



ECOSYSTEM PROFILE

CAUCASUS BIODIVERSITY HOTSPOT

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INTRODUCTION

The Critical Ecosystem Partnership Fund (CEPF) is designed to safeguard the world's threatened biodiversity hotspots in developing countries. It is a joint initiative of Conservation International (CI), the Global Environment Facility (GEF), the Government of Japan, the MacArthur Foundation and the World Bank. CEPF supports projects in hotspots, areas with more than 60 percent of the Earth's terrestrial species in just 1.4 percent of its land surface. The Caucasus hotspot, with its unique assemblages of plant and animal communities and rare and endemic species, is globally important for conserving representative areas of the Earth's biodiversity, making it worthy of international attention and CEPF funding.

A fundamental purpose of CEPF is to ensure that civil society is engaged in efforts to conserve biodiversity in the hotspots. An additional purpose is to ensure that those efforts complement existing strategies and frameworks established by local, regional and national governments.

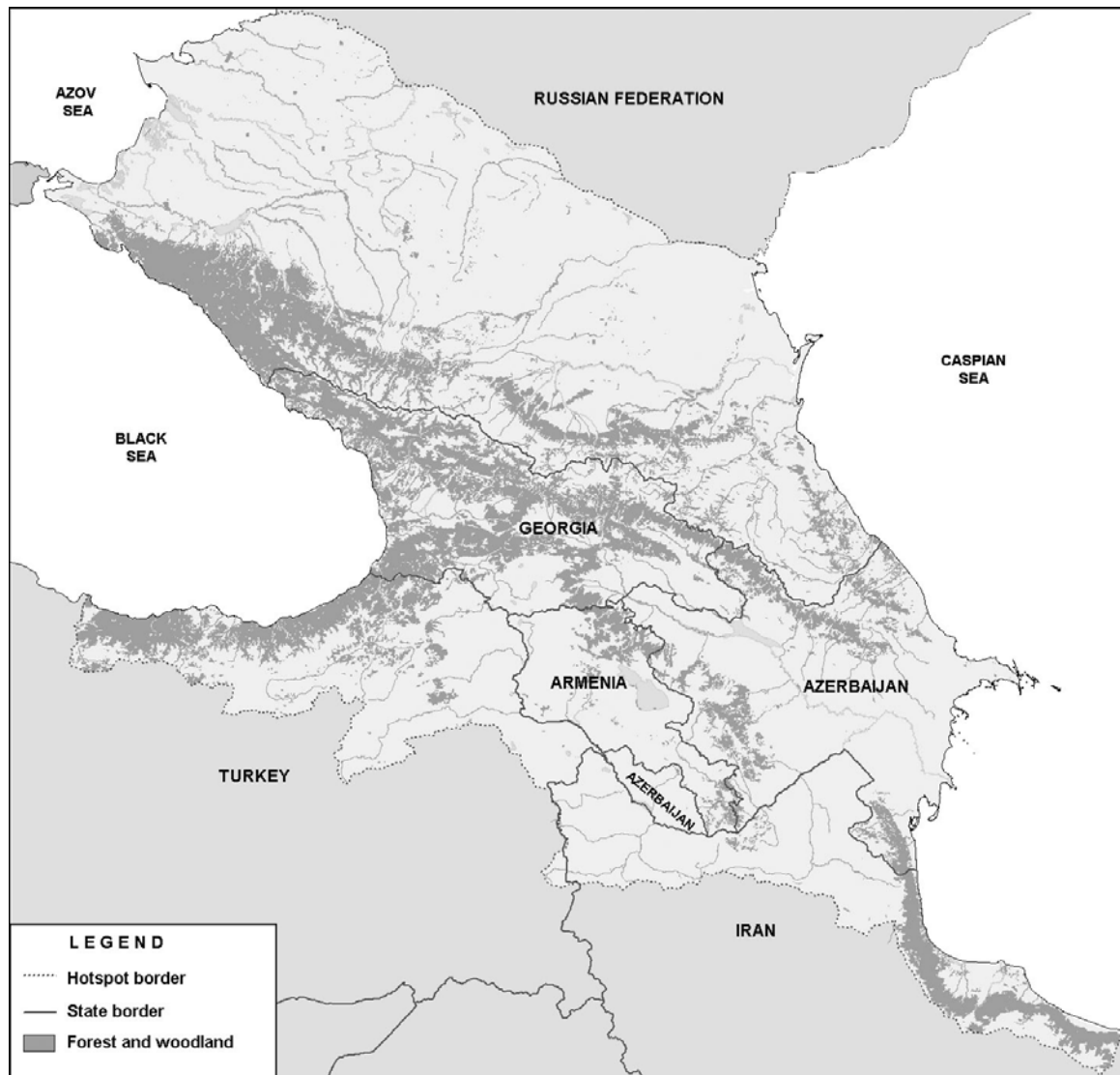
CEPF aims to promote working alliances among community groups, nongovernmental organizations (NGOs), government, academic institutions and the private sector, combining unique capacities and eliminating duplication of efforts for a comprehensive approach to conservation. CEPF is unique among funding mechanisms in that it focuses on biological areas rather than political boundaries and examines conservation threats on a corridor-wide basis to identify and support a regional, rather than a national, approach to achieving conservation outcomes. Corridors are determined through a process of identifying important species, site and corridor-level conservation outcomes for the hotspot. CEPF targets transboundary cooperation when areas rich in biological value straddle national borders, or in areas where a regional approach will be more effective than a national approach.

THE ECOSYSTEM PROFILE

The Caucasus hotspot, historically interpreted as the isthmus between the Black and Caspian seas, covers a total area of 580,000 km², including the nations of Armenia, Azerbaijan and Georgia, the North Caucasus portion of the Russian Federation, northeastern Turkey and part of northwestern Iran (Figure 1).

One of the most biologically rich regions on Earth, the Caucasus is among the planet's 25 most diverse and endangered hotspots. The Caucasus is one of WWF's Global 200 Ecoregions, identified as globally outstanding for biodiversity. The Caucasus has also been named a large herbivore hotspot by WWF's Large Herbivore Initiative. Eleven species of large herbivores, as well as five large carnivores, are found over a relatively small area. The 2002 IUCN Red List identifies 50 species of globally threatened animals and one plant in the Caucasus. Among the IUCN species, 18 have restricted ranges or are endemics. The Caucasus Mountains harbor a wealth of highly sought-after medicinal and decorative plants, as well as unique relic and endemic plant communities.

Figure 1. The Caucasus hotspot



Spanning the borders of six countries, the Caucasus hotspot is a globally significant center of cultural diversity, where a multitude of ethnic groups, languages and religions intermingle over a relatively small area. Close cooperation across borders will be required for conservation of unique and threatened ecosystems, while helping to foster peace and understanding in an ethnically diverse region.

The purpose of the ecosystem profile is to provide a rapid assessment of underlying causes of biodiversity loss, to define measurable outcomes for conservation of species, sites and corridors, understand the existing institutional framework and identify funding gaps and opportunities for investment. The ecosystem profile recommends strategic funding directions that will contribute to the conservation of biodiversity in this globally significant region.

Civil society organizations will propose projects and actions that fit into these strategic directions and contribute to the conservation of biodiversity in the targeted region. Applicants propose specific projects consistent with these funding directions and investment criteria. The ecosystem profile does not define the specific activities that prospective implementers may propose, but outlines the conservation strategy that will guide those activities. Applicants for CEPF grants will be required to prepare detailed proposals identifying and describing the interventions and performance indicators that will be used to measure the success of the project.

BACKGROUND

The ecosystem profile and five-year investment strategy for the Caucasus Region was developed based on stakeholder workshops and background reports coordinated by the WWF Caucasus Programme Office (WWF Caucasus). More than 130 experts from the six countries participated in preparation of the Caucasus ecosystem profile representing a variety of scientific, governmental and nongovernmental organizations. During the six months of the project, data on biodiversity, socioeconomic factors, institutional context and conservation efforts from six countries were compiled and synthesized. Two stakeholder workshops were held in November 2002 and January 2003 to allow broad input from the conservation community and to formulate and approve the niche and investment strategies proposed for CEPF in the region. The workshops helped people from six countries to reach a consensus in this politically complicated region. They also generated commitment from all stakeholders for implementation of proposed directions.

This ecosystem profile, together with profiles under development for CEPF in other regions at this time, includes a new commitment and emphasis on using conservation outcomes—targets against which the success of investments can be measured—as the scientific underpinning for determining CEPF’s geographic and thematic focus for investment. Conservation outcomes are the full set of quantitative and justifiable conservation targets in a hotspot that need to be achieved in order to prevent biodiversity loss. These targets are defined at three levels: species (extinctions avoided), sites (areas protected) and landscapes (corridors created). As conservation in the field succeeds in achieving these targets, these targets become demonstrable results or outcomes. While CEPF cannot achieve all of the outcomes identified for a region on its own, the partnership is trying to ensure that its conservation investments are working toward preventing biodiversity loss and that its success can be monitored and measured.

Species, site and corridor outcomes for the Caucasus were defined in cooperation with scientists at CI’s Center for Applied Biodiversity Science (CABS). Based on the results of these analyses, experts identified 10 corridors that encompass the vast majority of outcomes defined for the Caucasus hotspot.

In parallel to this work, WWF coordinated the development of a long-term vision for conservation of the Caucasus Ecoregion. About 60 priority areas for achieving the vision were identified based on biological and socioeconomic analyses and identification of focal species, processes and habitats. Corridors and CEPF strategies for this profile were determined taking into account the conservation vision and identified priority areas, the

conservation site outcomes determined for 51 globally threatened species and the existing network of protected areas in the region.

WWF Caucasus prepared this profile in collaboration with the MacArthur Foundation, the German Bank for Reconstruction and Development (KfW) and BirdLife International. The Biodiversity and Landscape Conservation Union of Armenia, CABS, the Center for Sustainable Development of Iran, the Ecological Union of Azerbaijan and AHT International provided technical support.

BIOLOGICAL IMPORTANCE

The Caucasus is a hotspot of plant and animal species diversity and endemism important for the conservation of biodiversity on a global scale. Located at a biological crossroads, species from Central and Northern Europe, Central Asia, the Middle East and North Africa mingle here with endemics found nowhere else. High levels of landscape diversity in the Caucasus are largely the result of temporal-spatial variability in the region. The unique geology and terrain, consisting of three major mountain chains separated by valleys and plains, permit a variety of different microclimate, soil and vegetative conditions, resulting in a broad range of landscapes and unusually high levels of species diversity for the Temperate Zone. Climatic conditions are very diverse, with precipitation ranging from more than 4,000 mm per year in the southwestern Caucasus to less than 200 mm a year in deserts in the eastern Caucasus.

More than 6,500 species of vascular plants are found in the Caucasus. A quarter of these plants are found nowhere else on Earth - the highest level of endemism in the temperate world. At least 153 mammals inhabit the Caucasus; one-fifth of these are endemic to the region. As many as 400 species of birds are found in the Caucasus, four of which are endemic to this hotspot. The coasts of the Black and Caspian seas are important stop over sites for millions of migrating birds, which fly over the isthmus each spring and autumn between their summer and winter homes. Twenty-two of the 77 reptiles in the Caucasus are endemic to the region. Fourteen species of amphibians are found in the region, of which four are endemics. More than 200 species of fish are found in the rivers and seas of the region, more than a third of which are found nowhere else.

Globally Threatened Species

Globally threatened species—those listed as vulnerable, endangered and critically endangered according to the IUCN Red List—are the primary focus for conservation at the species level in this profile. In all, 50 globally threatened species of animals and one plant were identified in the hotspot. The distribution of these species was assessed to determine important sites and corridors for conservation. The East Caucasian tur and the West Caucasian tur are among the 18 mammals identified in this hotspot. Turs are found in the Greater Caucasus Range, dwelling mainly in the high mountains and sometimes descending into the rocky gorges of the forest belt. In recent years, their numbers have declined greatly and now IUCN lists the turs as endangered and vulnerable. The Armenian mouflon, an endemic species of wild sheep and the ancestral form of domestic sheep, is another mammal listed as vulnerable in the IUCN Red List. Mouflon populations have dwindled to fewer than several hundred in southern Armenia and in the

Nakhichevan Autonomous Republic (Azerbaijan). Dahl's jird, found in semi-desert habitats in the Araks River valley, is also endangered in the region.

Globally threatened birds in the Caucasus include the critically endangered Siberian crane that migrates along the Caspian Sea coast; the vulnerable great bustard, found in open plains in northern Iran and Turkey during migration and in the North Caucasus of Russia; the endangered white-headed duck; and vulnerable red-breasted goose that winters in wetlands in Azerbaijan, Russia and northern Iran and Turkey. In all, 11 bird species in the Caucasus are listed as vulnerable, endangered or critically endangered according to IUCN.

The 10 globally threatened reptiles in the region include the Caucasian viper, meadow viper and Dinnik's viper. These vipers are endemic to the Caucasus and occupy total ranges of only a few thousand square kilometers. The endemic Caucasian salamander, one of the four vulnerable species of amphibians, is found only in western Georgia and Turkey.

Six species of sturgeon and the beluga are endangered by overfishing and habitat degradation in the Black and Caspian seas. The Baltic (Atlantic) sturgeon, which spawns only in rivers in the Kolkheti Lowlands in Georgia, is critically endangered.

Additionally, the Caucasus has a number of important flagship and locally threatened species. Perhaps the best known is the highly endangered Caucasian leopard, celebrated in local folklore. The leopard used to be widespread throughout the Caucasus, but now it is found only in remote parts of the Greater Caucasus Range, southern Armenia, the Nakhichevan Republic (Azerbaijan), the Talysh Mountains and in bordering areas of northeastern Turkey and northwestern Iran. The main reasons for the leopard's decline are habitat loss, poaching and decline of prey species.

Other large mammal species include the striped hyena, which is now on the verge of extinction, and the Caucasian red deer, one of the most endangered species of wildlife in the southern Caucasus. Chamois and goitred gazelle are also important flagship species in the region.

Endemic species of birds in the Caucasus include the Caucasian black grouse and the Caucasian snowcock. The Caucasian black grouse occurs in all the high mountains of the Caucasus, while the Caucasian snowcock is found only in the Greater Caucasus Range.

Vegetation

The vegetation of the Caucasus is quite diverse as a result of the varied relief, climate and evolutionary history. Outstanding features include plants and plant associations that date back to the Tertiary Period, including in the Colchic Region in the Black Sea basin and the Hyrcanic Region in the southeastern portion of the Caucasus on the Caspian Sea coast. The abundance of relic and endemic plant species in the region is largely due to the fact that the Caucasus was spared glaciation during the last Iceage. The Colchic Refugia (Georgia, Russia and Turkey) and the Hyrcanic Refugia (Azerbaijan and Iran) harbor species found nowhere else like Imeretian and pontic oaks, Medwedew's birch,

Ungern's and Smirnow's rhododendron, epigea and others. Chestnut-leaf oak, Hyrcanic poplar, danae and other plants are endemic relics of the Hyrcanic Region. Relic forests of endemic box tree occur in the northern part of the Colchic Region.

About 700 species of higher plants are listed in regional Red Books of Rare and Endangered Species, including at least 20 species of bellflower and 18 species of iris. Five species of lichens and 11 species of fungi are also locally endangered. Tigran's elder is the only globally threatened plant included in the IUCN Red List and considered in this Ecosystem Profile as a conservation target at the species level. This vulnerable shrub is an endemic found sporadically in the Shirak, Aparan, Yerevan and Darelegis regions of Armenia, in lower and middle mountain belts on dry rocky and clay soils. It is threatened by habitat loss to development and overgrazing.

Major Ecosystems

The major ecosystems in the Caucasus hotspot consist of forests, high mountain habitats, dry mountain shrublands, steppes, semi-deserts and wetlands. In the North Caucasus Plain, vegetation changes from steppe communities in the west to semi-desert and desert habitats in the east. Moving south, the Greater Caucasus Range rises above the plain with several peaks above 5,000m, enveloped by broadleaf and coniferous forests and subalpine and alpine meadows, glaciers and snowfields. The Greater Caucasus Range gives way to the narrow Transcaucasian Depression to the south, with rich alder and Caucasian wing-nut swamp forests in the Kolkheti Lowlands to the west and steppes, arid woodlands, semi-deserts and deserts to the east. The Lesser Caucasus Mountain Chain rises to the south of this depression, with broadleaf and coniferous forests and alpine meadows and shrublands. The Southern Uplands abut the Lesser Caucasus Mountains, characterized by mountain steppe and grasslands. The Talysh-Alborz Mountain Range, in the southeastern corner of the hotspot, extends along the Caspian Sea from southern Azerbaijan to northern Iran, where broadleaf forest, mountain steppe and alpine meadow ecosystems are represented.

Forests are the most important biome for biodiversity conservation in the Caucasus, covering nearly one-fifth of the region. Forests in the Caucasus are highly diverse, consisting of broadleaf, dark coniferous, pine, arid open woodland and lowland forests, which are dispersed according to elevation, soil conditions and climate in the region.

Broadleaf forests, consisting of Oriental beech, oak, hornbeam and chestnut, make up most of the forested landscape of the Caucasus. Beech forests play the leading role in the region's timber industry. Careless clearcutting of mountain beech stands has permanently damaged a significant portion of valuable beech forests in the Northern Caucasus. Most oak species in the hotspot are endemic to the region. Oak forests, largely cleared for farmlands and pastures, have been spared mostly in remote canyons and on relatively poor soils. Chestnut forests in the Colchic foothills and in the northwestern Caucasus have also been logged intensively. In northeastern Turkey, broadleaf forests are cleared for tea and hazelnut plantations. In northwestern Iran, only 12 percent Arasbaran broadleaf forests remain, noted for their high number of endemic species.

