

# **Environmental Threats and Opportunities Assessment for Uganda**

## **Biodiversity Assessment**

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## Executive Summary

The conservation of biodiversity and tropical forests is a major global concern. Much of the earth's biodiversity is located in tropical countries where severe human poverty and population pressures strain the continued survival and sustainability of these resources. Recognizing this fact, the U.S. government has added conservation provisions relating to tropical forests (Section 118) and biodiversity (Section 119) to the Foreign Assistance Act of 1961. These clauses require that all U.S. Agency for International Development (USAID) strategic plans include an analysis of the actions needed in the host country to achieve conservation and sustainable management of tropical forests and biodiversity. Because tropical forests are a subset of the diversity of Uganda ecosystems and species, no separate report was done on forests in Uganda. Rather, the available information on forests is folded into this report along with other ecosystems of note. It is sincerely hoped that this report will enjoy a wide readership beyond the scope of this reporting obligation and will help others involved in important conservation efforts in Uganda.

This report was prepared by a Chemonics International Inc. team led by Dr. Pat Foster-Turley and including Amy Bodmann of Chemonics; Dr. Panta Kasoma and Professor Derek Pomeroy of the Makerere University Institute of Environment and Natural Resources; and Gerald Eilu of the Makerere University Department of Forestry and Nature Conservation. The team also extends its grateful appreciation to Robert Buzzard, USAID/Uganda ENR SO team leader, who provided useful insight, contacts, and documents that were invaluable to this study.

In carrying out this assessment, the team collected and studied key documents on the biology and policy aspects of biodiversity, where these existed. This written literature demonstrated many redundancies and conflicting statements, and data gaps were evident everywhere. Interviews with key government officials, biologists, and conservationists were held to clarify details and to get a more informal understanding of the real on-the-ground biodiversity conservation picture in Uganda. Finally, a focal group meeting of university biologists and some representative NGOs was held at Makerere University to gain a further appreciation for the biodiversity conservation needs and recommendations of those people deeply involved in work in the field.

Simultaneous with the Chemonics team assessment, a second analysis that builds on the team's findings and addresses proposed USAID strategic approaches was prepared by Karen Menczer, under an Associates in Rural Development (ARD) contract. By working closely with Karen, we were able to unify our approaches and prepare a synthesis environmental annex (see Annex A) from the findings of both assessments. We are extremely pleased with the teamwork evident in the preparation of these assessments and hope that the results will have a positive impact on biological conservation efforts in Uganda.

## SECTION I

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### Overview of Biodiversity Concerns and Conservation Efforts in Uganda

Uganda is a beautiful and biodiverse country. Its many natural wonders include charismatic species such as mountain gorillas and chimpanzees, an extraordinary diversity of birds, the world's second largest lake, and other features that have drawn the world's attention. Tragically, Uganda is also a country with a high incidence of poverty among its burgeoning human population, especially in the rural southwest and along the lakeshores where the more important species and habitats occur. The trend in habitat degradation and species loss is evident wherever data exist, and pressures on these resources in critical areas are escalating. The challenges of conserving the forests, wetlands, woodlands, and other habitats and species are daunting, but not insurmountable. Indeed, efforts made now to conserve these resources and biodiversity will ensure the future livelihoods and well being of the people of Uganda.

Many of Uganda's diverse ecosystems and globally important rare and endangered species are found within the borders of national parks, forest reserves, and other protected areas. However, the amount of protection these areas actually receive varies greatly. Donors provide the bulk of the financial support to these areas, and to the government agencies that administer them. For now, tourists are avoiding Uganda because of rebel activity and are taking their vacations in safer countries. As a result, tourist revenue is not expected to support protected areas and species conservation efforts for the foreseeable future. If these resources are to remain, it will only be through the efforts of donors and other international sources of funding.

Outside of protected areas, the outlook for biodiversity conservation is particularly grim. Conservation efforts for many wetlands, rangelands, and other areas of biological importance that do not enjoy any sort of protected status are inadequate and largely ineffective. One barrier to effective conservation is the politics of District-level management of these resources; another obstacle is lack of enforcement of laws from the community level on up. Wetlands continue to be converted to rice fields, and fishes in the lakes continue to be used up in "tragedy of the commons" situations. It is difficult to be optimistic about the long-term viability of many of these resources and species unless present trends are curtailed.

The problems facing biodiversity conservation efforts in Uganda occur at all levels. Although Uganda is a party to a number of international conventions, it generally lacks the resources to effectively implement them. The country has many environmental laws, policies, guidelines, and management plans on the books, but little implementation or enforcement of any of them. National agencies often are too understaffed to get to the field where the problems occur.

Corruption and political pressure provide impediments to effective law enforcement efforts. At the village level, many people are ignorant of the natural resources laws and do not understand the importance of sustainable use of the environment and natural resources. There is a need for environmental awareness and education at all levels, from the top ministers down to the school

children in the villages. There is also a need for better ecological data from all areas of the field so that critical trends in overexploitation of biodiversity and ecosystems can be determined and efforts made to address them.

One approach to addressing these issues would be to further strengthen capacity building and environmental awareness efforts with national and District government officials and NGOs. Another way to reduce the stress on ecosystems and resources would be to implement poverty-alleviation strategies in areas around critical protected areas. Such strategies would give local people other sources of livelihood besides unsustainable harvesting of forest and wetland resources. In addition, new markets need to be found for sustainably produced natural products to ensure the effectiveness of these efforts. Community involvement in zoning and planning at their local level would also help alleviate this pressure.

Ways exist to reconcile the immediate needs of people with the long-term needs of the environment. Our challenge is to find and implement them at all levels within Uganda.

## SECTION II

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### Status of Biodiversity

#### A. Ecosystem Approach to Biodiversity

Biodiversity is the diversity of living things on earth and includes all plants, animals, and microorganisms at the species level; the genetic components of each; and the ecosystems they inhabit. In Uganda, the Wildlife Policy defines “wildlife” as a subset of total biodiversity that includes both animals and plants native to Uganda or migrating through. Very little attention is paid in Uganda to wild biodiversity at the subspecies or genetic level, and there is little relevant information to draw upon. Therefore, this report addresses primarily biodiversity conservation at the species level.

It is impossible to consider the diversity of plants and animals without considering the habitats they live in and the interrelationships among them. Many conservationists consider this “ecosystem approach” to be the most successful way to address threats to biodiversity. As this analysis repeatedly demonstrates, many species, and especially the most rare and threatened, are associated with particular ecosystems or vegetative habitat types. As these habitats become degraded or converted to agricultural or other uses, the species associated with them disappear. Moreover, some species (“indicator species”) can be used to give an indication of the integrity and health of particular ecosystems. The diversity of dragonfly species, for instance, gives a good indication of the quality of aquatic habitats. Butterflies may serve a similar role in certain terrestrial habitats. Both groups have very specialized requirements and many of them are only found in association with particular plants. A diversity of these indicator species predicates a diversity of associated plant species. From an ecosystem integrity standpoint, more is better.

Other species serve as “keystone species” in a habitat. Changes in the presence or numbers of these species greatly affect the entire ecosystem. Elephants are a good example of a keystone species in African savannas. Elephants fill a dynamic niche, modifying the vegetation and landscape as they forage and move through. Too many elephants confined in small areas can have an overwhelming negative influence on various other species; too few elephants can also affect other species.

“Umbrella species” are those with habitat requirements that encompass many others. By conserving the large areas needed to protect viable populations of lions, cheetahs, and other predators, for instance, many other species are protected, too. Finally, there are the “flagship” species that tourists from outside Uganda spend money here to see.

Biodiversity conservation depends on the viability of all of these species and the interrelationships with the ecosystems they inhabit. Accordingly, this “ecosystem approach” forms the cornerstone for this analysis.

## B. Natural Ecosystems of Uganda

### B1. Biodiversity in Natural Ecosystems

Uganda is a land-locked country with an extraordinary amount of diversity in both terrestrial and aquatic habitats and a burgeoning human population living off these natural resources. Major ecosystem types range from some of the world's largest lakes to high-altitude montane forests. A number of different vegetation classification schemes have been developed to map out these areas. Analyses of biodiversity in Uganda have relied on either the National Biomass Study map with 13 landscape categories (National Biomass Study, 1996) or the earlier analysis by Langdale-Brown et al (1964) that determined 22 vegetation types in Uganda. This second approach is the one used in the detailed Wildlife Protected Area System Plan of the Uganda Wildlife Authority (1999) and the Forestry Nature Conservation Master Plan (1999), and is the one referred to here (see Figure 1 on the next page and Table II-1 below).

**Table II-1. Major Vegetation Categories of Uganda**

|   |   |
|---|---|
| A | High altitude moorland and heath            |
| B | High altitude forest                        |
| C | Medium altitude moist evergreen forest      |
| D | Medium altitude moist semi-deciduous forest |
| F | Forest/savanna mosaic                       |
| G | Moist thicket                               |
| H | Woodland                                    |
| J | Moist <i>Acacia</i> savanna                 |
| K | Moist <i>Combretum</i> savanna              |
| L | <i>Butyrospermum</i> savanna                |
| M | Palm savanna                                |
| M | Dry <i>Combretum</i> savanna                |
| P | Dry <i>Acacia</i> savanna                   |
| Q | Grassland savanna                           |
| R | Tree and shrub steppe                       |
| S | Grass steppe                                |
| T | Bushland                                    |
| V | Dry thicket                                 |
| W | Communities on sites with impeded drainage  |
| X | Swamp                                       |
| Y | Swamp forest                                |
| Z | Post cultivation communities                |

*Langdale-Brown, et al, 1964*

## Figure 1. Major Vegetation Categories

Over time, a high proportion of the vegetation of Uganda has been modified by cutting, cultivation, burning, grazing, and other anthropogenic actions. Many of the 22 vegetation types shown in Table II-1 have been significantly reduced in quality and range over time. Table II-2 shows an estimate made nearly 40 years ago (Langdale-Brown et al, 1964) on the actual extent of various vegetation types in Uganda. The situation has no doubt deteriorated further from the natural state since then.

**Table II-2. Percentage Areas of Open Water, Crops, and Main Vegetation Types**

|  |      |
|--|------|
| Cropland                                       | 11.7 |
| High-altitude grassland, health and mooreland  | 0.8  |
| Forest and moist thicket                       | 4.6  |
| Well-drained savanna (including grass savanna) | 48.3 |
| Dry thicket, bushland, and steppe              | 7.5  |
| Communities on sites with impeded drainage     | 7.9  |
| Permanent swamp                                | 3.9  |
| Open water                                     | 15.3 |

*Langdale-Brown et al, 1964*

From the standpoint of biodiversity conservation, the remaining naturally vegetated areas contain the bulk of species and ecosystems of particular concern. Most of these remaining natural areas are found where they have been protected from human encroachment and other disturbances. In Uganda, the remaining natural areas include subsets of forests, wetlands, grasslands/savannas, and open water. These are discussed below.

*Forests.* Natural forest types include those found at high altitudes, lower altitudes, and those with various plant compositions ranging from primarily evergreen to deciduous to bamboo forests. Various forest specialist species of conservation concern are associated with the various forest types. For instance, mountain gorillas are found only in the mid-altitude evergreen forests of the Albertine Rift. Many medicinal plants used by communities are also only found in particular types of forests. A variety of endangered and rare bird species are forest specialists that are closely associated with only one particular forest type. Bennun et al (1996) estimated that 187 of Uganda's 1,007 bird species are forest specialists and of these, about 30 are listed as threatened species. As forested land continues to be converted to plantations, more and more forest specialist species disappear. The effects on biodiversity when natural forests are degraded are more difficult to assess. In Budongo forest, it has been found that selective logging of hardwood tree species has resulted in the regeneration of more fruiting trees, which actually favor the chimpanzee populations. More work on this topic is sorely needed before appropriate recommendations on selective logging and other types of forest use can be made.

*Wetlands.* Wetlands cover about 13 percent of Uganda (NEMA, 1998) and have been subdivided into many subtypes. Swamps are found along lakeshores and in floodplains throughout the country. Some swamps are seasonal and some are permanently wet; some support large tree

species, some are dominated by a single species such as papyrus, and others support primarily low grasses. Within this diversity of wetland types are many specialists. For the most studied Ugandan taxa — birds — it has been estimated that 159 species are wetlands specialists. Otters and a dozen other mammals, 48 amphibians, and 52 fish species are found primarily in wetlands (FAO, 1996). Many fish species found in the lakes retreat to the adjacent wetlands to spawn. Work on dragonflies, molluscs, and other fauna are less extensive, but many of these, too, are closely associated with wetlands. Papyrus and other wetland plants have commercial value: at least 22 species of plants are edible, and many other plants are used for medicinal purposes. One study of swamp forest plant resources in Uganda (Omagor, 1999) found 17 plant species of particular economic, cultural, or medicinal value in this habitat alone. Most wetlands in Uganda occur outside of protected areas, and their range and quality are rapidly being eroded.

*Grasslands/savannas.* Grasslands and savannas cover more than 50 percent of the land area of Uganda and include a great variety of habitat types dominated in different locations by species as diverse as grasses, or palms or acacias. Savannas throughout Uganda were once the home to large populations of rhinoceroses, elephants, giraffes, antelopes, lions, wild dogs, and the like. A diversity of other plant and animal species are also closely associated with natural savanna types. Much of this habitat has been converted to human use for agriculture and grazing; a few of the large mammals, such as black and white rhinos and wild dogs, are considered to be extinct in the country. The remaining pockets of natural savannas and grasslands are primarily found in various protected areas in Uganda. Although large mammal populations are still relatively small following decades of over-hunting when Uganda was in turmoil, the numbers of many of these species are gradually making a comeback. The small numbers of large ungulates and elephants, however, has enabled a diversity of vegetation types once subject to high grazing pressure to thrive, and various birds, butterflies, and small mammal populations are in better shape than ever in these parks. Some natural habitat and wildlife species also remain in areas in northern Uganda (i.e., Gulu and Kitgum Districts) where rebel groups abound and the local people live primarily in protected villages subsisting on World Food Program contributions (R. Lamprey, pers. com.).

*Open water.* Open water is a category that includes major lakes such as Lake Victoria, Lake Kyoga, Lake Edward, Lake Albert, Lake George, and Lake Mburo and many smaller lakes; stretches of the Nile River and other rivers; and streams and water bodies throughout the country. Collectively, these water bodies contain one of the largest assemblages of diverse freshwater fish species in the world. In Lake Victoria alone, more than 600 species of cichlid fish have been found, at last count, with as many as 102 species found in a single study of southern lake waters in the early 1990s (Arinaitwe et al, 2000). The natural state of some of these water bodies has been greatly affected by the introduction of exotic species, including Nile perch, other fish species, and the water hyacinths. These introductions, along with agricultural runoff, and other anthropogenic factors, have led to a dramatic decrease in fish diversity in Lake Victoria. In recent years, fishery data have indicated a decline in both the size and amount of Nile perch harvested, and other clear signs of over-fishing of this dominant food fish. A recent report by Balirwa et al (in press) indicates that this decline in large predatory Nile perch in Lake Victoria may already be leading to a resurgence of a number of indigenous cichlid species. Aside from fish, a diversity of other fauna and plants are also associated with open water habitats. A number of these species are no doubt also affected by introduced Nile perch and other changes, but little

data are available. Much more work remains to be done to assess the economic and biological impacts of such changes in the major water bodies of Uganda.

## **B2. Priority Transboundary Natural Areas**

*Albertine Rift Mountains: Uganda, Rwanda, Burundi, the Democratic Republic of the Congo (DRC), Tanzania*

The Albertine Rift Mountains (now referred to as the Albertine Rift Area of Endemism) is an area that includes the mountains that flank the Albertine Rift Valley in the Haut-Zaire, Kim, and Shaba region of eastern DRC, and in southwest Uganda, Rwanda, Burundi, and extreme western Tanzania. Globally, this area has been accorded priority status by both World Wildlife Fund and Birdlife International. The area is known for its high biological diversity and a number of well-known rare and/or endemic species including mountain gorillas, chimpanzees, golden monkeys, and black-fronted duikers. Estimates indicate that there are 35 mammals (25 of these occur in Uganda), 43 birds, 20 reptiles, and 42 amphibians that are endemic to the region. This gives a total of 150 endemic terrestrial vertebrates in the ecoregion (Brooks *et al* in prep.). Whereas the Albertine Rift forests are well known to be a center of animal endemism, no data on their plant endemism have ever been compiled. However, for some well-known taxa such as *Impatiens* (Balsaminaceae), 27 species are known to be endemic to the area. The Rwenzori Mountains alone are known to have 75 endemics. Fifteen of Uganda's 47 woody plants on the WCMC list of threatened trees are recorded from the Albertine Rift. Much of the Albertine Rift area is insecure, thus intensifying the importance of the Ugandan protected areas found in this region. The Wildlife Conservation Society has been working here with support from the MacArthur Foundation, the New York Zoological Society, and other donors. A main thrust of this project is to conduct biological surveys and inventories, to train rangers and others to do such work, and to incorporate such biological findings within zonal management plans.

*Lake Victoria: Uganda, Kenya, Tanzania*

Lake Victoria is the second largest lake in the world (after Lake Superior in North America), and a repository of the largest recorded diversity of fish species in a single water body. Introduced Nile perch, water hyacinth, and other species; agricultural run-off; pollutants; and other anthropogenic changes have modified the natural lake system in recent years. Surrounding communities depend on the fishery resources of this lake and the other natural products they can utilize from surrounding wetland areas. However, the wetlands are continually being encroached on and degraded, the fish are being overharvested, and these and other pressures are escalating to the detriment of both the ecosystem and the people who depend on it now and in the future. The Global Environment Facility-funded Lake Victoria Environmental Management Project, the Lake Victoria Fisheries Organization, the Lake Victoria Fisheries Research Program, and the FAO Regional Lake Victoria Water Resources Project Research Program are various programs addressing elements of these complex issues.

*Sango Bay – Minziro Forests: Uganda, Tanzania*

The Sango Bay – Minziro Forest ecosystem occupies the Kagera River floodplain and seasonally flooded grasslands on the western shores of Lake Victoria. These forests represent the largest

tract of swamp forest in Uganda. This *Baikiaea-Podocarpus* swamp forest type is not found anywhere else in tropical Africa — hence, its global importance for biodiversity conservation. Fourteen species (eight butterflies, two birds, three trees and one moth) not found in any other forests in Uganda occur in Sango Bay. Tree species such as *Cordia millenii* (that is used locally for making drums, other musical instruments, and canoes) and *Irvingia gabonensis* are Red Data-listed by IUCN as endangered. The UNDP/GEF-East African Cross-Border Biodiversity Project operating in the three East African countries of Kenya, Tanzania, and Uganda aims to reduce the rate of biodiversity loss at cross-border sites in East Africa, including the Sango Bay area. The project aims to create an enabling environment in which government agencies and local communities can jointly regulate resource use.

#### *Mt. Elgon: Uganda, Kenya*

Mount Elgon (4,320 m high) is a solitary extinct volcano in Eastern Uganda and neighboring Kenya with one of the largest craters in the world (8 km across). Of conservation importance are the herb and shrub species of the montane health and morland zones that are endemic to the mountains or shared only with other high East African mountains. In addition, IUCN Red Data-listed tree species such as *Juniperus procera* and *Prunus Africana* occur here. The fauna of Mt. Elgon represents the western ranges limits of species or races that occur in the highlands of Kenya and northern Tanzania, and is therefore important for the long-term survival of these species. Threatened mammal species include the elephant, the leopard, and lammergeier. Economically, the reserve plays a crucial role as a water catchment serving more than 1 million people and as a source of montane bamboo whose shoots are eaten by the local communities. Hunting is widespread, particularly of the black and white colobus monkey, whose skins are used in local circumcision ceremonies. Most of the reserve borders densely populated agricultural lands and now there is threat of encroachment. These issues need urgent attention. The IUCN has focused a transboundary project on this area to help consolidate efforts within Mt. Elgon National Park in Uganda and adjacent areas in Kenya.

### **B3. Priority National Natural Areas**

In addition to the areas with transnational focus described above, a number of natural areas in Uganda contain biodiversity values of global significance. One product of the Wildlife Protected Area System Plan for Uganda (April 1999) is a ranking of the overall biodiversity importance of each protected area in Uganda based on a variety of assessment parameters. In this analysis, four Ugandan national parks scored highly on international significance:

- *Queen Elizabeth National Park* (close to the Albertine Rift transboundary area), due to its status as both a United Nations Man and the Biosphere Reserve and as an agreed-upon (but not yet listed) Ramsar Site
- *Bwindi Impenetrable Forest National Park* (in the Albertine Rift transboundary area), for its listing as a World Heritage Site and for its important mountain gorilla populations

- *Rwenzori Mountains National Park* (in the Albertine Rift transboundary area), for its World Heritage Site listing as well as its many restricted range and endemic species
- *Murchison Falls National Park*, for its conservation importance long recognized by the IUCN

Wetlands areas in Uganda have also received great global attention through the Ramsar Convention on Wetlands. In Uganda, not all of the globally significant wetlands fall in protected areas — a real cause for conservation alarm. Ramsar wetland sites of international importance are declared based on their global biodiversity and ecological value. Lake George is now a listed Ramsar Site, although it lies outside of a protected area. Under the Ugandan Wetland Sector Strategic Plan (2001-2010), two other wetland sites have been agreed on and two more are being proposed for listing, and others may soon follow.

In another initiative, Nature Uganda, in association with Birdlife International and the Royal Society for the Protection of Birds (RSPB), has been engaged in a project to identify “Important Bird Areas in Uganda.” Thirty such areas have been listed due to a combination of factors, including the presence of globally threatened species, restricted range species, congregations of large flocks, and those found only in particular vegetation zones.

#### **B4. Degraded Vs. Intact Natural Ecosystems**

Many of the protected areas in Uganda, whether under the auspices of the Uganda Wildlife Authority or the Forestry Department, are still undergoing encroachment by human settlements, being unsustainably logged and deforested, and subject to habitat and species destruction on many fronts. Although there are different legal categories of use in various types of protected areas, few of these regulations are enforced anywhere. Care should be taken not to overly interpret the maps of protected areas and natural ecosystems (such as Figures 1 and 2) to be representative of pristine natural habitats. In many areas, not only are the boundaries eroding, but the quality of habitat and the extent of plant and animal species contained within are also undergoing changes in a negative direction.

### **C. Agricultural and Urban Ecosystems**

#### **C1. Introduction**

Most of the habitat in Uganda is under extensive human influence due to farming, grazing, or community settlement. It is therefore impossible to consider biodiversity without addressing these conditions. As the land area gets increasingly developed, the flora and fauna include primarily domesticated species, with the wild species largely including only opportunistic or generalist species that are able to adapt to man’s presence. Globally important rare and endangered species are very rarely found in areas subject to extensive human use — this is the reason for their rarity in the first place. In Uganda, most species of special concern are found in protected areas, although some still occur in natural wetlands and other habitat types, which are rapidly undergoing conversion for human use. It is expected that if this remains the case, many of these species will disappear, too. Urban centers are also not known to harbor rare and threatened species, except in *ex situ* conditions such as in zoos and botanical gardens. In Uganda,

the areas with highest human population are found primarily around Lake Victoria and in the southwest, where globally important protected areas are also located (see Figure 2, map of human population in Uganda, on the next page). From a biodiversity conservation standpoint, the juxtaposition of high human populations and protected area borders is always difficult to manage. Uganda is no exception to this.

## **C2. Agricultural Ecosystems**

Uganda has been divided into five farming zones (NEMA, 1998):

1. Northern and eastern cereal-cotton-cattle
2. Intensive banana-coffee
3. Western banana-coffee-cattle
4. West Nile cereal-cassava-tobacco
5. Afro-montane systems

Each zone has associated environmental problems. In (1) the northern and eastern cereal-cotton-cattle belt, soil erosion, degradation of pastures, and risk of chemicals getting into the watershed from extensive cotton fields are all recognized problems. Likewise, both banana-coffee zones (2) and (3) soils are degraded from continual cropping of small plots without replenishment, and deforestation is occurring on steep slopes leading to erosion. Tobacco farming (4) is especially destructive to the environment due to the fact that 10-40 tons of dry wood are needed to process each ton of tobacco, leading to increased cutting of wood and depletion of woodland resources. In the Afro-Montane systems (5) with large human populations, crops are planted high up on slopes, soil fertility has declined, and yields are low, leading to increased poverty and food insecurity among the communities. It can probably be assumed that few, if any, rare animal and plant species remain in any of these extensively farmed zones.

Few studies have been made of the presence or absence of native flora and fauna in agricultural areas. One study by Dranzoa (1990) surveyed birds in natural forest and in cultivated areas. She found that although both study sites contained about the same number of species (156 vs. 158), the species composition was largely different, with the forest specialist species for the most part not found outside the forest. Plantations of bananas or oil palm or pine just do not contain the diversity of specialized requirements of most natural forest species.

Agroforestry is a practice that is being introduced in select areas of Uganda to try to stem the loss of natural forest products due to human extractive uses and to provide people with alternative tree resources grown on their own farms. The USAID-supported AFRENA agroforestry project, for instance, has a component working with communities in the buffer zone around Mabira Forest just outside of Kampala. The main thrust of this work is to provide farmers with root stock and knowledge to enable them to plant various improved varieties of fruit trees, shrubs that are useful as fallow and fodder, trees that are fast-growing and can be used as sources of firewood, and other enhancements. A number of the species being introduced in this work are non-natives, but said to be noninvasive, so the direct contributions to natural biodiversity may not be the foremost concern. However, with such resources available to the people on their own land, there is less incentive for unsustainable harvesting of trees from the nearby forest. A study is currently

**Figure 2. Map of Human Population in Uganda**

being initiated to look at the bird diversity under different land use types in the region, and further studies are planned, but the data and results are not yet available.

