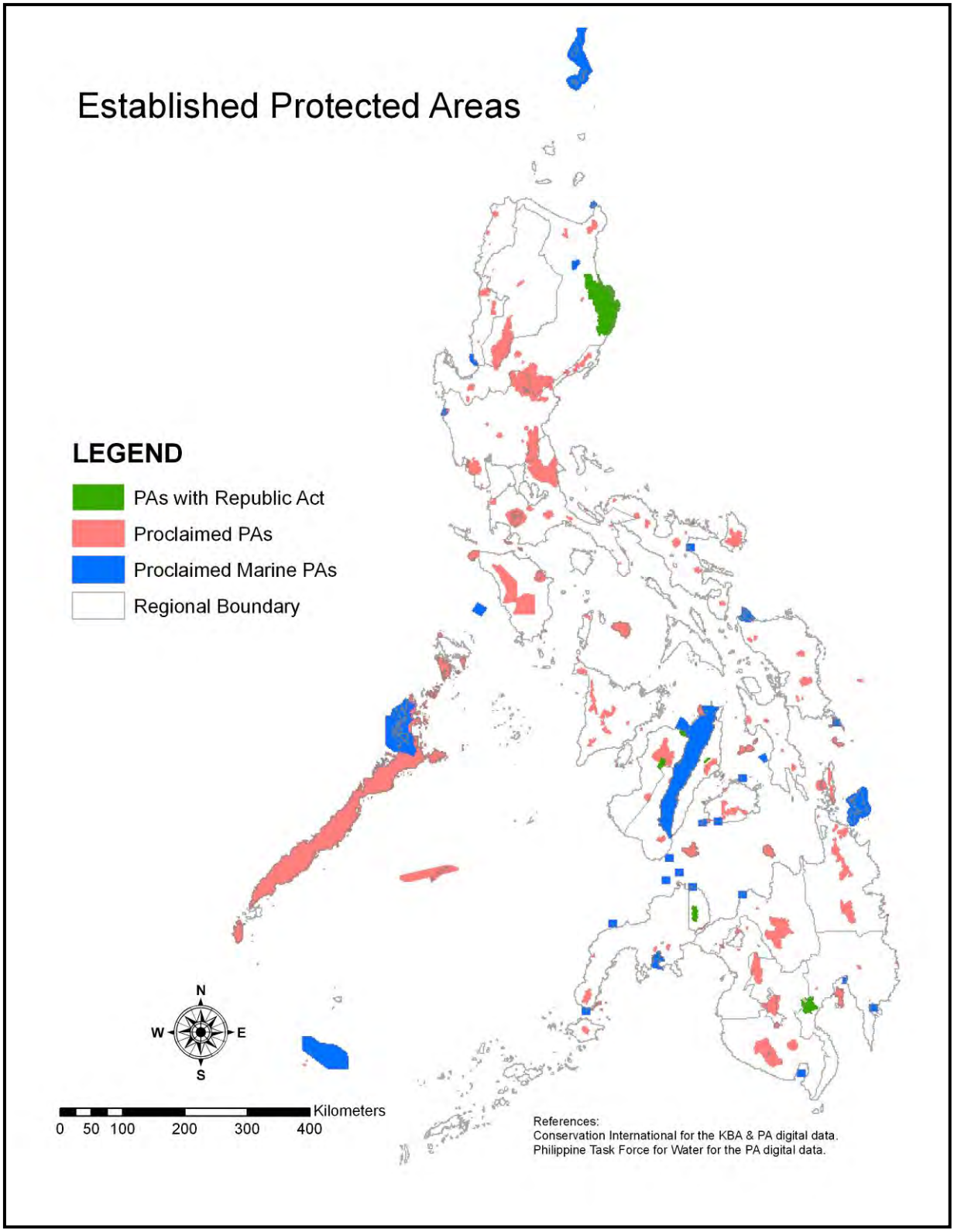


Figure 3.4 Protected areas within the NIPAS.

Staffing and budgeting for NIPAS areas. Funding for protected area in the Philippines has not significantly increased since 2002 despite the increasing number of declared PAs under the DENR/PAWB/PAWS responsibilities. Only one (Mt. Kanlaon National Park) out of the 10 legislated PAs is assured of PA-specific funding that is equivalent to US $20,000 (at current exchange rates – November, 2008). The PAWB Central Office has increased its staff from 100 in 2004 to 278 today (PAWB, 2008). But for the 196 PAs under DENR (and excluding PAWB Central staff) there are still only 1010 persons directly engaged in protecting and managing the biodiversity resources in these areas, an average of 2,421 hectares per staff person. Actual numbers obviously vary from site to site; some have sufficient staff, others like the Sierra Madre PA, Mt. Apo, and Mt Kitanglad could easily benefit from added professionals.

As part of the NIPAS law and its IRR, trust funds are to be established for each protected area. The Integrated Protected Area Funds (IPAF) are conceptualized and designed for the purpose of meeting the financial needs of each protected area. Revenue for the funds is envisioned to come from (a) taxes from permitted sale and export of fauna and flora; (b) proceeds from leases of multiple use areas including tourist concessions; (c) contributions from industries and facilities benefiting from the PA; (d) fines and fees including entrance fees; (e) donations, endowments and grants from any sources, and others. The IPAFs are planned to augment the national support from the budget process to the conservation of tropical forests and biodiversity in NIPAS sites.

Currently, this financing strategy is not meeting its full potential. Only 146 sites have an associatd IPAF, so full coverage remains a challenge. Additionaly, and perhaps more critically, *all incomes from operational IPAFs go to the national treasury*. Under existing guidelines, at least 75 percent of the funds (termed Sub-IPAF) generated by a protected area can be retained on site for development and maintenance needs. The remaining 25 percent goes to the Central IPAF to provide a source of funds for administering all the NIPAS sites and partial subsidy for other protected areas that have no viable or limited source of income. An approved work and financial plan is required to be submitted to the IPAF Governing Board before each site can access them. The total cumulative amount generated by the IPAFs in 2007 was equivalent to more than US $2.5 million $2,816.9 (PAWB, 2008) at current exchange rates. If properly allocated among the 146 sites with IPAFs, there will be at least an average of $19,293 for each that can augment or complement their annual budgetary allocation. Mechanisms for easy access and fair distribution of IPAFs between and among sites with IPAFs need further review and refinement. There is also the need to review the 75-25% distribution of the IPAF between the national and local NIPAS administration including the percentage share of LGUs who have political jurisdictions over the NIPAS sites.

4.0 AN ASSESSMENT OF THE THREATS AND ISSUES RELATED TO BIODIVERSITY AND TROPICAL FORESTS

In recounting the Philippines as a treasure trove of biodiversity and a country with a fragile, but still important country for tropical forest cover, the previous section also noted that it is one of the world's "hotspots". This is the notorious classification reserved only for those places where the conservation and protection of natural resources is extremely threatened. The Philippines is on this list.

This was the situation presented in the 2004 analysis (Guiang, 2004) and it remains a fact today: the Philippines great heritage in tropical forests, terrestrial and marine biodiversity is disappearing at an alarming rate. And what remains is under constant threat of being lost completely, or substantially altered to the degree that its ecological function will be irreparably harmed.

In 2004 the major threats included habitat destruction, over-exploitation, chemical pollution, biological pollution and weak institutional and legal capacities. As was noted by numerous specialists and USAID-partner groups during the course of this assessment, most of these threats have been knocking on the Philippine conservation door for quite awhile. Some have moved up in terms of priority, often due to changes in global demand for resources, while others may be less threatened in parts of the archipelago due to the efforts of a biodiversity conservation project working with the DENR or DA-BFAR, or an NGO's work with local communities, or LGU initiatives. Table 4.1 lists the major direct and indirect threats for this report.

Table 4.1 Direct and indirect threats to biodiversity and tropical forest conservation in the Philippines.

Direct Threats	
Terrestrial (including fresh water systems)	**Coastal & Marine**
• Destruction/fragmentation of habitats (timber poaching, illegal cutting, forest conversion to agriculture, settlement and other non-forest uses) • Pollution of fresh water sources, streams, wetlands • Illegal wildlife poaching and trade • Alien and invasive species	• Overfishing • Illegal and destructive fishing • Mine spill • Pollution from ships/navigation • Agricultural runoff • Siltation and sedimentation • Land based/coastal pollution • Alien and invasive species
Indirect Threats	
• Population growth/migration • Poverty • Unregulated upland and coastal development	• Food security • Greater demands for energy and minerals • Climate change • Natural catastrophes
• Institutional weaknesses/poor governance • Corruption and greed • Peace and order issues (Mindanao)	

4.1 Threats to Forests and Terrestrial Resources

Forest cover as reported in Section 3 is actually on the increase in the Philippines, but most of this is in secondary growth, plantations and in land conversion to higher (commercial) value tree crops. Although it is recognized that this type of forest cover does contain biological diversity and is certainly better than no forest cover, they do not have the complexity or the diversity of natural forest cover. And it is these latter lands which are continuing to suffer the most. The fragmentation of forest habitat and natural forest conversion to (primarily) agriculture is the largest direct threat to species loss for both flora and fauna (Acosta, 2008). The analysis of Carandang (2008) showed that more than 7.8 million hectares of dipterocarp forests from 1935-2003 were converted to other uses (44% - mostly for agriculture and settlements), permanently damaged by logging i.e. converted to roads, bridges, settlements (9%), and second growth forests converted through kaingin making (47%). These threats have their root causes in population growth and migration and in institutional weaknesses) including corruption and greed (Vitug, 1993; La Vina 2008; De Rueda, 2006; Guiang, et. al. 2008). Many Filipinos who need their livelihoods to survive and despite there being policies and laws to protect the natural landscapes have been enticed to engage in small scale timber poaching or logging especially with the support of financiers and willing buyers.

The continuing decline of tropical forests is the consequence of the "open access" condition of most remaining tropical forests, unpredictable (and sometimes inconsistent) forest policies, weak property rights, and inadequate incentives for various tenure holders to think long-term and invest their own resources for forest protection and conservation and development of bare forestlands within their tenured areas (Guiang, et. al., 2008). DENR has only partially devolved forest management functions to LGUs. This has discouraged innovative and local proactive actions in conserving the remaining forests, in assisting community tenure holders and forest occupants or in organizing locally-based forest enforcement teams. LGUs are not also able to collect real estate taxes from public forest lands. Many LGUs have expressed their willingness to actively participate in forest conservation but find themselves inadequately prepared to address the whole array of improving environment and natural resources management (ENR). These are further aggravated by the DENR lack of manpower, budgets and local awareness to keep the forests from being lost. The system of conserving forests has indirectly promoted opportunism, entry of free riders, and rent seeking behaviors.

Remaining natural forests in the Philippines are primarily confined to upland areas and lands with extremely steep slopes, areas that are inaccessible and remote. But these sites, too, remain under significant threat from a growing population nationwide. Much of the cutting is done illegally, slowly, steadily, one tree at a time, and in a manner that gradually disrupts flora and faunal habitats. Taken collectively the damage is extensive. A recent report from northern Luzon (Burgonio, 2008a) noted that 11 million board feet of logs were cut in the Northern Sierra Madre Natural Park—a legislated protected area. But its remoteness and the fact that the area straddled nine municipalities made patrolling and enforcement difficult, and in this case, impossible.

Available land use/cover data in the Philippines encompasses both the forests within and outside the protected areas system are covered. Nevertheless, the absence of legal protection means that the trend of declining natural forest and expanding plantation type forests is more apparent outside PAs. The conservation of tropical forests under the private sector (e.g., IFMAs), CBMAs, CADTs outside the NIPAS, and other forms of tenure or agreements, and those in "open access" condition has been largely dependent on the subsidy support and use right given to tenure holders.

Angeles (2003) notes that the forest conversion and habitat loss is very cumulative, human-induced in nature and constant due to:

- Conversion of forestlands into A & D lands for permanent uses, such as for agriculture and human settlements;
- Removal of forests in declared forestlands for grazing, fishpond, and vegetable cultivation purposes;
- Illegal occupancy and kaingin-making (and fire) in declared forestlands;
- Illegal logging and fuelwood gathering in declared forestlands; and
- Poor management of remaining natural forests by tenured stakeholders and the Government alike.

Increasing energy prices also make fuelwood as a household energy source more lucrative. Even in urban areas it seen as a less expensive alternative to liquid propane bottled gas. In Sarangani province in Mindanao, the government has banned fuelwood cutting for transporting and marketing outside its political jurisdiction. Liquid propane gas (very popular as a household cooking fuel) prices were more than three times that for an equivalent amount of energy coming from fuelwood and local entrepreneurs were racing to cut the wood and even transport it out of the province where they could gain a healthy profit.

Both small- and large- scale mining (under the Small Scale Mining Act or RA 7076 and the Mining Act of 1995, respectively)[1] also pose a very serious threat to loss of forest cover and biodiversity in the Philippines. Of the nine million hectares (a third of the total land area) of potential mining land, only 1.4 million hectares is covered by mining permits. Areas being claimed for mining concessions are often in direct conflict with areas with high biological diversity, ancestral land/domain of indigenous peoples and watershed reservations (Doyle et al, 2007).

[1] Cruz (1999) commented that the Mining Act of 1995 has stifled "the development of small-scale mining, regulate and control the industry, and deprive small-scale miners, particularly indigenous communities, of an age-old economic activity", which has been the overall substance of the People's Small Scale Mining Act or Republic Act 7076.

Box 4.1 The risks and costs of mining.

Unmitigated Potential Resource & Environmental Damage	*Uncompensated Economic/Social Risks & Costs*
MINING EXPLORATION, OPERATION & ORE EXTRACTION	
• Disruption, if not loss, of natural habitat • Forestland conversion/loss • Decline in carbon sequestration capacity • Erosion, sedimentation • Reduced slope stability or higher risk of landslides • Diversion of surface or groundwater • Reduced or erratic stream flows • Clogged stream channels • Potential acid rock generation • Contamination of surface waterways	• Restricted entry to hunters, food gatherers, shifting cultivators • Loss of forest-based livelihood (e.g., non-timber forest products) • Displacement of indigenous and migrant households/community • Reduced water availability for domestic consumption and irrigation • Higher cost of potable water • Income losses due to landslide, farm productivity decline
MINERAL PRODUCTION	
• Threat to particular species or biodiversity loss • Diversion of surface and groundwater • Reduced streamflow or groundwater depletion • Acid rock drainage and contamination of soil and water • Surface, groundwater pollution • Reduced fish spawning area • Damage to aquatic life • Air pollution (increased dust, PM, metal gases, sulfuric acid)	• Reduced local water supply • Higher cost or greater unavailability of potable water • On-site and off-site decline in farm yield, fish harvest (subsistence or income sources) • Less recreational opportunities • Entry of mercury, other toxic material into the food chain • Health damage from poor water quality • Respiratory illnesses and loss of life • Decline in productivity, income
MINE WASTE AND TAILINGS MANAGEMENT, MINE REHABILITATION, CLOSURE OR ABANDONMENT	
• Contamination of streams, rivers, water bodies from tailings release • Destruction of habitats (rivers, mangroves, sea grass, coral reefs) • Fish kills • Groundwater contamination from tailing dam seepages • Air pollution from dried tailings • Loss of particular species	• Immediate illnesses and long-term health damage from contaminated water and food intake • On-site and off-site/downstream property damages and livelihood or income losses from tailings release • Off-site/downstream community displacement

Source: Bautista, 2008.

In several provinces, the government with its pro-mining stand[2] and the private sector's mining interests are cashing in on the high global market prices for minerals like gold, nickel and iridium. As the agency that must rule on all mining concessions, DENR's role as environmental manager in the face of the potential impact of mining activities is hotly debated among stakeholders. Once the decision to move forward with the mining activity is made the costs to biodiversity, forest conservation and the environment can be enormous. Box 4.1 illustrates the costs attributable to mining activities.

The results of the 2003 National Forest Assessment show that there is a need to rethink forest policy and forest land allocation in the country, particularly on where management of natural forests should be focused, where the initiatives on protected area management should be, where production forestry should be focused on, and where plantation forests development should be concentrated, as well as where community-based forest management should be given more emphasis (Acosta, 2005).

4.2 Threats to Coastal and Marine Resources

Because the seas and oceans that surround the Philippines and lap its coastal areas provide for easy movement of species, their biodiversity is not threatened by fragmentation like the terrestrial species. But their root causes are, like the threats to terrestrial resources, largely driven by human behavior in the form of population pressures and ineffective institutions that do not adequately address conservation and sustainable management of marine resources. Overfishing of existing stocks and illegal fishing (such as using dynamite or illegal gears) are very real in many areas of the country. These are further propelled by the need to support livelihoods and the weakness or inability to enforce existing (and usually national) protective statutes. Box 4.2 provides the DA-BFAR recommended actions that aimed at addressing both direct and indirect threats confronting marine and coastal resources.

While the DA-BFAR recommended actions to mitigate, reduce, or eliminate the threats posed by weak management of fisheries and coastal habitat are important, they do not acknowledge the increasing threat posed by pollution and inadequate water/wastewater sanitation on coastal areas. As noted in Section 2, there are 52 million people living along the country's coastlines. Solid waste and wastewater from all human activities eventually empty into the Philippine seas. Only 11 percent of the population in Metro Manila is serviced by a sewerage system, and only 1 percent of the country's total population has access to sewerage system (EMB, 2006). This means that urban waste that drain into water ways and end up in coastal waters are gradually building up pollutants in the fishing grounds and marine protected areas.

[2] In December 2004, the Supreme Court reversed the unconstitutionality of the 1995 Mining Act. The DENR Secretary Atienza has rallied mining companies and stakeholders to embrace responsible mining to advance the industry's role as catalyst in shielding the country from the raging global economic crisis (Atienza, DENR website, 2008).

Box 4.2 Six critical actions to reverse the decline of Philippine marine fisheries.

1. **Reduction and rationalization of fishing effort.** With most of the Philippines' fisheries either fully exploited or overfished, reduction of fishing effort has become an urgent imperative that can be ignored only at the expense of nation's environmental and economic health. The amount of reduction will be huge in most cases. For small pelagics as a whole, effort should be decreased by an estimated 50-65%. In most fishing grounds, reduction of effort to sustainable levels must be a long-term goal.
2. **Protection, rehabilitation and enhancement of coastal habitats.** In the Philippines, the rehabilitation of mangroves and establishment of marine protected areas (MPAs) are perhaps the most widely implemented interventions among the suite of coastal resource management (CRM) measures. Successful examples of community-based stewardship of mangroves should be replicated widely, with priority given to saving existing mangroves. More functioning MPAs are needed, particularly to protect spawning areas and other fish aggregation sites. Also, integrated planning for and among MPAs is essential to provide larger overall benefits to habitat protection and thus fisheries management.
3. **Improved utilization of harvests.** Losses due to spoilage can be reduced through provision of post-harvest facilities and training of fishers in proper post-harvest handling. Improvements in gear technology (and their spatial and temporal disposition) are in order to reduce by-catch and discards.
4. **Enhanced local stewardship and management of resources.** Local stewardship and management of resources must be inclusive and based on the local government unit (LGU) through comprehensive CRM planning and implementation. It should not be equated solely with organizing small fishers to better repel commercial fishing boats that intrude into municipal waters. Efforts should be made to involve all stakeholders in constructive planning and actions.
5. **Supplemental/alternative livelihood for fishers.** The need to provide supplemental and alternative livelihood for fishers cannot be overemphasized, particularly in the case of small fishers who are mired in poverty and are fishing to survive. A good argument can be made for facilitating such livelihoods as a first or parallel intervention in site or fisheries management.
6. **Capacity building and institutional strengthening.** Capacity building in resource assessment, management planning, implementation and enforcement is needed at both national and local levels. Training in skills for integrated coastal resources planning and management is essential to build up a system that addresses the complexity of issues.

Source: Department of Agriculture-BFAR, 2004.

Two recent reports, Reefs Through Time, 2008 and Proceedings – Coastal Zone Philippines 2 Congress (2007) provide good baseline data and fodder for discussion about best practices for marine and coastal management in the Philippines; they also overwhelming show that population pressure and human activities have serious (negative) impacts on what is arguably the country's most important resource.

The threats to marine and coastal resources due to pollution from leachates from unmanaged solid wastes and untreated waste water from highly urbanized areas are compounded by unregulated coastal tourism (often without proper waste disposal facility), illegal quarrying, unsustainable aquaculture practices, urban run-off, unregulated industrial and agricultural sources and risks from oil and chemical spills. This includes direct dumping of untreated chemicals from industries and commercial establishments into the estuaries and bays; run-off from upland mining, forestry and agricultural activities; and pollution from urban and residential areas.

The data show with increasing consistency that this unmanaged pollution and waste disposal pose an enormous threat, not just toward marine life and biodiversity, but also to human health and well-being (EMB, 2006; Arcenas, 2008). The long-term prognosis is not good, especially in the face of inadequate monitoring and the controls now in place. Lack of resources constrains regular monitoring of important water quality indicators such as heavy metals, nitrates, and sedimentation. Only three inland surface waters (Meycuayan, Bocaue and Marilao) and three out of the 77 coastal and marine waters in the country are regularly monitored by the Environmental Management Bureau (2006) for heavy metals.

In addition to the overfishing, poor and weak resource management, and pollution threats, the rapidly increasing global trade in the live food fish trade and aquarium trade poses a growing threat. The Philippines currently supplies 80 percent of the world's ornamental fish amount to around US$10 million per year (Apec Fisheries Working Group, 2008). It is estimated that 4000 or more Filipino fish collectors have used cyanide extensively on Philippine reefs (McClellan and Bruno, 2008). This tactic results in only 10 percent of the poisoned fish reaching their markets as half die on the reef, and 40 percent die even before they reach their destinations.

Finally, although classified as an indirect threat, climate change is beginning to show more dramatic and direct impacts in the Philippines. Coral bleaching from increases in sea temperatures have already had an impact in several areas, enough so that studies are in place to keep watch on these statistics. An island nation like the Philippines will be battered on several fronts as climate changes continue. The reefs are susceptible to bleaching (and dying), fish stocks will both decrease and relocate to cooler waters. Both effects will impact directly on coastal population livelihoods as land-based pollution and overfishing is today. Sea levels will rise to impact directly on infrastructure, livelihoods and living conditions. Local economies based on fishing will be eroded, marine-based and coast-based tourism will also be directly impacted by many of the changes brought on by the increasing threat of climate change and its impacts on the Philippine coasts.

4.3 Impacts of Threats on Species

The human-caused destruction to habitats and the pollution of watersheds, estuaries and marine waters are having a direct impact on the thousands of species of fauna and flora in the Philippines. The International Union for Conservation of Nature (IUCN) monitors threatened and endangered species worldwide and annually posts them on its renowned watch list called the Red List. The IUCN Red List (2007) for the Philippines is presented in Annex E and shows 546 species for the threatened categories (critically endangered, endangered, vulnerable, near threatened). Table 4.2 shows the trends on the Philippines Red List over the past seven years for the top three threatened categories. Of the flora species examined (318), two-thirds were viewed as threatened in 2007; and of the fauna species (1,005) about one-quarter are on the list.

Poaching of wildlife and the illegal trade of species threatens the country's unique fauna. The DENR director of the PAWB recently noted (Burgonio, 2008b) that there is substantial capture and illegal trade of wildlife, especially birds, in the Philippines. And more significantly, the nation is an important transshipment point for illegal trade of wildlife and endangered species, mostly coming from Malaysia and Indonesia, enroute to other Asian countries. According to the PAWB Director, the Philippines has started gathering and estimating the value of of illegal wildlife trade. Annex E presents the CITES (Convention on International Trade in Endangered Species) list of species being monitored for illegal trade in the country.

Alien invasive species is another example which can threaten the survival of endangered species and cultured species through disease, environmental and habitat change. The concern about invasive species has only been recently realized and steps to address them are in their infancy (Azanza, 2006). The Philippines has also not put in place mechanisms to control pathways of introduction of alien species in the marine and coastal environment (PAWB, 2006).

Table 4.2 Trends in critically endangered, endangered and vulnerable species on the Philippine Red List.

Species group	2001				2004				2007			
	CR	**EN**	**VU**	**Total**	**CR**	**EN**	**VU**	**Total**	**CR**	**EN**	**VU**	**Total**
Fauna												
Fishes	16	2	11	**29**	17	8	27	**52**	18	5	35	**58**
Amphibians	7	6	11	**24**	1	15	33	**49**	1	15	32	**48**
Birds	12	13	43	**68**	12	13	46	**71**	12	12	43	**67**
Mammals	7	14	32	**53**	7	14	32	**53**	8	13	30	**51**
Mollusks	1	0	2	**3**	1	0	2	**3**	1	0	2	**3**
Arthropods	1	6	10	**17**	1	6	10	**17**	2	5	10	**17**
Reptiles	3	4	1	**8**	4	5	1	**10**	3	5	1	**9**
Sub-total	47	45	110	**202**	43	61	151	**255**	45	55	153	**253**
Flora												
Bryophytes	0	2	0	**2**	0	2	0	**2**	0	2	0	**2**
Conifers	0	1	3	**4**	0	1	3	**4**	1	1	3	**5**
Monocots	0	0	8	**8**	10	6	11	**27**	9	6	11	**26**
Dicots	44	26	132	**202**	44	27	132	**203**	37	25	117	**179**
Cycads	-	-	-	**-**	-	-	-	**-**	0	1	0	**1**
Sub-Total	44	29	143	**216**	54	36	146	**236**	47	35	131	**213**
TOTAL	**91**	**74**	**253**	**418**	**97**	**97**	**297**	**491**	**92**	**90**	**284**	**466**

Source: IUCN Red List, 2001; IUCN Red List, 2004; IUCN Red List, 2007.

Cr- Critically endangered **Vu**- vulnerable **En**- Endangered

Color has no meaning- it is used for easier differentiation and comparison

4.4 Prioritizing Key Biodiversity Conservation Areas

The term "conservation priority" was first used in the Philippines in the early 1990's by members of academe, NGOs and international experts working in the country. This line of thinking became the basis for the WB, GEF, EU, and GRP mapping of the

"Conservation of Priority Protected Areas in the Philippines (CPPAP)." Priority protected areas were targeted for external funding — mainly from GEF, EU, World Bank, among others. These initial efforts further evolved into the 2001 Philippine Biodiversity Conservation Priority-setting Program (PBCPP) convened by the DENR. The PBCPP resulted in the updating of the 16 terrestrial and six marine bio-geographic regions in the country. It identified 206 conservation priority areas (CPA) which comprised nearly 23 percent of the country's total land area and archipelagic waters.

More recently, using guidance from the PBCPP, a framework for locating and mapping Key Biodiversity Areas (KBA) for terrestrial sites and Marine Key Biodiversity Areas (MKBAs) country-wide was established by the DENR with support from key NGOs (CI, WWF, Haribon, and FPE). These areas cover the extent and location of vulnerable, irreplaceable, and to a certain extent, trigger species. The designation of KBA and MKBA was achieved through research and peer-review of issues and trends resulting in the establishment of different Priority Levels (One, Two or Three) for identified critical habits.

4.4.1 Using Key Biodiversity Areas to prioritize investment in conservation activities

Key Biodiversity Areas are one way to more effectively identify and prioritize the remaining percentage of the Philippines critical and most threatened areas of biodiversity and tropical forests. Figure 4.1 illustrates where the KBAs and the MKBAs are in the Philippines; they represent close to two-thirds of the country's area. KBA's and MKBA's are not intended as areas for management or a delineation of any official nature, instead, they are part of the selection criteria for investing and concentrating resources toward biodiversity conservation. They provide a means to rapidly identify a geographic area which contains one or more endangered, critical, or unique ecosystem(s) or specie(s) to be conserved or managed. Within a KBA, various conservation management approaches can be practiced; it is not a specific method or a management tool in and of itself. Nor does it result in an "either/or" scenario. These approaches can include: NIPAS (or designating protected areas, reserves, or refuges), ecosystem-based approach, watershed management approach (or integrated watershed management), or even a landscape approach, among probable others. It is through these management approaches that threats to the biodiversity of systems and species within a KBA will be addressed.

KBAs are not exclusive of people or livelihoods. In fact, communities and industries are often located within a KBA or around a KBA, thereby likely acting as root causes of the direct threats facing the biodiversity within the KBA. Working to address the effects and impacts of the human-side of the environment, the people and industries that a program collaborates and cooperates with on activities, will depend on the KBA identified. A program that decided to focus on one or more KBAs would likely choose to invest resources into communities and industries active in and around a particular KBA, in order to be sure that an investment has the most impact on the final objective of biodiversity conservation.