Dark coniferous forests, made up mainly of Oriental spruce and Caucasian fir, are found in the western part of the Lesser Caucasus Range and on both sides of the western and central Greater Caucasus Range. Coniferous forests are logged for paper production and timber, resulting in severe depletion of these reserves. Pine forests occur in the North Caucasus, though they are also found in the southern Caucasus, especially in the Kura River watershed in Georgia and Azerbaijan.

Arid open woodlands form on dry, rocky slopes in the eastern and southern Caucasus, made up of juniper and pistachio species. Lowland forests are found in floodplains and on low river terraces, generally growing on alluvial, swampy, or moist soils. Very few lowland forests have been preserved to this day; some stands remain only in the Lenkoran and Kolkheti lowlands and in the Kura, Iori, Samur and Alazan-Agrichay river valleys.

High mountain meadows are dominated by herbaceous species. About 1,000 vascular plant species are found in the Greater Caucasus high mountains and half of these are endemics. Caucasian rhododendron thickets grow on slopes with northern exposure in the Greater Caucasus Range and in the northern part of the Lesser Caucasus Mountain Chain. Alpine mats, formed by dense low-lying perennial plants, cover the terrain on the upper belts of these two mountain systems. Alpine meadows and grasslands are used intensively for livestock grazing in the summer throughout the region, resulting in decline in plant species diversity. Unique communities of cliff and rock vegetation are distributed throughout the high mountains of the Caucasus. Approximately 80 percent of the plant species found in rock and scree communities on Colchic limestone ridges in the Greater Caucasus are endemic to the hotspot.

Mediterranean and Anatolian-Iranian shrublands occur in arid mountains of the Caucasus where continental climate prevails, particularly in the foothills of the Araks River watershed.

Steppe vegetation used to be widespread on the Caucasus Isthmus, but today only fragments of primary steppe communities have survived on slopes that are unsuitable for agriculture. Steppe communities are found in the plains and foothills of the eastern and southern Caucasus. Highland steppe communities, primarily found in dry mountain regions of the southern Caucasus, are diverse in species composition and have a number of endemic plants.

Until recently, semi-deserts with elements of desert vegetation were widespread in the lowlands and foothills of the eastern part of the Caucasus Isthmus. In the past few decades, agricultural development, irrigation and winter grazing practices have significantly altered the landscape in this area. The few semi-deserts and deserts that have been preserved are made up of either predominately wormwood or salt habitat species.

Wetland ecosystems are found throughout the Caucasus and include estuaries and river deltas, marshes, swamps, lakes and streams in alpine regions. Wetland vegetation covers large areas along the lower Terek, Sulak, Kuban, Kura, Samur and Rioni rivers and the coastal zones of the Black, Azov and Caspian seas. Flora in wetlands ranges from

aquatic vegetation in lakes, to swampy floodplain, brush and forest ecosystems, to sphagnum-sedge swamps in the Kolkheti Lowlands. The marshes along the Caspian coast in northwestern Iran are particularly important for waterfowl. A variety of lakes are scattered throughout the Caucasus from small alpine lakes to significant bodies of water such as Lake Sevan with highly specific fish fauna.

Protected Areas

Protected areas have played an important role in nature conservation in the Caucasus for nearly a century. The first strict nature reserve in the region was created in 1912 in Lagodekhi Gorge on the southeastern slopes of the Greater Caucasus Range in Georgia. Since then, more than 60 strict nature reserves were created in the former Soviet part of the Caucasus, yet many of these were abolished in the 1950s. Georgia, for example, had 22 strict nature reserves prior to 1951. By the end of the protected area reform process, only one reserve remained. In time, some previously existing protected areas were re-established and new ones were created. Now, Georgia has 16 strict nature reserves and two national parks.

Today, there are 55 strict nature reserves and national parks in the Caucasus hotspot. Combined, nature reserves (IUCN categories I and II) protect a total land area of 1.2 million hectares or 2.1 percent of the Caucasus Region. Besides these protected areas, there are a large number of multiple-use sanctuaries, refuges, nature parks, hunting reserves and protected forests in the Caucasus (IUCN categories IV to VI). Altogether, approximately 8 percent of the Caucasus Region is afforded some sort of protection.

Most strict nature reserves and national parks, particularly in the southern Caucasus, are too small to guarantee long-term biodiversity conservation. Economic problems have resulted in an increase in poaching, illegal forest cutting and grazing in protected areas where the protection regime is not always enforced. Reserve employees are underpaid and equipment and transportation are lacking. Buffer zones are often non-existent, so consequences of resource use and human pressures outside reserves spill over the borders and impact protected ecosystems. Furthermore, the existing protected areas system is not entirely representative of the full range of biodiversity in the hotspot.

New protected areas need to be created in certain regions where there are none and corridors need to be created between existing protected areas. The protected status of sanctuaries with low levels of protection need to be increased in areas that are important for conservation of biodiversity and endangered species and ecosystems. Management and planning in nature reserves needs to be improved by increasing the qualifications of nature reserve staff and elaborating and implementing management plans.

CONSERVATION OUTCOMES

This ecosystem profile, together with profiles under development for other regions at this time, includes a new commitment and emphasis on using conservation outcomes—targets against which the success of investments can be measured—as the scientific underpinning for determining CEPF’s geographic and thematic focus for investment. Conservation outcomes are the full set of quantitative and justifiable conservation targets

in a hotspot that need to be achieved in order to prevent biodiversity loss. These targets are defined at three levels: species (extinctions avoided), sites (areas protected) and landscapes (corridors created). As conservation in the field succeeds in achieving these targets, these targets become demonstrable results or outcomes. While CEPF cannot achieve all of the outcomes identified for a region on its own, the partnership is trying to ensure that its conservation investments are working toward preventing biodiversity loss and that its success can be monitored and measured. CI's Center for Applied Biodiversity Science is facilitating the definition of conservation outcomes across the 25 global hotspots, representing the benchmarks against which the global conservation community can gauge the success of conservation measures.

Species Outcomes

In determining species outcomes, CEPF aims to improve or stabilize the conservation status of species and ultimately avoid extinctions. Since avoiding species extinctions is essential for halting biodiversity loss, threatened species, or species that have a high probability of extinction, are the obvious targets for conservation in a given hotspot. Species outcomes are defined based on the conservation status of individual species, compiled in IUCN Red Lists. The Red List is based on quantitative, globally applicable criteria under which the probability of extinction is estimated for each species. Species outcomes in the Caucasus hotspot are those species that are globally threatened (vulnerable, endangered and critically endangered) according to the most recent IUCN Red List. Outcome definition is a fluid process and as data and criteria become available, species-level outcomes are being expanded to include other taxonomic groups that have not been assessed, as well as restricted-range species (endemics).

In order to determine species outcomes for the Caucasus, WWF Caucasus synthesized available information on globally threatened birds for the hotspot, based on data provided by BirdLife International. It also included all other globally threatened species in the hotspot, based on recent IUCN Red Lists. Local scientists assisted in determining whether or not each species actually occurs in the Caucasus. WWF Caucasus then compiled a database on threatened species including the status, distribution, conservation needs and major threats for each species based on surveys of scientists in the field.

A total of 51 species representing six taxa (mammals, birds, reptiles, amphibians, fish and plants) were included in the species outcomes as a result of this process (Table 1, Appendix 1). Eighteen mammal species, 11 bird species, 10 reptile species, four amphibian species, seven fish species and one plant species were selected as targets for conservation. Two species of mammals are listed as critically endangered: the saiga antelope, found only in the Russian part of the Caucasus, and the Armenian birch mouse, found only in Armenia. Four mammals are endangered, including the West Caucasian tur and Dahl's jird. Eleven of the 18 mammal species are found in Armenia, Azerbaijan and Georgia, while 14 species are found in Russia, 10 in Iran and nine in Turkey. The vulnerable giant mole rat is found only in Russia. Six of the threatened mammals are endemics or restricted-range species.

Table 1. Summary of species outcomes for the Caucasus hotspot

TAXONOMIC GROUP	NUMBER OF GLOBALLY THREATENED SPECIES				DISTRIBUTION BY COUNTRY					
	IUCN Status			Total	Armenia	Azerbaijan	Georgia	Iran	Russia	Turkey
	Vulnerable	Endangered	Critically Endangered							
Mammals	12	4	2	18	11	11	11	10	14	9
Birds	9	1	1	11	4	8	3	11	11	10
Reptiles	4	4	2	10	3	3	5	4	5	6
Amphibians	4			4		2	3	1	2	3
Fish	1	5	1	7		6	6	5	6	4
Plants	1			1	1					
TOTAL	31	14	6	*51	19	30	28	31	38	32

*September 2004 update: The global conservation status of one of the amphibian species outcomes has since been determined to be near threatened, rather than vulnerable as originally indicated. As a result of this new information, the species can no longer be considered a species outcome or a priority for CEPF investment. The CEPF investment strategy and appendices of this profile have been updated with this change.

Eleven bird species were identified as conservation outcomes, including one critically endangered species - the Siberian crane, which migrates along the Caspian coast. The white-headed duck is endangered, while the remaining nine species are considered vulnerable. Three of the avian species outcomes are found in Georgia and four in Armenia. Eight birds are found in Azerbaijan and 10 in the Turkish Caucasus. The Russian and Iranian Caucasus both have all 11 bird species. Three additional bird species, used by BirdLife International to delineate Important Bird Areas (IBAs), are local endemics with restricted ranges: Caucasian black grouse, Caucasian snowcock and Caucasian chiffchaff.

Ten species of reptiles and four species of amphibians were targeted in the species outcomes. Two reptiles—Darevsky’s and pontic vipers—are critically endangered. The large-headed water snake is found only in the Russian Caucasus. All four species of amphibians are vulnerable. The Persian brook salamander is found only in the Iranian Caucasus. Seven of the 10 threatened reptiles and all of the threatened amphibians in the hotspot are restricted-range species or local endemics.

Seven species of fish are included in the species outcomes, six of which are from the sturgeon genus. Five of the seven fish are endangered. The critically endangered Baltic sturgeon is found only in the Black Sea and rivers of the Kolkheti Lowlands in Georgia. Overfishing and pollution in the Caspian and Black seas threaten all of these fish species.

Only one plant—Tigran’s elder—is included in the species outcomes as a vulnerable species. This endemic species is sporadically found on lower and middle mountain slopes in Armenia and is threatened by habitat loss to development and overgrazing.

In summary, six species of the 51 are critically endangered, 14 are endangered and 31 are vulnerable. The 51 threatened species were the basis for determining site-level outcomes for the Caucasus hotspot and will be important indicators of the success of future conservation activities. Among them, critically endangered, restricted-range and landscape species with large ranges that cannot be saved at the site-level were taken into account as important conservation priorities at the species level (Appendix 2). CEPF and the conservation community should monitor the status of these species closely to prevent further extinctions and biodiversity loss.

Site Outcomes

Site outcomes were defined for each target species, recognizing that most species are best conserved through the protection of the sites in which they occur. Site outcomes are physically and/or socioeconomically discrete areas of land that need to be protected to conserve the target species. Sites are scale-independent, which means they can be very small or very large. The defining characteristic of a site is that it is an area that can be managed as a single unit. Sites can be any category of protected area, governmental lands, or private farms or ranches. The main objective of defining important sites for conservation of threatened species is to identify areas where investments can be made to create protected areas or special conservation regimes, expand existing protected areas and improve protected area management, all of which will help to prevent species extinctions and biodiversity loss.

In order to define the site-level outcomes, WWF Caucasus analyzed point data on the distribution of globally threatened and endemic species (species outcomes). It mapped the data according to the six taxa (mammals, birds, reptiles, amphibians, fish and plants) to determine sites where these species are found. Since BirdLife International has already determined IBAs for bird fauna, these were automatically included as site outcomes in the hotspot. Existing protected areas in the region where globally threatened species (species outcomes) occur were also included in the list of sites. Much of the work involved resolving overlaps between the IBAs, existing protected areas and other site outcomes for non-bird taxa, since IBAs were not always delineated with regard to protected area boundaries. Important habitats for threatened species that are not currently protected but could be managed as a single unit were also included. Additional factors considered in determining site outcomes were: a) important habitats for endemics (restricted-range species) and b) sites important for large congregations of waterfowl and fish, particularly those that hold more than 1 percent of the global population of a single species at a particular time (according to BirdLife International criteria).

WWF Caucasus identified 205 site outcomes for the Caucasus, covering 19 percent of the hotspot. It compiled a database on these site outcomes including the site name, major habitat, threatened species occurring there, protected status, threats and proposed conservation actions. Table 2 shows how the outcomes are distributed across countries and taxonomic groups. In Armenia, 20 sites were identified, covering an area of more than 0.91 million hectares. Azerbaijan has 61 site outcomes covering more than 1.29 million hectares. Georgia has 49 site outcomes across an area of 2.17 million hectares. In northwestern Iran, 15 site outcomes have been identified across 1.65 million hectares. The Russian Caucasus includes 42 site outcomes with a combined area of 2.29 million

hectares. Northeastern Turkey has 18 site outcomes with an area of 2.25 million hectares. These sites are described in Appendix 3 and depicted in Figure 2.

In all, 115 of the sites identified in the site outcomes harbor mammals listed as threatened by IUCN. Globally threatened birds and IBAs are represented in 100 of the sites, while reptiles and amphibians are found in 59 and 21 of the sites, respectively. Threatened fish species are found in 20 of the 205 sites and the Tigran's elder - the only globally threatened plant species - is found in three sites.

Table 2. Summary of site outcomes for the Caucasus hotspot

TAXONOMIC GROUP	CONSERVATION SITES													
	Hotspot		Country											
	Number of Sites	Area (x 1,000 ha)	Armenia		Azerbaijan		Georgia		Iran		Russia		Turkey	
Number of Sites			Area (x 1,000 ha)	Number of Sites	Area (x 1,000 ha)	Number of Sites	Area (x 1,000 ha)	Number of Sites	Area (x 1,000 ha)	Number of Sites	Area (x 1,000 ha)	Number of Sites	Area (x 1,000 ha)	
Mammals	115	8,097	10	764	26	828	25	1,312	11	1,482	33	1,678	10	2,032
Birds	100	5,847	11	574	35	664	19	845	9	1,248	17	875	9	1,641
Reptiles	59	5,704	3	337	16	525	21	1,357	3	586	10	1,031	6	1,867
Amphibians	21	2,784			1	26	14	635	1	374	2	358	3	1,390
Fish	20	2,156			4	318	8	205	3	205	4	168	1	1,260
Plants	3	130	3	130										
All Taxa	205	10,560	20	906	61	1,289	49	2,174	15	1,647	42	2,293	18	2,250

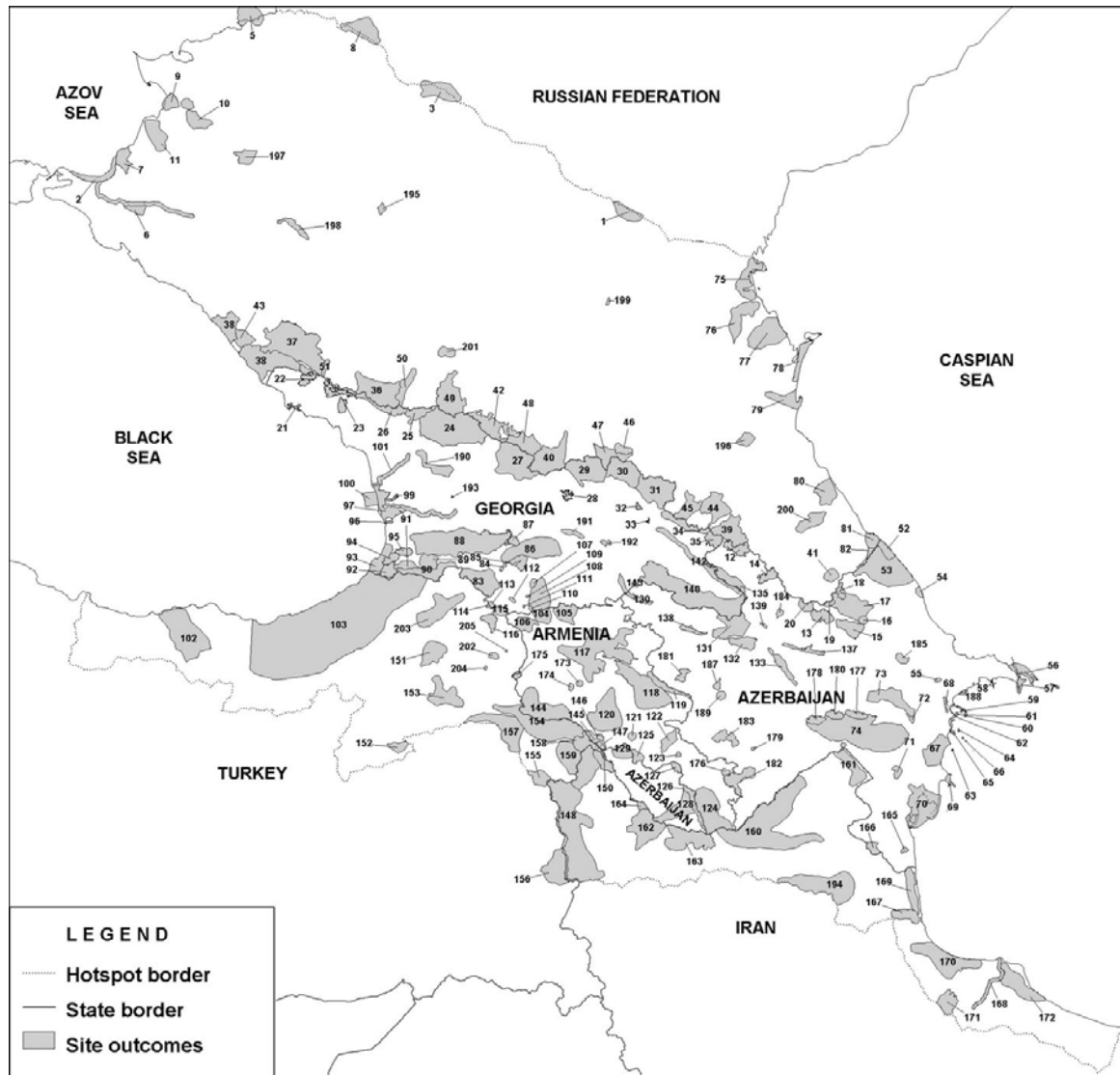
Corridor Outcomes

Corridor outcomes are large-scale landscapes that need to be conserved in order to allow persistence of biodiversity. While protecting sites alone will not be sufficient to conserve biodiversity in the long-term, conservation of landscapes (corridors) large enough to allow the persistence of biodiversity must be anchored on core areas (site outcomes), embedded in a matrix of other natural habitat and anthropogenic land uses. Corridors within the Caucasus were identified and delineated based on the following criteria: coverage of site outcomes, existence of large-scale intact biota assemblages, needs of wide-ranging (landscape) species, connectivity of habitats and opportunities for maintaining ecological and evolutionary processes. Areas that were considered for corridors included intact rivers and landscapes, natural mountain passes, known migratory corridors and areas with spatial heterogeneity that could serve as stepping stones for many species. WWF Caucasus also considered habitat representation, resilience to anthropogenic development scenarios and the need to safeguard unknown areas that might harbor high levels of biodiversity or endemism.