Another issue of agricultural biodiversity is crop diversity. The Plant Genetics Research Program of the Forest Research Institute is involved in such work, as undoubtedly are a number of other agricultural institutions within Uganda and abroad. From an agricultural perspective, it is important to maintain a gene bank that preserves many crop strains and related wild varieties to ensure that sufficient genetic material exists to respond to environmental and pest-related changes in crops. A detailed assessment of this work is beyond the scope of this report.

### **C3. Urban Ecosystems**

Many plant and animal species have become well adapted to urban ecosystems. These range from introduced ornamental plants that have become feral to generalist opportunistic animal species like Norway rats. It is hard to be in Kampala long without seeing examples of such opportunistic animal species, in particular marabou storks and straw-colored fruit bats. Although both of these species are relatively common and widespread, they provide a unique natural twist to a major urban area and it is interesting to consider them here as examples of the way certain species can adapt to the presence of humans.

Marabou storks were known from 40 breeding colonies at the start of this century and 15 of these remain active (Arinaitwe, 2000). One of these colonies now inhabits Kampala. As of 1995, there were 400 nests in the city and the number is thought to be increasing. Why are these storks doing so well here? The answer is clear. These birds are scavengers that feed on discarded meat and carcasses, all increasingly available in a city where road kills, discarded fish heads, and chicken feet and the like are common. Marabou storks thrive on garbage that is readily available, and they are big birds with no natural predators in the city.

In the case of straw-colored fruit bats, the case is less clear. These bats are well known and studied, unlike the other 100 or so species of bats in Uganda, and tend to inhabit towns in a number of locations throughout East Africa. These fruit bats feed primarily on native fruits like figs and mvule, but they sometimes also raid orchards. In Kampala, these bats were once mostly found in an area called Bat Valley, but now they can be seen in locations including the Forestry Department compound. Surveys on these bats have indicated a recent decline in numbers from a high of about 200,000 in the 1960s to the 1998 census figures of about 40,000 animals (Arinaitwe, 2000). No one is certain about the reason for their decline, although food availability probably plays a role.

These two examples give a glimpse of native species that may adapt to city life. But, even city life is not a sure thing, as the declining bat population indicates. And, even if a few species such as these do make the shift, many, many more species are falling by the wayside. Urban habitats simply do not provide the specialized resources needed for all but the most adaptable of species.

## D. Species Diversity

### D1. Diversity of Flora and Fauna in Uganda

Besides the ecosystem approach, another way to catalogue biodiversity is through taxonomic lists. In Uganda, unfortunately, not much data are available on most taxa of plants and animals. Although vertebrates (mammals, birds, reptiles, amphibians, fish, etc.) are best known to most people, these species only make up a small proportion of the world's animal species. According to the MUIENR database, there are 345 mammals, 142 reptiles, 86 amphibians, and more than 600 fish species in Uganda. The bird species are particularly rich, with 1,007 species that include about 10 percent of all the bird species in the world. Insects and molluscs, however, make up the bulk of the world's animals, and many other taxa of invertebrates are heavily represented as well.

In Uganda very little is known about most of the invertebrates, although recent biological inventories in Forest Reserves (Forestry Department) and in wetlands (Wetlands Biodiversity Inventory) have begun to look at butterflies and dragonflies as indicator species. Eventually, data on these species will also be included in the MUIENR database. Plant diversity has similar spotty coverage in the database, with most work done on woody plants (i.e., trees) and some with other plants of medicinal or dietary use to people. There are 5,000 species of flowering plants and 406 Gymnosperms and ferns recorded in Uganda. Of these, there are 54 woody plants considered to be under threat (NEMA, 1999). Despite the sketchiness of the data, the amount of known biodiversity in Uganda places this country among the most biodiverse in the world.

*Globally rare and endangered species.* Globally recognized rare and threatened plant and animal species are listed in the IUCN/ Conservation Monitoring System Red Data Book, which has been updated in 2001 and resides on the Internet. Upwards of 200 species of plants and animals are Red-listed for Uganda. These species are of global importance for conservation efforts and deserve special attention in this country. The reasons for the rarity of each species are different. A number of these species have specialized habitat requirements and are associated primarily with particular vegetation categories that are undergoing conversion or degradation. Others are largely threatened by direct human persecution or other anthropogenic factors. For the purposes of this report, Gerald Eilu at MUIENR has analyzed the distribution and threats associated with Red Listed plants and birds (see tables in Annex B). The remaining Red Listed species are also listed in Annex B. Scanning these charts gives a clear indication of some of the biodiversity conservation issues of top priority in Uganda.

*Endemic species.* Endemic species are plants or animals that are found only in a particular area and nowhere else on earth. Uganda has about 30 endemic plants (Beetje et al, 1994) including those with limited distribution, such as some aloes found only on rocky outcrops (see box on rare aloes on the next page). One endemic species of bird, the Fox's weaver, is found around the water bodies of Lakes Opeta and Bisina. A handful of birds, some mammals, and other animals are endemic not only to Uganda, but throughout the Albertine Rift countries. A great variety of cichlid fish species — maybe as many as 600 species — are also regionally endemic to Lake Victoria and other water bodies in the region.

*Economically and medicinally important species.* Most people in Uganda live in rural settings, close to the natural resources they depend upon for survival. Various animal species are hunted

or fished for food; others have commercial or export value. Still others are admired for their beauty and symbolism (see box on the grey crowned crane on the next page). The same situation is true with plants. Generally speaking all indigenous trees are useful in one way or another. In some parts of Uganda, people pay great respect to certain trees or clumps of forest remaining on hilltops or in river valleys. A famous example is the Mubende Witch tree (*Pterygota mildbraedii*), a remnant of tropical rainforest that probably covered the area at one time. In the Buganda Kingdom (one of the monarchies in Uganda), it is considered taboo to remove any woody material from a number of such clumps of forests that still retain species of the otherwise degraded vegetation. Such forests have in the past been protected by these traditions; however, such traditions are now giving way in view of increasing pressure on resources.

#### Rare Aloes

In the east of Uganda, one of the most famous areas of cretaceous volcanic activity exists in south Bukedi, where Tororo rock represents the crystalline limestone center of an ancient volcano (a volcanic plug). This area is home to an *Aloe* species (*Aloe tororoana*) that is endemic to Uganda and known to grow naturally in the wild only on the Tororo Rock. The *Aloe* is a popular genus of succulents with more than 300 species occurring naturally in Africa, Madagascar, and Arabia. The *Aloes* have restorative and medicinal properties, e.g., aiding in the healing and repair of human skin. The *Aloes* are locally used for medicinal purposes. For example, the leaves are boiled in water and the decoction drunk to cause vomiting to cure stomach diseases and malaria. In other cases, the leaves are roasted and mucilage put on swellings or boils to quicken the healing process. Although commercial exploitation of this rare *Aloe* has not been recorded, the locality where it occurs is not within a protected area (PA). This poses a serious threat to the survival of this species. There is the threat of habitat loss resulting from the mining and quarrying around Tororo rock. Survival of rare species such as this *Aloe* outside PAs will depend entirely on strategies designed in the future to cater to species in such areas. The Plants Working Group of Nature Uganda has now undertaken an inventory of plants around Tororo rock as an initial step toward the conservation of this important site.

Uganda's flora of more than 5,000 species provides vast opportunities for use of plants for household subsistence and for commercial purposes. Uses for Ugandan plants include food, fodder, personal hygiene, medicine, bee keeping/honey collection, timber, handicraft and ornament (Katende *et al* 1998). Of course, the needs present immense economic losses to agricultural production. Data on uses of Ugandan plants are scattered within individual works covering groups such climbers (Eilu in prep.), wild food plants and mushroom (Katende *et al* 1999), and medicinal plants (Kokwara, 1976). More than 200 wild plants and some mushrooms are edible in Uganda, while Katende *et al* (1998) present a catalogue of economically useful plants in Uganda with thousands of records. However still more work is required to come up with actual numbers for the country. Annex C illustrates representative plants with indigenous value and the threats these face in Uganda. Conservation efforts need to be focused on such plants to ensure that they continue to exist for the use of people now and in the future.

### E. Threats to Biodiversity in Uganda

The loss of biodiversity within Uganda, and globally, is primarily due to the influence of the world's most dominant species: man. The economies of developing countries including Uganda still depend largely on utilization and extraction of natural resources, most often unsustainably. In more developed countries, pollution from industry and urban centers, excessive use of fossil fuels and other factors take their toll. Taken together, these anthropogenic factors are responsible for most of the declines seen in species populations and distribution everywhere.

### The Grey Crowned Crane in Uganda

The grey crowned crane (*Balearica regulorum* susp. *gibbericeps*), classified as Vulnerable under the IUCN Red List Categories, is Uganda's National Bird. Among other things, this bird appears on the national coat of arms, on coins, and the football team of Uganda is named "The Cranes." Locally in Uganda, the crane is recognized among the majority of the population as a National bird, or as a sacred bird, that should not be killed. Some of the protection stems from its cultural significance and from stories told in early school days. One story told is that if one killed a crane, many cranes from various places would gather at that location to mourn their dead and whoever was responsible would also die. Of course, people vaguely believe that the law protects the crane. Not only the grey crowned crane benefits from this protection; other cranes such as the black crowned cranes (*Balearica pavonina*) also benefit.

Despite this reverence, populations of grey crowned cranes are declining. They are large terrestrial birds that nest and forage in seasonal grass swamps (often outside protected areas) and therefore changes in land use (particularly overexploitation and conversion to rice fields of non-reserved wetlands) now threaten these birds in Uganda and other African countries. Estimates place the total population at 75,000-85,000, but no reliable estimates are available of the number of these birds in Uganda. There are some cranes in Uganda's National Parks, but they are also commonly found in a variety of modified land types (pastures, grasslands, cultivated fields, and irrigated lands). The loss of suitable breeding/foraging sites has resulted in a low reproductive rate that now threatens the survival of the crowned crane in Uganda. Young birds are also captured for pets and possibly for illegal international trade. Where cranes are abundant, crop damage by cranes has been reported and could result in instances of intentionally killing these birds. Efforts to conserve the crane should include habitat protection and management, education and awareness, research and training, and species conservation, perhaps including captive breeding and reintroduction.

The large human population, particularly along the shores of Lake Victoria and in the southwest, (see Figure 2), are a growing threat to the important biodiversity found within these regions. With an overall population growth rate of 2.5 percent/year (NEMA, 1999) the pressures on remaining natural land and resources continues to increase. As the agricultural land becomes further degraded, people are increasingly forced to extract whatever they can from the nearby protected areas to survive. The root cause of most of the decline in biodiversity is human poverty; until this factor is effectively addressed, populations and distribution of many rare and important species will continue to decline in Uganda.

The following paragraphs describe threats to biodiversity in Uganda and provide examples of the interface between people and

biodiversity. This is not an overall priority list of threats, as threats vary in importance from place to place. Thus, priorities must be determined locally. What follows only provides an indication of the types of threats that occur and the impact some of these are having.

## E1. Land Conversion

Deforestation and the conversion of land to agricultural uses are the main threats to biodiversity within Uganda. The rate of deforestation and other conversion of natural habitats have been analyzed by MUIENR (Arinaitwe, et al, 2000) using data from historical records, UWA reports, the National Biomass Survey, and other sources. Unfortunately, the data are sketchy on certain aspects such as the extent of conversion of savanna-type ecosystems and conflicting on a variety of forest measurements. Despite these difficulties, MUIENR has come up with some estimates for three main land categories: savannas, wetlands, and forests.

Savannas are the most difficult areas to assess, since these include a number of different natural Langdale-Brown vegetative types (see Table II-1) and a number of bushland, grassland, and agricultural areas considered by the National Biomass Study and parts of woodlands as well. MUIENR reports that prior to conversion, savannas of various types covered approximately 70 percent of Uganda. The National Biomass Study (1996) includes 61.8 percent of Uganda in three

different bushland/grassland categories. Very little of this land today is thought to be in a nearly natural state, and most of this occurs only in protected areas. The great majority has become grazing land for domestic livestock or converted to agriculture, industry, and other uses. No actual data seem to exist on the extent of this conversion, but it is fair to say that few natural savannas and associated flora and fauna remain within Uganda.

Wetlands include a number of types categorized by Langdale-Brown (see Table II-1), but basically can be considered to be seasonal wetlands or permanent swamps dominated by papyrus. Together, these wetlands are thought to cover about 13 percent of Uganda (NEMA, 1998). The National Biomass Study, using data collected in the early 1990s, analyzed wetlands conversion at that time on a district-by-district basis. Overall, they found that 7 percent of the wetlands had been turned to agricultural uses, with the most conversion occurring in the eastern rice-growing regions. Data do not exist on conversion rates since then, but it is generally recognized that swamps continue to be drained despite official guidelines and regulations.

The rate of deforestation has been extensively analyzed by MUIENR (Arinaitwe, et al, 2000), but the data come from different sources and are difficult to reconcile. Nonetheless, they estimate that there was approximately 26,900 sq km (13.7 percent) of forest cover in Uganda in 1900 and only about 7,000 km<sup>2</sup> (3.6 percent) today. As the extent of the forest decreases, it also becomes increasingly fragmented with grave consequences for species that require large connected natural habitats for their survival. The only good news is that most of this remaining forest is in protected areas so the rate of decline of the forests is expected to level off in the future.

## **E2. Unsustainable Resource Extraction**

Degradation of natural savannas, wetlands, and forests is much more difficult to quantify than actual conversion rates, and this often is associated with unsustainable extraction of particular natural resources. A look at the Red List for plants (Annex B) and the cause of the threat gives a glimpse of some economically valuable species such as mahogonies that have become increasingly rare due to overharvesting. Rattan (*Calamus deeratus*) is another plant that is gradually disappearing. As recently as 10 years ago, rattan was collected from forests near Kampala and used to make chairs locally. Now, rattan harvesters need to travel as far away as Budongo Forest to collect the rattan used in the chairs sold along the Kampala-Jinja road. Many other examples exist of such occurrences in Uganda. In many cases appropriate laws exist, but these are rarely enforced. Data also are difficult to find for most species, but most agree that the problem is widespread and rampant.

Animals are also unsustainably extracted from reserves and protected areas, despite any laws to the contrary. Large mammals underwent a precipitous decline in numbers and range during the couple of decades of internal strife in Uganda, and by all counts, most reached record lows during surveys conducted by the Game Department (now UWA) in 1982/3. Now most remaining large animals live in protected areas and most protected areas have some sort of anti-poaching unit. Unfortunately, these units are often far too small and poorly equipped to effectively counter the poaching efforts. There is reportedly still some trade in illegal endangered species and their products in Uganda, but much of the poaching stems from the local community's need for protein, which they find in "bushmeat." Some types of game, such as small duikers and antelopes, are eagerly sought for food, despite laws protecting them. Other species such as

chimpanzees may inadvertently be caught in snares set for other animals (see box on the next page). Other animals such as bush pigs are not protected by UWA and are legal to kill as vermin if they become a pest to a village. This loophole has led to the great decline in this species even within the parks. The insurgence of monkey-eating Congolese fleeing into border areas in the Albertine Rift zone has also impacted primate populations in these areas. These problems will get much worse before they get better.

#### Snared Chimpanzees

Chimpanzees in Uganda inhabit a few remaining forest areas, where people still rely on bushmeat as a protein source. Although this practice is illegal in the forest reserves and protected areas where chimps are found, people still set many snares in an effort to catch food animals. Chimps investigate these snares, and are often inadvertently killed or lose digits, hands, or limbs from snares. The data from the snare-removal program of the Jane Goodall Institute/Chimpanzee Sanctuary and Wildlife Conservation Trust gives a window of insight into the extent of this poaching problem. In Kibale National Park, 25 percent of the chimpanzees have one visible injury from snares and an increasing number of chimps are now showing two injuries. Some 90 snares a month are located and removed from Kibale National Park, a park where 50 percent of the area is patrolled in this way. In Budongo Forest Reserve, only 1 percent of the area is patrolled by snare-removal teams, but here more than 100 snares are found and removed each month. The effects of snares on other animals is unknown but most likely considerable.

The fishery sector is also plagued with problems of unsustainable extraction of resources. Rules and guidelines for fishing net sizes, permits, time of day of legal fishing, and the like are all in place, but these are rarely enforced. The Nile perch catches are decreasing fish size and amount, despite uncontrolled and expanding harvest efforts. This over-fishing of the introduced predatory Nile perch is, in fact, beginning to show a positive impact on the diversity of other native fish species

(Balirwa, et al, in press). The economic impacts of the fishery decline, however, far overshadow this fact in national importance.

### E3. Burning Around Protected Areas

Other factors besides unsustainable resource extractions are resulting in the degradation of important natural protected areas and ecosystems. One problem affecting terrestrial protected areas, and savannas in particular, is uncontrolled burning in adjacent community areas. People set fires to replenish grazing land for their livestock and sometimes to chase animals they are hunting. Other fires are accidentally set, but get out of control. These uncontrolled fires often sweep into protected areas and decimate many hectares of habitat in the process.

### E4. Introduction of Exotics

Although there are a few examples of the introduction of non-native plants and the proliferation of these in natural areas — like lantanas (*Lantana camara*) in various parts of the country — it is the aquatic examples in Uganda that capture the most attention. Lake Victoria is famous in international conservation circles, not only because it is the second largest lake in the world, but also because it represents one of the most dramatic examples of the effects that can be wrought by introduced exotic species. This lake is home to the greatest radiation of freshwater fish species found in a single water body, more than 600 species, most of them haplochromine cichlids. Following the introduction of Nile perch (*Lates niloticus*) and a handful of other exotic species into this system in the late 1950s and 1960s, and the boom in the Nile perch population that was evident by the 1980s, many of the native fish have become rare or nonexistent. No doubt other anthropogenic changes in water quality during these years have also played a role in the decline of biodiversity (see below), but predation and competition with aggressive Nile perch

undoubtedly is a factor. Another exotic species is also wreaking havoc in Lake Victoria and other water bodies. The water hyacinth (*Eichornia crassipes*) is native to Amazonia and has been imported worldwide as an attractive pond plant. It was first reported in Lake Victoria in 1989 and has become an invasive pest since then, with large vegetation mats blocking shorelines and fouling boat engines and cooling systems. Control measures are now in place, but much more work needs to be done. There are no good assessments of the damage done by the water hyacinth to the rest of the lake's biodiversity, but it has been thought to have changed the ecological parameters of shorelines and reduced the diversity of plankton, floating and submerged plants, and macroinvertebrates as well as fish. These examples illustrate the effects that the introduction of non-native species can have. In Uganda, other exotic species are proposed for mariculture and agricultural use, and this, too, can become a similar threat to wild ecosystems and species if appropriate care is not taken to keep them from becoming invasive pests.

### **E5. Water Quality Disturbances**

The open water areas of Uganda are being increasingly affected by more than the introduction of non-native species. Human activities along the shores, hydroelectric dams along the rivers, and other direct and indirect modifications are changing the water quality and ecology of certain lakes. Deforestation of shorelines and agricultural runoff in many areas has resulted in a shift of the lake from a meso to eutrophic state, with resulting changes in species composition. Pesticides from cut flowers and other water-intensive crops near lakeshores, when improperly managed, have added persistent pollutants to the food chain. Industrial and municipal pollutants also find their way to the lake. Other lakes, rivers, and water bodies are no doubt similarly affected. It is difficult to find data on these matters, but no doubt a combination of such factors provide a significant threat to good water quality and the life that depends on it, including humans.

### **E6. Civil War**

Civil war in many areas of Uganda poses a large-scale threat to the status of protected areas, primarily through the loss of tourism revenue. A number of protected areas have highly attractive scenery and animals, but they are in unsafe zones, where occasional rebel attacks occur. The widely publicized attack on foreign gorilla-watching tourists in Bwindi National Park in 1999 brought an abrupt decline in the entire tourism sector, not just in Uganda but also throughout regional Africa. Occasional rebel-related murders still occur in the better-known parks. Tour operators are often hesitant to bring clients into such areas and tourists who have heard the news are afraid to venture out. At this time, most protected areas and their operating agencies, UWA and the Forest Department, are heavily donor supported and do not rely on tourism dollars. This is due to change as the GTZ project comes to a close of phase one, and the World Bank steps back. Unless the security situation can be greatly improved, there will not be enough tourist dollars to support the work of UWA and the Forest Department, or the biodiversity they are charged with protecting.

### **E7. Other Factors**

Depending on the locality, many other factors provide threats to the diversity of life in Uganda. In areas where people and domesticated animals come into close proximity with wildlife, the transmission of disease from one to the other is possible. In Bwindi, for instance, a number of

gorillas have come down with scabies from contact with people. The illegal international trade in endangered species is reportedly still continuing in Uganda, and target species such as birds and primates are still illegally captured and exported despite CITES regulations to the contrary. When these animals are captured, it often involves killing entire wild groups for the few young animals that are sought. There may also be other threats to biodiversity not mentioned in this report that may vary from site to site. The unique and often very different threats at the local level need to be investigated and considered when any project activities are planned and implemented to avoid further habitat degradation and biodiversity losses.

## SECTION III

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# Status of Biodiversity Conservation in Uganda

## A. Biodiversity Conservation In and Around Protected Areas

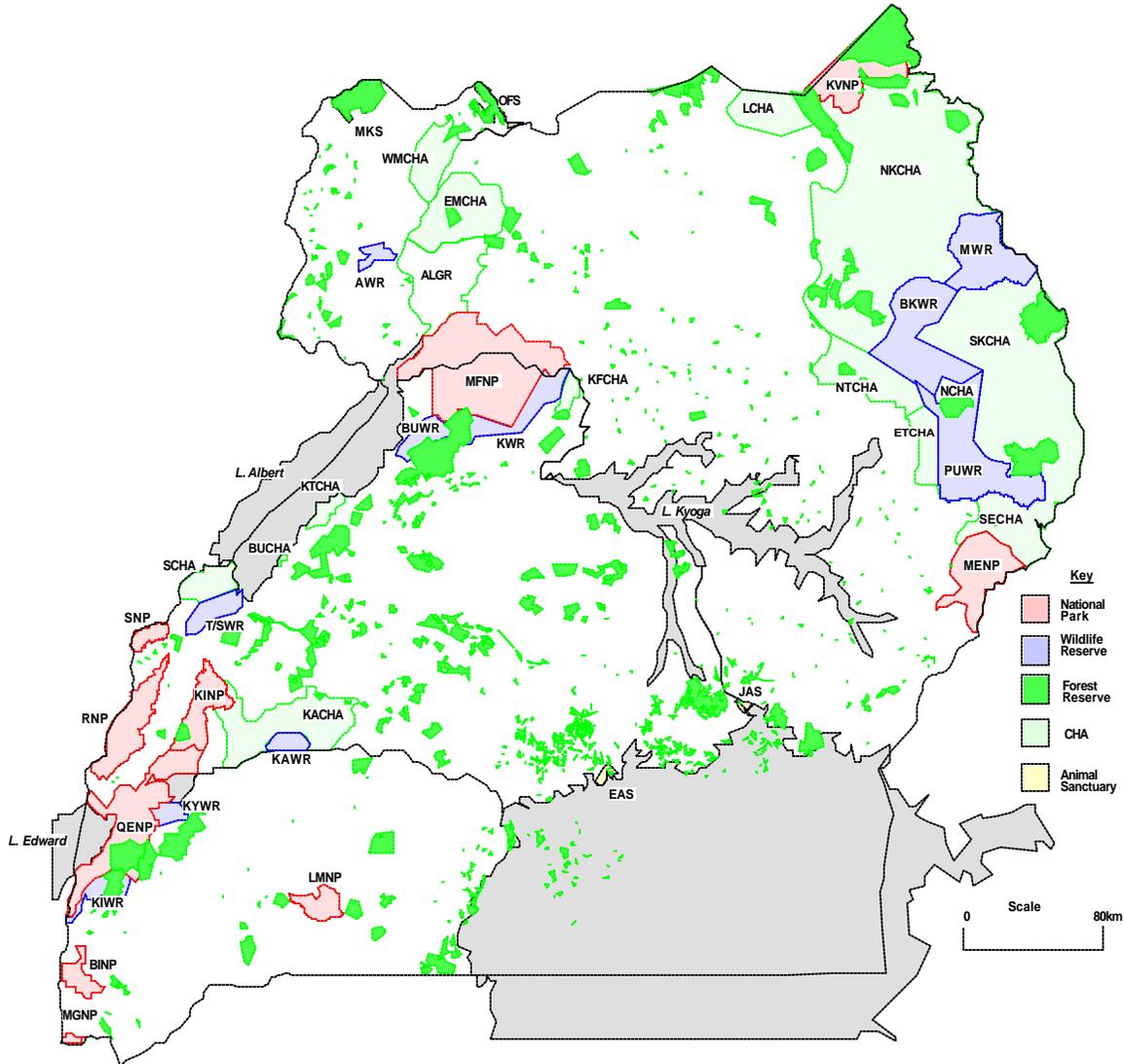
Uganda has an extensive network of protected areas that include national parks, wildlife reserves, animal sanctuaries, and community wildlife areas (formerly called controlled hunting areas) managed by the Uganda Wildlife Authority and a large number of smaller forest reserves and nature reserves managed by the Forest Department (see Figure 3 on the next page). Depending on the differing policies of UWA and the Forest Department, each protected area category is open to different types of legal use, such as tourism and research use only; extraction of nontimber forest products such as wild coffee and rattan; and in some cases even large timber removal operations. The amount of enforcement of these legal activities also varies greatly from site to site and from time to time. Besides these protected areas, a few other areas are protected by other institutes or NGOs, including the Chimp Sanctuary on Ngamba Island offshore from Entebbe (a consortium of NGOs) and the Zika Forest (Uganda Virus Research Institute and the Uganda Wildlife Society.)

