Biodiversity Assessment for Georgia

Task Order under the Biodiversity & Sustainable Forestry IQC (BIOFOR)

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TABLE OF CONTENTS

SECTION I

Introduction

This biodiversity assessment for the Republic of Georgia has three interlinked objectives:

- Summarizes the status of biodiversity and its conservation in Georgia; analyzes threats, identifies opportunities, and makes recommendations for the improved conservation of biodiversity. This information will help USAID/Georgia, and other organizations and individuals, as appropriate, make decisions related to biodiversity conservation.

- Meets the requirements stipulated under Section 119.d (2) of the Foreign Assistance Act (see Annex A, FAA Sections 117 and 119), required when USAID missions are developing new strategic programs. The assessment also prepares the Mission to address issues arising under Sections 117 and 119 of the FAA, by providing information on biodiversity and natural resources in Georgia.

- Analyzes the impact of current and future USAID activities in Georgia on biodiversity conservation, suggests actions that USAID could support that support biodiversity conservation in Georgia and are consistent with current and future USAID programs, and identifies special opportunities for the Mission in the area of biodiversity conservation.

The assessment was funded by USAID's Bureau of Europe and the New Independent States under a contract to Chemonics International through the Biodiversity and Sustainable Forestry (BIOFOR) IQC (see Annex B, Scope of Work). A two-person team consisting of Spike Millington and Ramaz Gokhelashvili visited Georgia from November 19 to December 8, 1999.

The approach used in the assessment was to collect and analyze information on biodiversity and related areas through documentation searches, interviews with key individuals and organizations concerned with biodiversity, both in Georgia and Washington DC (see Annex C, List of Persons Contacted), and field trips. Because of the short time in Georgia, the team was only able to carry out two field trips outside of Tbilisi. These were to the semi-arid zone of southern Georgia, around Gareji, and to the central Greater Caucasus mountains around Kazbegi.

Rather than duplicating research already undertaken and presented in strategy and project documents, this assessment has borrowed freely from these documents, and synthesized and adapted information where appropriate.

SECTION II

Status of Biodiversity

A. Overview

The Caucasus region has been identified by the World Wide Fund for Nature as a Global 200 Ecoregion, based on selection criteria such as species richness, levels of endemism, taxonomic uniqueness, unusual evolutionary phenomena, and global rarity of major habitat types. Moreover, Conservation International has identified the region as a global "hotspot"—that is, one of the 25 most biologically rich and *most endangered* terrestrial ecosystems in the world.[1] These hotspots have been identified based on three criteria: the number of species present, the number of those species found exclusively in an ecosystem and the degree of threat they face. The Caucasus region is an Endemic Bird Area, with several bird species and subspecies endemic to the region.

Georgia, a mountainous country covering 70,000 km^2 with a population of 5.5 million people, is situated between the south slope of the Caucasus Mountains, the east coast of the Black Sea, and the northern edge of the Turkish Anatolia plain. Forests cover 40 percent of the country (2.8 million ha), largely in the Greater Caucasus Mountains (Georgia's northern border), the Lesser Caucasus (its southern border), and in intervening lowlands and foothills. The principal landscapes of the Caucasus include foothill and mountain forests and subalpine meadows of the Greater and Lesser Caucasus, treeless mountain upland plateaus of the Lesser Caucasus, humid lowland forests of western Georgia, and the arid steppe and deserts of eastern Georgia.

Located at a biogeographical crossroads where the flora and fauna of at least three biogeographic provinces converge, Georgia has high levels of biodiversity. In this region are found species typical of Europe (e.g., bear, lynx, chamois, red deer), Central Asia (e.g., Caucasian tur or mountain goat, leopard), and the Middle East regions (e.g., striped hyena, Persian gazelle); many of these species are threatened elsewhere in their ranges. The varied terrain and climatic conditions contribute to a diversity of ecosystems and species. The Georgian forests of the Caucasus Mountains contain more than 200 plant community associations, and 120 species of tree, 250 bushes, and 4,500 species of vascular plants. Among vascular plants, 9 percent are endemic to Georgia and 14 percent are endemic to the Caucasus region. There are 572 vertebrate species (348 species of birds, 95 mammals, 52 reptiles, 13 amphibians, and 64 fishes). The diverse and threatened large mammal fauna includes three species of wild goats, chamois, red and roe deer, and their predators, including wolf, lynx, wild cats, and possibly leopard. Some of these species (e.g., wild goats, deer, and wolf) undertake large-scale annual movements, increasing their susceptibility to habitat loss, degradation, and fragmentation, overhunting, and competition with domestic livestock for forage.

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[1] 1) Tropical Andes; 2) Mediterranean Basin; 3) Madagascar/Indian Ocean Islands; 4) Mesoamerica; 5) Caribbean Islands; 6) Indo-Burma; 7) Atlantic Forest of Brazil; 8) Philippines; 9) Cape Floristic Region of South Africa; 10) Mountains of South Central China; 11) Sundaland; 12) Brazilian Cerrado; 13) Southwest Australia; 14) Polynesia and Micronesia; 15) New Caledonia; 16) Choco/Darien/Western Ecuador; 17) Western Ghats & Sri Lanka; 18) California Floristic Province; 19) Succulent Karoo; 20) New Zealand; 21) Central Chile; 22) Guinean Forests of West Africa; **23) Caucasus;** 24) Eastern Arc Mountains, Coastal Forests of Kenya and Tanzania; 25) Wallacea.

Georgia also possesses rich agricultural biodiversity that is gradually being replaced by more cosmopolitan varieties. The list of Georgian plant genetic resources includes varieties and subspecies, some endemic to the Caucasus region, which are close relatives of domestic food plants. The Caucasus region also harbors several wild close relatives of domestic food plants such as wild rye, wheat, barley, millet, wild pears, cherry, and more than 200 varieties of grapes as well as at least nine important domestic animal breeds.

B. Main Landscape Zones

Georgia's ecosystems include alpine and subalpine meadows, lowland steppe grasslands, coastal, mountain and inland wetlands, coniferous and beech forests, oak woodlands and mixed deciduous forests, wetland forests, arid light woodlands, riparian shrub, and forest vegetation along rivers. The landscape zones of Georgia are shown in Annex E.

Considerable differences between the climates of western and eastern Georgia have led to significant differences in ecosystems and vegetation types. Semi-arid and arid woodlands do not exist in western Georgia. There are four main altitudinal zones in western Georgia: forests (up to 1,900 m), subalpine (1,900 to 2,500 m); alpine (2,500 to 3,100) and nival (> 3,100). In contrast, there are six zones in Eastern Georgia: semi-desert; dry grassland (steppes) and arid woodland (150 to 600 m); forest (600 to 1,900 m); subalpine (1,900 to 2,500 m) alpine (2,500 to 3,000 m); sub-nival (3,000 to 3,500 m) and nival (> 3,500). In mountain forests and alpine zones, treeless formations of semi-arid ecosystems are also found.

Semi-desert habitats are restricted to the extreme southeast of Georgia and are dominated by wormwood *Artemisia fragrans*, either alone or associated with saltwort (*Salsola sppi*), or *Bothriochloa*. Pockets of more typical desert vegetation also occur in this area.

Steppe vegetation occurs the lowlands and foothills around 300 to 700 m and is largely the result of human influence on woodland and shrub habitats. The dominant species are grasses (*Bothriochloa spp*). Rich floristic communities have developed in the *Bothriochloa ischaemum/Glycyrrhiza glabra* steppes of the lowlands. On the foothill slopes, *Bothriochloa ephemerosa* is mixed with other grasses such as *Festuca sulcata* and *Stipa spp*. Thorny shrubs, notably Christ's Thorn (*Paliurus spina-christii*), are typical. Mountain steppes are found between 1,800 to 2,500 m, and *Stipa spp* and *Festuca spp* are dominant. Meadows are often formed, with a tall, rich herbaceous component.

Semi-arid woodlands occur on the plains and foothills of East Georgia. Communities are of three main types:

- Pistachio (*Pistachia mutica*) woodlands, with quite a rich understorey of shrubs and grasses
- Juniper (*Juniperus spp*) woodlands in mountainous areas
- Open woodlands dominated by species of *Pyrus* and *Celtis*

Lowland forests. Alder (*Alnus barbata*) forests are characteristic of swampy regions of the lowlands and are floristically rich. Riparian forest, with wing-nut (*Pterocrya pterocarpa*), lowland oaks (e.g., *Quercus imeretina*) and white poplars (*Populus alba*) are found along river banks or in floodplain areas. Their extent has been much reduced because of their accessibility. A unique area of relic *Carpinus orientalis-Zelkova carpinifolia* forest exists in East Georgia between the Alzani and Stori rivers. A characteristic community of the Black Sea coast is the tall *Pinus pityusa* forests, sometimes mixed with broadleaved species.

Particularly interesting are the endemic mixed broad-leaved forests of western Georgia that have developed in areas of high rainfall (2,500 mm/yr). These are very rich floristically and contain many rare and relic species and communities from the Tertiary period. A rich understorey and the presence of many vines and ferns characterize these threatened rainforests. Many of these forests have been cleared for agricultural crops such as tea, citrus, and tobacco. This has been accompanied by the spread of aggressive weed species, often non-native.

Mountain forests. Forests cover almost 40 percent of Georgia's territory, but are unevenly distributed and include areas with low tree cover.

In western Georgia, lowland forests give way on southern slopes to oak/hornbeam forests dominated by Georgian oak (*Quercus iberica*), *Q. hartwissiana* and hornbeam (*Carpinus caucasica*). At 600 to 700 m, beech (*Fagus orientalis*) forests appear, mixed with Caucasian fir (*Abies nordmanniana*). Forests of Caucasian spruce (*Picea orientalis*) and fir occur at 1,200 to 1,300 m, with subalpine forests of spruce and birch (*Betula medwedewii*). On the northern slopes, the oak forest is replaced by hornbeam and sweet chestnut (*Castanea sativa*), with beech forests dominating at higher altitudes. In some areas (Svaneti), beech forests begin to dominate at 600 m, with an understorey of *Rhododendrum ponticum*. Fir trees appear with the beech trees at 1,300 m, and *Acer trautvetteri* becomes dominant in the subalpine zone.

In eastern Georgia, semi-desert and steppe areas are replaced by forests of Georgian oak and hornbeam (*Carpinus orientalis*) on southern slopes. There is a narrow band of beech-hornbeam forest around 1,300 m, with forests of broad-leaved oak (*Q. macranthera*) at higher altitudes. On northern slopes, beech forests occupy extensive areas from 600 to1800 m above the Georgian oak/hornbeam forests. The maple (*Acer trautvetteri*) is also found in these beech forests, which are replaced at higher altitudes by birch forests, and finally by Rhododendron scrub above tree level. The high-altitude beech and birch forests are often characterized by their "crookstem" appearance.

Subalpine zone (1,900 to 2,500 m). Near the timberline, straight trunk forests reach their climatic limit and are replaced by low ("elfin") forests of spruce, pine, fir, and beech in relatively dry and sunny areas, and by crookstem forests in moister areas, typically birch (*Betula litwinowii*), service tree (*Sorbus aucuparia*) and beech. All these forests are very diverse and floristically rich, including the regionally endemic birch species (*Betula medwedewii* and *B. megrelica*), and Pontic oak (*Quercus megrelica*).

Under certain conditions, a tall herbaceous vegetation, including several species of *Aconitum*, *Cicerbita*, *Delphinium*, *Heracleum* and *Senecio* occurs in the subalpine zone. This is unique

among mountain ecosystems, including the Alps, Himalayas, and Pamir ranges. More typically, the vegetation of the subalpine zone consists of grass and grass/forb meadows. Dominant species are *Calamagrostris arundinacea, Poa longifolia* and *Festuca varia*.

Alpine zone (2,500 to 3,000 m). This zone is characterized by the dominance of short-grass meadows, the so-called "carpet-like" alpine meadows, alternating with thickets of *Rhododendron caucasicum* and rock scree vegetation. Above the alpine zone, in the sub-nival zone, environmental conditions are extreme. Nevertheless, more than 300 plant species occur here, with more than 100 of those being characteristic of the zone, mostly associated with rock and talus substrates.

Wetlands are represented primarily by the swamp forests and bogs of the western Georgia lowlands. Peat bogs are characteristic of the Kholketi lowlands, but are also found at higher altitudes. In the lowlands, such bogs contain a number of relic and endemic plant species. Lakes and marshes, typically with reeds *Phragmites* and cattail *Typha* are found in the lowlands and along river valleys.

C. Species Diversity

Table 1. Number of Vascular Plants and Vertebrate Species in Georgia and Number of Listed Species in the Red Book of Georgia and the IUCN International Red List

Group	Total No.	No. in Georgian Red Book	No. in IUCN Red List
Fish (freshwater)	84	1	18
Amphibians	13	4	3
Reptiles	53	6	11
Birds	360	33	17
Mammals	95	19	31
Vascular Plants	4, 500	150	48
Total			**6**

Individual details of Red Data Book species can be found in Annex D.