Ten conservation corridors were identified for the Caucasus hotspot as important for biodiversity conservation (Appendix 4 and Figure 3). Of these, five were determined to be priority (target) corridors for conservation. All 10 corridors are described below in

brief, including significant biodiversity features, threatened species and habitats, institutional factors and potential for expansion of protected areas. An explanation of the ranking of the five priority corridors is given below under CEPF Niche for Investment.

Figure 2. Site outcomes for the Caucasus hotspot



Note: Site numbers correspond to numbering in Appendix 3.

Kuma-Manych Corridor

The Kuma-Manych Corridor (2.08 million hectares) extends along the northern border of the hotspot in the North Caucasus Plain and includes the eastern coast of the Azov Sea. The corridor, located entirely within the Russian Federation, harbors numerous wetlands, large lakes and channels - important areas for waterfowl that have been designated IBAs and site outcomes. Wetlands are surrounded by steppe and semi-desert habitats. Parts of the corridor have been severely impacted by grazing, farming, poaching and overfishing.

The Kuma-Manych Corridor was delineated based on its importance for migratory waterfowl and its significant number of IBAs. The corridor contains 11 site outcomes, making up a quarter of its area. Lake Manych-Gudilo, the Yeyski Salt Lakes and the deltas of the Don and Kuban rivers are some of the more notable sites. The Kuban River Delta has been designated a Ramsar site. Ten globally threatened species are found here, such as European mink, otter, bustard and three species of sturgeon. Eight wetland sites hold globally significant congregations of waterfowl, such as the red-breasted goose and lesser white-fronted goose. Three wildlife sanctuaries protect only 4.1 percent of the corridor. There are no local NGOs active in the region, but universities and institutes in large cities of the North Caucasus work in these areas. International conservation organizations and Russian national NGOs are active in the region. State natural resource management agencies have representative offices for the region.

Greater Caucasus Corridor

The Greater Caucasus Corridor (4.68 million hectares) mainly includes middle and high mountain areas of the Greater Caucasus Range, extending from the Black Sea almost to the Caspian. The corridor runs along the borders of Russia, Georgia and Azerbaijan and contains the highest peak in Europe - Mount Elbrus (5,642m). Major habitats include deciduous and coniferous forests at middle elevations and elfin woods, shrublands, alpine meadows, glaciers and snowfields at high elevations. Large areas of pristine forests and high mountain habitats remain intact. A number of endemic species of plants and animals are found here. The region was named a large herbivore hotspot by WWF for the abundance of ungulates. Threats to biodiversity include illegal logging, overgrazing in high mountain areas, poaching and political strife. The corridor contains 40 site outcomes, making up almost half of its area. Twenty globally threatened and seven restricted-range species are found here including East and West Caucasian turs and Dinnik's viper. One site, Teberdinsky Nature Reserve, harbors globally significant congregations of the endemic Caucasian black grouse. Protected areas cover 35 percent of the corridor, including 15 strictly protected nature reserves, three national parks and 23 sanctuaries and other areas. Several reserves are adjacent to each other across national borders, offering great potential for transboundary cooperation. Some reserves should be connected by wildlife corridors to facilitate migration of red deer and other species. Political conflicts in Abkhazia (Georgia) and Chechnya (Russia) make work in certain areas of the corridor difficult. A number of NGOs are active in the corridor. Existing protected areas are the basis of many investment projects in the region. State natural resource management agencies have representative offices in the corridor.

Caspian Corridor

The Caspian Corridor (3.23 million hectares) is located along the Caspian Sea coast from the Talysh Mountains in the south to the northern border of the hotspot, including parts of Azerbaijan and Russia. Coastal wetland, marine, semi-desert and desert habitats are found in this corridor, which has the lowest level of precipitation in all of the Caucasus. The Caspian Corridor was delineated based on its importance for migratory waterfowl and its significant number of IBAs. The corridor has 31 sites identified as site outcomes, covering more than a quarter of its area. Twenty sites have important congregations of waterfowl, the largest number in the Caucasus. Many sites are critical spawning areas for threatened sturgeon populations. Twenty-three globally threatened species are found

here, such as the Caspian seal, found in the Absheron site and the marbled duck, found in lakes and shore areas along the Caspian. Illegal fishing threatens sturgeon populations. Poaching of migratory birds is widespread. Pipeline construction and oil development threaten certain parts of the region, such as Baku Bay. The protected areas system, made up of four nature reserves and 11 sanctuaries, covers 14 percent of the corridor. Some NGOs are active in the corridor, but capacity is generally limited. New funds for the environment are becoming available from oil companies in the region. State natural resource management agencies have representative offices in the corridor.



Figure 3. Corridor outcomes for the Caucasus hotspot
1 - Kuma-Manych; 2 - Greater Caucasus; 3 - Caspian; 4 - West Lesser Caucasus; 5 - Javakheti; 6 - East Lesser Caucasus; 7 - Iori-Mingechaur; 8 - Southern Uplands; 9 - Arasbaran; 10 - Hyrcan

West Lesser Caucasus Corridor

The West Lesser Caucasus Corridor (2.99 million hectares) is situated in the western part of the Lesser Caucasus Mountain Range, where it extends along the Black Sea from northeastern Turkey to southwestern Georgia, ending in central Georgia. The area has the highest level of precipitation in the Caucasus. The Colchic Refugia, at the core of the corridor, contains the highest levels of woody plant diversity in the hotspot with a large percentage of endemic and relic species. Major habitats consist of broadleaf, coniferous and elfin forests with evergreen understory. Five species of rhododendron are found here, including two endemics. The Kolkheti Lowlands harbor important wetlands for migrating waterfowl and rivers for spawning sturgeon, including the critically endangered Baltic sturgeon. Significant numbers of threatened bat species are found here. The region was named a large herbivore hotspot by WWF for its abundance of ungulate species. In all, 21 site outcomes are found in this corridor, covering 76 percent of its area. Four sites contain globally significant congregations of birds. The corridor includes the highest number of threatened species among the corridors (29) including several species of endemic vipers, sturgeon and the otter. Seven restricted-range species inhabit the area, such as the Caucasian salamander. Illegal fishing threatens sturgeon populations in the Black Sea, while fuel wood collection, illegal logging and timber export affect forest ecosystems. Poaching, oil pipelines, sea ports and damming of rivers impact freshwater and terrestrial ecosystems. Protected areas cover 11 percent of the corridor and include 12 nature reserves, seven national parks and five sanctuaries. Transboundary cooperation between reserves bordering Turkey and Georgia has been initiated. WWF and several local NGOs are active in the region, as well as the Georgian and Turkish governments. State natural resource management agencies have representative offices in the corridor.

Javakheti Corridor

The Javakheti Corridor (0.42 million hectares), the smallest corridor in the Caucasus, is situated in the northern part of the Southern Uplands on the border of Armenia, Georgia and Turkey. Habitats include high mountain wetlands with lakes of volcanic origin, steppes and meadows. The region is one of the three important migratory corridors for birds in the Caucasus. Thirteen site outcomes are found here, covering 53 percent of the corridor. Six globally threatened species inhabit the region, such as the corncrake and imperial eagle. Darevsky's viper is one of the two restricted-range species in this corridor. Ten sites in the corridor have significant congregations of waterfowl, the second largest in the hotspot after the Caspian Corridor. Threats to habitats include unsustainable water management, poaching of birds and overgrazing. There are no protected areas in the corridor, providing opportunities to create new reserves, including across political boundaries. A number of NGOs are active in this corridor. State natural resource management agencies have representative offices in the region.

East Lesser Caucasus Corridor

The East Lesser Caucasus Corridor (1.43 million hectares) in Armenia and the Nakhichevan Autonomous Republic of Azerbaijan is situated mainly in the eastern and southern parts of the Lesser Caucasus Mountain Chain. Temperate broadleaf forests, mountain steppes and subalpine and alpine meadows are the primary habitat types. Juniper woodlands are found on mountain slopes. Lake Sevan, the largest freshwater

lake in the Caucasus, is included in this corridor. The leopard - a flagship species - is found in the region. The corridor includes 13 site outcomes, making up nearly half of its area (52 percent). Fourteen globally threatened species are found here, such as Armenian mouflon, bezoar goat, otter, Armenian birch mouse and Tigran's elder. Lake Sevan has large congregations of waterfowl. The Armenian birch mouse and the Armenian mouflon are restricted-range species in this corridor. Fuel wood collection and illegal logging, poaching, overgrazing and unsustainable water management threaten the region's biodiversity and natural ecosystems. Protected areas cover a quarter of the corridor, but only two of these are national parks, three are strict nature reserves and the remaining sixteen are sanctuaries with insufficient protected regimes to prevent biodiversity loss. The status of these protected areas should be increased and new reserves should be created. Institutional capacity is limited, with the exception of governmental agencies, which have representatives of environmental and other natural resource management agencies in the region. International NGOs carry out conservation work in the corridor.

Iori-Mingechaur Corridor

The Iori-Mingechaur Corridor (0.97 million hectares) is situated in the central part of the Transcaucasian Depression on the border between Georgia and Azerbaijan. The corridor includes intact arid plateau and foothill habitats with pistachio-juniper woodlands, as well as a significant portion of the floodplain forests in the hotspot. Steppe, semi-desert and wetland ecosystems are also represented here. The corridor includes 14 site outcomes, covering 57 percent of its area. Three sites are important for bird congregations. Nine globally threatened species inhabit the region including Mehely's horseshoe bat, common tortoise, imperial eagle and otter. Significant threats include overgrazing, poaching and infrastructure development. Protected areas cover 15.1 percent of the corridor. Habitats are adequately protected on the Georgian side and protection is relatively good in Azerbaijan. The corridor has high potential for transboundary cooperation among reserves. Several NGOs from Georgia and Azerbaijan are active in this region. State natural resource management agencies have representative offices in the corridor.

Southern Uplands Corridor

The Southern Uplands Corridor (2.04 million hectares) covers the central part of the Southern Uplands on the border of Turkey, Iran and Armenia. The sacred Mount Ararat (5,165 m), located in this corridor, is one of the highest peaks in the Caucasus Hotspot. Major habitats include mountain steppes and scattered wetlands. The corridor contains 16 site outcomes, covering 62 percent of its area. Two sites have globally significant congregations of birds. Twenty-four globally threatened species, such as Armenian mouflon and bezoar goat, are found in the corridor. Seven species have restricted ranges, such as Dahl's jird and Schaub's bat, which occur only in this corridor. Overgrazing and poaching threaten the region's habitats and wildlife. Protected areas are poorly represented, covering less than 1 percent of the corridor. New protected areas, particularly in wetland areas, should be created. Institutional capacity is limited, with the exception of governmental agencies, which have regional divisions of national environmental and natural resource agencies.

Arasbaran Corridor

The Arasbaran Corridor (1.24 million hectares) includes the extreme northwestern part of Iran at the junction of the Southern Uplands and the Lesser Caucasus Range. The Araks River borders the corridor to the north. Major habitat types include mountain steppes, remnants of broadleaf forests and wetlands in the Araks River watershed. Mountain habitats are important for the leopard. The corridor includes five site outcomes, which cover more than half of its area. Three sites along the Araks River are important for congregations of waterfowl. Globally threatened species include 16 species, such as the Armenian mouflon and bezoar goat. The Persian brook salamander is one of the three restricted-range species. Threats to natural habitats include overgrazing and poaching, as well as construction of roads and dams. Protected areas cover nearly a quarter of the corridor, but the protected status of these is generally too low to guarantee biodiversity conservation. Institutional capacity is limited, though regional representatives of environmental agencies and protected areas staff are present.

Hyracan Corridor

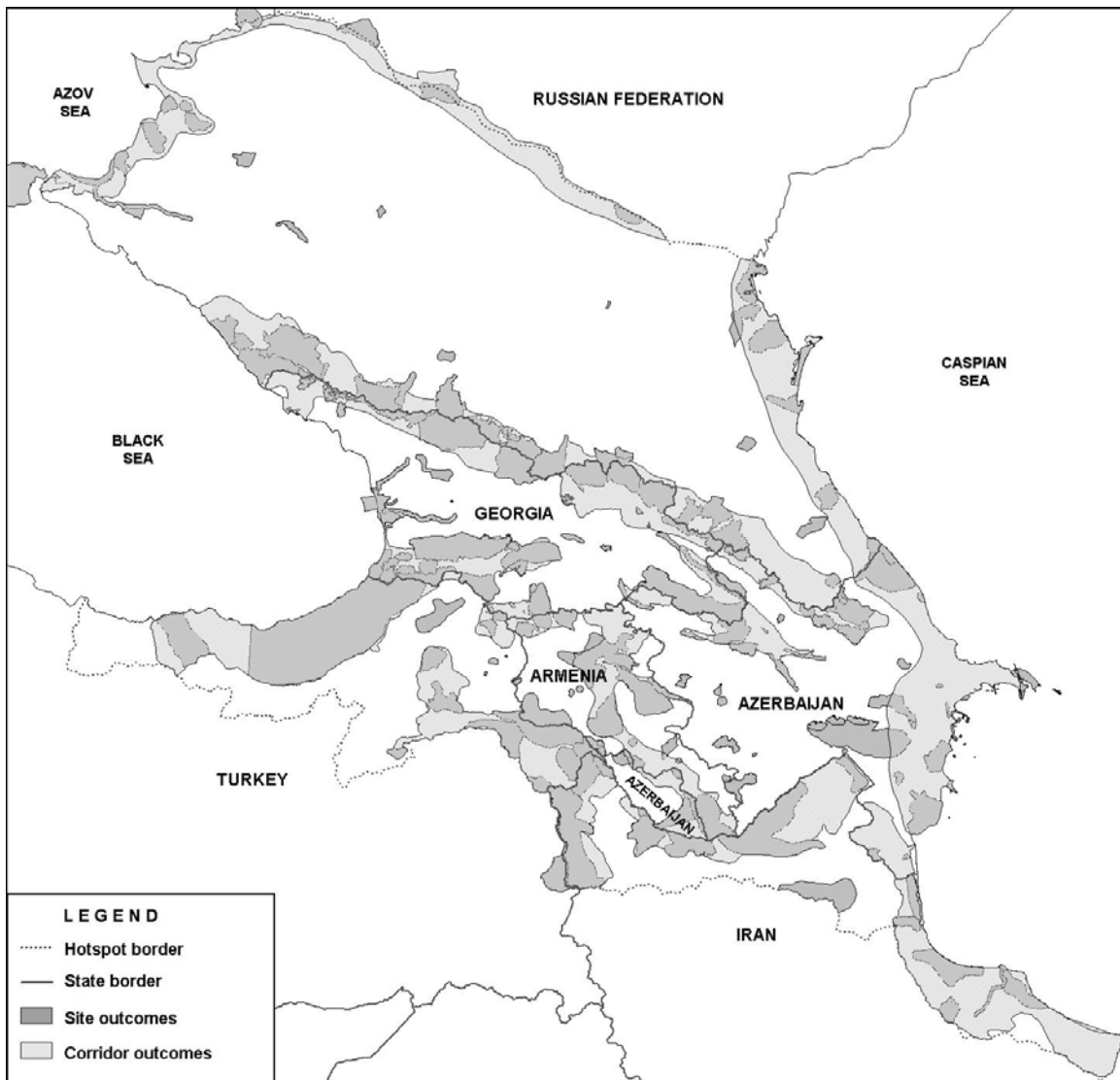
The Hyrcan Corridor (1.85 million hectares) includes the Talysh Mountains in Azerbaijan and the northwestern part of the Alborz Mountains in Iran, along with a section of the Caspian coast. The Hyrcanic Region is one of the two important plant refugia in the Caucasus Hotspot, where a number of relic and endemic species are found. Major habitats include broadleaf forests, high mountain steppes and meadows and some coastal wetlands - important wintering grounds for endangered bird species. One wetland area has Ramsar status. Leopards are found in forest habitats. The corridor contains eight site outcomes, covering over 21 percent of its area. Two sites are important for bird congregations. Nineteen globally threatened species are found in the corridor including sturgeon and Siberian crane. Overarching threats include unsustainable logging, poaching and overfishing of sturgeon species. Protected areas (one strict nature reserve, one national park and 11 other types of protected areas) cover an insufficient portion of the corridor (8.6 percent) and most of these have low protected status. Institutional capacity is limited, though regional representatives of environmental agencies and protected areas staff are present.