Most of the wildlife-related conservation work in Uganda is concentrated in the larger and better-known national parks and reserves, home to most of the remaining focal animals. These wildlife conservation efforts primarily fall under the authority of the Uganda Wildlife Authority (UWA), which carries out its own community, research, and conservation work and grants permits to others to do the same. The Forestry Department also coordinates biodiversity conservation activities in its system of Forest and Nature Reserves. A number of universities and NGOs also play a major role in conservation activities in and around these parks. The tourism industry in many developing countries typically contributes a large share of the finances needed to support national parks. Prior to the internationally publicized deaths of foreign tourists in Bwindi in 1999, many tourist dollars were flowing to the Albertine Rift national parks. The tourism situation is now recovering, but until these parks are able to draw a fair share of the international tourist trade, much of the work in protected areas continues to be supported largely by donor funds and private contributions. The primary types of conservation activities in and around protected areas are developing master plans, antipoaching efforts, research and monitoring programs for targeted species, and community education and development work in areas around the parks.

### A1. Management Plan Development

A number of donors have been working with UWA, the Forestry Department, and other stakeholders to help develop management plans for protected areas. The development of these plans, such as for Queen Elizabeth and Murchison Falls National Parks that are spearheaded by USAID's Action Program for the Environment (APE) and Conserve Biodiversity (COBS) projects, involve consultations with many partners, stakeholders, and district and community representatives. The result of such participatory planning activities will be greater ownership by

**Figure 3. Existing System Of Wildlife And Forestry Protected Areas In Uganda (UWA Protected Area Assessment Program, April, 2001)**



| National Parks |                     | Wildlife Reserves |                    | Controlled Hunting Areas |                | Wildlife Sanctuaries |             |
|----------------|---------------------|-------------------|--------------------|--------------------------|----------------|----------------------|-------------|
| BINP           | Bwindi Impenetrable | AWR               | Ajais's            | BUCHA                    | Buhuka         | EAS                  | Entebbe     |
| KINP           | Kibale              | ALWR              | Aswa-Lolim *       | EMCHA                    | East Madi      | JAS                  | Jinja       |
| KVNPA          | Kidepo Valley       | BKWR              | Bokora Corridor    | KACHA                    | Katonga        | MKS                  | Mt. Kei     |
| LMNP           | Lake Mburo          | BUWR              | Bugungu            | KFCHA                    | Karuma Falls   | OFS                  | Otze Forest |
| MENP           | Mt. Elgon           | KAWR              | Katonga            | KTCHA                    | Kaiso-Tonya    |                      |             |
| MFNP           | Murchison Falls     | KFWR              | Kibale F. Corridor | LCHA                     | Lipan          |                      |             |
| QENP           | Queen Elizabeth     | KWR               | Karuma             | NCHA                     | Napak          |                      |             |
| RNP            | Rwenzori            | KIWR              | Kigezi             | NKCHA                    | North Karamoja |                      |             |
| SNP            | Semuliki            | KYWR              | Kyambura           | NTCHA                    | North Teso     |                      |             |
| MGNP           | Mgahinga Gorilla    | MWR               | Matheniko          | SCHA                     | Semliki Flats  |                      |             |
|                |                     | PUWR              | Pian-Upe           | SECHA                    | Sebei          |                      |             |
|                |                     | T/SWR             | Toro               | SKCHA                    | South Karamoja |                      |             |
|                |                     |                   |                    | ETCHA                    | East Teso      |                      |             |
|                |                     |                   |                    | WMCHA                    | West Madi      |                      |             |

\* Former, incl. Kilak CHA

those concerned, and ultimately greater conservation effect. It remains to be seen how effective the implementation of these and other master plans developed in recent years will be.

## **A2. Antipoaching Efforts**

The populations of larger wildlife species in Uganda declined dramatically in distribution and abundance during nearly two decades of internal strife, and now numbers of elephants, ungulates, and large carnivores are gradually recovering in most major parks. UWA is mandated to protect these animals from further decimation. Some poaching for valuable trophies such as elephant tusks still occurs, but the primary threat these days is due to local communities hunting for “bushmeat” or any species they can hunt to eat. Depending on the financial support in each park, which varies greatly from park to park depending on donor interest, UWA rangers conduct antipoaching patrols by car, by boat, or on foot and collect data on poaching for the UWA data bank. Data are difficult to access on the success of these missions.

Some anti-poaching efforts may also be conducted by NGOs in certain areas. For instance, the Jane Goodall Institute/Chimpanzee Sanctuary and Wildlife Conservation Trust (CSWCT) works around Budongo Forest and Kibale National Park to locate and collect snares that are illegally set for edible animals but also maim or kill a large number of chimps in the process.

## **A3. Research and Monitoring Programs**

A number of research and monitoring efforts in protected areas are coordinated by government agencies. UWA has spent years collecting and analyzing biodiversity data from all of the national parks, reserves, wildlife sanctuaries and controlled hunting areas and has published these data in an informative five-volume set of documents (UWA, 1999). Here the information on population trends of many species are summarized for all the parks, and supplemented with individual treatments for each protected area. Ongoing ranger monitoring programs continue in many areas, and the data are coordinated into a data bank that includes population counts on target species, results of opportunistic sightings, poaching data, etc. Research work on some species and ecosystems is also conducted by UWA and by independent researchers under a UWA permit. All of this data is also included in the UWA data bank. As this data bank develops further, this information will be used to show critical species-related trends.

Similarly, the Forest Department has undertaken a detailed biodiversity assessment of the forest reserves; this information appears in the Forestry Nature Conservation Master Plan (1999.) In analyzing these data, a number of forest reserves were noted for their important biodiversity values, and this subset has been reclassified as nature reserves. This data collection operation has been completed and the results analyzed. For research on particular wildlife within a forest reserve, permits are needed by UWA, thus leading to conflicts in jurisdiction between these two agencies. The Forest Department has also housed the National Biomass Study, which has produced useful maps and analyses of the land and habitat types throughout the country.

Universities and NGOs coordinate other monitoring efforts. There are three university-based field stations in Uganda: Makerere University’s field station in Kibale National Park; the Institute of Tropical Forest Conservation, which is associated with Mbarara University (both supported over the years by USAID/Uganda); and the Budongo Forest Project, which is

associated with Oxford University and Makerere University's Faculty of Forestry and Nature Conservation. These three stations serve as headquarters for research programs and projects in their areas and work in association with NGOs and donors.

Research and species monitoring projects conducted by NGOs are many and diverse. Much of this effort is focused in the Albertine Rift parks in the southwest, where the globally important populations of great apes and other primates have long been known and studied. Some of these projects, such as those supported by USAID's former Grants Management Unit and now by ECOTRUST, by the Wildlife Conservation Society/New York Zoological Society, the Institute of Tropical Forest Conservation, and the Albertine Rift Conservation Society, focus broadly on a number of taxa and biodiversity conservation issues. Other projects, such as the International Gorilla Conservation Program (with some USAID support) and the Jane Goodall Institute/Chimpanzee Sanctuary and Wildlife Conservation Trust, confine their efforts mostly to conservation issues affecting particular target species.

Beyond the Albertine Rift parks, research and monitoring projects are spread across other major parks in the country. Makerere University and the Mbarara Institute of Science and Technology students are engaged in studies around the country. Foreign universities such as the University of Florida and Cambridge University also have students in Uganda working on research projects both inside and outside protected areas.

#### **A4. Community Education and Development Work**

In Uganda, as elsewhere, there is a strong consensus that protected areas cannot remain effectively protected without substantial community involvement and buy-in. Communities around parks historically have depended on these ecosystems for meat, wood, and other products. When extracting these resources becomes illegal, they need other avenues for food security if poaching is to be reduced. In many cases, communities stand to gain greatly by the increased economic incentives generated by a thriving tourism industry. Nearby communities are also negatively affected by marauding problem animals that leave the reserve. Education and awareness programs, community-based natural resource programs, poverty-reduction strategies, animal control efforts, and other approaches are needed to develop a greater sympathy between the needs of communities and that of the parks. Such issues form the basis of most community work occurring around protected areas in Uganda.

UWA addresses the issues of communities through community conservation, education, and problem animal control programs. All parks have one or more community conservation officers who interface with the nearby communities, provide educational material and programs, and try to be responsive to community concerns. In some areas, donor or NGO assistance programs have provided communities near parks with new bore-holes, clinics, and schools. When elephants, hippos, lions cause problems in community areas, problem animal officers are called in to chase the animals back to the park, or in extreme cases, kill them. Other animals, such as baboons, vervet monkeys, and bush pigs are classified as "vermin" and the communities can dispatch them by themselves. UWA is now developing a new approach of negotiating resource agreements with communities to enable them to more directly benefit from park resources. So far such agreements have been signed for wild coffee (Kibale N.P.), bamboo (Mt. Elgon N.P.), nontimber forest products (Bwindi N.P.), and for access to water for cattle (Lake Mburo). Interestingly,

Arthur Mugisha, UWA's director of field operations, is doing a Ph.D. dissertation entitled "Evaluation of Community-Based Conservation Programs" at the University of Florida, so such work should continue to receive attention within UWA. The Forest Department has also developed collaborative management agreements with communities adjacent to two Forest Reserves: Namatale and Tororo Central Forest Reserve. Overall, collaborative management in Uganda is in its infancy, and its complexities are just becoming apparent (Tumushabe, G.W, 2000). It is characterized by:

- Policy confusion due to a lack of uniformity in language (UWA calls it community conservation, Forest Department calls it collaborative management or comanagement, Fisheries Department calls it comanagement, etc.).
- Limited capacity on the part of resource-dependent communities to negotiate collaborative management agreements with the relevant authorities.
- A strong tendency to conclude collaborative management agreements with selected community members to the exclusion of the rest of the community that may undermine the objectives of the agreement. For example, in Kasyoha Kitomi, Bushyenyi District, the district fisheries officer has entered into an arrangement with the community whereby only four persons would have the right of access to the fisheries on a minor lake in the area. However, the community as a whole receives little for agreeing to this more restricted access.
- The possibility that communities may exchange some of their "commercial" interests in a given protected area, e.g., timber harvesting, commercial wood fuel/charcoal harvesting, game meat hunting for "non-consumptive" uses such as mushroom growing, bee keeping, and medicinal plant collecting. This raises issues of equity because the same individuals may not be involved in all activities to the same degree.

Other community-level conservation and development activities in Uganda are conducted by NGOs working around protected areas. CARE, for instance, focuses its Development Through Conservation Program around Bwindi and Mgahinga NPs, and also implements the Queen Elizabeth Community Conservation and Integrated Lake Management projects in and around Queen Elizabeth NP. At each location, they engage at three levels: helping communities with alternative livelihoods; community conservation and education; and institutional support at the district level. IUCN is working with communities around Mt. Elgon National Park, Kibale, and Semliki National Parks. The Mgahinga-Bwindi Impenetrable Forest Conservation Trust supports work around both of those national parks. The Uganda Community Tourism Association helps communities benefit from ecotourism opportunities near a number of protected areas in Uganda. The Kibale Forest Foundation, with GEF funding, is helping communities with a resource agreement with UWA to harvest and sell park-grown wild coffee overseas with a "green certification." The AFRENA agroforestry project is working in communities around Mabira Forest on interventions involving increased use of trees and shrubs on farms. Many other community programs are known in Uganda but it is difficult to find data on their effectiveness. Such work often takes years to pay off in results and in many cases it may be too soon to tell.

## **B. Biodiversity Conservation Outside Protected Areas**

Beyond the borders of protected areas in Uganda loom many biodiversity conservation threats and fewer programs and resources to address them. Of major concern are the country's important wetlands, lakes, and rivers, most of which are located in the public domain and heavily utilized for their resources in an often-uncontrolled manner. Likewise, species of special concern are found throughout the country, and often outside the protection of a national park or reserve. There is a small *ex situ* conservation presence in this country that focuses on a few of these species, but more work is needed. In general, the fate of any of Uganda's interesting plants and animals that live outside of reserves is seriously threatened. A few representative projects are described here and other programs no doubt also exist, but there are many more needs to be addressed in this conservation area.

### **B1. Wetlands Conservation**

The principle action to conserve wetlands in Uganda is orchestrated through the Wetlands Inspection Division of the Ministry of Water, Lands and Environment with technical assistance from the IUCN and financial support from the Royal Netherlands Government. The Wetlands Sector Strategic Plan 2001-2010 outlines interventions they are working on, including public education and awareness programs, policy formulation, biodiversity inventories, developing Ramsar site proposals, etc. Wetlands guidelines and policies are in place, but enforcement is difficult. As authority is devolved to the District level, the very politicians who are converting wetlands for their own financial purposes become charged with enforcing laws against this in a classic "fox guarding the hen house" situation. Wetlands conservationists are finding that a better approach is to step down to the community level and help communities develop their own participatory planning and zoning guidelines that encompass their needs now and in the future. Combining this with solid education and awareness work is the best hope for conservation success in this difficult area.

Another wetlands conservation initiative is being spearheaded by Nature Uganda in association with Birdlife International and the Royal Society for the Protection of Birds with UNDP/GEF funding. This initiative, "Important Bird Areas in Uganda," has listed 30 priority sites for biodiversity conservation and most of these sites are wetlands. To address conservation issues, this project has developed education and awareness materials and provided these to communities in the target areas. Students at Makerere University are also surveying dragonflies, butterflies, amphibians, and other indicator species at these important sites with support from DANIDA.

### **B2. Lake Conservation**

Conservation work that is focused on Lake Victoria and other water resources primarily addresses the concerns of the fishery sector. As harvests of Nile perch decline, more and more resources are aimed at studying the reasons why. Although a principal cause is thought to be over-fishing and fishing with illegally small-net sizes, other biological factors are at play as well. Two large-scale initiatives — the Lake Victoria Environmental Management Project (LVEMP), funded by the World Bank/GEF, and the Integrated Lakes Management Project, funded by DFID — are addressing the many factors most likely responsible for the decline in fish stocks and the degradation of lake resources in general. Within these projects, little mention is made of the

massive decline in cichlid species or the biodiversity conservation problems inherent in this decline. A small international conservation community including researchers at the Fisheries Resources Research Institute in Jinja, and colleagues in the United States and England are trying to draw attention to this problem and are proposing some solutions. Until the Nile perch declines enough so that other fishes dominate the catches, it is unlikely that any significant resources will be attracted to this effort.

Another regional conservation issue for Lake Victoria is the burgeoning spread of the introduced water hyacinth, which clogs waterways, jams boat propellers and cooling systems, and makes access to the water difficult in many areas. The Regional Lake Victoria Water Hyacinth Management Program along with government and research partners have addressed this problem primarily through physical removal of the floating plant masses, with the use of herbicides still undergoing an environmental review. A relatively new initiative is now underway to introduce weevils that feed on the water hyacinths. It is hoped that this approach of biological control will eventually slow the spread of the weed and reduce the use of controversial herbicides in the lake ecosystems.

### **B3. Species-Focused Conservation**

Most biodiversity programs in Uganda are geographically focused at particular protected areas or important wetlands and lakes. A few projects, however, focus on particular species that are found more widely in the country. Bird surveys are conducted in most major wetlands areas and more information is available on birds than on any other group. There are also a few species-focused mammal studies. The Wildlife Conservation Society and the Jane Goodall Institute are coordinating surveys of chimpanzees in Kibale Forest, Budongo Forest, and other areas where they occur both inside and outside protected areas and also engaging in public awareness programs in these areas. Similarly, the International Gorilla Conservation Program is working to conserve gorillas in Bwindi and Mgahinga National Parks. Studies of economically important plant species, such as mahogonies, are surveyed in forest reserves and other areas. University projects are also looking at a particular species, such as lions or banded mongooses, but only in certain national parks. Other examples no doubt exist, but it is fair to say that species-focused conservation programs are in their infancy in Uganda.

### **B4. *Ex situ* Conservation**

Entebbe is the location of Uganda's two main *ex situ* (outside the natural habitat) biodiversity conservation projects: the Uganda Wildlife Education Centre (UWEC) and the Entebbe Botanical Garden. UWEC is a zoo that concentrates on local species and serves as a rehabilitation station for injured chimpanzees and other species that are confiscated from poachers. A number of international and national organizations, including USAID/Uganda, support UWEC, and private contributions are sought through an animal "adoption" program. The attendants and animal keepers seem surprisingly well informed, in part due to a keeper exchange program with the North Carolina Zoo in the United States, and the animals on display looked far better than most in developing country zoos. UWEC is now implementing a new master plan and new exhibits are under construction. The associated Chimp Sanctuary on Ngamba Island is another valuable *ex situ* facility where rescued chimpanzees can be safely viewed and conservation messages disseminated. The Botanical Garden is also a good resource for Uganda,

and the curator is an expert on plants in the country and on related conservation issues. Both facilities are unique education and conservation resources in a country like Uganda, and their work deserves support and encouragement. These programs attract visitors by offering a recreational experience and can open the door to increased conservation awareness among the visiting public. In addition to these public facilities, other *ex situ* research projects include the Plant Genetics Research Program of the Forest Research Institute, where targeted species are studied and conserved. There is much room in Uganda for more work of this type and many further opportunities for partnering with other international *ex situ* efforts.

## SECTION IV

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# Strategic and Policy Framework

### A. Introduction

Uganda has a strong policy and legislative framework in place governing the conservation of natural resources and biodiversity. In addition, a number of agencies and NGOs are working on various coordination, research, and implementation aspects of these laws and policies. But despite large-scale donor support for such strategic efforts, there is much room for improvement in implementation and enforcement of existing laws and policies. In Uganda, the challenge remains to further develop practical implementation plans and to build capacity at the district and community level to carry out these policies. Although an exhaustive detailing of the Ugandan policy framework is beyond the scope of this report, this section summarizes some of the most relevant biodiversity-related policies, legislation, and implementation efforts currently in force. This summary will help guide others to more fully investigate the strategic and policy framework in Uganda and work toward further biodiversity conservation actions.

### B. National Policy Framework

Since the mid-1980s, Uganda's policy has increasingly recognized the critical nature of natural resources as the country's economic capital base. There is also an increasing realization of the link between environmental degradation and poverty, population, and inappropriate economic policy. This is apparent in Uganda's current political focus on poverty alleviation, as reflected in the Poverty Eradication Action Plan (PEAP, 1997, revised 2000), and in its overall focus on broad social and economic development. A number of policies contain references to the conservation of natural resources and biodiversity in Uganda. Some of the more relevant policies are described below.

*The Poverty Eradication Action Plan.* The PEAP currently guides GOU development strategy with the objective of effecting a dramatic reduction of poverty. The strategy that government has adopted with respect to environment, especially use of natural resources to eradicate poverty, hinges on conservation of these resources, especially the soil, forests and biomass, water, wetlands, and wildlife. Among the priority actions outlined in the PEAP is identifying the existing stock of biodiversity and support to additional monitoring activities, sensitizing communities about the benefits of sustainable natural resource management, and promoting resource management plans/agreements at community and district levels.

The PEAP highlights implementation of the National Environmental Action Plan (NEAP) as one of the ways to achieve sustainable development. Another important realization was the recognition that lack of policy and institutional coordination aggravates the degradation of natural resources. Recent efforts in the Ugandan environmental policy arena seek to provide a policy framework for institutional collaboration and consultations, and provide a broad legal framework for working toward coordinated resolution of environmental problems.

*The National Environmental Action Plan (NEAP)*. The NEAP process took nearly three years and culminated in 1995 with the production of an action agenda aimed at achieving a balance between development and the conservation of natural resources and the environment. The process was initiated after the realization of the environmental degradation that had taken place

#### NEAP Objectives

The NEAP's overall policy goal is to achieve sustainable social and economic development that maintains or enhances environmental quality and resource productivity on a long-term basis to meet the needs of present and future generations.

The key policy objectives are to:

- Enhance the health and quality of life for all Ugandans and promote long-term, sustainable socioeconomic development through sound environmental and natural resource management
- Integrate environmental concerns in all development policies, planning, and activities at national, district, and local levels with full public participation
- Conserve, preserve, and restore ecosystems, maintaining ecological processes and recognizing the importance of the conservation of biodiversity
- Optimize resource use and sustainable resource consumption
- Raise public awareness and understanding of linkages between environment and development
- Ensure individual and community participation in environmental improvement activities

in Uganda. The policy sets goals and attempts to harmonize sectoral and cross-sectoral objectives, principles, and strategies with an aim to finding common ground among the often-conflicting concepts of economic development, improved living standards, and environmental conservation. NEAP considers biodiversity conservation explicitly, stating the goal “to serve and manage sustainably the country’s terrestrial and aquatic biological diversity in support of national economic development.”

*The National Environment Management Policy for Uganda (NEMP, 1994)*. The NEMP resulted

from the process of preparing the NEAP and became a component of the NEAP document. NEMP sets overall goals and objectives for environmental management and provides a broad policy framework for harmonizing sectoral and cross-sectoral policy objectives. Key initial actions are identified as necessary. These include: “(i) the creation and establishment of an appropriate institutional (*see NEMA, below*) and legal framework; (ii) the development of a new sustainable conservation culture; (iii) revision and modernization of sectoral policies, legislation, and regulations; and (iv) the establishment of an effective monitoring and evaluation system to assess the impact of policies and actions on the environment, the population and the economy.”

With the policy objective of promoting environmentally responsible social and economic growth, the NEMP recognizes biodiversity conservation as a form of natural resource management that is critical to meet the needs of both present and future generations of Ugandans. The NEMP states that protected areas are the cornerstones of Uganda’s biodiversity conservation efforts. It also underscores the importance of biodiversity conservation outside protected areas, pointing out that this is dependent on broad participation of various agencies, institutions, and individuals. NEMP also sets goals of encouraging tourism, appropriate pricing of biodiversity resources, inclusion of broad ecosystem types in protected areas, and local community involvement in protected area planning and management. Strategies to accomplish these objectives include comprehensive and coordinated policies and legislation for biodiversity conservation in and out of protected areas, developing a framework for managing buffer zones, and developing mechanisms to integrate local communities into protected area management and ensure that they reap some portion of the benefits. NEMP also mandated that natural resources agencies would be coordinated under a common management authority and the framework for this institution was embedded in Section

5 of the *National Environmental Statute*. This mandate gave birth to the National Environmental Management Authority (NEMA), which is discussed below in subsection D.

*Plan for the Modernization of Agriculture (PMA)*. This is a framework for increasing agricultural output through increased acreage, improved crop and animal varieties, and management. Although the plan envisaged a sector modernization process through, among other things, sustainable utilization of soils and other renewable natural resources, it only makes passing reference to issues of environment and biodiversity conservation. For example, it mentions the desirability of maintenance of fish biodiversity and states that disease and pest control should be consistent with environmental protection and prudent use of renewable natural resources. It would appear that there is need for this policy to undergo EIA with a view to including biodiversity and other environmental concerns into it.

*National Policy for the Conservation and Management of Wetland Resources, 1995*. This was the first of its kind in Africa. It aims at curtailing the rampant loss of wetland habitats and their resources and ensuring that benefits from wetlands are sustainably and equitably distributed to all people of Uganda.

*Water Resources Policy, 1995*. This was developed under the framework of a water action plan in the mid 1990s, recognizing the close links between land use and water quality, wetlands and water resources, and the role of environmental impact assessment as a planning tool.

*The Uganda Wildlife Policy, 1999* builds upon the *Uganda Wildlife Statute (1996)*. The vision of these policy documents is to “conserve in perpetuity the rich biological diversity and natural habitats of Uganda in a manner that accommodates the development needs of the nation and the well-being of its people and the global community.” The policy looks at the relationship between wildlife conservation and national development, the framework for implementing the policy as well as the actual implementation in terms of institutional arrangements, research and monitoring, the role of NGOs and the private sector, etc.

*The Uganda Forestry Policy (Draft for Cabinet), 2000*. The 1988 Forestry Policy for Uganda had three major objectives. To: 1) maintain and safeguard enough forest land in the country; 2) manage the forest estate so as to optimize economic and environmental benefits; and 3) promote an understanding of forests and trees. The 1988 policy has been undergoing review over the last few years because it was realized that it provided limited guidance on principles, strategies for implementation, forests outside gazetted areas, and the balance between production and conservation. It also does not elaborate the roles of government, the private sector, and rural communities in forestry, and does not elaborate the linkages with other sectors and land uses. The new draft policy recognizes recent policies such as the PEAP and PMA. The goal of the new policy is “an integrated forest sector that achieves sustainable increases in the economic, social and environmental benefits from forests and trees by all the people of Uganda, especially the poor and vulnerable.” It clearly lays out the different roles of the various stakeholders and has a framework for local community involvement in forestry. The issue of natural forest on private land is addressed and the role of the sector in biodiversity conservation is highlighted.

*National Biodiversity Strategy and Action Plan (NBSAP)*. The NBSAP is in the final stages of elaboration. In 1997, Uganda received some funding from the Global Environment Facility (GEF) for NEMA to start developing the NBSAP. A number of task forces were formed in 1998 to start the process. Each task force produced a report and NEMA then contracted IUCN to take the process further. A series of consultations and workshops have taken place over the past two years culminating in the production of a draft NBSAP. A NEMA Technical Committee has reviewed this draft, which is now at IUCN for finalization. Once the NBSAP is completed and approved by the government, planners and others at the national and local levels will use it to integrate biodiversity in development. The Ministry of Finance and Economic Planning will use it as a reference in budgeting and allocation of government resources.