C1. Flora

The flora of Georgia contains between 4,200 and 4,500 species of vascular plants. Of these, 9 percent are endemic to Georgia and 14 percent are endemic to the Caucasus. This is a high proportion compared with other, larger countries of Europe and Asia. There are a number of unique and representative plant communities and ecosystems of high biodiversity importance. More than 2,000 species are of direct economic importance, for timber, edible fruits and nuts, forage and fodder, medicine, industry and essential oil production. In addition, there are many rare and traditional cultivars and wild relatives of cultivated species. Ten species of vascular plants are known to have become extinct in Georgia. In addition, 50 are critically endangered, 300 are classified as rare, and 140 have undergone significant decline.

For Georgia's forests, the following species are dominant: Eastern beech, 1,164,000 ha (42 percent); hornbeam, 298,000 ha, (11.8 percent); oak, 281,000 ha, (11.2 percent); alder, 200,000 ha, (7.2 percent); sweet chestnut, 105,000 ha, (3.8 percent); coniferous species, (fir, spruce, and pine), 455,000 ha, (17.4 percent).

Lammergeier *(Gypaetus barbatus)*

Twenty-two (22) percent of Georgia's forests are found at altitudes from 0 to 500 m, 24 percent from 500 to 1,000 m, 17 percent from 1,000 to 1,500 m, 17 percent from 1,500 to 2,000 m, and 20 percent above 2,000 m.

Most forests of the country are on the slopes of Great and Lesser Caucasus. Four percent of the forest area is on slopes from 0 to 10 ^{o}, 16 percent on 11 to 20 ^{o}, 17 percent on 21 to 25 ^{o}, 19 percent on 26 to 30^{o}, 20 percent on s 31 to 35 ^{o}, and 24 percent on slopes steeper than 35 ^{o}.

Broadleaved forests characterize Georgian forests (80 percent of the area and 69 percent of the volume). Beech (*Fagus orientalis*) is the dominant species, occupying 50 percent of the forested area. The second species group in terms of area coverage (10 percent) are the oaks *(Querqus iberica, Q. cerris, Q. suber)* followed by firs (9 percent), primarily *Abies nordmanniana.* Other important species are hornbeam *(Carpinus spp.),* spruce *(Picea orientalis),* pine *(Pinus nigra, P. pinaster, P. silvestris),* Birch *(Betula spp.),* Chestnut *(Castanea sativa)* and alder (*Alnus spp*.).

Relic and endemic species are widely distributed in Georgian forests, among them yew *(Taxus baccata),* Bichvinta Silver fir *(Pinus pithycesa), Pterocaria fraxinifolia,* Georgian hazelnut *(Corylus iberica),* Imeretian oak *(Quercus imeretina), Zelkova carpinifolia, Pistacea mutica,* Georgian maple *(Acer iberica)* etc. In total, 1,000 plant species are considered endemic. Of more than 400 species of trees, 60 naturally occur only in Georgia and another 43 only in the Caucasus region.

C2. Fauna

The fauna of Georgia consists of species characteristic not only of Georgia and the Caucasus, but also of their areas of origin, such as southwestern Asia and the Middle East/east Mediterranean regions. The following table indicates the number of species falling broadly into these different levels of country and regional endemism.

Table 2. Number of Species of Georgian Animals Exhibiting Different Categories of Endemism
(*1, endemic of Georgia; 2, endemic of Caucasus; 3, endemic of southwestern Asia; 4, East-Mediterranean species)*

Taxon	Total	1	2	3	4
Fishes (freshwater)	84	4	11	6	1
Amphibians	13	0	3	4	2
Reptiles	53	0	13	8	11
Birds	360	0	2	0	0
Mammals	95	0	18	11	5

C2a. Invertebrates

Five hundred (500) representatives of butterflies and moths (*Macrolepidoptera*) have been described in Georgia, nearly a third of them endemic or relic species. Seven species of the family *Papilionidae* (swallowtails) occur in the country, including two endemics. Sixty-five (65) insect species from Georgia were included in the most recent Red Data book of the Soviet Union.

C2b. Vertebrates

Freshwater fish. Throughout Georgia there are 84 species of freshwater fish. Twenty-nine species are found in the basin of the Caspian Sea, of which 11 are also found in Black Sea basins. Twelve (12) of the native species are found only in the basin of the Mtkvari river, and 9 of these are endemic to this river and its tributaries. There are also 9 introduced fish species. Throughout the basin of the Black Sea, there are 66 species of fish, including 2 introduced species. Six are endemic to the Kolkheti region, including the economically important *Varicorhinus spp*. The conservation status of most Georgian fish is not known. *Acipenser sturio* (sturgeon) and *Salmo trutta labrax* (salmon) were included in the Soviet Red Data book. Other sturgeon and trout species are also likely to be under threat. The status of the endemic species of the river Mtkvari and of Kolkheti needs further study.

Amphibians. Four species of newts and nine species of frogs and toads are found in Georgia. One species is endemic to Georgia and two to the Caucasus. Recently, the range of *Pelobates syriacus* has declined alarmingly, and that of *Triturus vittatus ophryticus* is also decreasing.

Reptiles. Fifty-three (53) reptile species occur throughout Georgia, consisting of 3 tortoises, 27 lizards and 23 snakes. Of these, 3 snakes and 12 lizards are endemic to the Caucasus. Six reptiles are included in the Georgian Red Data book. Seven reptiles having the largest part of their range in Georgia are vulnerable. The ranges of *Vipera lebetina*, *Eumeces schneider* and *Eryx jaculus* have been declining for the past 10 years.

Birds. Three-hundred-and-sixty (360) bird species have been recorded in Georgia. Because of their mobility, there is a lower level of endemism among birds compared to other groups. Caucasian snowcock (*Tetraogallus caucasicus*) and Caucasian black grouse (*Tetrao mlokosiewiczi*) are alpine species endemic to the Caucasus. Disjunct populations of great rosefinch (*Carpodacus rubicilla*) and Guldenstadt's redstart (*Phoenicurus erythrogaster*) occur in the Caucasus, where they breed at high altitudes, but winter in alpine valleys. Here they appear to be dependent on thickets of berry-bearing shrub, *Hippophae rhamnoides*, which are threatened with overcutting by local shepherds. Some 100 species are migratory and appear in the country on passage or during the winter. Many species are dependent on wetland habitats, which are under severe threat in Georgia and the region. Birds of prey, including vultures, are well represented in Georgia, which is also an important migratory pathway. The smaller species of hawks are regularly trapped in the migration period. Seventeen (17) bird species are globally threatened and included in the IUCN Red Data list.

Mammals. There are 68 species of small mammals in Georgia. Nineteen (19) of these species are endemics. Fifteen (15) of them have not had their conservation status evaluated, and for about 30 further species there is not enough information to assign them to a category. Seven species are endangered and five are vulnerable, with 20 classified as being out of danger. Large mammals include 27 species of carnivores and ungulates. Up to the beginning of this century, these species were widely distributed across the country. For example, the ranges of the Asian leopard (*Panthera pardus*), lynx (*Felis lynx*), and wolf (*Canis lupus*) covered practically the whole country. The striped hyena (*Hyaena hyaena*) was common in all arid zones of the country. In the Black Sea, three species of dolphins and porpoises are found.

C3. Agrobiodiversity

Agriculture in Georgia can be traced back to the 5/6th millennium B.C., when Kartvelian (Georgian) tribes began to domesticate basic crops such as wheat, barley, oat, rye, and grain legumes (pea, chickpea, lentil, fava bean), as well as fruit species (plum, cherry, quince, grape) and other crops.

Having first developed the concept of centers of crop plant biodiversity in 1926, the Russian agricultural scientist Vavilov described Georgia as being part of a Southeast Asian Center of Agrobiodiversity (containing the Caucasian Center, the Near Eastern Center and the Northern Indian Center). More recent studies have placed Georgia in an enlarged Near Eastern Center, which includes the Fertile Crescent, the Caucasus, and all of Turkey. It is important to note that whichever center description is used, the different authors all agree that Georgia, with 23 soil-climatic zones in only 70,000 km^2, possesses a unique plant diversity and a species composition that significantly differs from that of its southern neighbor Armenia.


Caucasian tur *(Capra cylindricornis)*

Indeed, Georgia has a very rich flora of crop plants, both in terms of number of crop species (about 100 families and 350 local species of grain-crops) as well as in terms of intraspecific

variability. There are numerous endemic cultivated taxa, such as *Triticum karamyshcevii, Pisum sativum, Staphylea colchica, Triticum carthlicum, Vicia faba, Triticum timophevii, Staphylea pinata, Vitex agnus-castus, Trieicum macha,* and *Trieicum zhukovskyi*.

The variability within crop species is significant and well documented for some indigenous varieties (*Triticum aestivus, Vitis vinifera,* etc.) as well as for introduced species (*Phaseolus vulgaris, Glycine max, Zea mays*, etc). As far as the latter is concerned, Georgia is a secondary center of diversity. For instance, the garden bean (*P. vulgaris*), introduced in the second half of the 16th century, shows a striking variability in growth form, leaf shape and size, flower coloration, color and structure of pod, as well as in time of maturity. For example, 48 seed variants have been detected in the East Georgian province of Kakhetia.

Georgia's rich agrobiodiversity is threatened by the introduction of cultivars of a few popular species, and by the erosion of traditional knowledge and practices for conserving agrobiodiversity.

There is also a rich diversity of fruit trees. This group of plants is composed of more than 100 species of seed and stone fruit trees, nuts, and wild berries. Among others of particular importance, the group includes *Amyygdalus communis, Cerasus mahaleb, M. pumila, Pyrus communis*, and *Cydonia oblonga*. Of an estimated 500 local varieties of grapes, only 300 still exist in seed or live collections in scientific research institutes and peasant farms.

C4. Threats to Biodiversity

Habitat loss and fragmentation. While relatively large areas of natural habitat remain, significant declines in available habitat threaten the persistence of some of Georgia's most distinctive biodiversity. Deforestation and habitat fragmentation, caused primarily by subsistence needs for agricultural and pastoral lands and fuelwood, is a growing problem throughout the Caucasus. Easily accessible forests, such as those that occur in mountain river valleys and riparian forests, have been the hardest hit. Forests of the Mtkvari valley, dominated by *Quercus pedunculifolia* and *Ulmus carpinifolia* with a mixture of *Celtis caucasicum,* have been almost completely destroyed over the last 35 years. The conversion of alder (*Alnus barbata*) forests to agricultural land has depleted riverine forests, especially in the Trialeti and Meskheti ridges of the Lesser Caucasus.

In addition, wetland habitats have suffered from drainage for agricultural and urban development, as well as peat extraction and gravel mining. In Kolkheti, relic species such as *Hibiscus ponticus* and sundews (*Drosera spp.*) are threatened by wetland degradation. In addition to their unique plant and animal communities, wetlands provide critical habitat for migratory and wintering birds.

The presence of exotic invasive species of plants is also a concern, particularly in the lowland areas of west Georgia, where they compete with native plant communities and threaten ecologically fragile and sensitive habitats.

Unsustainable forest practices. During the Soviet era, forests were managed principally for protection and recreation, with timber and timber products being imported from Russia. Since independence in 1991, Georgia's forests have been particularly hard hit due to poor management,

with widespread illegal harvesting of timber and uncontrolled fuelwood exploitation, the latter driven by the acute energy crisis during the winter months.

Unsustainable livestock practices. The rangelands (alpine meadows and lowland steppe communities) of the Eastern Caucasus have been overgrazed by sheep (see box on next page). Unsustainable range management, mainly by overstocking, has been intensified by the repopulation of high mountain villages, starting in the late 1980s. Currently, more than 250,000 sheep are herded seasonally between the alpine pastures at Tusheti (4000 m. elevation) and summer steppe pastures on the Iori floodplain (200 m). In subalpine meadows, overgrazing and associated disturbance is contributing to declines in Caucasian goat (*Capra cylindricornis*) and chamois (*Rupicapra rupicapra*). In the lowland grasslands of southeastern Georgia, where the same domestic sheep move to winter pasture, severe overgrazing is significantly impacting the endemic flora and fauna of steppe communities. Such competition for grazing contributed importantly to the extirpation of Persian gazelle (*Gazella subgutturosa*) from Georgia and, indirectly, the striped hyaena (*Hyaena hyaena*).

Traditionally sheep were grazed on alpine meadows. Subalpine meadows were reserved for fodder production, to be used during the winter months. Because of the changed security and political situation, traditional grazing grounds in the north Caucasus are no longer accessible, and livestock is kept nearer to villages all the year round, resulting in overgrazing of the subalpine meadows, as well as degradation of fragile subalpine woodland ecosystems.