Thirty-three sites with a combined area of 675,341 hectares were not included in any of the corridors. These sites should be targeted for investment by other funding sources since they do not fall under the corridor outcomes that will be supported by CEPF investment. The majority of these sites are IBAs that are distributed along bird migratory routes. White-headed duck, otter and several species of bats are just a few of the globally threatened species that need protection in these individual sites. Two sites in Armenia are crucial for protection of the Tigran's elder plant. Additionally, there were several site outcomes that were only partially covered by corridors. Threats to these sites include infrastructure development (urban expansion), overgrazing, overfishing, poaching and water pollution. These sites should be targeted for investment by other funding sources since they do not fall under the corridor outcomes that will be supported by CEPF investment.

In summary, the area of the 10 corridor outcomes is 20.8 million hectares, making up 35.5 percent of the hotspot. Corridor outcomes contain the majority of the globally threatened species and are important areas of congregations of waterfowl and Caucasian

endemics. Corridors are generally the most intact areas in the Caucasus, partly because they are located along political borders, furthest from administrative centers and development pressures. The majority of the protected areas in the hotspot fall within the boundaries of the 10 corridors. Corridors include 84 percent of the total number of sites identified in site outcomes, or 94 percent of the total area of site outcomes (Figure 4). The remaining sites, shown in Figure 4 and listed in Appendix 3, must be targeted for individual conservation programs from other funding sources to prevent extinctions of globally threatened species.

Figure 4. Site and corridor outcomes in the Caucasus hotspot



SOCIOECONOMIC FEATURES

Humans have inhabited the Caucasus for many millennia. Legions of rulers and government regimes have vied for control of the region and its rich natural and cultural resources. Nearly half the lands in the Caucasus have been transformed by human activities. Any strategy for conservation of the rich biodiversity of the region will have to take the human factor into account by seeking alternative ways to boost local economies through integrating sustainable practices of natural resource use and including local communities in conservation programs.

Institutional Framework

After the breakup of the Soviet Union in 1990, Armenia, Azerbaijan, Georgia and even Russia faced the challenge of building new governmental structures. New state institutions dealing with natural resources were created while others were dismantled or reorganized. Environmental ministries are the leading agencies in biodiversity conservation in Armenia, Azerbaijan and Georgia, while the Ministry of Natural Resources absorbed the functions of the environmental ministry in Russia in 2000. Forestry, water resources, agricultural and other agencies also have jurisdiction over various aspects of natural resources. Ministries generally have regional divisions in each of the provinces within the countries. However, state conservation agencies often lack funding and capacity to implement their mandates or to enforce legislation and international obligations. Conflicting policies in legislation and overlapping jurisdictions in addition to a general lack of communication among governing bodies hinder effective management of environmental resources and create significant contradictions in regulation.

In Turkey, the Ministry of Forestry deals with biodiversity conservation issues in forests. Turkey's Ministry of Environment also plays an important role, dealing with pollution, marine and wetland ecosystems, climate change, sustainable resource use and other issues. Iran's Department of the Environment is in charge of environmental protection in that country.

Universities, scientific academies and specialized institutes on forestry, soils, biology and marine resources play an important role in research and inventory of biodiversity in the hotspot. Scientists and students participate in reserve planning and fieldwork in protected areas.

The NGO movement has gained momentum over the past decade in each of the Caucasus countries. National and local NGOs speak out on environmental issues, impact public opinion and conduct scientific studies on environmental and social issues. NGOs provide independent information on important topics, often filling in gaps where scientific and governmental institutions fall short. NGOs play a crucial role in bringing a variety of stakeholders together, holding meetings among decisionmakers, local communities, businesses and international organizations. Fourteen national NGOs, such as the Environment Foundation of Turkey and the SOS Environment Volunteers and eight local NGOs, such as the Black Sea Environmentalists, are active in the Turkish Caucasus. The Center for Sustainable Development (CENESTA) is one of many environmental NGOs

active in Iran. Some of the more notable of the over 20 NGOs in Armenia are the Biodiversity and Landscape Conservation Union, Khazer Ecological and Cultural NGO and the Center for Environmental Rights. Azerbaijan has the Ecological Union, Green Wave and the Green Movement of Azerbaijan among 40 others. At least 50 environmental NGOs are active in Georgia, such as the Noah's Ark Center for Recovery of Endangered Species (NACRES), Georgian Center for Conservation of Wildlife (GCCW) and the Green Movement of Georgia. NGOs promoting conservation in the Russian Caucasus include the Socio-Ecological Union and other regional divisions of Russian NGOs and the North Caucasus Association of Protected Areas.

International NGOs such as BirdLife International, Eurasia Foundation, Fauna and Flora International, Greenpeace, MacArthur Foundation, Wetlands International and WWF are important catalysts for biodiversity conservation in the Caucasus.

Nature Conservation Legislation

Armenia, Azerbaijan, Georgia and Russia began to adopt new environmental legislation after the demise of the Soviet Union in 1990. Legislation was enacted on environmental protection, protected areas, wildlife management and forestry. Other laws on air pollution, water, land use and environmental impact assessments were also enacted.

In Turkey, articles in the 1982 Constitution guarantee the right to a clean environment and lay out principles for protection of cultural and natural areas. A number of other laws on allocation of forests for protection, hunting and fishing, water use, tourism, coastal areas, export of animal species and national parks have come into force in the past two decades.

Iran's constitution proclaims the need to prevent pollution and environmental degradation. Laws governing management of game, forest and rangeland resources have been in effect since 1967. Laws and acts dealing with environmental protection, air pollution and water use were put in place beginning in the 1970s and 1980s. Deficiencies in existing regulations are related to the lack of correct environmental data, lack of enforcement by environmental inspection agencies and the scarcity of experienced environmental professionals in the country.

Gaps and contradictions in conservation legislation and overlapping jurisdictions plague each of the countries in the Caucasus. Transboundary cooperation on environmental issues is limited, though a memorandum of understanding is under consideration between Georgia and Turkey to promote cooperation on biodiversity conservation and sustainable resource use in the globally important Colchic Region. Bilateral agreements on environmental cooperation also exist between Georgia and Azerbaijan and between Georgia and Armenia, yet detailed work plans have yet to be elaborated.

All six countries have signed the majority of international conventions, including the Convention on Biological Diversity, Wetlands of International Importance, Convention on International Trade in Endangered Species (CITES) and World Cultural and Natural Heritage. Not all of the countries, however, have the capacity and finances to fulfill their

international obligations. Countries are implementing other multilateral strategies and programs such as the Caspian Environment Program and Regional Seas Project.

Economic Situation

The economies of Armenia, Azerbaijan, Georgia and Russia are still in a state of transition since the fall of the Soviet Union. Economic development and indicators clearly differ between urban areas and rural communities, where corridor outcomes have been delineated. Agricultural farming, livestock, forestry and fishing make up the bulk of the economy in rural regions in the Caucasus.

Agriculture was the leading sector of the economy for Armenia, Azerbaijan, Georgia and the Russian Caucasus during Soviet times. Fertile soils and favorable climate conditions allowed a broad range of production. Goods shipped to the USSR included grapes, wine, tobacco, cotton, fruit, vegetables, tea and citrus fruits. Since 1990, production and distribution patterns were disrupted. In Armenia, Azerbaijan and Georgia, total production of previously exported crops such as citrus fruits and grapes is only a third of pre-1990 levels. Today most of the rural population depends on subsistence farming, growing basic food crops for consumption. Livestock farming (cattle, sheep, goats) is the primary source of income in mountain regions. Cattle and sheep provide leather, wool, meat, milk and other products. Livestock production has decreased in the former Soviet republics in the past 10 years.

Fishing in rivers, lakes and seas has been an important part of regional economic development for centuries. The demand for caviar, sturgeon and other fish on global markets encourages overfishing and poaching. Sturgeon is the most sought after fish, with seven species living in the Caspian and Black seas and swimming up rivers to spawn. The Caspian Sea holds 90 percent of the world's sturgeon. Overfishing in the Black and Caspian seas has brought about the demise of sturgeon and other fish - 13 species of fish in the Black Sea are endangered or nearly extinct. Fishing in freshwater rivers and lakes plays an important role in local economies and for supplementing low incomes in rural areas. Poaching in important rivers and streams for spawning sturgeon is widespread.

Agriculture is also the leading industry in the Turkish Caucasus. Major crops include grains, vegetables, industrial crops, fruit and seeds for oil. All of the tea produced in Turkey comes from the Caucasus provinces. Livestock and bee-keeping are also important sources of income in rural areas. The bulk of fish production in the country comes from the Turkish Caucasus. Yet the economic situation in the Turkish Caucasus lags behind economic indicators for Turkey.

The Iranian Caucasus has grasslands favorable for livestock breeding and agriculture. Craft-making and fruit orchards are also important sources of income in rural areas. Dairy products from this region such as Leghvan cheese are world-renowned.

The forestry and wood manufacturing industry in the Caucasus has felt the impacts of the economic crisis more acutely than other areas of production, despite relatively large forest reserves, particularly in the North Caucasus. Wood processing plants produce

boards for construction, furniture, parquet flooring and other products. Forests provide firewood for heat and cooking in rural areas. Due to the chronic lack of energy resources in Georgia and Armenia, the public sector now consumes two to three times more firewood than in the 1980s. Illegal logging and timber export put at risk some of the last remnants of forests in the Caucasus.

A once flourishing tourism industry based on spas and mineral baths, beaches of the Black and Caspian seas and mountain sports has diminished to next to nothing. Today, many tourists prefer to travel to more exotic destinations with higher standards, resulting in serious losses to local economies. Facilities to support tourists in the former Soviet region of the Caucasus are decaying or lacking altogether, suggesting that either large investments would be required to boost this sector of the economy or local people would need to become more active in providing diversifying services to tourists (bed and breakfasts, restaurants, souvenirs) to reach a different market segment.

Infrastructure and Regional Development

Infrastructure is mainly concentrated in and around large cities, far from rural areas. Several dams for hydroelectric stations and reservoirs have altered natural river systems and flooded forests and steppes. Oil pipelines connect the Caspian and Black seas and gas pipelines run from Russia to Armenia via Georgia. The Baku-Ceyhan pipeline, now under construction, will connect the Caspian Sea with the Mediterranean, running through Azerbaijan, Georgia and Turkey. Pipelines and power lines fragment natural habitats and disrupt animal migrations.

Roads are generally under-developed and poorly maintained due to the complicated mountainous terrain in the region and lack of finances. Railroads follow the major roads and are connected by ferries to Ukraine and Europe, offering potential for connection to the European railway network. Water transportation is accessible from ports on the Black Sea, handling some freight and insignificant numbers of passengers. The Caspian Sea is landlocked and connections between ports of adjacent countries are limited.

Most of the Caucasus Region is electrified. The Metsamor Nuclear Power Plant, the only atomic power station in the Caucasus, produces the bulk of the energy in Armenia. In Azerbaijan, thermal power plants produce 85 percent of the energy and hydropower provides the rest. Most of the energy in Georgia is generated by hydropower.

Since infrastructure and regional development is mostly concentrated near urban centers, many of the outlying regions of the countries are largely unscathed by large-scale infrastructure projects and development. Border regions of the countries, which are usually the most distant areas from administrative centers, harbor large swaths of intact natural habitats. As a result, much of the biodiversity in the Caucasus has been preserved in these outlying regions and many of the corridor outcomes are situated in border regions.

Demography and Social Trends

Approximately 35 million people live in the Caucasus hotspot and about half in rural areas. The region has a high population density at 60 people per square kilometer. High migration rates are characteristic for the entire region. Incentives for migration include better employment opportunities, higher income and the attraction of urban life for rural youth. As a result of migration and falling birth rates, the overall population in the region has decreased since 1990.

The majority of the population in rural areas of the former Soviet Union lives below the poverty level. Most have low disposable incomes, limited access to health care, poor housing and shortages of fuel and electricity. Health care is more accessible in the Turkish Caucasus and some other areas. Many people in rural villages supplement their income with food from vegetable gardens, livestock, fishing and hunting.

The Caucasus is a mosaic of ethnic, religious and cultural diversity. A multitude of languages can be heard in the region. Christianity and Islam are practiced side by side and while differences in religious beliefs are generally tolerated, historically religion has been the reason behind many ethnic skirmishes.

Many people are aware of environmental issues due to the generally high level of education in the region (literacy is near 100 percent in most areas). Rural populations, however, are generally less informed and competent environmental journalists in these areas are lacking. The desire to take action to improve the environmental situation among the general public is very low, since most people are more concerned with meeting basic needs such as food, drinking water, or employment.

In **conclusion**, a rapid assessment of the socioeconomic situation assists in identifying the niche for CEPF in the region. Clearly, civil society - NGOs, scientific institutes, universities and other groups - is established in the region, providing a basis for conservation action, though finances and capacity are limited. Governmental institutions are generally supportive of conservation and a number of laws are in place, but agencies often lack financial and technical capabilities to enforce them. Cooperation on the environment between countries is limited but the potential exists, particularly where protected areas and migrating species are concerned. Most of the counties in the region are experiencing economic difficulties. The rural population is especially poor, where people are largely dependent on the land to meet their basic needs. New models of alternative income generation and sustainable resource use are needed to help the rural population emerge from economic depression and become less dependent on natural resources. The general public in corridor areas is largely uninformed on environmental issues and lacks incentive to participate in conservation programs.

SYNOPSIS OF CURRENT THREATS

Biodiversity of the Caucasus is being lost at an alarming rate. On average, nearly half of the lands in the hotspot have been transformed by human activities. The plains, foothills and subalpine belts have been the most heavily impacted. Native floodplain vegetation remains on only half of its original area in the North Caucasus and only 2-3 percent of

original riparian forests remain in the southern Caucasus. Most natural old growth forests have been fragmented into small sections, divided by areas of commercial forests or plantations, as well as agricultural and developed lands. For the Caucasus as a whole, about a quarter of the region remains in reasonable condition, while less than 10 percent of the original vegetation, including forests, can be considered pristine.

Numbers of large herbivores have dropped dramatically in the past century. Red deer numbers have plummeted from 800 in the Lagodekhi Nature Reserve of Georgia to fewer than 100 today. In Azerbaijan, only 500 of the animals remain, while fewer than 1,500 red deer are left in Russia. Saiga antelope numbers in the North Caucasus Plain have dropped from several hundred thousand at the middle of the 20th century to fewer than 20,000 today.

Participants of the second stakeholder workshop, facilitated through CEPF investment, held in January 2003 determined proximate threats and their root causes in the Caucasus hotspot. The major threats to biodiversity in the region are illegal logging, fuel wood harvesting and the timber trade; overgrazing; poaching and illegal wildlife trade; overfishing; infrastructure development; and pollution of rivers and wetlands. These threats lead to habitat degradation, decline of species populations and disruption of ecological processes - all contributing to overall loss of biodiversity.

Illegal Logging, Fuel Wood Harvesting and the Timber Trade

Illegal logging, fuel wood harvesting and the timber trade threaten biodiversity in the region's forests and lead to habitat degradation. While officially sanctioned logging has actually decreased in some areas in the past few years—in the North Caucasus, for example, only 30 to 50 percent of the originally planned area is being logged—illegal logging has increased. In Georgia, experts believe that illegal logging (including fuel wood harvesting) accounts for three times more than the official quotas. In Armenia, as a result of the energy crisis, 27,000 ha of forests were cut between 1992-1995, comprising 8 percent of the entire forest reserves of that country. The amount of timber and fuel wood taken from forests in the Eastern Anatolian Province of Turkey is nine times higher than forest productivity. Fuel wood harvesting has increased nearly three times in some areas compared to a decade ago as a result of energy shortages and the economic crisis. Rural populations are largely dependent on fuel wood consumption for heating and cooking.

Illegal timber export is a serious problem, particularly for Georgia and Russia, but official estimates of exports are not available. Illegal logging leads to decline in species composition, forest degradation and overall habitat loss, impacting a number of plant and animal species. Fuel wood harvesting and consumption lead to forest degradation and disappearance of certain species and contribute to forest fires and global warming. The Greater Caucasus, West Lesser Caucasus, East Lesser Caucasus and Hyrcan corridors are the most impacted by illegal or unsustainable logging and fuel wood harvesting.

In order to halt illegal logging, independent assessments of the level of illegal logging and timber exports need to be made. Possible measures to combat illegal logging and trade include increasing the capacity of customs and forest inspection agencies to stop

illegal trade and monitor logging in forestry enterprises. Information exchange between importing and exporting countries, as well as transboundary cooperation and NGO participation in monitoring the timber trade would help curb illegal logging. Fines for violators could be increased, while increasing the sale price of timber would mean that fewer trees would have to be cut to turn a profit. At the same time, processing wood in the region into construction materials, wood flooring, furniture and other goods would fetch a higher price on regional and international markets, eventually leading to lower levels of timber extraction from forests. Measures to reduce unsustainable fuel wood harvesting include enforcing restrictions on fuel wood harvesting near villages and reducing dependence on fuel wood by providing energy alternatives such as natural gas.