*Vision 2025*. This was based on a long-term perspectives study that commenced in 1997. It constitutes a framework for long-term development but does not provide a plan of action for development. This would be done by action plans arising out of the long-term perspective. One strategic issue recognized in this vision is how to ensure that resource use and development activities sustain and enhance environmental quality. The strategies are to:

- Develop and strengthen policies for sustainable utilization of environmental resources, including biodiversity
- Promote public awareness and participation in management of environmental resources
- Enhance the role of women in environment management
- Develop a pollution-free and beautiful environment

## **C. Legislative Framework**

### **C1. National Legislative Framework**

The following is a brief listing of national laws relevant to the current task of viewing the institutional environment for biodiversity and tropical forest conservation in Uganda. A discussion of some of these laws can be found in subsection D, Institutional Framework.

- The National Environment Statute, 1995
- The Forests Act, Cap 246
- The Wildlife Act, 1996
- Local Governments Act, 1997
- The Land Act, 1998
- The Plant Protection Act
- The Timber (Export) Act, Cap 247, as amended by Act 14 of 1970
- The Prohibition of Burning of Grass Decree, 1974
- The Animal Diseases Act, Cap 218
- The Animal (Prevention of Cruelty) Act, Cap 220
- The Cattle Grazing Act, Cap 222

- Fish and Crocodile Act (amended in 1967 and now being revised into a new Fisheries Act, which is presently before Parliament)

These and other acts identify the responsible authority for enforcement and implementation and spell out procedures to be followed. Some allow for participation in planning at the local, district, and/or national levels. The Local Governments Act of 1997 targets the role of local participation in decision making across many sectors. The problem with most of these laws is that their enforcement and implementation are thought to be sporadic and ineffectual in most cases. This could partly be due to the fact that the people who interface with biodiversity and tropical forests on a daily basis are generally ignorant of these laws.

## **C2. International and Regional Conventions**

Uganda has ratified several major international conventions in the field of biodiversity conservation. In many instances, however, national legislation must be modified to give such treaties binding force in Ugandan law. Uganda is party to the following treaties, with examples of special interest described in more detail.

*The Convention on Wetlands of International importance Especially as Waterfowl Habitat (Ramsar Convention), 1971*, was ratified by Uganda in 1988. At present, one wetland in Uganda is listed as a Ramsar site (Lake George wetlands). Plans are in progress to list four other sites: Lake Nabugabo, Lutembe/Mabamba Bays, Lakes Opetta and Bisina.

*The Convention on Biological Diversity (CBD), Rio de Janeiro, 1992*, was ratified by Uganda in 1993. NEMA is in charge of Uganda's participation in international environmental conventions, and is preparing the country action plan (BSAP) for CBD. Most provisions in the CBD were already included in the National Environmental Statute (1995). Also, the Uganda Wildlife Statute adheres to principles of the Convention, especially provisions for sustainable management and use of wildlife. The CBD recognizes the sovereign rights of states over its natural resources and the authority to determine access to genetic resources through national legislation. It also provides for establishment of mechanisms for equitable sharing of benefits accruing from such genetic resources. The convention caters for access to information including indigenous knowledge in a manner that does not infringe on the intellectual property rights of communities. In Uganda, the NEMA, in close collaboration with the National Council for Science and Technology, has drafted regulations on access to genetic resources. These regulations are awaiting final technical review before going to the Cabinet. The major problem however, is that most Ugandans have little understanding of these issues, whether in government or civil society. It is crucial that civil organizations involved in biodiversity conservation and awareness activities be empowered to deliver information and knowledge to communities so that they can appreciate their natural resources and negotiate issues of access to genetic resources as well as indigenous knowledge from a position of strength.

*The Convention for the Protection of World Cultural and Natural Heritage, Paris, 1972* was ratified by Uganda in 1987. Two sites, Bwindi Impenetrable National Park and Rwenzori Mountains National Park, have been inscribed as World Heritage Sites. However, because of insecurity in the Rwenzoris, park management is unable to control activities in the area, which has led to the inclusion of this site on the global endangered list of World Heritage Sites.

*The United Nations Framework Convention on Climate Change, 1992*, was ratified by Uganda in 1993. The objective of this treaty is to regulate levels of greenhouse gases in the atmosphere to avoid undesirable global climate change. This convention relates to biodiversity in that it requires sinks and reservoirs of carbon to be conserved and sustainably managed and has led to replanting of forests in some areas of Uganda.

*The Convention on International Trade in Endangered Species of Wild Fauna and Flora, Washington, 1973 (CITES)*, was ratified in 1987, but no regulations are currently in place. Although the Wildlife Statute of 1996 has provisions that relate to preservation of rare, endemic, and endangered species, and CITES standard forms for permits and certificates are being used, no specific subsidiary legislation provides for implementation in Uganda. Relevant statutes, such as the new Fisheries Act and the Forests Act do, not specifically mention CITES. Therefore, Uganda is bound by CITES, but the Ugandan people are not bound by the government to implement CITES.

Other regional agreements contribute to the conservation of biodiversity, to which Uganda is party. Two of particular interest are the African Convention on the Conservation of Nature and Natural Resources, and the Lake Victoria Fisheries Organization.

*The African Convention on the Conservation of Nature and Natural Resources, Algiers, 1968*, was ratified by Uganda in 1977. This remains the primary pan-African legal instrument for the conservation of the environment in general and biodiversity in particular, and it was incorporated into Uganda's municipal law by the Uganda Wildlife Statute. However, no financial provisions were included, so despite clear objectives, it has not been implemented by Uganda or by most other countries in Africa. The Organization of African Unity (OAU) is now considering reviewing and revising the treaty, possibly with a view to making it operational.

*The Lake Victoria Fisheries Organisation* was ratified by Uganda in 1995. This agreement seeks to promote improved management and conservation of lake resources by encouraging collaboration among agencies and programs operating on the lake, as well as coordinating fisheries extension work in these three East African countries.

Uganda is a party to many other conventions not summarized here, such as the Convention to Combat Desertification, the Bonn Convention, the Lusaka Agreement, etc. Together, there is a large amount of international environmental policy work in place in Uganda. For most of these, however, implementation is sorely lacking.

#### **D. Institutional Framework: Government Agencies**

The *National Environment Management Authority (NEMA)* arose from the NEAP process and oversees the National Environment Management Policy (1994) as well as the implementation of the National Environment Action Plan (NEAP, 1995). NEMA is expected to encourage, supervise, monitor, and coordinate environmental actions among and between sectors, provide technical and training input, and provide policy level assistance to other agencies. NEMA is in the process of developing an Environment and Natural Resources Sector Investment Plan that will align with other sectoral initiatives such as the PMA, Forestry Sector Plan and Forestry Policy (to be published, 2001), and the 10-year Wetlands Strategic Plan (2000). Given the

government's current emphasis on poverty eradication, NEMA is undertaking efforts to incorporate environmental issues, including biodiversity, into poverty eradication planning. NEMA has recently joined the PMA policy-level steering committee at the Permanent Secretary level, resulting in establishment of a Task Force on Environment and Natural Resources. The inclusion of "environment" and NEMA's participation in guiding the PEAP process is partially due to coordinated donor pressure (including USAID/Uganda) to "green" the PEAP process and subsequent programs.

As an agency supported almost entirely by donor funds, NEMA has yet to establish its authority, credibility, and usefulness within the GOU structure. NEMA started operating in 1996 with approximately 90 percent of its funding from the World Bank, and another World Bank loan is forthcoming. It is mandated to coordinate, supervise, and monitor all environmental activities, but not to engage in its own research or implementation efforts. Key activities in the past five years have been focused on developing policies and regulations in environmental management.

Presently, NEMA is trying to develop regulations regarding access to genetic resources as per the Convention on Biological Diversity. The regulation is currently under review by the Policy Committee on the Environment. There is a Technical Committee on Biodiversity Conservation that advises the NEMA Board of Directors and that contains an NGO representative, now the Uganda Wildlife Society.

Enforcement efforts by NEMA are weak. Although they have the mandate and authority to prosecute those not in compliance with various regulations, NEMA's current approach is not to do so. Various donors, including USAID, are currently working to help NEMA fulfill a mandate to develop and implement environmental action plans (EAPs) at the local level (District, sub-county, and parish plans). Implementation of these action plans is at a very early stage, and NEMA is open to having donors select districts in which to focus their efforts.

*The Forest Department* within the Ministry of Lands, Water and Environment is presently responsible for forest management, but this will soon be replaced by a new parastatal National Forestry Authority (NFA). The NFA is a significant departure from typical public sector forestry management in that it is currently planned to become largely self-supporting through collection of fees and any revenue obtained from managing forests. The NFA will have broad representation of stakeholders, a characteristic shared by the new forestry policy, which also maintains a conservation role for planning and collaborative management, encouragement to NGOs and CBOs, and multiple use strategies. The former policy of government retaining ownership of natural resources on private and customary land is discarded, and landowners have become owners of the natural resources on their land. This will allow *mailo* and customary landholders to control and manage forestry reserves and plantations. While the new policy advocates forest use consistent with conservation of biodiversity and existing ecosystems, it also favors sustainable use of forestry resources on private land as contributions to poverty eradication and economic growth. The government of Uganda clearly plans to support development of plantations that will have the possibility of funding through international carbon credits.

*The Uganda Wildlife Authority (UWA)* is an autonomous agency that manages national parks and wildlife reserves as well as wildlife outside protected areas. UWA is presently supported primarily by donor funds, the longevity of which is problematic. The Wildlife Policy and Wildlife Statute give UWA a strong mandate to preserve and manage biodiversity and also provide a framework to enable partnership with communities neighboring national parks. UWA, like the new planned National Forest Authority, is expected to become less dependent on government contributions and to be partially self-supporting, primarily through tourism receipts. The current unfortunate security situation makes increased tourism revenues a difficult goal to achieve. In the medium term, once immediate difficulties are resolved and forests and parks have attained some management stability, the institutions for wildlife, forests, and protected areas are expected to be unified under one agency.

*The Wetlands Inspection Division of the Ministry of Water, Lands, and Environment* administers the National Policy for the Conservation and Management of Wetland Resources and has produced and is implementing the Wetland Sector Strategic Plan 2001-2010 (WSSP). This plan integrates closely with the Poverty Eradication Action Plan through attention to increased income and increased quality of life of the poor. The Wetlands Inspection Division provides oversight, monitoring, and technical support for District wetlands programs and activities and recognizes the PMA mandate to use wetlands wisely in a way compatible with the vital functions and natural properties of the ecosystem. WSSP's objectives include generation of improved knowledge about Uganda's wetlands, public and stakeholder education, institutional development, formulation of policy and legislation, protection of vital ecosystems, and assistance to community management of the resource. Donor funding is instrumental in accomplishing these goals and half of the projected \$28 million cost of the WSSP over 10 years is expected to be provided by donor agencies.

*The Fisheries Department* implements the Fish and Crocodile Act, which was amended in 1967 and is currently outdated and expected to be replaced by the new Fisheries Act, which is presently before Parliament. The policy is clear that fisheries resources are fragile and must be harvested sustainably. Many regulations concerning net size, allowable fish size, and other parameters to protect this resource are clearly outlined. Unfortunately, there is very poor implementation of these laws by the Fisheries Department, which is said to be facing many problems ranging from the lack of qualified personnel to a lack of presence in the field where the laws should be enforced. There is need for participation of stakeholders, including involving fishermen in management, which could reduce the need for enforcement and associated costs.

## **E. Nature and Conservation NGOs**

Numerous Ugandan NGOs are active in biodiversity conservation. The matrix at the end of this section (Table IV-1) provides an overview of biodiversity-related NGO activities in Uganda, and selected organizations are discussed in more detail below. Many other NGOs are active in Uganda at the national, district, and local levels. Some of these are mentioned throughout various other sections of this document, where applicable.

*Uganda Wildlife Society (UWS)* is an advocacy organization with a mission of promoting wildlife conservation and related environmental issues in Uganda. Through lobbying on environmental issues, it has argued actively against the use of chemicals to control water

hyacinth in the absence of a satisfactory EIA and influenced fair award of concessions in former Uganda National Parks for the benefit of wildlife and the environment. UWS also conducts awareness campaigns by holding monthly debates and nature walks. UWS supports wildlife and environment research projects, the results of which are then disseminated through monthly programs and publications, and fed into advocacy work. One such forum is the organization's magazine *NatureWatch*, which is inserted into *The New Vision*, a leading daily newspaper in Uganda, on a monthly basis. The society receives support from USAID and other donors.

UWS also chairs a working group of NGOs with interest in implementing the Convention on Biological Diversity, which was supported in the past by Worldwide Fund for Nature (WWF). This group, comprised of more than 40 NGOs, is involved in ensuring that civil society input is incorporated into the NBSAP.

*NatureUganda* is the operational name of the East Africa Natural History Society (EANHS) in Uganda. The EANHS was set up in 1909 with the objective of documenting plants and animals and their natural history in East Africa, and is the oldest conservation NGO in the region. Activities in Uganda were rejuvenated in 1986, and the society was registered as a non-profit organization approximately 10 years later. As the BirdLife International partner in Uganda, *NatureUganda* is an authority on the status of Uganda's birds and their habitats. *NatureUganda* started the process of gathering atlas data on Uganda's biodiversity that culminated in the establishment of the National Biodiversity Data Bank (NBDB), now managed by Makerere University Institute of Environment and Natural Resources (MUIENR). The society operates through a number of working groups with special interests. There is BirdLife Uganda with interest in birds; Plants Working Group with botanical leanings; Wetlands Working Group interested in wetland conservation and monitoring using indicators such as waterbirds; and the Herps Working Group with interest in amphibians and reptiles. The society keeps membership interest by organizing regular nature walks as well as excursions to places of special interest. *NatureUganda* participates actively in the NGO WORKING GROUP on the CBD and made contribution to the NBSAP by being involved in two of the task forces that were set up by NEMA. The Society will publish a book, "Important Bird Areas of Uganda" later this year.

*Wildlife Clubs of Uganda* is a national association of member clubs formed in institutions of learning, particularly schools, rural community groups, and individuals who are interested in promoting environmental conservation in Uganda. Formed in 1975, the primary goals of WCU are to: 1) reach more Ugandan youth in institutions of learning with environmental conservation education, and generally promote public awareness on the need for conservation of natural resources; and 2) promote the realization of sustainable utilisation of natural resources in Uganda.

*ECOTRUST* funds several grant facilities, including one directed at providing small grants to CBOs (up to \$25,000), and another capitalized at about \$1.5 million, which grants up to \$200K and is directed toward implementing management plans in PAs and EAPs at the local level). This organization emerged from the Grants Management Unit of USAID's APE program and has evolved into an independent conservation NGO that provides sustained funding for biodiversity conservation and environmental management in Uganda. ECOTRUST's five primary program areas are: 1) biodiversity conservation; 2) sustainable NRM; 3) new and renewable energy

resources; 4) pollution control and management; 5) land trust management. ECOTRUST intends to maintain this mandate by sourcing funds from other donors in addition to USAID and establishing a conservation trust. In 1999, its operations were low key. It contracted with WWF to purchase land adjacent to Rwenzori Mountain NP for a visitor center. Throughout 2000, the USAID/COBS project assisted ECOTRUST to develop appropriate policies and procedures that would qualify it for direct USAID support. This process culminated with the recent signing of a US\$2.4 million cooperative agreement from USAID. Currently, USAID's COBS project is providing an organizational development specialist to help ECOTRUST strengthen management capacity.

*The Institute for Tropical Forest Conservation (ITFC)* is a research institute of the Mbarara University of Science and Technology, located at Ruhija in Bwindi Impenetrable National Park. It evolved from the Impenetrable Forest Conservation Project whose mission was to protect the unique montane forests of southwestern Uganda. The institute is now charged with coordinating research and monitoring activities in Bwindi Impenetrable and Mgahinga Gorilla National Parks and has facilitated research activities for both Ugandan and non-Ugandan graduate students. ITFC was a beneficiary of an institutional strengthening grant from USAID.

*The Makerere University Biological Field Station* in Kibale National Park is another research station that evolved from a former New York Zoological Society field site in the 1980s. It belongs to Makerere University and is administered by MUIENR. Its well-developed infrastructure was developed with assistance from the European Union and USAID. It now serves as a research site for Ugandan and foreign researchers and students and has several long-term projects. It hosts several tropical ecology field courses for European, American, and African students every year organized by institutions such as the Tropical Biology Association, the Smithsonian Institution and Makerere University itself.

*The Budongo Forest Project* is the third field research station in Uganda located in Budongo Forest Reserve near Murchison Falls National Park and Lake Albert. This field station was originated through projects conducted by Oxford University and New York Zoological Society researchers and is now managed by the Forest Department of Makerere University. Research projects here focus on the sustainable use of forest products, and long term monitoring of chimpanzees and other primates that inhabit the forest.

There are also a few international NGOs concerned with environment and biodiversity conservation operating in Uganda. Up until recently, both the World Wildlife Fund (WWF) and the African Wildlife Foundation (AWF) had a strong presence in Uganda but they have both limited their activities in recent months. Because of unrest in the Rwenzori Mountains, WWF has pulled back and is now primarily helping a team of stakeholders develop a large GEF proposal for the Albertine Rift area under a current small GEF planning grant. AWF was operating in and around Lake Mburo National Park but the project has now ended and the organization's activities in Uganda are now restricted to support to the International Gorilla Conservation Project. Other international NGOs with a larger presence in Uganda are described below.

IUCN (The World Conservation Union) seeks to influence, encourage, and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use

of natural resources is equitable and ecologically sustainable. A country office was set up in Uganda in 1993 and it now addresses the needs of the national IUCN partners and the conservation issues they identify and also furthers the interests of the IUCN Global mission and East Africa program. IUCN/Uganda has been particularly active in the wetlands program and Integrated Conservation and Development projects around Mt Elgon National Park as well as Kibale/Semliki National Parks.

*CARE* is involved in a number of natural resource management projects but the most significant one is the Development Through Conservation Project (DTC), which has been running in southwest Uganda around Bwindi Impenetrable and Mgahinga Gorilla National Parks since 1988. The aim is to conserve those two unique forests as well as promoting sustainable development in the surrounding communities. The project has previously benefited from USAID grant assistance.

## **F. The Role of Donors**

Donors play a major role in biodiversity and natural resources conservation efforts in Uganda. The United States and many European countries have development agencies within Uganda, and many include environmental activities within their programs. The multisectoral Global Environment Facility (through the World Bank and/or UNDP) and the World Bank on its own also support a number of biodiversity programs in Uganda. The current focus of the government of Uganda on poverty alleviation has downplayed the importance of the environmental sector. As donor agencies increasingly respond to the government's Poverty Eradication Action Plan, they are also beginning to downplay biodiversity and environmental conservation efforts. Since the primary funding for most environmental agencies and conservation NGOs largely comes from donors, any set backs to continued donor support will be devastating to the natural environment and associated species in Uganda, which ironically is the basis of livelihood for most Ugandans.

Much of this donor activity is described elsewhere in this document (see Status of Biodiversity Conservation, Section III, and the Strategic and Policy Framework, Section IV). Although an exhaustive treatment of this subject is beyond the scope of this report, we summarize key donor activities in Table IV-2 at the end of this section.

## **G. Private Sector Involvement**

The private sector could contribute far more to biodiversity and natural resources conservation than it does at present. In many developing countries, a key to the conservation and protection of parks and associated flora and fauna is found through international tourism channels. In Uganda, tourism is not yet a large-scale revenue earner. Rebel activities in major national parks and reserves have put a damper on international visits by well-heeled global nature seekers. Whereas tourism was a major foreign exchange earner in the 1960s,<sup>1</sup> it fell off dramatically with political instability in the 1970s and 1980s. Although a Tourism Master Plan has been created with assistance from UNDP and the World Tourism Organization, improved security measures are still needed to enable this industry to take its rightful place in the nation's economy and in biodiversity conservation activities. At present, a number of private sector lodges, tour operators,

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<sup>1</sup> Uganda Ministry of Finance and Economic Planning, 1994 in Opio-Odongo 1998. Page 157.

and other tourism concerns are faced with low occupancy rates and barely surviving. Survival of the biodiversity at the species and ecosystem levels that are needed to attract future tourists is left to donors and governmental efforts until this situation can turn around.

A handful of private foundations, such as the MacArthur Foundation and the Rockefeller Foundation, sometimes support specific conservation initiatives in Uganda. Various U.S. and European universities also provide funds for certain biodiversity related research and conservation efforts. Aside from this, the contributions from the private sector are fairly inconsequential in Uganda. Despite the increasingly large presence of international companies selling products or exporting resources from Uganda, there are not as many corporate conservation programs and granting sources as could be expected. Shell Petroleum gives out a few small conservation grants to local NGOs and the Sheraton Hotel has a “Going Green” program that helps support the Wildlife Education Center, the International Gorilla Conservation Program and a few other charismatic species conservation activities. Other companies with a big presence in Uganda such as Coca Cola and Monsanto should be encouraged to do the same.

A relatively new approach to private sector involvement in Uganda is the “green certification” movement, which provides an international market for products that are harvested or manufactured in an environmentally sound and sustainable fashion. A growing population of environmentally conscious consumers in the industrialized world will pay a higher price for such goods. A number of programs are beginning to tap this market in Uganda, and are working with communities to ensure that a proportion of the proceeds come back to them. Such efforts, if successful, provide a glimmer of hope that Uganda’s biodiversity can be sustainably managed, and that people can also directly benefit.

## **H. Conclusions**

This review has highlighted the many policies, laws, and programmatic activities in place in Uganda that can aid in the conservation of biodiversity and natural resources, and in the associated well being of the Ugandan people. The challenge facing Uganda is to fill in the gaps in implementation, enforcement, and cooperation so that everyone can benefit. Key recommendations to this end are presented in Section VI.

Table IV-1. Summary of NGO Activities in Uganda

| NGO/PVO   | Protected Areas | Institutional Strengthening | Education & Awareness | Policy | Research & Monitoring | CBNRM | Forests | Wetlands | Species Conservation | Geographic Area                                |
|---|-----------------|-----------------------------|-----------------------|--------|-----------------------|-------|---------|----------|----------------------|--|
| *Institute of Tropical Forest Conservation          | v               |                             |                       |        | v                     | v     |         |          | v                    | Bwindi   |
| *Makerere University Biological Field Station       | v               |                             |                       |        | v                     | v     |         |          |                      | Kibale   |
| Nature Uganda                                       |                 |                             | v                     | v      | v                     | v     | v       | v        | v                    | Nationwide                                     |
| WWF Managing start up of GEF Albertine Rift Project | v               | v                           | v                     |        |                       | v     | v       |          | v                    | Western Uganda                                 |
| Albertine Rift Conservation Society                 | v               | v                           | v                     |        | v                     |       | v       |          | v                    | Western Uganda (Albertine Rift)                |
| Uganda Wildlife Society                             |                 |                             | v                     | v      |                       |       | v       | v        | v                    | Nationwide                                     |
| IUCN  | v               | v                           | v                     | v      |                       | v     | v       | v        | v                    | Mt. Elgon<br>Kibale,<br>Semliki,<br>Nationwide |
| WCS   | v               | v                           |                       |        | v                     |       | v       |          | v                    | Western Uganda                                 |
| International Gorilla Conservation Program          | v               |                             |                       |        | v                     |       | v       |          | v                    | South Western Uganda                           |
| Uganda Community                                    |                 | v                           | v                     |        |                       | v     |         |          |                      | Nationwide                                     |

| NGO/PVO                                     | Protected Areas | Institutional Strengthening | Education & Awareness | Policy | Research & Monitoring | CBNRM | Forests | Wetlands | Species Conservation | Geographic Area                   |
|---|-----------------|-----------------------------|-----------------------|--------|-----------------------|-------|---------|----------|----------------------|-----------------------------------|
| Tourism Association                         |                 |                             |                       |        |                       |       |         |          |                      |                                   |
| CARE  | v               |                             | v                     | v      |                       | v     | v       | v        |                      | Mgahinga, Bwindi, Queen Elizabeth |
| Mgahinga Bwindi Imp. Forest Trust Endowment | v               | v                           | v                     |        | v                     | v     | v       |          | v                    | South Western Uganda              |
| *Budongo Forest Project                     | v               |                             |                       | v      |                       |       | v       |          |                      | Budongo Forest                    |
| Wildlife Clubs of Uganda                    |                 |                             | v                     |        |                       | v     |         |          |                      | Nationwide                        |

*\*University research institutions*

Table IV-2. Summary of Donor Activities in Uganda

| Donor                              | Protected Areas | Institn'l Strength'g | Education & Awareness | Policy | Research & Monitoring | Commt'y Work | Forests | Wetlands | Species Conservt'n | Geographic Area                             |
|------------------------------------|-----------------|----------------------|-----------------------|--------|-----------------------|--------------|---------|----------|--------------------|---|
| USAID                              | v               | v                    |                       | v      | v                     |              | v       |          | v                  | Southwest primarily                         |
| GTZ                                | v               | v                    |                       | v      | v                     |              |         |          | v                  | Murchison Falls N P, UWA                    |
| Netherlands                        |                 | v                    | v                     | v      | v                     | v            |         | v        |                    | Nationwide                                  |
| NORAD Biomass Study                |                 | v                    |                       |        | v                     |              | v       |          |                    | Nationwide                                  |
| EU/Forestry Dept.                  |                 |                      |                       |        |                       | v            | v       |          |                    |   |
| EU Protected Area Assistance (UWA) | v               | v                    |                       | v      | v                     |              |         |          |                    | Nationwide                                  |
| EU Support to Uganda Tourism Board |                 | v                    | v                     |        |                       |              |         |          |                    | Nationwide                                  |
| GEF/ UNDP                          |                 |                      | v                     |        | v                     | v            | v       | v        |                    | Kotido/ Moroto and Rakai/ Mbarara districts |
| World Bank ICB/ PAMSU UWA          | v               | v                    | v                     |        |                       | v            |         |          | v                  | Nationwide but with a focus on PAs          |
| UNDP Small Grants                  | v               | v                    | v                     |        |                       | v            | v       | v        | v                  | Nationwide                                  |
| ECOTRUST                           | v               | v                    | v                     | v      | v                     | v            | v       | v        | v                  | Nationwide                                  |
| WB Lake Victoria Env. Mgt. Project |                 | v                    | v                     | v      | v                     | v            | v       | v        |                    | L. Victoria catchment                       |

| <b>Donor</b>                     | <b>Protected Areas</b> | <b>Institn'l Strength'g</b> | <b>Education &amp; Awareness</b> | <b>Policy</b> | <b>Research &amp; Monitoring</b> | <b>Commt'y Work</b> | <b>Forests</b> | <b>Wetlands</b> | <b>Species Conservt'n</b> | <b>Geographic Area</b>  |
|----------------------------------|------------------------|-----------------------------|----------------------------------|---------------|----------------------------------|---------------------|----------------|-----------------|---------------------------|-------------------------|
| <b>WB-NEMA EMCBP</b>             |                        | v                           | v                                | v             |                                  |                     |                |                 |                           | Nationwide              |
| <b>DFID Integrated Lake Mgmt</b> |                        |                             |                                  |               |                                  | v                   | v              | v               |                           | Lakes George and Kyoga, |

## SECTION V

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### Summary of Findings

This assessment was prepared using information gathered from many documents and face-to-face meetings with government officials, biologists, and conservationists in the country. Trends became evident and were affirmed by people who have been involved in Uganda's conservation community for years. In this section we summarize major themes that became apparent during this study. This is not an exhaustive list, and others with experience in the country will doubtless be able to expand upon it. The impediments to biodiversity conservation are many and varied. The following list gives some extent of the scope of the problem.