Illegal hunting and harvesting. Censuses have revealed dramatic declines in the numbers of carnivores and ungulates over the last 10 years. The causes include overhunting and habitat loss, although a better understanding of the biological and social dimensions of these causes is needed. Census data for five key species indicate the seriousness of the problems. The Caucasian tur (*Capra caucasica*), a mountain goat endemic to the Caucasus region, has declined by one-half between 1985 and 1994, to about 2,800 individuals. The bezoar (*Capra aegagrus*), a wild relative of the domestic goat, is nearing extirpation from Georgia and today numbers fewer than 100 individuals in the Lesser Caucasus. Chamois (*Rupicapra rupicapra*) have declined from an estimated 6,000 individuals in 1985 to about 1,000 individuals. Red deer (*Cervus elaphus*) have declined three-fold in the census areas and the entire Georgian population may be less than 1,500 individuals. Lynx (*Lynx lynx*) numbered 500 or more in 1990; today the Georgian population is estimated at about 160 individuals. Brown bears and wolves have also experienced significant declines.

Poaching is not only affecting large mammals, but plants as well. WWF's wildlife trade monitoring arm, TRAFFIC, recently reported an upsurge of harvesting of rare flowering plant bulbs in Georgia. In 1994, 515,000 bulbs of the snowdrop *Galanthus ikeriae*, a species listed on Appendix II of the Convention on Trade in Endangered Flora and Fauna (CITES), were exported by Turkish traders to markets in Western Europe. Other species affected by the trade include wild cyclamens (*Cyclamen spp*.) and snowflakes (*Leucojum spp*.)

Decline of Traditional Grazing Practices (From GEF PDF for Arid Zone Project)

The abandonment of traditional land use methods has resulted in severe erosion of arid and semi-arid ecosystems. Historical records show that before the Soviet revolution, communities had been applying a sustainable and ingenious system of rotation for centuries. Shepherds had a strategy of seasonal and "year-to-year" pasture utilization. Shepherds involved in the livestock migration cycle associated in informal cooperative subgroups. Each subgroup received two plots of arid land for a period of 10 to 15 years to utilize as pastures. At the same time, special attention was paid to the types of land plots. All pastures consisted of two different zones: hills and plains. At the beginning of the fall season, each subgroup first occupied the hilly areas of one of their two land plots. In winter they would bring their herds down to the plain areas in a seasonal utilization pattern. The "year-to-year" utilization scheme resulted in one plot of their pasture remaining untouched throughout the whole year. In the following year, the same seasonal utilization method was repeated in the area that was ungrazed the previous year. In addition, there was a full rotation of plots among shepherds each 10 to15 years. A system of mutual enforcement was possible due to the size of the groups, social links among their members, and the size of the plots.

The implementation of the Soviet economic system caused the abandonment of the traditional and sustainable pasture management techniques once widely used in the Caucasus. The new regime abolished the private sector, created collective farms, and promoted unselective and intensive utilization of winter pastures. This eliminated the foundations of a traditional system whose main principle was not one of maximization at all. The abolishment of the concept of private and communal use of land eroded the mechanisms that had successfully internalized the costs of erosion into the shepherds' decision-making.

The adoption of a market economy and the subsequent recognition of private and communal property rights have not resulted in the adoption by the population of the old rotation system. This is hardly surprising. There are knowledge barriers and significant transaction costs for any shepherd or community willing to take the lead and put the old system back in place again. Even today, the majority of the Georgian part of the arid and semi-arid zone still is state property with unclear land use rights.

Pollution of the Black Sea. In the last 30 years, Black Sea ecosystems have been severely damaged through a combination of high nutrient runoff from agricultural inputs, industrial and municipal pollution, and overexploitation of fish stocks. The accidental introduction of the exotic and invasive jellyfish species *Mnemiopsis leidyi* led to an explosive increase in this species, which feeds on plankton and fish larvae. In addition Black Sea coastal and littoral wetland ecosystems have been degraded through poorly planned infrastructure and management. As a result, the six Black Sea states signed and ratified the Convention for the Protection of the Black Sea against Pollution in 1992, leading to the development of the Black Sea Environmental Program in 1993.

The recognition of these threats to biodiversity in Georgia have led to a series of major projects intended to address the issues and reduce the threats (see Section IV D).

SECTION III

Status of Biodiversity Conservation

A. Protected Areas

In 1990, the government of Georgia, with support from the WWF-International, began a process of planning for a major reorganization of the protected areas system in anticipation of a broad-based privatization of state lands. The traditional protectionist model of strict nature reserves ("zapovedniks") was considered inflexible and inadequate and the development of alternative models became a pressing need. As a result, 20 nature reserves are currently being transformed into 9 broad protected area landscapes (see Annex F). These landscapes will contain a variety of types of protected area, with different management regimes, in accordance with the 1996 Law on Protected Areas. This law recognizes internationally applied categories of protected areas ranging from strict protection to multiple-use areas. This consolidation is considered to offer a more viable option for long-term conservation of critical habitats and species.

In 1997, President Shevardnadze declared a goal of 20 percent of Georgian territory under some form of protected area. It is anticipated that "traditional" protected areas (nature reserves, national parks, natural monuments, managed nature reserves) will cover 10 percent of the territory of Georgia, with protection and sustainable development areas (protected landscapes, multiple use protected areas) extending coverage to 20 percent of the country's territory. The process initiated by the Georgian Government and WWF found much-needed support from other international organizations (e.g., the World Bank and UNDP, and others), which helped to produce management plans for the majority of the nine areas. In particular, the World Bank/GEF initiative aimed at the conservation of forest ecosystems in Georgia is of special importance. A key component of the project is to help the Government implement some of the previously mentioned protected area management plans.

Under Soviet legislation, 14 nature reserves and 5 state forest hunting reserves were established in Georgia. Strictly protected areas covered 2.4 percent of the country's territory and protected areas with multiple use regimes covered 0.8 percent. Nature reserves and forest hunting reserves are managed by local administrations and controlled at the national level by the Department of Protected Areas, Nature Reserves & Hunting (DPA).

The first national park for Georgia, Borjomi-Kharagauli National Park, was designated and established in 1995 by a decision of the Cabinet of Ministers. An interdisciplinary team of experts, in cooperation with the Ministry of Environment, the Department of Protected Areas (DPA) and the Department of Foresty, elaborated the management plan for Borjomi-Kharagauli National Park. This has been supported by WWF and assisted by local populations. The plan integrates six-year programs aimed at the development of the Borjomi State Nature Reserve, establishment of a national park (50,400 ha), and stimulation of sustainable development of the region (support zone). It includes protection, research and monitoring, administration, integrated development, and support zone programs. The implementation of these programs will be supported with the aid of donor organizations, particularly KFW and other German partners.

Similar comprehensive management plans were elaborated with the support of WWF for the Eastern Caucasus and Iori Plateau regions. With the participation of the World Bank and GEF, management guidelines for Kolkheti Wetlands, considered wetlands of international importance, have been developed under the ICZM project, which has a primary focus on sustainable management of the region. The project includes the designation and establishment of Kolkheti National Park.

A map indicating the location and extent of existing and planned protected areas is presented in Annex F and a list of protected areas in Annex G.

B. Conservation Outside Protected Areas

Even a well-designed and integrated protected area system will be insufficient to ensure the conservation of all important species and habitats. Seasonally migratory animals (migratory birds, bats, etc.), or species that normally range over large distances (birds and most large mammals) will be among those. Many endemic species of plants may also remain outside protected areas. Therefore, other conservation tools will be necessary to ensure the protection of biodiversity throughout the country.

B1. Ex-situ Conservation

In terms of *ex-situ* conservation, plants have received more attention in Georgia than animals, with four established botanical gardens and systematically enriched herbaria in the country. Botanical gardens are important for species conservation and plant propagation, as well as research and education. The Institute of Botany has a partnership with Missouri Botanical Gardens, but would benefit from improved infrastructure, both for research and education, as well as improved international cooperation (for example through the IUCN Botanic Gardens Conservation Secretariat). Special attention needs to be paid to rare, endemic, and relic species, as well as those of economic, including medicinal importance.

It is also recommended that small agro-botanic gardens be developed in various regions of Georgia, where special attention will be paid to varieties native and economically important to particular areas. In this regard, it may be appropriate to restore the tradition of school gardens, which will also have educational purposes.

Only two institutions could be called *ex-situ* conservation centers for animals. These are Tbilisi Zoo and the Batumi Dolphinarium. However, no actual conservation activities have been carried out in either place. The Batumi Dolphinarium is no longer operational. Most animals at the Tbilisi Zoo belong to native species, but are represented by single individuals. Tbilisi Zoo has no facilities for conservation activities.

B2. Hunting

Hunting is regulated under the Law on Wild Fauna Protection, but capacity to monitor and enforce hunting regulations is poor. Illegal hunting has contributed to the decline of several large mammal species in Georgia (see Section C4). New hunting policies and regulations are under development, with an emphasis on the creation of private hunting reserves. Technical information on hunting

quotas and related areas is lacking, with the result that total permissible quotas in some cases exceed the populations of the targeted species. Wildlife management outside of protected areas, including habitat corridors and management of migratory species and species with large home ranges, should be an important component of a biodiversity strategy.

B3. Fishing

The most valuable fish species inhabiting the rivers of Georgia are migratory Black Sea sturgeon and salmon. The Rioni river and its tributaries are the spawning grounds for several sturgeon species. The Black Sea Salmon (*Salmo fario*) spawns in many of the rivers in the Black Sea coastal zone, but numbers are much reduced and the situation is precarious. Damming of the downstream reaches of some rivers has had an important effect on the distribution and abundance of migratory and resident fish species. Reservoirs developed for hydropower and irrigation use are poorly adapted for fishery conservation, because of sharp fluctuations of water level, high turbidity, and absence of higher aquatic vegetation and fauna.

On the Black Sea coast, Paliastomi Lake was historically very important for its commercial fisheries. However, yields have plummeted as a result of increased salinization, which has resulted in the loss of rich plankton reserves critical for fish survival and reproduction, especially for bottom-feeding fish.

The ICZM project is currently supporting research in these areas (see Section IV D).

SECTION IV

Strategic and Policy Framework

A. Policy Framework

The National Environmental Action Plan (NEAP) is in the process of being finalized. Investment priorities related to biodiversity include:

- Reduce the environmental impact of agriculture through i) a program of development and demonstration of best agricultural practices, including crop rotation, biological methods for pest control, terracing, better irrigation techniques, etc. and ii) a watershed management demonstration program to promote public awareness and protection of soil resources

- Implement through ongoing international agreements programs for protecting the Black Sea

- Implement a program for protecting biodiversity in Georgia

- Implement a program for protecting Georgia's forests, including: i) introducing concepts of forest management and sustainable use, ii) development of forest management capacity, iii) enforcement of protective regulations, and iv) participation in regional and international cooperative forestry initiatives.

A national Biodiversity Strategy and Action Plan (BSAP) is also in the final stages of elaboration. A Biodiversity Country Study Report was produced in 1996, and is currently being updated.

The BSAP notes that "despite the fact that, after adoption of the new Constitution in 1995 and more than 400 new laws of which approximately 15 are directly related to the field of environmental/nature protection, biodiversity and sustainable development, today Georgia's environmental legislation is a confusing mixture of laws, acts and regulations based on absolutely different legislative and judicial provisions. This is one of the main obstacles on the way to integrated sustainable strategy and policy development and implementation."

B. Legislative Framework

B1. Laws

The Constitution of Georgia (1995) states (Article 37) that:

"3. Everyone has the right to live in a healthy environment and use natural and cultural surroundings. Everyone is obliged to protect natural and cultural surroundings;
4. The State guarantees the protection of nature and its rational use to ensure a healthy environment corresponding to the ecological and economic interests of society, and taking into account the interests of current and future generations;

5. Individuals have the right to complete, objective and timely information on the conditions in which they live and work."

The Environmental Protection Act of 1996 provides a legal basis for:

- Prevention of adverse effects on the environment
- Improvement of environmental quality
- Sustainable development and sustianble use of natural resources
- Conservation of biodiversity and maintenance of the ecological balance
- Conservation of unique landscapes and ecosystems
- Resolving global and regional problems in the field of environmental protection
- Civil obligations and rights relating to environmental protection
- Environmental education

The Environmental Protection Act forms the legal basis for the laws on Environmental Permits and State Ecological Expertise, as well as provisions on Environmental Impact Assessment.

The 1996 Law on Protected Areas adopted categories of protected areas in line with international criteria developed by IUCN. These are:

- State Nature Reserve, being created and managed mainly for scientific research and/or wilderness protection
- National Park, being established and managed mainly for natural ecosystem conservation and recreation
- Natural Monument, being established and managed mainly for the conservation of specific natural features
- Managed Nature Reserve/Habitat and Species Management Area, being established and managed mainly for conservation through management interventions
- Protected Landscape/Seascape, being established and managed mainly for natural/cultural landscape/seascape conservation, scenery preservation and recreation
- Multiple Use Protected Area/Managed Resource Protected Area, being established and managed mainly for the sustainable use of natural ecosystems and renewable natural resources.

Along with these categories, the law makes provision for the possible designation of the international categories included in the global network of protected areas, such as Biosphere Reserve, World Heritage Site, and Wetlands of International Significance (Ramsar Sites).