Overgrazing

Overgrazing and uncontrolled livestock grazing threatens steppe, subalpine and alpine ecosystems. A third of pasturelands in the region are subject to erosion. Sheep grazing in winter ranges and steppes and semi-deserts of the eastern Caucasus has nearly tripled in the past decade. Intensive grazing has resulted in reduced species diversity and habitat degradation. Secondary plant communities now occupy 80 percent of grasslands in the subalpine belt. The alpine belt is slightly better preserved. Grazing of cattle in forested areas disturbs undergrowth and creates competition for wild ungulates. Overgrazing is causing environmental damage in much of the hotspot, particularly in the Kuma-Manych, Greater Caucasus, Javakheti, East Lesser Caucasus, Iori-Mingechaur and Southern Uplands corridors.

Measures to reduce the impacts of overgrazing include developing sustainable rangeland management plans, enforcing restrictions on grazing in protected areas and prohibiting grazing in damaged fields near rivers and on steep slopes. Furthermore, developing opportunities for alternative sources of income would reduce the need to keep large numbers of livestock in some rural communities.

Poaching and the Illegal Wildlife Trade

Poaching and the illegal wildlife trade have increased significantly as a result of the economic crisis and the opening of the borders in the former Soviet countries. Overhunting of legal game species and poaching of rare species is widespread in mountain regions, in particular. Government agencies set quotas for game species without carrying out appropriate research on game numbers and population dynamics. Thus, quotas are often too high to ensure that viable populations of game animals (mostly ungulates) are maintained. Nature reserves are neither equipped nor authorized to control poaching outside of protected areas. Limitations of enforcement capabilities in Turkey and Iran also lead to uncontrolled hunting.

Leopard, brown bear, Caucasian red deer, bezoar goat and turs are heavily poached in the Caucasus. There are no more than 25 leopards left in the entire Caucasus region. Tur populations, hunted for their horns and meat, have declined in recent years and there are fewer than 200 Caucasian chamois in the Lesser Caucasus Range. Red deer numbers have fallen in the past few decades as well, particularly in the southern part of the hotspot.

Lynx, otter, wild cat, fox and jackal are killed for their fur. Rare species of falcons are captured and sold abroad. Reptiles and amphibians like common tortoise, Transcaucasian agama and Caucasian salamander have been collected for decades, both for laboratory use and the pet trade. Vipers have long been exploited for their venom. Use of animal parts, such as saiga horns for oriental medicines and leopard skins for decoration, threatens several endangered species. Poaching and unsustainable hunting are rampant in nearly all the corridors.

Measures to reduce poaching include building capacity (training, equipment, transportation) of existing ranger services, inspection agencies and NGO groups to patrol areas where poaching is prevalent. Anti-poaching units within governmental inspection agencies and civil groups could be created to monitor territories outside protected areas. Fines for poachers should be increased and prosecution of violators enforced. New opportunities for providing income to local communities through ecotourism and sustainable resource use should be developed to reduce the need for poaching. Illegal export of animal derivatives should be halted by working with customs agencies across borders and through the TRAFFIC network to reduce demand on world markets.

Overfishing

Overfishing, mostly driven by poverty and international demand for black-caviar, is widespread in the Caspian Sea and spawning rivers. The caviar from one beluga fetches as much as \$30,000 on world markets. Illegal fishing could cause some species of sturgeon to go extinct within the next few years. It takes nearly two decades for the sturgeon to reach maturity, therefore overfishing has far-reaching impacts for populations of these fish. Overfishing is also a serious problem in the Black and Azov seas. A study in the Black Sea found that the annual catch value to the fishing industry declined by \$300 million from 1980 to the mid-1990s. Poachers may exceed the legal catch quota by 10 times. Fish inspection agencies are often powerless to halt overfishing - either they are corrupt and benefit from the business or they lack the capacity to fight it. Overfishing and illegal fishing also impact lakes and rivers. Fish populations have been affected in freshwater and marine habitats in the Caspian, Kuma-Manych, West Lesser Caucasus and Hyrcan corridors.

Measures to halt overfishing include enacting and enforcing bans on threatened fish species and decreasing demand for threatened species on international markets through public awareness campaigns. Fines for illegal fishing should be increased and violators prosecuted to the full extent of the law. Capacity (training, equipment, transportation) of marine and freshwater inspection agencies should be strengthened. Fishing quotas should be established based on independent scientific studies of reproductive capacity of fish populations. Alternative sources of income should be provided for fishermen.

Infrastructure Development

Infrastructure development, including roads, dams, channels and pipelines, fragments natural habitats and contributes to habitat loss. Draining wetlands and digging channels for agriculture and irrigation alters riparian ecosystems irreversibly and leads to habitat loss. Oil extraction in Baku Bay in the Caspian Corridor causes pollution and habitat degradation. Plans for construction of the Baku-Ceyhan pipeline will have negative

impacts for biodiversity. Certain provinces in Turkey have experienced population booms in the past 10 years, leading to a growth in construction of residential housing, industrial complexes and infrastructure. A highway along the Black Sea Coast has damaged marine ecosystems irreversibly and expansion of urban areas destroys forest cover. Plans to build a dam on the Chorokh River for irrigation or electricity will result in enormous damage to riparian ecosystems of one of the most important rivers in the Turkish Caucasus. Infrastructure development threatens natural habitats in the Caspian, West Lesser Caucasus, Iori-Mingechaur and Arasbaran corridors.

Measures to mitigate impacts of infrastructure development include carrying out independent environmental impact assessments and monitoring, bringing public attention to the environmental consequences of development projects and encouraging development companies to provide funds for protected areas and other conservation measures in areas that will be disturbed by infrastructure projects.

Pollution of Rivers and Wetlands

Pollution of rivers and wetlands is generally a result of run off from human settlements, factories, farmlands and pastures. While the use of pesticides and fertilizers in commercial agriculture has declined significantly in the former Soviet countries since 1990, use of chemicals on private plots is growing. Manure from livestock is often dumped directly into rivers, altering nutrient balances and causing eutrophication of lakes. Waste materials from timber production are also thrown into rivers at logging and processing sites. Erosion from farmlands, pastures and logged forests causes increased turbidity in many rivers.

Large-scale industrial production has decreased dramatically in the last decade as a result of the economic crisis, leading to lower levels of pollution. However, smaller factories generally do not have the means to install effective waste management mechanisms and equipment and runoff waters are highly polluted. Pollution of wetlands and rivers impacts breeding birds and fish populations. Pesticides and fertilizers kill large numbers of invertebrates and make their way up the food chain to birds and even humans. Pollution has impacted freshwater systems in the Kuma-Manych, Arasbaran and Iori-Mingechaur corridors. Pollution from oil extraction, run off and other sources has compromised the integrity of marine ecosystems in the Caspian, Azov and Black seas. Ineffective water management is a serious problem for water conservation in the East Lesser Caucasus and Javakheti corridors.

Measures to reduce pollution of rivers and wetlands include increasing fines for dumping polluted wastewater into rivers and prosecuting violators. Civil society should be involved in monitoring pollution levels in rivers and lakes to determine sources. Dumping of manure and other waste into rivers should be prohibited. Use of pesticides and other chemicals near waterways should be closely monitored by independent groups. Conversion of lands adjacent to rivers and lakes for agriculture should be prohibited.

Root Causes

A number of root causes are behind the proximate threats to biodiversity (Figure 5). Root causes can be broadly grouped into three categories: socioeconomic, political and

institutional. Poverty is perhaps the most significant of the **socioeconomic root causes**, leading to poaching, fuel wood consumption, illegal logging, overgrazing and other threats. Poverty forces people to be dependent on natural resources and use resources unsustainably to meet their basic needs. The lack of public awareness and public involvement in nature conservation is another reason people are more likely to participate in poaching, overfishing and other violations. Economically, the public has little incentive to conserve firewood, water, or other resources. Poor land use planning results in overgrazing, pollution of waterways and inefficient infrastructure development.

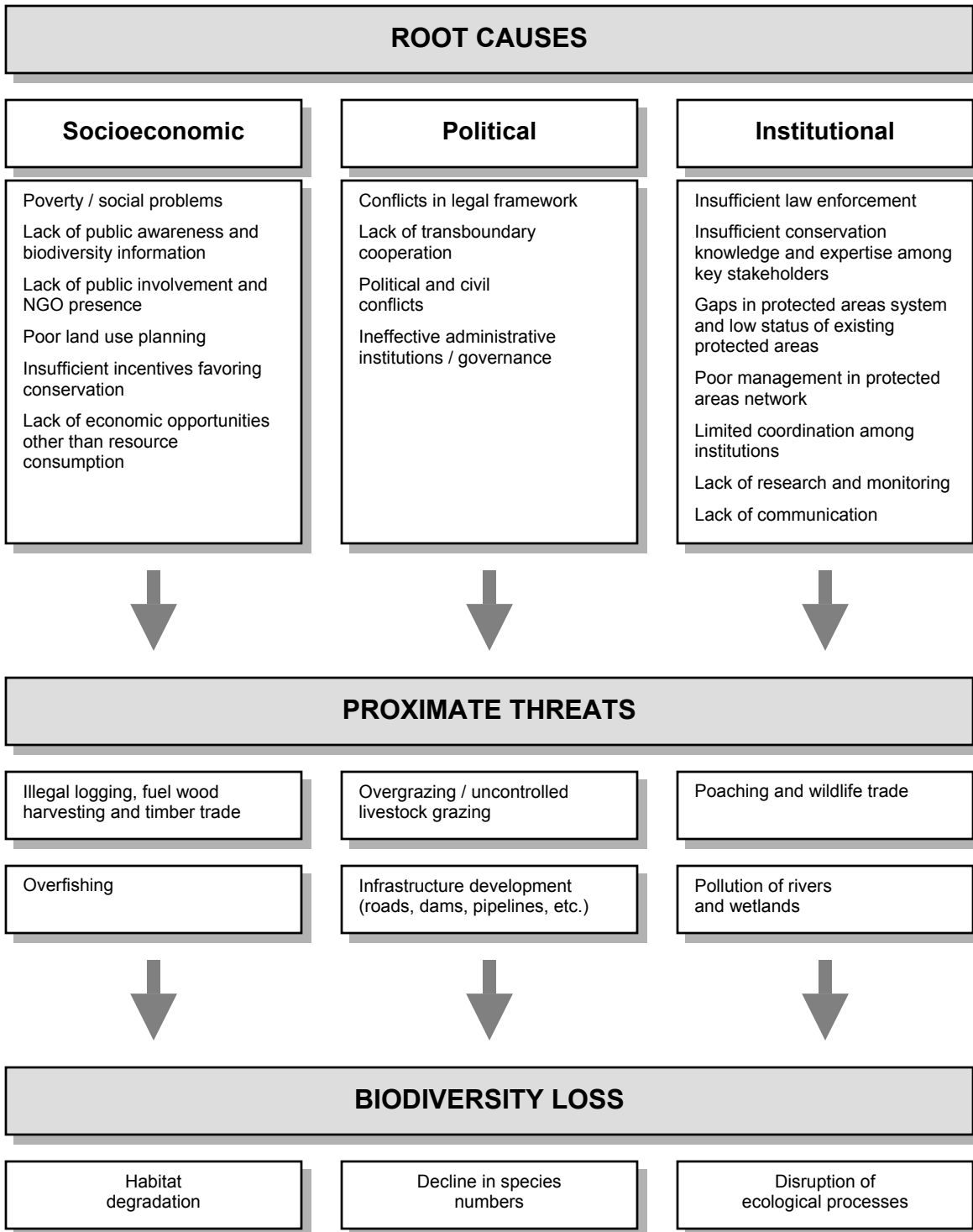
Political root causes of biodiversity degradation stem from gaps and contradictions in legislation and the lack of a clear delineation of jurisdiction for enforcement agencies. Political and civil conflicts hinder cooperation on nature conservation and military conflicts often result in increased forest fires, logging, poaching and pollution. The lack of transboundary cooperation between countries hinders control of overfishing, illegal trade of timber and wildlife and pollution of waterways.

Institutional root causes include ineffective administrative institutions and enforcement of legislation. Limited coordination among institutions and lack of communication results in duplication of efforts and misunderstandings. Insufficient knowledge of conservation issues among key stakeholders hinders environmental protection efforts.

Gaps in protected areas networks and poor protected areas management leads to poaching, illegal logging, overgrazing and other threats. Insufficient research and monitoring means that the extent of illegal logging, overfishing and poaching is unknown and long-term impacts on biodiversity are poorly understood.

Assessment of proximate threats and root causes helps to determine the thematic focus of the CEPF niche. Strategies should aim to address the root causes in order to mitigate threats in the corridors. Targeted programs that empower civil society to improve management of protected areas and capabilities of state conservation agencies and increase transboundary coordination will be important strategic directions for CEPF investment. Programs to create alternative incomes for local communities will be important to reduce the public's dependence on natural resource consumption. Strategies to increase awareness among decisionmakers and the public will promote involvement in and support of conservation activities. Training and support of NGOs and key stakeholders will help them carry out important conservation projects more efficiently and in coordination with existing government efforts, thereby maximizing the effectiveness of all efforts. Tightly defined monitoring and research activities will help us gain a better understanding of the extent of threats to biodiversity and what measures are needed to halt biodiversity loss.

Figure 5. Threats and root causes



SYNOPSIS OF CURRENT INVESTMENTS

Investments in biodiversity conservation in the Caucasus Hotspot come from national governments, bilateral and multilateral agencies and international and regional NGOs. The following summary is not an exhaustive list of organizations and projects in the region, but is only meant to assist in determining funding gaps and opportunities in the hotspot. Table 3 depicts major investment projects underway and funding opportunities in corridors.

National Governments

Each of the national governments in the Caucasus has developed or is in the process of developing a national strategy and action plan for conservation and sustainable use of biodiversity as part of international obligations under the Convention on Biodiversity. Environmental policies and legislation are in place in all the countries. Though regional governments allocate funds for protected areas operations and environmental programs, funding for implementation of action plans and programs is scarce. Recommended CEPF investment is coherent with the national strategies envisioned by each of the countries in the Caucasus.

The Russian Government spent more than \$13 million on nature conservation in the North Caucasus in 2002, four times more than in 2000. Russia also committed significant funds toward developing a strategy for sustainable development in the mountains of the Adygeya Republic. The Georgian Government recently made a commitment to preserve 15 percent of the country's forests in protected areas (IUCN I-IV) as part of WWF's Gifts to the Earth initiative. The Government of Azerbaijan contributed \$1 million to creation of the Shakhdag National Park. The government is developing a program for protection and expansion of forests and for environmentally sustainable socioeconomic development. In the framework of the Caspian Environment Program, the Azerbaijan government is developing a national Caspian Action Plan. The Ministry of Nature Protection in Armenia carried out several projects with support of the GEF and the United Nations Development Programme (UNDP) on combating desertification, climate change and building capacity for implementing the Convention on Biodiversity. The Ministry developed an action plan for Lake Sevan, as well as forest and biodiversity conservation strategies. The Turkish Government has supported biodiversity and natural resource management in the Turkish Caucasus. The Department of Environment in Iran carried out several biological assessment projects in the Caucasus, including in the Ghorigol wetlands, as well as studies of rare flora and fauna in the Caucasus region. In 1995, the Iranian government funded a study and management plan for the Sabalan protected area.

Bilateral and Multilateral Donors

Among bilateral and multilateral donors in the Caucasus, GEF is one of the most active. GEF has invested substantial funds in protected areas and promoting environmental education and ecotourism in the North Caucasus, as well as expanding the protected areas system in Georgia. GEF funded species conservation projects on the European bison, East Caucasian tur and chamois. In Turkey, GEF is building capacity for resource

management planning, protected areas management and conservation of threatened fauna species. GEF funded two UNDP implemented projects worth over two million dollars on improving environmental management in the Black Sea Region. GEF funded UNDP implemented capacity building activities in the Ministry of Environment in Georgia and in Armenia and on preventing transboundary pollution in the Kura-Araks basin.

The European Union's Technical Assistance for the Commonwealth of Independent States (EU-TACIS) supported an environmental program on the Black Sea (\$5.5 million), as well as projects on improving nature conservation policy and environmental awareness in the region.

The Germany Ministry for Cooperation and Development (BMZ) has supported a project on erosion control in Turkey. The German government funded development of a vision for biodiversity conservation in the Caucasus Ecoregion that also served as a foundation for defining CEPF's proposed investments and will support implementation of selected projects under the Caucasus Initiative of the Government of Germany. The German Bank for Reconstruction and Development (KfW) is funding a \$10 million project in Georgia to create the Borjomi-Kharagauli National Park and develop communal infrastructure in its support zone.

The Swiss government, in partnership with the World Bank, is financing a Tourism Initiative project for South Caucasus and a WWF project on sustainable use of medicinal plants.

The United Nations Development Programme (UNDP) invested \$1.6 million to build disaster management capabilities and \$2.3 million on sustainable resource management in Georgia. UNDP is also funding a program on rural development in the Turkish Caucasus.

The United States Agency for International Development (USAID) is actively supporting building environmental awareness in the Caucasus. In the Russian Caucasus, USAID funded projects on promoting environmental education and ecotourism through nature reserves, the mass media and children's camps through the Institute for Sustainable Communities. USAID invested over \$6 million in improving water management in the southern Caucasus. The Swiss Government, World Bank, EU and UNDP also contributed funds for that project.

The World Bank provided a \$15 million loan to Georgia for establishing sound forest management systems. The World Bank also supported projects in Armenia on natural resources management and poverty reduction, in Azerbaijan on boosting sturgeon populations and creating a national park and on assessing forests on the Turkish-Georgian border. The World Bank/GEF is funding a large-scale protected areas development project in Georgia (\$8.7 million), aiming to establish two new national parks and expand existing reserves, as well as provide assistance to the state department of protected areas. The World Bank/GEF is also supporting the creation of a national park in the Kolkheti Lowlands (\$2.5 million).