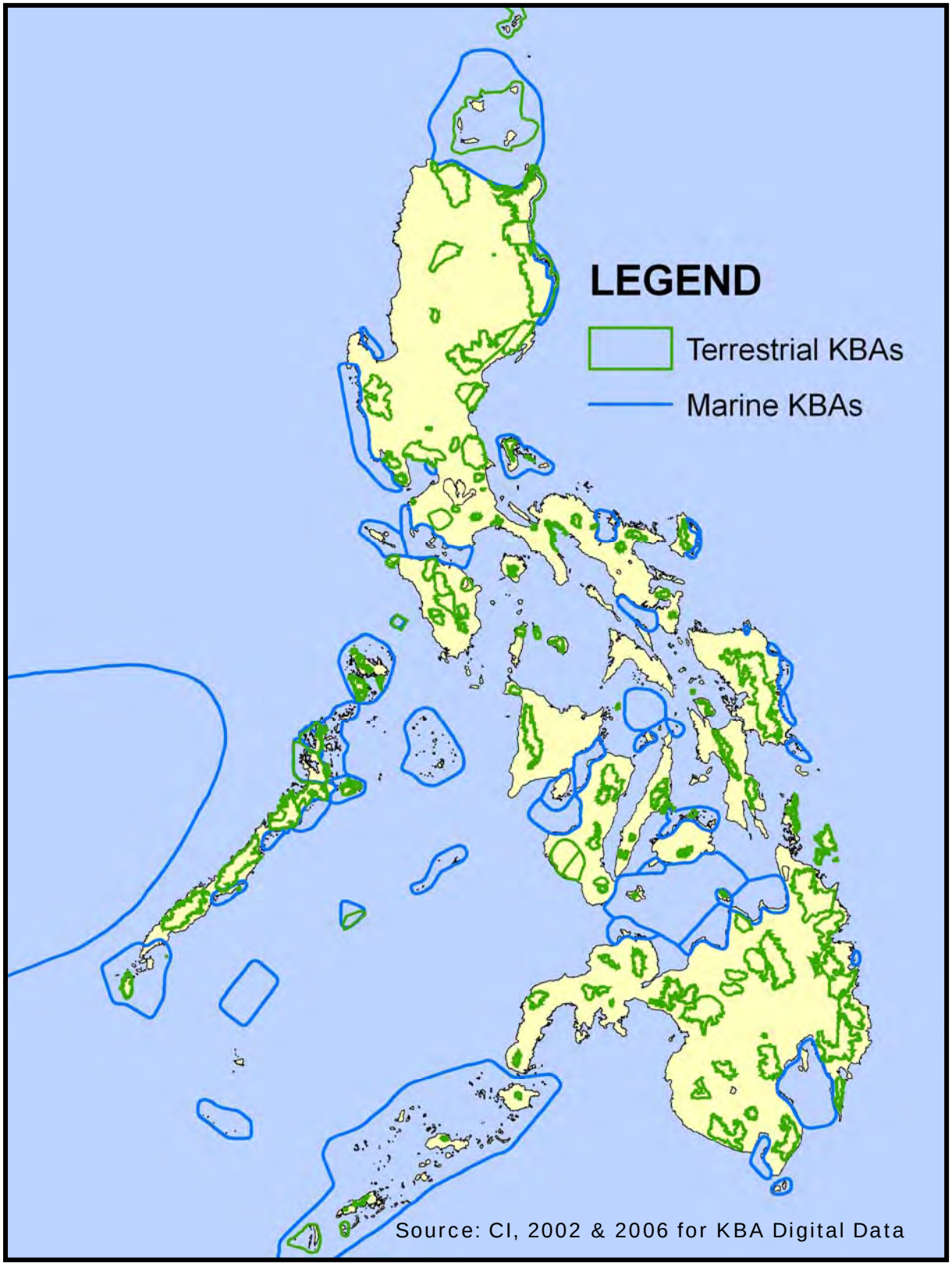


Figure 4.1 Location of terrestrial and marine KBAs in the Philippines.

Different conservation stakeholders are apt to view the utility of KBAs differently, and may choose not to accept them as selection criteria. For USAID biodiversity earmark money, it's a requirement that all activities be tied to threat reduction of a biologically significant area (a.k.a., a KBA). Thus, USAID programs have to identify which KBA they will be working in/around to reduce threats to biodiversity. DENR can work on NIPAS- which fall in KBAs- and USAID will also work with NIPAS, but only those in KBAs.

Because KBAs often fall across several LGUs, close and effective coordination and collaboration is essential for responsible management the resources and prevention of leakage within the target KBA. This is more likely to be assured with local control mechanisms, especially if their overall value to the community is established. Table 4.3 looks at funds that are potentially available to LGUs for managing and conserving biodiversity and tropical forests in KBAs in comparison to what the DENR has in a regional context.

Table 4.3 Average DENR budget and potential amounts that LGUs can contribute from their internal revenue allocation (IRA) per hectare of Key Biodiversity Area, by region

Region	No. of LGUS with a KBA	Area of KBAs (ha)	DENR budget/ha of KBA, 2005-2007[1] ($)	Potential amounts LGUs can allocate/ha of KBA, 2006-2007[2] (from their IRA) ($)	Potential amounts LGUs can allocate/ ha of KBA from their 20% Dev't. Fund, 2006-2007[3] ($)
1	3	Not avail.	Not available	Not available	Not available
2	5	2,035,173	2.5	65.2	13.0
3	7	463,139	17.1	515.1	103.0
4A	5	246,368	33.2	989.0	197.8
4B	5	1,294,868	4.0	93.8	18.8
5	4	91,503	51.5	1055.7	211.1
6	5	333,857	23.5	637.1	127.4
7	4	211,235	33.9	856.8	171.4
8	6	775,929	8.8	195.8	39.2
9	3	97,854	49.2	1087.2	217.4
10	5	335,413	20.2	432.5	86.5
11	4	455,059	14.8	282.1	56.4
12	6	260,381	32.6	700.3	140.1
13	4	354,849	17.9	280.8	56.2
ARMM	3	350,855	5.5	133.5	26.7
CAR	6	238,425	14.7	340.3	68.1

Source: Extrapolated from GAA appropriations from 2005-2007

[1] $1= PhP 50.8, based on averaging of US dollar- Philippine peso exchange rates of $1= 55.08 (2005), $1= 51.31 (2006) and $1= 46.15 (2007).

[2] $1= PhP 48.73, based on averaging of 2006 and 2007 US dollar- Philippine peso exchange rates

[3] $1=PhP 48.73, based on averaging of 2006 and 2007 US dollar- Philippine peso exchange rates

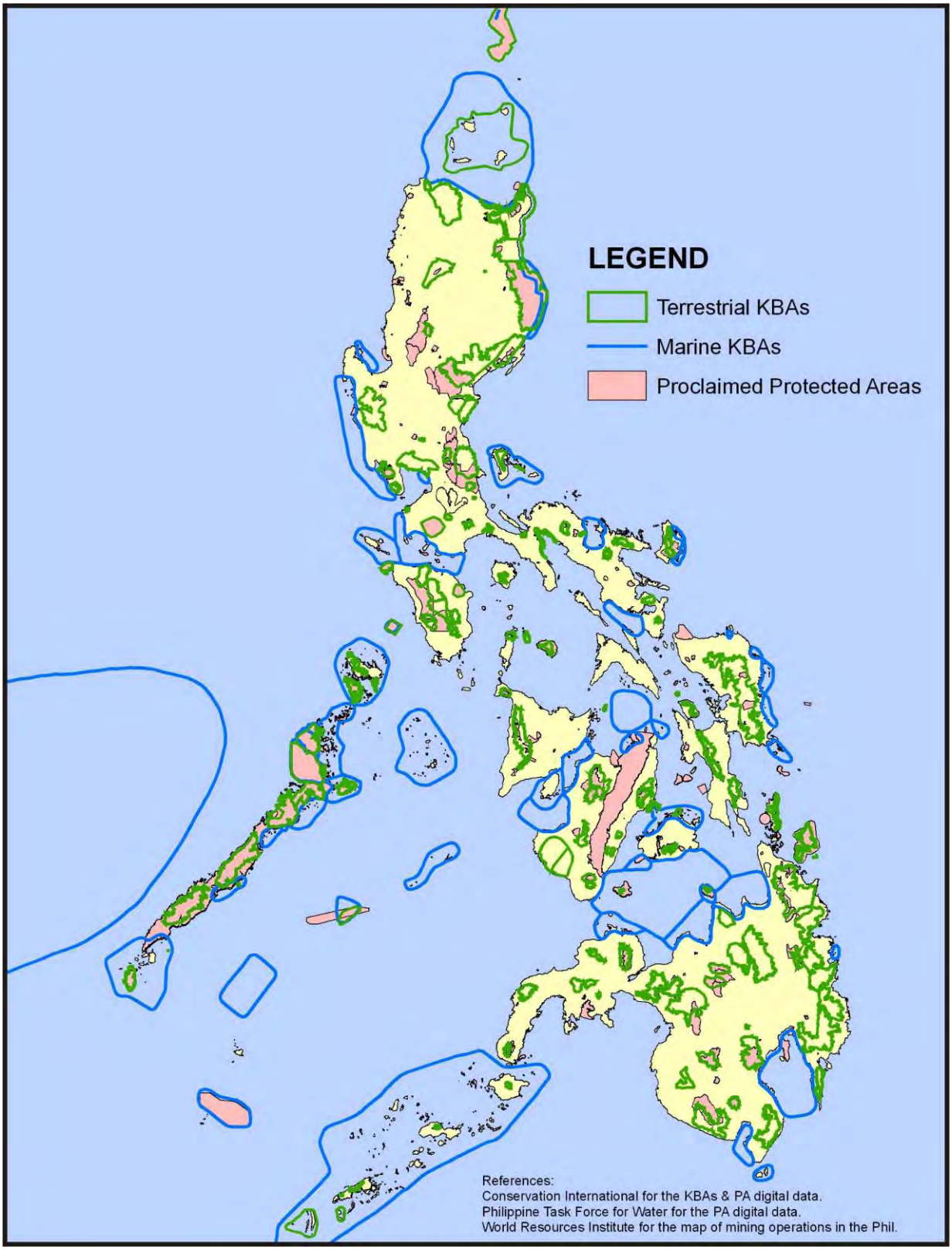


Figure 4.2 Marine and terrestrial KBAs with the NIPAS sites.

4.4.2 Conservation management approaches applicable within a KBA

There is a variety of conservation or environmental management approaches that can occur within a KBA. Several can actually be implemented at the same time. Highlighted here are the NIPAS, which has been invested in heavily over the years by the Philippine Government, and ecosystem-based approach, which enables a wide lens for integrating various tactics toward the goal of conservation and management of resources.

Conservation Management through NIPAS

The term "protected areas" in the Philippines generally means two things. One, those areas that are part of the NIPAS and have been declared, proclaimed or legislated as protected areas. These are normally under the direct management of the DENR, other national government agencies, or through the multi-sectoral Protected Area Management Board (PAMB). Second, those areas that are considered to be outside the NIPAS areas such as those declared to be watershed reservations, marine protected areas, marine sanctuaries, or those categorized in the forestry sector as "protection forests and forestlands" under different tenure holders defined by certain criteria, e.g., greater than an 18 percent slope, above 1000 m, old growth forests, or riparian areas. These areas are often within the KBAs or MKBAs but may be under the jurisdiction and responsibility of civil and military organizations, local government units, local communities, community organizations, indigenous peoples, private leases and concessions. Figure 4.2, presents an overlay of the KBAs and MKBAs with the current NIPAS.

In NIPAS areas, the government, through the multi-sectoral Protected Area Management Boards (PAMBs), are responsible, accountable, and have authority to protect and manage the forests, forest lands, and biological resources. In the second category, tenure holders have the accountability and responsibility, but with limited authority with respect to managing the tropical forests, forest lands including mangroves. In both cases, DENR heavily regulates the extraction, modification and use of the forests and forest lands. Unallocated forest lands areas remain under direct accountability of DENR until they are allocated to other entities. In coastal areas, those under the NIPAS are directly under the PAMB and DENR; those outside are devolved to local government units for protection and management.

Conservation Management through an Ecosystem-based Approach

Ecosystem-based management is an approach to resource management and conservation that considers all ecosystem components, including humans and the environment, instead of managing one issue in isolation. The approach embraces the theory that sustainable solutions are achievable only by addressing multiple parts of the system in order to retain balance. An ecosystem could be a watershed, sub-watersheds, a legally or administratively defined protected area or watershed reservation, an ancestral domain claim covered by CADT or CADC, a habitat of endemic species, island or group of islands, or a political unit that coincides with unique ecological processes. In an ecosystem, leaders and stakeholders work together to integrate people and livelihoods

based on common unifying themes such as water (using the ridge to reef approach), an indigenous knowledge and practices of IPs, location. In a watershed ecosystem, for instance, there could be coordinated and complementary actions that support biodiversity conservation from the tenure holders, agricultural lands, settlement, industries and coastal communities to conserve biodiversity in coastal areas and water bodies.

4.4.3 Challenges to Adapting the KBA for Focused Investment

As shown in the Table 4.4 below, NIPAS sites are not fully aligned with the terrestrial KBAs and MKBAs and even the PBCPP and IBAs- and vice versa. The overlaps could strengthen conservation of the remaining tropical forests and terrestrial and marine biological resources. While it is recognized within the Philippines conservation community that the NIPAS is not adequate both in terms of its coverage of critical habitats nor in its management of the PAs it is mandated to protect, it has been a primary tool for selecting areas for investment in conservation. To its credit, the DENR also recognizes this and uses information from PBCPP and the terrestrial KBA/MKBA in reviewing draft PA proclamations.

Table 4.4 Comparison of sites identified as priority for conservation with the present components of NIPAS

Basis	No. of Sites Identified as Priority	No. of Overlaps with NIPAS
Philippines Biodiversity Conservation Priority-setting Program (PBCPP)	▪ **206 – 170 terrestrial, 36 marine**	▪ 105 (51%)- 84 terrestrial, 21 marine overlap with NIPAS areas
Important Bird Areas	▪ **117**	▪ 44 (38%)
Key Biodiversity Areas (KBA)	▪ **128** plus 51 candidates	▪ 45 (35%) overlap with NIPAS areas

Sources: CI-DENR-Haribon (2007), Ambal (2005)

The highly regulated issuance of harvesting rights in natural forests intended for sustainable harvest by the private sector and the communities discouraged many tenure holders to take proactive actions in conserving their remaining forest stand. Other issues that impact on areas outside NIPAS sites are listed in Box 4.3. Similarly, those issues related to NIPAS sites can be reviewed in Box 4.5.

Finally, jurisdictional issues also continue to plague a unified approach to conservation and biodiversity priorities in the Philippines. As noted elsewhere in the document tropical forest and biodiversity conservation are two separate mandates within the DENR bureaucracy, but with the exception of most coastal and marine areas, the areas of responsibility are the same. The FMB has the mandate to manage tropical forests while the PAWB is charged with protecting and managing protected areas. These bureaus have separate personnel, budgeting, and administrative procedure, which imply higher overhead costs. The National Water Resources Board, which has mandates on watersheds, was recently attached to the Department, but their functions remains separate (and are also often redundant with the PAWB and the FMB).

Box 4.5 Summary of issues related to tropical forests and biodiversity in NIPAS sites.

- With increasing population in and near the NIPAS areas, weak property rights combined with weak enforcement in these areas are resulting to upland migration, exploitation and expansion of existing claims.
- DENR and other concerned agencies have limited capacity – in terms of budget, staff, technical skills to perform functions and provide support system to stakeholders in and outside the PAs, enforcement, etc. This issue requires immediate action and focused on PAs or non-PAs that are in high priority KBAs or MKBAs.
- The IPAFs have potential to play a major role as a source of financing conservation of tropical forests and biodiversity; however, the current system of collection, sharing, re-distribution, accessing, and re-investments has to be reviewed and be made responsive.
- There is an undefined, unclear, and voluntary nature of LGUs and private sector participation and engagement in NIPAS sites.
- There is a critical need to develop and install sustainable M&E system to monitor and update forest cover, forest quality, claims, biodiversity indicators, threats, etc.
- The process of proclaiming, declaring, legislating or even disestablishing NIPAS sites are not moving towards capturing the conservation of tropical forests and biodiversity in KBAs and MKBAs
- NIPAS and Local Government Code Conflict
  - ✓ The definition of municipal waters, expressly excludes protected areas, whose administrative jurisdiction belongs to the DENR and the local Protected Areas Management Board (PAMB). Thus, the LGU loses sole management control over protected areas that overlap with municipal waters. LGUs can only have a say in the management of the municipal water's portion of protected area as a member of the PAMB. This situation causes conflicts in terms of sharing of revenues generated from protected areas as well as gives rise to questions as to the applicability of LGU ordinances and prohibitions under RA 8550 within protected areas that overlap with municipal waters.
  - ✓ Taxation is one source of confusion between Protected Area Management Board and the local government unit. Both have mandates to collect revenue from the same area
- IPRA/CADT and NIPAS Conflict
  - ✓ Proclaimed areas under NIPAS that now partly or mostly covered by ancestral domain titles, but no mandatory requirement to include IPs to be represented in their respective PAMBs.
  - ✓ Overlap of boundaries of protected areas and ancestral domain or ancestral lands
  - ✓ Conflict and need for harmonization of ADSDPP and PA plans
- NIPAS and Mining Conflict: there are mining claims in protected areas.
- Conflicts in the provisions of IPRA and Mining laws
  - ✓ Section 3(a) of Republic Act 8371 includes within the concept of ancestral domains not only areas such as ancestral lands, forests, worship areas, hunting and burial grounds, but also pastures, residential and agricultural lands, bodies of water and mineral and other resources. Including mineral resources within the scope of ancestral domain is significant as it qualifies the Regalian Doctrine, embodied in the Constitution, which puts all mineral and natural resources under the control and disposition of the State. But Section 56, which states: "*property rights within the ancestral domains already existing and/or vested upon effectivity of this Act, shall be recognized and respected,*" excludes lands that are privately owned from the scope of ancestral domains. This has the effect of practically negating the progressive definition of ancestral domains contained in Section 3. Mining companies have taken this provision to further their interests, interpreting "vested rights" as including mining concessions. Under such an interpretation, mining concessions already existing prior to the effectivity of IPRA are excluded from the scope of ancestral domains.

5.0 RECENT AND CURRENT INITIATIVES FOR BIODIVERSITY AND TROPICAL FORESTS CONSERVATION

This section briefly reviews government, donor and NGO investments in biodiversity and tropical forests in the Philippines. This information is intended to summarize where and what activities are being implemented, to provide a glimpse of what the institution's focus is and the gross level of investment. It is suggested that the reader visit the individual websites of the various institutions for more detailed information.

5.1 Philippine Government Initiatives

5.1.1 National-level programs

Since 2004, there were at least three major planning documents that provided guidance for DENR and other related government agencies in carrying out various conservation programs for the tropical forests and biological diversity. These are:

- The 5-Year Medium Term Philippine Development Plan (MTPDP) for 2004-2010. This provides guidance for DENR, DA/BFAR, and other government agencies to program conservation related-activities as investments for achieving the MTPDP goals. The MTPDP *Thrusts 1* and *3* list specific programs in support of conserving the tropical forests and biodiversity with foreign funding assistance playing key roles. Table 5.1 below lists the major targets within these two thrusts. The MTPDP *Thrusts* provide the basis for the GoP's agencies, especially in DENR, to develop their sector plans and programs for the annual planning and budgeting exercises. DENR and other agencies are then evaluated on the basis of the delivery of their agencies' major final outputs (MFOs). Please see Annex D for details of the MTPDP and DENR MFOs related to conserving biodiversity and tropical forests.

- The DENR Forest Sector also updated its Master Plan for Forestry Development in 2003-2004. This is supposed to be the basis of the sector to plan and program different activities in support of conserving tropical forests (see Annex D for details of the targets of the Revised Forestry Master Plan).

- The ENR Framework Plan for 2003-2012 to "serve as a blueprint to guide the policy and planning staff of the Department of Environment and Natural Resources (DENR) and its bureaus in addressing the trends and challenges in environment and development for the next 10 years (2003–2012). It is DENR's road map in pursuing sustainable development given the existing and anticipated problems, policy, and institutional issues and constraints." Since it is an ENR Framework, it only provides strategic and integrated management interventions to achieve certain objectives. This Plan has a Biodiversity Resource Management Framework (BRMF).

The DENR Foreign-Assisted and Special Projects Office (FASPO) also reported (Teh, 2008) that the NIPAS law is also being upgraded to address many of it short-comings and that the amended version is expected to be completed before the end of 2008. It is expected that this will have an impact on how nationally-legislated PAs are managed and how activities are planned and budgeted.

Of the initiatives listed above, it is the MTPDP that USAID works most closely with in terms of aligning its program efforts to the GoP's planning goals. And it is the ENR Framework Plan that provides the GoP and donors with a basic strategy of biodiversity and natural resources conservation.

Table 5.1 Biodiversity-related targets under the 2004-2010 MTPDP.

Thrust 1: Sustainable and more productive utilization of natural resources to promote investments and entrepreneurship	***Thrust 3: Focus and strengthen the protection of vulnerable and ecologically fragile areas, especially watersheds and areas where biodiversity is highly threatened***
Forest Ecosystem - Targets cover production and not protection forests	Forest Ecosystem - Reforestation of 1 million hectares in 140 critical watersheds; - Augment forest protection through partnership with OGAs, LGUs, and NGOs; Pursue the incorporation of forest protection as a key result area for PNP and military contingents covering watershed areas
Biodiversity - Development and sustainable utilization of biodiversity resources	Biodiversity - Delineate 6.336 million hectares nationwide for protection (assessment and classification of 57 caves, inventory of wildlife for protection, management of 39 priority wetlands, and development of PA management plans) - Develop PAs into viable management areas (conduct zoning of 77 PAs; establish PAMBs in all proclaimed PAs, equip LGUs and communities with the tools necessary for better PA management, promote ecotourism in 29 PAs included in the National Ecotourism Master Plan, develop water user fee and plow back mechanism, facilitate IPAF remittance to the PAMB, carrying capacity studies for 29 PAs hosting development projects; Ninoy Aquino Parks and Wildlife Center as ecological destination and People's center in Metro Manila)
Coastal and Marine Ecosystems - Delineation of areas for protection, exploration and utilization through the survey and mapping of maritime zones starting in 2005 with particular emphasis on municipal waters delineation in coastal areas with offshore islands	Coastal and Marine Ecosystem - Extensively implement mangrove replanting, covering 10,500 ha and establishing 128 marine sanctuaries in cooperation with LGUs; - create 14 coastal law enforcement alliance with non-government sectors and communities; - provide technical assistance to 570 LGUs in coastal protection and management, especially in participatory planning, zoning and standard setting

Source: DENR-FASPO, 2008.

e5.1.2 Local government roles

It was noted earlier in Section 3 that LGUs are undertaking more proactive roles in managing their own resources. This is most directly evident in the increasing number of marine protected areas, but also in terrestrial sites where LGUs work with DENR to help

resolve tenure issues related to ancestral lands and with the approval of forest land use plans for the country's natural forests. DENR, working with USAID's Environmental Governance Project (EcoGov) for six years, has assisted more than 150 LGUs with devolving management and enforcement of environment and natural forests to the community level. The DENR-FASPO office has also seized on the success of these efforts and has instructed the World Bank and the Asian Development Bank to also work closely with LGUs as they implement their forestry and coastal marine conservation and biodiversity projects in other regions. (DENR-FASPO, 2008).

For example, the best practices in implementing LGU forest land use plans, coastal resource management plans, and co-management agreements in mangroves and forest lands, if adapted as templates and models, can prove themselves to be effective with other LGUs and regions in the Philippines as DENR carries out the provisions of its Memorandum Circular No. 2008-04, known as "The 2009 Upland Development Program (Reforestation and Agroforestry). This program with its PhP 2 billion pesos allocation (about US$ 40 million) in 2009 can provide "seed money" for uplands and coastal communities to rehabilitate their degraded forest lands and mangrove areas. Again, the program can be made more effective with secured property rights, participation and sustainable support of LGUs, technical assistance of local DENR, and the use of good governance principles especially in procurement of seeds and planting materials.

Guiang et.al. (2008) note that compared to DENR's budgetary resources, LGUs have tremendous potential to support decentralized and devolved forest management. The authors estimate that funding to support environmental management services, especially for devolved forest management (e.g., formerly within DENR's jurisdiction), " … *could easily triple or quadruple financial resources at the local level*." And they point out that the impact of this could be substantial, simply due to the fact that 40 to 80 percent of LGUs' total area is considered public forest and forest land (and that more than 80 percent of the country's land area is part of a watershed).

The Autonomous Region of Muslim Mindanao (ARMM) has also been proactive in signaling its support for conservation and biodiversity protection initiatives. It has worked to develop and implement a regional sustainable forest management act, shown that it is prepared to work on an integrated watershed management plan for Lake Lanao and published a handbook (*Al Khalifa*, The Steward) that outlines the basic principles of environmental governance based on teachings in the Qur'an.

5.2 Multi-lateral and Bi-lateral Donor Investment

Foreign assistance has continued to support environment and natural resources management in the Philippines. One estimate states that over on billion dollars has been invested to better manage and conserve Philippine natural resources over the past decade. Foreign assistance comes in the form of programs and projects that are funded by Official Development Assistance (ODA) and other foreign funding facilities, whether partly or wholly, on the basis of a loan or grant agreement, or similar contracts/instruments entered into by the Government of the Philippines (GOP) with governments or agencies of foreign countries (bilateral), and international or multilateral funding institutions.

From 2001-2007, foreign assisted (loan) projects (FAPs) contributed to an average of 15 percent of the total annual budget of the DENR (DENR-FASPO, 2008). The highest level of foreign assistance to the DENR in the last 7 years (US$538 million) was recorded in 2001, and then there was a steady decline until 2005. The level in 2007 was again up, but still about one-half the level achieved in 2001. The DENR is among the top three Philippine government agencies recipients of foreign grants, but has a low share (1.6%) in the entire ODA loan portfolio. The World Bank (48.9%), Asian Development Bank (35.7%), and the Japan Bank for International Cooperation (15.3%) are the three sources of DENR loan portfolio. Main contributors of grant assistance have been led by the Global Environment Facility (GEF), the Montreal Protocol, and with USAID and the Australian Agency for International Development tied for third (see Figure 5.1). Direct GEF funds are due to taper off and be more regionally focused.

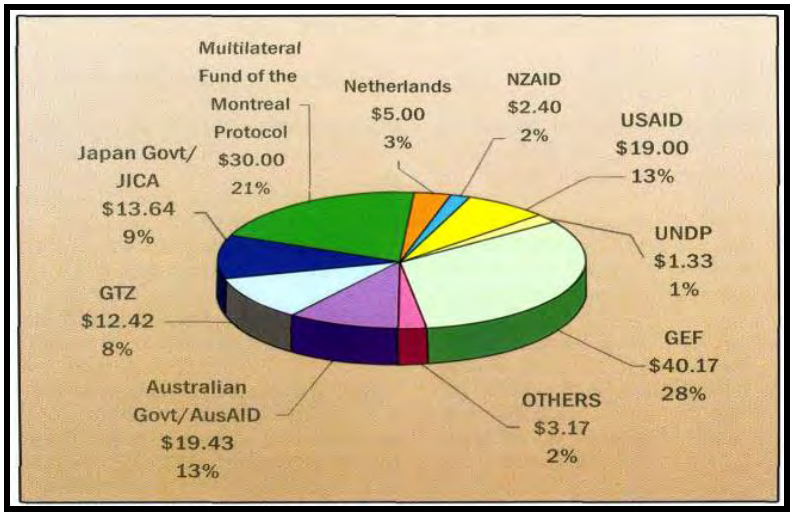


Figure 5.1 Sources of grants to DE NR, 2007. (DENR FASPO, 2008)

Figure 5.2 shows the foreign assistance by sector. DENR FASPO (2008) notes that in 2007 coastal and marine-related projects received a higher share than forestry, reflecting an overall trend of the past few years, and that assistance to biodiversity was only four percent (US $13.7 million) of the total going to environment-related projects.