The law identifies the responsible authority for managing protected areas at various levels of government and describes the procedure for comprehensive planning (integration into national and regional land-use planning and procedures). It specifies procedures by which new protected areas are designated and for amending the status of existing areas. Public participation at all levels of planning, decision making, and management of protected areas is legally secured. The legislation

contains regulations for partnerships between government and nongovernment organizations and possible financing mechanisms.

The Law on the Protection of Wild Fauna protects wild animal species and their habitats, serving as a legal base for both *in-situ* and *ex-situ* conservation and sustainable use. The law clearly defines the responsibilities of governmental and public responsibilities for animal conservation, including the right to public participation. It specifies that for development programs, habitats, migration routes, breeding grounds and other areas of critical importance to wild animals must be protected.

The Forest Code on Georgia was adopted in 1999 and attempts to provide a broad framework covering the multiple functions and uses of forests, including protection, watershed management, and timber production. Development of the Forest Code was supported by the World Bank, with assistance from FAO, WWF-Georgia, and others. For the first time, it allows private ownership of forests and commercial harvesting of private forests. Georgia's State Department of Forestry (SDF) will not directly undertake commercial harvesting as it seeks to separate control and management functions, delegating the latter to private enterprises. However, the SDF will still carry out "sanitary" cutting and similar forest management activities. The Forest Code defines additional categories of protected forests, including those with special soil and watershed regulation functions, floodplain and subalpine strip forests, and those containing Red List plant species. As for many environmental laws in Georgia, the Forest Code is a framework law that requires detailed implementing regulations (including Presidential decrees) to be developed to function effectively. A controversial provision of the Forest Code permits commercial logging on slopes of 35 degrees (in fact 70 percent of forests are on slopes of more than 25 degrees, often in roadless areas). The responsibility for the issuance of logging licenses is transferred from the Ministry of Environment to the SDF under the Code.

B2. International Conventions

Georgia has ratified several major international conventions in the field of biodiversity conservation. These include the Convention on Biological Diversity, CITES, and the Ramsar Convention on Wetlands. Georgia has also signed agreements with three neighboring countries — Azerbaijan, Turkey, and Armenia — on the cooperation in the field of environmental protection. All the three agreements are meant to strengthen common efforts in the field of biodiversity conservation. According to the agreements with Armenia and Azerbaijan, the parties have accepted responsibility to cooperate in the area of the conservation of migratory species and transboundary ecosystems.[*] In this respect, these agreements reflect the provisions of the Convention on the Conservation of Migratory Species of Wild Animals (the Bonn Convention). Apart from this, the agreement with Armenia includes establishing transboundary protected areas (Article 8).

In the near future, Georgia will also ratify the Bonn Convention. Georgia has already signed two agreements under this convention: Agreement on the Conservation of Small Cetaceans in the Black

[*] "Agreement between the Governments of Georgia and the Republic of Armenia on the Protection of the Environment and Natural Resources", Articles 4,6 and 7.
"Agreement between the Governments of Georgia and Azerbaijan on the Protection of the Environment and Natural Resources", Articles 6,7 and 8.

Sea, Mediterranean and Adjacent Atlantic Ocean, and The African-Eurasian Waterbird Agreement, which now need to be ratified. Georgia will also adhere to Agreement on the Conservation of Bats in Europe.

Georgia has signed but not ratified the Aarhus Convention on Access to Information, Public Participation Decision-Making, and Access to Justice in Environmental Matters, in part because of concerns about the capacity to provide information.

In the case of the incompatibility of provisions of Georgian legislation with international conventions and agreements to which Georgia is a party, priority will be given to the latter, providing it does not contradict the Constitution of Georgia.

C. Institutional Framework

The Georgian Parliament is the highest representative body of state power in Georgia. It has 14 permanent committees, including the Committee for Environmental Protection and Natural Resources, which oversees the conduct of environmental affairs on behalf of Parliament.

C1. Government of Georgia

The Government of Georgia is the highest executive body of state power in Georgia. The Government monitors the operation of ministries and other authorities within its sphere of competence. The government bodies most concerned with biodiversity conservation are described in the following paragraphs.

The Ministry of the Environment (MoE). The Ministry of the Environment, established in 1991, is the main agency responsible for environmental protection and the regulation of natural resource use. It has approximately 2,000 employees, and had a 1998 budget of 3.6 million lari ($2.8 million). It reports to the minister through a first deputy minister and four deputy ministers. The Department of Biodiversity Protection is responsible for biodiversity conservation within the MoE, including formulation and implementation of biodiversity policy (including the BSAP), integrating biodiversity into sectoral policies and programs, and in guiding and coordinating the activities of the regional MoE offices. Under the Forest Code, the Ministry of Environment will review sectoral plans, approve forest management plans, and monitor forest operations to ensure that they conform with permit conditions.

The State Department of Forestry (SDF). The SDF is responsible for developing forest strategy and policy, as well as oversight of the management of the forest estate. Total staff consists of more than 3,000 people, about a third of whom are professional staff. In addition to the central office (50 professional staff) there are 54 district offices.

The State Department of Protected Area, Nature Reserves and Hunting Management (DPA). The Department of Protected Areas is a small organization with a total staff of 17 (including support staff) in Tbilisi and 450 others assigned to individual protected areas (30 to 40 for each protected area). The department is charged with oversight of the existing protected areas (currently 1 national park, 13 strict nature reserves, and 5 managed nature reserves), and with management of state hunting laws. Previous responsibilities were confined to enforcement and protection, together

with research. With the adoption of the new categories of protected areas, DPA has additional functions, including the development of legislation and policy related to revenue generation mechanisms, such as park charges and hunting fees (permitted only in some categories of protected areas), development of ecotourism, and management of recreational use. In addition, legal and institutional changes are needed to permit parks to reinvest such revenues in park management.

Other government agencies involved in biodiversity conservation include the Ministry of Food and Agriculture (including the Committee on Land Resources and Land Cadaster) and the State Department of Tourism.

C2. Roles, Relationships, and Authorities

Roles, relationships and authorities between the MoE, SDF, and DPA are confusing, with apparent functional duplications and even contradictions. This is partly as a result of the shift from the rigid Soviet style institutional setup toward a more integrated approach to environmental management, reflecting exposure to different institutional models for environmental policy and regulation, as well as the opportunities presented by increased donor resources available for environmental projects (see subsection D below).

In contrast to Azerbaijan and Armenia, where protected areas fall under the equivalent of the Ministry of Environment (in Armenia, forestry is also under the ministry), in Georgia they remain separated. The situation is further complicated in that the project implementation unit for the influential Protected Areas Development (PAD) project is located within the MoE, rather than DPA. In all three countries, donors (particularly the World Bank) have encouraged a separation of the policy and regulatory function from management functions to reduce conflict of interest within a single organization.

Thus, in Georgia, the new Forest Code attempts to delegate management of forests primarily to the private sector, leaving SDF with a regulatory mandate. The relatively recent (1991) creation of the MoE with a broad environmental mandate contrasts with the traditional and well-defined mandates of SDF and DPA, dating from the Soviet era. With the advent of significant donor resources for forestry and biodiversity conservation, resentment by the MoE toward SDF (for forestry) and by DPA toward MoE (for protected areas) has escalated as a result of different perceptions in regard to appropriate roles and responsibilities.

This institutional confusion has coincided with the removal of strict controls and the decline of enforcement capacity for natural resources management since the Soviet era, which has resulted in uncontrolled exploitation, particularly of forests, by powerful special interests. This is one of the major issues the new forest code attempts to address. At the same time, there has been a rise in the number of increasingly competent NGOs, capable of assuming management and coordination functions on the ground (see discussion of NGOs below).

The infusion of donor resources supporting biodiversity conservation and forestry offers significant opportunities to clarify roles and relationships, and build partnerships among government institutions, and between government, NGOs and the private sector. However, it is critical that these projects work closely with each other, to bring stakeholders together to discuss and resolve potential institutional conflicts.

C3. NGOs

Several Georgian NGOs are very active in biodiversity conservation.

WWF-Georgia has supported the concept and development of Georgia's new protected areas system and is particularly active in Borjomi-Kharagauli NP. Other activities include:

- Development of management plans for four national parks
- Development of Borjomi-Kharagauli NP, principally infrastructure and training
- Environmental education and awareness, including regional training centers, curriculum development and media support
- Sustainable forestry, including support to the Forest Code, awareness, information and training
- Transboundary protected areas cooperation, particularly with Azerbaijan and Russia
- Ecodevelopment in sparsely populated areas, e.g., handicrafts, family hotels, traditional beer-making
- Small grants to local NGOs around protected areas

NACRES (Noah's Ark Center for the Recovery of Endangered Species) has expanded its original activities on research and conservation of endangered species to include education, networking and policy development. NACRES developed the Biodiversity Country Study on behalf of UNEP and is involved in BSAP preparation.

The *Georgian Center for the Conservation of Wildlife* supports species and conservation research and created a regional Caucasus Environmental NGO network.

The *Poseidon Marine Association* is a local NGO specializing in issues of marine and freshwater habitat and species conservation, notably in the Black Sea region.

Elkana is a biological farming association that promotes and lobbies for organic farming and provides extension services to organic farmers throughout the country. In 1998 Elkana helped found *Dika*, the Agrobiodiversity Protection Society of Georgia, whose main objectives are to i) preserve, recover, and introduce endemic cultivated plant species and local varieties in agriculture; ii) propagate information on agrobiodiversity protection, conservation, and utilization of plant genetic resources; and iii) prepare personnel needed in the field of conservation and utilization of plant genetic resources.

C4. Regional Environmental Center

The Caucasus Regional Environmental Center (REC) is a foundation that aims to promote cooperation among stakeholders at national and regional levels to address environmental problems in Azerbaijan, Armenia, and Georgia. According to its charter (1999), activities shall be to:

- Assist in the exchange and dissemination of information on issues of environment and sustainable development; provide access to national and international databases

making use of existing structures and facilities; produce newsletters and other publications

- Provide support for environmental education, training, and capacity building
- Provide support wherever possible for initiatives aimed at increasing environmental awareness
- Establish a grants program that maintains a balance between small and large grants and participate with other RECs in developing a grants scheme for regional and transboundary projects
- Promote public participation in the decision-making processes of society that relate to the environment
- Provide a forum for discussion of environmental issues, and policy analysis relating to environmental issues, sustainable development and interaction between governments, NGOs and other stakeholders
- Provide a framework for possible regional cooperation at a governmental and non-governmental level
- Provide a link with the business community and industry on environmental issues

At the time of writing, the Government of Azerbaijan had yet to sign the REC charter. Several NGOs in Armenia and Georgia indicated concerns regarding the process of the establishment of the structure and charter of the REC, citing lack of transparency and consensus, as well as an overly prominent role for government representatives. Funding for the REC comes primarily from EU-TACIS, although the U.S. government has provided financial support through U.S. Environmental Protection Agency.

D. Internationally Supported Projects

The matrix at the end of this section provides an overview of donor-supported projects in Georgia. More detailed descriptions of individual projects are also provided.

The *Georgia Protected Areas Development project* (2000-2005) is a six-year, $9 million World Bank/GEF-supported project to improve the conservation of Georgian biodiversity and its sustainable use. The medium-term objectives are to: a) establish three ecologically effective protected areas in eastern Georgia; b) facilitate the creation of a national network of protected areas; c) integrate biodiversity conservation into forestry, range management, and agriculture; d) strengthen institutions responsible for biodiversity conservation programs; e) improve public awareness of the values and importance of Georgian biodiversity; and f) promote regional/international cooperation for conservation of biodiversity in the Caucasus region. A summary of expected outputs and indicators is included in Annex H.

The *Georgia Forestry Development Program* is a proposed eight-year, $20 million World Bank-supported initiative to help the government of Georgia to effectively manage and use the country's forest resources sustainably. Components are: a) policy planning and analysis, b) institutional

assessment and restructuring, c) land use and forest management plans, d) human resources development and training, and e) public awareness. A preparation report and project concept documents have been finalized and the project is expected to begin in 2000.

The German Development Bank, KFW, is providing 6.7 million DM for integrated rural development around *Borjomi-Kharagauli NP* (2.3 million for infrastructure, 1.6 million for training and education [to be implemented by WWF] and 2.7 million for support zone activities in six districts around the park). Support zone activities include regional planning, agriculture, forestry, and tourism.

The Georgia *Integrated Coastal Zone Management Project* (1999-2004) is a 5 ½-year, $7.6 million World Bank/GEF/Government of Netherlands-supported project that aims to "assist Georgia in meeting its international commitments under the Black Sea Environmental Program and to implement priority actions outlined in the Georgia Biodiversity Strategy and Action Plan. Priorities include conservation of biodiversity at sites of international significance on Georgia's Black Sea coast, such as Kolkheti and Kobuleti wetland Ramsar sites; restoration of degraded habitats and resources within the Black Sea Large Marine Ecosystem; and participation in regional efforts to manage and sustain public goods of a transnational character." Proposed activities under the $3.2 million establishment of Kolkheti NP and Kobuleti NR component include creation of these protected areas, support to protected area administration and management, biodiversity monitoring, and applied research.