#### A. Findings

1. *Uganda is a beautiful and biodiverse country with many natural wonders of international importance.*

Throughout all the documents and underlying all discussions it is clear that Uganda is a country with stunning natural beauty and a great diversity of important and complex ecosystems and species. Charismatic species such as the mountain gorilla have drawn the world's attention. The diversity of birds in Uganda is one of the greatest on earth. Uganda's volcanoes, forests, lakes, rivers, savannas, and wetlands are among the most unique and diverse habitats on earth. In plain terms, the beauty and diversity of Uganda's habitats are national treasures that must be preserved to maintain a range of options for future generations.

2. *Difficulties in reconciling "poverty alleviation" with "biodiversity conservation."*

Poverty alleviation is the driving theme of government programs and donors are responding to this cry for help. It is difficult to find a valid niche for strong biodiversity conservation work that clearly meets this goal in the short term. In the longer term, however, the poverty situation will only be exacerbated by continued depletion of natural resources and the safety buffer that a good diversity of wild species provides. Poverty is the root cause of loss of biodiversity in many situations within Uganda. Carefully designed poverty alleviation schemes could provide people with alternative income sources and other options than to continually overharvest and degrade the natural environment. But, these projects take time to develop, implement, evaluate, and show the desired improvements and results. The forces driving poverty reduction have a shorter operational timeline, and poverty alleviation strategies need to focus on the "now." Even though immediate food and agricultural assistance programs are the focus of many development assistance programs today, forward-thinking donors and others need to continue to provide protection to key natural resources so that these can be saved for future generations.

3. *The historical loss of species has been great in Uganda, and the negative trends are continuing.*

Many major mammal species — rhinos, cheetahs, oryx, etc. — were extirpated during Uganda’s decades of internal turmoil. Most of the remaining large animals are confined to protected areas, where their numbers are small but stable or decreasing still. Birds and fish species continue to decline in numbers and distribution throughout the country. Invertebrates have been barely studied, but no doubt are disappearing along with their habitats. Antipoaching efforts in protected areas are often inadequate. Outside of protected areas the situation for wetlands and other pockets of biodiversity is even bleaker. Much work continues to be needed in Uganda to slow the rate of biodiversity loss for many taxa.

4. *Tourism cannot at this time provide the financial support for protection and conservation efforts in national parks and reserves and it is unlikely that it will be able to do so in the near future.*

In many developing countries, tourism is the main income producer for national parks and wildlife protection and conservation efforts, but this is not the case here. The rebel activity in Uganda has put a damper on the potential of the tourism industry to bring money into the country for protected area conservation. Whenever the news of a shooting in a national park gets global attention, foreign visitors look elsewhere for their vacations. Until this unrest can be settled and the situation made safe for visitors, tourism will continue to make a relatively small contribution to biodiversity conservation initiatives. In the meantime, it remains up to donors to fill the financial gaps if particular protected areas and globally significant species are to be preserved.

5. *The situation outside of protected areas is particularly grim.*

Many wetlands, rangelands, and other areas with biological importance are found outside the borders of protected areas and conservation efforts here are inadequate and largely ineffective. The politics of District-level management of these resources are one barrier and lack of enforcement of laws from the community level on up is another. Wetlands continue to be converted to rice fields, and fishes in the lakes continue to be used up in “tragedy of the commons” situations. It is difficult to be optimistic about the long-term viability of many of these resources and species unless these trends are curtailed.

6. *Public awareness and sensitization programs are scarce at all levels.*

Many branches of the government of Uganda remain unconcerned about the loss of natural resources and more work needs to be done to educate officials about the far-reaching impacts of environmental degradation. Similarly, the general public needs to be further informed and made aware of the interrelationships of the environment with their own needs and the needs of their children, and their children’s children. Many NGOs are working on environmental issues within Uganda, but their efforts are largely independent and uncoordinated. Coordination in the area of environmental education and awareness is needed, and more such programs need to be implemented. There remains a large niche and the need for environmental education programs at all levels within Uganda.

7. *There are many environmental laws, policies, guidelines and management plans in Uganda and very little implementation or enforcement of any of them.*

Shelves are filled with the many well-meaning environmental policies and plans that have been developed for Uganda, often at great cost. Implementation of these policies is another matter. National agencies are often too understaffed to get to the field where the problems occur. Corruption and political pressure also provide impediments to effective law enforcement efforts. During this assessment, many examples of ineffective enforcement of environmental regulations were discovered. Nearly everyone interviewed volunteered examples. Although a good policy framework without enforcement can serve to provide leverage for NGOs and relevant authorities, it is only when the policies are legally enforced that the true benefits are realized.

## **B. Conclusions**

Many other findings are nestled within other sections of this document, and it is hoped that taken together, these observations will provide food for thought and perhaps the basis for more conservation-oriented action. There are ways to reconcile the immediate needs of people with the long-term needs of the environment. Our challenge is to find and implement them. The next section outlines specific recommendations that may provide a starting point.

## SECTION VI

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# Recommendations for Improved Biodiversity Conservation

### A. Focusing on Gaps

During the course of this biodiversity assessment, a number of recurring themes in biodiversity conservation became evident through interviews and a review of written reports. In addition, a focal group meeting conducted at MUIENR on April 12, 2001 reinforced some of these notions. Further consultations with conservationists in NGOs, government agencies, USAID, and elsewhere have helped refine these ideas.

Many biodiversity conservation initiatives are being implemented in Uganda with contributions from the government, donors, NGOs, and other entities. Some work at the policy level and in protected areas; indeed, some areas of natural resources concern are already being vigorously addressed. The recommendations in this report focus not on the strengths of existing programs but rather on gaps that have been found during in-country discussions and meetings. We present these recommendations here in the hopes that USAID and other donors may work together to more fully address these issues.

### B. International-Level Recommendations

1. *Support further capacity building for NEMA to enable them to effectively engage in Convention on Biological Diversity (CBD), Ramsar, and other relevant convention activities; Increase awareness within country ministries of the importance of doing this*

NEMA is the institution that interfaces most readily with the key biodiversity-related conventions. Virtually all of the cost of this work is donor supported, but not to the degree necessary for full effectiveness of involvement. More support would enable the timely preparation of country reports needed to further ensure that biodiversity conservation in Uganda benefits from global attention to its resources, threats, and needs. Internally, the Ministry of Finance and other ministries in Uganda also need to be engaged in more awareness-raising efforts so they can understand the importance as well. If NEMA must continue to argue with the Ministry of Finance over the mere \$400 fee needed to be a party to CBD, it is unlikely that further progress will be made on other biodiversity issues at the country level.

2. *Further investigations and refinements of biodiversity prospecting guidelines and further recruitment of potential international partners*

In 1999, "Draft Regulations on Access to Biological Resources and Benefit Sharing in Uganda" were prepared to address the issues surrounding use of resources and bioprospecting in this country. A detailed legal analysis of this draft soon followed (UWS, 1999). More work is needed to refine these guidelines, to develop ways to enforce them, and to attract pharmaceutical companies and others whose involvement in Uganda may help bring in additional resources for biodiversity sustainable use and conservation.

3. *Seek increased contributions to biodiversity conservation from large international corporations with activities in Uganda*

The global private sector is not nearly as involved in biodiversity conservation as it could be in Uganda. Uganda's rich natural resources and growing population have attracted large international corporations that profit largely from their operations in the country. Many of these companies (i.e., Monsanto, Shell, etc.) have associated nonprofit arms in other parts of the world that could be alerted to the Ugandan biodiversity and natural resources situation and encouraged to help support conservation efforts. Efforts within the tourism sector should continue to work to attract large global tourist companies and foreign tour groups to the parks and ecotourism sites in Uganda. The "green certification movement" should also be pursued to encourage the export of high priced natural resources products to the global market. Further such private sector collaborations in natural resources and biodiversity aspects should be created and encouraged.

### **C. National-Level Recommendations**

1. *Support NEMA to better coordinate functions of all environmental agencies*

The NEMA office has a coordinating role encompassing natural resources-related agencies but with no real authority over their actions. UWA and the Forestry Department in particular have overlapping wildlife mandates that often cast them in adversarial roles. Likewise, in various protected areas under UWA's jurisdiction, the Fisheries Department policies are at odds. Work needs to be done to smooth out such discrepancies to ensure the full collaboration of all agencies in the environmental sector. NEMA is in a position to help in this process if stronger resources and capacity were vested there.

2. *Strengthen and coordinate existing biodiversity data collection and management systems and encourage their expansion to a greater number of indicator, economic, and culturally significant species within Uganda*

It is impossible to get a true idea of the status of biodiversity conservation without adequate data and monitoring efforts. A number of centers within the government, university, and NGO communities are working to collect and manage species distribution and population data sets, but the work is largely uncoordinated among the entities. UWA, for instance, coordinates data on biodiversity found within national parks and wildlife reserves, and the Forest Department does the same for various categories of forest reserves. MUIENR maintains a database on countrywide biodiversity but only from a limited number of data sources and in-country studies. All of these efforts would benefit from a coordinated approach. At present the bulk of the studies and data available include conspicuous animals such as mammals and birds, and various economically important plant species. In addition, more work is needed on underrepresented taxa, including useful indicator species for ecosystem health, such as butterflies, dragonflies, and aquatic invertebrates. Such data could be coordinated with regional and global conservation efforts to yield a bigger picture of the environmental conditions in Uganda.

3. *Strengthen public education and awareness activities using the media and other marketing strategies at the national level*

Public awareness of conservation issues could be strengthened at the national level in Uganda using television, radio, newspapers, billboards, outdoor plays, and other media most accessible to large segments of the population. A concerted social marketing strategy could design and deliver such messages to target people in different regions in ways that will influence them. Such work could help enhance the work ongoing at local levels throughout the country.

4. *Support more effective enforcement and implementation of appropriate resource use policies and guidelines at the national level*

Uganda's many natural resources policies and guidelines suffer from lack of enforcement. More work needs to be done to build human and technical capacity to enforce the fisheries, wildlife, and wetlands regulations that come into play at the national level.

#### **D. District-Level Recommendations**

1. *Support more effective enforcement and implementation of appropriate resource use policies and guidelines at the District level*

Devolution of authority to the District level in Uganda has come at a cost to the appropriate implementation of fisheries, wildlife, and wetlands regulations and guidelines. Further capacity-building efforts are needed in key Districts to ensure effective implementation of well-meaning but so far non-enforced regulations concerning the use of natural resources.

#### **E. Local-Level Recommendations**

[Note: Local level activities should be focused in areas where the conservation value of the biodiversity is the greatest and the threats are most pressing. Globally, the greatest threats to biodiversity and ecosystem conservation most always correspond to the areas with the highest densities of the poorest people living closest to these areas. In Uganda, the areas in the southwest and along the shores of Lake Victoria are the most critical for conservation action and also the areas where the local people stand to benefit the most from donor investments.]

1. *Promote poverty-alleviation strategies at the community level in areas adjacent to globally significant protected areas*

Uganda's southwest contains some of the most critical protected areas surrounded by some of the poorest people in the country. Until this poverty is adequately addressed, the communities will continue to unsustainably utilize the nearby forests and biodiversity within. Continued and increasing efforts are needed in such realms as increasing agricultural productivity, providing agroforestry resources and techniques, and other methods to provide alternative sources of livelihood and income for communities in these areas. UWA should be encouraged in its development of natural resource agreements with such communities, and other community-based natural resource management endeavors should be bolstered in these critical areas.

2. *Support participatory community zoning and planning efforts in key habitats that are in the public domain*

Many wetland areas of global and national significance are not located within protected areas and fall entirely within the public domain. Similarly, some important remnants of natural habitats such as woodlands and forest patches still exist without government protection. In some cases, these are conserved primarily by local customs and traditions that could easily be eroded by “modernization.” In these areas, increasing efforts are needed to ensure that the local people recognize the need to sustainably use these resources for their own benefits now and in the future. Participatory community zoning and planning efforts can help people weigh the costs and benefits of immediate use of these resources, and give them tools to develop their own strategies to protect certain areas and resources, while using others in different ways. Much more work of this type is needed to effect the community-level changes that are necessary for long-term benefits to the people and the ecosystems involved.

**ANNEX A**

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**USAID/Uganda Integrated Strategic Plan, Environmental Threats and Opportunities Assessment, April 2001**

## ANNEX A

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# USAID/Uganda Integrated Strategic Plan, Environmental Threats and Opportunities Assessment, April 2001

USAID/Uganda is currently developing a six-year integrated strategic plan (ISP 2002-2007). This environmental annex summarizes a full environmental threats and opportunities assessment that was conducted for this new strategic plan. Sections of it also address Foreign Assistance Act (FAA) requirements to assess USAID's program impact on tropical forests (FAA 118) and biodiversity (FAA 119) and to consider factors related to the overall environmental sustainability (FAA 117) of its work in Uganda. In addition, the status, threats and strategic issues regarding biodiversity and tropical forests in the host country of Uganda were assessed and used as a basis for the relevant mission-focused environmental sustainability analysis.

### **A. Two Detailed Assessments: Summary and Findings**

To this end, this annex consists of a summary and synthesis of the findings and recommendations of two detailed assessments prepared during April 2001:

- The USAID Program Impact on Environmental Sustainability, Tropical Forests and Biodiversity (FAA 117/118/119)
- Biodiversity Assessment for Uganda.

Further details of both assessments are available in these parent documents, which are available from USAID/Uganda.

*USAID Program Impact on Environmental Sustainability, Tropical Forests and Biodiversity (FAA 117/118/119).* This assessment is an ISP-specific analysis that examines environmental threats and opportunities inherent in the Mission's strategy and assesses the extent to which the Mission's strategy incorporates environmental sustainability, tropical forests and biodiversity concerns. This assessment was prepared by Karen Menczer (Independent Consultant) working under contract with Associates in Rural Development (ARD, Inc.) The analysis is based on discussions with Strategic Objective (SO) Team Leaders, the Draft USAID/Uganda Concept Paper for Six-Year Integrated Strategic Plan, 2002-2007 (October 2000), a draft of the ISP (undated), drafts of each SO's ISP Strategy and interviews with representative environmental experts. Specific assessments and recommendations concerning the Mission's role in biodiversity and tropical forest conservation were developed from the findings and recommendations presented in the Biodiversity Assessment for Uganda described below. This environmental annex only summarizes the findings and recommendations of the parent document: the full document is available for reference from USAID/Uganda.

*Biodiversity Assessment for Uganda.* This assessment is a country-specific analysis of the status of biodiversity in Uganda, the threats to this biodiversity, and recommended actions to address these threats. Tropical forests are a subset of overall biodiversity and issues concerning their

status and conservation are not considered separately but are woven throughout the overall biodiversity assessment where appropriate. This assessment was prepared by a Chemonics team led by Dr. Pat Foster-Turley (independent consultant) and included Amy Bodmann (Chemonics), Dr. Panta Kasoma and Professor Derek Pomeroy (Makerere University Institute of Environment and Natural Resources), and Gerald Eilu (Faculty of Forestry and Nature Conservation, Makerere University.) This assessment was based on a detailed analysis of biological, policy, and conservation documents available in Uganda, a focal group meeting of university biologists and conservationists, and on interviews with many people actively engaged in forest and biodiversity work in the country. The complete document, the *Biodiversity Assessment for Uganda* is available from USAID/Uganda. Key results only are summarized here.

## **B. Environmental Sustainability Analysis (FAA 117) for the ISP**

### **B1. Background**

The Environmental Sustainability Analysis (ESA) was prepared in conjunction with the preparation of USAID/Uganda's Integrated Strategic Plan (ISP). A primary document, *USAID Program Impact on Environmental Sustainability, Tropical Forests and Biodiversity (FAA 117/118/119)*, contains the details of this analysis. A summary of the main findings regarding FAA 117 are given here with the specifics related to the forests and biodiversity assessment given in a later section of this report.

USAID's Automated Directive System (ADS 201.3.4.11) and Technical Annex B, 1995 offer guidance for the ESA, which is conducted at the SO level to identify *environmental sustainability concerns*, and *opportunities* and to incorporate these into SO planning. The 117 ESA presents environmental issues that each SO considered during strategy development. The ESA resolves the concerns, or if no resolution has yet been reached, recommends opportunities for their resolution.

Under the new USAID/Uganda ISP, the current five Strategic Objectives (SO) and one Special Objective (SpO), will be combined to form three new SOs:

- SO 7, *Expansion of sustainable economic opportunities for rural sector growth*
- SO 8, *Human capacity improved*
- SO 9, *More effective and participatory governance*

An environmental sustainability analysis was conducted on each of these SOs in consultation with team members, mission staff, and others with relevant experience in Uganda. The summary of this FAA 117 ESA is included here, with further details available in the parent document.

### **B2. SO 7: Expansion of Sustainable Economic Opportunities for Rural Sector Growth**

#### *Concern 1 — Limited available data*

There is a lack of sound, relevant, and current data constrains the ability of the GOU and donors to make effective decisions about sustainable land use strategies and options. Agricultural expansion is often undertaken to the detriment of important, fragile, and/or critical ecosystems.

Wetlands are often drained and used to grow crops, especially during dry seasons. Policies encourage clearing “bush” to make way for crops. Data are limited, so it is impossible to determine the biodiversity value of “bush” that is being cleared; or the diversity lost when wetlands are drained and cultivated, and when forests and other natural systems are cleared.

An element of SO 7’s strategy focuses on agricultural intensification rather than expansion, but intensification does not preclude expansion. Although agricultural expansion may be a significant environmental concern in Uganda, SO 7 maintains that because its clients use modern inputs and crop management techniques, they are not expanding land under agriculture. However, due to lack of a system for monitoring trends in agricultural expansion, this claim is currently unverifiable.

SO 7 is generating data (through the International Food Policy Research Institute — IFPRI) that will help value different land types and land use systems; identify the main factors affecting land management; increase awareness of land degradation causes; and develop strategies for solving the degradation problems.

*Opportunities.* SO 7 will need sound data on the rate of agricultural expansion; areas that are being impacted by expansion; biodiversity loss due to agricultural expansion and other causes — basically, a system to monitor land uses and land cover and changes over time. Some baseline and trend data may exist (for example, with MUIENR and the Biomass Study). Beyond data gathering and monitoring, SO 7 can work with relevant ministries and authorities — at headquarters and local levels—to build acceptance for this land use-based decision-making and monitoring process. In addition, the newly merged SO can bring its agricultural and environmental expertise to extensionist and farmer training programs. Programs could be developed to increase farmers’ understanding of conservation policies; regulations that affect farmers; and the importance of retaining natural ecosystems.

### *Concern 2 — Agricultural commercialization*

Agricultural commercialization requires increased agricultural productivity, and access to local, national, and international markets. To significantly increase productivity, farmers will need to use modern farming techniques — improved seed, a variety of pesticides and fertilizers, and crop and soil management measures that conserve water and soil, reduce weeds, and build soil fertility.

USAID/Uganda has conducted a state-of-the-art pesticide review (the Pesticide Analysis and Mitigation Plan, and the follow-on IDEA Pesticide IEE). Misuse of fertilizers may also pose an environmental threat, especially on steep slopes adjacent to waterbodies. Fertilizer use is evaluated, and mitigation measures are recommended at the activity level in IEEs.

Because of the poor road system throughout much of rural Uganda, farmers are unable to get their produce to market profitably and in a timely manner. Road rehabilitation activities are examined individually in activity-specific IEEs, and in follow-on ERs.

With a move to commercialized agriculture, small farmers may find that they are unable to compete, and may have to look for off-farm employment opportunities. However, SO 7 interventions, especially with Title II partners, help to ensure that small farmers will be able to retain their farm-based livelihoods, and that their farms may even be profitable.

*Opportunities.* Environmental sustainability issues regarding agricultural commercialization have been resolved.

### *Concern 3 — Valuing and prioritizing E/NR interventions*

Agriculture is often seen as the only option to gain income from the land. The general public sees limited opportunities for economic gain from conserving ecosystems (including many sustainable use options). Even within the development/donor community, it is often difficult to justify traditional natural resource conservation efforts such as support for protected areas. However, SO 7 is looking for creative approaches to support conservation and sustainable use, and to diversify land uses, thereby offering an array of economic natural resource-based options.

SO 7 will help to diversify the economic opportunities available to communities in areas that are of marginal value for agriculture, and that have high biodiversity value — like the southwest. SO 7 will gear its efforts toward developing products and markets so that increased incomes can be realized from sustainable use of natural resources. The aim is to optimize economically productive land use options that can provide livelihoods for local people without compromising ecological integrity.

*Opportunities.* Uganda’s potential export markets — EU countries and the United States — demand high-quality goods. There is also a relatively recent and fast-growing movement that demands “environmentally friendly” or “environmentally sustainable” products. Uganda has the opportunity to capitalize on these demands by investing in the development of natural resource-derived products, developing market linkages and marketing strategies, and supporting a quality assurance chain, from harvester to producer to consumer.

The natural resource based agencies, Uganda Wildlife Authority (UWA), Forest Department (FD), Wetlands Inspection Division (WID), and Fisheries Department, have — or are developing — sustainable use policies, and are mandated to work with communities so that they can gain access to protected resources. SO 7 may consider working with international certifying bodies such as the Forest Stewardship Council and Green Wood to implement internationally recognized certification programs and thereby capitalize on the growing demand for environmentally certified products.

### *Concern 4 — Ability and capacity to implement environmental policies*

Uganda has strong policies and regulations for natural resource conservation and protection. Although policies are in place, the ability and capacity to enforce the policies and regulations are often absent.

SO 7 will continue to build capacity in environmental management. SO 7 will support environmental impact assessment training at the district level for District Environmental Officers, and at the headquarters level of key organizations (NEMA, UWA).

*Opportunities.* Working with SO 9, SO 7 can direct additional resources to train district-level officials to assess and prioritize environmental actions, and ensure compliance with environmental policies/regulations at the district level.

At the district level, SO 7 could assist relevant authorities to develop, strengthen, or “ground truth” sustainable use policies. This would feed into the SO 7 aim of economic diversification and sustainable natural resource management.

Since the lack of a coordinated policy agenda constrains the ability to effectively implement E/NR policies, regulations, and initiatives, SO 7 could work at the central government/headquarters level to harmonize and coordinate the environmental policy agenda among the various ministries, authorities, and departments.

#### *Concern 5 — Land tenure*

Private land ownership is the exception rather than the rule in Uganda. However, only with security of ownership or long-term access rights comes a willingness to invest in the land, develop land, and apply sustainable resource measures. Strengthened land tenure, including long-term access rights for resource use, is critical for SO 7 to achieve improved sustainable natural resource use and management.

*Opportunity.* SO 7 can work with SO 9 to inform Parliamentarians of land tenure issues, and the threats posed to sustainable land use activities by lack of secure tenure. SO 7 could work from both directions — through environmental advocacy NGOs and with lawmakers.

#### *Concern 6 — Competitiveness strategy focus on fish, cotton, and coffee*

Building competitiveness is a major feature of the SO 7 strategy. Fish, cotton, and coffee are the focus sectors for the first phase of implementation of the competitiveness program. For each sector, there are environmental concerns related to increasing productivity and exports.

*Opportunity.* Action plans are currently being developed for each focus sector of the competitiveness program. An IEE should be conducted during the action planning process so that environmental issues can be evaluated early in the design stage and at the activity level.