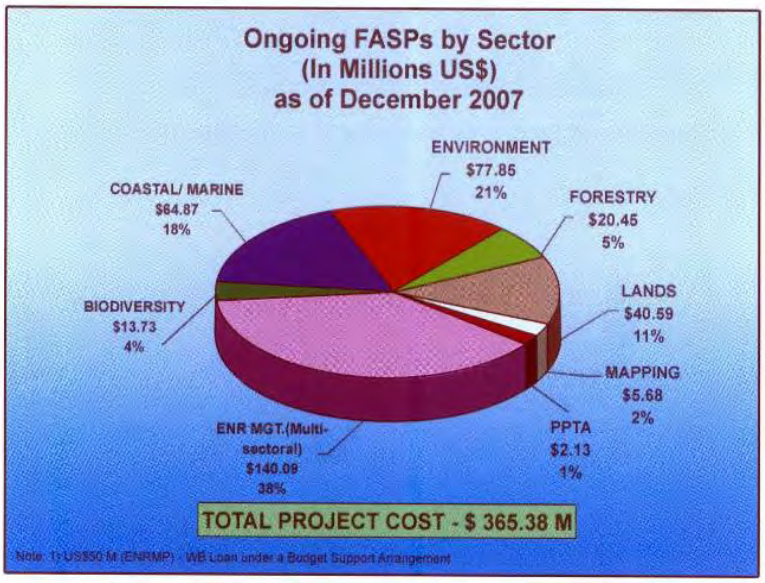


Figure 5.2 Distribution of foreign-assistance grants by sector. (DENR-FASPO, 2008)

Four projects with loan component support forestry and biodiversity conservation in the Philippines. In addition, 15 of the 26 grant projects in the current DENR foreign-assistance portfolio are said to directly or indirectly support ENR and biodiversity conservation. Five ENR loan projects (forest management, community-based forest and mangrove management, CRM, river basin and watershed management, and highland agricultural resources management) are currently in the pipeline as of December 2007 and five grant ENR-related projects with combined cost of US$30.05 million are also expected to be approved and mobilized within the next 3 years. Recently completed and on-going foreign-assisted loan and grant projects related to biodiversity and tropical forestry conservation are listed in Annex F.

5.3 Trends in Donor Technical Assistance

The donor investment has been used to test and pilot innovative approaches with the potential for improving tropical forests and biodiversity conservaton at the local, provincial, regional, national, and international levels. Investment in areas such as protected area management, marine protected areas, community-based forest management and capacity building continue to influence debate on the issues and challenges facing effective conservation and effecient management of tropical forests and biodiversity. These debates are playing out among the spectrum of stakeholders and resulting in several notable trends in key areas and emerging approaches are evident. These include:

- Improving capacity for governance-oriented planning and carrying out devolved ENR functions (over the last 3-4 years mainly by USAID, GTZ, World Bank, AusAid, and several NGOs);

- Increasing Asia-ASEAN regional collaboration on biodiversity, such as the Coral Triangle Initiative (CTI), ASEAN Regional Center for Biodiversity, and the UNDP-EU Small Grants Program.
- Opening environmental planning to include multiple stakeholders within landscapes/ecosystems and among local government units (USAID, CIDA, ADB, World Bank, GTZ, WWF, CI);
- Exploring payment for environmental services and carbon market opportunities (GEF, CIFOR, ICRAF, USAID);
- Supporting policies and program implementation specificly for tropical forest management (ITTO, FAO, USAID, World Bank);
- Promoting PA-specific improvement of biodiversity conservation initiatives (GEF, EU, FPE, PTFCF, UNDP, among others);
- Fostering collaboration and co-management approaches in developing, conserving and managing forests and forest lands (USAID, GTZ, CIDA);
- Integrating social marketing for changing downstream behaviors and social advocacy for influencing decision makers into programs (USAID, World Bank, WWF, CI, Haribon); and
- Focusing efforts at the local level to improve environmental governance (CRM zoning, forest land use planning, ancestral domain planning, preparing environmental codes, MPA networking, improved assessment of solid waste and waste water); most are specific components of projects supported by USAID, GTZ, ADB, World Bank, UNDP, and AusAid).
- Linking economic enterprise and sustainable forest use and management, especially in ancestral lands (European Commission, UNDP).
- The increasing attention among NGOs and donors towards the absence of a well-organized program to conserve biodiversity and tropical forests in ancestral land and ancestral domain areas. There are opportunities for conservation in these areas as several CADTs/CADCs are also located in NIPAS and large watershed reservations especially in Northern Luzon and Mindanao. The biggest grant facility for tropical forest and biodiversity conservation primarily directed at indigenous peoples in the Philippines comes from the Small Grants Programme for Tropical Forests in South and Southeast Asia (SGPPTF) financed by the European Commission and implemented by UNDP through the Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA).

It is worth noting that in the last 4 years, there has been no major donor funding to help subsidize the protection, development, and management of remaining tropical forests outside the NIPAS sites.

5.4 USAID Investments in Biodiversity Conservation

USAID has a long history with technical and policy assistance to environmental protection and conservation in the Philippines. Current environmental projects include site-based efforts that have a strong focus that seeks to strengthen the ability of national and local organizations (mainly LGUs) to conserve and sustainably manage forests, water

and coastal resources. Table 5.2 lists projects in the current and recent portfolio that contain significant environmental activities. Each of USAID's programs have a site-specific orientation and for the most part they work in all the major regions of the country, including ARMM areas in Mindanao with its peace and order issues.

Table 5.2 USAID-funded programs with a biodiversity component

Project Title	Implementation Period	Estimated Life of Project Funding (LOP) (In US$)
1. Fisheries Improved for Sustainable Harvest (FISH)	2003 to 2009	12,950,000
2. Partnership for Biodiversity Conservation (PBC)	2004 to 2008	325,000
3. Environmental Governance Phase 2 (EcoGov2)	2004 to 2009	18,938,800
4. Volunteers in Environmental Governance (VEG)	2004 to 2009	251,000
5. Sustainable Coastal Tourism in Asia (SCOTIA)	2004 to 2008	1,479,100
6. Local Initiatives for Affordable Wastewater (LINAW2)	2005 to 2007	299,900
7. Philippine Sanitation Alliance (PSA)	2007 to 2010	800,000*
8. Coral Triangle Initiative (CTI)	2008 to 2012	6,000,000
Total	---	41,043,800

* 40 % of project LOP funding attributed to biodiversity earmark

Source: Agoncillo, 2008

The FISH, PBC, EcoGov2, and VEG projects have clear mandates to work with local communities and LGUs for the purpose of improved conservation and management of biodiversity and natural resources within defined boundaries. EcoGov2 has had success working with local officials and the DENR in the areas of forest management, marine and coastal management, containing and managing solid waste and wastewater that threatens downstream resources, and promoting protected areas as a means of improving livelihoods. FISH also collaborates with LGUs and the BFAR to protect local marine and coastal resources and to improve the management of the fish stocks and environmental resources such as coral reefs and mangroves, which support them.

The recently completed SCOTIA and LINAW projects partnered with LGUs and resort/hotel owners located in coastal areas to improve solid waste management, and wastewater management. The PBC works with the US Department of the Interior as a cooperating partner supporting biodiversity conservation in the Philippines by increasing capacity of local and national environmental law enforcement bodies. The PBC objective contributes to USAID's mission of strengthening the ability of national and local government units and communities to address critical threats to the country's coastal resources and promoting good governance—transparency and accountability—in enforcing environmental laws.

The Coral Triangle Initiative, USAID newest program in the area of biodiversity conservation, is part of a much larger multi-donor initiative that encompasses the important coral resources in a 6-member country region. It recognizes the area's resources as a critical component of not only marine biodiversity in the global sense, but also as an absolutely essential part of hundreds of thousands of peoples' livelihoods in this region. Conservation, management, cross-border cooperation, conflict resolution,

climate change, overfishing and other elements all figure prominently in this massive and important undertaking.

Even programs that are not traditionally considered "biodiversity-focused" are and can be vehicles for reducing, eliminating, or mitigating threats to biodiversity. Experiences from USAID funded projects implemented by CI (in Sierra Madre Biodiversity Corridor), WWF, Integrated Population and Coastal Resource Management (IPOPCORM) show that integrating family planning, health objectives, livelihood and conservation activities into community-based projects can create more effective and sustainable programs. This integration of health programming with environment programming is an innovative approach that illustrates how to tackle biodiversity conservation as part of an interactive system. USAID's energy program portfolio, also has a role to play in biodiversity conservation. Through activities that promote and provide susatainabel alternative sources of fuel to firewood, there is a potential for significant impact on destruction and fragmentation of habitats.

USAID's success to date in its biodiversity protection and conservation management programs is due to the broad menu of technical assistance they provide to communities and national and local government. But the success is also due in large part to the flexibility of the programs and their ability to respond to demands for assistance from clients and client groups.

5.5 Non-Government Organizations and Conservation Foundation Investments

5.5.1 NGOs

Non-government organizations (NGOs) working with donors and with partner NGOs, POs, academe, private sector and LGUs have continued to play an important role in tropical forest and biodiversity conservation in the country. Four large Philippine environmental NGOs that are at the forefront of this initiative are the Conservation International (CI), Kabang Kalikasan ng Pilipinas Foundation, Inc (also known as World Wildlife Fund (WWF)-Philippines), Haribon Foundation for the Conservation of Natural Resources, Inc., and the Foundation for Philippine Environment (FPE).

The estimated respective contributions to tropical forestry and biodiversity conservation in the Philippines of these four major NGOs are listed in Table 5.3 below. As seen in this table the estimated total annual contribution to national biodiversity effort of these NGOs is more than US$6.3 million. The amount may be greater due to monetary and non-monetary contributions leveraged from local private and public organizations, volunteer individuals, groups and communities were included. Brief descriptions of these NGOs are found in Annex C.

Although they have widely diverse source of revenues, funding for these major NGOs mainly come from foreign donor organizations. They also partner with local and national

public and private organizations in carrying out local conservation initiatives. WWF, CI and Haribon being 'local affiliates' of an international NGO (Haribon is affiliated with Birdlife International, both WWF and CI are US-based international organizations) receive funding support from the international network. Among the four only WWF and FPE have a direct funding link with USAID/Philippines.

5.5.2 Conservation foundations

Apart from GEF, there are two other large funding programs where NGOs played a major implementation role during the assessment period. These two are the Philippines Tropical Forest Conservation Foundation (PTFCF) with current investment portfolio/total assets of US$4 million and the Critical Ecosystems Partnership Fund (CEPF), which ended in 2007, with $7 million total portfolio. The PTFCF is administered by an NGO-led Board comprising five representatives of the non-governmental sector appointed by the RP, two representatives of the US, two representatives of the RP. PTFCF was established in September 2002, when the U.S. and Philippine governments signed a Debt Reduction Agreement and Tropical Forest Conservation Agreement under the U.S. Tropical Forest Conservation Act. The debt agreement diverted $8.25 million in interest payments due on USG loans into a Tropical Forest Conservation Fund over 14 years in local currency. As of June 2008 the PTFCP has funded over 71 projects valued over US$ 1.9 million (Agoncillo, 2008).

The CEPF is funded by the Global Environmental Facility, the government of Japan, the John D. and Catherine T. MacArthur Foundation, and the World Bank. Conservation International serves as the regional implementation team (RIT) for CEPF in the Philippines. CEPF's investments concentrated on the following niche: fostering civil society support and advocacy for broad-based biodiversity conservation on a corridor scale in the Sierra Madre, Palawan and Eastern Mindanao and on financing globally threatened species conservation in areas (e.g., Cebu, Negros, Mindoro, Panay, and Tawi-Tawi) outside of the major remaining forest landscapes. As part of its commitment to learning and innovation, CEPF funded high-risk projects (unmet or under financed conservation need) that other donors might not finance.

Since its inception in 2002 it has funded a total of 59 projects valued at US$ 7.0 million. (The CI portion is slightly less than 50 percent of the portfolio budget.)

Table 5.3 Investments in conservation and biodiversity of four major Philippine conservation NGOs.

NGO	Projects implemented	Specific interventions	Geographic coverage	Estimated investment
WWF-Phil	21 projects (only 16 projects were funded in 2007)	Coastal resource and fisheries conservation, MPA networking, PA management, Environmental User's fee, integrated coastal management, population, health and environment approach to conservation, dolphin conservation	Tawi-tawi, Cebu, Bohol, Batangas, Mindoro, Sorsogon, Palawan, Sibuyan, Bataan,	P 380,415,188 (2004-2007) or approximately more than US$8.43 million *Average annual investment of US$2.11million /year*
Haribon	18 biodiversity and environment related projects (2006 data only)	Biodiversity assessment and monitoring, constituency-building, policy advocacy, awareness, networking, education, support-mobilization, training; community-based mangrove management, environment and social valuation, governance and local development sustainable livelihood, strengthening the judiciary, marine sanctuary monitoring	Mindoro, Panay, Cebu, Negros, Surigao del Sur, Zambales, Gen. Nakar (Quezon), Bulacan, Mindoro Occidental, Nueva Ecija, Rizal, Agusan del Sur,	P86,686,801 (2006) or approximately *US$1.93 million*
CI	16 local projects funded under CEPF from 2002-2007	Biodiversity surveys in biodiversity corridors, scientific studies, PA establishment and strengthening, carbon sequestration and monitoring program, agroforestry, ecotourism and other sustainable livelihood, conservation financing to finance sustainable watershed management; KBA identification	Sierra Madre Mountains (Quirino Protected Landscape, Penablanca Protected Landscape and Seascape), Palawan (Mt. Mantalingahan and Tubbataha Reef National Marine Park), Eastern Mindanao, Cebu, Negros, Mindoro, Panay, and Tawi-Tawi	Total of US$3,305,443 from CEFP (2002-2007); amounts that came from other donors and expended on non-CEFP projects not included *Average annual investment of US$550,907.2 from CEFP*
FPE	73 biodiversity and forest conservation-related projects from 2003 to March 2006	Terrestrial protected area management, general biodiversity conservation, sustainable development, CRM/MPA projects, biodiversity conservation involving Indigenous People/Ancestral Domain, community-based biodiversity management in a watershed, community-based forest management and agroforestry.	Bulacan, Cagayan Valley, Ligawasan Marsh, Northwest Panay, Caraga, Abra, Dinagat Island, Mt. Malindang Natural Park, Zambales Mt. Range, Mt. Talinis and Twin Lakes, Palawan, Negros Oriental, Northwest Panay, Bohol, Mt. Banahaw, Mt. Cristobal, Albay,	PhP 76,700,483 (more than US$1.7 million) from 2003-March 2006 *Average annual investment of US515,152*

6.0 OPPORTUNITIES AND RECOMMENDATIONS

6.1 Actions Necessary to Conserve Biodiversity and Tropical Forests

A quick look to the end of this report in Annex F and 5.2 in the previous section shows extensive investment in biodiversity and tropical forest conservation throughout the Philippines. DENR FASPO-initiated CBFM Policy Dialogue, DA-BFAR and MSN initiated forum on marine protected areas, the ADB-supported Philippine Forestry Development Forum in 2005, and the FAO-FMB's Philippine Forestry Outlook Study 2020, and other efforts at donor coordination and communication show that this is a complex task.

Yet the challenges remain. Section 4.0 highlights that direct threats to biological resources continue to be extensive despite the millions of dollars of effort expended. In the face of ineffective environment and natural resources institutions crippled by overlapping mandates and laws and lack of resources, a clear national champion has not emerged to develop and push an overarching vision that defines effective strategies. Perhaps the biggest challenge for the Government of the Philippines and donors seeking to mitigate the direct threats to biodiversity and tropical forests in the country are the pressure placed on resources by the interplay of population/migration, poverty, and unequal wealth distribution.

As a response to the interdependence of these threats, successful traditional approaches should be modified to favor an ecosystem-based approach – requiring transparent and participatory coordinated planning, collaboration. This means that strategies and interventions for conservation must regard flora and fauna, the economic conditions of people who depend on the forests or biological diversity, and the most appropriate governance structures. In this way, biodiversity conservation is clearly connected with the socioeconomic outcomes in NIPAS, KBAs, or CBFM/CADT/CADC areas. The GRP and donors should prioritize conservation investments and efforts in five areas, listed here in descending order of importance.

(a) **NIPAS located in priority KBAs.** In these areas, DENR can pool limited resources to strengthen current capacity, exercise their full authority and mandate, and establish long-term sustainable co-financing arrangements. As national "set asides", these areas are attractive for concerted awareness and advocacy campaigns, co-financing, co-investments, in-depth research and analysis, piloting innovations, and collective enforcement efforts.

(b) **Key Biodiversity Areas (KBAs).** Priority should be placed to those with emerging local champions (LGU leaders, civil society groups, national line agencies, or academic institutions) who can be supported by local stakeholders, including the private sector and national agencies. These areas

may or may not be under the NIPAS, but are clearly defined as a critical habitat or part of the extent of the distribution of vulnerable, irreplaceable, and even trigger species that need urgent conservation. There is currently no institution or organization that has the mandate to coordinate convergence of biodiversity conservation work within defined KBAs. LGUs, however, are going to be the key actors – provincial governments, cluster of cities and/or municipalities. These KBAs are ideal for modeling or scaling up integrated approaches to address issues related to sustainable livelihoods, ecotourism, pollutants, mining, environmental services, safety nets for climate change impacts, and urbanization. Conservation in KBAs will be guided by the Local Government Code, Fisheries Code, Agriculture and Fisheries Modernization Act of 1997 (AFMA), DENR-DILG JMC 2003-01, IPRA Law, Clean Water Act, Ecological Solid Waste Management Act, Mining Law, Environmental Impact Statement (EIS) law. These can be further strengthened with local ordinances, approved comprehensive land use plans (CLUP), joint Memorandums of Agreement (MOA) for carrying out approved forest land use plan (FLUP), approved CRM zones and municipal water zones plans, and approved investment plans of LGUs.

(c) **CBFMAs and CADTs/CADCs areas, MPA clusters within bays or islands in and outside NIPAS or KBAs.** There are more than 5 million hectares of forestlands and mangroves that are covered by different community tenure management agreements or rights. Most of the MPAs are under the de-facto stewardships of coastal communities. These communities can make or break conservation of the remaining natural forests and biodiversity. They need incentives, initial support, subsidy, capacity building, and technical guidance in conserving their forests, marine sanctuaries, and mangroves and, eventually, get out of poverty. The Executive Order 263 (CBFM), the Executive Order 533 (Integrated Coastal Resource Management), the IPRA, and NIPAS, and Mining Laws (both for small and large scale) are the key legislations that will guide conservation efforts with community tenure holders. In working with communities (upland migrants and IPs), support from LGUs with technical guidance from DENR, DA/BFAR and other line agencies or NGOs are crucial. For instance, among IPs or communities who are engaged in small scale mining or those with tie up with mining companies will need to develop and internalize the negative impacts of mining, short and long term, of mining both on- and off-sites. In many cases, the LGUs together with national agencies and civil society groups have to develop local programs to assist communities review and evaluate EISs (environmental impact statements) before embarking on mining activities.

(d) **Non-NIPAS and non-KBAs where local stakeholders such as LGUs, NGOs, communities, private sector, and academic/training institutions are willing to develop and test models and processes.** These initiatives must be demand-driven and must directly contribute to making conservation work more efficient and sustainable over time. These initiatives, however, have to

be linked with DENR, National Commission on Indigenous Peoples (NCIP), Department of Agriculture), LGUs, and their respective coalitions, i.e., the leagues as institutions that have mandates to address biodiversity conservation.

Each of the above entry points needs effective institutions to make conservation efforts work – guided with clear vision, mission, and goals. Well-defined strategies are required to address both conservation of tropical forests and biodiversity and the socio-economic needs and rights of LGUs and communities. These strategies should include sustainable financing mechanisms; and M&E system needs to be put in place and linked to biodiversity conservation and poverty reduction. These institutions must be able to resolve conflicts, enforce laws, negotiate and ward off existing and potential sources of threats, i.e., mining proponents, illegal loggers. This means that DENR must become effective in conserving biodiversity and tropical forests in NIPAS; LGUs become responsible, accountable, and have authority in pursuing collective actions to conserve biodiversity in KBAs; and that community tenure holders (CBFMAs, CADCs/CADTs) become effective and have adequate support systems (from their local leaders, DENR, NCIP, NGOS, LGUs, donors, private sector) to manage their tenured forest lands.

The NIPAS does help to delineate some of the important tropical forest and significant biodiversity areas. However, it does not encompass the vast majority of biodiverse areas, nor does it prioritize ones that are most critical. Plus its mandate is also in conflict with other tenure holders, especially at the LGU level where management is proving to be the most effective. NIPAS should not be scrapped, but donors need to collaborate with each other, NGOs, the national government and, most importantly, with LGUs, to arrive at a more effective conservation strategy to help save the Philippines natural heritage.

Key Biodiversity Areas (KBAs), both marine and terrestrial, offers a solid alternative to NIPAS and brings the priorities into focus. They can also provide an "initial rallying point" for the divergent interests of the local, regional, and national stakeholders. Data and information already exist and have been substantially mapped to show where the hottest of the threatened hotspots are. DENR, together with local champions and in partnership with Department of the Interior and Local Government (DILG), DA, and Department of Tourism (DOT), can lead in promoting the awareness about these resources and work with the Regional Development Councils (RDCs), donors, private sector, media groups, NGOs and the LGUs to:

- Provide direction, guidelines, and major coordination of collective efforts for KBA-based conservation of tropical forests and biodiversity;
- Develop and assist implementation of an M & E system for key performance indicators for national, regional and LGUs;
- Provide a road map and strategy for carrying out awareness, media, advocacy, and social marketing campaigns that focus on the value of coordinated, collective, and collaborative conservation efforts in top priority KBAs.

- Advocate for increased and continuing budget support for implementation of convergent initiatives that are carried out by the LGUs, DENR, DA, NGOs, NCIP, DOT, and other national and local agencies.

These efforts should not be at the expense of NIPAS, but rather be a serious effort to resolve conflict issues and to complement the DENR/PAWB-led efforts. In addition, the GRP and donors should work quickly (within the next one to two years) to establish an action agenda for the Priority 1 KBAs and MKBAs.

Sections 118 and 119 of the FAA specifically call for the identification of actions necessary to address the threats to biodiversity and tropical forests. These constitute "global" actions necessary in the Philippines, and are not specifically the responsibility of USAID. In addressing conservation initiatives to reduce threats to biodiversity and tropical forests, either in priority sites, designers and implementers should:

- **Utilize the most successful past and on-going experiences for learning and innovation models.** As mentioned earlier, many of the lessons and best practices from completed and ongoing projects, initiatives of LGUs (especially those best practices that were recognized by a credible national awarding committee such as the Galing Pook Awards), and those from the private sector (non-government and for profit organizations) can "jump start" the process of arriving at convergent approach to conserving biodiversity and tropical forests in NIPAS within KBAs, top KBAs, community tenure holders's forestlands, and even those outside the KBAs or NIPAS sites. For instance, the DENR-EcoGov best practices in working with LGUs especially in forestry and coastal resources can provide starting and entry points in implementing the DENR MC 2008-04, "The 2009 Upland Development Program (Reforestation and Agroforestry)." The LGUs with approved FLUPs and MOAs with DENR can easily absorb the PhP 2 billion pesos (about US $ 40 million) funding in 2009 for assistance to community tenure holders, rehabilitation in LGU-DENR co-managed forests, conservation of NIPAS sites, and enrichment and regeneration of watershed reservations. If allocated and expended properly, the PhP 2 billion pesos can significantly reduce threats to biodiversity and remaining natural forests. The LGUs and community tenure holders and their members can cover the maintenance costs as their counterpart after 2009.

- **Strengthen and stabilize individual tenure and property rights in NIPAS, watershed reservations, co-managed forestlands, mangrove areas, MPAs, CBFM and CADT areas.** There is an urgent need to immediately provide long-term incentives for legitimate occupants. Processes in recognizing property rights, initial support systems, and mechanisms for holding the occupants accountable of their activities in conservation areas should be developed and carried out with LGUs, local DENR and DA. This approach needs to leverage the support of LGUs, DA, and other concerned agencies in priority conservation areas.

- **Assist community tenure holders, watershed managers, protected area supervisors, alliances, PAMBs, MPA networks, and LGUs to develop and carry out local enforcement system for easier monitoring, reporting, and legal or paralegal actions.** Ideally, these actions should be part of the approved resource management plans for budgeting and implementation.

- **Promote and facilitate self-sustaining active partnerships with NGOs, donors, and private sector to support a common vision and implementation.** In all of the high conservation areas, there are many threat-reducing opportunities that can be addressed through partnerships, collaborative agreements, co-investments, joint implementation, and co-financing to leverage long-term local commitments, resources, and sharing of knowledge, skills, and resources.

- **Advocate for the correction of unequal allocation of IRA support and subsidy to encourage LGUs and community tenure holders to conserve biodiversity and tropical forests.** Many LGUs need assistance in aligning their zoning and land use regimes with their sub-watershed divides and CRM zones. There should be a premium for LGUs and tenure holders to conserve biodiversity and tropical forests within their jurisdiction, especially if these resources benefit a greater part of society i.e. Lake Lanao Watershed, Liguasan Marsh, Sierra Madre Natural Park, Mt. Apo, Mt. Kitanglad, Davao Gulf, and Danajon Bank.

- **Recommend technically sound and socially acceptable mitigating measures for any form of environmental damages resulting from use, intervention, or investments.** Payment for environmental services (PES) is one option that could be explored more fully.

- **Develop local capacities.** There is continued need for skills development in areas of strategic conservation planning following participatory processes, forging agreements among stakeholders, developing collective actions, strengthening access and property rights, monitoring mutually agreed conservation indicators of key biodiversity and tropical forests, diversifying financing, and enforcing environmental laws and regulations.

6.2 Extent to Which USAID Actions Meet Conservation Needs

Current USAID Programs

USAID has a significant history working in the environment sector in the Philippines and is recognized as a valuable partner in efforts for improved health, education, energy, governance and economic development. Across the environment portfolio, USAID has made valuable inroads for the long term mitigation, reduction, and elimination of identified threats across the Philippines, including conflict-areas of Mindanao.

Many completed and ongoing USAID projects, such as EcoGov, FISH, CRMP and Governance and Local Democracy Project (GOLD), have significant experience in the dealing with LGUs. In the process of providing technical assistance and building local capacities, these projects provide examples on how LGUs can individually and collectively conserve tropical forests and biodiversity in shared ecosystems such as bays, NIPAS, and watersheds. LGUs are realizing the importance of adopting and integrating different measures that manage their remaining forests and marine habitat, rehabilitate degraded areas, and improve management of solid wastes and waste water in order to support communities through improved fisheries, environment-friendly investments, and better local environmental governance systems.

Both the FISH and EcoGov projects have demonstrated how national agencies, such as DENR and Bureau of Fisheries and Aquatic Resources (BFAR), can help LGUs and communities plan and carry out decentralized ENR functions to reduce threats to conserving forests and biodiversity. These projects continue to lead conservation efforts in generating models for collaboration, networking, habitat management, collective enforcement, and improved fisheries and coastal resources management through effective zoning regimes. They have developed models and processes that can easily be replicated and scaled up with LGUs, DENR, DA/BFAR, and local groups.

USAID's EcoGov project has proven that agreements and tenure instruments for tropical forests, mangroves, and bare forestlands— with provisions to address individual property rights, co-management agreements, joint FLUP implementation MOAs, and public-private partnership agreements- can be successfully promoted and adopted by local farmers and citizens to formalize their responsibilities as landscape stewards. Governors and mayors have championed forest and marine resources management at the local level and there have been direct gains in conserving and protecting those resources. Local enforcement of environmental laws substantiated with local ordinances has improved in LGUs with approved and implemented FLUPs, CRM/MPA, and solid waste management plans. Several LGUs have started to update/revise their CLUPs which integrate their environment and natural resources (ENR) plans with current land uses, planned investments and expansion plans to address and reduce on- and off-site environmental damages.

A key element in USAID approaches in helping to protect environmental resources has been in the flexibility of its programming responses. The application of its technical assistance packages has been demand-driven. Activities that serve to promote conservation of tropical forests have not been foisted on fragile sites or communities; management planning expertise has not been the focus of national campaigns to shore up marine protected areas, nor has technical assistance to plan solid waste reduction or wastewater treatment been a precondition for helping to clean up estuaries and bays. The assistance has been provided primarily because it has been asked for by leaders and mentors in the provinces and in the LGUs.