International NGOs and Foundations

A number of international NGOs and foundations are active in the Caucasus. The Initiative for Social Action and Renewal in Eurasia (ISAR) provides small grants for various environmental projects in the Russian Caucasus, including on promoting environmental awareness through the mass media and working with children, collecting information on impacts of military conflicts on the environment and assessing the state of fish populations in southern Russia. IUCN financed an assessment of biological and landscape diversity in the North Caucasus.

The Eurasia Foundation has contributed to rural development and poverty reduction projects in the region. The MacArthur Foundation actively supports civil society in the Caucasus. MacArthur supported creation of the Ecoregional Biodiversity Consultation Council for the Caucasus Ecoregion, as a follow up to its project with WWF on elaborating a portfolio for conserving the region's biodiversity. This portfolio served as a backdrop for deriving CEPF's investment priorities in the Caucasus. MacArthur also financed a conference on threats to the Caspian, as well as work to understand issues related to the changing level of the Azov Sea.

WWF has been working in the Caucasus for more than 10 years through its WWF Georgia (now WWF Caucasus), WWF Turkey and WWF Russia offices. WWF's projects are mainly related to creation of protected areas and improving management of existing reserves, developing ecotourism, promoting environmental education and environmentally sound policies and conserving endangered species.

Regional NGOs

Most of the regional NGOs rely on international donors to support their programs. NGO capacity is limited in rural areas where corridors have been delineated.

The Regional Environmental Centre for the Caucasus (REC Caucasus) operates with core support from the EU and funding from Switzerland, the United States and other countries. REC assists Armenia, Azerbaijan and Georgia in solving environmental problems, supports building civil society, promotes public participation in the decisionmaking process and helps develop the free exchange of information.

In Georgia, the Noah's Ark Center for Recovery of Endangered Species (NACRES) is one of the more active local NGOs. NACRES implements projects on research and monitoring of large carnivores and on protected areas. The Georgian Center for the Conservation of Wildlife (GCCW) carries out projects on environmental awareness and studies of migratory birds and raptors, among others. The Sacred Earth Network provided funding through the GCCW to support the Caucasus Environmental NGO Network (CENN).

Today, CENN is an active nongovernmental organization that acts as a voluntary effort to foster regional cooperation by means of improving communication among environmental organizations of Armenia, Azerbaijan and Georgia.

Most projects run by NGOs in Armenia and Azerbaijan are funded by international donors, such as the GEF, TACIS and USAID. The “Chevre” NGO in Azerbaijan promotes sustainable development and conservation of the southeastern Caucasus.

Business Sector

Investments in biodiversity from the business sector are relatively rare, but precedents have been made. British Petroleum supported conservation of floodplain forests in the upper Kura River (Tugai Forests) in Azerbaijan (\$250,000), in addition to actions for conservation of Javakheti wetlands through NACRES in Georgia. The British Petroleum funds projects of GCCW and NACRES in Georgia.

Table 3. Major investment projects on biodiversity conservation in the Caucasus
 (Note: the following table is not an exhaustive list of all projects in the region, but provides an overview of the major investment directions)

CORRIDOR	PRIMARY THREATS AND ROOT CAUSES	MAJOR PROJECTS
1. Kuma-Manych	<ul style="list-style-type: none"> • overgrazing 	<ul style="list-style-type: none"> • Research and monitoring of migratory waterfowl in the Kuma-Manych Depression - Russia (Wetlands International, ongoing, \$25,000)
2. Greater Caucasus	<ul style="list-style-type: none"> • illegal logging 	<ul style="list-style-type: none"> • Establishing a protected areas regional association on the basis of Teberdinsky Zapovednik - Russia (GEF, 1999-2001, \$33,500) • Environmental center in Teberdinsky Zapovednik; ecotourism and education projects - Russia (GEF, 1998-2000, \$371,500) • Development of sustainable tourism in the Northern Caucasus - Russia (USAID/ISC, 2000-2001, \$117,782) • Development of environmental education through creation of summer camps in Sochi area - Russia (USAID, 2000-2001, \$39,500) • Awareness campaign in regional mass media in Dagestan and Krasnodarsky Province - Russia (USAID, 2000-2001, \$36,000) • Model project for strengthening protection in Severo-Osetinsky Zapovednik (GEF, 1998-1999, \$95,800) • Promoting ecotourism in the North Caucasus - Russia (USAID/ISC, 1999-2001, \$136,887) • Forests development project - Georgia (World Bank, ongoing, \$15.6 million) • Protected areas development project - Georgia (GEF/World Bank, ongoing, \$8.7 million) • Creating anti-poaching units - Georgia (WWF, ongoing, \$70,000) • Creation of Shakhdag National Park - Azerbaijan (World Bank/Japanese government, ongoing, \$900,000)
3. Caspian	<ul style="list-style-type: none"> • overfishing, poaching 	<ul style="list-style-type: none"> • Construction of a sturgeon propagation factory on the Caspian Sea Coast - Azerbaijan (World Bank, 2001-2003, \$9.1 million) • Regional partnership for prevention of transboundary degradation of the Kura-Araks River basin - Armenia, Azerbaijan, Georgia (UNDP/Swiss government/ World Bank/USAID/EU, ongoing, \$4.7 million)

CORRIDOR	PRIMARY THREATS AND ROOT CAUSES	MAJOR PROJECTS
4. West Lesser Caucasus	<ul style="list-style-type: none"> illegal fishing, logging, poaching 	<ul style="list-style-type: none"> Biodiversity and natural resources management - Turkey (GEF/Turkish Government, ongoing, \$11.5 million) Model project for erosion control, natural resource management and rural development in Bayburt Province - Turkey (German Government, \$3 million) Gap analysis in the Uzungel Nature Park - Turkey (GEF, ongoing, \$20,000) Creating anti-poaching units - Georgia (WWF, ongoing, \$70,000) Creation of Kolkheti National Park - Georgia (GEF/World Bank, ongoing, \$2.5 million) Creation of Borjomi-Kharagauli National Park and its support zone - Georgia (KfW/WWF/GSIF, 1999-2002, \$10 million) Assessment of high conservation value forests on the border of Turkey and Georgia (World Bank/WWF Alliance, ongoing, \$25,000)
5. Javakheti	<ul style="list-style-type: none"> unsustainable water management 	<ul style="list-style-type: none"> Continued actions for the conservation of Javakheti wetlands - Georgia (BP/NACRES, ongoing, \$52,500)
6. East Lesser Caucasus	<ul style="list-style-type: none"> fuel wood collection, illegal logging 	<ul style="list-style-type: none"> Natural resources management and poverty reduction - Armenia (World Bank/GEF, ongoing, \$13.1 million) Regional partnership for prevention of transboundary degradation of the Kura-Araks River basin - Armenia, Azerbaijan, Georgia (UNDP/Swiss government/ World Bank/USAID/EU, ongoing, \$4.7 million) Conservation of the endangered leopard in the Caucasus Ecoregion (WWF, ongoing, \$200,000)
7. Iori-Mingechaur	<ul style="list-style-type: none"> overgrazing, poaching 	<ul style="list-style-type: none"> Conservation of arid and semi-arid ecosystems in the Caucasus - Georgia (UNDP/GE/MacArthur/NACRES, ongoing, \$750,000) Creating anti-poaching units - Georgia (WWF, ongoing, \$70,000) Regional partnership for prevention of transboundary degradation of the Kura-Araks River basin - Armenia, Azerbaijan, Georgia (UNDP/Swiss government/ World Bank/USAID/EU, ongoing, \$4.7 million) Tugai Forest - Azerbaijan (BP Azerbaijan, ongoing, \$250,000)
8. Southern Uplands	<ul style="list-style-type: none"> poaching, overgrazing 	<ul style="list-style-type: none"> Eastern Anatolia participatory rural development project - Turkey (UNDP, 2001-2003, \$425,000) Conservation of the Agri Mountain's biodiversity, especially threatened fauna species - Turkey (GEF, ongoing, \$30,000)
9. Arasbaran	<ul style="list-style-type: none"> overgrazing, poaching 	<ul style="list-style-type: none"> No major investments
10. Hyrcaan	<ul style="list-style-type: none"> unsustainable logging 	<ul style="list-style-type: none"> Conservation of the endangered leopard in the Caucasus Ecoregion (WWF, ongoing, \$200,000)

Funding Opportunities

Funding is required to complement investments of governmental and international conservation organizations and to ensure overall effectiveness of conservation efforts. Supporting civil society in improving protected areas systems, for example, would complement existing governmental plans on expanding protected area networks. Projects on building environmental awareness will complement ongoing NGO programs in that field throughout the hotspot. Funding for promoting transboundary cooperation will build on region-wide projects by the GEF, World Bank and others by creating an institutional basis for cooperation between the Caucasus countries. Funding for monitoring and conservation of globally threatened species will further conservation efforts of NGOs, protected areas and scientific institutions in corridors.

Opportunities differ from corridor to corridor. Protected areas systems consisting of strict nature reserves are well developed in the Greater Caucasus and West Lesser Caucasus corridors, where efforts are needed to connect existing reserves with wildlife corridors. Protected areas in the Caspian, East Lesser Caucasus and Hyrcan corridors are mostly sanctuaries with low protected status and require strengthening. Support for promoting transboundary cooperation is needed in all five corridors. Nearly all corridors require funding for increasing public awareness and support from decisionmakers for biodiversity conservation in the region. Support for introducing sustainable means of resource use and promoting alternative livelihoods in local communities is virtually non-existent in all corridors.

CEPF NICHE FOR INVESTMENT

The CEPF niche for investment in the Caucasus hotspot was determined based on the following factors: biological and geographical priorities for biodiversity conservation (species, site and corridor outcomes); threats to biodiversity; socioeconomic framework of the corridors; institutional capacity in the region; and assessment of current investments and funding gaps and opportunities in the corridors.

The **biological** basis for the CEPF niche is determined by the species outcomes - globally threatened species found in the Caucasus according to the 2002 IUCN Red List. These species are the primary basis for conservation action in the region and the foundation upon which all other priorities - site and corridor outcomes - were determined. It is important to note that investment will be concentrated in the corridors that contain the majority of these species. Additional funding should be sought to cover species located outside of these corridors. Monitoring of populations of globally threatened species over the long term will help ascertain whether or not conservation programs are successful. Over time, the list of globally threatened species for the Caucasus should be updated, as more information on restricted-range and threatened species is gathered in the region.

The **geographical** basis for the CEPF niche in the Caucasus hotspot was elaborated during the process of determining conservation outcomes. The globally threatened species (species outcomes) were found to be concentrated in 205 sites throughout the hotspot (site outcomes). These sites were grouped where possible into 10 broad corridors (corridor outcomes). Thirty-three sites, that contain globally threatened species, did not fall under any of the corridors and should be targeted individually through additional

funding opportunities. Wide-ranging species (landscape species) are not limited to specific corridors and should be targeted separately where necessary. While the corridors are not targeted for protection as entire blocks, they indicate priority areas where precise measures can be taken to complement existing conservation programs.

In order to narrow the geographical niche to account for limited CEPF funding, five priority corridors were delineated from the original 10, taking into account representativeness, level of biodiversity, threats, current investments and other factors. These target corridors are the Greater Caucasus, Caspian, West Lesser Caucasus, East Lesser Caucasus and Hyrcan corridors. The five corridors, covering 14.2 million hectares, account for 68 percent of the total area and 66 percent of the site outcomes of all 10 corridors. Ninety percent (46) of the species outcomes are found in these five corridors, including all six critically endangered species. All 18 landscape species are represented within the five target corridors. Fourteen of the 17 restricted-range species found in all 10 corridors are in the selected five. Over half of the bird congregation areas are concentrated in the five corridors. Nearly 90 percent of the protected areas found in the 10 corridors are located within the five priority corridors. All major habitats are represented in the target corridors.

The threat of habitat degradation and irreversible biodiversity loss is also greatest in the five target corridors. Illegal and unsustainable logging and fuelwood collection threaten habitats in these five corridors, leading to forest degradation, deforestation and species extinctions. Poaching poses serious threats to biodiversity and endangered species in all five corridors. Overgrazing is impacting fragile mountain meadow habitats in the Greater Caucasus and East Lesser Caucasus corridors. Overfishing is wiping out fish populations and related biodiversity in the Caspian, West Lesser Caucasus and Hyrcan corridors. Infrastructure development and poor water management is a problem in three of the corridors. Thus, the five corridors have a representative array of problems to be resolved through investment in conservation programs. The Caspian and Hyrcan corridors in particular have received limited international assistance and government support. All six countries are represented in the target corridors, which is important for ensuring support from each of the national governments. Finally, these five corridors provide unprecedented opportunities for promoting transboundary cooperation, since each of the corridors crosses the boundaries of two or more countries in the hotspot. Additional sources of funding will need to be identified to resolve important conservation issues in the remaining five corridors and sites not covered by corridors.

The **thematic** basis for the CEPF niche was elaborated as a result of analysis of threats to biodiversity at the species, sites and corridor level. Major threats include overgrazing, poaching, illegal logging, fuel wood harvesting, overfishing and infrastructure development. The thematic niche for CEPF should address the socioeconomic, political and institutional root causes of these threats - lack of awareness, lack of economic opportunities, poor management of protected areas, etc. - while monitoring the status of globally threatened species and their habitats. The thematic niche - CEPF's strategic directions - includes targeted actions led by civil society actors, such as strengthening the protected areas network, for example, by developing management plans for protected areas in target corridors and linking existing protected areas into a continuous network of

reserves (Econet). CEPF can support efforts of civil society to promote transboundary cooperation to ensure conservation of transborder ecosystems and threatened species. The thematic niche includes fighting poverty in local communities by implementing model projects on alternative income generation and sustainable resource use, reducing pressures on natural ecosystems. CEPF can play an important role in building capacity of civil society and conservation agencies through training and technical support and in promoting awareness and support of decisionmakers and the general public on biodiversity conservation issues in target corridor areas. Components of the strategic directions should be carried out in the corridors where they will have the greatest impact.

The **institutional** basis for the CEPF niche was determined as a result of the rapid socioeconomic analysis and assessment of institutional capacity. Legislation supporting nature conservation is generally in place in all the countries, though contradictions exist and enforcement capabilities are less than optimal. Governmental environmental agencies have representative branches in all five target corridors, but these are underfunded and can only cover basic operational costs. NGOs are well established in the Greater Caucasus, Caspian and West Lesser Caucasus corridors, but have limited capacity and funding. International NGOs are active in most of the corridors. Protected areas with experienced scientific and administrative staff can serve as the basis for conservation projects related to species conservation and other areas in the target corridors. Target groups for funding—the institutional niche—are NGOs and other parts of civil society (universities, institutes, etc.) that can work with governmental agencies to fill in gaps where state funds fall short, as well as protected areas staff and individuals involved in conservation in the region. Governmental conservation agencies would also benefit from training programs and other capacity building measures facilitated by civil groups.

The **funding** niche was determined based on analysis of current investments in the Caucasus and taking into consideration that CEPF funds are limited and the timeframe is only five years. CEPF funding can help fill funding gaps in the protected areas system—the foundation—by supporting ongoing efforts to create new reserves and wildlife corridors. Improving reserve management through development and implementation of management plans will help ensure that existing reserves are effective in conserving biodiversity within the target corridors. Promoting transboundary cooperation in the target corridors would help governments realize programs on transboundary conservation set out in bilateral agreements. In order to ensure persistence of the globally threatened species, conservation mechanisms such as international conventions on biodiversity and the IUCN Red List need to be updated and enforced. State conservation agencies would benefit from training and support in implementing conventions. Small grants targeted at conservation of all globally threatened species would ensure that these species receive the attention of the conservation community and serve as indicators for conservation success in the region. Model projects on alternative income generation for local communities and sustainable resource use are good investments that will demonstrate the benefits of sustainable nature use and become self-financing in the long run.

To reiterate, the **CEPF niche for investment** was formulated based on five major parameters: evaluation of the most important biological factors, determination of priority geographical areas, potential impact of thematic directions, assessment of available institutional capacity and analysis of current funding gaps and opportunities. The outcome of this evaluation is that CEPF investment should be focused on conserving globally threatened species, the majority of which are found in five target corridors: Greater Caucasus, Caspian, West Lesser Caucasus, East Lesser Caucasus and Hyrcan. The main threats to biodiversity and species in these target corridors stem from illegal logging, overgrazing, poaching, overfishing and infrastructure development. Thus CEPF funding should focus primarily on mediating the root causes of these threats in the five corridors - lack of economic opportunities, lack of transboundary cooperation, lack of awareness, poor protected area management and others. Existing civil society institutions, protected areas and conservation agencies should be the target groups for CEPF funding, as they have the greatest potential to realize projects for mitigating threats and halting biodiversity loss in the Caucasus hotspot.

CEPF INVESTMENT STRATEGY AND PRIORITIES

Program Focus

The CEPF program focus is based on the need to abate proximate threats to biodiversity and their root causes in the Caucasus hotspot. Within the ecosystem profile, five target corridors of the 10 total corridors (corridor outcomes) have been delineated to conserve globally threatened species (species outcomes) and their major habitats (site outcomes). Government institutions and civil society are active in conservation in the region, but often lack the capacity to implement environmental programs. CEPF can build on their existing programs to further biodiversity conservation, in particular, through increasing transboundary cooperation, strengthening existing protected areas systems, strengthening mechanisms for biodiversity conservation, promoting sustainable resource use and increasing awareness and commitment of decisionmakers for biodiversity conservation in the region.