The *Black Sea Environmental Program* is a long-term program established in 1993 and financed principally by UNDP/GEF with support from EU-Tacis, the World Bank and UNEP. The six littoral states of the Black Sea have produced a strategic action plan to address problems of environmental degradation of Black Sea ecosystems. A regional biodiversity center has been established in Batumi, and its effectiveness is currently being evaluated.

The *Arid and Semiarid Ecosystem Conservation in the Caucasus* is a 29-month, $878,000, UNDP/GEF-supported regional (Georgia, Armenia, and Azerbaijan) project that aims to conserve a highly threatened arid and semi-arid ecosystem through the participatory planning and sustainable use of natural resources. Objectives are to: a) increase coordination among countries concerned in participatory planning and sustainable management of natural resources, b) develop agreed-upon alternative land use strategies aimed at recovering and protecting the ecosystem and key species, and c) increase awareness and develop management techniques for the sustainable use of biological resources among land users and other stakeholders. NACRES is the executing agency.

The EU-Tacis-supported *Regional Environmental Awareness Raising Program* (1996-1999) has targeted parliamentary groups, media journalists, and NGOs in Azerbaijan, Armenia, and Georgia. In 1998, a small project fund brought together NGOs from the three countries to take joint action to address the issue of pollution of the Kura-Araks river. The program has been broadly successful, but will end in December 1999 as EU-Tacis has not identified environment as part of its upcoming strategic program.

An agrobiodiversity conservation project is currently being developed through a GEF PDF grant (see Annex I).

Matrix of International Environmental Projects in Georgia

	Protected Areas	Institutional Strengthening	Awareness Raising	Policy	Forests	Wetlands	Species Conservation	Research/ Monitoring
WB/GEF PAD	X	X	X		X		X	X
WB/GEF FDP		X	X	X	X			X
WB/GEF ICZM	X	X				X		X
BSEP			X	X		X		X
GEF Arid Zone							X	X
GEF Agrobiodiversity			X				X	X
USAID/NPS	X	X	X					
WWF (various)	X		X	X	X		X	X
TACIS EAP			X					
NACRES (various)							X	X

SECTION V

Summary of Findings

1. Georgia has made less progress in developing a comprehensive policy framework than neighboring Armenia. The NEAP is still not finalized, and the biodiversity component of the NEAP does not yet exist. It was intended that this be filled by the BSAP, which remains poorly developed. The BSAP is planned for completion by the end of 1999, but this is an unrealistic time frame if the BSAP is truly to serve as an action framework for biodiversity conservation in Georgia. The BSAP should incorporate and build on current and planned activities in biodiversity conservation and related fields. It should pay attention to integrating biodiversity conservation concerns into sectoral and economic policies, such as privatization.

2. Good progress has been made on developing a modern legislative framework for biodiversity conservation, notably with protected areas and forestry legislation. However, these remain principally framework laws that require detailed regulatory implementing acts to become effective. This provides an opportunity to incorporate feedback from local perspectives and field realities, as well as providing a forum for discussion of issues, clarifying roles and responsibilities, and allowing for pilot initiatives involving local populations. However, much legislation is still modeled on a rigid and prescriptive Soviet-type model. This relies heavily on increased enforcement capacity of government agencies which, given current budgetary priorities and constraints, is probably not realistic. Consideration needs to be given to moving away from command-and-control mechanisms to incentive-based systems that involve public participation.

3. Environmental awareness and education has improved in recent years, primarily due to the efforts of environmental NGOs, several of which have a biodiversity focus in Georgia. However, much remains to be done, particularly with respect to biodiversity conservation. This extends from improving the understanding of biodiversity conservation and its importance in economic and social development by decision-makers and politicians, to linking biodiversity conservation to immediate day-to-day needs of local populations. The example of the TACIS awareness-raising program's efforts to address environmental protection through improved water quality and health along the Kura river is a good approach that deserves continued support.

4. During the Soviet period, unplanned and poorly managed development coincided with almost complete disregard for environmental impacts and consequences. The time since Georgia's independence has seen a marked decrease in agricultural and other inputs, as well as industrial decline. This provides an opportunity for more sustainable development that integrates environmental concerns, including biodiversity conservation. Well-planned agriculture, forestry, and water management programs have significant potential to favor improved biodiversity conservation. In addition, the opportunity exists to develop and expand organic farming and agrobiodiversity conservation activities, including in neighboring countries.

5. The current information base on biodiversity is relatively good, with recent data on distribution and abundance for many groups, including mammals, birds, and plants. Habitat and ecological community data could usefully be developed as a broad conservation tool to complement species information in prioritizing sites of special conservation importance.

6. Coordination, including better definition of roles and responsibilities, information sharing, and streamlining of procedures and operations between government agencies offers significant potential for more effective planning, policy, and monitoring. This is particularly the case for the Ministry of Environment, Department of Forestry and Department of Protected Areas.

7. Government systems remain highly centralized in terms of authorities. Yet, significant numbers of regional and local staff exist on the ground, e.g., protected area authorities. However, these people have meager resources, lacking even basic equipment and receiving irregular and low salaries. Improved support to decentralized authorities, including new partnerships with local groups and communities, needs to be developed.

8. Impressive strides have been made in developing an effective and representative protected area system that includes different management categories. On-ground activities are well underway and can provide a good example to neighboring Caucasus countries. The integrated landscape approach to protected areas management that is based on an improved understanding of pressures on protected areas, and the development of adapted management plans that address these pressures, represents a major step forward.

9. Environmental NGOs specializing in biodiversity conservation are well represented and relatively well developed in Georgia and have played an important role in raising awareness and commitment to biodiversity conservation in the country. More remains to be done in coordinating the efforts of NGOs and supporting them in efforts to increase awareness and education, advocacy and lobbying, information gathering and sharing, and developing on-ground initiatives supporting CBOs, local communities, and others.

10. While WWF and other NGOs have begun to develop local activities, there is a need to build on these activities in a coordinated manner, to involve local authorities, communities and CBOs in dialogue, and to develop local initiatives that can demonstrate success and inform the ongoing policy discussion.

11. Georgia is much further advanced than the neighboring countries of Armenia and Azerbaijan in its capacity for, and experience in, biodiversity conservation. Georgia has developed information sharing and regional cooperation activities with these two countries, and has provided a conduit for dialogue and action in the face of the ongoing political differences between Armenia and Azerbaijan. Because biodiversity conservation is a transboundary issue and because it is politically less sensitive than other sectors, efforts need to be encouraged for greater regional cooperation.

12. The private sector has had a very limited role in biodiversity conservation in Georgia. Opportunities for private sector involvement in biodiversity conservation include ecotourism

development, sustainable forest management initiatives, hunting reserves, and protected area management.

13. In the case of the Forest Code, specific implementation regulations have been identified but not developed. These regulations will have an important impact on biodiversity conservation and should be carefully considered. One issue of importance lies in the policy of retaining locally generated revenues from protected area and forest management initiatives and reinvesting them in improved management according to specified guidelines. Currently such revenues are returned to the Treasury for general budget use.

14. Finally, it is important to emphasize that Georgia has developed, or is developing, a number of large and important projects that directly address most of the issues raised earlier in this report. This is in contrast to the neighboring countries of Armenia and Azerbaijan. Lessons learned from these projects will be important in developing a comprehensive program for biodiversity throughout the Caucasus.

SECTION VI

Recommendations for Improved Biodiversity Conservation

The following recommendations have been developed from existing studies and documentation, and are intended to complement existing or proposed projects in Georgia. They represent a shorter and more focused set of recommendations based on the findings of the present study, as well as meetings and interviews carried out during the study.

1. *Finalize the BSAP.*

Funds allocated for BSAP completion have been exhausted. There is a need to support a participatory process of BSAP development and completion. An international facilitator should be hired to assure this process. World Bank funds may become available, but it is important that a wide variety of stakeholders be involved in the process to promote information sharing, consensus-building, and ownership.

2. *Identify status and develop management guidelines for fragile or vulnerable habitats, and incorporate into EIA legislation.*

Identification and distribution of fragile and vulnerable habitats, such as alpine meadows and wetlands, should be the first step in developing management guidelines for the conservation and sustainable use of such areas. This should then be incorporated into environmental guidelines and legislation concerning different types of planned investment projects potentially affecting these habitats. At the same time, this information is important in prioritizing sites for biodiversity conservation.

3. *Develop pilot initiatives in community-based natural resource management and biodiversity conservation, e.g., for forestry, grazing, wetlands, tourism.*

Given the harshness of the current economic situation, it is necessary to develop incentives for local communities and other stakeholder groups to better manage their resources. Management plans that clearly detail the rights, responsibilities, and benefits to local groups should be developed for improved management. Opportunities exist to build on or revive more ecologically sound traditional practices. In the absence of such incentives, it is clear that natural resources will continue to be depleted in an unsustainable fashion. Community-based management of forests, grazing lands, and wetlands should be encouraged on a pilot basis and carefully monitored for sustainability. Opportunities for community involvement in protected area management, e.g., through ecotourism development and biodiversity monitoring, should be explored. Such initiatives are proposed under the Protected Areas Development (PAD) and Forestry Development (FDP) projects, as well as the GEF arid zone project, and should be supported. Lessons learned from such initiatives will be very important for the future of biodiversity conservation in Georgia and the Caucasus.

4. *Develop and build on mechanisms to bring together government, donors, academic and NGO groups for awareness raising, information sharing, and coordination of activities.*

There is confusion regarding the most appropriate and effective roles for government agencies, at both national and local levels, academic institutions, and NGOs. For biodiversity conservation to be effective, the relative advantages and different roles of these groups, and how they interact with communities and the public at large, need to be understood, internalized, and developed. While there is a good basis for coordination and communication, this needs to be improved, and capacity-building efforts need to be appropriately targeted. Resources will always be scarce and it is important that they are used optimally. Donors can play an important role in this process.

5. *Support NGOs in awareness raising and local initiatives.*

Environmental NGOs in Georgia have demonstrated considerable success in promoting and supporting biodiversity conservation. WWF has an extensive environmental education program and other NGOs are also active in awareness raising, education, advocacy, and lobbying. Efforts to develop organizational capacity need to continue, particularly for NGOs and CBOs based outside of the capital. This should be paired with building technical and implementation capabilities. Awareness raising and environmental education are areas where NGOs can be especially effective. But there is also a need to work with local communities to develop field-based conservation initiatives (see No. 3 above). Training, skills transfer, small grants, and partnerships with regional and international NGOs can significantly increase the ability of Georgian NGOs to be effective local development partners. Participatory monitoring of capacity building efforts is another important focus.

6. *Promote regional collaboration, through information sharing, exchange visits, study tours, conferences, and transboundary initiatives.*

Broadly speaking, Georgia's progress in biodiversity conservation is much more advanced than that of the neighboring states of Azerbaijan and Armenia. Lessons and experiences shared between these three countries that together represent many of the biological resources unique to the Transcaucasus region have the potential to significantly improve capacity in the region, as well as promoting broader cooperation in a more general sense. Azerbaijan and Armenia can benefit from the experience of Georgian organizations, particularly NGOs, in information sharing, community-based initiatives, and policy development. Georgia is the only one of the three countries with representation of international conservation NGOs (WWF) and with experience implementing a major donor-funded biodiversity project (World Bank). Several organizations have regional "Caucasus" programs based in Georgia.

SECTION VII

USAID/Georgia

A. Impact of the Program

An environmental assessment carried out in early 1999 (Diamond & Mitchell) used a comparative risk assessment to propose a prioritized set of environmental recommendations for incorporation into the USAID/Georgia strategy. Although biodiversity was not addressed as a specific issue, a number of proposed activities are related to biodiversity conservation, including local environmental initiatives, with support to communities, local governments, civic associations, and concerned individuals. Identified high-risk problems requiring more significant investments of USAID resources included protected area and forestry development, primarily in association with the World Bank-supported programs in these areas. Suggestions are to help the government of Georgia meet conditionalities and later support implementation of specific activities. The USAID Strategic Plan for Georgia notes that "modest environmental activities" will be integrated into existing strategic objectives, notably in the energy sector. The strategic objectives are:

- Accelerated development and growth of private enterprises
- A more economically efficient and environmentally sustainable energy sector
- Legal systems that better support implementation of democratic processes and market reform
- More efficient and responsive local government
- Reduced human suffering in targeted communities

In addition, there is a special initiative on targeted privatization and cross-cutting programs of training and small grants.

While the Mission's program can be considered "neutral" in its impact on biodiversity conservation, the NGO strengthening program, first through ISAR and subsequently Horizonti, has significant increased the capacity of environmental NGOs involved directly or indirectly in biodiversity conservation. Environmental NGOs were initial beneficiaries of this program, and support has now been extended to a broader spectrum of NGOs.