In many cases, this flexibility has been the link in getting commitment of local stakeholders. USAID's demand-driven approach in providing technical assistance has

generated pioneering and innovative models that are extremely valuable in strengthening conservation efforts. This has been true in testing models and processes and introducing cost effective technologies for reducing pollutants from settlements and urban areas that threaten biodiversity in freshwater bodies and coastal areas. It has also been true in developing science-based approach to MPA networking, promoting clustering of disposal facilities, and application of business planning approaches to reduce waste management. Synergies have also been achieved with USAID-funded projects in health, education, and energy.

USAID also has a few programs that while not specifically focused on biodiversity or tropical forestry, address several of the root causes identified in this report. For example, the Philippine Sanitation Alliance (PSA) provides more than 900,000 Filipinos with access to basic sanitation services to reduce public health risks and promote increased productivity. The PSA's focus is on developing and implementing stakeholder-driven sanitation facilities and promoting social awareness on the benefits of proper hygiene. Among other activities, US-Asia Environmental Partnership (UAEP) provides support to local governments and community-based groups to solve sanitation and wastewater problems and to share best practices to reduce pollution in rivers and lakes. Local Initiatives for Affordable Wastewater Treatment is testing low-cost wastewater treatment systems with four local governments through innovative financing schemes.

Proposed New Country Strategy (2009-2013)

At the time of this assessment USAID/Philippines was in the process of laying the foundation for a new Country Assistance Strategy for 2009-2013. The Philippines has been selected as a pilot country for the new Pilot Country Strategic Plans which utilize the new U.S. Government Foreign Assistance Framework and link objectives with State Department goals in each of USAID's regions.

Given the status of future programming, this report is unable to fully articulate which proposed actions can meet conservation needs. However, based on the draft CAS made available on USAID's website, addressing threats to biodiversity and tropical forestry will be a critical component of any action designed to contribute to achieving the overall strategic vision of a "well-governed and stable democracy that is able to meet the needs of its people, especially the poor." USAID has four assistance priority goals under consideration which programs will address:

- Accelerating growth through improved competiveness
- Strengthening governance, rule of law, and the fight against corruption
- Investing in people to reduce poverty
- Promoting a peaceful and secure Philippines

While the promotion of better environmental management currently falls under Goal 3, "Investing in people to reduce poverty," the findings of this report indicate that due to the range of root causes of direct threats to biodiversity and tropical forestry, cross-sectoral actions will likely achieve important results in the mitigation, elimination, or reduction of those threats. As the Philippine economy and the livelihood of its citizens largely rely on

a healthy environment, USAID designs for competitiveness programs, anti-corruption efforts, as well as conflict-mitigation programs each provide an opening for the integration of actions to combat threats to biodiversity and tropical forestry.

6.3 Recommendations for Future USAID Investment

This assessment has reviewed the issues and threats to the Philippines biodiversity and tropical forests and also examined actions for the Government of the Philippines, donors, LGUs, and NGOs that are attempting to address these threats. This section prioritizes recommendations for future investments that USAID/Philippines will make to fund activities aimed at conserving and managing tropical forests and biodiversity. These recommendations are made based on the threats identified in this report, past USAID successes, and current programming in the USAID portfolio. Coordination with the GRP and other donors will secure and maximize the investment potential of USAID monies.

- **Increase investment tied to activities which address improved solid waste management, water and wastewater sanitation, and pollution that threaten biodiversity in coastal areas and inland waterways.**

Solid waste, water/wastewater sanitation, and pollution due to population pressures, agricultural run-off, and mining are critical threats to the Philippines unique marine and freshwater biodiversity. The health of these water systems is integrally linked to the health of the population, both physically and financially. The transitional coastal zones are especially vulnerable. Fish populations, the biodiversity of the coastal habitats on which fish populations depend, and the environmental quality of the water resources in these densely populated zones is very much at risk. USAID urgently needs to continue its support in these areas, to continue working with the government, other donors and NGOs in these zones. This is also an area where there are opportunities for integrating various LGU ENR programs, vertically within the ridge to reef landscape, or horizontally among different agencies and sectors. The integration should be focused in achieving reduced negative environmental impacts of current and future zoning and investments especially to freshwater resources, transition areas, and coastal resources.

- **Use investment to leverage and promote innovative financing mechanisms and partnerships for conservation and management of biodiversity and tropical forestry.**

Much of the ineffectiveness of national government programs to conserve and manage the biological wealth and diversity of the Philippines stems from the lack of financial resources and manpower. The devolution of responsibilities to the LGUs has meant a large patchwork of conservation and rehabilitation of these same areas, but usually a more effective one. Local participation has resulted in better control and enforcement, and a greater interest in management by a wider range of participants, which begins to address the lack of manpower. However, the lack of financial resources remains a significant challenge to effective conservation efforts.

USAID programs can address this shortfall through promoting the development, testing, and scaling up of innovative financing mechanisms. Nascent PES schemes are under development, but national level policies should be reviewed and analyzed so that revenues from payment for environmental services and other incentives will benefit LGUs and communities as a result of their efforts to conserve forests and biodiversity in their localities and tenured areas. USAID can draw lessons and approaches from its completed and ongoing initiatives and research with the EcoGov and FISH projects as well as tap in to similar experiences it has sponsored and learned from around d the globe. As part of this effort, increased emphasis should be placed on redefining the value of natural resources to local communities in order to catalyze a shift in economic thinking about the longer term financial benefits of sustainable resource management.

Similarly, USAID investment can be successfully used to leverage private sector investment, as well as promote partnerships between the private sector and LGUs or national agencies. There are increasing examples in the Philippines and elsewhere of innovative partnerships developed between public and private sectors in order to meet the shortfall of financing on the part of the public sector and the need for increased social investment on the part of the private sector.

- **Identify priority conservation areas for biodiversity and tropical forestry and invest in their champions.**

There are significant priority areas for conserving tropical forest and biodiversity that are not receiving the attention that is needed, and they will be lost if there is a continuation of the status quo. Using the KBA as a selection criteria to pinpoint piority areas, USAID should work with the GRP and LGUs to support cities, municipalities and provinces in these areas and foster champions for conservation. USAID has a definite comparative advantage in working with LGUs, DENR and BFAR in areas of forest, marine and biodiversity management due to successful on-going relationships. USAID can:

a. Continue supporting LGU-led natural resource conservation and protection, especially for landscape or shared ecosystem levels (and to work with partners in areas where ENR investment goals can be most effectively achieved);
b. Gradually align and implement its current portfolio to generate best practices and processes on how provinces and LGUs in priority KBAs and MKBAs can effectively reduce threats to tropical forests and biodiversity through their individual and collective actions;
c. Initiate donor and NGO coordination and sharing in support of KBAs/MKBAs at local, national and global region levels; and
d. As a supplement, consider assisting with the development and implementation of training and capacity-building programs on conserving tropical forests and biodiversity for local professionals and implementers. This training can also be provided to strengthen capacities of LGU ENROs especially those LGU clusters located in top KBAs, and professionalize the DENR NIPAS Protected Area Supervisors and their staff.

- **Invest in integrated program designs that address multiple root causes of direct threats to biodiversity conservation and tropical forestry.**

A critical analysis of the indirect threats to biodiversity conservation and tropical forestry clearly shows a crossover of causes ranging from economic, social, and political. Addressing just one of these pillars is unlikely to effect lasting results. USAID has had success in programs, such as IPOPCORM, which marry technical sectors together and address the issues with a solution favorable to cross-sectorial development challenges. Programs with components in energy, health, water/wastewater, even microfinance, can lend themselves to achieving USAID biodiversity conservation objectives when appropriately designed. Thus, USAID should be open to consider programs outside the Environment portfolio as conduits for investment in biodiversity conservation.

- **Biodiversity and tropical forestry policy harmonization and continuing support of devolution process remains a critical area for investment.**

USAID's successes in addressing the direct threats listed at the beginning of Section 4 in Table 4.1 have been most notable at local levels where there have been opportunities to directly deal with institutional weaknesses, one of the root causes for many of the other threats. This has also meant that time, resources and diplomatic capital be expended at the national and regional levels of DENR and BFAR. Institutionally, these are agencies with mandate to address policy and implementation support gaps in conserving tropical forests and biodiversity. The recommendations listed here recognize that this is necessary and that there are also benefits that accrue from these actions. Future activities and planning should not ignore this fact either.

- **Demand-driven and flexible programming will yield a more sustainable return on investments in technical assistance for biodiversity conservation and tropical forestry.**

The demand-driven approach to technical assistance has proven successful in almost all the provinces where USAID is engaged. The ownership associated with the activities has helped them to grow, to be popular with local communities and provided an ironclad link with local livelihoods. The techniques and public awareness tools used to promote this approach are known and can be customized to different situations. USAID needs to continue to support this approach and use it inconjuction with identified conservation priority areas to reduce threats to biodiversity and the fragmentation and destruction of tropical forests, especially at the LGU level. Ongoing initiatives on developing low-cost waste water treatment approaches and technologies based on interest and commitments of LGUs are expected to yield "best practices" that are going to be useful to LGUs and communities who are in top priority KBAs.

- **Use the momentum of successful activities and invest in scaling up and institutionalizing best practices of biodiversity conservation and tropical forestry.**

With the willingness of the DENR regional leadership and provincial governments and several municipalities within their jurisdiction, provincial core teams are being trained, coached, and periodically mentored to help other LGUs. These local organizations are emerging as sources of support for their LGUs, as their emerging clients. EcoGov 2 has observed this happening in Northern Luzon – Quirino and Nueva Vizcaya on forest land use planning and solid waste and management. The regional DENR offices and the provinces of Zamboanga del Sur, South Cotabato, and Sarangani, Negros Oriental, and Bohol are following this pattern since 2007. As an approach, provincial government partnership with regional DENR especially with the support and availability of capable service providers (i.e. academic institutions or NGOs) is emerging as a viable institutional approach in carrying out concerted, collective actions in KBAs.

- **Assume a leadership role with investments in local climate change initiatives that develop strategies and actions that will mitigate threats to marine and terrestrial biodiversity and tropical forests.**

Climate change will soon be a direct threat to biodiversity and tropical forests in the Philippines. Changes are apt to occur to terrestrial habitats that will impact directly on many of the species already on the endangered lists, but it will probably be the marine and coastal environments that will encounter more of a widespread impact. With more than 7,000 islands and with more than 800 communities and cities at sea level, the Philippines is especially vulnerable and susceptible to flooding and rise of water levels that may result from climatic changes.

USAID's current activities with the Coral Triangle Initiative should help to provide important information both from both a resources perspective and from a livelihood perspective. It can also draw on its global experiences in similar situations to help construct a more proactive agenda. Monitoring climate, weather patterns, and sea level are an integral part, but developing alternative strategies for what these coastal populations need to think about and to prepare for now are critical. USAID should be working in each of its sectors and with counterpart agencies and other donors to make this happen in a cost-efficient and effective manner.

The Philippines also offer great opportunities in capturing/sequestering carbon from plantations, assisted natural regeneration, mangrove rehabilitation, reduced forests and grassland fires and proper waste management. The United Nations program for Reduced Emissions from Deforestation and forest Degradation (REDD) warrants a higher profile in the Philippines. Much of the emphasis has been on the deforestation, but DENR, and especially the LGUs could work towards lessening forest degradation. Recent estimates (Putz et. al., 2008) note that in places like the Philippines improved forest management through reduced impact logging and other conservation activities could account for emission reduction equivalent to 10 percent of those available from avoided

deforestation. USAID, in its currently funded projects, has been focusing on this, but there is room for more focused assistance now and into the future.

USAID can continue supporting measures to reduce emission or increase sequestration of carbon through several means. Continue supporting LGUs and local DENR in selected KBAs to further refine and simplify approaches that will result to collaborative, co-financing, partnership-focused, and incentive-and market-driven mechanisms for developing agroforestry systems, tree farms, perennial orchards, assisted natural regeneration and reforestation of critical watersheds. USAID and other donors can help re-direct government subsidies (such as the initial funds from the Value Added Tax (VAT) surplus for DENR in its GAA for 2009 that will support its Upland Development Program) for upland rehabilitation by leveraging donor funds to provide training, technical assistance, policy analysis and modification, and development of governance-oriented M&E system at the LGU level. It is expected that this approach will provide incentives (improved property rights, LGU support, market linkage, initial planting subsidy, etc.) for different tenure holders – private sector, communities, civil society, etc – to willingly invest their own available or accessible resources for developing fuelwood farms, tree farms, agroforestry, and perennial orchards. It is also expected that this approach may facilitate a local and market-based approach that will lead towards more public-private parternship in developing forest lands, mangrove areas, sanctuaries, ecotourism sites, and common fishing grounds, and an environmentally-sound mariculture systems.

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A N N E X E S

Annex A

FOREIGN ASSISTANCE ACT SECTIONS 118 AND 119

Part I, Section 118\73\ - Tropical Forests

(a) Importance of Forests and Tree Cover.--In enacting section 103(b)(3) of this Act the Congress recognized the importance of forests and tree cover to the developing countries. The Congress is particularly concerned about the continuing and accelerating alteration, destruction, and loss of tropical forests in developing countries, which pose a serious threat to development and the environment. Tropical forest destruction and loss--

(1) result in shortages of wood, especially wood for fuel; loss of biologically productive wetlands; siltation of lakes, reservoirs, and irrigation systems; floods; destruction of indigenous peoples; extinction of plant and animal species; reduced capacity for food production; and loss of genetic resources; and

(2) can result in desertification and destabilization of the earth's climate. Properly managed tropical forests provide a sustained flow of resources essential to the economic growth of developing countries, as well as genetic resources of value to developed and developing countries alike.

(b) Priorities.--The concerns expressed in subsection (a) and the recommendations of the United States Interagency Task Force on Tropical Forests shall be given high priority by the President--

(1) in formulating and carrying out programs and policies with respect to developing countries, including those relating to bilateral and multilateral assistance and those relating to private sector activities; and

(2) in seeking opportunities to coordinate public and private development and investment activities which affect forests in developing countries.

(c) Assistance to Developing Countries.--In providing assistance to developing countries, the President shall do the following:

(1) Place a high priority on conservation and sustainable management of tropical forests.

(2) To the fullest extent feasible, engage in dialogues and exchanges of information with recipient countries--

(A) which stress the importance of conserving and sustainably managing forest resources for the long-term economic benefit of those countries, as well as the irreversible losses associated with forest destruction, and

(B) which identify and focus on policies of those countries which directly or indirectly contribute to deforestation.

(3) To the fullest extent feasible, support projects and activities--

(A) which offer employment and income alternatives to those who otherwise would cause destruction and loss of forests, and

(B) which help developing countries identify and implement alternatives to colonizing forested areas.

(4) To the fullest extent feasible, support training programs, educational efforts, and the establishment or strengthening of institutions which increase the capacity of developing countries to formulate forest policies, engage in relevant land-use planning, and otherwise improve the management of their forests.

(5) To the fullest extent feasible, help end destructive slash-and-burn agriculture by supporting stable and productive farming practices in areas already cleared or degraded and on lands which inevitably will be settled, with special emphasis on demonstrating the feasibility of agroforestry and other techniques which use technologies and methods suited to the local environment and traditional agricultural techniques and feature close consultation with and involvement of local people.

(6) To the fullest extent feasible, help conserve forests which have not yet been degraded, by helping to increase production on lands already cleared or degraded through support of reforestation, fuelwood, and other sustainable forestry projects and practices, making sure that local people are involved at all stages of project design and implementation.

(7) To the fullest extent feasible, support projects and other activities to conserve forested watersheds and rehabilitate those which have been deforested, making sure that local people are involved at all stages of project design and implementation.

(8) To the fullest extent feasible, support training, research, and other actions which lead to sustainable and more environmentally sound practices for timber harvesting, removal, and processing, including reforestation, soil conservation, and other activities to rehabilitate degraded forest lands.

(9) To the fullest extent feasible, support research to expand knowledge of tropical forests and identify alternatives which will prevent forest destruction, loss, or degradation, including research in agroforestry, sustainable management of natural forests, small-scale farms and gardens, small-scale animal husbandry, wider application of adopted traditional practices, and suitable crops and crop combinations.

(10) To the fullest extent feasible, conserve biological diversity in forest areas by--

(A) supporting and cooperating with United States Government agencies, other donors (both bilateral and multilateral), and other appropriate governmental, intergovernmental, and nongovernmental organizations in efforts to identify, establish, and maintain a representative network of protected tropical forest ecosystems on a worldwide basis;

(B) whenever appropriate, making the establishment of protected areas a condition of support for activities involving forest clearance of degradation; and

(C) helping developing countries identify tropical forest ecosystems and species in need of protection and establish and maintain appropriate protected areas.

(11) To the fullest extent feasible, engage in efforts to increase the awareness of United States Government agencies and other donors, both bilateral and multilateral, of the immediate and long-term value of tropical forests.

(12) To the fullest extent feasible, utilize the resources and abilities of all relevant United States Government agencies.

(13) Require that any program or project under this chapter significantly affecting tropical forests (including projects involving the planting of exotic plant species)--

(A) be based upon careful analysis of the alternatives available to achieve the best sustainable use of the land, and

(B) take full account of the environmental impacts of the proposed activities on biological diversity, as provided for in the environmental procedures of the Agency for International Development.

(14) Deny assistance under this chapter for--

(A) the procurement or use of logging equipment, unless an environmental assessment indicates that all timber harvesting operations involved will be conducted in an environmentally sound manner which minimizes forest destruction and that the proposed activity will produce positive economic benefits and sustainable forest management systems; and

(B) actions which significantly degrade national parks or similar protected areas which contain tropical forests or introduce exotic plants or animals into such areas.

(15) Deny assistance under this chapter for the following activities unless an environmental assessment indicates that the proposed activity will contribute significantly and directly to improving the livelihood of the rural poor and will be conducted in an environmentally sound manner which supports sustainable development:

(A) Activities which would result in the conversion of forest lands to the rearing of livestock.

(B) The construction, upgrading, or maintenance of roads (including temporary haul roads for logging or other extractive industries) which pass through relatively undegraded forest lands.

(C) The colonization of forest lands.

(D) The construction of dams or other water control structures which flood relatively undegraded forest lands.

(d) PVOs and Other Nongovernmental Organizations.--Whenever feasible, the President shall accomplish the objectives of this section through projects managed by private and voluntary organizations or international, regional, or national nongovernmental organizations which are active in the region or country where the project is located.

(e) Country Analysis Requirements.--Each country development strategy statement or other country plan prepared by the Agency for International Development shall include an analysis of-

(1) the actions necessary in that country to achieve conservation and sustainable management of tropical forests, and

(2) the extent to which the actions proposed for support by the Agency meet the needs thus identified.

(f) Annual Report.--Each annual report required by section 634(a) of this Act shall include a report on the implementation of this section.

Part I, Section 119\75\ - Endangered Species

(a) The Congress finds the survival of many animal and plant species is endangered by overhunting, by the presence of toxic chemicals in water, air and soil, and by the destruction of habitats. The Congress further finds that the extinction of animal and plant species is an irreparable loss with potentially serious environmental and economic consequences for developing and developed countries alike. Accordingly, the preservation of animal and plant species through the regulation of the hunting and trade in endangered species, through limitations on the pollution of natural ecosystems, and through the protection of wildlife habitats should be an important objective of the United States development assistance.

\75\ 22 U.S.C. 2151q. Sec. 119, pars. (a) and (b) were added by sec. 702 of the International Environment Protection Act of 1983 (title VII of the Department of State Authorization Act, Fiscal Years 1984 and 1985, Public Law 98-164; 97 Stat. 1045).

(b) \75\ In order to preserve biological diversity, the President is authorized to furnish assistance under this part, notwithstanding section 660,\76\ to assist countries in protecting and maintaining wildlife habitats and in developing sound wildlife management and plant conservation programs. Special efforts should be made to establish and maintain wildlife sanctuaries, reserves, and parks; to enact and enforce anti-poaching measures; and to identify, study, and catalog animal and plant species, especially in tropical environments.

\76\ Section 533(d)(4)(A) of the Foreign Operations, Export Financing, and Related Programs Appropriations Act, 1990 (Public Law 101-167; 103 Stat. 1227), added ``notwithstanding section 660" at this point.

(c) \77\ Funding Level.--For fiscal year 1987, not less than $2,500,000 of the funds available to carry out this part (excluding funds made available to carry out section 104(c)(2), relating to the Child Survival Fund) shall be allocated for assistance pursuant to subsection (b) for activities which were not funded prior to fiscal year 1987. In addition, the Agency for International Development shall, to the fullest extent possible, continue and increase assistance pursuant to subsection (b) for activities for which assistance was provided in fiscal years prior to fiscal year 1987.

\77\ Pars. (c) through (h) were added by sec. 302 of Public Law 99- 529 (100 Stat. 3017).

(d) \77\ Country Analysis Requirements.--Each country development strategy statement or other country plan prepared by the Agency for International Development shall include an analysis of-

(1) the actions necessary in that country to conserve biological diversity, and

(2) the extent to which the actions proposed for support by the Agency meet the needs thus identified.

(e) \77\ Local Involvement.--To the fullest extent possible, projects supported under this section shall include close consultation with and involvement of local people at all stages of design and implementation.

(f) \77\ PVOs and Other Nongovernmental Organizations.-- Whenever feasible, the objectives of this section shall be accomplished through projects managed by appropriate private and voluntary organizations, or international, regional, or national nongovernmental organizations, which are active in the region or country where the project is located.

(g) \77\ Actions by AID.--The Administrator of the Agency for International Development shall-(1) cooperate with appropriate international organizations, both governmental and nongovernmental;

(2) look to the World Conservation Strategy as an overall guide for actions to conserve biological diversity;

(3) engage in dialogues and exchanges of information with recipient countries which stress the importance of conserving biological diversity for the long-term economic benefit of those countries and which identify and focus on policies of those countries which directly or indirectly contribute to loss of biological diversity;

(4) support training and education efforts which improve the capacity of recipient countries to prevent loss of biological diversity;

(5) whenever possible, enter into long-term agreements in which the recipient country agrees to protect ecosystems or other wildlife habitats recommended for protection by relevant governmental or nongovernmental organizations or as a result of activities undertaken pursuant to paragraph

(6), and the United States agrees to provide, subject to obtaining the necessary appropriations, additional assistance necessary for the establishment and maintenance of such protected areas;

(6) support, as necessary and in cooperation with the appropriate governmental and nongovernmental organizations, efforts to identify and survey ecosystems in recipient countries worthy of protection;

(7) cooperate with and support the relevant efforts of other agencies of the United States Government, including the United States Fish and Wildlife Service, the National Park Service, the Forest Service, and the Peace Corps;

(8) review the Agency's environmental regulations and revise them as necessary to ensure that ongoing and proposed actions by the Agency do not inadvertently endanger wildlife species or their critical habitats, harm protected areas, or have other adverse impacts on

biological diversity (and shall report to the Congress within a year after the date of enactment of this paragraph on the actions taken pursuant to this paragraph);

(9) ensure that environmental profiles sponsored by the Agency include information needed for conservation of biological diversity; and

(10) deny any direct or indirect assistance under this chapter for actions which significantly degrade national parks or similar protected areas or introduce exotic plants or animals into such areas.

(h) \77\ Annual Reports.--Each annual report required by section 634(a) of this Act shall include, in a separate volume, a report on the implementation of this section.

ANNEX B

PERSONS CONSULTED/INTERVIEWED

National Government Agencies

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Sr. Environmental Management Specialist, PAWB

Ms. Lynnette Laroya
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Regional Executive Director (RED), DENR Region 11

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Nilo Rivera
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Ms. Lydia T. Hofeleña
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Mr. Leonilo R. Rivera
PASu, DENR Region 11

Mr. Manolito U. Sy
Supervising Science Research Specialist, DENR-ERDB

Mr. Adonis P. De Los Reyes
OIC Division Chief, NEDA

Mr. Romy Acosta
Director, Forest Management Bureau (FMB)
Ms. Neria Andin
Asst. Director, FMB

Mr. Jesus Javier
Division Chief- Reforestation Division, FMB

Ms. Rosalie Imperial
FMB

Ms. Rebecca B. Aguda
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Ms. Juanita B. Bautista
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Mr. Eric M. Raz
Provincial Officer, National Commissión on Indigenous Peoples (NCIP)- Cotabato Province

Ms. Jessica C. Muños
Project Director, Department of Agriculture-Bureau of Fisheries and Aquatic Resources-PMO

Mr. Cesar P. Odi
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Ms. Juliet Texon
PDO, DENR-Planning

Ms. Monyeen S. Manrique
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Ms. Lourdes G. Ferrer
OIC-Dir., FASPO

Ms. Merly Tomilluso
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Ms. Rosalina Ablang
FASPO

Ms. Melinda P. Ayap
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Mr. Dennis Segovia
FASPO

Mr. Manuel Bunag
DENR-FASPO

NGOs

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Executive Director, CI-Philippines

Ms. Marion Daclan
CI-Philippines

Ms. Liza V. Daya
Outcomes Coordinator, Conservation International (CI)-Philippines

Ms. Annabel Plantilla
Executive Director, Haribon Foundation

Mr. Blas Tabaranza
OIC-Chief Operating Officer, Haribon Foundation

Ms. Christine Reyes
Executive Director, Foundation for the Philippine Environment

Mr. Godof Villapando
Manager, Foundation for the Philippine Environment (FPE)

Ms. Jenet de la Cruz
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Mr. Lory Tan
Vice Chair, WWF Philippines/ Philippines Tropical Forest Conservation

Ms. Marina Rabe-Manvel
Area Director- Tanggol Kalikasan

Ms. Rita Macabuhay
Asst. to Exec Director for Organizational Sustainability, Haribon Foundation

LGU

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Barangay Captain, Matina Aplaya, Davao City

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Sangguniang Panlungsod-Chair on Environment, Davao City

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City Tourism Officer, Davao City

Engr. Mario Luis J. Jacinto
City Planning and Development Coordinator, Davao City

Hon. Joel Ray Lopez
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Ms. Aurora Herbito
Municipal Planning and Development Coordinator, Sta. Cruz, Davao del Sur

Ms. Helen Dayana
Provincial Planning and Development Officer, Davao del Sur and PAMB member

Ms. Camila Infiesto
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Mr. Julius Tingzon
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Others

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Ms. Alma dela Paz
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Ms. Trixie Ann Clemente
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Mr. Eric Buduan
Project Officer, Philippine Tropical Forest Conservation Foundation

ANNEX C

SUPPLEMENTAL INFORMATION:

1. LEGISLATIVE, POLICY AND INSTITUTIONAL FRAMEWORKS

2. DENR SECTORAL PLANS AND PROGRAMS

3. BRIEF DESCRIPTION OF MAJOR CONSERVATION NGOS IN THE PHILIPPINES

LEGISLATIVE, POLICY AND INSTITUTIONAL FRAMEWORKS

Protected areas. As a general matter, local governments have no jurisdiction over activities in protected areas (PAs), although the line is blurry in terrestrial PAs. The Fisheries Law is categorical about marine PAs, which are excluded from municipal waters and local government control. Congress has created a multi-sectoral body, the Protected Areas Management Board (PAMB) that manages each protected area. Its members come from national government agencies, local governments as well as resident community representatives and indigenous peoples. The PAMB is the policy-making body for the PA.

> *The Board shall, by majority vote, decide the allocations for budget, approve pro-posals for funding, decide matters relating to planning, peripheral protection and general administration of the area in accordance with the general management strategy*.[3]

The Protected Area Superintendent implements the policy decisions of the PAMB.

The PAMB, despite being a semi-autonomous multi-stakeholder management body, is chaired by the DENR and the PA Superintendent is under the administrative and operational control of DENR. In practice, DENR directs the management agenda of the PA, especially because it still retains resource use permitting and allocation powers. However, since DENR has very limited budget and personnel for PA management, many enlightened local governments have stepped forward to support PA management in their areas. In Mt. Kintanglad Natural Park for example, local governments take turns hosting PAMB meetings, while in Mt. Apo Natural Park, local governments are poised to take the lead in management planning for the parts of the protected area under their political jurisdiction, subject to coordination and integration at the PAMB level.

[3] NIPAS, Sec. 11; but the composition of the PAMB can be changed in the site-specific laws. For instance, NGO membership in the Mt. Kanlaon PAMB was greatly reduced as a reaction to the massive opposition of NGOs to geothermal exploration. In the Sagay Marine Reserve, the local government heads the PAMB instead of the DENR since it was the local government which lobbied for the approval of the site-specific law in Congress.