### **B3. SO 8: Human Capacity Improved**

#### *Concern 1 — Medical waste disposal and treatment*

The SO 8 strategy focus on HIV/AIDS and malaria detection and prevention, may result in more medical waste being generated, and needing to be disposed of. Although it is not within SO 8’s manageable interest to construct or develop treatment/disposal facilities, SO 8 will assist in the

development of procedures for waste handling in medical facilities where the program is active, and will train health workers on proper handling and disposal of medical waste.

*Opportunity.* Environmental impacts related to medical waste handling and disposal will be evaluated in detail in an IEE.

#### *Concern 2 — Environmental education*

Currently SO 8 intends to work with the Ministry of Education and Sports, and with teachers to strengthen the primary school core curriculum, which includes four subjects: math, English, science, and social studies. Although not included as a stand-alone core subject, environmental education is taught under the science core program. Currently, SO 8 does not intend to get involved in environmental education, unless it is made a part of the core curriculum.

*Opportunity.* In future programming, SO 8 and SO 7 may be able to work together to strengthen environmental education in Uganda's schools. SO 8 could work with SO 7 to support the development of radio and television messages — which could expand to longer programs — with an environmental education focus.

#### *Concern 3 — Sanitation facilities and clean water*

Access to clean water and sanitation facilities is essential for creating and maintaining a healthy population. Although it is outside of SO 8's manageable interest to construct sanitation facilities and water systems, SO 8 intends to improve personal hygiene practices through its school-based health education activities.

*Opportunity.* Environmental sustainability issues related to sanitation facilities and clean water have been resolved.

#### *Concern 4 — High rate of population growth*

Uganda's annual growth rate of 2.5 percent/year (NEMA, 1999) compromises economic growth, leads to increased pressure on critical natural resources, and undermines public investment in social programs. Through SO 8's Family Life Education activities, reproductive health education will be strengthened, and will be directed towards adolescents, the most vulnerable group. Keeping girls in school longer, a primary aim of SO 8, will also help reduce the population growth rate.

*Opportunity.* SO 8 should collaborate with SO 7 to reach populations that live near PAs, and that due to high population growth rates may threaten PAs (by encroaching for additional agricultural land; by poaching plant and wildlife resources).

## **B4. SO 9: More Effective and Participatory Governance**

### *Concern 1 — Relocation of displaced people*

Although people living in displaced persons' camps stress the environment and natural resources in the vicinity of the camps, additional and longer-term environmental impacts, may potentially result when displaced people are moved back to their villages, or to "virgin" land. Although the activities are currently undefined, if SO 9 does support activities involving land development, environmental impacts will be more closely scrutinized during the IEE.

*Opportunity.* Environmental sustainability issues raised during SO design were resolved.

### *Concern 2 — Lack of environmental advocacy capacity*

With growing threats to the environment from increased industrial and business development and high population growth, lawmakers and civil society will have to engage in the development-conservation debate with much more skill than in the past. Although specific activities are currently undefined, SO 9 intends to focus its capacity-building support on committees and NGOs that will enhance the USAID portfolio.

*Opportunity.* During activity design, SO 9 and SO 7 collaboration could gear capacity-building activities toward environmental NGOs to help build an environmental advocacy network/community. In addition, to strengthen ongoing SO 7 work in the environmental policy arena, TA and training could be directed toward increasing lawmakers' sensitivity to and understanding of environmental issues. Besides strengthening environmental advocacy NGOs, Parliamentarians can also act as environmental advocates.

### *Concern 3 — Lack of E/NR skills at the local level*

Since decentralization is a relatively new GOU policy, local officials, who are in positions of responsibility, often lack the skills to plan for and implement effective environmental management, identify environmental problems, and request assistance to implement solutions.

*Opportunity.* A training module could be developed using BIOFOR and EPED lessons learned during DEAP development, and the DEAP process could thereby be replicated in SO 9's focus districts. The DEAP process involves identifying, prioritizing, and finding avenues for funding environmental actions.

## **C. Biodiversity (including Tropical Forests) Assessment for Uganda**

### **C1. Background**

In response to the accelerated worldwide loss of tropical forests, the U.S. Congress enacted Section 118 of the FAA, which acknowledges the important role tropical forests and tree cover play in the economies of developing countries, and in the lives of their people. The U.S. Congress later enacted Section 119 of the FAA in response to the irreparable loss of plant and animal species occurring in many developing countries — and the environmental and economic

consequences of this loss. These two sections are closely entwined and are considered together in this assessment for Uganda. Forests are a subcomponent of the diversity of ecosystems and species that contribute to the rich and threatened biodiversity of Uganda. Issues and threats pertaining to forests are integrated throughout the “Biodiversity Assessment of Uganda.”

This assessment was compiled with information gathered from many documents and many more face-to-face meetings with government officials, biologists, and conservationists in the country. Trends became evident that were confirmed by people who have been involved in Uganda’s conservation community for years. Below we summarize major themes that became apparent during this study (see subsection C2) and recommendations to address these concerns on a countrywide basis (see subsection C3). The ramifications of these findings and recommendations to USAID/Uganda in the development of the ISP are detailed in the next section.

## **C2. Findings of the Biodiversity Assessment**

### *1. Uganda is a beautiful and biodiverse country with many natural wonders of international importance.*

Throughout all the documents and underlying all discussions it is clear that Uganda is a country with stunning natural beauty and a great diversity of important and complex ecosystems and species. Charismatic species such as the mountain gorilla have drawn the world’s attention. The diversity of birds in Uganda is one of the greatest on earth. Uganda’s volcanoes, forests, lakes, rivers, savannas, and wetlands are among the most unique and diverse habitats on earth. In plain terms, the beauty and diversity of Uganda’s habitats are national treasures that must be preserved to maintain a range of options for future generations.

### *2. Difficulties in reconciling “poverty alleviation” with “biodiversity conservation.”*

Poverty alleviation is the driving theme of government programs and donors are responding to this cry for help. It is difficult to find a valid niche for strong biodiversity conservation work that clearly meets this goal in the short term. In the longer term, however, the poverty situation will only be exacerbated by continued depletion of natural resources and the safety buffer that a good diversity of wild species provides. Poverty is the root cause of loss of biodiversity in many situations within Uganda. Carefully designed poverty alleviation schemes could provide people with alternative income sources and other options than to continually overharvest and degrade the natural environment. But, these projects take time to develop, implement, evaluate, and show the desired improvements and results. The forces driving poverty reduction have a shorter operational timeline, and poverty alleviation strategies need to focus on the “now.” Even though immediate food and agricultural assistance programs are the focus of many development assistance programs today, forward-thinking donors and others need to continue to provide protection to key natural resources so that these can be saved for future generations.

3. *The historical loss of species has been great in Uganda, and the negative trends are continuing.*

Many major mammal species — rhinos, cheetahs, oryx, etc. — were extirpated during Uganda’s decades of internal turmoil. Most of the remaining large animals are confined to protected areas, where their numbers are small but stable or decreasing still. Birds and fish species continue to decline in numbers and distribution throughout the country. Invertebrates have been barely studied, but no doubt are disappearing along with their habitats. Antipoaching efforts in protected areas are often inadequate. Outside of protected areas the situation for wetlands and other pockets of biodiversity is even bleaker. Much work continues to be needed in Uganda to slow the rate of biodiversity loss for many taxa.

4. *Tourism cannot at this time provide the financial support for protection and conservation efforts in national parks and reserves and it is unlikely that it will be able to do so in the near future.*

In many developing countries, tourism is the main income producer for national parks and wildlife protection and conservation efforts, but this is not the case here. The rebel activity in Uganda has put a damper on the potential of the tourism industry to bring money into the country for protected area conservation. Whenever the news of a shooting in a national park gets global attention, foreign visitors look elsewhere for their vacations. Until this unrest can be settled and the situation made safe for visitors, tourism will continue to make a relatively small contribution to biodiversity conservation initiatives. In the meantime, it remains up to donors to fill the financial gaps if particular protected areas and globally significant species are to be preserved.

5. *The situation outside of protected areas is particularly grim.*

Many wetlands, rangelands, and other areas with biological importance are found outside the borders of protected areas and conservation efforts here are inadequate and largely ineffective. The politics of District-level management of these resources are one barrier and lack of enforcement of laws from the community level on up is another. Wetlands continue to be converted to rice fields, and fishes in the lakes continue to be used up in “tragedy of the commons” situations. It is difficult to be optimistic about the long-term viability of many of these resources and species unless these trends are curtailed.

6. *Public awareness and sensitization programs are scarce at all levels.*

Many branches of the government of Uganda remain unconcerned about the loss of natural resources and more work needs to be done to educate officials about the far-reaching impacts of environmental degradation. Similarly, the general public needs to be further informed and made aware of the interrelationships of the environment with their own needs and the needs of their children, and their children’s children. Many NGOs are working on environmental issues within Uganda, but their efforts are largely independent and uncoordinated. Coordination in the area of environmental education and awareness is needed, and more such programs need to be implemented. There remains a large niche and the need for environmental education programs at all levels within Uganda.

7. *There are many environmental laws, policies, guidelines and management plans in Uganda and very little implementation or enforcement of any of them.*

Shelves are filled with the many well-meaning environmental policies and plans that have been developed for Uganda, often at great cost. Implementation of these policies is another matter. National agencies are often too understaffed to get to the field where the problems occur. Corruption and political pressure also provide impediments to effective law enforcement efforts. During this assessment, many examples of ineffective enforcement of environmental regulations were discovered. Nearly everyone interviewed volunteered examples. Without adequate enforcement, environmental policies are just a waste of time and paper.

### **C3. Recommendations for Improved Biodiversity Conservation in Uganda**

Many biodiversity conservation initiatives are being implemented in Uganda with contributions from the government, donors, NGOs, and other entities. Some work at the policy level and in protected areas; indeed, some areas of natural resources concern are already being vigorously addressed. The recommendations below focus not on the strengths of existing programs but rather on gaps that have been found during in-country discussions and meetings. We present these recommendations here in the hopes that USAID and other donors may work together to more fully address these issues.

#### **International-Level Recommendations**

1. *Support further capacity building for NEMA to enable them to effectively engage in Convention on Biological Diversity (CBD), Ramsar, and other relevant convention activities; Increase awareness within country ministries of the importance of doing this*

NEMA is the institution that interfaces most readily with the key biodiversity-related conventions. Virtually all of the cost of this work is donor supported, but not to the degree necessary for full effectiveness of involvement. More support would enable the timely preparation of country reports needed to further ensure that biodiversity conservation in Uganda benefits from global attention to its resources, threats, and needs. Internally, the Ministry of Finance and other ministries in Uganda also need to be engaged in more awareness-raising efforts so they can understand the importance as well. If NEMA must continue to argue with the Ministry of Finance over the mere \$400 fee needed to be a party to CBD, it is unlikely that further progress will be made on other biodiversity issues at the country level.

2. *Further investigations and refinements of biodiversity prospecting guidelines and further recruitment of potential international partners*

In 1999, “Draft Regulations on Access to Biological Resources and Benefit Sharing in Uganda” were prepared to address the issues surrounding use of resources and bioprospecting in this country. A detailed legal analysis of this draft soon followed (UWS, 1999). More work is needed to refine these guidelines, to develop ways to enforce them, and to attract pharmaceutical companies and others whose involvement in Uganda may help bring in additional resources for biodiversity sustainable use and conservation.

3. *Seek increased contributions to biodiversity conservation from large international corporations with activities in Uganda*

The global private sector is not nearly as involved in biodiversity conservation as it could be in Uganda. Uganda's rich natural resources and growing population have attracted large international corporations that profit largely from their operations in the country. Many of these companies (i.e., Monsanto, Shell, etc.) have associated nonprofit arms in other parts of the world that could be alerted to the Ugandan biodiversity and natural resources situation and encouraged to help support conservation efforts. Efforts within the tourism sector should continue to work to attract large global tourist companies and foreign tour groups to the parks and ecotourism sites in Uganda. The "green certification movement" should also be pursued to encourage the export of high priced natural resources products to the global market. Further such private sector collaborations in natural resources and biodiversity aspects should be created and encouraged.

### **National-Level Recommendations**

1. *Support NEMA to better coordinate functions of all environmental agencies*

The NEMA office has a coordinating role encompassing natural resources-related agencies but with no real authority over their actions. UWA and the Forestry Department in particular have overlapping wildlife mandates that often cast them in adversarial roles. Likewise, in various protected areas under UWA's jurisdiction, the Fisheries Department policies are at odds. Work needs to be done to smooth out such discrepancies to ensure the full collaboration of all agencies in the environmental sector. NEMA is in a position to help in this process if stronger resources and capacity were vested there.

2. *Strengthen and coordinate existing biodiversity data collection and management systems and encourage their expansion to a greater number of indicator, economic, and culturally significant species within Uganda*

It is impossible to get a true idea of the status of biodiversity conservation without adequate data and monitoring efforts. A number of centers within the government, university, and NGO communities are working to collect and manage species distribution and population data sets, but the work is largely uncoordinated among the entities. UWA, for instance, coordinates data on biodiversity found within national parks and wildlife reserves, and the Forest Department does the same for various categories of forest reserves. MUIENR maintains a database on countrywide biodiversity but only from a limited number of data sources and in-country studies. All of these efforts would benefit from a coordinated approach. At present the bulk of the studies and data available include conspicuous animals such as mammals and birds, and various economically important plant species. In addition, more work is needed on underrepresented taxa, including useful indicator species for ecosystem health, such as butterflies, dragonflies, and aquatic invertebrates. Such data could be coordinated with regional and global conservation efforts to yield a bigger picture of the environmental conditions in Uganda.

*3. Strengthen public education and awareness activities using the media and other marketing strategies at the national level*

Public awareness of conservation issues could be strengthened at the national level in Uganda using television, radio, newspapers, billboards, outdoor plays, and other media most accessible to large segments of the population. A concerted social marketing strategy could design and deliver such messages to target people in different regions in ways that will influence them. Such work could help enhance the work ongoing at local levels throughout the country.

*4. Support more effective enforcement and implementation of appropriate resource use policies and guidelines at the national level*

Uganda's many natural resources policies and guidelines suffer from lack of enforcement. More work needs to be done to build human and technical capacity to enforce the fisheries, wildlife, and wetlands regulations that come into play at the national level.

### **District-Level Recommendations**

*1. Support more effective enforcement and implementation of appropriate resource use policies and guidelines at the District level*

Devolution of authority to the District level in Uganda has come at a cost to the appropriate implementation of fisheries, wildlife, and wetlands regulations and guidelines. Further capacity-building efforts are needed in key Districts to ensure effective implementation of well-meaning but so far non-enforced regulations concerning the use of natural resources.

### **Local-Level Recommendations**

[Note: Local level activities should be focused in areas where the conservation value of the biodiversity is the greatest and the threats are most pressing. Globally, the greatest threats to biodiversity and ecosystem conservation most always correspond to the areas with the highest densities of the poorest people living closest to these areas. In Uganda, the areas in the southwest and along the shores of Lake Victoria are the most critical for conservation action and also the areas where the local people stand to benefit the most from donor investments.]

*1. Promote poverty-alleviation strategies at the community level in areas adjacent to globally significant protected areas*

Uganda's southwest contains some of the most critical protected areas surrounded by some of the poorest people in the country. Until this poverty is adequately addressed, the communities will continue to unsustainably utilize the nearby forests and biodiversity within. Continued and increasing efforts are needed in such realms as increasing agricultural productivity, providing agroforestry resources and techniques, and other methods to provide alternative sources of livelihood and income for communities in these areas. UWA should be encouraged in its development of natural resource agreements with such communities, and other community-based natural resource management endeavors should be bolstered in these critical areas.

2. *Support participatory community zoning and planning efforts in key habitats that are in the public domain*

Many wetland areas of global and national significance are not located within protected areas and fall entirely within the public domain. Similarly, some important remnants of natural habitats such as woodlands and forest patches still exist without government protection. In some cases, these are conserved primarily by local customs and traditions that could easily be eroded by “modernization.” In these areas, increasing efforts are needed to ensure that the local people recognize the need to sustainably use these resources for their own benefits now and in the future. Participatory community zoning and planning efforts can help people weigh the costs and benefits of immediate use of these resources, and give them tools to develop their own strategies to protect certain areas and resources, while using others in different ways. Much more work of this type is needed to effect the community-level changes that are necessary for long-term benefits to the people and the ecosystems involved.

#### **D. ISP Opportunities to Conserve Tropical Forests and Biodiversity**

Subsection C above discusses the threats to biodiversity and tropical forest conservation in Uganda and details recommendations that would address these on a national basis. Here, the recommendations are brought back to the Mission level. This analysis evaluates the USAID/Uganda ISP *contribution* to tropical forests (FAA 118) and biodiversity (FAA 119) conservation in Uganda relative to the country-level recommendations, and presents *opportunities* to further incorporate tropical forest and biodiversity conservation measures into the ISP and into future USAID programming. This analysis focuses primarily on the extent to which SO 7 is addressing these actions since SO 8 and SO 9 affects forest and biodiversity conservation only minimally, if at all.

##### **D1. USAID Contributions to Biodiversity Assessment Recommendations**

1. *Support for international biodiversity agreements*

SO 7 intends to engage in policy dialogue at the Ministry and headquarters’ levels that implement and report on international treaties, conventions, and agreements, under IR 7.4 and sub-IRs 7.4.2 and 7.4.4. SO 7 has yet to develop specific targets for policy dialogue; however, Section 5.0 of the ETOA recommends focus areas.

2. *Support biodiversity prospecting*

“Bioprospecting” is one of several approaches that SO 7 will evaluate for its potential to improve and diversify environmentally sustainable economic opportunities in rural areas. SO 7 will consider opportunities for “bioprospecting” under IR 7.2 and particularly sub-IR 7.2.3 and under IR 7.3 and particularly sub-IR 7.3.1.

3. *Seek contributions for biodiversity conservation from the private sector*

Although this recommendation supports no specific SO or IR, USAID has considerable experience and a comparative advantage in leveraging funds.

*4. Support NEMA to coordinate functions*

Support for the NEMA coordination function falls under SO 7's IR 7.4 and particularly sub-IR 7.4.4.

*5. Strengthen and coordinate existing data collection and management*

Although this recommendation does not support a specific SO or IR, it cuts across IR 7.2, 7.3, and 7.4.

*6. Strengthen public education and awareness*

Although currently this recommendation is not part of the ISP, SO 7 and SO 8 should consider a possible collaborative effort in this area.

*7. Support more effective enforcement and implementation of resource use policies*

SO 7 will support this recommendation under sub-IR 7.4.4, increased implementation of sound environmental and natural resource policies.

*8. Support more effective enforcement and implementation of resource use policies*

As stated above, SO 7 supports this recommendation under sub-IR 7.4.4. Possible areas of focus include: building environmental impact assessment capacity at district and parish levels; improving enforcement of fisheries regulations; and supporting implementation of collaborative management agreements.

*9. Promote poverty alleviation strategies adjacent to globally significant protected areas*

SO 7's primary focus, "expansion of sustainable economic opportunities for rural sector growth," supports rural poverty alleviation. IR 7.2 addresses poverty alleviation through natural resource conservation and reversing environmental degradation.

*10. Support participatory community zoning and planning efforts in key habitats in the public domain*

SO 7 will support sustainable management and use of a variety of ecosystem and habitat types, including wetlands that are not in protected areas.

## **E. Overall Recommendations**

This section brings together the opportunities and contributions described throughout the 117/8/9 assessment, and presents recommendations with key entry points for the ISP to positively influence environmental, biodiversity, and tropical forest conservation in Uganda. These recommendations are the priority actions that were generated during the 117/8/9 exercise. The recommendations were developed and prioritized by considering USAID's goal for the ISP

period, 2002-2007; USAID's comparative advantage; needs and gaps in the environment sector; and available partners with whom to work.

## **E1. First-Tier Recommendations**

First-tier recommendations are critical for achieving the ISP's goal, and are the most effective contributions the ISP can make towards environmental and biodiversity conservation.

### *1. Support collaborative management of natural resources*

This recommendation feeds directly into the SO 7 strategy to expand sustainable economic opportunities for rural sector growth. The approach is relatively new, but most conservation professionals believe it has real potential, especially when implemented within an economic growth/poverty alleviation framework rather than simply as a conservation program. The underlying assumption is that poorer households have fewer livelihood opportunities, and therefore are most likely to engage in potentially risky illegal resource extraction. The collaborative scheme can be tied into local, national, and international markets, or access can be granted simply for subsistence use. Developing value-added commodities and market linkages are additional components of collaborative management, and ones that will most likely appeal to USAID for its rural sector economic growth potential.

### *2. Develop a systematic, consistent, user-friendly, natural resource database and monitoring system*

This recommendation is based on the findings of the ASO team; the ESA; Part 1 of the ETOA-Conservation needs in Uganda, and was identified by a number of natural resource practitioners as a principal constraint to accomplishing their work. With a data collection and monitoring system in place, choices of land use options in Uganda could be made on a rational, scientific basis. In addition, this recommendation could lead to a regional initiative among east African countries since so much of the natural resources are shared among the countries, and limited data is a regional concern.

### *3. Support policy coordination*

The ESA and Part 1 of the ETOA found that the lack of a coordinated policy agenda among natural resource agencies poses a serious constraint to implementing and enforcing policies, regulations, and guidelines. The MUIENR forum reinforced this finding, and interviews with natural resource professionals in Uganda also supported it. Part 1 of the ETOA describes NEMA's coordinating role, but also notes that NEMA has little authority to fulfill this role. USAID has a comparative advantage and expertise in strengthening policies, and has experience working within the GOU to help shape the current policies.

## **E2. Second-Tier Recommendations**

Second-tier recommendations are supportive of Tier 1 recommendations, and will help to ensure environmental sustainability of the ISP, and to improve tropical forest and biodiversity conservation.

1. *Support policy dialog to strengthen international treaties and agreements, especially the Convention on International Trade in Endangered Species of Flora and Fauna (CITES)*

Within the framework of SO 7, CITES is one of the most important international agreements. Since SO 7 intends to increase and diversify economic opportunities, mainly using the natural resource base, and with an eye to export markets, the ability to comply with CITES will become especially important. USAID/PPC is promoting activities that strengthen CITES implementation, and Uganda is one of the focus countries where PPC hopes to improve compliance.

2. *Strengthen public awareness of and support for the environment and conservation*

Public awareness of environmental issues and concern for environmental protection are notable gaps among the Ugandan public. From the HIV/AIDS model of public awareness building, it is obvious that Ugandans respond to radio, billboards, poster, and newspaper campaigns. Similarly, SO 7, with the assistance of SO 8, should support a public awareness campaign aimed at adults and children to increase awareness and appreciation of the environment.

3. *Strengthen district E/NR capacity*

This recommendation should be a collaborative effort between SO 7 and SO 9. It is derived from the ESA, Part 1 of the ETOA, and the ASO. The ASO notes that districts have real authority and receive significant funds from central government grants and from locally generated tax revenue for their selected programs. The ASO also states that deficits in human resources at the district and sub-district levels are serious obstacles to implementing policy.

4. *Support family planning activities in areas with globally important biodiversity*

The highest human population densities in Africa (246 people/km<sup>2</sup>) are found around Bwindi and Mgahinga, in the country's southwestern region. This area also has a high population growth rate of 2.8 percent/year. SO 7 and SO 9 collaboration would be especially important in the ecologically fragile areas bordering Bwindi and Mgahinga, where high-population density and rate of population growth coincide with globally valuable biodiversity resources.

## **F. Conclusions**

The many findings and recommendations within this Environmental Sustainability Assessment are closely interrelated. There is also a close association between the perceived needs for environmental sustainability and biodiversity conservation within Uganda and the ability of the new ISP to address them. It is hoped that the readers of this annex will also review the two parent documents, *USAID Program Impact on Environmental Sustainability, Tropical Forests and Biodiversity (FAA 117/118/119)* and the *Biodiversity Assessment for Uganda* for the fuller details available in these larger reports. It is evident that there is much scope for environmental and biodiversity conservation work yet to be done in Uganda but these documents, taken together, give comprehensive assessments of useful places to begin.