Strategic Directions

Four strategic directions for the CEPF investment strategy were developed based on the conclusions of this rapid assessment and elaboration of the CEPF niche. Funding gaps and opportunities were explored to find ways that CEPF could complement existing efforts and increase the overall effectiveness of conservation activities. The CEPF strategic directions and investment priorities are outlined in Table 4 and described in detail below. Priority investment areas were determined within each of the strategic directions. While elaborating specific projects for implementation was not the goal of this profile, ideas, examples and focal areas for investment, as well as indication of which corridors have the greatest potential or require the most assistance for each component, are provided.

Table 4. CEPF strategic directions and investment priorities in the Caucasus hotspot

CEPF STRATEGIC DIRECTIONS	CEPF INVESTMENT PRIORITIES
<p>1. Support civil society efforts to promote transboundary cooperation and improve protected area systems in five target corridors</p>	<p>1.1 Promote transboundary cooperation by carrying out joint initiatives and harmonizing existing projects to conserve border ecosystems and species and site outcomes</p> <p>1.2 Support existing efforts to create new protected areas and wildlife corridors through planning processes and co-financing efforts</p> <p>1.3 Develop and implement management plans for model protected areas with broad participation of stakeholders</p>
<p>2. Strengthen mechanisms to conserve biodiversity of the Caucasus hotspot with emphasis on species, site and corridor outcomes</p>	<p>2.1 Provide funding for research and implementation of the Caucasus Red List re-assessments, particularly for poorly represented taxa such as plants, invertebrates, reptiles and fish.</p> <p>2.2 Under one CEPF/Small Grant mechanism, focus small grant efforts on supporting efforts to conserve 50 globally threatened species in the hotspot.</p> <p>2.3 Provide support to conservation agencies specifically to improve implementation of international conventions such as the Convention on Biological Diversity, the Convention on International Trade in Endangered Species and the Ramsar Convention on Wetlands</p>
<p>3. Implement models demonstrating sustainable resource use in five target corridors</p>	<p>3.1 Evaluate and implement models for sustainable forestry, water use and range management</p> <p>3.2 Under one CEPF/Small Grant mechanism, focus small grant efforts on supporting existing NGOs to undertake projects focused on developing alternative livelihoods, such as ecotourism, collection of non-timber forest products and sustainable hunting and fishing</p> <p>3.3 Support civil society efforts to mitigate, participate in and monitor development projects</p>
<p>4. Increase the awareness and commitment of decisionmakers to biodiversity conservation in five target corridors</p>	<p>4.1 Develop local capacity to train environmental journalists and develop incentives to write on environmental issues, targeting decisionmakers in particular</p> <p>4.2 Develop a communications campaign to increase environmental awareness in the Caucasus hotspot</p>

1. Support civil society efforts to promote transboundary cooperation and improve protected area systems in five target corridors

Each of the five target corridors in the Caucasus hotspot extends across borders of two or more countries. The ranges of globally threatened species cross political borders. Illegal logging, wildlife trade, pollution and other issues also have transboundary implications. Thus, transboundary cooperation will be a key component of ensuring long-term biodiversity conservation in the Caucasus. Projects promoting transboundary cooperation are relatively inexpensive but have far-reaching effects. Civil society, such as NGOs and scientific institutions, has the expertise and organizational capacity to ensure that transboundary initiatives are successful and effective over the long-term.

Many transboundary issues related to biodiversity conservation can be resolved through establishing transboundary protected areas and enhancing existing protected areas systems. Protected areas are the foundation for biodiversity conservation in the Caucasus hotspot, helping to safeguard globally threatened species, local endemics and unique

habitats. Certain corridors of the Caucasus hotspot have well-developed systems of protected areas, while others have none. Limited CEPF funding could be used to support civil society in realizing existing state programs for creating transboundary protected areas, planning and expanding protected areas systems and establishing wildlife corridors to ensure connectivity of existing protected areas - by linking reserves into ecological networks of protected areas (Econets). Civil society can also work to improve protected area management by assisting in elaborating management plans for model areas and training protected areas staff in development and implementation of management priorities.

Recommendations for engaging civil society in these areas include:

1.1 Promote transboundary cooperation by carrying out joint initiatives and harmonizing existing projects to conserve border ecosystems and species and site outcomes: assess existing programs and implement new strategies and projects relevant to species and site outcomes; promote cooperation on halting illegal logging and export/import of timber and wildlife; organize exchanges across borders between protected areas, NGOs, institutes and universities and governmental agencies; conduct international conferences and meetings on transboundary cooperation.

1.2. Support existing efforts to create new protected areas and wildlife corridors through planning, co-financing and other points: involve civil society in protected area planning and expansion of protected areas systems; support establishment of transboundary protected areas where border reserves already exist (a transboundary protected area is proposed in the Greater Caucasus Corridor on the borders of Georgia, Azerbaijan, Russia and other opportunities may arise); use civil society expertise to elaborate proposals to create multiple use corridors and sanctuaries in site outcomes or to connect existing reserves into Econets where management capacity already exists; develop new types of management categories for linking areas where necessary (nature parks, wildlife corridors, etc.).

1.3. Develop and implement management plans for model protected areas with broad participation of stakeholders in five target corridors: engage expertise of civil society in elaboration of management plans for transboundary protected areas, key nature reserves and site outcomes to serve as models for other reserves; involve local communities, decisionmakers, businesses and other stakeholders in the planning process; provide grants for technical assistance to implement priority aspects of management plans; improve infrastructure and provide incentives to staff in model areas.

2. Strengthen mechanisms to conserve biodiversity of the Caucasus hotspot with emphasis on species, site and corridor outcomes

Endangered species are the first elements of biodiversity to disappear as ecosystems and natural conditions are altered. Thus, effective conservation planning requires up-to-date information on the status of threatened species and the habitats on which they depend. Species in the IUCN Red List are generally granted special attention within government and NGO conservation programs. IUCN species are subject to regulations under CITES

and other conventions. Therefore it is extremely important that the IUCN Red List accurately reflect the current situation in the Caucasus hotspot. At present, the IUCN Red List has some gaps and inaccuracies, especially where the range and status of certain species are concerned. Scientific institutions, NGOs and protected areas should be enlisted to help update the IUCN Red List and determine whether there are other globally threatened species (species outcomes) in the hotspot. For certain species, rapid scientific surveys will need to be carried out. GIS tools will be used to map threatened species and determine their current level of protection. Small grants aimed at protecting globally threatened species will enable civil society and other institutions, such as protected areas, to elaborate and implement effective species conservation programs. Investments into species conservation should encompass all 10 corridors in order to ensure conservation of the 50 globally threatened species and their habitats.

International conventions on biodiversity, such as the Convention on Biological Diversity (CBD), CITES and the Ramsar Convention on Wetlands, require member countries to provide adequate levels of protection to endangered species, ecosystems and biodiversity overall. While the six countries in the Caucasus hotspot have signed the majority of conventions related to biodiversity, most lack the means to implement them. Often officials responsible for convention implementation lack the necessary know-how to ensure their country is in compliance with convention regulations. Training programs for conservation agencies and responsible officials are needed to create capacity to implement the biodiversity conventions. CEPF could also boost the effectiveness of government efforts by assisting civil society to implement projects related to the conventions in cooperation with conservation agencies.

Examples of programs to enhance mechanisms for biodiversity conservation are:

2.1 Provide funding for research and implementation of the Caucasus Red List re-assessments, particularly for poorly represented taxa such as plants, invertebrates, reptiles and fish. Involve civil society - NGOs, scientific institutions, scientists in protected areas - in rapid scientific surveys for certain globally threatened species and other species which should be listed; assess the current state and range of listed and potential species; make recommendations to IUCN to update the Red List for the Caucasus Hotspot.

2.2. Under one CEPF Small Grants umbrella, establish a small grants program to support efforts to conserve 50 globally threatened species in the hotspot: create a mechanism to distribute small grants; solicit proposals for conserving globally threatened species from the conservation community; provide small grants to NGOs, scientific institutions, protected areas and individuals to support research and conservation projects on threatened species. Projects might include enlisting support of local communities in conserving endangered species, elaborating and implementing species conservation strategies; monitoring endangered species, determining causes for population decline, setting up a sanctuary or corridor to conserve important habitats for threatened species, or combating poaching and illegal wildlife trade.

2.3. Provide support to conservation agencies specifically to improve implementation

of international conventions such as CBD, CITES and Ramsar: support civil society in organizing training programs for government officials charged with implementation of conventions on biodiversity; develop and distribute informational materials for conservation agencies on international conventions; support preparation and submission of reports on biodiversity and other necessary background materials as required by international conventions; assess ways that civil society can complement government efforts in implementing conventions and provide appropriate support.

3. Implement models demonstrating sustainable resource use in five target corridors

In order to reduce poaching, overgrazing, overfishing and unsustainable fuel wood collection, new models of sustainable resource use need to be developed in corridors where pressures are greatest. Ways to generate income for local communities need to be developed in order to make them less dependent on natural resources. Examples of alternative income generation include ecotourism, sustainable collection and sale of medicinal plants and other non-timber forest products and sustainable hunting and fishing. NGOs and other civil institutions can work with local communities to develop capacity for alternative livelihoods. Sustainable resource use also entails reducing the impacts of development on the environment and biodiversity. Civil society can play an important role in monitoring these impacts and providing objective information on pressing conservation issues.

Investments to demonstrate sustainable resource use might include:

3.1. Evaluate and implement models for sustainable forestry, water use and range management: identify communities within the five corridors that have the desire to participate in model projects; build capacity in these model communities through training and technical support; elaborate guidelines for sustainable resource use and implement in model areas. The Greater Caucasus, West Lesser Caucasus and Hyrcan corridors have the best potential for sustainable forestry projects. The East Lesser Caucasus Corridor offers the best potential for sustainable range management projects.

3.2. Under one CEPF/Small Grants mechanism, establish a small grants program to support existing NGOs to undertake projects focused on developing alternative livelihoods, such as ecotourism, collection of non-timber forest products and sustainable hunting and fishing: create mechanism for distributing small grants in the region; solicit proposals from the conservation community for projects; provide small grants to NGOs, scientific institutions, protected areas and individuals on building capacity for ecotourism and other projects in model communities, providing training and technical support for sustainable resource use, establishing zones and management guidelines to encourage sustainable resource use and marketing and distribution of sustainably harvested products and services. Projects within the five target corridors should be selected for funding based on available expertise and capacity, economic factors and threats to biodiversity.

3.3. Support civil society efforts to mitigate, participate in and monitor development projects: create capacity of NGOs and the scientific community to assess and mitigate impacts of large development projects such as the Baku-Ceyhan pipeline, dams in the

Chorokh River valley, pollution of waterways from oil extraction, etc.; develop model project on monitoring illegal logging and timber export/import; build capacity to assess threatened fish populations and impact establishment of catch limits and other projects.

4. Increase awareness and commitment of decisionmakers and the public to biodiversity conservation in five target corridors

An awareness campaign to build support of decisionmakers and the general public for conservation programs should be carried out on the community, regional, national and transboundary levels. An assessment of current awareness levels should be carried out to provide a basis to measure success. Programs should be based on the institutional capacity of existing NGOs and other parts of civil society (universities, media, etc.).

Specific activities might include:

4.1. Build local capacity to train environmental journalists (in print, television and radio) and develop incentives to write on environmental issues, targeting decisionmakers in particular: work with NGOs to develop seminars and training workshops for environmental reporters, especially representatives of local newspapers and television in corridor areas and target sites; organize contests and provide other incentives for environmental reporting.

4.2. Develop a communications campaign to increase environmental awareness in the Caucasus hotspot: develop a strategy in concert with environmental NGOs and conservation agencies on building awareness of important conservation issues in the region, including transboundary issues; provide support for implementation of key components of the communications strategy. Investment areas might include: working with the mass media (TV, radio and print) in the target corridors to increase environmental content of reporting; assisting conservation NGOs in hiring and training communications officers to work with the press; supporting environmental information clearinghouses in existing NGOs to provide accessible information and photo and film archives for the mass media; and supporting production of films and clips for news broadcasts on conservation issues for television.

Sustainability

In order to ensure sustainability and regional support of projects after the investment period, CEPF should work within the framework of government action plans and international conventions. By investing in the four strategic directions described above, CEPF will help build a stable foundation for biodiversity conservation in the Caucasus Hotspot for the long-term. Increased transboundary cooperation will ensure that efforts to conserve biodiversity happen on a regional level. Strengthening protected areas will help safeguard globally threatened species and unique habitats, ensuring they are managed properly on inviolable lands. Assistance and training to NGOs and conservation agencies will ensure that local organizations gain professional tools and potential to continue to work on conservation issues long after funding has run out. Finding ways for rural communities to benefit from nature conservation, through sustainable resource use, will boost local economies, helping reduce pressures on

biodiversity. Involving NGOs in planning and monitoring development projects will ensure that long-term economic endeavors take into account consequences to biodiversity.

The strategy to build environmental awareness of decisionmakers and other stakeholders on the importance of conserving biodiversity and the environment in the Caucasus is perhaps the most important component to ensure long-term sustainability of conservation measures. By investing in building awareness, CEPF will help build support for biodiversity conservation from decisionmakers, businesses and land users at the community level. Rural populations—those with a direct link to natural resource use—are generally the least informed on conservation issues. By focusing awareness strategies in target corridors, these rural communities will gain knowledge that will last a lifetime, empowering them to make informed decisions about their environment.

CONCLUSION

The Caucasus hotspot contains globally important reserves of biodiversity. To ensure conservation of this diversity, 10 priority corridor outcomes for the Caucasus were identified that contain the bulk of the globally threatened species and intact habitats in the region. Five of these corridors—Greater Caucasus, West Lesser Caucasus, East Lesser Caucasus, Caspian and Hyrcan, all of which span the borders of two or more countries—will be the focus of CEPF investment. Governmental institutions in the six countries in the hotspot support biodiversity conservation and have signed important international environmental conventions, yet most lack the funding and expertise to uphold environmental mandates. Civil society, including environmental NGOs, universities and scientific institutes, is relatively well developed in the region and has the potential to help fill these gaps.

Proximate threats such as poaching, overfishing, illegal logging and overgrazing are causing irreversible damage to biodiversity in the hotspot. Threats stem from economic and social problems, the lack of environmental awareness, poor management and enforcement capabilities and the lack of transboundary cooperation. International donors have provided considerable support to help resolve some of these issues. Yet funding opportunities exist in many of the corridors identified in this profile, particularly in promoting transboundary cooperation, training conservation professionals, building environmental awareness and demonstrating the benefits of sustainable resource use.

CEPF's strategy for the Caucasus hotspot should help to mitigate specific threats and their root causes in five target biodiversity corridors, while focusing on programs that will have the most impact given limited funds.

With CEPF support, the conservation community can achieve important milestones toward safeguarding globally threatened species and unique ecosystems by helping to prevent species extinctions and habitat loss in one of the most biologically diverse regions on Earth.

ABBREVIATIONS USED IN THE TEXT

BMZ	German Ministry for Cooperation and Development
CBD	Convention on Biological Diversity
CBO	Community-based organization
CENESTA	Center for Sustainable Development (Iran)
CENN	Caucasus Environmental NGO Network
CEPF	Critical Ecosystem Partnership Fund
CI	Conservation International
CITES	Convention on International Trade in Endangered Species
ECONET	Ecological network of protected areas
GCCW	Georgian Center for Conservation of Wildlife
GEF	Global Environment Facility
GIS	Geographic Information System
GSIF	Georgian Social Investment Fund
IBA	Important Bird Area (according to BirdLife International)
ISAR	Initiative for Social Action and Renewal in Eurasia
ISC	Institute for Sustainable Communities
IUCN	World Conservation Union
KfW	German Bank for Reconstruction and Development
NACRES	Noah's Ark Center for Recovery of Endangered Species (Georgia)
NGO	Nongovernmental organization
REC	Regional Environmental Centre for the Caucasus
TACIS	Technical Assistance for the Commonwealth of Independent States (EU)
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
WWF	World Wide Fund for Nature