Wildlife. Wildlife resources management is shared by three agencies: DENR, Department of Agriculture (DA), and the Palawan Council for Sustainable Development. Recognizing the potential for overlaps and conflicts, the three agencies joined together in issuing the implementing rules of the Wildlife Act (Joint DENR-DA-PCSD Administrative Order No. 2004-01).

Under the rules, "DENR shall have jurisdiction over all terrestrial plant and animal species, all turtles and tortoises and wetland species, including but not limited to crocodiles, water birds and all amphibians and dugong. The DA shall have jurisdiction over all declared aquatic critical habitats, all aquatic resources, including but not limited to all fishes, aquatic plants, invertebrates and all marine mammals, except dugong. The Secretaries of the DENR and the DA shall review, and by joint administrative order, revise and regularly update the list of species under their respective jurisdiction. In the Province of Palawan, jurisdiction herein conferred is vested to the Palawan Council for Sustainable Development pursuant to Republic Act No. 7611."

Further, "The management of wildlife resources found within protected areas shall be governed by RA 7586 (NIPAS Act); Provided that the use for scientific and/or commercial purposes, where appropriate, of aquatic and marine resources within protected areas listed under the jurisdiction of DA shall be governed by RA 9147 (Wildlife Act) and RA 8550 (Fisheries Code), as the case may be." Finally, with respect to ancestral domains, "The utilization of wildlife resources found within ancestral domains/ancestral lands shall be subject to the issuance of a Free and Prior Informed Consent pursuant to the RA 8371 (Indigenous Peoples Rights Act of 1997 or IPRA)."

Each agency provides similar procedures and requirements for permits and fees. For purposes of CITES, both DENR and DA provide the necessary permits and monitoring mechanisms. For bio-prospecting activities, especially by international commercial entities, DENR, DA and PCSD have issued rules, together with NCIP on permits and prior informed consent requirements, consistent with the CBD and with domestic laws (Wildlife Act and IPRA). These rules are embodied in Joint DENR-DA-PCSD-NCIP Administrative Order No. 2005-01.

Forestry. Under Sec. 17 of the Local Government Code, "Pursuant to national policies and subject to supervision, control and review of the DENR," municipal and city governments have responsibility for "implementation of community-based forestry projects, which include integrated social forestry programs and similar projects; management and control of communal forests with an area not exceeding fifty (50) square kilometers; establishment of tree parks, greenbelts, and similar forest development projects." Provinces also have responsibility for enforcement of forestry laws.

Fisheries and coastal resources. The management of coastal resources is best described as fragmented, involving overlapping jurisdictions of many agencies and inconsistent regulations that reflects that classic struggle between economic development and environmental protection

The municipal and city governments have primary jurisdiction over fisheries and coastal management except for NIPAS areas and wildlife species, as discussed above. At the national level, EO 533 is an attempt set up a national institutional framework for coastal management following the ICM approach. EO 533 mandates the creation of an inter-agency, multi-sectoral mechanism to coordinate the efforts of different agencies, sectors and administrative levels. The President also issued Executive Order No. 612 (2007) revitalizing a cabinet-level body, the Commission on Maritime and Ocean Affairs. The CMOA "shall have overall jurisdiction and direction over policy formulation, implementation and coordination with other departments and experts, both foreign and local, on maritime issues," which translates to issues related to United Nations Convention on the Law of the Sea (UNCLOS) and further development and implementation of the National Marine Policy.

DENR SECTORAL PLANS AND PROGRAMS

DENR's Sectoral Plans and Programs

To push its commitments under the MTPDP, DENR has laid down a 12-point medium-term agenda. Specific ENR protection and conservation targets with bearing on biodiversity and forestry include: forest boundary delineation involving 58,667 km; reforestation of 86,235 has of forestlands using indigenous and threatened species, and conduct of technical assistance in the protection and conservation of coastal resources and in the proclamation of marine protected areas. Activities have also been identified that would promote good and green governance through transparency, efficiency, accountability and consistency in the conduct of the Department's work. The delineation of the country's forest line, long viewed to be key in conserving remaining tropical forest suffers from budgetary and institutional constraints.

DENR has also formulated a Logical Framework that sets its over-all and sectoral goals and objectives and strategies for achieving targets. Biodiversity concerns directly fall under DENR's performance targets or Major Final Outputs (MFO) 1 to 3 (Table 2). MFO 1 deals with the regular planning, policy-making, IEC, capacity-building, and knowledge management functions of DENR. MFO 2 translates outputs of MFO 1 into operational terms while MFO 3 is concerned with the regulatory functions of the Department.

Major Final Output 1	Major Final Output 2	Major Final Output 3
• environmental and natural resources accounting • valuation and assessment studies • classification of water bodies • assessment and mapping programs in line with the delineation of forestland boundary line.	• development, rehabilitation, and restoration of degraded terrestrial, marine, and coastal habitats and protected areas • protection of untenured forest areas, critical habitats, mangroves and management of PAs • operation, development and maintenance of national parks (e.g., Mt. Apo National Park) and operation and management of special projects (e.g., tamaraw, pawikan, and tarsier conservation).	• enforcement of wildlife species protection rules and regulations • conduct of investigations on claims and conflicts on land management concerns • deputization and training of Wildlife Enforcement Officers • establishment of Coastal Law Enforcement Alliances • issuance of environmental clearances and permits (such as for wildlife collection, bioprospecting)

Major plans and programs of DENR that are directly related to tropical forestry and biodiversity conservation include the: Master Plan for Forestry Development (2003); Second Decade Community-Based Forest Management Strategic Plan (2007), and Framework Plan for Environment and Natural Resources (2006).

The Revised Master Plan for Forestry Development

In 1999, midway in the 1991 MFPD implementation, a UNDP fact finding mission conducted a review and found both success and failures of the Plan. The successes were mostly on people oriented forestry or CBFM and biodiversity conservation such as establishment of protected areas. However, the rest of the programs did not progress as projected. Implementers point to two reasons for such: expected financial support did not materialize and the proposed sustainable forest management bill has languished in congress for the last two decades. These kept the DENR from pursuing aggressive sustainable forest management strategies. Also, some new developments, both local and global, many unforeseen when the Plan was formulated, have emerged and overtaken most of its proposed programs.

The team that prepared the plan formulated a newer vision, objectives and strategic programs. The objectives are:

a. To manage watersheds sustainably in partnership with stakeholders;
b. To rationalize forest-based industries;
c. To provide excellent forestry education;

d. To enhance protective and biodiversity values of forests;
e. To improve the quality of life of upland communities;
f. To enhance decision making through improved systems on information management, monitoring, and evaluation;
g. To enhance forestry institutions' effectiveness, efficiency and competence; and
h. To provide the right policy environment to enable sustainable forest management.

The specific targets of the Revised Master Plan are:

a. 150 watersheds prioritized and characterized within 2 years, integrated management plans prepared and management body in place within 5 years;
b. Forestry and related policies harmonized within 5 years;
c. Responsible forest based industries within 5 years;
d. All regions starting to implement strategies towards sustainable forest management within 1-5 years;
e. Productive collaboration among DENR, LGUs and other watershed stakeholders in responsible forest management within 5 years;
f. At least 300,000 ha of permanent grazing land sustainably managed by 2010;
g. Philippine forest administration fully capable and responsive within 10 years;
h. Forestlands boundary relocated and demarcated, production and protection forests delineated within 10 years;
i. Sustainable management of 1.5 M ha of residual forests, self sufficiency in wood in 10 years;
j. Establishment, maintenance, and renewal of 460,000 ha of commercial forest plantations within 12 years;
k. All forestlands under sustainable management by capable managers, all open areas closed within 12 years; and
l. Poverty in the uplands minimized by 50% within 15 years.

The Revised Plan focuses on four strategic programs on policy and institution development, watershed and forest management, livelihood and poverty alleviation, and forest-based industries development. It also prioritized 10 subprograms. The 10 priority subprograms has a total budgetary requirement of PhP60,614 M over its 25-year period of implementation. The programs with the biggest requirements are the forest plantations and the CBFM with totals of PhP34,000 M and PhP17,075 M, respectively. The critical period in the implementation is the first 5 years which requires a total budget of PhP21,115.3 M. This constitutes 62% of public investment and 38% of private sector investment.

ENR Framework Plan

The DENR's ENR Framework "serves as a blueprint to guide the policy and planning staff of the Department of Environment and Natural Resources (DENR) and its bureaus in addressing the trends and challenges in environment and development for the next 10 years (2003–2012). It is DENR's road map in pursuing sustainable development given the existing and anticipated problems, policy, and institutional issues and constraints."

Since it is an ENR Framework, it only provides strategic management interventions under strategic objectives. There are no specific programs and targets to be monitored.

The ENR Framework plan document consists of seven volumes representing the various subsector plans on management of forest and water resources, biodiversity resources, coastal and marine resources, minerals and geosciences, land resources and environmental management.

The subsector plan for forestry of the ENR Framework recommends 4 strategic objectives namely:

- Help reduce poverty in upland/forest communities in the country within 10 to 25 years through collaborative implementation by the stakeholders of CBFM/WEM programs in all SDUs/watersheds.
- Through complete logging ban and effective conservation programs, preserve as biodiversity reserves and protection forests, all remaining natural old-growth forests, natural sub-marginal forests, mossy forests, forests within 20 m on either side of streams and on slopes 50% or steeper, natural mangrove and coastal forests, and other designated conservation areas; and, rehabilitate degraded portions of such protected areas.
- Increase forest and vegetative cover in all barangays and municipalities in the country and continue to do so until the target forest/vegetative cover as per watershed management unit plan is attained for each barangay and municipality. Full attainment of target forest/vegetative cover for each SDU shall be within 25 to 50 years.
- Demonstrate within 2 years in selected SDUs/watersheds actual planning, implementation, and monitoring of sustainable development systems (including sustainable forestry) to learn lessons and gain practical experience.

The goals of the Biodiversity Resource Management Framework (BRMF) subsector plan are: poverty reduction, socio-economic development within the bounds of ecosystems resiliency (sustainable development), and social equity through proper resource use access (UNDP-DENR, 2006). Wealth creation for the national good is given emphasis together with the other intermediate objectives of conservation of natural resources and protection of the environment. The BRMF is an attempt to translate the recommendations of both the NBSAP and PBCP into a form that can input into the next MTPDP (UNDP-DENR, 2006). Its policy thrusts are directed towards achieving the following:

- Supporting the immediate establishment of the permanent forests and providing a biodiversity resources management perspective to areas that will identified as such.
- Adopting the integrated watershed management approach to biodiversity and wildlife protection planning.
- Enhancing the conservation and protection of biodiversity resources in critical ecosystems in support to the NIPAS and other related laws.
- Conserving and developing community-based biodiversity and wildlife.

- Encouraging biodiversity resources research and private sector involvement for effective resources.
- Promoting biodiversity industries and marketing.
- Promoting biodiversity resources economics and valuing biodiversity resources for sustainable management.
- Providing institutional support for sustainable biodiversity and wildlife conservation, management and development.
- Strengthening monitoring and enforcing regulations by improving governance at all levels.
- Establishing intersectoral linkages for effective management and optimum utilization of biodiversity resources.
- Complying with international commitments.

As with other DENR plans the ENR framework plan suffers from lack of government budget support for their implementation and M&E of their implementation status. It is also vulnerable to changes in DENR leadership.

BRIEF DESCRIPTION OF MAJOR CONSERVATION NGOS IN THE PHILIPPINES

Conservation International **(CI)** is a US-based environmental non-profit organization that works in more than 40 countries on four continents. Funding comes from various corporate, government and multilateral aid partners and NGO groups. Its local chapter-CI Philippines works at the local level in spearheading scientific studies and biodiversity conservation activities in major biodiversity hotspots in Sierra Madre Mountains, Eastern Mindanao and Palawan through various conservation and capacity-building efforts. At the national level, CI is working with national government agencies and other conservation groups come up with policies and programs that strengthen critical habitat and species conservation. Important contributions include the identification and assessment of 128 KBAs and 51 other potential candidate KBA sites. CI Philippines has also implemented an integrated Population-Environment program that demonstrates the link between reduced population pressure and improved biodiversity conservation.

Funding sources for Philippines programs: CEFP (Global Environmental Facility, the government of Japan, the John D. and Catherine T. MacArthur Foundation, and the World Bank), CI network

The ***Foundation for the Philippine Environment (FPE)*** is a non-stock, non-profit organization duly registered with the Securities & Exchange Commission on January 14, 1992. It was founded to manage a national environmental fund for biodiversity conservation and sustainable development. Its initial financial base is an endowment fund established through a debt-for-nature swap with the US Government in the amount of US $22 million. It assists non-government and people's organizations in funding or securing funds for programs and projects for biodiversity conservation and sustainable

development of the environment. It also provides trainings to its grantees to build and enhance the capabilities of their project implementers and beneficiaries. All projects have been either implemented by an NGO or PO, three have been an NGO and an academic institution collaborative project.

The Foundation took shape through a four-cornered partnership involving: Philippine NGOs and POs; the Philippine Government through the Department of Environment and Natural Resources (DENR) and the Department of Finance (DOF); U.S. NGOs, through the World Wildlife Fund (WWF) and the U.S.-based Philippine Development Forum; and the U.S. Government, through the United States Agency for International Development (USAID).

Funding sources for current Philippines programs: Endowment fund (Debt for Nature SWAP) and investment income, WWF-US, Philippine Development Forum, USAID

The ***Haribon Foundation*** is a membership organization that has been at the fore front of environmental protection and sustainable resource management in the Philippines for over 30 years. It has been transformed from a bird watching society in 1972 into an organization well entenched into environment conservation and sustainable development. The Foundation's program focuses on the following areas: education and training, environment conservation, research and special advocacies. It has expanded its areas of operation all over the Philippines, ranging from park and biodiversity conservations to coastal resource management.

Funding sources for Philippines programs: Grants and donations (GEF, Birdlife International, CEFP, FPE, David and Lucille Packard Foundation, Body Shop, Wageningen International, WWF-Philippines, Ford Motor Company, Kingdom of Netherlands), interest income, membership fees, other income.

K*abang Kalikasan Ng Pilipinas (KKP*) started in 1970 as a program office of World Wildlife Fund (WWF) - USA coordinating with the NIPAS under the debt-for-nature swap scheme. It became an affiliate/national organization of WWF and was registered in 1996 as a non-stock non-profit foundation in the Philippines. It currently implements 19 conservation and development projects in 11 provinces and at least 28 towns; from the far north in the Babuyan Islands, to the southernmost tip, the Turtle Islands in Tawi-Tawi. The field projects of WWF-Philippines support local efforts in coastal resources management, community-based ecotourism, management of protected areas, and environmental law enforcement, among others. WWF's projects on species protection serve as catalytic platforms for a broader coastal management and conservation program in a number of areas. These include the Irrawaddy dolphin in Malampaya Sound, Palawan, the whaleshark in Donsol, Sorsogon, whales and dolphins in Tanon Strait, Negros Oriental, sea turtles in the Turtle Islands, Tawi-Tawi, the dugong in Roxas, Palawan, and the humpback whale in Babuyan Islands.

Funding sources for Philippine programs: WWF network (WWF-US and WWF-International), grants and donations (Packard Foundation, National Oceanic Atmospheric Administration, World Congress on Protected Areas, the Australian Department of Environment and Heritage, the US State Department, USAID, GEF,), trust and foundation, corporate, individuals, income interest, others

Process of Selecting Key Biodiversity Areas in the Philippines

The delineation is done by a team of experts from different organizations and institutions.

1. Review IUCN Red list and plot important species

The species that are plotted are based on the following criteria:

a) **Vulnerability** - Measured by the confirmed presence of one or more globally threatened species. The working groups reviews and validates the IUCN Red List. The distribution of the Red List species is then plotted as initial step in locating the KBAs

b) **Irreplaceability** – This is determined through the presence of geographically concentrated species such as those that are identified as restricted range species. In the case of the Philippines the country's endemic species were used as a proxy indicator. Congregatory species defined as a species that gathers in large numbers at specific sites were also defined.

2. Identify Trigger Species

Trigger species – This is an endangered animal or plant that survives in a single location, a hair trigger from extinction. The trigger species are identified trigger from among those identified under the vulnerable & irreplaceable species. Its distribution is plotted on the map

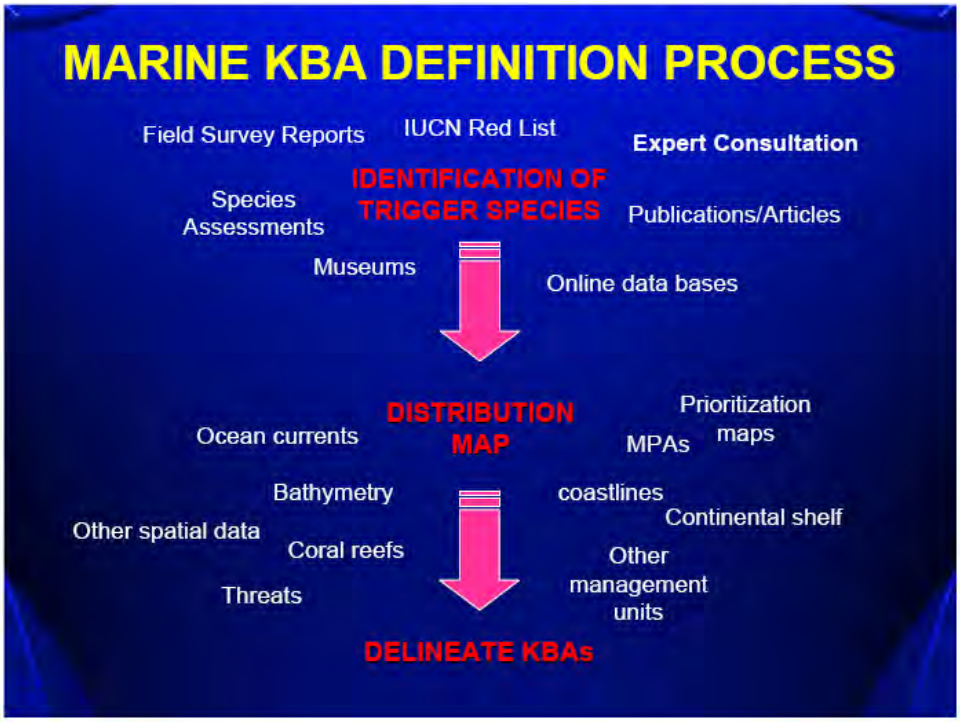
3. Delineation of KBAs on map

The two species distribution maps the vulnerable and irreplaceability criteria are overlayed on the following data so that the extents of the Key Biodiversity areas are delineated.

- bathymetry-topography
- existing management units
- protected areas (PAs) and Marine Protected Areas (MPAs)

extent of habitat of trigger species (natural forest for terrestrial) to delineate potential & candidate sites

Source: CI 2006 & 2008.


MARINE KBA DEFINITION PROCESS
Field Survey Reports
IUCN Red List
Expert Consultation
IDENTIFICATION OF TRIGGER SPECIES
Species Assessments
Publications/Articles
Museums
Online data bases
DISTRIBUTION MAP
Prioritization maps
Ocean currents
MPAs
Bathymetry
coastlines
Continental shelf
Other spatial data
Coral reefs
Other management units
Threats
DELINEATE KBAs

ANNEX D

2007 IUCN RED LIST OF THREATENED SPECIES FOR THE PHILIPPINES

#	Scientific Name	Common Name(s)	[Red List]
1	Hampala lopezi		CR A1a, B1+2a ver 2.3 (1994) (needs updating)
2	Pandaka pygmaea	DWARF PYGMY GOBY (Eng)	CR A1ace ver 2.3 (1994) (needs updating)
3	Eretmochelys imbricata	HAWKSBILL TURTLE (Eng) CARET (Fre) TORTUE CARET (Fre) TORTUE IMBRIQUÉE (Fre) TORTUE À BEC FAUCON (Fre) TORTUE À ÉCAILLES (Fre) TORTUGA CAREY (Spa)	CR A1bd ver 2.3 (1994) (needs updating)
4	Gongrospermum philippinense		CR A1c ver 2.3 (1994)
5	Guioa palawanica		CR A1c ver 2.3 (1994)
6	Guioa parvifoliola		CR A1c ver 2.3 (1994)
7	Guioa reticulata		CR A1c ver 2.3 (1994)
8	Hopea brachyptera		CR A1c+2c, B1+2c, C1, D ver 2.3 (1994)
9	Parantica davidi	DAVID'S TIGER (Eng)	CR A1c, B1+2abde, C2b ver 2.3 (1994) (needs updating)
10	Crateromys paulus	ILIN BUSHY-TAILED CLOUD RAT (Eng)	CR A1c, B1+2b, C2b ver 2.3 (1994) (needs updating)
11	Crocodylus mindorensis	PHILIPPINES CROCODILE (Eng)	CR A1c, C2a ver 2.3 (1994) (needs updating)
12	Parashorea malaanonan	WHITE LAUAN (Eng) WHITE SERAYA (Eng)	CR A1cd ver 2.3 (1994)
13	Shorea almon	LIGHT RED MERANTI (Eng) PHILIPPINE MAHOGANY (Eng) WHITE LAUAN (Eng)	CR A1cd ver 2.3 (1994)
14	Shorea contorta	WHITE LAUAN (Eng)	CR A1cd ver 2.3 (1994)
15	Shorea falciferoides		CR A1cd ver 2.3 (1994)
16	Shorea guiso		CR A1cd ver 2.3 (1994)
17	Shorea hopeifolia	YELLOW MERANTI (Eng)	CR A1cd ver 2.3 (1994)
18	Shorea negrosensis	RED LAUAN (Eng)	CR A1cd ver 2.3 (1994)
19	Shorea palosapis	PHILIPPINE MAHOGANY (Eng) WHITE LAUAN (Eng)	CR A1cd ver 2.3 (1994)
20	Shorea polysperma		CR A1cd ver 2.3 (1994)
21	Shorea seminis		CR A1cd ver 2.3 (1994)
22	Vatica pachyphylla		CR A1cd ver 2.3 (1994)
23	Dipterocarpus gracilis		CR A1cd+2cd ver 2.3 (1994)
24	Dipterocarpus grandiflorus		CR A1cd+2cd ver 2.3 (1994)
25	Dipterocarpus hasseltii		CR A1cd+2cd ver 2.3 (1994)
26	Dipterocarpus kunstleri		CR A1cd+2cd ver 2.3 (1994)

#	Scientific Name	Common Name(s)	[Red List]
27	Dipterocarpus validus		CR A1cd+2cd ver 2.3 (1994)
28	Dipterocarpus eurynchus		CR A1cd+2cd, B1+2c ver 2.3 (1994)
29	Dipterocarpus kerrii		CR A1cd+2cd, B1+2c ver 2.3 (1994)
30	Hopea cagayanensis		CR A1cd+2cd, B1+2c ver 2.3 (1994)
31	Hopea acuminata		CR A1cd, B1+2c ver 2.3 (1994)
32	Hopea malibato		CR A1cd, B1+2c ver 2.3 (1994)
33	Hopea philippinensis		CR A1cd, B1+2c ver 2.3 (1994)
34	Hopea plagata		CR A1cd, B1+2c ver 2.3 (1994)
35	Hopea basilanica		CR A1cd, B1+2c, C1, D ver 2.3 (1994)
36	Hopea mindanensis		CR A1cd, B1+2c, C1, D ver 2.3 (1994)
37	Hopea samarensis		CR A1cd, B1+2c, C1, D ver 2.3 (1994)
38	Shorea astylosa		CR A1cd, C2a ver 2.3 (1994)
39	Shorea malibato		CR A1cd, C2a ver 2.3 (1994)
40	Vatica elliptica		CR A1cd, C2a ver 2.3 (1994)
41	Sus cebifrons	VISAYAN WARTY PIG (Eng)	CR A1cde, B1+2acd, E ver 2.3 (1994) (needs updating)
42	Cephalakompsus pachycheilus		CR A1ce ver 2.3 (1994) (needs updating)
43	Mandibularca resinus	BAGANGAN (Eng)	CR A1ce ver 2.3 (1994) (needs updating)
44	Ospatulus truncatus	BITUNGU (Eng)	CR A1ce ver 2.3 (1994) (needs updating)
45	Puntius amarus	PAIT (Eng)	CR A1ce ver 2.3 (1994) (needs updating)
46	Puntius baoulan	BAOLAN (Eng)	CR A1ce ver 2.3 (1994) (needs updating)
47	Puntius clemensi	BAGANGAN (Eng)	CR A1ce ver 2.3 (1994) (needs updating)
48	Puntius disa	DISA (Eng)	CR A1ce ver 2.3 (1994) (needs updating)
49	Puntius flavifuscus	KATAPA-TAPA (Eng)	CR A1ce ver 2.3 (1994) (needs updating)
50	Puntius herrei		CR A1ce ver 2.3 (1994) (needs updating)
51	Puntius katalo	KATOLO (Eng)	CR A1ce ver 2.3 (1994) (needs updating)
52	Puntius lanaoensis	KANDAR (Eng)	CR A1ce ver 2.3 (1994) (needs updating)
53	Puntius manalak	MANALAK (Eng)	CR A1ce ver 2.3 (1994) (needs updating)
54	Puntius tras	TRAS (Eng)	CR A1ce ver 2.3 (1994) (needs updating)
55	Spratellicypris palata	PALATA (Eng)	CR A1ce ver 2.3 (1994) (needs updating)

#	Scientific Name	Common Name(s)	[Red List]
56	Risiocnemis seidenschwarzi		CR A2a; B2ab(iii,v) ver 3.1 (2001)
57	Pristis microdon	FRESHWATER SAWFISH (Eng) LARGETOOTH SAWFISH (Eng) LEICHHARDT'S SAWFISH (Eng) SMALLTOOTH SAWFISH (Eng) POISSON-SCIE (Fre) PEJEPEINE (Spa) PEZ SIERRA (Spa)	CR A2abcd+3cd+4bcd ver 3.1 (2001)
58	Cacatua haematuropygia	PHILIPPINE COCKATOO (Eng) CACATOÈS DES PHILIPPINES (Fre) CACATOÈS À VENTRE ROUGE (Fre) CACATÚA DE COLA SANGRANTE (Spa)	CR A2bcd ver 3.1 (2001)
59	Anoxypristis cuspidata	KNIFETOOTH SAWFISH (Eng) NARROW SAWFISH (Eng) POINTED SAWFISH (Eng) POISSON-SCIE (Fre) PEJEPEINE (Spa) PEZ SIERRA (Spa)	CR A2bcd+3cd+4bcd ver 3.1 (2001)
60	Nyctimene rabori	PHILIPPINE TUBE-NOSED FRUIT BAT (Eng)	CR A2c ver 2.3 (1994) (needs updating)
61	Helicostyla smargadina		CR A2c, B1+2c ver 2.3 (1994) (needs updating)
62	Dobsonia chapmani	NEGROS NAKED-BACKED FRUIT BAT (Eng) PHILIPPINE BARE-BACKED FRUIT BAT (Eng)	CR A2cd ver 3.1 (2001)
63	Aceros waldeni	VISAYAN WRINKLED HORNBILL (Eng) CALAO DE WALDEN (Fre)	CR A2cd+3cd; C2a(i) ver 3.1 (2001)
64	Siebenrockiella leytensis	PHILIPPINE POND TURTLE (Eng)	CR A2d, B1+2c ver 2.3 (1994)
65	Anthracoceros montani	SULU HORNBILL (Eng) CALAO DES SULU (Fre)	CR A3bcd; C2a(ii); D ver 3.1 (2001)
66	Gallicolumba menagei	SULU BLEEDING-HEART (Eng)	CR A3c; C2a(i,ii); D ver 3.1 (2001)
67	Paphiopedilum adductum		CR A4acd; B1ab(ii,iii,v) ver 3.1 (2001)
68	Amesiella monticola		CR A4acd; B1ab(ii,iii,v); D ver 3.1 (2001)
69	Ascoglossum calopterum		CR A4acd; B1ab(ii,iii,v); D ver 3.1 (2001)
70	Ceratocentron fesselii		CR A4acd; B1ab(ii,iii,v); D ver 3.1 (2001)
71	Dendrobium schuetzei		CR A4acd; B1ab(ii,iii,v); D ver 3.1 (2001)
72	Gastrochilus calceolaris		CR A4acd; B1ab(ii,iii,v); D ver 3.1 (2001)
73	Paphiopedilum fowliei		CR A4acd; B1ab(ii,iii,v); D ver 3.1 (2001)
74	Paphiopedilum urbanianum		CR A4acd; B1ab(ii,iii,v); D ver 3.1 (2001)
75	Phalaenopsis micholitzii		CR A4acd; B1ab(ii,iii,v); D ver 3.1 (2001)