## ANNEX B

### Analysis of Red-Listed Species

**Table B-1. Distribution and Threats Associated with Red-Listed Plants**

| Scientific name                    | Common name                                   | Red list          | Habitat   |
|------------------------------------|---|-------------------|---|
| <i>Afrothismia winkleri</i>        | -   | CR A1c+2c         | -   |
| <i>Azelia africana</i>             | -   | VU A1d            | Dry forest and woodland (rocky hills and escarpments where protected from fire) |
| <i>Azelia bipindensis</i>          | -   | VU A1cd           | Rain forest   |
| <i>Albizia ferruginea</i>          | -   | VU A1cd           | Widespread  |
| <i>Antrocaryon micraster</i>       | -   | VU A1cd           | Medium Altitude Moist Semi-deciduous forest                                     |
| <i>Beilschmiedia ugandensis</i>    | -   | VU A2d            | Forest, swampy areas  |
| <i>Brachylaena huillensis</i>      | -   | LR/nt             | Medium Altitude Moist Semi-deciduous forest                                     |
| <i>Brazzeia longipedicellata</i>   | -   | EN B1+2c          | Medium Altitude Moist Evergreen forest  |
| <i>Catha edulis</i>                | -   | LR/1c             | Evergreen Sub-Montane or Medium Altitude forest<br>Woodland on Rocky Hills      |
| <i>Cola bracteata</i>              | -   | VU B1+2c          | Medium Altitude Moist Evergreen forest  |
| <i>Cordia millenii</i>             | -   | LR/lc             | Closed forest and secondary formations  |
| <i>Cordyla richardii</i>           | -   | VU B1+2c          | Savanna   |
| <i>Dalbergia melanoxydon</i>       | African blackwood (E)<br>Mozambique ebony (E) | LR/nt             | Woodlands   |
| <i>Dialium excelsum</i>            | -   | EN B1+2c          | Medium Altitude Moist Semi-deciduous forest                                     |
| <i>Diospyros katendei</i>          | -   | CR B1+2ce, C2b, D | Medium Altitude Moist Evergreen forest  |
| <i>Dracaena ombet</i>              | Nubian dragon tree (E)                        | EN A1cd           | -   |
| <i>Entandrophragma angolense</i>   | African mahogany                              | VU A1cd           | -   |
| <i>Entandrophragma cylindricum</i> | African mahogany                              | VU A1cd           | Medium Altitude Moist Semi-deciduous forest                                     |
| <i>Entandrophragma excelsum</i>    | African mahogany                              | LR/lc             | Medium Altitude Moist Semi-deciduous forest                                     |
| <i>Entandrophragma utile</i>       | African mahogany                              | VU A1cd           | Medium Altitude Moist Semi-deciduous forest                                     |
| <i>Euphorbia bwambensis</i>        | -   | VU B1+2c          | Moist Semi-deciduous forest   |
| <i>Guarea cedrata</i>              | Scented Guarea                                | VU A1c            | Medium Altitude Moist Semi-deciduous/Evergreen forest                           |
| <i>Guarea mayombensis</i>          | -   | VU A1c            | Medium Altitude Moist Evergreen forest  |
| <i>Hallea stipulosa</i>            | -   | VU A1cd           | Swampy areas  |

| Scientific name                | Common name   | Red list | Habitat  |
|--------------------------------|---|----------|--|
| <i>Irvingia gabonensis</i>     | Wild Mango  | LR/nt    | Medium Altitude Moist Evergreen forest (infrequently Gallery forest and Medium Altitude Moist Semi-deciduous forest) |
| <i>Isolona congolana</i>       | -   | LR/nt    | Moist Evergreen forest (often along rivers)  |
| <i>Juniperus procera</i>       | East African cedarwood (E)  | LR/nt    | High Altitude Forest   |
| <i>Khaya anthotheca</i>        | African mahogany (E)<br>white mahogany (E)                              | VU A1cd  | Medium Altitude Moist Evergreen/Semi-deciduous forest  |
| <i>Khaya grandifoliola</i>     | African mahogany (E)<br>Benin mahogany (E)<br>large-leaved mahogany (E) | VU A1cd  | Dry Semi-deciduous forest/forest outliers  |
| <i>Khaya senegalensis</i>      | Senegal mahogany (E)  | VU A1cd  | Savanna woodland (high-rainfall)   |
| <i>Lophira alata</i>           | Meni-oil tree   | VU A1cd  | Savanna  |
| <i>Lovoa swynnertonii</i>      | -   | EN A1cd  | Medium Altitude Moist Evergreen forest   |
| <i>Lovoa trichilioides</i>     | African walnut (E)  | VU A1cd  | Medium Altitude Moist Evergreen/Semi-deciduous forest  |
| <i>Memecylon bequaertii</i>    | -   | VU B1+2c | -  |
| <i>Milicia excelsa</i>         | Iroko   | LR/nt    | Medium Altitude Moist Semi-deciduous forest  |
| <i>Millettia lacus-alberti</i> | -   | VU B1+2c | Medium Altitude Moist Evergreen forest   |
| <i>Millettia psilopetala</i>   | -   | LR/lc    | -  |
| <i>Nauclea diderrichii</i>     | -   | VU A1cd  | Moist Semi-deciduous forest  |
| <i>Ocotea kenyensis</i>        | -   | VU A1cd  | Medium Altitude Moist Evergreen forest   |
| <i>Pavetta intermedia</i>      | -   | VU B1+2c | Medium Altitude Moist forest   |
| <i>Pistacia aethiopica</i>     | -   | LR/nt    | Woodland   |
| <i>Pouteria altissima</i>      | -   | LR/cd    | Medium Altitude Moist Semi-deciduous forest (drier areas)  |
| <i>Prunus africana</i>         | Red stinkwood (E)   | VU A1cd  | Medium Altitude Moist Evergreen forest   |
| <i>Rhynchosigma racemosum</i>  | -   | VU A1c   | -  |
| <i>Turraeanthus africanus</i>  | -   | VU A1cd  | Medium Altitude Moist Semi-deciduous forest  |
| <i>Tylophora cameroonica</i>   | -   | LR/nt    | Medium Altitude Moist Evergreen forest   |
| <i>Vitellaria paradoxa</i>     | Shea butter tree (E)  | VU A1cd  | Woodland   |

The major threats affecting these species are habitat loss and timber harvesting.

#### Key To The Categories

CR: Critically Endangered  
EN: Endangered  
VU: Vulnerable  
LR: Lower Risk

LR: Lower Risk  
cd: Conservation Dependent  
nt: Near Threatened  
lc: Least Concern  
DD: Data Deficient

**Table B-2. Distribution and Threats Associated with Red Data-Listed Birds**

| Scientific Name                  | Common Name  | Red List            | Habitat   | Threats   |
|----------------------------------|--|---------------------|---|---|
| <i>Apalis karamojae</i>          | Karamoja Apalis (E)  | VU A2c, B1 + 2 abce | DRY THICKET (THICK BUSH AND SMALL TREES ESPECIALLY ALONG SEASONAL SWAMPS) | WOOD CUTTING AND CATTLE GRAZING                       |
| <i>Balaeniceps rex</i>           | Shoebill (E)<br>Whale-headed Stork (E)   | LR/nt               | Swamp/ Wetlands   | Development and disturbance of Wetlands               |
| <i>Bradypterus graueri</i>       | Grauer's Rush-warbler (E)<br>Grauer's Scrub-warbler (E)<br>Grauer's Swamp-warbler (E)        | EN B1+2bcde         | Highland swamp  | Forest clearing that may lead to swamp drainage       |
| <i>Chloropeta gracilirostris</i> | Papyrus Yellow Warbler (E)<br>Thin-billed Flycatcher-Warbler (E)<br>Yellow Swamp-Warbler (E) | VU B1+2abcde, C2a   | Papyrus swamps  | Draining of swamps<br>Cutting of Papyrus              |
| <i>Crex crex</i>                 | Corn Crake (E)<br>Corncrake (E)  | VU A2c              | Dry grassland and savanna   | Changes in agricultural practices/habitat degradation |
| <i>Eremomela turneri</i>         | Turner's Eremomela (E)   | EN B1+2abcde        | Along streams and in forest edges and clearings                           | Forest clearance                                      |
| <i>Francolinus nahani</i>        | Nahan's Francolin (E)  | EN B1+2bce          | Lowland forest  | Forest destruction<br>Hunting                         |
| <i>Muscicapa lendu</i>           | Chapin's Alseonax (E)<br>Chapin's Flycatcher (E)   | VU C2a              | Medium Altitude Moist-Evergreen/ Montane Forest                           | Forest clearance                                      |
| <i>Pseudocalyptomena graueri</i> | African Green Broadbill (E)<br>Grauer's Broadbill (E)  | VU B1+2abce, C1+2a  | Montane Forest  | Forest destruction                                    |
| <i>Zoothera oberlaenderi</i>     | Forest Ground-thrush (E)<br>Oberlaender's Ground-thrush (E)                                  | LR/nt               | Mid Altitude Semi-deciduous Forest  | Forest destruction                                    |
| <i>Aquila clanga</i>             | Greater Spotted Eagle (E)<br>Spotted Eagle (E)   | VU C1               | Lowland forest near wetlands  | Habitat destruction,<br>Hunting                       |
| <i>Ardeola idae</i>              | Madagascar Pond-heron (E)  | VU A1bd+2bd, C1+2b  | Fresh water wetlands with adjacent tree cover                             | Wetland drainage<br>Exploitation of eggs              |
| <i>Balearica pavonina</i>        | Black Crowned-crane (E)  | LR/nt               | Both wet and dry open habitats  | Habitat loss and degradation                          |
| <i>Circus macrourus</i>          | Pale Harrier (E)<br>Pallid Harrier (E)   | LR/nt               | Scrub, savanna and wetlands   | Destruction and degradation of habitat                |
| <i>Columba albinucha</i>         | White-naped Pigeon (E)   | LR/nt               | Dense Mid-Altitude forest   | Habitat loss<br>Persecution                           |
| <i>Coracina graueri</i>          | Grauer's Cuckoo-shrike (E)   | LR/nt               | Montane and transitional forest   | Habitat loss  |
| <i>Cryptospiza shelleyi</i>      | Shelley's Crimson-wing (E)   | VU C2a              | Mid- and high altitude moist evergreen forest                             | Deforestation and degradation of forest               |
| <i>Falco fasciinucha</i>         | Taita Falcon (E)<br>Teita Falcon (E)   | LR/nt               | Rock face habitats (gorges and escarpments)                               | Pesticide spraying to control <i>Quelea</i>           |

| Scientific Name                | Common Name                                       | Red List                  | Habitat  | Threats   |
|--------------------------------|---|---------------------------|--|---|
| <i>Falco naumanni</i>          | Lesser Kestrel (E)                                | <u>VU A1bce+2bce</u>      | Natural and Managed grasslands<br>Non-intensive cultivation  | Habitat loss and degradation to<br>agriculture deforestation and<br>urbanisation            |
| <i>Glareola nordmanni</i>      | Black-winged Pratincole (E)                       | <u>DD</u>                 | Grassland  | Habitat loss to agricultural practices<br>and grassland degradation                         |
| <i>Hirundo atrocaerulea</i>    | Blue Swallow (E)                                  | <u>VU A1ce+2ce, C1+2b</u> | Montane grassland<br>Open grassland with bushes and trees  | Destruction and degradation of<br>grassland habitat   |
| <i>Indicator pumilio</i>       | Dwarf Honeyguide (E)                              | <u>LR/nt</u>              | Mid-altitude evergreen forest  | Forest degradation<br>Forest loss   |
| <i>Laniarius mufumbiri</i>     | Papyrus Gonolek                                   | LR/nt                     | Papyrus swamps   | Wetland drainage and degradation  |
| <i>Lybius rubrifacies</i>      | Red-faced Barbet (E)                              | LR/nt                     | Wooded grasslands<br>Mixed wood land<br>Cultivated areas with scattered trees  | Habitat loss<br>Habitat degradation   |
| <i>Malaconotus lagdeni</i>     | Lagden's Bush-shrike (E)                          | LR/nt                     | Mid/High altitude moist evergreen forest   | Forest degradation<br>Forest loss   |
| <i>Neotis denhami</i>          | Stanley's Bustard (E)                             | LR/nt                     | Wooded and open savanna<br>Flood plains<br>Farm lands  | Conversion of grassland and light<br>woodland to agriculture<br>Hunting                     |
| <i>Phoenicopterus minor</i>    | Lesser Flamingo (E)                               | LR/nt                     | Alkaline and saline lakes especially in the<br>Rift valley   | Pollution and disturbance   |
| <i>Phyllastrephus lorentzi</i> | Sassi's Greenbul (E)                              | LR/nt                     | Low land and transitional mid altitude forest  | Forest clearance and degradation  |
| <i>Ploceus victoriae</i>       | Entebbe Weaver (E)                                | DD                        | -  | -   |
| <i>Pteronetta hartlaubi</i>    | Victoria Masked-Weaver (E)<br>Hartlaub's Duck (E) | LR/nt                     | Forest areas (secluded marshes and pools<br>in dense, swampy tropical evergreen<br>forests)<br>Streams in well wooded savanna grasslands | Hunting<br>Increase in slush and burn<br>cultivation<br>Water pollution                     |
| <i>Rynchops flavirostris</i>   | African Skimmer (E)                               | <u>LR/nt</u>              | Rivers and lakes (breeding in dry sand bars<br>in broad river and lakes)   | Poisoning<br>Habitat loss<br>Poor farming practices<br>Egg collecting<br>Trapping of adults |
| <i>Torgos tracheliotus</i>     | Lappet-faced Vulture (E)                          | VU C1                     | Ranges widely  | Poisoning<br>Persecution<br>Pesticide use   |
| <i>Zoothera tanganjicae</i>    | Kivu Ground-thrush (E)                            | <u>LR/nt</u>              | Mid altitude moist evergreen forest  | Forest destruction  |

### Key To The Categories

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Table A-3. Listing of Other Red Data-Listed Taxa

| Scientific Name                           | Common Name (s)   | Red List                |
|---|---|-------------------------|
| <u><i>Bulinus transversalis</i></u>       |   | <u>VU B1+2c</u>         |
| <u><i>Cardioderma cor</i></u>             |   | <u>LR/nt</u>            |
| <u><i>Chaerephon chapini</i></u>          |   | <u>LR/nt</u>            |
| <u><i>Chalinolobus egeria</i></u>         |   | <u>LR/nt</u>            |
| <u><i>Chalinolobus gleni</i></u>          |   | <u>LR/nt</u>            |
| <u><i>Crocidura selina</i></u>            |   | <u>EN B1+2c</u>         |
| <u><i>Hyemoschus aquaticus</i></u>        | Water Chevrotain (E)  | <u>DD</u>               |
| <u><i>Idiurus zenkeri</i></u>             |   | <u>LR/nt</u>            |
| <u><i>Mops congicus</i></u>               |   | <u>LR/nt</u>            |
| <u><i>Mops demonstrator</i></u>           |   | <u>LR/nt</u>            |
| <u><i>Mops trevori</i></u>                |   | <u>LR/nt</u>            |
| <u><i>Oreotragus oreotragus</i></u>       | Klipspringer (E)  | <u>LR/cd</u>            |
| <u><i>Paraxerus alexandri</i></u>         |   | <u>LR/nt</u>            |
| <u><i>Potamogale velox</i></u>            |   | <u>EN B1+2c</u>         |
| <u><i>Pyxichromis orthostoma</i></u>      |   | <u>VU A1ace, B1+2ce</u> |
| <u><i>Rhinolophus alcyone</i></u>         |   | <u>LR/nt</u>            |
| <u><i>Rhinolophus maclaudi</i></u>        |   | <u>LR/nt</u>            |
| <u><i>Rhynchocyon cirnei</i></u>          |   | <u>VU B1+2c</u>         |
| <u><i>Saccolaimus peli</i></u>            |   | <u>LR/nt</u>            |
| <u><i>Tachyoryctes ankoliae</i></u>       |   | <u>VU A1cd</u>          |
| <u><i>Thermodiaptomus galeboides</i></u>  |   | <u>VU D2</u>            |
| <u><i>Tropodiaptomus stuhlmanni</i></u>   |   | <u>VU D2</u>            |
| <u><i>Tropodiaptomus worthingtoni</i></u> |   | <u>DD</u>               |
| <u><i>Kinixys erosa</i></u>               | Common Tortoise (E)<br>Forest Hinged Tortoise (E)<br>Schweigger's Tortoise (E)<br>Serrated Hinge-back Tortoise (E)<br>Serrated Hinge-backed Tortoise (E)<br>Serrated Tortoise (E) |                         |
| <u><i>Bellamya constricta</i></u>         |   | <u>EN B1+2abcd</u>      |

| Scientific Name                                       | Common Name (s) | Red List                  |
|---|-----------------|---------------------------|
| <u><i>Bellamya costulata</i></u>                      |                 | <u>EN B1+2abcd</u>        |
| <u><i>Bellamya jucunda</i></u>                        |                 | <u>EN B1+2abcd</u>        |
| <u><i>Bellamya phthinotropis</i></u>                  |                 | <u>EN B1+2abcd</u>        |
| <u><i>Bellamya rubicunda</i></u>                      |                 | <u>EN B1+2abcd</u>        |
| <u><i>Bellamya trochearis</i></u>                     |                 | <u>EN B1+2abcd</u>        |
| <u><i>Allochromis welcommei</i></u>                   |                 | <u>CR A1acde, B1+2ce</u>  |
| <u><i>Astatotilapia "shovelmouth"</i></u>             |                 | <u>EN A1acde, B1+2ce</u>  |
| <u><i>Astatotilapia barbarae</i></u>                  |                 | <u>EN A1ace, B1+2bcde</u> |
| <u><i>Astatotilapia latifasciata</i></u>              |                 | <u>CR A1acde, B1+2ce</u>  |
| <u><i>Astatotilapia velifer</i></u>                   |                 | <u>VU A1ae, B1+2c</u>     |
| <u><i>Haplochromis "ruby"</i></u>                     |                 | <u>CR A1acde, B1+2ce</u>  |
| <u><i>Haplochromis annectidens</i></u>                |                 | <u>CR A1ace, B1+2cde</u>  |
| <u><i>Haplochromis obliquidens</i></u>                |                 | <u>EN A1ace, B1+2acd</u>  |
| <u><i>Harpagochromis "frogmouth"</i></u>              |                 | <u>VU A1ae, B1+2acd</u>   |
| <u><i>Harpagochromis quiarti ssp. complex</i></u>     |                 | <u>CR A1ace, B1+2acd</u>  |
| <u><i>Harpagochromis plagiostoma</i></u>              |                 | <u>CR A1ace, B1+2acd</u>  |
| <u><i>Harpagochromis worthingtoni</i></u>             |                 | <u>CR A1acde, B1+2ce</u>  |
| <u><i>Lipochromis "backflash cryptodon"</i></u>       |                 | <u>CR A1acde, B1+2ce</u>  |
| <u><i>Lipochromis "parvidens-like"</i></u>            |                 | <u>CR A1acde, B1+2ce</u>  |
| <u><i>Lipochromis "small obesoid"</i></u>             |                 | <u>CR A1acde, B1+2ce</u>  |
| <u><i>Oreochromis esculentus</i></u>                  |                 | <u>VU A1acde, B1+2ce</u>  |
| <u><i>Oreochromis variabilis</i></u>                  |                 | <u>VU A1acde, B1+2ce</u>  |
| <u><i>Xystichromis "Kyoga flameback"</i></u>          |                 | <u>CR A1ace, B1+2ce</u>   |
| <u><i>Paralabidochromis beadlei</i></u>               |                 | <u>CR A1ace, B1+2cd</u>   |
| <u><i>Paralabidochromis chilotes ssp. complex</i></u> |                 | <u>VU A1ace, B1+2acd</u>  |
| <u><i>Paralabidochromis chromogynos</i></u>           |                 | <u>VU A1ace, B1+2acd</u>  |
| <u><i>Paralabidochromis crassilabris</i></u>          |                 | <u>VU A1ace, B1+2acd</u>  |
| <u><i>Prognathochromis "long snout"</i></u>           |                 | <u>EN A1acde, B1+2ce</u>  |
| <u><i>Prognathochromis venator</i></u>                |                 | <u>EN A1ace, B1+2cd</u>   |
| <u><i>Prognathochromis worthingtoni</i></u>           |                 | <u>CR A1acde, B1+2ce</u>  |
| <u><i>Psammochromis acidens</i></u>                   |                 | <u>VU A1ace, B1+2acd</u>  |

| Scientific Name                                   | Common Name (s)   | Red List                |
|---|---|-------------------------|
| <u><i>Psammochromis aelocephalus</i></u>          |   | <u>VU A1ac, B1+2acd</u> |
| <u><i>Papilio antimachus</i></u>                  | African Giant Swallowtail (E)   | <u>DD</u>               |
| <u><i>Papilio leucotaenia</i></u>                 | Cream-banded Swallowtail (E)  | <u>VU B1+2c</u>         |
| <br>  |   |                         |
| <u><i>Acinonyx jubatus</i></u>                    | Cheetah (E)<br>Hunting Leopard (E)  | <u>VU A1d+2d, C1</u>    |
| <u><i>Aepyceros melampus</i></u>                  | Impala (E)  | <u>LR/cd</u>            |
| <u><i>Alcelaphus buselaphus</i></u>               | Common Hartebeest (E)   | <u>LR/cd</u>            |
| <u><i>Alcelaphus buselaphus ssp. lelwel</i></u>   | Lelwel Hartebeest (E)   | <u>LR/cd</u>            |
| <u><i>Aonyx congica</i></u>                       | Cameroon Clawless Otter (E)<br>Congo Clawless Otter (E)<br>Small-clawed Otter (E)<br>Small-toothed Clawless Otter (E)<br>Zaire Clawless Otter (E) | <u>DD</u>               |
| <br>  |   |                         |
| <u><i>Bdeogale jacksoni</i></u>                   | Jackson's Mongoose (E)  | <u>VU B1+2c</u>         |
| <u><i>Cephalophus callipygus</i></u>              | Peter's Duiker (E)<br>Peters' Duiker (E)  | <u>LR/nt</u>            |
| <br>  |   |                         |
| <u><i>Cephalophus dorsalis</i></u>                | Bay Duiker (E)  | <u>LR/nt</u>            |
| <u><i>Cephalophus nigrifrons</i></u>              | Black-fronted Duiker (E)  | <u>LR/nt</u>            |
| <u><i>Cephalophus nigrifrons ssp. rubidus</i></u> | Ruwenzori Black-fronted Duiker (E)  | <u>EN A1c</u>           |
| <u><i>Cephalophus rufilatus</i></u>               | Red-flanked Duiker (E)  | <u>LR/cd</u>            |
| <u><i>Cephalophus silvicultor</i></u>             | Yellow-backed Duiker (E)  | <u>LR/nt</u>            |
| <u><i>Cephalophus weynsi</i></u>                  | Weyn's Duiker (E)   | <u>LR/nt</u>            |
| <u><i>Cercopithecus hamlyni</i></u>               | Owl-faced Guenon (E)<br>Owl-faced Monkey (E)  | <u>LR/nt</u>            |
| <br>  |   |                         |
| <u><i>Cercopithecus lhoesti</i></u>               | l'Hoest's Guenon (E)<br>l'Hoest's Monkey (E)<br>Mountain Monkey (E)   | <u>LR/nt</u>            |
| <br>  |   |                         |
| <u><i>Cercopithecus mitis ssp. kandti</i></u>     | Golden Guenon (E)<br>Golden Monkey (E)  | <u>EN B1+2c</u>         |
| <br>  |   |                         |
| <u><i>Colobus angolensis ssp. ruwenzorii</i></u>  | Rwenzori Black-and-white Colobus (E)  | <u>VU B1+2c</u>         |
| <u><i>Crocuta crocuta</i></u>                     | Spotted Hyaena (E)  | <u>LR/cd</u>            |
| <u><i>Damaliscus lunatus</i></u>                  | Tsessebe (E)  | <u>LR/cd</u>            |

| Scientific Name                                 | Common Name (s)  | Red List                |
|---|--|-------------------------|
| <u><i>Damaliscus lunatus ssp. jimela</i></u>    | Topi (E)   | <u>LR/cd</u>            |
| <u><i>Dasymys incomtus</i></u>                  |  | <u>DD</u>               |
| <u><i>Dasymys montanus</i></u>                  |  | <u>VU B1+2c</u>         |
| <u><i>Funisciurus carruthersi</i></u>           | Carruther's Mountain Squirrel (E)  | <u>VU B1+2c</u>         |
| <u><i>Galago matschiei</i></u>                  | Eastern Needle-clawed Bushbaby (E)<br>Eastern Needle-clawed Galago (E)<br>Lesser Needle-clawed Galago (E)<br>Matschie's Galago (E)<br>Spectacled Lesser Galago (E) | <u>LR/nt</u>            |
| <u><i>Gallinago media</i></u>                   | Great Snipe (E)  | <u>LR/nt</u>            |
| <u><i>Gaurochromis simpsoni</i></u>             |  | <u>EN A1ace, B1+2cd</u> |
| <u><i>Gazella granti</i></u>                    | Grant's Gazelle (E)  | <u>LR/cd</u>            |
| <u><i>Giraffa camelopardalis</i></u>            | Giraffe (E)  | <u>LR/cd</u>            |
| <u><i>Gorilla beringei</i></u>                  | Eastern Gorilla (E)<br>Mountain Gorilla (E)  | <u>EN A2cd</u>          |
| <u><i>Gorilla beringei ssp. ?</i></u>           | Bwindi Gorilla (E)   | <u>CR C2b</u>           |
| <u><i>Gorilla beringei ssp. beringei</i></u>    | Mountain Gorilla (E)   | <u>CR C2b</u>           |
| <u><i>Hippotragus equinus</i></u>               | Roan Antelope (E)  | <u>LR/cd</u>            |
| <u><i>Hystrix cristata</i></u>                  | Crested Porcupine (E)<br>North African Crested Porcupine (E)   | <u>LR/nt</u>            |
| <u><i>Kobus ellipsiprymnus</i></u>              | Waterbuck (E)  | <u>LR/cd</u>            |
| <u><i>Kobus ellipsiprymnus ssp. defassa</i></u> | Defassa Waterbuck (E)  | <u>LR/cd</u>            |
| <u><i>Kobus kob</i></u>                         | Kob (E)  | <u>LR/cd</u>            |
| <u><i>Kobus kob ssp. leucotis</i></u>           | White-eared Kob (E)  | <u>LR/nt</u>            |
| <u><i>Kobus kob ssp. thomasi</i></u>            | Uganda Kob (E)   | <u>LR/cd</u>            |
| <u><i>Loxodonta africana</i></u>                | African Elephant (E)   | <u>EN A1b</u>           |
| <u><i>Lutra maculicollis</i></u>                | Speckle-throated Otter (E)<br>Spot-necked Otter (E)<br>Spotted-necked Otter (E)  | <u>VU A1c</u>           |
| <u><i>Lycaon pictus</i></u>                     | African Hunting Dog (E)<br>African Wild Dog (E)<br>Wild Dog (E)  | <u>EN C1</u>            |
| <u><i>Manis temminckii</i></u>                  | Cape Pangolin (E)<br>Scaly Anteater (E)  | <u>LR/nt</u>            |