While not strictly under the Mission's purview, two environmental activities relevant to biodiversity conservation have been, or are currently, supported by other U.S. government agencies. USAID has provided financial support through an interagency agreement with the U.S. National Park Service (NPS) to support the DPA in institutional development, protected area system development, ecotourism planning, and financial sustainability of protected areas. NPS has been closely involved with the development of the World Bank/GEF Protected Areas project, and has helped foster increased understanding of different alternatives to protected area management and financing, based on training and exchange visits between the United States and Georgia. The World Bank has requested continued involvement of NPS as a complement to the protected areas project, and this offers an opportunity for USAID co-financing. Additionally, USAID has supported, again through an interagency agreement with the U.S. Environmental Protection Agency,

the development of the Regional Environmental Center, although the extent to which it will be involved in the future remains unclear.

B. Recommendations for USAID/Georgia

These recommendations stem from meetings with USAID/Georgia staff and are based on the USAID/Georgia three-year Strategic Plan, which proposes an integration of environmental activities into the proposed plan. Recommendations build on existing or proposed activities. Recommendations made here are low cost with potentially relatively high impact and provide opportunities to leverage other funds.

1. *Support continuing involvement of the U.S. National Park Service in strengthening protected areas management, notably institutional strengthening, training, and exchange visits.* This provides an opportunity to leverage funds provided under the GEF/World Bank Protected Areas Development project.

   Support for environmental awareness raising is especially important with respect to biodiversity conservation needs. This area particularly needs support in the wake of the phasing out of the TACIS awareness-raising program. It would be useful to review that project to identify promising avenues of support, build on successes, and identify future opportunities. Possible activities include support to NGOs involved in environmental awareness raising, media support, awareness raising of the implications and opportunities regarding policy and legislative reform (such as the new forest code), and integration of awareness raising into local community-based natural resource management and biodiversity conservation initiatives.

2. *Focus support currently provided through Horizonti in organizational development to include technical support to environmental NGOs to build capacity and develop local natural resource management and biodiversity initiatives.* The capacity of environmental NGOs has been significantly strengthened by the project, and several NGOs now are in a good position to develop larger initiatives and have expressed readiness to do so. The small grants program could be expanded to also include larger grants to give some NGOs the opportunity to develop environmental initiatives. This may require a more detailed technical focus, including technical training and support, and could be provided through an international NGO or group of NGOs that combine civil society strengthening and technical expertise. At the same time, capacity-building support to smaller NGOs and CBOs should continue, especially those outside of the capital, and partnerships among NGOs and between NGOs and CBOs in environment and biodiversity conservation should be encouraged. Technically, there is a need to link biodiversity conservation to direct social and economic pressures faced by local populations.

3. *Support pilot community-based natural resource management and biodiversity conservation initiatives.* These would focus on areas of high biodiversity importance and bring together local communities, local government authorities and technical agencies, and other local organizations and stakeholders to develop participatory management plans. USAID has significant experience in this area in other parts of the world, often with the support of international conservation NGOs. Partnerships between international conservation NGOs and Georgian environmental organizations offer one option to build capacity and incorporate best

practices from elsewhere. This activity supports the local governance objectives of the Mission. There is an opportunity to develop pilot initiatives proposed by other projects, and perhaps leverage funds from the respective donor organizations. Technical areas include sustainable natural forest management, integrated wetland management, sustainable rangeland and grazing management, and protected area management.

4. *Promote regional cooperation through information sharing, exchange visits, conferences, joint studies, partnerships, and perhaps transboundary projects (e.g., within the context of Kura basin initiative).* Environment is an area that presents significant opportunities for cooperation between Georgia and the neighboring states of Armenia, Azerbaijan, and Turkey; there are many shared resources as well as a history of cooperation between Georgia, Armenia, and Azerbaijan. A recent environmental concept paper for USAID/Armenia has proposed a regional Caucasus water initiative to include Georgia and Azerbaijan. Watershed protection, including sustainable forest management, wetland protection, and biodiversity conservation is an important element of improved water supply and quality and could easily fit into such an initiative. Other areas of regional cooperation could include regional prioritization of biodiversity, including critical habitats and regionally threatened areas and species. This would reflect the importance of the Caucasus as a biodiversity center and would rationalize conservation in individual countries based on global importance. In addition, it would promote the conservation of migratory species in the region. One area of particular importance relates to wetlands throughout the Caucasus, which are extremely important for biodiversity conservation and in a very threatened state. USAID could usefully support an analysis of wetland distribution, management, and importance in the region, with a goal of identifying key areas of focus for future activities (either through USAID or other donors).

   Other recommendations proposed for the Georgia Mission could also be developed as regional activities, e.g., environmental awareness and NGO development. The Caucasus Environmental NGO Network offers one opportunity to promote regional information sharing and exchange, as well as to bring NGOs together with other partners to discuss environmental priorities.

   The Mission should follow progress in development of the REC because of its potential value for regional cooperation. For example, it could provide an opportunity to continue open Parliamentary meetings and public hearings developed under the TACIS awareness-raising program. It may be less useful for continuing the NGO and media activities of that program. Because both ISAR-Baku and the NGO Center in Yerevan are supported by USAID, there is a clear opportunity to integrate these activities into future USAID programming for NGO support. In addition, EPAC in Yerevan could usefully be involved in these activities, including Parliamentary meetings. An effort targeted at improved understanding of biodiversity and why it is important, and linking biodiversity to wider environmental and economic issues, would be useful.

5. *Examine opportunities for private sector involvement in improved biodiversity conservation, e.g., protected areas management, ecotourism, EIA (local consulting firms), forestry, and hunting concessions.* This could include community-based demonstration projects related to small and medium-sized enterprise (SME) development, e.g., in ecotourism,

sustainable forestry initiatives including non-timber forest products, sustainable agriculture valorizing crop varieties, and handicraft development.

6. *To take full advantage of these opportunities, USAID/Georgia should be aware of planned and ongoing activities in biodiversity conservation in Georgia.* One way of achieving this is through regular participation in donor meetings on environment. At present, these do not exist, but given the significant investment in the area, it is something that could be proposed to the Ministry of Environment. USAID/Georgia is planning to hire a local environmental assistant, and this activity could be included in the Scope of Work.

7. *Provide technical assistance and training in environmental policy and institutional development.* This fairly discrete activity could have important impact. Because this is a critical time in the formulation and implementation of policies related to biodiversity conservation, this activity could provide an opportunity to bring government and non-government organizations together and increase transparency in policy development. It also presents opportunities for leveraging funds from other donors in the context of their ongoing and planned programs.

ANNEX A

SECTIONS 117 AND 119 OF THE FOREIGN ASSISTANCE ACT

Available in Hard Copy Only

ANNEX B

Scope of Work

Country Biodiversity Assessments

Azerbaijan, Armenia, and Georgia

I. Objective

To conduct a country-wide assessment of biodiversity resources and their status for the purposes of complying with USAID Environmental Procedures described in Title 22 CFR, Section 216.

II. Background

A. Policies Governing Environmental Procedures

The Foreign Assistance Act (FAA) of 1961, Sec. 498C states that funds made available for assistance to the New Independent States (NIS) shall be subject to the provisions of Section 117 relating to Environment and Natural Resources (FAA Sec. 498C, footnote e). Section 117 requires that the President take fully into account the impact of foreign assistance programs and projects on environment and natural resources (Sec 117(c)(1)). Current USAID Legislation which guides environmental impact and monitoring is Title 22 of the Code of Federal Regulations, Part 216 ("Reg. 216"). In complying with the law, USAID provides its Environmental Procedures under ADS 204.5 to ensure accordance with the requirements of Title 22 CFR 216.

Section 119 of the FAA relates to Endangered Species. It states that "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 (FAA, Sec. 119 (a))." Furthermore it states that "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(FAA, Sec. 119(d)."

In order for USAID Missions to be in compliance with the above, and in order to USAID Missions to effectively determine impact on natural resources and endangered species and incorporate mitigation measures in their programs, a biodiversity assessment is needed to inform Mission planning. The purpose of this Task Order is to provide USAID/ENI Missions in Azerbaijan, Armenia and Georgia with this critical information.

B. Overview on USAID programs in the Caucasus

Congress has created a $250 million "Southern Caucasus" earmark for FY 1988- up from $143 million in FY 1997. **Armenia** is a strategically important republic in the Caucasus which is in the early stages of a transition to achieve a democratic market-oriented economy. It was the first

former Soviet Republic to register real economic growth in 1994. Between 1992-1996, USAID primarily focused its resources on humanitarian assistance which will still be required, but at diminishing levels. Greater emphasis will now be directed to the restructuring of the energy and financial sectors; creating a legal, regulatory and policy framework for broad-based competition and economic growth; and promoting a democratic transition through better-informed citizen participation in political and economic decision-making. USAID and other USG support to **Azerbaijan** is severely restricted at this time due to political issues related to offensive use of force against Armenia and Nagrno-Karabakh. USAID provides humanitarian assistance which is channeled through international organizations and limited training to private citizens, including to farmers and agribusiness entrepreneurs in areas such as agricultural marketing. Since 1992, USAID's program in **Georgia**, has been primarily in the form of emergency humanitarian assistance. USAID has been the largest bilateral donor, providing more than half of the country's emergency needs. USAID is gradually shifting its emphasis toward economic and social sector restructuring and democratization to meet the changing nature of the development challenge there. USAID is establishing two finance programs intended to support private sector development and growth. USAID also has a program to support the restructuring and organization of corporate enterprises in the electric power and oil and gas subsectors, including legislative and regulatory reform, and aims to mobilize private/public financing for selected energy projects to rehabilitate energy infrastructure.

III. Statement of Work

The Contractor shall perform the following activities:

A) Hold meetings with the Bureau Environmental Officer (BEO)of USAID's ENI Bureau in Washington, to ensure full understanding of ENI's program in the Caucuses, USAID Environmental Procedures and purpose of this assignment. This would include policy decisions and approaches which the BEO and Agency Environmental Advisor are taking as per their authority under Reg. 216, which may not be explicit in general legal documentation.

B) Field a team to conduct an overview and general analysis of each country's biodiversity and its current status. The documentation should include descriptions of:

- Major ecosystem types highlighting important, unique aspects of the country's biodiversity, including important endemic species and their habitats.

- Natural areas of particular importance to biodiversity conservation, such as key wetlands, remaining old-growth forests or coastal areas critical for species reproduction, feeding or migration, if relevant.

- Plant and animal species which are endangered or threatened with extinction. Endangered species of particular social, economic or environmental importance should be highlighted and described, as should their habitats. An updated list, such as the IUCN red list should be included as an annex.

- Current and potential future threats to biodiversity including a general assessment of overall health of ecosystems and major factors affecting ecosystem health such as land use, pests, and/or contamination, etc. or major institutional or policy failures or transboundary issues as appropriate.

- Conservation efforts including national policies and strategies, the status of financing for conservation, the status of country participation in major international treaties, the country's protected area system, and botanical gardens/gene banks (if relevant) and their status, and monitoring systems. This section should also include recent, current and planned activities by donor organizations which support biodiversity conservation, an identification of NGO's, universities and other local organizations involved in conservation, and a general description of responsible government agencies. A general assessment of the effectiveness of these policies, institutions and activities to achieve biodiversity conservation should be included. Priority conservation needs which lack donor or local support should be highlighted.

- USAID's program in general and, if relevant, 1) any perceived potential areas of concern related to biodiversity impacts with current or planned program activities, or 2) any potential opportunities for USAID to support biodiversity conservation consistent with Mission program objectives.

C) For each country specified, prepare a report, which incorporates the points above, on the status of biodiversity and conservation efforts and implications for USAID programming and environmental monitoring to ensure compliance with 22 CFR 216.

IV. Methodology

The contractor shall field a two-person team for this assignment. One team member should be a biodiversity specialist with international, regional or in country experience. The second team member should be a natural resources institutional/policy specialist with international or in-country experience. The team leader may have either of these specialties; however, the team leader should be a senior-level professional with USAID experience with significant experience in international conservation programs and environmental impact assessments. Experience in the region or country is preferred. The second team member should be a mid-level or qualified junior level professional. USAID/ENI encourages the use of local professionals for the second team member as appropriate for this assignment.

V. Deliverables

The primary deliverable under this task order is a report for each of the three countries, addressing the points specified in the statement of work, not to exceed 30 pages, excluding annexes. Each report will contain at a minimum one map which provides a broad picture of key ecosystems, habitats and protected areas, one annex containing IUCN lists for endangered and threatened species, and one annex containing Sections 117 and 119 of the Foreign Assistance Act.

The second set of deliverables are in-country Mission exit briefings.

Two hard copies and one electronic copy in Word format of this assessment shall be provided to the USAID Mission in each country as well as to the ENI Bureau Environmental Officer.

VI. Reporting Requirements

The Contractor shall report to the Bureau Environmental Officer in Washington for this overall assignment. While in each country, the contractor shall report to the Mission Environmental Officer or his/her designee.