#	Scientific Name	Common Name(s)	[Red List]
76	Chrotomys gonzalesi	ISAROG STRIPED SHREW-RAT (Eng) MT ISAROG STRIPED RAT (Eng)	CR B1+2c ver 2.3 (1994) (needs updating)
77	Crocidura negrina	NEGROS SHREW (Eng)	CR B1+2c ver 2.3 (1994) (needs updating)
78	Hopea quisumbingiana		CR B1+2c ver 2.3 (1994)
79	Kibatalia longifolia		CR B1+2c ver 2.3 (1994)
80	Dicaeum quadricolor	CEBU FLOWERPECKER (Eng)	CR B1ab(i,ii,iii,iv,v); C2a(i) ver 3.1 (2001)
81	Platymantis insulata	ISLAND FOREST FROG (Eng)	CR B1ab(iii)+2ab(iii) ver 3.1 (2001)
82	Podocarpus palawanensis		CR B1ab(iii)+2ab(iii) ver 3.1 (2001)
83	Bubalus mindorensis	MINDORO DWARF BUFFALO (Eng) TAMARAW (Eng) TAMAROU (Eng) TAMARAU (Fre, Spa) BÚFALO DE MINDORO (Spa)	CR C1+2a(ii) ver 3.1 (2001)
84	Centropus steerii	BLACK-HOODED COUCAL (Eng)	CR C2a(i) ver 3.1 (2001)
85	Gallicolumba keayi	NEGROS BLEEDING-HEART (Eng)	CR C2a(i) ver 3.1 (2001)
86	Gallicolumba platenae	MINDORO BLEEDING-HEART (Eng)	CR C2a(i) ver 3.1 (2001)
87	Oriolus isabellae	ISABELA ORIOLE (Eng)	CR C2a(i) ver 3.1 (2001)
88	Pithecophaga jefferyi	PHILIPPINE EAGLE (Eng) AIGLE DES PHILIPPINES (Fre) AIGLE DES SINGES (Fre) AIGLE MANGEUR DE SINGES (Fre) PITHÉCOPHAGE DES PHILIPPINES (Fre) AGUILA COMEMONOS (Spa) AGUILA MONERA (Spa)	CR C2a(ii) ver 3.1 (2001)
89	Ptilinopus arcanus	NEGROS FRUIT-DOVE (Eng)	CR C2a(ii); D ver 3.1 (2001)
90	Sterna bernsteini	CHINESE CRESTED-TERN (Eng)	CR C2a(ii); D ver 3.1 (2001)
91	Cryptocarya elliptifolia		CR C2a, D ver 2.3 (1994)
92	Crunomys fallax	NORTHERN LUZON SHREW RAT (Eng)	CR C2b ver 2.3 (1994) (needs updating)
93	Caretta caretta	LOGGERHEAD (Eng) CAOUANNE (Fre) TORTUE CAOUANNE (Fre) CAYUMA (Spa) TORTUGA BOBA (Spa)	EN A1abd ver 2.3 (1994) (needs updating)
94	Heosemys spinosa	SPINY TERRAPIN (Eng) SPINY TURTLE (Eng) SUNBURST TURTLE (Eng)	EN A1bcd ver 2.3 (1994)
95	Lepidochelys olivacea	OLIVE RIDLEY (Eng) PACIFIC RIDLEY (Eng) RIDLEY DU PACIFIQUE (Fre) TORTUE BÂTARDE (Fre) TORTUE DE RIDLEY (Fre) TORTUE OLIVÂTRE (Fre) TORTUGA GOLFINA (Spa) TORTUGA OLIVACEA (Spa)	EN A1bd ver 2.3 (1994) (needs updating, petitioned)
96	Gloeocarpus patentivalvis		EN A1c ver 2.3 (1994)
97	Guioa acuminata		EN A1c ver 2.3 (1994)
98	Guioa discolor		EN A1c ver 2.3 (1994)

#	Scientific Name	Common Name(s)	[Red List]
99	Guioa myriadenia		EN A1c ver 2.3 (1994)
100	Guioa truncata		EN A1c ver 2.3 (1994)
101	Podocarpus costalis		EN A1c ver 2.3 (1994)
102	Prunus pulgarensis		EN A1c ver 2.3 (1994)
103	Prunus rubiginosa		EN A1c ver 2.3 (1994)
104	Schefflera palawanensis		EN A1c ver 2.3 (1994)
105	Diospyros philippinensis		EN A1c, B1+2abc ver 2.3 (1994)
106	Crateromys australis	DINAGAT BUSHY-TAILED CLOUD RAT (Eng) DINAGAT ISLAND CLOUD RAT (Eng)	EN A1c, B1+2b, C2b ver 2.3 (1994) (needs updating)
107	Schefflera agamae		EN A1c, B1+2c ver 2.3 (1994)
108	Schefflera albido-bracteata		EN A1c, B1+2c ver 2.3 (1994)
109	Schefflera curranii		EN A1c, B1+2c ver 2.3 (1994)
110	Crateromys heaneyi	PANAY BUSHY-TAILED CLOUD RAT (Eng) PANAY CLOUD RUNNER (Eng)	EN A1c, C2b ver 2.3 (1994) (needs updating)
111	Acerodon jubatus	GOLDEN-CAPPED FRUIT BAT (Eng) ZORRO VOLADOR FILIPINO (Spa)	EN A1cd ver 2.3 (1994) (needs updating)
112	Mangifera monandra		EN A1cd ver 2.3 (1994)
113	Shorea ovata	DARK RED MERANTI (Eng)	EN A1cd ver 2.3 (1994)
114	Vatica mangachapoi		EN A1cd ver 2.3 (1994)
115	Vatica maritima		EN A1cd ver 2.3 (1994)
116	Anisoptera costata		EN A1cd+2cd ver 2.3 (1994)
117	Pelochelys cantorii	CANTOR'S GIANT SOFTSHELL (Eng)	EN A1cd+2cd ver 2.3 (1994)
118	Scleropages formosus	ASIAN AROWANA (Eng) ASIAN BONYTONGUE (Eng) GOLDEN AROWANA (Eng) GOLDEN DRAGON FISH (Eng) KELESA (Eng) SCLÉROPAGE D'ASIE (Fre) SCLÉROPAGE FORMOSUS (Fre) PEZ LENGÜIHUESO MALAYO (Spa)	EN A1cd+2cd ver 2.3 (1994) (needs updating)
119	Dipterocarpus alatus		EN A1cd+2cd, B1+2c ver 2.3 (1994)
120	Ospatulus palaemophagus		EN A1ce ver 2.3 (1994) (needs updating)
121	Chelonia mydas	GREEN TURTLE (Eng) TORTUE COMESTIBLE (Fre) TORTUE FRANCHE (Fre) TORTUE VERTE (Fre) TORTUGA BLANCA (Spa) TORTUGA VERDE (Spa)	EN A2bd ver 3.1 (2001)
122	Cheilinus undulatus	GIANT WRASSE (Eng) HUMPHEAD WRASSE (Eng) HUMPHEAD (Eng) MAORI WRASSE (Eng) NAPOLEON WRASSE (Eng) TRUCK WRASSE (Eng) UNDULATE WRASSE (Eng) NAPOLEON (Fre)	EN A2bd+3bd ver 3.1 (2001)

#	Scientific Name	Common Name(s)	[Red List]
123	Sphyrna mokarran	GREAT HAMMERHEAD (Eng) HAMMERHEAD SHARK (Eng) SQUAT-HEADED HAMMERHEAD SHARK (Eng) GRAND REQUIN-MARTEAU (Fre) MARIEAU MILLET (Fre) POISSON PANTOUFLIER (Fre) SOROSENA (Fre) CORNUDA (Spa) EL TIBURON (Spa) GUARDIA CIVIL (Spa) PEZ MARTILLO (Spa) TIBURON (Spa)	EN A2bd+4bd ver 3.1 (2001)
124	Pteropus leucopterus	WHITE-WINGED FLYING FOX (Eng) ZORRO VOLADOR DE LUZÓN (Spa)	EN A2c ver 2.3 (1994) (needs updating)
125	Phapitreron cinereiceps	TAWITAWI BROWN-DOVE (Eng)	EN A2cd+3cd+4cd; C2a(ii) ver 3.1 (2001)
126	Penelopides panini	VISAYAN TARICTIC (Eng) CALAO TARICTIC (Fre)	EN A2cd+3cd; C2a(i) ver 3.1 (2001)
127	Ixos siquijorensis	STREAK-BREASTED BULBUL (Eng) BULBUL DE SIQUIJOR (Fre)	EN A3bc; B1ab(i,ii,iii,iv,v) ver 3.1 (2001)
128	Prioniturus verticalis	BLUE-WINGED RACQUET-TAIL (Eng) PALETTE DES SULU (Fre) LORITO-MOMOTO DE LAS SULU (Spa)	EN A3bcd; B1ab(i,ii,iii,iv,v); C1+2a(i) ver 3.1 (2001)
129	Aerides lawrenciae		EN A4acd; B1ab(ii,iii,v) ver 3.1 (2001)
130	Amesiella philippensis		EN A4acd; B1ab(ii,iii,v) ver 3.1 (2001)
131	Paphiopedilum ciliolare		EN A4acd; B1ab(ii,iii,v) ver 3.1 (2001)
132	Phalaenopsis lindenii		EN A4acd; B1ab(ii,iii,v) ver 3.1 (2001)
133	Vanda javierae		EN A4acd; B1ab(ii,iii,v) ver 3.1 (2001)
134	Vanda scandens		EN A4acd; B1ab(ii,iii,v) ver 3.1 (2001)
135	Tectona philippinensis	PHILIPPINE TEAK (Eng)	EN B1+2abc ver 2.3 (1994)
136	Graphium sandawanum	APO SWALLOWTAIL (Eng)	EN B1+2ac ver 2.3 (1994) (needs updating)
137	Sundasciurus juvencus	NORTHERN PALAWAN TREE SQUIRREL (Eng)	EN B1+2b ver 2.3 (1994) (needs updating)
138	Cervus alfredi	PHILLIPINE SPOTTED DEER (Eng) VISAYAN SPOTTED DEER (Eng)	EN B1+2c ver 2.3 (1994) (needs updating)
139	Crocidura grandis	MT. MALINDANG SHREW (Eng)	EN B1+2c ver 2.3 (1994) (needs updating)
140	Crocidura mindorus	MINDORO SHREW (Eng)	EN B1+2c ver 2.3 (1994) (needs updating)
141	Cryptocarya palawanensis		EN B1+2c ver 2.3 (1994)
142	Horsfieldia obscurineria		EN B1+2c ver 2.3 (1994)
143	Kibatalia puberula		EN B1+2c ver 2.3 (1994)
144	Kibatalia stenopetala		EN B1+2c ver 2.3 (1994)
145	Parantica milagros	MILAGROS' TIGER (Eng)	EN B1+2c ver 2.3 (1994)

#	Scientific Name	Common Name(s)	[Red List]
			(needs updating)
146	Parantica schoenigi	FATHER SCHOENIG'S CHOCOLATE (Eng)	EN B1+2c ver 2.3 (1994) (needs updating)
147	Podogymnura aureospinula	DINAGAT MOONRAT (Eng)	EN B1+2c ver 2.3 (1994) (needs updating)
148	Podogymnura truei	MINDANAO GYMNURE (Eng) MINDANAO MOONRAT (Eng)	EN B1+2c ver 2.3 (1994) (needs updating)
149	Palawanomys furvus	PALAWAN SOFT-FURRED MOUNTAIN RAT (Eng)	EN B1+2c, C2b ver 2.3 (1994) (needs updating)
150	Drepanolejeunea bakeri		EN B1+2cd ver 2.3 (1994)
151	Merrilliobryum fabronioides		EN B1+2cd ver 2.3 (1994)
152	Hemitriakis leucoperiptera	WHITEFIN TOPESHARK (Eng)	EN B1+2ce, C2b ver 2.3 (1994)
153	Nepenthes truncata		EN B1+2d ver 2.3 (1994)
154	Nepenthes bellii		EN B1+2e ver 2.3 (1994)
155	Papilio chikae	LUZON PEACOCK SWALLOWTAIL (Eng)	EN B1+2e ver 2.3 (1994) (needs updating)
156	Axis calamianensis	CALAMANIAN DEER (Eng) CALAMIAN DEER (Eng) CALAMIAN HOG DEER (Eng) PHILIPPINE DEER (Eng) CERF-COCHON CALAMIEN (Fre) CIERVO DE LOS CALAMIANES (Spa) CIERVO PORQUERIZO DE LOS CALAMIANES (Spa)	EN B1+3d ver 2.3 (1994) (needs updating)
157	Stachyris nigrorum	NEGROS STRIPED-BABBLER (Eng)	EN B1ab(i,ii,iii,iv,v) ver 3.1 (2001)
158	Copsychus cebuensis	BLACK SHAMA (Eng)	EN B1ab(i,ii,iii,iv,v); C2a(i) ver 3.1 (2001)
159	Cycas chamberlainii		EN B1ab(i,iv)+2ab(i,iv) ver 3.1 (2001)
160	Megophrys ligayae	PALAWAN HORNED FROG (Eng)	EN B1ab(iii) ver 3.1 (2001)
161	Pelophryne albotaeniata	PALAWAN TOADLET (Eng)	EN B1ab(iii) ver 3.1 (2001)
162	Philautus schmackeri	MINDORO TREE FROG (Eng)	EN B1ab(iii) ver 3.1 (2001)
163	Philautus surrufus		EN B1ab(iii) ver 3.1 (2001)
164	Platymantis cagayanensis		EN B1ab(iii) ver 3.1 (2001)
165	Platymantis hazelae	HAZEL'S FOREST FROG (Eng)	EN B1ab(iii) ver 3.1 (2001)
166	Platymantis negrosensis	NEGROS FOREST FROG (Eng)	EN B1ab(iii) ver 3.1 (2001)
167	Platymantis panayensis	PANAY FOREST FROG (Eng)	EN B1ab(iii) ver 3.1 (2001)
168	Platymantis polillensis	POLILLO FOREST FROG (Eng)	EN B1ab(iii) ver 3.1 (2001)
169	Platymantis spelaea	NEGROS CAVE FROG (Eng)	EN B1ab(iii) ver 3.1 (2001)
170	Platymantis subterrestris	MT. DATA FOREST FROG (Eng)	EN B1ab(iii) ver 3.1 (2001)
171	Platymantis taylori		EN B1ab(iii) ver 3.1 (2001)
172	Rana mangyanum		EN B1ab(iii) ver 3.1 (2001)
173	Platymantis lawtoni		EN B1ab(iii)+2ab(iii) ver 3.1 (2001)
174	Platymantis levigata	SMOOTH-SKINNED FOREST FROG (Eng)	EN B1ab(iii)+2ab(iii) ver 3.1 (2001)

#	Scientific Name	Common Name(s)	[Red List]
175	Rhinocypha hageni		EN B1ab(iii)+2ab(iii) ver 3.1 (2001)
176	Dasycrotapha speciosa	FLAME-TEMPLED BABBLER (Eng)	EN B2ab(i,ii,iii,iv,v) ver 3.1 (2001)
177	Rhinomyias albigularis	WHITE-THROATED JUNGLE-FLYCATCHER (Eng)	EN B2ab(i,ii,iii,iv,v) ver 3.1 (2001
178	Eurynorhynchus pygmeus	SPOON-BILLED SANDPIPER (Eng)	EN C1+2a(ii) ver 3.1 (2001)
179	Gorsachius goisagi	JAPANESE NIGHT-HERON (Eng)	EN C2a(i) ver 3.1 (2001)
180	Penelopides mindorensis	MINDORO TARICTIC (Eng) CALAO DE MINDORO (Fre)	EN C2a(i) ver 3.1 (2001)
181	Tringa guttifer	SPOTTED GREENSHANK (Eng) CHEVALIER TACHETÉ (Fre) CHEVALIER À GOUTTELETTE (Fre) ARCHIBEBE MOTEADO (Spa)	EN C2a(i) ver 3.1 (2001)
182	Archboldomys luzonensis	MT ISAROG SHREW-MOUSE (Eng)	EN C2b ver 2.3 (1994) (needs updating)
183	Carcharias taurus	GREY NURSE SHARK (Eng) SAND TIGER SHARK (Eng) SPOTTED RAGGED-TOOTH SHARK (Eng) REQUIN TAUREAU (Fre) TORO BACOTA (Spa)	VU A1ab+2d ver 2.3 (1994)
184	Thunnus obesus	BIGEYE TUNA (Eng)	VU A1bd ver 2.3 (1994) (needs updating)
185	Rhincodon typus	WHALE SHARK (Eng) REQUIN BALEINE (Fre) TIBURÓN BALLENA (Spa)	VU A1bd+2d ver 2.3 (1994)
186	Urogymnus asperrimus	PORCUPINE RAY (Eng)	VU A1bd, B1+2bcd ver 2.3 (1994)
187	Aglaia aherniana		VU A1c ver 2.3 (1994)
188	Aglaia angustifolia		VU A1c ver 2.3 (1994)
189	Aglaia cumingiana		VU A1c ver 2.3 (1994)
190	Aglaia smithii		VU A1c ver 2.3 (1994)
191	Alangium longiflorum		VU A1c ver 2.3 (1994)
192	Areca ipot	IPOT PALM (Eng)	VU A1c ver 2.3 (1994)
193	Areca parens		VU A1c ver 2.3 (1994)
194	Areca whitfardii		VU A1c ver 2.3 (1994)
195	Haeromys pusillus	LESSER RANEE MOUSE (Eng)	VU A1c ver 2.3 (1994) (needs updating)
196	Haplonycteris fischeri	FISCHER'S PYGMY FRUIT BAT (Eng) PHILIPPINE PYGMY FRUIT BAT (Eng)	VU A1c ver 2.3 (1994) (needs updating)
197	Horsfieldia ardisiifolia		VU A1c ver 2.3 (1994)
198	Mastixia macrocarpa		VU A1c ver 2.3 (1994)
199	Myristica frugifera		VU A1c ver 2.3 (1994)
200	Myristica philippensis		VU A1c ver 2.3 (1994)
201	Oncosperma platyphyllum		VU A1c ver 2.3 (1994)
202	Tabernaemontana cordata		VU A1c ver 2.3 (1994)
203	Varanus olivaceus	GRAY'S MONITOR (Eng) VARAN DE GRAY (Fre)	VU A1c ver 2.3 (1994) (needs updating)

#	Scientific Name	Common Name(s)	[Red List]
204	Atrophaneura schadenbergi		VU A1c+2c ver 2.3 (1994) (needs updating)
205	Cynocephalus volans	FLYING LEMUR (Eng) PHILIPPINE FLYING LEMUR (Eng)	VU A1c+2c ver 2.3 (1994) (needs updating)
206	Sundasciurus rabori	PALAWAN MONTANE SQUIRREL (Eng)	VU A1c, B1+2b ver 2.3 (1994) (needs updating)
207	Tarsomys echinatus	SPINY LONG-FOOTED RAT (Eng)	VU A1c, B1+2b ver 2.3 (1994) (needs updating)
208	Tryphomys adustus	LUZON SHORT-NOSED RAT (Eng)	VU A1c, B1+2b ver 2.3 (1994) (needs updating)
209	Crateromys schadenbergi	GIANT BUSHY-TAILED CLOUD RAT (Eng) LUZON BUSHY-TAILED CLOUD RAT (Eng)	VU A1c, B1+2c ver 2.3 (1994) (needs updating)
210	Guioa bicolor		VU A1c, B1+2c ver 2.3 (1994)
211	Kibatalia gitingensis		VU A1c, B1+2c ver 2.3 (1994)
212	Atrophaneura atropos		VU A1c, D2 ver 2.3 (1994) (needs updating)
213	Corypha microclada		VU A1c, D2 ver 2.3 (1994)
214	Livistona robinsoniana		VU A1c, D2 ver 2.3 (1994)
215	Myristica pilosigemma		VU A1c, D2 ver 2.3 (1994)
216	Adenanthera intermedia		VU A1cd ver 2.3 (1994)
217	Agathis philippinensis		VU A1cd ver 2.3 (1994)
218	Aphanamixis cumingiana		VU A1cd ver 2.3 (1994)
219	Aquilaria malaccensis	AGARWOOD (Eng) ALOEWOOD (Eng) EAGLEWOOD (Eng) LIGN-ALOES (Eng)	VU A1cd ver 2.3 (1994)
220	Ardisia squamulosa		VU A1cd ver 2.3 (1994)
221	Canarium luzonicum		VU A1cd ver 2.3 (1994)
222	Canarium ovatum		VU A1cd ver 2.3 (1994)
223	Celtis luzonica		VU A1cd ver 2.3 (1994)
224	Dillenia fischeri		VU A1cd ver 2.3 (1994)
225	Dillenia luzoniensis		VU A1cd ver 2.3 (1994)
226	Diospyros blancoi		VU A1cd ver 2.3 (1994)
227	Diplodiscus paniculatus		VU A1cd ver 2.3 (1994)
228	Dysoxylum turczaninowii		VU A1cd ver 2.3 (1994)
229	Ficus ulmifolia		VU A1cd ver 2.3 (1994)
230	Intsia bijuga	BORNEO TEAK (Eng) MOLUCCAN IRONWOOD (Eng)	VU A1cd ver 2.3 (1994)
231	Lithocarpus ovalis		VU A1cd ver 2.3 (1994)
232	Macaranga bicolor		VU A1cd ver 2.3 (1994)
233	Macaranga caudatifolia		VU A1cd ver 2.3 (1994)
234	Macaranga grandifolia		VU A1cd ver 2.3 (1994)
235	Madhuca betis		VU A1cd ver 2.3 (1994)
236	Mitrephora lanotan		VU A1cd ver 2.3 (1994)
237	Neolitsea vidalii		VU A1cd ver 2.3 (1994)

#	Scientific Name	Common Name(s)	[Red List]
238	Palaquium mindanaense		VU A1cd ver 2.3 (1994)
239	Pericopsis mooniana	NANDU WOOD (Eng) NEDUN TREE (Eng)	VU A1cd ver 2.3 (1994)
240	Persea philippinensis		VU A1cd ver 2.3 (1994)
241	Phloeomys cumingi	SOUTHERN GIANT SLENDER-TAILED CLOUD RAT (Eng) SOUTHERN LUZON GIANT CLOUD RAT (Eng)	VU A1cd ver 2.3 (1994) (needs updating)
242	Reutealis trisperma		VU A1cd ver 2.3 (1994)
243	Sandoricum vidalii		VU A1cd ver 2.3 (1994)
244	Sapium luzonicum		VU A1cd ver 2.3 (1994)
245	Securinega flexuosa		VU A1cd ver 2.3 (1994)
246	Tristania decorticata		VU A1cd ver 2.3 (1994)
247	Tristania littoralis		VU A1cd ver 2.3 (1994)
248	Vitex parviflora		VU A1cd ver 2.3 (1994)
249	Ziziphus talanai		VU A1cd ver 2.3 (1994)
250	Carcharodon carcharias	GREAT WHITE SHARK (Eng)	VU A1cd+2cd ver 2.3 (1994)
251	Eusideroxylon zwageri	BILLIAN (Eng) BORNEO IRONWOOD (Eng) BOIS DE FER (Fre)	VU A1cd+2cd ver 2.3 (1994)
252	Sus philippensis	PHILIPPINE WARTY PIG (Eng)	VU A1cd+2e ver 2.3 (1994)
253	Aquilaria cumingiana		VU A1d ver 2.3 (1994)
254	Artocarpus blancoi		VU A1d ver 2.3 (1994)
255	Artocarpus rubrovenus		VU A1d ver 2.3 (1994)
256	Artocarpus treculianus		VU A1d ver 2.3 (1994)
257	Cinnamomum mercadoi	CINAMOMON (Eng)	VU A1d ver 2.3 (1994)
258	Cynometra inaequifolia		VU A1d ver 2.3 (1994)
259	Dillenia megalantha		VU A1d ver 2.3 (1994)
260	Dillenia philippinensis		VU A1d ver 2.3 (1994)
261	Dillenia reifferscheidtia		VU A1d ver 2.3 (1994)
262	Intsia acuminata		VU A1d ver 2.3 (1994)
263	Litsea leytensis		VU A1d ver 2.3 (1994)
264	Madhuca oblongifolia		VU A1d ver 2.3 (1994)
265	Madhuca obovatifolia		VU A1d ver 2.3 (1994)
266	Mangifera altissima		VU A1d ver 2.3 (1994)
267	Palaquium bataanense		VU A1d ver 2.3 (1994)
268	Palaquium luzoniense	RED NATO (Eng)	VU A1d ver 2.3 (1994)
269	Palaquium philippense		VU A1d ver 2.3 (1994)
270	Pouteria villamilii	WHITE NATO (Eng)	VU A1d ver 2.3 (1994)
271	Pterocarpus indicus	AMBOYNA WOOD (Eng) BURMESE ROSEWOOD (Eng) RED SANDALWOOD (Eng) SANTAL ROUGE (Fre)	VU A1d ver 2.3 (1994)
272	Santalum album	SANDALWOOD (Eng)	VU A1d ver 2.3 (1994)
273	Sindora inermis		VU A1d ver 2.3 (1994)
274	Sindora supa		VU A1d ver 2.3 (1994)

#	Scientific Name	Common Name(s)	[Red List]
275	Terminalia nitens		VU A1d ver 2.3 (1994)
276	Terminalia pellucida		VU A1d ver 2.3 (1994)
277	Xanthostemon verdugonianus		VU A1d ver 2.3 (1994)
278	Ziziphus hutchinsonii		VU A1d ver 2.3 (1994)
279	Nebrius ferrugineus	TAWNY NURSE SHARK (Eng)	VU A2abcd+3cd+4abcd ver 3.1 (2001)
280	Stegostoma fasciatum	LEOPARD SHARK (Eng) ZEBRA SHARK (Eng)	VU A2abcd+3cd+4abcd ver 3.1 (2001)
281	Carcharhinus longimanus	OCEANIC WHITETIP SHARK (Eng) WHITE-TIPPED SHARK (Eng) WHITETIP OCEANIC SHARK (Eng) WHITETIP SHARK (Eng) REQUIN OCÉANIQUE (Fre) TIBURÓN OCEANICO (Spa)	VU A2ad+3d+4ad ver 3.1 (2001)
282	Rhynchobatus sp. nov. B	BROADNOSE WEDGEFISH (Eng)	VU A2ad+3d+4ad ver 3.1 (2001)
283	Taeniura meyeni	BLACK-BLOTCHED STINGRAY (Eng) BLACK-SPOTTED STINGRAY (Eng) BLOTCHED FANTAIL RAY (Eng) FANTAIL STINGRAY (Eng) GIANT REEF RAY (Eng) ROUND RIBBONTAIL RAY (Eng) SPECKLED STINGRAY (Eng) PASTENAGUE EVENTAIL (Fre)	VU A2ad+3d+4ad ver 3.1 (2001)
284	Dugong dugon	DUGONG (Eng, Fre, Spa) SEA COW (Eng) DUGON (Spa)	VU A2bcd ver 3.1 (2001)
285	Anas luzonica	PHILIPPINE DUCK (Eng)	VU A2bcd+3bcd ver 3.1 (2001)
286	Ducula carola	SPOTTED IMPERIAL-PIGEON (Eng)	VU A2bcd+3bcd; C1 ver 3.1 (2001)
287	Centrophorus squamosus	DEEPWATER SPINY DOGFISH (Eng) LEAFSCALE GULPER SHARK (Eng) NILSON'S DEEPSEA DOGFISH (Eng) SQUALE-CHAGRIN DE L'ATLANTIQUE (Fre) QUELVACHO NEGRO (Spa)	VU A2bd+3bd+4bd ver 3.1 (2001)
288	Hemipristis elongatus	FOSSIL SHARK (Eng) SNAGGLETOOTH SHARK (Eng) MILANDRE CHICOR (Fre) COMADREJA SOBREDIENTE (Spa)	VU A2bd+3bd+4bd ver 3.1 (2001)
289	Rhina ancylostoma	BOWMOUTH GUITARFISH (Eng) MUD SKATE (Eng) SHARK RAY (Eng)	VU A2bd+3bd+4bd ver 3.1 (2001)
290	Rhynchobatus australiae	WHITE-SPOTTED GUITARFISH (Eng) WHITE-SPOTTED WEDGEFISH (Eng)	VU A2bd+3bd+4bd ver 3.1 (2001)
291	Rhinobatos granulatus	SHARPNOSE GUITARFISH (Eng)	VU A2bd+3d+4d ver 3.1 (2001)
292	Acerodon leucotis	PALAWAN FRUIT BAT (Eng) ZORRO VOLADOR DE CALAMIAN (Spa)	VU A2c ver 2.3 (1994) (needs updating)
293	Graphium idaeoides		VU A2c ver 2.3 (1994) (needs updating)
294	Graphium megaera		VU A2c ver 2.3 (1994) (needs updating)
295	Otopteropus	LUZON FRUIT BAT (Eng)	VU A2c ver 2.3 (1994)