| Scientific Name                                   | Common Name (s)                   | Red List        |
|---|-----------------------------------|-----------------|
|   | South African Pangolin (E)        |                 |
|   | Temminck's Ground Pangolin (E)    |                 |
| <u><i>Micropotamogale ruwenzorii</i></u>          | Ruwenzori Otter-shrew (E)         | <u>EN B1+2c</u> |
| <u><i>Miniopterus schreibersi</i></u>             | Common Bentwing Bat (E)           | <u>LR/nt</u>    |
|   | Schreiber's Long-fingered Bat (E) |                 |
| <u><i>Myosorex blarina</i></u>                    |                                   | <u>VU B1+2c</u> |
| <u><i>Neotragus batesi</i></u>                    | Bates' Pygmy Antelope (E)         | <u>LR/nt</u>    |
| <u><i>Oenomys hypoxanthus</i></u>                 |                                   | <u>DD</u>       |
| <u><i>Okapia johnstoni</i></u>                    | Okapi (E)                         | <u>LR/nt</u>    |
| <u><i>Oryx gazella</i></u>                        | Gemsbok (E)                       | <u>LR/cd</u>    |
| <u><i>Oryx gazella ssp. beisa</i></u>             | Beisa Oryx (E)                    | <u>LR/cd</u>    |
| <u><i>Osteolaemus tetraspis</i></u>               | African Dwarf Crocodile (E)       | <u>VU A2cd</u>  |
|   | West African Dwarf Crocodile (E)  |                 |
| <u><i>Otomops martiensseni</i></u>                |                                   | <u>VU A2c</u>   |
| <u><i>Otomys denti</i></u>                        |                                   | <u>LR/nt</u>    |
| <u><i>Otomys typus</i></u>                        |                                   | <u>LR/nt</u>    |
| <u><i>Ourebia ourebi</i></u>                      | Oribi (E)                         | <u>LR/cd</u>    |
| <u><i>Pan troglodytes</i></u>                     | Chimpanzee (E)                    | <u>EN A2cd</u>  |
|   | Common Chimpanzee (E)             |                 |
|   | Robust Chimpanzee (E)             |                 |
| <u><i>Pan troglodytes ssp. schweinfurthii</i></u> | Eastern Chimpanzee (E)            | <u>EN A2cd</u>  |
| <u><i>Panthera leo</i></u>                        | Lion (E)                          | <u>VU A1cd</u>  |
| <u><i>Pelomys hopkinsi</i></u>                    |                                   | <u>VU B1+2c</u> |
| <u><i>Pelomys isseli</i></u>                      |                                   | <u>VU B1+2c</u> |
| <u><i>Praomys jacksoni</i></u>                    |                                   | <u>DD</u>       |
| <u><i>Procolobus badius ssp. ellioti</i></u>      | Elliot's Red Colobus (E)          | <u>DD</u>       |
| <u><i>Redunca fulvorufula</i></u>                 | Mountain Reedbuck (E)             | <u>LR/cd</u>    |
| <u><i>Redunca fulvorufula ssp. chanleri</i></u>   | Chanler's Mountain Reedbuck (E)   | <u>LR/nt</u>    |
| <u><i>Redunca redunca</i></u>                     | Bohor Reedbuck (E)                | <u>LR/cd</u>    |
| <u><i>Rhabdomys pumilio</i></u>                   |                                   | <u>DD</u>       |
| <u><i>Ruwenzorisorex suncoides</i></u>            |                                   | <u>VU B1+2c</u> |
| <u><i>Syncerus caffer</i></u>                     | African Buffalo (E)               | <u>LR/cd</u>    |
| <u><i>Taurotragus derbianus</i></u>               | Giant Eland (E)                   | <u>LR/nt</u>    |

| Scientific Name                                 | Common Name (s)                 | Red List        |
|---|---------------------------------|-----------------|
| <u><i>Tragelaphus derbianus ssp. gigas</i></u>  | Eastern Giant Eland (E)         | <u>LR/nt</u>    |
| <u><i>Tragelaphus eurycerus</i></u>             | Bongo (E)                       | <u>LR/nt</u>    |
| <u><i>Tragelaphus eurycerus ssp. isaaci</i></u> | Eastern Bongo (E)               | <u>EN B1+2b</u> |
| <u><i>Tragelaphus imberbis</i></u>              | Lesser Kudu (E)                 | <u>LR/cd</u>    |
| <u><i>Tragelaphus oryx</i></u>                  | Common Eland (E)                | <u>LR/cd</u>    |
| <u><i>Tragelaphus spekii</i></u>                | Marshbuck (E)<br>Sitatunga (E)) | <u>LR/nt</u>    |
| <u><i>Tragelaphus strepsiceros</i></u>          | Greater Kudu (E)                | <u>LR/cd</u>    |

**Key To The Categories**

CR: Critically Endangered  
 EN: Endangered  
 VU: Vulnerable  
 LR: Lower Risk

LR: Lower Risk  
 cd: Conservation Dependent  
 nt: Near Threatened  
 lc: Least Concern  
 DD: Data Deficient

## ANNEX C

### Representative Plants with Indigenous Values And The Threats They Face

| Scientific Name                                    | Common Name                     | Use  | Habitat   | Threats   |
|--|---------------------------------|--|---|---|
| <i>Vitellaria paradoxa</i><br>(Tree)               | Shea butter tree                | The fruits are edible, consisting of a sweet pulp.<br>Shea kernels ('shea nuts') contain oil used as a butter or ghee substitute for cooking; also used as soap and candles.<br>Used as fodder, shade and as ornamental.   | Woodland  | Overexploitation for timber, firewood and charcoal production.<br>Habitat loss through agricultural encroachment and increasing population pressure.<br>Poor representation in protected areas although occasionally given protection or planted in farmed areas. |
| <i>Prunus africana</i><br>(Tree)                   | Red stinkwood (E)               | Stem bark is harvested for local medicinal use (to treat stomach ache and stomach diseases) and for export to international pharmaceutical companies.  | Medium Altitude Moist Evergreen forest  | Unsustainable exploitation of its bark.<br>Unsustainable exploitation of its wood.<br>Habitat loss.   |
| <i>Warburgia ugandensis</i><br>(Tree)              | Uganda greenwood or green heart | Resin used to fix tools in handles.<br>Fruit is edible.<br>Decoction of bark or leaves drunk to cure malaria.<br>Dried bark chewed as remedy for stomachache, constipation, coughs, fevers, toothaches, muscle pains, weak joints and general body pains.<br>Roots used in soup for prevention of diarrhoea<br>Used as mulch, shade or ornamental. | Lake Victoria forests, widespread in particularly on drier sites.                             | Habitat loss.   |
| <i>Rytigynia kigeziensis</i><br>(Shrub/small tree) |                                 | The bark is used to treat intestinal parasites (worms), and as parasite loads are high in the Bwindi area where the tree occurs, some people feel that they will die if they do not have access to this plant.<br>Small stem sizes used as bean stakes.  | Mid Altitude Moist Evergreen Forest (in Uganda it is known only from Kigezi, western Uganda). | Habitat loss<br>Poor methods of harvesting bark and other parts.  |

| Scientific Name                        | Common Name       | Use   | Habitat   | Threats  |
|--|-------------------|---|---|--|
| <i>Momordica foetida</i><br>(Climber)  |                   | Medicinal (decoction from leaves used to treat cough, fever and stomach-ache)<br>Infusion of crushed roots or leaves used to induce abortion.<br>Cultural use (during rituals to celebrate the birth of twins)<br>Fruits, young shoot and leaves are sometimes eaten. | Widespread, mainly in disturbed habitats and also as a weed on roadsides. | Habitat loss through agricultural encroachment and increasing population pressure. |
| <i>Mondia whytei</i><br>(Climber)      |                   | Tuberous roots used as medicine (allegedly have aphrodisiac properties).<br>Used as appetiser.<br>Roots used to make a Liqueur.   | Fairly widespread in Bunyoro, Busoga and central Uganda.                  | Habitat loss through agricultural encroachment and increasing population pressure. |
| <i>Rauvolfia vomitoria</i><br>(Tree)   |                   | Roots, bark and fruits used for medicine particularly to control hypertension.  | Forest edges and in young secondary forest.                               | Habitat loss through agricultural encroachment and increasing population pressure. |
| <i>Spathodea campanulata</i><br>(Tree) | Uganda flame tree | One of the most beautiful trees world wide. Used ornamentally as avenue trees and as shade.   | Widespread throughout except in Karamoja and other dry areas.             | Habitat loss through agricultural encroachment and increasing population pressure. |

## ANNEX D

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### Scope of Work

#### Environmental Threats and Opportunities Assessment (ETOA) Activity

##### Objective

The objective of this work is to deliver to USAID/Uganda a countrywide Environmental Threats and Opportunities Assessment (ETOA) that will inform the Environmental Annex of the USAID/Uganda Integrated Strategic Planning (ISP) process. This coordination effort will be carried out by the Contractor's short-term consultant(s) with experience in biodiversity assessment, inventory and analysis. Also, the consultant(s) will be familiar with the impacts of government policy on biodiversity conservation and natural resource condition. This ETOA will comply with sections 117 - 119 of the Foreign Assistance of 1961, Agency guidance on country strategy development, and USAID environmental procedures described in Title 22 CFR, Section 216.

##### Background

Environmental Requirements. The core environmental requirements of USAID operating unit strategic plans are spelled out in ADS 201.5.10g, and are derived from provisions of the Foreign Assistance Act (FAA).

- Environmental Sustainability. USAID/Uganda recognizes that protection of the environment and wise management of the natural resources base are absolute requirements of any successful development program. Section 117 of the FAA "*Environment and Natural Resources,*" dictates that operating units will implement their programs with an aim toward maintaining (and restoring) natural resources upon which economic growth depends, and to consider the impact of their activities on the environment. The legal requirements of the FAA are reflected in USAID's *ADS Chapter 204 "Environmental Procedures,*" which provides essential procedures and policy on the application of *22 CFR Part 216*. This regulation codifies the Agency's procedures "to ensure that environmental factors and values are integrated into the A.I.D. decision making process." Further, *22 CFR 216.5* requires USAID operating units to conduct their assistance programs in ways that are sensitive to the protection of endangered or threatened species and their critical habitats.
- Tropical Forestry and Biological Diversity. Sections 118 "*Tropical Forests*" and 119 "*Endangered Species*" of the FAA codify the more specific U.S. interests in forests and biological diversity. These two provisions require that all country plans include: 1) an analysis of the actions necessary in that country to conserve biological diversity and tropical forests; and 2) the extent to which current or proposed USAID actions meet those needs. Section 118/119 analyses are specific legal requirements of all USAID operating unit strategic plans.

Translating the intent of the above legal requirements into a practical strategic planning approach, the ADS provides a priority-setting framework for missions to use in determining environmental threats and opportunities (See 201.5.8; and Supplementary References, Joint Planning and Guidelines for Strategic Plans, and Technical Annex B Environment, dated February 1995). The priority-setting process is intended to guide the setting of environmental strategic objectives, as well as to inform strategic objectives in other sectors.

## **Development Setting**

Uganda boasts one of the most rich and diverse resource bases in Africa, with varied habitats including rift valleys, mountain ranges, and an extensive network of rivers and lakes. Uganda is home to abundant flora and fauna, including over half of the world's population of mountain gorillas. The country's rich natural resources provide the country with a valuable opportunity for sustainable economic growth through its agricultural and forestry sectors, as well as the growing ecotourism industry, all of which are dependent on a healthy ecosystem.

Although approximately 13% of Uganda's total land area is covered by its protected area (PA) system, the country's PAs are threatened by the encroachment of human settlements, human resource deficiencies within the PA management structure, and limited availability of information on the status of biodiversity. Areas outside of PAs also contain a wealth of biodiversity, and are endangered by unsustainable agricultural practices and poor definition and allocation of property rights. Developmental activities such as industrialization, trade, tourism and agriculture tend to impose externalities such as pollution on ecosystems, thereby disrupting the health of the system and decreasing biodiversity. The growth of resource-based industries is dependent on combating various threats to Uganda's natural resource sectors, all of which need to be addressed through the 117/119 biodiversity assessment process.

Institutionally, the Government of Uganda (GOU), as a result of the National Environment Action Plan (NEAP) process has generally improved the enabling environment for biodiversity conservation. However, problems of policy, and institutional and financing still remain. The policy, legal and institutional framework for sustainable conservation of biodiversity outside PAs is lacking, with many existing policies outdated or in need of supporting regulations. Inclusive of PAs, the National Environment Management Authority (NEMA) has been established as an institution with a mandate to supervise, monitor, and coordinate environmental issues. NEMA activities now need to be linked with those of other lead agencies, including the Uganda Wildlife Authority, the Forest Department, and the Ministry of Agriculture. Weaknesses in infrastructure, human resources, and information collection and management characterize most of these institutions, thereby weakening their ability to fulfill their respective roles in environmental management.

Theoretically, the GOU decentralization policy empowers local governments to manage their local environment; however, local level capacity is low and only a few of Uganda's 45 districts are currently receiving support in environmental management. District capacity and vertical linkages with NEMA therefore need to be strengthened if natural resource management and policy is going to generate the desired results. The participation of local communities, NGOs, and the private sector is also limited by the lack of sustainable funding mechanisms. Civil society provides the context for political and administrative decisions regarding natural resources, and

increased participation by civil society groups is required to maintain momentum gained to environmental management from the establishment of the NEAP and NEMA.

These and other issues need to be assessed to ensure compliance with 117 and 119 regulations, and the resulting information will aid the Mission in addressing natural resource issues appropriately in its strategy while ensuring compliance with the US Foreign Assistance Act.

### **Purpose and Objectives of the ETOA**

The tasks embodied in this SOW will advance USAID/Uganda's ISP by providing and ensuring:

- an overall assessment of the status and trends in key components of Uganda's biodiversity and tropical forest resources;
- an overall understanding of developmental threats (including existing and proposed policy initiatives as well as the legal and regulatory framework) to environment, biodiversity and tropical forests: and
- an understanding of actions that must be taken to maintain biodiversity, tropical forests and ensure sustainable environmental management given the documentation and analysis of threats.

The following activities are considered necessary for the Contractor to deliver a timely and high quality ETOA for incorporation in the USAID/Uganda ISP:

- a) Conduct pre-travel informational meetings and information gathering prior to travelling to the field. The contractor will hold meetings with Environmental Officers of the Africa and Global Bureaus in Washington who are knowledgeable of biodiversity conservation in Uganda. The contractor will also gather existing relevant background information on Uganda's natural resources base and begin identifying issues relevant to the ETOA.
- b) Upon arrival in-country, meet with USAID/Uganda to get a solid understanding of Mission program goals and objectives under its ISP; perspectives of this assignment and specific interests for the team, including advice and protocol on approaching USAID partners and host country organizations with respect to this assignment. The team will discuss organizations to be contacted and any planned site visits with the Mission and coordinate as required.

The Contractor shall produce Part 1 of the ETOA using information from Ugandan sources, such as the Makerere University Institute of Environment and Natural Resources (MUIENR), other relevant sources and the work product of an independent local consultant who is performing Part 2 of the ETOA under a separate contract.

The Contractor shall:

#### ETOA Part 1

- i) Document the state of key biodiversity components and natural resources by: a) quantifying trends in their management, biophysical condition, productivity, abundance and distribution and

b) identifying and analyzing the threats (e.g., degradation, depletion, pollution) to which they are subjected. The report will address:

- Major ecosystem types such as afro-alpine, forests, savanna, grassland, wetlands, rivers and lakes highlighting important, unique aspects of the country's biodiversity, including important endemic species;
  - Natural areas such as Protected Areas (national parks, wildlife reserves, forest reserves) of particular importance to biodiversity conservation, critical for species reproduction, feeding or migration;
  - Description of soil fertility, erosion and agricultural land use as related to biodiversity conservation and ecosystem stability and recovery;
  - Plant and animal species that are endangered or threatened with extinction. Endangered species of particular social, economic or environmental importance should be highlighted and described, as should their habitats;
  - Recent, current and potential future primary threats to biodiversity and tropical forests whether they are ecological (i.e. fire), related to human use (i.e. agriculture, contamination, energy exploitation/development for biomass and hydropower;), institutional (i.e. absent, inadequate or failed policy<sup>1</sup>, regulation or enforcement) or transboundary issues as appropriate; and
  - Conservation efforts including their scope and effectiveness. This should include recent, current and planned activities by donor organizations that support biodiversity conservation and identification of NGOs, universities and other local organizations involved in conservation.
- ii) Discuss the effectiveness of relevant GOU management authorities that supervise and govern the utilization, development and/or monitoring of environmental resources in terms of how they achieve environmental sustainability and mitigate negative development impacts, prevent degradation and/or achieve restoration of tropical forests and biodiversity; and
- iii) Recommend actions that must be taken in the country as a whole to protect/improve tropical forests and biodiversity.

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<sup>1</sup> There are several, mutually supporting GOU initiatives that must be studied and investigated for their environmental impacts to produce a creditable ETOA. These include: 1) National Environment Management Policy (1994); 2) National Environment Statute (1995); 3) National Environment Action Plan (1995); 4) Poverty Eradication Action Plan (July 2000) - the development "umbrella" noted earlier; 5) Plan for the Modernization of Agriculture (PMA, August 2000); 6) PMA Grant Study (February 2001); 7) Medium-term Competitive Strategy for the Private Sector (February 2000); 8) Local Government Act (1997) that provides the framework for decentralization; and 9) Poverty Action Fund (PAF) that establishes GOU investment priorities under the World Bank-Highly Indebted Poor Countries (HIPC-II) debt relief initiative.

## ETOA Part 2

iv) Liaise and share pertinent information with the Environmental Specialist consultant who is completing Part 2 this ETOA. That consultant is assessing: 1) the impacts of the Mission's individual SO programs on tropical forests and biodiversity and 2) potential opportunities for the SOs to support biodiversity conservation consistent with Mission program goals and objectives. If Part 2 is late or requires additional work, the Period of Performance and Delivery Schedule will be adjusted accordingly.

### **ETOA Final Report and ISP Annex**

v) Provide technical coordination for the synthesis of Parts 1 and 2 of the ETOA report, and produce the mandatory environmental annex for the ISP.

### **Deliverables**

- Workplan/schedule within three working days of start date.
- Oral debriefing upon delivery of preliminary report (24 April)
- One report containing the information described in Parts 1 and 2, plus synthesis that will serve as ISP environmental annex.
- One to two-page summary or overview on the status of biodiversity and conservation efforts in Uganda and implications for USAID or other donor programming and environmental monitoring which shall define the actions necessary for conservation. The summary will be based on the larger ETOA document. This overview may be included in the biodiversity section of the USAID/Uganda Strategy.
- The final report will be submitted on diskette (1) and hard copy (5) within 2 days of end date (30 April).

## ANNEX E

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## **ANNEX F**

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### Sections 117 and 119 of the Foreign Assistance Act

**Sec. 117.<sup>66</sup> Assistance for Disadvantaged South Africans.—**  
\* \* \* [Repealed—1993]

**Sec. 117.<sup>66</sup> Environment and Natural Resources.—**(a) The Congress finds that if current trends in the degradation of natural resources in developing countries continue, they will severely undermine the best efforts to meet basic human needs, to achieve sustained economic growth, and to prevent international tension and conflict. The Congress also finds that the world faces enormous, urgent, and complex problems, with respect to natural resources, which require new forms of cooperation between the United States and developing countries to prevent such problems from becoming unmanageable. It is, therefore, in the economic and security interests of the United States to provide leadership both in thoroughly reassessing policies relating to natural resources and the environment, and in cooperating extensively with developing countries in order to achieve environmentally sound development.

(b) In order to address the serious problems described in subsection (a), the President is authorized to furnish assistance under this part for developing and strengthening the capacity of developing countries to protect and manage their environment and natural resources. Special efforts shall be made to maintain and where possible to restore the land, vegetation, water, wildlife, and other resources upon which depend economic growth and human well-being, especially of the poor.

(c)(1) The President, in implementing programs and projects under this chapter and chapter 10 of this part,<sup>70</sup> shall take fully

<sup>66</sup> Formerly at 22 U.S.C. 2151a. Sec. 117 was repealed by sec. 4(a)(3)(B) of the South African Democratic Transition Support Act of 1993 (Public Law 103-149; 107 Stat. 1505). It had been added originally by sec. 201(b) of Public Law 99-440 (100 Stat. 1064). Sec. 117 provided assistance for disadvantaged South Africans through South African nongovernmental organizations, such as the Educational Opportunities Council, the South African Institute of Race Relations, READ, professional teachers' unions, the Outreach Program of the University of the Western Cape, the Funda Center in Soweto, SACHED, UTP Trust, TOPS, the Willemgruit Fellowship Center (WFC), and civic and other organizations working at the community level which did not receive funds from the Government of South Africa.

A previous version of sec. 117, "Infant Nutrition", was repealed in 1978.  
<sup>67</sup> 22 U.S.C. 2151p. Sec. 117 was redesignated from being sec. 118 by sec. 301(1) of Public Law 99-529, resulting in the creation of two sections 117. Sec. 301(2) of Public Law 99-529 (100 Stat. 3014) further deleted subsec. (d) of that section, which dealt with tropical forests, and then sec. 301(3) of Public Law 99-529 added a new section 118 entitled "Tropical Forests". This section, as added by sec. 113 of Public Law 95-98 (91 Stat. 537) and amended by sec. 110 of Public Law 95-424 (92 Stat. 948) and sec. 122 of Public Law 96-53 (93 Stat. 948), was further amended and restated by sec. 307 of the International Security and Development Cooperation Act of 1981 (Public Law 97-113; 95 Stat. 1533). This section previously read as follows:

"Sec. 118. Environment and Natural Resources.—(a) The President is authorized to furnish assistance under this part for developing and strengthening the capacity of less developed countries to protect and manage their environment and natural resources. Special efforts shall be made to maintain and where possible restore the land, vegetation, water, wildlife and other resources upon which depend economic growth and human well-being especially that of the poor.

(b) In carrying out programs under this chapter, the President shall take into consideration the environmental consequences of development actions."

See also sec. 534 of the Foreign Operations, Export Financing, and Related Programs Appropriations Act, 1990 (Public Law 101-167; 103 Stat. 1228), as amended, relating to "Global Warming Initiative".

See also sec. 533 of the Foreign Operations, Export Financing, and Related Programs Appropriations Act, 1991 (Public Law 101-513; 104 Stat. 2013), as amended, relating to "Environment and Global Warming".

See also sec. 532 of the Foreign Operations, Export Financing, and Related Programs Appropriations Act, 1993 (Public Law 102-591; 106 Stat. 1668), relating to "Environment".

<sup>70</sup> Sec. 582 of the Foreign Operations, Export Financing, and Related Programs Appropriations Act, 1991 (Public Law 101-513; 104 Stat. 2026), added a new chapter 10 to part 1 of this Act,

into account the impact of such programs and projects upon the environment and natural resources of developing countries. Subject to such procedures as the President considers appropriate, the President shall require all agencies and officials responsible for programs or projects under this chapter—

(A) to prepare and take fully into account an environmental impact statement for any program or project under this chapter significantly affecting the environment of the global commons outside the jurisdiction of any country, the environment of the United States, or other aspects of the environment which the President may specify; and

(B) to prepare and take fully into account an environmental assessment of any proposed program or project under this chapter significantly affecting the environment of any foreign country.

Such agencies and officials should, where appropriate, use local technical resources in preparing environmental impact statements and environmental assessments pursuant to this subsection.

(2) The President may establish exceptions from the requirements of this subsection for emergency conditions and for cases in which compliance with those requirements would be seriously detrimental to the foreign policy interests of the United States.

**Sec. 118.<sup>71</sup> 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

providing for long-term development in sub-Saharan Africa, and made a conforming amendment by inserting "and chapter 10 of this part" here.

<sup>71</sup> 22 U.S.C. 2151p-1. Sec. 118 was added by sec. 301(3) of Public Law 99-529 (100 Stat. 3014). See also footnote 69.

(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 and 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 or 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.

**Sec. 119.<sup>72</sup> Renewable and Unconventional Energy Technologies.** \* \* \* [Repealed—1980]

**Sec. 119.<sup>73</sup> Endangered Species.**—(a)<sup>74</sup> 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.

(b)<sup>75</sup> In order to preserve biological diversity, the President is authorized to furnish assistance under this part, notwithstanding section 660,<sup>76</sup> to assist countries in protecting and maintaining wildlife habitats and in developing sound wildlife management and

<sup>72</sup> Sec. 119, as added by Public Law 96-88 (91 Stat. 828), amended by sec. 111 of the International Development and Food Assistance Act of 1978 (92 Stat. 948), and by sec. 107 of the International Development Cooperation Act of 1979 (93 Stat. 362), was repealed by sec. 304(g) of the International Security and Development Cooperation Act of 1980 (Public Law 96-533; 94 Stat. 3147). See sec. 106 of this Act for text concerning energy technologies.

<sup>73</sup> 22 U.S.C. 2151c.

<sup>74</sup> 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).

<sup>75</sup> 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.

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.

**(c)<sup>76</sup> 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.

**(d)<sup>76</sup> 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)<sup>76</sup> 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)<sup>76</sup> 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)<sup>76</sup> 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

<sup>76</sup> Pars. (c) through (h) were added by sec. 302 of Public Law 99-529 (100 Stat. 3017).

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) <sup>7c</sup> 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.