ANNEX C

List of Persons Contacted

Name	Occupation
Peter Argo	Director, Office of Energy and Environment, USAID
Herbert Emmrich	Senior Energy Advisor, USAID
Manana Gegeshidze	Democracy Program, USAID
Robert Cemovich	USAID Project to Develop Land Markets in Georgia
Sarah Clark	U.S. Embassy in Tbilisi
Nino Chkhobadze	Minister, Ministry of Environment of Georgia
Darejan Kapanadze	Operations Analyst, The World Bank Resident Mission
Olivier Breteche	Project Manager, TACIS Coordinating Unit – Georgia
Tamara Tsulukidze	Project Coordinator, TACIS Coordinating Unit
Keti Chachibaia	Regional Coordinator, TACIS Environmental Awareness Raising Program
Eka Khvedelidze	TACIS Environmental Education Program
Gabriel Labbat	Regional Coordinator, UNDP/GEF
Jens Sorensen	Senior Fellow, The Harbor and Coastal Center, WB contractor, ICZM
Mamuka Gvilava	Project Coordinator, ICZM Program
Otar Turmanidze	Deputy Head, Dept. of Environmental Permits and State Ecological Examination, MoE Georgia
Merab Machavariani	Head, Dept. of Biodiversity, MoE Georgia
Ramaz Shishniashvili	Head, State Department of Protected Areas
Besarion Lobjanidze	Deputy Head, State Department of Protected Areas
Kate M. Metreveli	Coordinator, PPU of WB Forestry Development Program, Georgian State Department of Forest Management
Levan Butkhuzi	Program Coordinator, NACRES
Malkhaz Khurtsidze	Manager, GIS and RS Scientific-Training Center
Nana Nemsadze	President, Biofermers Association “Elkana”
Maka Chichua	President, Biomonitoring Association
Lexo Gavashelishvili	Deputy Director, Georgian Center for the Conservation of Wildlife
Nana Janashia	Project Manager, Caucasus Environmental NGO Network
Nato Kirvalidze	Director, Caucasus Regional Environmental Center
Paata Shanshiashvili	Director, Georgia Protected Areas Development Center
David Nikoleishvili	President, Marine Association “Poseidoni”
Gia Qadjaia	Head, Department of Ecology, Tbilisi State University
Arnold Gegechkori	Head, Department of Zoology, Tbilisi State University
Gia Nakhutzrishvili	Director, Institute of Botany, Academy of Sciences
Irakli Eliava	Director, Institute of Zoology, Academy of Sciences
Temur Svanidze	Environmental Department, Georgian Pipeline Company
Maia Tavartkiladze	Environmental Dept., Georgian Pipeline Company
Laurent Nicole	General Manager, Acta Consultants
Zaza Shavshiashvili	Director, Forest Fund “Idio”
Nino Saakashvili	Director, Horizonti Foundation
Paliko Abaiadze	President, Environmental Law Club
Nugzar Zazanashvili	Programs Coordinator, WWF-Georgia

ANNEX D

Lists of Rare and Endangered Species of Georgia

Adopted from Red Data Book of Georgia (RDBG, 1982) and IUCN Red List of Animals (1996)

Table 1. List of Rare and Endangered Mammals of Georgia

Common name	Scientific Name	RDBG	IUCN
Mediterranean Horseshoe Bat	*Rhinolophus euriale*		VU
Greater Horseshoe Bat	*Rhinolophus ferrumequinum*		Lr/cd
Lesser Horseshoe Bat	*Rhinolophus hipposideros*		VU
Mehely's Horseshoe Bat	*Rhinolophus mehelyi*	+	VU
Western Barbastelle	*Barbastella barbastellus*	+	VU
Bechstein's Bat	*Myotis bechsteini*	+	VU
Geoffroy's bat	*Myotis emarginatus*	+	VU
Schreiber's Long-Fingered Bat	*Miniopterus schreibersi*	+	Lr/nt
Giant Noctule	*Nyctalus lasiopterus*	+	Lr/nt
Lesser Noctule	*Nyctalus leiseri*	+	Lr/nt
Transcaucasian Hamster	*Mesocricetus brandti*	+	
Shrew	*Sorex raddei*	+	
Shrew	*Suncus etruscus*	+	
Shrew	*Crocidura suaveolens*	+	
Red Manul	*Otocolobus manul ferrugineous*		Lr/nt
Persian Squirrel	*Sciurus anomalus*		Lr/nt
Kazbegi Birch Mouse	*Sicista kazbega*		DD
Caucasian Birch Mouse	*Sicista betulina*		Lr/nt
	Calomyscus urartensis		Lr/nt
	Chionomys gud		Lr/nt
	Chionomys roberti		Lr/nt
Snow Vole	*Chionomys nivalis*		Lr/nt
Harvest Mouse	*Micromys minutus*		Lr/nt
Forest Dormouse	*Dryomys nitedula*		Lr/nt
Fat Dormouse	*Myoxus glis*		Lr/nt
Striped Hyaena	*Hyaena hyaena*	+	
Leopard	*Felis pardus*	+	
Lynx	*Felis lynx orientalis*	+	
Marbled Polecat	*Vormela peregusna*	+	VU
European Otter	*Lutra lutra meridionalis*	+	
European mink	*Mustela (Lutreola) lutreola*	+	EN
Chamois	*Rupicapra rupicapra caucasica*		VU
Wild Goat	*Capra aegagrus aegagrus*		VU
Caucasian mountain goat	*Capra cylindricornis*		VU
Caucasian tur	*Capra caucasica*		VU
Red Deer	*Cervus elaphus maral*	+	
Persian Gazelle	*Gazella subgutturosa*	+	
Risso's Dolphin	*Grampus griseus*		DD
Common Dolphin	*Dolphinus delphis*		DD
Bottlenose Dolphin	*Tursiops truncatus ponticus*		DD
Harbor porpoise	*Phoceona phoceona relicta*		DD

Table 2. List of Rare and Endangered Birds of Georgia

Common name	Scientific name	RDBG	IUCN
Black stork	*Ciconia nigra*	+	
Dalmatian Pelican	*Pelecanus crispus*		VU
Pygmy Cormorant	*Phalacrocorax pygmaeus*		Lr/nt
Mute Swan	*Cygnus olor*	+	
Whooper Swan	*Cygnus cygnus*	+	
Lesser White-fronted Goose	*Anser erythropus*		VU
Ferruginous Duck	*Aythya nyroca*		VU
Marbled Teal	*Marmaronetta angustirostris*		VU
White-headed Duck	*Oxyura leucocephala*		VU
Great Egret	*Egretta alba*	+	
Little Egret	*Egretta garzetta*	+	
Osprey	*Pandion haliaetus*	+	
White-tailed Eagle	*Haliaeetus albicilla*	+	Lr/nt
Lammergeier	*Gypaetus barbatus*	+	
Eurasian Griffon Vulture	*Gyps fulvus*	+	
Black (Monk) Vulture	*Aegypius monachus*	+	Lr/nt
Short-toed Eagle	*Circaetus gallicus*	+	
Pallid Harrier	*Circus macrourus*		Lr/nt
Imperial Eagle	*Aquila heliaca*	+	VU
Steppe Eagle	*Aquila rapax*	+	
Golden Eagle	*Aquila chrysaetus*	+	
Saker Falcon	*Falco cherrug*	+	
Peregrine Falcon	*Falco peregrinus*	+	
Lesser Kestrel	*Falco naumanni*		VU
Black Francolin	*Francolinus francolinus*	+	
Caucasian Black Grouse	*Tetrao mlokosiwiczi*	+	Lr/nt
Caspian Snowcock	*Tetraogallus caspius*	+	
Purple Gallinule	*Porphyrio porphyrio*	+	
Grey Partridge	*Perdix perdix*	+	
Common Crane	*Grus grus*	+	
Corncrake	*Crex crex*		VU
Great Bustard	*Otis tarda*	+	VU
Little Bustard	*Tetrax tetrax*	+	Lr/nt
Great Snipe	*Gallinago media*		Lr/nt
Black-winged Pratincole	*Glareola nordmanni*		Lr/nt
Woodchat Shrike	*Lanius senator*	+	
Rufous Bush Chat	*Cercotrichas galactotes*	+	
Short-toed Treecreeper	*Certhia brachydactyla*	+	
Bearded Tit	*Panurus biarmicus*	+	
Firecrest	*Regulus ignicapillus*	+	
Syrian Woodpecker	*Dendrocopos syriacus*	+	
Great Rosefinch	*Carpodacus rubicilla*	+	
Guldenstadt's Redstart	*Phoenicurus erythrogaster*	+	
Crimson-winged Finch	*Rhodopechys sanguinea*	+	

Table 3. List of Rare and Endangered Reptiles, Amphibians and Fish of Georgia

Reptiles	RDBG	IUCN
Testudo graeca	+	VU
Emys orbicularis		Lr/nt
Lacerta alpina		DD
Lacerta clarkorum		EN
Eumeces schneideri	+	
Erix jaculus	+	
Elaphe longissima	+	
Elaphe situla		DD
Natrix megalocephala		VU
Vipera kaznakovi	+	EN
Vipera ammodytes	+	NE
Vipera dinniki		VU
Vipera pontica		CR
Vipera darevskii		CR

Amphibians	RDBG	IUCN
Triturus vittatus	+	
Triturus cristatus		Lr/cd
Mertensiella caucasica	+	Lr/nt
Pelobates syriacus	+	
Pelodytes caucasica	+	
Hyla arborea		Lr/nt

Fishes	RDBG	IUCN
Acipenser sturio	+	CR
Acipenser nudiventris		EN
Acipenser persicus		EN
Acipenser stellatus		EN
Acipenser ruthenus		VU
Huso huso		EN
Alosa pontica		DD
Alosa maeotica		DD
Clupeonella cultriventris		DD
Aspius aspius		DD
Leuciscus borysthenicus		DD
Barbatula brandti		DD
Barbus cyclolepis		DD
Pelecus cultratus		DD
Rutilus frisii		DD
Syngnathus nigrolineatus		DD
Mesogobius batrachocephalus		DD
Neogobius melanostomus		DD

Lr/nt Lower threat/near threatened; Lr/cd Lower threat/conservation dependent;
VU Vulnerable; CR Critically endangered; EN Endangered; DD Data deficient; NE Not evaluated

Table 4. The List of Endangered Plant Species of Georgia. From the Red Data Book of Georgia (1982)

Scientific name	***Scientific name***

Scientific name	Scientific name
Anogramma leprophylla	*Pterocarya pterocarpa*
Hymenophyllum tubridgense	*Salvia garedji*
Osmunda regalis	*+Satureja bzibica*
Juniperus foetidissima	*Laurus nobilis*
Platycladus orientalis	*Astragalus caucasicus*
+ Pinus eldarica	*Astragalus cyri*
Pinus pithyusa	*Astragalus schischkinii*
Taxus baccata	*Astragalus sommieri*
Acer ibericum	*Astragalus tannae*
Pistacia mutica	*Cicer arietinum*
Hedera pastuchovii	*Ewersmannia subspinosa*
Berberis iberica	*Genista abchasica*
Bongardis chrysogonum	*Genista adzharica*
Gymnospermium smirnowii	*Halimodendron halodendron*
Betula medwedewii	*Althaea officinalis*
+Betula megrelica	*Nuphar luteum*
+Betula raddeana	*Nymphaea colchica*
+Buxus colchica	*Phillyrea wilmoriniana*
Campanula armasica	*Paeonia carthalinica*
Campanula crispa	*Paeonia wittmanniana*
Campanula dzaaku	*Paeonia lagodechiana*
Campanula dzyschrica	*Paeonia majko*
+Campanula engurensis	*+Paeonia mlokosewitchii*
Campanula mirabilis	*Papaver pseudo-orientale*
Campanula paradoxa	*Cyclamen colchicum*
Campanula svanetica	*Primula juliae*
Symphyandra pendula	*Primula megaseifolia*
Cerastium ponticum	*Punica granatum*
Charesia akinfievii	*Cytinus rubra*
Dianthus letzkhovelii	*Amygdalus georgica*
Dianthus kusnetzovii	*Crataegus pontica*
Silene marcowiczii	*Pyrus demetrii*
Silene pygmaea	*Pyrus sachokiana*
Celtis caucasica	*Populus euphratica*
Celtis glabrata	*+Staphylea colchica*
Amphoricarpos elegans	*Staphylea pinnata*
Cladochaeta candidissima	*Ulmus elliptica*
Podospermum grigirashvili	*Ulmus georgica*
Pseudopodospermum leptophilum	*Ulmus glabra*
Scorzonera dzhavakhetica	*Ulmus minor*
Scorzonera ketzkhoveli	*Ulmus suberosa*
Scorzonera koslovskyi	*Zelkova carpinifolia*
Senecio massagetovii	*Angelica adzharica*
Senecio rhombifolius	*Bupleurum rischavii*
Tragopogon meskheticus	*Heracleum aconitifolium*
Thelycrania armasica	*Heracleum sommieri*
Corylus colchica	*Ligusticum arafoe*
Corylus iberica	*Polylophium panjutinii*
Ostrya carpinifolia	*Vitis silvestris*
Anchonium elichrysifolium	*Nitraria schoberi*
+Scabiosa olgae	*Pancratium maritimum*
Drosera anglica	*+Dioscorea caucasica*
Drosera intermedis	*Chrysopogon gryllus*
Drosera rotundifolia	*Molinia litoralis*
Diospyros lotus	*+Secale kuprijanovi*
Hippophae rhamnoides	*Triticum aestivum*
Arbutus andrachne	*Triticum carthlicum*
Epigaea gaultherioides	*Triticum compactum*
Rhododendron smirnowii	*Triticum dicoccum*
Rhododendron ungernii	*Triticum durum*
+Leptopus colchicus	*Triticum macha*