#	Scientific Name	Common Name(s)	[Red List]
	cartilagonodus		(needs updating)
296	Pteropus pumilus	LITTLE GOLDEN-MANTLED FLYING FOX (Eng) ZORRO VOLADOR DE TAYLOR (Spa)	VU A2c ver 2.3 (1994) (needs updating)
297	Rhinolophus subrufus	SMALL RUFOUS HORSESHOE BAT (Eng)	VU A2c ver 2.3 (1994) (needs updating)
298	Alcedo argentata	SILVERY KINGFISHER (Eng)	VU A2c+3c ver 3.1 (2001)
299	Ceyx melanurus	PHILIPPINE DWARF KINGFISHER (Eng)	VU A2c+3c ver 3.1 (2001)
300	Coracina mindanensis	BLACK-BIBBED CICADABIRD (Eng)	VU A2c+3c ver 3.1 (2001)
301	Coracina ostenta	WHITE-WINGED CUCKOO-SHRIKE (Eng)	VU A2c+3c ver 3.1 (2001)
302	Dicaeum haematostictum	VISAYAN FLOWERPECKER (Eng)	VU A2c+3c ver 3.1 (2001)
303	Eurylaimus samarensis	VISAYAN BROADBILL (Eng)	VU A2c+3c ver 3.1 (2001)
304	Muscicapa randi	ASHY-BREASTED FLYCATCHER (Eng)	VU A2c+3c ver 3.1 (2001)
305	Todiramphus winchelli	RUFOUS-LORED KINGFISHER (Eng)	VU A2c+3c ver 3.1 (2001)
306	Dicaeum retrocinctum	SCARLET-COLLARED FLOWERPECKER (Eng)	VU A2c+3c; B1ab(i,ii,iii,iv,v) ver 3.1 (2001)
307	Ficedula platenae	PALAWAN FLYCATCHER (Eng)	VU A2c+3c; B1ab(i,ii,iii,iv,v) ver 3.1 (2001)
308	Ptilocichla falcata	FALCATED WREN-BABBLER (Eng)	VU A2c+3c; B1ab(i,ii,iii,iv,v) ver 3.1 (2001)
309	Dendrocopos ramsayi	SULU WOODPECKER (Eng)	VU A2c+3c; B1ab(i,ii,iii,iv,v); C2a(i) ver 3.1 (2001)
310	Rhinomyias insignis	WHITE-BROWED JUNGLE-FLYCATCHER (Eng)	VU A2c+3c; B1ab(i,ii,iii,iv,v); C2a(i) ver 3.1 (2001)
311	Bubo philippensis	PHILIPPINE EAGLE-OWL (Eng) GRAND-DUC DES PHILIPPINES (Fre) BÚHO FILIPINO (Spa)	VU A2c+3c; C1+2a(i) ver 3.1 (2001)
312	Actenoides hombroni	BLUE-CAPPED KINGFISHER (Eng)	VU A2c+3c; C2a(i) ver 3.1 (2001)
313	Chloropsis flavipennis	PHILIPPINE LEAFBIRD (Eng)	VU A2c+3c; C2a(i) ver 3.1 (2001)
314	Eurylaimus steerii	MINDANAO BROADBILL (Eng)	VU A2c+3c; C2a(i) ver 3.1 (2001)
315	Ficedula basilanica	LITTLE SLATY FLYCATCHER (Eng)	VU A2c+3c; C2a(i) ver 3.1 (2001)
316	Hypothymis coelestis	CELESTIAL MONARCH (Eng)	VU A2c+3c; C2a(i) ver 3.1 (2001)
317	Pitta steerii	AZURE-BREASTED PITTA (Eng)	VU A2c+3c; C2a(i) ver 3.1 (2001)
318	Hippocampus comes	TIGER TAIL SEAHORSE (Eng)	VU A2cd ver 3.1 (2001)
319	Pteropus speciosus	PHILIPPINE GRAY FLYING FOX (Eng) ZORRO VOLADOR DE LA ISLA MALAWI (Spa)	VU A2cd ver 2.3 (1994) (needs updating)
320	Tridacna derasa	SOUTHERN GIANT CLAM (Eng)	VU A2cd ver 2.3 (1994) (needs updating)
321	Tridacna gigas	GIANT CLAM (Eng) BÉNITIER GÉANT (Fre)	VU A2cd ver 2.3 (1994) (needs updating)
322	Anthracoceros marchei	PALAWAN HORNBILL (Eng)	VU A2cd+3cd ver 3.1 (2001)
323	Erythrura viridifacies	GREEN-FACED PARROTFINCH (Eng)	VU A2cd+3cd ver 3.1 (2001)
324	Pitta kochi	WHISKERED PITTA (Eng) BRÈVE DE KOCH (Fre) PITA DE KOCH (Spa)	VU A2cd+3cd ver 3.1 (2001)

#	Scientific Name	Common Name(s)	[Red List]
325	Prioniturus platenae	BLUE-HEADED RACQUET-TAIL (Eng) PALETTE DE PALAWAN (Fre) LORITO-MOMOTO DE PALAWAN (Spa)	VU A2cd+3cd ver 3.1 (2001)
326	Zoothera cinerea	ASHY THRUSH (Eng)	VU A2cd+3cd ver 3.1 (2001)
327	Gallicolumba crinigera	MINDANAO BLEEDING-HEART (Eng)	VU A2cd+3cd+4cd; C2a(i) ver 3.1 (2001)
328	Polyplectron napoleonis	PALAWAN PEACOCK-PHEASANT (Eng) ÉPERONNIER DE PALAWAN (Fre) ÉPERONNIER NAPOLÉON (Fre) ESPOLONERO DE PALAWAN (Spa) FAISÁN REAL DE PALAGUÁN (Spa)	VU A2cd+3cd; B1ab(i,ii,iii,iv,v); C1 ver 3.1 (2001)
329	Ducula mindorensis	MINDORO IMPERIAL-PIGEON (Eng) CARPOPHAGE DE MINDORO (Fre) PIGEON DE MINDORO (Fre) PALOMA DE MINDORO (Spa)	VU A2cd+3cd; B1ab(ii,iii,iv,v); C2a(i) ver 3.1 (2001)
380	Mimizuku gurneyi	GIANT SCOPS-OWL (Eng) HIBOU DE TWEEDDALE (Fre) PETIT-DUC DE GURNEY (Fre) PETIT-DUC GÉANT (Fre) SCOPS GÉANT DE GUERNEY (Fre) AUTILLO DE GUERNEY (Spa) BÚHO DE MINDANAO (Spa)	VU A2cd+3cd; C2a(i) ver 3.1 (2001)
381	Phapitreron brunneiceps	MINDANAO BROWN-DOVE (Eng)	VU A2cd+3cd; C2a(i) ver 3.1 (2001)
382	Prioniturus luconensis	GREEN RACQUET-TAIL (Eng) PALETTE VERTE (Fre) LORITO-MOMOTO DE LUZÓN (Spa)	VU A2cd+3cd; C2a(i) ver 3.1 (2001)
383	Ptilinopus marchei	FLAME-BREASTED FRUIT-DOVE (Eng)	VU A2cd+3cd; C2a(i) ver 3.1 (2001)
384	Spizaetus philippensis	PHILIPPINE HAWK-EAGLE (Eng) AIGLE DES PHILIPPINES (Fre) AGUILA-AZOR FILIPINA (Spa)	VU A2cd+3cd; C2a(i) ver 3.1 (2001)
385	Puntius lindog	LINDOG (Eng)	VU A2cde ver 2.3 (1994) (needs updating)
386	Puntius sirang	SIRANG (Eng)	VU A2cde ver 2.3 (1994) (needs updating)
387	Puntius tumba	TUMBA (Eng)	VU A2cde ver 2.3 (1994) (needs updating)
388	Grus antigone	SARUS CRANE (Eng)	VU A2cde+3cde+4cde ver 3.1 (2001)
389	Rhyacornis bicolor	LUZON WATER-REDSTART (Eng)	VU A2ce+3ce; B1ab(i,ii,iii,iv,v); D2 ver 3.1 (2001)
390	Bolbometopon muricatum	BUMPHEAD PARROTFISH (Eng) DOUBLE-HEADED PARROTFISH (Eng) GREEN HUMPHEAD PARROTFISH (Eng) HUMPHEAD PARROTFISH (Eng) FILAMBASE (Fre) PERROQUET BOSSU VERT (Fre) PERROQUET À BOSSE (Fre) LORO COTOTO VERDE (Spa)	VU A2d ver 3.1 (2001)
391	Epinephelus lanceolatus	BRINDLE BASS (Eng) BRINDLED GROUPER (Eng) GIANT GROUPER (Eng)	VU A2d ver 3.1 (2001)

#	Scientific Name	Common Name(s)	[Red List]
		QUEENSLAND GROPER (Eng) MÉROU LANCÉOLÉ (Fre) MERO LANCEOLADE (Spa)	
392	Rhinoptera javanica	FLAPNOSE RAY (Eng) JAVANESE COWNOSE RAY (Eng) MOURINE JAVANAISE (Fre)	VU A2d+3cd+4cd ver 3.1 (2001)
393	Aetomylaeus nichofii	BANDED EAGLE RAY (Eng)	VU A2d+3d+4d ver 3.1 (2001)
394	Aerides leeanum		VU A4acd; B1ab(ii,iii,v) ver 3.1 (2001)
395	Dendrobium sanderae		VU A4acd; B1ab(ii,iii,v) ver 3.1 (2001)
396	Epigeneium treacherianum		VU A4acd; B1ab(ii,iii,v) ver 3.1 (2001)
397	Cromileptes altivelis	BARAMUNDI COD (Eng) BARRAMUNDI COD (Eng) BARRIMUNDI COD (Eng) FLATFISH GROUPER (Eng) HIGHFINNED GROUPER (Eng) HUMP-BACK ROCK-COD (Eng) HUMPBACK GROUPER (Eng) HUMPBACK ROCKCOD (Eng) HUMPBACK SEABASS (Eng) LOCHE TRUITE (Eng) PANTHER GROUPER (Eng) PANTHERFISH (Eng) GRISSETTE (Fre) LOCHE VOILE (Fre) MEROU BOSSU (Fre) MERO JOROBADO (Spa)	VU A4cd ver 3.1 (2001)
398	Hippocampus barbouri	BARBOUR'S SEAHORSE (Eng)	VU A4cd ver 3.1 (2001)
399	Hippocampus kuda	COMMON SEAHORSE (Eng) ESTUARY SEAHORSE (Eng) SPOTTED SEAHORSE (Eng) YELLOW SEAHORSE (Eng)	VU A4cd ver 3.1 (2001)
400	Hippocampus spinosissimus	HEDGEHOG SEAHORSE (Eng)	VU A4cd ver 3.1 (2001)
401	Hippocampus trimaculatus	FLAT-FACED SEAHORSE (Eng) LOW-CROWNED SEAHORSE (Eng) THREE-SPOT SEAHORSE (Eng)	VU A4cd ver 3.1 (2001)
402	Plectropomus areolatus	POLKADOT COD (Eng) SPOTTED CORAL TROUT (Eng) SQUARE-TAIL CORAL TROUT (Eng) SQUARETAIL CORAL TROUT (Eng) SQUARETAIL CORALGROUPER (Eng) SQUARETAIL GROUPER (Eng) SQUARETAIL LEOPARDGROUPER (Eng) MÉROU QUEUE CARRÉE (Fre) SAUMONÉE OCELLÉE (Fre) MERO TRONCÓN (Spa)	VU A4d ver 3.1 (2001)
403	Apomys gracilirostris	LARGE MINDORO FOREST MOUSE (Eng)	VU B1+2b, C2a ver 2.3 (1994) (needs updating)
404	Alionycteris paucidentata	MINDANAO PYGMY FRUIT BAT (Eng)	VU B1+2c ver 2.3 (1994) (needs updating)
405	Antidesma obliquinervium		VU B1+2c ver 2.3 (1994)

#	Scientific Name	Common Name(s)	[Red List]
406	Antidesma subolivaceum		VU B1+2c ver 2.3 (1994)
407	Aporusa elliptifolia		VU B1+2c ver 2.3 (1994)
408	Arthrophyllum pulgarense		VU B1+2c ver 2.3 (1994)
409	Baccaurea glabrifolia		VU B1+2c ver 2.3 (1994)
410	Baccaurea odoratissima		VU B1+2c ver 2.3 (1994)
411	Chrotomys whiteheadi	LUZON STRIPED RAT (Eng)	VU B1+2c ver 2.3 (1994) (needs updating)
412	Crocidura beatus	MINDANAO SHREW (Eng)	VU B1+2c ver 2.3 (1994) (needs updating)
413	Crocidura grayi	LUZON SHREW (Eng)	VU B1+2c ver 2.3 (1994) (needs updating)
414	Crocidura palawanensis	PALAWAN SHREW (Eng)	VU B1+2c ver 2.3 (1994) (needs updating)
415	Dasymaschalon scandens		VU B1+2c ver 2.3 (1994)
416	Diospyros pulgarensis		VU B1+2c ver 2.3 (1994)
417	Drypetes palawanensis		VU B1+2c ver 2.3 (1994)
418	Dysoxylum angustifolium		VU B1+2c ver 2.3 (1994)
419	Dysoxylum palawanensis		VU B1+2c ver 2.3 (1994)
420	Freycinetia auriculata		VU B1+2c ver 2.3 (1994)
421	Glyptopetalum palawanense		VU B1+2c ver 2.3 (1994)
422	Idea electra	ELECTRA'S TREE-NYMPH (Eng)	VU B1+2c ver 2.3 (1994) (needs updating)
423	Knema stenocarpa		VU B1+2c ver 2.3 (1994)
424	Macaranga congestiflora		VU B1+2c ver 2.3 (1994)
425	Mitrephora caudata		VU B1+2c ver 2.3 (1994)
426	Mitrephora fragrans		VU B1+2c ver 2.3 (1994)
427	Mydaus marchei	PALAWAN STINK BADGER (Eng)	VU B1+2c ver 2.3 (1994) (needs updating)
428	Myristica colinridsdalei		VU B1+2c ver 2.3 (1994)
429	Orophea palawanensis		VU B1+2c ver 2.3 (1994)
430	Orophea submaculata		VU B1+2c ver 2.3 (1994)
431	Pandanus decipiens		VU B1+2c ver 2.3 (1994)
432	Parantica dannatti	DANNATT'S TIGER (Eng)	VU B1+2c ver 2.3 (1994) (needs updating)
433	Parantica phyle	FELDER'S TIGER (Eng)	VU B1+2c ver 2.3 (1994) (needs updating)
434	Polyalthia elmeri		VU B1+2c ver 2.3 (1994)
435	Polyalthia palawanensis		VU B1+2c ver 2.3 (1994)
436	Protium connarifolium		VU B1+2c ver 2.3 (1994)
437	Rattus mindorensis	MINDORO BLACK RAT (Eng)	VU B1+2c ver 2.3 (1994) (needs updating)
438	Rattus tawitawiensis	TAWI-TAWI FOREST RAT (Eng)	VU B1+2c ver 2.3 (1994)

#	Scientific Name	Common Name(s)	[Red List]
		TAWITAWI ISLAND RAT (Eng)	(needs updating)
439	Rhynchomys isarogensis	ISAROG SHREW RAT (Eng) MT ISAROG SHREW-RAT (Eng)	VU B1+2c ver 2.3 (1994) (needs updating)
440	Semecarpus paucinervius		VU B1+2c ver 2.3 (1994)
441	Stryphnodendron harbesonii		VU B1+2c ver 2.3 (1994)
442	Sundasciurus samarensis	SAMAR SQUIRREL (Eng)	VU B1+2c ver 2.3 (1994) (needs updating)
443	Tupaia palawanensis	PALAWAN TREE SHREW (Eng) TOUPAÏE DE L'ÎLE PALAWAN (Fre)	VU B1+2c ver 2.3 (1994) (needs updating)
444	Urogale everetti	MINDANAO TREE SHREW (Eng) PHILIPPINE TREE SHREW (Eng) UROGALE D'EVERETT (Fre) UROGALE DE MINDANAO (Fre) MUSARAÑA ARBORÍCOLA DE FILIPINAS (Spa)	VU B1+2c ver 2.3 (1994) (needs updating)
445	Xylosma palawanense		VU B1+2c ver 2.3 (1994)
446	Ilex palawanica		VU B1+2c, D2 ver 2.3 (1994)
447	Papilio osmana		VU B1+2c, D2 ver 2.3 (1994) (needs updating)
448	Pinus merkusii	MERKUS PINE (Eng) MINDORO PINE (Eng) SUMATRAN PINE (Eng)	VU B1+2cde ver 2.3 (1994)
449	Ducula pickeringii	GREY IMPERIAL-PIGEON (Eng)	VU B1ab(ii,iii,iv,v) ver 3.1 (2001)
450	Ansonia mcgregori		VU B1ab(iii) ver 3.1 (2001)
451	Ansonia muelleri		VU B1ab(iii) ver 3.1 (2001)
452	Barbourula busuangensis	PHILIPPINE DISCOGLOSSID FROG (Eng) PHILIPPINE FLAT-HEADED FROG (Eng)	VU B1ab(iii) ver 3.1 (2001)
453	Kaloula kalingensis	KALINGA NARROWMOUTH TOAD (Eng) SMOOTH-FINGERED NARROW-MOUTHED FROG (Eng)	VU B1ab(iii) ver 3.1 (2001)
454	Kaloula rigida	LUZON NARROW-MOUTHED FROG (Eng)	VU B1ab(iii) ver 3.1 (2001)
455	Limnonectes acanthi		VU B1ab(iii) ver 3.1 (2001)
456	Limnonectes diuatus	EASTERN MINDANAO FROG (Eng) TAGIBO WART FROG (Eng)	VU B1ab(iii) ver 3.1 (2001)
457	Limnonectes parvus	PHILIPPINE SMALL-DISKED FROG (Eng)	VU B1ab(iii) ver 3.1 (2001)
458	Megophrys stejnegeri	MINDANAO HORNED FROG (Eng) SOUTHEAST ASIAN HORNED TOAD (Eng)	VU B1ab(iii) ver 3.1 (2001)
459	Nyctixalus spinosus	SPINY TREE FROG (Eng)	VU B1ab(iii) ver 3.1 (2001)
460	Occidozyga diminutivus	SMALL-HEADED FROG (Eng)	VU B1ab(iii) ver 3.1 (2001)
461	Oreophryne anulata		VU B1ab(iii) ver 3.1 (2001)
462	Pelophryne lighti		VU B1ab(iii) ver 3.1 (2001)
463	Philautus acutirostris		VU B1ab(iii) ver 3.1 (2001)
464	Philautus leitensis	LEYTE TREE FROG (Eng)	VU B1ab(iii) ver 3.1 (2001)

#	Scientific Name	Common Name(s)	[Red List]
465	Philautus poecilius	MOTTLED TREE FROG (Eng)	VU B1ab(iii) ver 3.1 (2001)
466	Philautus worcesteri		VU B1ab(iii) ver 3.1 (2001)
467	Platymantis cornuta	HORNED FOREST FROG (Eng)	VU B1ab(iii) ver 3.1 (2001)
468	Platymantis guentheri		VU B1ab(iii) ver 3.1 (2001)
469	Platymantis pygmaea	PYGMY FOREST FROG (Eng)	VU B1ab(iii) ver 3.1 (2001)
470	Platymantis rabori	RABOR'S FOREST FROG (Eng)	VU B1ab(iii) ver 3.1 (2001)
471	Platymantis sierramadrensis		VU B1ab(iii) ver 3.1 (2001)
472	Rana igorota		VU B1ab(iii) ver 3.1 (2001)
473	Rana tipanan		VU B1ab(iii) ver 3.1 (2001)
474	Rhacophorus bimaculatus		VU B1ab(iii) ver 3.1 (2001)
475	Limnonectes visayanus	GIANT VISAYAN FROG (Eng)	VU B1ab(iii,v) ver 3.1 (2001)
476	Rhinocypha latimacula		VU B2ab(iii) ver 3.1 (2001)
477	Anonymomys mindorensis	MINDORO CLIMBING RAT (Eng) MINDORO RAT (Eng)	VU C2a ver 2.3 (1994) (needs updating)
488	Egretta eulophotes	CHINESE EGRET (Eng)	VU C2a(i) ver 3.1 (2001)
499	Acrocephalus sorghophilus	STREAKED REED-WARBLER (Eng)	VU C2a(ii) ver 3.1 (2001)
500	Emberiza sulphurata	YELLOW BUNTING (Eng)	VU C2a(ii) ver 3.1 (2001)
501	Phylloscopus ijimae	IZU LEAF-WARBLER (Eng)	VU C2a(ii) ver 3.1 (2001)
502	Apomys sacobianus	LONG-NOSED LUZON FOREST MOUSE (Eng)	VU C2b ver 2.3 (1994) (needs updating)
503	Gallirallus calayanensis	CALAYAN RAIL (Eng)	VU D1+2 ver 3.1 (2001)
504	Aglaia costata		VU D2 ver 2.3 (1994)
505	Aglaia pyriformis		VU D2 ver 2.3 (1994)
506	Atherinomorus lineatus	LINED SILVERSIDE (Eng)	VU D2 ver 2.3 (1994) (needs updating)
507	Boroda expatria		VU D2 ver 2.3 (1994) (needs updating)
508	Elaeocarpus dinagatensis		VU D2 ver 2.3 (1994)
509	Elaeocarpus gigantifolius		VU D2 ver 2.3 (1994)
510	Embolanthera spicata		VU D2 ver 2.3 (1994)
511	Hopea foxworthyi		VU D2 ver 2.3 (1994)
512	Horsfieldia samarensis		VU D2 ver 2.3 (1994)
513	Kibatalia elmeri		VU D2 ver 2.3 (1994)
514	Kibatalia macgregori		VU D2 ver 2.3 (1994)
515	Kibatalia merrilliana		VU D2 ver 2.3 (1994)
516	Knema alvarezii		VU D2 ver 2.3 (1994)
517	Knema ridsdaleana		VU D2 ver 2.3 (1994)
518	Mallotus odoratus		VU D2 ver 2.3 (1994)
519	Myristica basilanica		VU D2 ver 2.3 (1994)
520	Myristica longipetiolata		VU D2 ver 2.3 (1994)
521	Nepenthes argentii		VU D2 ver 2.3 (1994)
522	Nepenthes merrilliana		VU D2 ver 2.3 (1994)

#	Scientific Name	Common Name(s)	[Red List]
523	Nepenthes sibuyanensis		VU D2 ver 2.3 (1994)
524	Papilio carolinensis		VU D2 ver 2.3 (1994) (needs updating)
525	Platymantis banahao	BANAHAO FOREST FROG (Eng)	VU D2 ver 3.1 (2001)
526	Platymantis indeprensus		VU D2 ver 3.1 (2001)
527	Platymantis isarog	ISAROG FOREST FROG (Eng)	VU D2 ver 3.1 (2001)
528	Platymantis montana		VU D2 ver 3.1 (2001)
529	Platymantis naomiae	NAOMI'S FOREST FROG (Eng)	VU D2 ver 3.1 (2001)
530	Platymantis pseudodorsalis		VU D2 ver 3.1 (2001)
531	Podocarpus lophatus		VU D2 ver 2.3 (1994)
532	Prunus subglabra		VU D2 ver 2.3 (1994)
533	Puntius hemictenus		VU D2 ver 2.3 (1994) (needs updating)
544	Puntius manguaoensis		VU D2 ver 2.3 (1994) (needs updating)
545	Sicyopus axilimentus		VU D2 ver 2.3 (1994) (needs updating)
546	Stiphodon surrufus		VU D2 ver 2.3 (1994) (needs updating)

Source: IUCN, 2007.

ANNEX E

PHILIPPINES SPECIES ON CITES APPENDIX I AND II

CITES APPENDIX I (FAUNA AND FLORA WHICH NATIONAL AND INTERNATIONAL TRADE IS STRICTLY PROHIBITED)

CLASS	ORDER	FAMILY	COMMON NAME	SCIENTIFIC NAME
1. *MAMMALIA*	Sirenia	Dugongidae	Dugong (=Sea Cow)	*Dugong dugon*
	Cetacea	Phocoenidae	Finless porpoise (=Black Finless Porpoise) (=Finless Black Porpoise)	*Neophocaena phocaenoides*
		Physeteridae	Sperm whale (=Cachelot) (=Pot whale) (=Spermacet whale)	*Physeter catodon*
		Balaenopteridae	Humpback whale (=Hump whale) (=Bunch) (=Hunchbacked whale)	*Megaptera novaeangliae*
			Bryde's whale (=Tropical Whale)	*Balaenoptera edeni*
			Minke Whale (=Northern Minke Whale) (=Little Piked Whale) (=Lesser Rorqual)	*Balaenoptera acutorostrata*
		Delphinidae	Irrawaddy Dolphin (=Snubfin Dolphin)	*Orcaella brevirostris*
			Indo-pacific Humpbacked Dolphin	*Sousa chinensis*
	Artiodactyla	Bovidae	Tamaraw	*Bubalus mindorensis*
		Cervidae	Calamian Deer (=Calamian Hog Deer)	*Axis calamianensis*
	Chiroptera	Pteropodidae	Giant golden-crowned flying fox (=Golden-capped fruit bat)	*Acerodon jubatus*
			Panay Flying-fox (=Panay Giant fruit bat) (=Panay Golden-capped fruit bat)	*Acerodon Lucifer*
2. *AVES*	Falconiformes	Accipitridae	Philippine Eagle (=Great Philippine Eagle) (=Monkey-eating Eagle)	*Pithecophaga jefferyi*

CLASS	ORDER	FAMILY	COMMON NAME	SCIENTIFIC NAME
		Falconidae	Peregrine Falcon (=Duck Hawk) (=Peregrine)	*Falco peregrinus*
	Galliformes	Phasianidae	Palawan Peacock Pheasant (=Napoleon's Peacock-Pheasant)	*Polyplectron emphanum*
	Charadriiformes	Scolopacidae	Spotted Greenshank (=Nordmann's Greenshank)	*Tringa guttifer*
	Columbiformes	Columbidae	Nicobar Pigeon (=Nicobar Dove)	*Caloenas nicobarica*
			Mindoro Imperial Pigeon (=Mindoro Zone-tailed Pigeon)	*Ducula mindorensis*
	Psittaciformes	Psittacidae	Philippine Cockatoo (=Red-vented Cockatoo)	*Cacatua haematuropygia*
	Strigiformes	Strigidae	Giant Scops Owl (=Lesser Eagle-Owl) (=Mindanao Eagle-Owl)	*Mimizuku gurneyi*
	Passeriformes	Pittidae	Koch's Pitta (=Whiskered Pitta)	*Pitta kochi*
	Piciformes	Picidae	White-bellied Woodpecker	*Dryocopus javensis*
			Tristram's Woodpecker	*Dryocopus javensis richardsi*
3. *REPTILIA*	Testudinata	Cheloniidae	Green Turtle	*Chelonia mydas*
			Hawksbill Turtle	*Eretmochelys imbricate*
			Pacific Hawksbill Turtle	*Eretmochelys imbricata bissa*
			Atlantic Hawksbill Turtle	*Eretmochelys imbricata imbricate*
			Olive-ridley Turtle	*Lepidochelys olivacea*
			Loggerhead turtle	*Caretta caretta*
		Dermochelyidae	Leatherback turtle (=Leathery Turtle) (=Luth) (=Trunkback turtle)	*Dermochelys coriacea*
	Crocodylia	Crocodylidae	Philippine Crocodile (=Mindoro Crocodile)	*Crocodylus mindorensis*
			Salt-water Crocodile (=Estuarine Crocodile) Crocodylus porosus	
4. *INSECTA*	Lepidoptera	Papilionidae	Luzon Peacock Swallowtail	*Papilio chikae*
5. *FLORA*		Orchidaceae	Lady's Slipper	*Paphiopedilum acmodontum*
				Paphiopedilum adductum
				Paphiopedilum anitum
				Paphiopedilum argus

CLASS	ORDER	FAMILY	COMMON NAME	SCIENTIFIC NAME
				Paphiopedilum ciliolare
				Paphiopedilum fowliei
				Paphiopedilum haynaldianum
				Paphiopedilum hennisianum
				Paphiopedilum philippinense
				Paphiopedilum philippinense roebelenii
				Paphiopedilum randsii
				Paphiopedilum urbanianum
				Paphiopedilum usitanum

APPENDIX II
(FAUNA AND FLORA WHICH INTERNATIONAL AND NATIONAL TRADE IS STRICTLY REGULATED)

CLASS	ORDER	FAMILY	COMMON NAME	SCIENTIFIC NAME
1. MAMALIA	Chiroptera	Pteropodidae	Palawan Flying-fox (=Palawan Fruit Bat)	*Acerodon leucotis*
			Small Flying-fox (=VariableFlying-fox)	*Pteropus hypomelanus*
			Ryukyu Flying-fox	*Pteropus dasymallus*
			Grey Flying-fox	*Pteropus griseus*
			White-winged Flying-fox	*Pteropus leucopterus*
			Meams's Flying-fox	*Pteropus mearnsi*
			Little Golden-mantled Flying-fox	*Pteropus pumilus*
			Large Flying-fox	*Pteropus vampyrus*
			Philippine Grey Flying-fox	*Pteropus speciosus*
	Pholidota	Manidae	Malayan Pangolin (=Sunda Pangolin)	*Manis javanica*
	Scandentia	Tupaiidae	Palawan Treeshrew	*Tuaia palawanensis*
			Philippine Treeshrew (=Mindanao Treeshrew)	*Urogale everetti*
	Primates	Loridae	Slow Loris	*Nycticebus coucang*
		Tarsiidae	Philippine Tarsier	*Tarsius syrichta*
		Cercopithecidae	Long-tailed Macaque (=Crab-eating Macaque) (=Cynomolgus Monkey)	*Macaca fascicularis*
	Carnivora	Felidae	Leopard Cat	*Prionailurus bengalensis*
			Bengal Leopard Cat	*Prionailurus bengalensis*

CLASS	ORDER	FAMILY	COMMON NAME	SCIENTIFIC NAME
				bengalensis
			Iriomote Cat	*Prionailurus bengalensis iriomotensis*
		Mustelidae	Oriental Small-clawed Otter (=Small-clawed Otter)	*Amblonyx cinereus*
	Cetacea	Delphinidae	Spinner Dolphin (=Long-beaked Dolphin) (=Long-snouted Dolphin)	*Stenella longirostris*
			Pantropical spotted dolphin (=Bridled Dolphin) (=Narrow-snouted Dolphin)	*Stenella attenuata*
			Fraser's Dolphin (=Sarawak Dolphin)	*Lagenodelphis hosei*
			Bottle-nosed Dolphin (=Bottlenose Dolphin)	*Tursiops truncatus*
			Risso's Dolphin (=Grey Dolphin)	*Grampus griseus*
			Rough-toothed Dolphin	*Steno bredanensis*
			Striped Dolphin (=Euphrosyne Dolphin)	*Stenella coeruleoalba*
			Melon-headed Whale	*Peponocephala electra*
			Pygmy Killer Whale (=Slender Blackfish)	*Feresa attenuata*
			Short-finned Pilot Whale (=Pacific Pilot Whale)	*Globicephala macrorhynchus*
			Killer Whale (=Orca)	*Orcinus orca*
			False Killer Whale	*Pesudorca crassidens*
		Physeteridae	Pygmy Sperm Whale	*Kogia breviceps*
			Dwarf Sperm Whale (=Owen's Pygmy Sperm Whale)	*Kogia simus*
		Ziphiidae	Blainville's Beaked Whale	*Mesoplodon densirostris*
			Cuvier's Beaked Whale (=Goose-beaked Whale)	*Ziphius cavirostris*
2. AVES	Falconiformes	Accipitridae	Black-winged Kite (=Black-shouldered Kite)	*Elanus caeruleus*
			Asian Baza (=Jerdon's Baza)	*Aviceda jerdoni*
			Oriental Honey-buzzard	*Pernis ptilorhyncus*
			White-bellied Sea Eagle (=White-bellied Fish-Eagle)	*Haliaeetus leucogaster*
			Barred Honey-buzzard	*Pernis celebensis*
			Brahminy Kite (=Red-backed Kite) (=Red-backed Sea Eagle) (=White-headed Sea Eagle)	*Haliastur indus*
			Grey Frog Hawk (=Chinese Goshawk) (=Chinese Sparrowhawk)	*Accipiter soloensis*

CLASS	ORDER	FAMILY	COMMON NAME	SCIENTIFIC NAME
			Japanese Sparrowhawk (=Japanese Lesser Sparrowhawk)	*Accipiter gularis*
			Black-eared Kite	*Milvus lineatus*
			Philippine Serpent-Eagle	*Spilornis holospilus*
			Crested Serpent-Eagle (=Mentawai Serpent-Eagle) (=Natuna Serpent-Eagle) (=Nias Serpent-Eagle) (=Ryukyu Serpent-Eagle) (=Simeulue Serpent-Eagle)	*Spilornis cheela*
			Grey-headed Fishing Eagle	*Ichthyophaga ichthyaetus*
			Eastern Marsh-Harrier (=Papuan Harrier) (=Spotted Marsh-Harrier) (=Spotted-backed Harrier)	*Circus spilonotus*
			Pied Harrier	*Circus melanoleucos*
			Common Buzzard (=Buzzard) (=Eurasian Buzzard)	*Buteo buteo*
			Crested Goshawk (=Asian Crested Goshawk)	*Accipiter trivirgatus*
			Besra Sparrowhawk (=Besra) (=Besra-sperwer)	*Accipiter virgatus*
			Grey-faced Buzzard (=Grey-faced Buzzard Eagle)	*Butastur indicus*
			Philippine Hawk-Eagle	*Spizaetus philippensis*
			Changeable Hawk-Eagle (=Crested Hawk-Eagle) (=Sunda Hawk-Eagle)	*Spizaetus cirrhatus*
			Rufous-bellied Eagle (=Chestnut-bellied Hawk-Eagle)	*Hieraaetus kienerii*
		Pandionidae	Osprey	*Pandion haliaetus*
		Falconidae	Philippine Falconet	*Microhierax erythrogenys*
			Common Kestrel (=Eurasian Kestrel) (=Kestrel)	*Falco tinnunculus*
			Oriental Hobby	*Falco severus*
			Merlin (=Pigeon Hawk)	*Falco columbarius*
	Gruiformes	Gruidae	Sarus Crane	*Grus antigone*
	Columbiformes	Columbidae	Luzon Bleeding Heart (=Bleeding Heart Dove) (=Bleeding Heart Pigeon)	*Gallicolumba luzonica*
	Psittaciformes	Psittacidae	Mindanao Lorikeet (=Johnstone's Lorikeet)	*Trichoglossus johnstoniae*
			Blue-headed Racquet-tail	*Prioniturus platenae*
			Montane Racquet-tailed (=Luzon Racquet-tail)	*Prioniturus montanus*
			Palawan Racket-tailed Parrot (=Blue-crowned Racquet-tail)	*Prioniturus discurus*

CLASS	ORDER	FAMILY	COMMON NAME	SCIENTIFIC NAME
			Green-headed Racket-tailed Parrot (=Green Racquet-tail) (=Green-crowned Racket-tailed Parrot)	*Prioniturus luconensis*
			Mindanao Racquet-tail	*Prioniturus waterstradti*
			Blue-winged Racquet-tail	*Prioniturus verticalis*
			Blue-naped Parrot	*Tanygnathus lucionensis*
			Blue-backed Parrot (=Muller's Parrot) (=Azure-rumped Parrot)	*Tanygnathus sumatranus*
			Great-billed Parrot	*Tanygnathus megalorynchos*
			Guaiabero	*Bolbopsittacus lunulatus*
			Philippine Hanging-Parrot (=Colasisi)	*Loriculus philippensis*
		Estrildidae	Java Sparrow	*Padda oryzivora*
		Sturnidae	Common Hill Myna (=Hill Myna)	*Gracula religiosa*
	Strigiformes	Phodilidae	Oriental Bay-Owl (=Common Bay-Owl) (=Bay Owl)	Phodilus badius
		Tytonidae	Eastern Grass-Owl	*Tyto longimembris*
		Strigidae	Philippine Scops-Owl	*Otus megalotis*
			Reddish Scops-Owl	*Otus rufescens*
			Short-eared Owl	*Asio flammeus*
			Spotted Wood-Owl	*Strix seloputo*
			Luzon Scops-Owl	*Otus longicornis*
			Palawan Scops-Owl	*Otus fuliginosus*
			Mantanani Scops-Owl	*Otus mantananensis*
			Ryukyu Scops-Owl (=Elegant Scops-Owl)	*Otus elegans*
			Mindoro Scops-Owl	*Otus mindorensis*
			Mindanao Scops-Owl	*Otus mirus*
			Brown Hawk-Owl (=Brown Boobook)	*Ninox scutulata*
			Philippine Hawk-Owl (=Philippine Boobook)	*Ninox philippensis*
			Philippine Eagle-Owl	*Bubo philippensis*
	Coraciiformes	Bucerotidae	Rufous Hornbill	*Buceros hydrocorax*
			Tarictic Hornbill (=Panay Tarictic Hornbill) (=Visayan Hornbill)	*Penelopides panini*
			Samar Hornbill (=Samar Tarictic Hornbill)	*Penelopides samarensis*
			Mindoro Hornbill	*Penelopides mindorensis*
			Luzon Hornbill (=Luzon Tarictic Hornbill)	*Penelopides manillae*

CLASS	ORDER	FAMILY	COMMON NAME	SCIENTIFIC NAME
			Mindanao Hornbill (=Mindanao Tarictic Hornbill)	*Penelopides affinis*
			Palawan Hornbill	*Anthracoceros marchei*
			Sulu Hornbill	*Anthracoceros montani*
			Writhed-billed Hornbill (=Visayan Wrinkled Hornbill) (=Panay Wrinkled Hornbill) (=Rufous-headed Hornbill)	*Aceros waldeni*
			Writhed Hornbill (=White-headed Hornbill) (=Mindanao Wrinkled Hornbill)	*Aceros leucocephalus*
3. REPTILIA	Sauria	Varanidae	Lizard	*Varanus mabitang*
			Gray's Monitor	*Varanus olivaceus*
			Harlequin Monitor (=Rough-necked Monitor) (=Tree Lizard)	*Varanus rudicollis*
			Common Water Monitor (=Malayan Monitor) (=No-mark Lizard) (=Plain Lizard) (=Rice Lizard) (=Ring Lizard) (=Two-banded Monitor) (=Water Monitor)	*Varanus salvator*
			King Cobra (=Hamadryad)	*Ophiophagus hannah*
			North Philippine Spitting Cobra (=Philippine Cobra)	*Naja philippinensis*
			Peters's Cobra (=South-east Philippine Spitting Cobra)	Naja samarensis
			Equatorial Spitting Cobra (=Golden Spitting Cobra)	Naja sumatrana
	Pythonidae	Elapidae	Java Rock Python (=Regal Python) (=Reticulated Python)	Python reticulatus
	Testudines	Emydidae	Malaysian Box Turtle (=South Asian Box Turtle)	*Cuora amboinensis*
			Philippine Pond Turtle (=Leyte Pond Turtle)	*Heosemys leytensis*
			Spiny Turtle (=Spiny Terrapin) (=Sunburst Turtle)	*Heosemys spinosa*
		Trionychidae	Asian Giant Softshell Turtle (=Cantor's Giant Softshell Turtle) (=Frog-faced Giant Softshell Turtle)	*Pelochelys cantorii*
	Crocodylia	Crocodylidae	Estuarine Crocodile (=Salt-water Crocodile)	*Crocodylus porosus*
4. INSECTA	Lepidoptera	Papilionidae	Butterfly	*Troides magellanus*
				Troides plateni
				Troides rhadamantus

CLASS	ORDER	FAMILY	COMMON NAME	SCIENTIFIC NAME
				Trogonoptera trojana
5. FLORA		Cyatheaceae	Tree Ferns	*Cyathea acuminata*
				Cyathea apoensis
				Cyathea atropurpurea
				Cyathea binuangensis
				Cyathea callosa
				Cyathea caudata
				Cyathea christii
				Cyathea cinerea
				Cyathea contaminans
				Cyathea curranii
				Cyathea edanoi
				Cyathea elmeri
				Cyathea fenicis
				Cyathea ferruginea
				Cyathea fuliginosa
				Cyathea halconensis
				Cyathea heterochlamydea
				Cyathea integra
				Cyathea latebrosa
				Cyathea latipinnula
				Cyathea lepifera
				Cyathea loheri
				Cyathea lurida
				Cyathea masapilidensis
				Cyathea microchlamys
				Cyathea negrosiana
				Cyathea obliqua
				Cyathea philippinensis
				Cyathea polypoda
				Cyathea robinsonii
				Cyathea rufopannosa
				Cyathea setulosa
				Cyathea sibuyanensis
				Cyathea spinulosa
				Cyathea squamulata

CLASS	ORDER	FAMILY	COMMON NAME	SCIENTIFIC NAME
				Cyathea suluensis
				Cyathea trichophora
				Cyathea tripinnata
				Cyathea zamboangana
	Cycadaceae	Sago-palm		*Cycas circinalis*
				Cycas circinalis angustifolia
				Cycas circinalis circinalis
				Cycas circinalis javana
				Cycas circinalis madagascariensis:trigonocarpoi
				Cycas circinalis papuana
				Cycas circinalis papuana:scratchleyana
				Cycas circinalis riuminiana:curranii
				Cycas circinalis riuminiana:curranii:graminea
				Cycas circinalis riuminiana:curranii:maritima
				Cycas circinalis ruiminiana
				Cycas circinalis ruiminiana:curranii:chamberlai
				Cycas circinalis seemannii
				Cycas circinalis thouarsii
				Cycas circinalis undulata
				Cycas circinalis vera:beddomei
				Cycas circinalis vera:pectinata
			Chamberlain Pitogo (=Arayat Pitogo)	*Cycas chamberlainii*
				Cycas curranii
				Cycas riuminiana
			Malayan Fern Palm	*Cycas rumphii*

CLASS	ORDER	FAMILY	COMMON NAME	SCIENTIFIC NAME
				Cycas rumphii bifida
				Cycas rumphii normanbyana
				Cycas rumphii papuana
				Cycas rumphii seemannii
				Cycas rumphii undulata
				Cycas rumphii zeylanica
			Culion Pitogo	*Cycas wadei*
		Dicksoniaceae		*Cibotium barometz*
				Dicksonia blumei
				Dicksonia mollis
		Euphorbiaceae	Lumbang Family	*Euphorbia plumerioides*
		Nepenthaceae	Pitcher Plant	*Nepenthes alata*
				Nepenthes alata biflora
				Nepenthes alata ecristata
				Nepenthes alata variegata
				Nepenthes bellii
				Nepenthes burkei
				Nepenthes burkei burkei
				Nepenthes burkei excellens
				Nepenthes burkei prolifica
				Nepenthes deaniana
				Nepenthes globamphora
				Nepenthes merrilliana
				Nepenthes mirabilis
				Nepenthes mirabilis anamensis
				Nepenthes mirabilis biflora
				Nepenthes mirabilis echinostoma
				Nepenthes mirabilis simensis
				Nepenthes mirabilis smilesii
				Nepenthes petiolata
				Nepenthes philippinensis
				Nepenthes truncata

CLASS	ORDER	FAMILY	COMMON NAME	SCIENTIFIC NAME
				Nepenthes ventricosa
		Orchidaceae		*Agrostophyllum hasseltii*
				Aphyllorchis pallida
				Appendicula alba
				Appendicula buxifolia
				Bulbophyllum antenniferum
				Bulbophyllum cheiri
			Large Flowered bulbophyllum	*Bulbophyllum macranthum*
				Bulbophyllum profusum
				Bulbophyllum stramineum
				Bulbophyllum whitfordii
				Calanthe angustifolia
				Calanthe pulchra
				Ceratostylis subulata
				Chelonistele sulphurea
				Cleisostoma uraiense
				Coelogyne palawanense
				Corybas laceratus
				Corybas merrillii
				Corybas ramosianus
				Cymbidium aliciae
				Cymbidium atropurpureum
				Cymbidium bicolor
				Cymbidium bicolor obtusum
				Cymbidium bicolor pubescens
				Cymbidium cyperifolium indochinense
				Cymbidium dayanum
				Cymbidium dayanum austrojaponicum
				Cymbidium finlaysonianum
				Cymbidium gonzalesii
				Cystorchis aphylla
				Cystorchis javanica
				Dendrobium

CLASS	ORDER	FAMILY	COMMON NAME	SCIENTIFIC NAME
				acuminatissimum
				Dendrobium crumenatum
				Dendrobium cumulatum
				Dendrobium heterocarpum
				Dendrobium lunatum
				Dendrobium macrophyllum macrophyllum
				Dendrobium macrophyllum subvelutinum
				Dendrobium ruckeri
				Dendrobium spurium
				Dendrochilum palawanense
				Dendrochilum zollingeri
				Epipogium roseum
				Eria aerisdostachya
				Eria bractescens bractescens
				Eria bractescens kurzii
				Eria curranii
				Eria fusca
				Eria ornata
				Eria palawanensis
				Flickingeria fimbriata
				Flickingeria luxurians
				Galeola altissima
				Galeola javanica
				Galeola nudifolia
				Goodyera fumata
			White featherduster	*Goodyera procera*
				Goodyera rubicunda
				Grammatophyllum speciosum
				Habenaria koordersii
				Hetaeria oblongifolia
				Hylophila lanceolata
				Lecanorchis pauciflora

CLASS	ORDER	FAMILY	COMMON NAME	SCIENTIFIC NAME
				Lepidogyne longifolia
				Liparis caespitosa
				Liparis compressa
				Liparis palawanensis
				Liparis pallida
				Luisia teretifolia
				Macodes petola
				Microtis unifolia
				Myrmechis gracilis
				Nervilia aragoana
				Oberonia monstruosa
				Peristylus monticola
				Phaius flavus
				Phalaenopsis amabilis
				Phalaenopsis aphrodite
				Phalaenopsis equestris
				Phalaenopsis fasciata
				Phalaenopsis fuscata
				Phalaenopsis gertrudeae
				Phalaenopsis hieroglyphica
				Phalaenopsis intermedia
				Phalaenopsis leucorrhoda
				Phalaenopsis lindenii
				Phalaenopsis lueddemanniana
				Phalaenopsis mannii
				Phalaenopsis mariae
				Phalaenopsis micholitzii
				Phalaenopsis pallens
				Phalaenopsis parishii
				Phalaenopsis portei
				Phalaenopsis pulchra
				Phalaenopsis reichenbachiana
				Phalaenopsis sanderiana
				Phalaenopsis schilleriana

CLASS	ORDER	FAMILY	COMMON NAME	SCIENTIFIC NAME
				Phalaenopsis schiller-stuartiana
				Phalaenopsis stuartiana
				Phalaenopsis veitchiana
				Phalaenopsis virataii
				Pholidota carnea
				Pholidota pallida
				Pholidota ventricosa
				Phreatia desiflora
				Phreatia secunda
				Phreatia sulcata

Source: Wildlife Resources Division, PAWB

Annex F.
Recently completed and on-going foreign-assisted projects that directly and indirectly support forestry and biodiversity conservation.

Project	Focus	Location	Duration	Funding agency and cost (US$'000)
DENR LOANS				
1. Southern Mindanao Integrated Coastal Zone Management Project (SMICZMP)	Watershed management, mangrove refo, septage management, CRM planning, river/shoreline protection	Regions 12 and 11 (Malalag Bay-Balasiao Watershed, Sarangani Bay-Mt Matutum Watershed)	1998-2007	JBIC - 23,196 GOP - 7,145 Total - 30,340
2. Integrated Coastal Resources Management Project (ICRMP)	Policy and institutional strengthening and development, ICRM and biodiversity conservation, enterprise development and income diversification, social and environmental services and facilities	Sixty-nine municipalities in Cagayan, Zambales, Masbate, Cebu, Siquijor, Davao Oriental	June 2007-June 2012	ADB - 33,800 GEF Grant - 9,000 GOP - 19,520 Total - 62,320
3. National Program Support for Environment and Natural Resources Development (NPS-ENRMP)	Enhance ecosystem services through integrated ecosystems management	Nationwide	Nov. 2007-Dec. 2012	WB Loan - 50,000 GEF Grant - 7,000 Total - 57,000
4. Watershed Management Sub-component of the Southern Philippines Irrigation Sector Project (SPISP-WMS)	Reforestation activities, tree plantation, streambank stabilization, agroforestry, preparation of watershed management plan, alliance building	Cebu, Agusan del Norte, Agusan del Sur, Regions 6 and CARAGA	2001-2007	ADB loan - 2,251 GOP - 965 Total - 3,216
DENR GRANTS				
1. Philippine Environmental Governance Project II	ENR (Environmental governance, forest, coastal and marine, solid waste, LGU investment in sanitation facility)	Regions 2, 3, 7, 9, 11, 12, ARMM	2004-2009	USAID grant - US19,000
2. Fisheries Improved for Sustainable Harvest (FISH)	ENR	Nueva Ecija, Palawan, Bohol, Surigao del Su Tawi-Tawi,	2003-2009	12,950,000
3. Partnership for Biodiversity Conservation (PBC)	ENR		2004-2008	325,000
4. Volunteers in Environmental Governance (VEG)	ENR	Aklan, Albay, Antique, Benguet, Bohol, Camarines Norte, Capiz, Cebu, Ifugao, Leyte Marinduque, Mindoro Oriental, Misamis Occodental, Negros Oriental, Northern Sama Nueva Vizcaya, Palawan, Siquijor, Sorsogor Southern Leyte	2004-2009	251,000
5. Sustainable Coastal Tourism in Asia (SCOTIA)	ENR	Batangas, Mindoro Oriental, Bohol, Cebu, Palawan	2004-2008	1,479,100

Project	Focus	Location	Duration	Funding agency and cost (US$'000)
6. Local Initiatives for Affordable Wastewater (LINAW2)	ENR		2005-2007	299,900
7. Philippine Sanitation Alliance (PSA)	ENR	Bukidnon, Camarines Sur, Cebu, Davao del Sur, Iloilo, Laguna, Metro Manila, Misamis Oriental, Negros Oriental, Samar, Zamboang del Sur	2007-2010	800,000*
8. Coral Triangle Initiative (CTI)			2008-2012	6,000,000
9. Environment, Natural Resource Mgt. & Rural Devt (ENRD) Program	ENR	Iloilo, Leyte	2005-2009	GTZ - 12,025
10. Partnership in Environmental Mgt. for the Seas of East Asia- Manila Bay Environment Mgt. Project	ENR	Manila, Navotas, Paranaque, Las Pinas, Pampanga, Bulacan, Bataan, Nueva Ecija, Tarlac, Rizal, Laguna, Cavite	2002-2007	UNDP/GEF- 5,451 GOP - 2,407 Total - 7,859
11. Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand	ENR	Region 1,3,4, NCR	2002-2007	UNEP/GEF grant - 336
12. Environment and Natural Resources Capacity and Operations Enhancement Programme (ENR-CORE)	ENR capacity building, CBFMA issuance, upland and mangrove refo	Nationwide	2005- 2009	UNDP Grant - 1,334
13. Samar Island Biodiversity Project	Biodiversity Conservation	Samal Island (Region 8)	Phase 1- 2000-2006 Phase 2- 2008-2010	UNDP-GEF/ TRAC - 8,631 GOP - 4,252 Total - 12,883
14. Mainstreaming Ecotourism in the Community-based Natural Resources Management	Community-Based Ecotourism/Biodiversity Conservation	Hundred Islands National Park Mayon Volcano Rajah Sikatuna Protected Landscape Lake Sebu Forest Reserve	2004-2008	NZAID Grant - 767 GOP - 80 Total - 847
15. Coastal Hazard Management Program	Coastal/Marine Resource Management	Nationwide		SIDA grant
16. Camiguin Coastal Resource Mgt Project (CCRMP)	Coastal/Marine Resource Management	Region 10- Camiguin	2007-2012	NZAID Grant - 1,638 GOP - 537 Total - 2,175
17. Manila Third Sewerage Project	Environment/Sewerage	Metro Manila	2007-2012	WB/GEF Grant -5,000
18. Project for the Enhancement of CBFM Program in the Philippines	Forestry/CBFM	Region 3- Pampanga, Tarlac, Bulacan, Bataan, Nueva Ecija	2004-2009	JICA Grant - 3,500 GOP - 340 Total - 3,840

Project	Focus	Location	Duration	Funding agency and cost (US$'000)
19. Laguna de Bay Community Carbon Finance Project	Forestry/small scale Clean Development Mechanism	Laguna de Bay	2004-2015	Japan Govt - 358
20. Advancing the Application of ANR for effective low-cost forest restoration	Forestry	Regions 3, 7, 11	2006-2008	FAO Grant - 253
21. Capacity Development Project for Water Quality Management	Water quality management (policy and procedural guidelines in support of Clean Water Act, Capacity building for EMB)	Regions 3, 6, 7	2006-2010	JICA Grant - 5,000 GOP - 12 Total - 5,012
22. Improving financial returns to smallholder tree farmers in the Philippines	Forestry/R&D	Region 4- Laguna de Bay	2005-2008	Australian Govt - 116 GOP - 69 Total - 186
DA and other National Government Agency LOANS				
1. Fisheries Resource Management Project (DA-BFAR)	Fisheries and Coastal Resource Management, Income Diversification, and Institutional Strengthening.	Philippines Lingayen Gulf, Sapian Bay, Honda Bay, Puerto Princesa Bay, Butuan Bay, Gingoog Bay, Davao Gulf, Tayabas Bay, Calauag Bay, San Miguel Bay, Ragay Gulf, Lagonoy Gulf, Sorsogon Bay, Carigara Bay, San Pedro Bay, Ormoc Bay, Sogod Bay, Panguil Bay	1998-2006 (extended to 2007)	JBIC and ADB - US$32,000 GOP counter-part- US$22,812
2. Northern Mindanao Community Initiatives and Natural Resource Management (Dept. of Agrarian Reform)	Livelihoods, including improved management of land and water resources, fisheries development and off-farm activities, establishment of boundaries of ancestral domains and formulation of their sustainable development and protection plan.	Caraga and Northern Mindanao regions	2003-2009	International Fund for Agricultural Devt (IFAD) - US$14,800 loan Total cost: US$21,600
3. Sustainable Environmental Management and Tourism Development Project in Northern Palawan (Dept of Public Works and Highway, Palawan Council for Sustainable Management and Dept of Tourism)	Biodiversity survey and research, environmentally critical areas network mapping and zoning, ecotourism, mapping, institutional development	Palawan	2001-2009	JBIC-approx US$14,187 GOP- US$1,017

Project	Focus	Location	Duration	Funding agency and cost (US$'000)
4. Marine Disaster Response and Environmental Protection System (Dept of Transportation and Communication)	Disaster preparedness against marine oil pollution			JBIC- 9,356 million yen
5. Mindanao Rural Development Project Phase II (DA)	Rural infrastructure, governance reforms and public administration, social development, and natural resource management component (coastal resources and marine biodiversity conservation, upland resource management)	225 municipalities in all of the 27 provinces of Mindanao.	2007-2012	WB- US$83,752
DA GRANTS				
1. FISH (DA-BFAR)	Coastal resource management, sustainable fisheries, MPA establishment, marine biodiversity conservation, policy and institutional development, social development	Calamianes Islands (Palawan), Danajon Bank (Bohol, Southern Leyte, Leyte, Cebu), Surigao del Sur and Tawi-Tawi.	2003-2010	USAID grant US 12,900
2. Upland Development Program for Southern Mindanao (DA)	Sustainable upland resource management, poverty alleviation	Region XI (Compostela Valley; Davao Oriental; Davao del Sur;); Region XII (Sarangani; South Cotabato);	1999-2007	European Union - US$18,300 GOP - 7,592

Source: DENR-FASPO, 2008; USAID, 2008; DA-BFAR, 2008