Scientific name	*Scientific name*
Castanea sativa	*Triticum monococcum*
Quercus dschorochensis	*+Triticum timopheevii*
Quercus hartwissiana	*Triticum paleocolchicum*
+Quercus imeretina	*Triticum zhukowsky*
Quercus macranthera	*Gladiolus dzhavakheticus*
Quercus pedunculiflora	*Iridodictyum winogradowii*
Quercus pontica	*Iris iberica*
Corydalis erdelii	*Asphodeline taurica*
Globularia trichosantha	*+Erythronium caucasicum*
Trapa colchica	*+Lilium caucasicum*
Trapa hyrcana	*Lilium georgicum*
Trapa maleevii	*Muscari alpanicum*
Hypericum thethrobicum	*Tulipa biebersteiniana*
Juglans regia	*Tulipa eichlerii*

\+ included in IUCN red list of threatened plants (see below)

Table 5. Threatened Plants in Georgia (from IUCN List)

Family	Species	Status	NC	GE
Amaryllidaceae	*Galanthus alpinus*	I		+
	Galanthus lagodechianus	R	+	
Orchidaceae	*Ophrys oestrifera*	I	+	+
Cruciferae	*Pseudoresicaria digitata*	I		+
	Crambe steveniana	I	+	
Buxaceae	*Buxus colchica*	I	+	+
Paeoniaceae	*Paeonia steveniana*	I	+	+
	Paeonia macrophylla	I		+
	Paeonia mlokosewitschii	I	+	
Fagaceae	*Quercus imeretina*	I	+	+
Graminae	*Secale kuprijanovii*	I	+	+
	Triticum timopheevii	I		+
	Zingeria biebersteiniana	I		+
	Stipa syreistschikowii	I	+	
	Elytrigia stipifolia	I	+	
Caryophyllaceae	*Silene akinfievii*	I	+	+
	Petrocoma hoefftiana	I	+	
Euphorbiaceae	*Leptopus colchicus*	I		+
	Euphorbia aristata	I	+	
Umbelliferae	*Polylophium panjutinii*	I		+
	Seseli saxicolum	I		+
	Laserpitium affine	R		+
Primulaceae	*Primula megaseifolia*	I		+
Scrophulariaceae	*Rhamphicarpa medwedewii*	I		+
	Veronica filifolia	I	+	
Staphyleaceae	*Staphylea colchica*	I		+
Ruscaceae	*Ruscus colchicus*	I		+
Compositae	*Anthemis saguramica*	I		+
Betulaceae	*Betula megrelica*	I		+
	Betula raddeana	I	+	+
Campanulaceae	*Campanula engurensis*	I	+	+
	Campanula makaschvilii	I		+
	Edraianthus owerinianus	I	+	
Ranunculaceae	*Delphinium fissum*	I		+
Dioscoraceae	*Dioscorea caucasica*	I		+
Berberidaceae	*Epimidium colchicum*	I	+	+
Liliaceae	*Erythronium caucasicum*	I	+	+
Gentianaceae	*Gentiana paradoxa*	I	+	+
Thymelaeaceae	*Daphne baksanica*	En	+	
Geraniaceae	*Erodium stevenii*	R	+	
Liliaceae	*Lilium caucasicum*	I	+	

Family	Species	Status	NC	GE
Boraginaceae	*Onosoma polyphylla*	I	+	
Papaveraceae	*Papaver bracteatum*	I	+	
Primulaceae	*Primula darialica*	I	+	
Labiatae	*Satureja bzybica*	I	+	
Saxifragaceae	*Saxifraga columnaris*	I	+	
	Saxifraga dinnikii	I	+	
Dipsacaceae	*Scabiosa olgae*	I	+	

I = Indeterminate; En = Endangered; R = Rare; NC = North Caucasus; GE = Georgia

ANNEX E

MAP OF LANDSCAPE ZONES (BIOMES) OF GEORGIA

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ANNEX F

MAP OF PROTECTED AREAS OF GEORGIA

Available in Hard Copy Only

ANNEX G

Protected Areas in Georgia

	Protected Areas	Year of designation	Existing area (ha.)	Planned area (ha.)	Planned Category
1	Algeti NR	1965	6,822	-	-
2	Akhmeta NR	1980	16,297		
	Babaneuri NR		2,735	4,331	NR
	Batsara NR		3,042	10,580	NR
	Tusheti NR		10,109	-	NP
3	Ajameti NR	1946	4,845	-	-
4	Pitsunda-Miusera NR	1966	3,645	-	-
5	Borjomi NR	1929	17,948	-	-
6	Pskhu-Gumista NR	1976	40,819	-	-
7	Vashlovani NR	1935	8,034	-	-
8	Kintrishi NR	1959	13,893	-	-
9	Lagodekhi NR	1912	17,932	25,400	NR
10	Liakhvi NR	1977	6,388	-	-
11	Ritsa NR	1957	16,289	-	-
12	Saguramo NR	1948	5,359	-	-
13	Sataplia-Kolkheti NR	1935	854	-	-
	Sataplia NR		354	-	-
	Kolkheti NR		500	-	-
14	Kazbegi NR	1966	8,707	-	-
15	Marimjvari NR	1939	1,040		-
	Total Nature Reserves (ha.)		**168,872**	**185,478**	
1	Gardabani State Forest Hunting Reserve (SFHR)	1957	3,315	-	MNR
2	Korugi SFHR	1958	2,068	2,600	MNR
3	Iori SFHR	1965	1,336	4,000	MNR
4	Chachuni SFHR	1965	5,200	18,805	MNR
5	Katsoburi SFHR	1964	295	-	-
	Total Managed Nature Reserves (ha.)		**12,214**	**29,015**	
1	Borjomi-Kharagauli Protected Area	1995		-	-
	-Borjomi National Park (NP)		50,400		
	- Ktsia-Tabatstkuri MNR		22,000		
	- Nedzvi MNR		11,200		
	- Tetrobi MNR		3,100		
	- Multiple Use Protected Area		156,000		
2	Kolkheti Protected Areas Region				
	- Kolkheti NP			54,700	NP
	- Kobuleti NR			777	NR
	- Multiple Use Protected Area			74,700	MUPA
3	Eastern Caucasus Protected Areas Region				
	- Tusheti NP			115,800	NP
	- Kakheti NP			76,850	NP
	- Pirikiti NP			168,400	NP
	- Khevi Protected Landscape			78,200	PL
	- Alazani MNR			11,165	MNR
	- Alaverdi MNR			262	MNR
	- MUPA			228,299	MUPA

	Protected Areas	Year of designation	Existing area (ha.)	Planned area (ha.)	Planned Category
4	Iori Protected Areas Region - Vashlovani NP - David-Gareji PL - MUPA			 44,796 37,000 192,200	 NP PL MUPA
5	Adjara-Guria-Imereti Protected Area Region			173,000	
6	Central Caucasus PAR			743,000	
7	Erusheti PAR			18,600	
8	Abkhazeti PAR			530,000	

NR - Strict Nature Reserve; MNR - Managed Nature Reserve; PL - Protected Landscape; NP – National Park; MUPA – Multiple Use Protected Area

ANNEX H

Georgia Protected Areas Development Project Design Summary

Narrative Summary	Key Performance Indicators
CAS Objectives: 1. Protect the environment, support sustainable natural resources management, and foster private sector rural development	**1.1 National protected area plan completed and adopted.** **1.2 Creation of national parks in Eastern and Central Caucasus** 1.3 Habitat conservation plans adopted to integrate biodiversity conservation objectives and activities into forest and range management 1.4 Increased public awareness of natural resources management issues 1.5 Development of nature-based tourism plans for 2 areas
2. GEF Operational Program: Support in-situ conservation, sustainable use, and capacity building	2.1 National Protected Areas network identified, representative of all major habitats 2.2 Increase in populations of key indicator and threatened species 2.4 Protected Areas Department restructured professional development and training activities
Project Development Objective: Improve in situ conservation of Georgian biodiversity and its sustainable use	

Narrative Summary	Key Performance Indicators
Outputs 1. At least 3 ecologically effective protected areas are functioning in eastern Georgia	1.1 legal designation of 2 national parks and expansion of 1 nature reserve 1.2 At least 90% of each management plan is implemented after 6 years of project implementation. 1.3 Number of illegal activities within the protected areas has been reduced at least 70% by the end of the project, in comparison with the pre-project condition 1.4 Population numbers of key target species increase (define % and species) by the end of the project, in comparison with the pre-project condition 1.5 Administrative system for receiving and managing user/entrance fees in place by the end of the 3rd year of the project. 1.6 The amount of funds generated through the reinvestment mechanism increases 20% by the end of the 6th year relative to the end of the 3rd year.
2. Facilitate the creation of a national network of protected areas	1.1 Protected Area Systems Plan approved by GoG by the end of the 2nd year of the project 1.2 Comprehensive management plan for the Central Caucasus planning region approved by GoG
3. Biodiversity conservation has been integrated into forestry, range management, and agriculture	3.1 Adoption of legislation on the protection of endangered plants and animals by the end of the 3rd year of the project 3.2 GoG approval of first recovery plan for target endangered species by end of the 2nd year of the project 3.3 GoG approval of first grazing plan by the end of the first year of the project 3.4 Agreement reached with Department of Forestry on guidelines for integration of biodiversity conservation into forestry planning process.
4. Institutions responsible for biodiversity conservation programs have been strengthened	4.1 Statute for the new structure of the Department of protected Areas is approved by the GoG by the end of the 1st year of the project 4.2 Institutional development plan for the DPA has been implemented at least 60% by the end of the 3rd year and 90% by the end of the 5th year.
5. Improve public awareness of Georgian biodiversity	5.1 To be determined

Narrative Summary	Key Performance Indicators
6. Promote international cooperation in Caucasus biodiversity conservation.	6.1 Number of international workshops 6.2 Workshops to report results of annual monitoring of migratory birds and mammals undertaken in years 2-6 of the project, with participation of representatives of Russia, Armenia, Azerbaijan, and Turkey 6.3 Regular mechanism for information exchange among the same countries established and operational by the 2nd year of the project
Activities: 1. Establish ecologically and socially effective protected areas	1.1 Creation of laws for new protected areas 1.2 Management plans for new protected areas
2. Integrate biodiversity conservation into forestry and range management inside and outside of protected areas	2.1 National policy document on sustainable forestry and conservation 2.2 Forestry and protected area specific plan for Central Caucasus region 2.3 Biodiversity assessments and habitat conservation plans for Central and/or Eastern Caucasus regions to be incorporated into forest management plans 2.4 Sustainable use plans for forest and pasture in support zones of selected protected areas
3. Strengthen institutions responsible for biodiversity conservation programs	3.1 Review of institutional arrangements and responsibilities for biodiversity conservation
4. Improve monitoring and applied research on threatened flora and fauna, and effect their recovery	4.1 Censuses and technical reports completed on forest biodiversity 4.2 Habitat conservation plans
5. Improve public awareness of Georgian biodiversity	5.1 Public information center for Caucasian biological diversity, including development of a Georgia biodiversity web site with information for recreational opportunities in national parks 5.2 Field guides on Georgian biodiversity
6. Promote international cooperation in Caucasus biodiversity conservation.	6.1 Action plan for transboundary cooperation 6.2 Functional network of international NGOs

ANNEX I

Agrobiodiversity Conservation in Georgia (from GEF PDF Grant Proposal)

The project will promote *in-situ* conservation of local crop species and varieties by strengthening traditional agricultural systems through farmer extension work on landrace management and by protecting wild relatives in selected protected areas.

The project has seven components aimed at removing the barriers to the conservation of local agrobiodiversity:

- The first component is to establish protected micro sites where there exists a significant concentration of globally significant wild relatives of cultivated plants.

- The second component is the strengthening of *in situ* conservation of native varieties in selected communities and in their immediate surrounding natural environment. These activities will complement existing and projected *ex-situ* conservation efforts, and also conservation of wild relatives in protected areas.

- The third component will promote and increase exchange and sharing of traditional knowledge that helps to maintain the diversity of the agroecosystems. Experiences will be shared and exchanged through farmer-to-farmer programs. The understanding of the links between cultural diversity and biological diversity will take an important role in this component.

- The fourth component will produce a package of pilot demonstration projects aimed at promoting the commercial use of native varieties with potential in regional markets.

- The fifth component will be an information base and monitoring system to document on-farm native species and varieties and wild relatives.

- The sixth component will be an improved legal and management framework for the conservation and sustainable use of agrobiodiversity in Georgia.

- Finally, the seventh component will be increased public awareness and strengthened technical capacity in government units, local communities and NGOs, including systematic efforts to promote consumption of local species and varieties.