APPENDICES

Appendix I

Species outcomes for the Caucasus hotspot

	SCIENTIFIC NAME	COMMON NAME	IUCN STATUS			DISTRIBUTION BY COUNTRY					
			Vulnerable	Endangered	Critically Endangered	Armenia	Azerbaijan	Georgia	Iran	Russia	Turkey
	Mammals		12	4	2	11	11	11	10	14	9
1	<i>Barbastella barbastellus</i>	Western barbastelle	+			+	+	+		+	+
2	<i>Myotis emarginatus</i>	Geoffroy's bat	+			+	+	+	+	+	+
3	<i>Myotis schaubi</i>	Schaub's bat		+							
4	<i>Myotis bechsteini</i>	Bechstein's bat	+				+	+	+	+	+
5	<i>Rhinolophus euryale</i>	Mediterranean horseshoe bat	+			+	+	+	+	+	+
6	<i>Rhinolophus hipposideros</i>	Lesser horseshoe bat	+			+	+	+	+	+	+
7	<i>Rhinolophus mehelyi</i>	Mehely's horseshoe bat	+			+	+	+	+	+	+
8	<i>Lutra lutra</i>	Common otter	+			+	+	+	+	+	+
9	<i>Mustela lutreola</i>	European mink		+				+		+	
10	<i>Phoca caspica</i>	Caspian seal	+				+		+	+	
11	<i>Capra aegagrus</i>	Wild (bezoar) goat	+			+	+	+	+	+	+
12	<i>Capra caucasica</i>	West Caucasian tur		+				+		+	
13	<i>Capra cylindricornis</i>	East Caucasian tur	+				+	+		+	
14	<i>Ovis ammon</i>	Armenian mouflon	+			+	+		+		+
15	<i>Saiga tatarica</i>	Saiga antelope			+					+	
16	<i>Sicista armenica</i>	Birch mouse			+	+					
17	<i>Spalax giganteus</i>	Giant mole rat	+							+	
18	<i>Meriones dahlí</i>	Dahl's jird		+		+					
	Birds		9	1	1	4	8	3	11	11	10
19	<i>Aquila heliaca</i>	Imperial eagle	+			+	+	+	+	+	+
20	<i>Aquila clanga</i>	Greater spotted eagle	+						+	+	+
21	<i>Falco naumanni</i>	Lesser kestrel	+			+	+	+	+	+	+
22	<i>Vanellus gregarius</i>	Sociable lapwing	+						+	+	+
23	<i>Crex crex</i>	Corncrake	+			+	+	+	+	+	+
24	<i>Grus leucogeranus</i>	Siberian crane			+		+		+	+	
25	<i>Otis tarda</i>	Great bustard	+						+	+	+
26	<i>Marmaronetta angustirostris</i>	Marbled duck	+			+	+		+	+	+
27	<i>Anser erythropus</i>	Lesser white-fronted goose	+				+		+	+	+
28	<i>Branta ruficollis</i>	Red-breasted goose	+				+		+	+	+
29	<i>Oxyura leucocephala</i>	White-headed duck		+			+		+	+	+
	Reptiles		4	4	2	3	3	5	4	5	6
30	<i>Testudo graeca</i>	Common tortoise	+			+	+	+	+	+	+
31	<i>Lacerta clarkorum</i>	Turkish lizard		+				+			+
32	<i>Natrix megalcephala</i>	Large-headed water snake	+							+	
33	<i>Vipera dorevskii</i>	Darevsky's viper			+	+		+			
34	<i>Vipera kaznakovi</i>	Caucasian viper		+		+	+	+		+	+
35	<i>Vipera ursinii</i>	Meadow viper		+					+	+	+
36	<i>Vipera dinniki</i>	Dinnik's viper	+				+	+		+	

	SCIENTIFIC NAME	COMMON NAME	IUCN STATUS			DISTRIBUTION BY COUNTRY					
			Vulnerable	Endangered	Critically Endangered	Armenia	Azerbaijan	Georgia	Iran	Russia	Turkey
37	<i>Vipera pontica</i>	Pontic viper			+						+
38	<i>Vipera wagneri</i>	Wagner's viper		+					+		+
39	<i>Vipera latifii</i>	Latifi's viper	+						+		
	Amphibians		4				2	3	1	2	3
40	<i>Mertensiella caucasica</i>	Caucasian salamander	+					+			+
*41	<i>Batrachuperus persicus</i>	Persian brook salamander	+						+		
42	<i>Bufo verrucosissimus</i>	Caucasian toad	+				+	+		+	+
43	<i>Pelodytes caucasicus</i>	Caucasian parsley frog	+				+	+		+	+
	Fish		1	5	1		6	6	5	6	4
44	<i>Acipenser gueldenstaedtii</i>	Russian sturgeon		+			+	+		+	
45	<i>Acipenser persicus</i>	Persian sturgeon		+			+	+	+	+	+
46	<i>Acipenser nudiventris</i>	Bastard sturgeon		+			+	+	+	+	+
47	<i>Acipenser ruthenus</i>	Sterlet	+				+		+	+	
48	<i>Acipenser stellatus</i>	Star sturgeon		+			+	+	+	+	+
49	<i>Acipenser sturio</i>	Baltic (Atlantic) sturgeon			+			+			
50	<i>Huso huso</i>	Beluga		+			+	+	+	+	+
	Plants		1			1					
51	<i>Sambucus tigranii</i>	Tigran's elder	+				+				
	TOTAL		31	14	6	19	30	28	31	38	32

* The global conservation status of one of the species outcomes, the Persian brook salamander (*Batrachuperus persicus*), has since been determined to be near threatened, rather than vulnerable as originally indicated. This species was originally included in the site outcomes based on preliminary results of the Global Amphibian Assessment. However, these results and data for the Global Amphibian Assessment have since been finalized and this species will be classified as near threatened on the 2004 IUCN Red List. As a result of this new information about the species' status, *Batrachuperus persicus* can no longer be considered a species outcome or a priority for CEPF investment. For further information, see www.globalamphibians.org.

Appendix 2

Conservation priorities at the species level in the Caucasus hotspot

	SCIENTIFIC NAME	COMMON NAME	IUCN STATUS*	DISTRIBUTION BY COUNTRY					
				Armenia	Azerbaijan	Georgia	Iran	Russia	Turkey
	Critically endangered species			2	1	2	0	2	1
1	<i>Saiga tatarica</i>	Saiga antelope	CR					+	
2	<i>Sicista armenica</i>	Armenian birch mouse	CR	+					
3	<i>Grus leucogeranus</i>	Siberian crane	CR		+			+	
4	<i>Vipera darevskii</i>	Darevsky's viper	CR	+		+			
5	<i>Vipera pontica</i>	Pontic viper	CR						+
6	<i>Acipenser sturio</i>	Baltic (Atlantic) sturgeon	CR			+			
	Landscape species			6	15	14	12	16	11
1	<i>Acipenser gueldenstaedtii</i>	Russian sturgeon	EN		+	+		+	
2	<i>Acipenser nudiventris</i>	Bastard sturgeon	EN		+	+	+	+	+
3	<i>Acipenser persicus</i>	Persian sturgeon	EN		+	+	+	+	+
4	<i>Acipenser ruthenus</i>	Sterlet	VU		+		+	+	
5	<i>Acipenser stellatus</i>	Star sturgeon	EN		+	+	+	+	+
6	<i>Acipenser sturio</i>	Baltic (Atlantic) sturgeon	CR			+			
7	<i>Huso huso</i>	Beluga	EN		+	+	+	+	+
8	<i>Barbastella barbastellus</i>	Western barbastelle	VU	+	+	+		+	+
9	<i>Myotis bechsteini</i>	Bechstein's bat	VU		+	+	+	+	+
10	<i>Myotis emarginatus</i>	Geoffroy's bat	VU	+	+	+	+	+	+
11	<i>Rhinolophus hipposideros</i>	Lesser horseshoe bat	VU	+	+	+	+	+	+
12	<i>Capra aegagrus</i>	Wild (bezoar) goat	VU	+	+	+	+	+	+
13	<i>Capra caucasica</i>	West Caucasian tur	EN			+		+	
14	<i>Capra cylindricornis</i>	East Caucasian tur	VU		+	+		+	
15	<i>Ovis ammon gmelini</i>	Armenian mouflon	VU	+	+		+		+
16	<i>Saiga tatarica</i>	Saiga antelope	CR					+	
17	<i>Lutra lutra</i>	Common otter	VU	+	+	+	+	+	+
18	<i>Phoca caspica</i>	Caspian seal	VU		+		+	+	
	Restricted-range species			5	6	9	4	7	8
1	<i>Myotis schaubi</i>	Schaub's bat	EN		+		+		
2	<i>Capra caucasica</i>	West Caucasian tur	EN			+		+	
3	<i>Capra cylindricornis</i>	East Caucasian tur	VU		+	+		+	
4	<i>Ovis ammon gmelini</i>	Armenian mouflon	VU	+	+		+		+
5	<i>Meriones dahl</i>	Dahl's jird	EN	+					
6	<i>Sicista armenica</i>	Birch mouse	CR	+					
7	<i>Lacerta clarkorum</i>	Turkish lizard	EN			+			+
8	<i>Natrix megalcephala</i>	Large-headed water snake	VU					+	
9	<i>Vipera darevskii</i>	Darevsky's viper	CR	+		+			
10	<i>Vipera kaznakovi</i>	Caucasian viper	EN			+		+	+
11	<i>Vipera dinniki</i>	Dinnik's viper	VU		+	+		+	
12	<i>Vipera pontica</i>	Pontic viper	CR						+
13	<i>Vipera wagneri</i>	Wagner's viper	EN				+		+
14	<i>Mertensiella caucasica</i>	Caucasian salamander	VU			+			+
**15	<i>Batrachuperus persicus</i>	Persian brook salamander	VU				+		
16	<i>Bufo verrucosissimus</i>	Caucasian toad	VU		+	+		+	+
17	<i>Pelodytes caucasicus</i>	Caucasian parsley frog	VU		+	+		+	+
18	<i>Sambucus tigranii</i>	Tigran's elder	VU	+					

* CR - critically endangered; EN - endangered; VU - vulnerable, according to IUCN Red List.

** The global conservation status of one of the species outcomes, the Persian brook salamander

Batrachuperus persicus), has since been determined to be near threatened, rather than vulnerable as originally indicated. This species was originally included based on preliminary results of the Global Amphibian Assessment. However, these results and data have since been finalized and this species will be classified as near threatened on the 2004 IUCN Red List. As a result of this new information about the species' status, *Batrachuperus persicus* can no longer be considered a species outcome or a priority for CEPF investment.

Appendix 3

Site outcomes for the Caucasus hotspot

	CORRIDOR, COUNTRY, AND SITE NAME*	GLOBALLY THREATENED SPECIES**	AREA OF SITES (ha)	OTHER CRITERIA	
				Globally significant congregation	Sites with restricted-range species
	KUMA-MANYCH	10	519,076	8	0
	Russia		519,076	8	0
1	Dadynskiye Lakes	<i>Branta ruficollis</i> , <i>Anser erythropus</i> , <i>Otis tarda</i> , <i>Oxyura leucocephala</i> , <i>Falco naumanni</i>	39,348	+	
2	Kuban	<i>Mustela lutreola</i> , <i>Lutra lutra</i> , <i>Huso huso</i> , <i>Acipenser stellatus</i> , <i>Acipenser gueldenstaedtii</i>	90,679		
3	Manych-Gudilo Lake	<i>Branta ruficollis</i> , <i>Anser erythropus</i>	72,541	+	
4	Yeisky Salt Lakes	<i>Otis tarda</i> , <i>Anser erythropus</i>	13,541	+	
5	Don Delta	<i>Branta ruficollis</i>	54,704	+	
6	Krimsky Sanctuary	<i>Lutra lutra</i>	19,821		
7	Priazovsky Sanctuary	<i>Lutra lutra</i>	32,635		
8	Veselovskoye Reservoir	<i>Branta ruficollis</i>	74,164	+	
9	Azov Sea Eastern Coast		24,480	+	
10	Yeya River Mouth		38,262	+	
11	Primorsko-Akhtarsk Salt Lakes		58,900	+	
	GREATER CAUCASUS	20	2,365,756	1	32
	Azerbaijan		245,150	0	8
12	Zakatala NR	<i>Barbastella barbastellus</i> , <i>Rhinolophus hipposideros</i> , <i>Myotis emarginatus</i> , <i>Capra cylindricornis</i> , <i>Pelodytes caucasicus</i> , <i>Bufo verrucosissimus</i>	26,552		+
13	Gabala NR	<i>Barbastella barbastellus</i> , <i>Rhinolophus hipposideros</i> , <i>Myotis emarginatus</i> , <i>M. bechsteini</i> , <i>Testudo graeca</i>	29,150		
14	Sarybash	<i>Barbastella barbastellus</i> , <i>Capra cylindricornis</i>	19,894		+
15	Ismailly	<i>Barbastella barbastellus</i> , <i>Aquila heliaca</i> , <i>Testudo graeca</i>	40,146		+
16	Babadag Mountain	<i>Capra cylindricornis</i> , <i>Aquila heliaca</i>	7,551		+
17	Shakhdag Mountain (1)	<i>Capra cylindricornis</i> , <i>Aquila heliaca</i>	90,033		+
18	Shakhdag Mountain (2)	<i>Capra cylindricornis</i>	10,450		+
19	Bazar-Duzu Mountain	<i>Capra cylindricornis</i>	5,762		+
20	Oguz		15,613		+
	Georgia		864,640	0	13
21	Bichvinta-Miusera NR	<i>Rhinolophus euryale</i> , <i>Barbastella barbastellus</i> , <i>Testudo graeca</i>	4,018		
22	Ritsa NR	<i>Mustela lutreola</i> , <i>Capra caucasica</i> , <i>Barbastella barbastellus</i> , <i>Vipera kaznakovi</i> , <i>Pelodytes caucasicus</i> , <i>Bufo verrucosissimus</i>	16,500		+
23	Sukhumi	<i>Myotis emarginatus</i> , <i>Mustela lutreola</i> , <i>Capra caucasica</i> , <i>Vipera kaznakovi</i> , <i>Pelodytes caucasicus</i> , <i>Bufo verrucosissimus</i>	38,743		+
24	Svaneti (1)	<i>Capra caucasica</i> , <i>Vipera dinniki</i>	232,131		+
25	Svaneti (2)	<i>Capra caucasica</i> , <i>Vipera dinniki</i>	30,208		
26	Abkhazia	<i>Capra caucasica</i>	35,058		+
27	Racha		137,568		+
28	Liakhvi NR	<i>Rhinolophus hipposideros</i> , <i>Myotis emarginatus</i> , <i>Pelodytes caucasicus</i> , <i>Bufo verrucosissimus</i>	7,887		+

	CORRIDOR, COUNTRY, AND SITE NAME*	GLOBALLY THREATENED SPECIES**	AREA OF SITES (ha)	OTHER CRITERIA	
				Globally significant congregation	Sites with restricted-range species
29	Khevi	<i>Capra cylindricornis</i> , <i>Crex crex</i> , <i>Vipera dinniki</i>	101,957		+
30	Khevsureti	<i>Capra cylindricornis</i>	84,239		+
31	Tusheti	<i>Capra cylindricornis</i> , <i>Capra aegagrus</i> , <i>Vipera dinniki</i> , <i>Pelodytes caucasicus</i> , <i>Bufo verrucosissimus</i>	112,142		+
32	Akhmeta NR (Akhmeta)	<i>Pelodytes caucasicus</i> , <i>Bufo verrucosissimus</i>	3,050		+
33	Akhmeta NR (Babaneuri)	<i>Pelodytes caucasicus</i> , <i>Bufo verrucosissimus</i>	801		+
34	Eastern Caucasus	<i>Crex crex</i> , <i>Aquila heliaca</i>	35,969		+
35	Lagodekhi	<i>Barbastella barbastellus</i> , <i>Rhinolophus hipposideros</i> , <i>Capra cylindricornis</i> , <i>Pelodytes caucasicus</i> , <i>Bufo verrucosissimus</i>	24,369		+
	Russia		1,255,965	1	11
36	Teberdinsky NR	<i>Barbastella barbastellus</i> , <i>Rhinolophus hipposideros</i> , <i>R. euryale</i> , <i>Myotis emarginatus</i> , <i>M. bechsteini</i> , <i>Mustela lutreola</i> , <i>Lutra lutra</i> , <i>Capra caucasica</i> , <i>Aquila heliaca</i> , <i>Testudo graeca</i> , <i>Natrix megalcephala</i> , <i>Vipera dinniki</i> , <i>V. ursinii</i> , <i>Pelodytes caucasicus</i> , <i>Bufo verrucosissimus</i>	121,487	+	+
37	Kavkazsky Biosphere Reserve	<i>Barbastella barbastellus</i> , <i>Rhinolophus hipposideros</i> , <i>R. euryale</i> , <i>Myotis emarginatus</i> , <i>M. bechsteini</i> , <i>Mustela lutreola</i> , <i>Lutra lutra</i> , <i>Capra caucasica</i> , <i>Crex crex</i> , <i>Testudo graeca</i> , <i>Natrix megalcephala</i> , <i>Vipera dinniki</i> , <i>V. ursinii</i> , <i>Pelodytes caucasicus</i> , <i>Bufo verrucosissimus</i> , <i>Vipera kaznakovi</i>	236,882		+
38	Sochinsky NP	<i>Rhinolophus hipposideros</i> , <i>R. euryale</i> , <i>Lutra lutra</i> , <i>Testudo graeca</i> , <i>Natrix megalcephala</i> , <i>Vipera dinniki</i> , <i>Vipera kaznakovi</i>	193,695		+
39	Tiyaratinsky Sanctuary	<i>Capra cylindricornis</i> , <i>C. aegagrus</i> , <i>Vipera dinniki</i>	81,722		+
40	Severo-Osetinsky NR and Sanctuaries	<i>Capra cylindricornis</i> , <i>Vipera dinniki</i> , <i>V. ursinii</i>	110,008		+
41	Laman-Kam Area	<i>Aquila clanga</i> , <i>Aquila heliaca</i>	18,710		
42	Kabardino-Balkarsky NR	<i>Capra caucasica</i> , <i>Vipera ursinii</i>	75,736		+
43	Sochinsky Sanctuary	<i>Rhinolophus hipposideros</i> , <i>Lutra lutra</i>	30,536		
44	Kosobsko-Kelebsky Sanctuary	<i>Capra aegagrus</i>	71,371		
45	Begtinsky	<i>Capra aegagrus</i>	47,075		
46	Erzi NR	<i>Capra cylindricornis</i>	16,647		+
47	Ingushsky Sanctuary	<i>Capra cylindricornis</i>	48,673		+
48	Alania NP	<i>Capra cylindricornis</i>	56,855		+
49	Prielbrusiye	<i>Capra cylindricornis</i>	103,247		+
50	Dautsky Sanctuary	<i>Vipera dinniki</i>	34,728		
51	Damkhurtsky Sanctuary	<i>Vipera dinniki</i>	8,592		+
	CASPIAN	23	892,422	20	0
	Azerbaijan		515,563	16	0
52	Samur Delta	<i>Aquila heliaca</i> , <i>Falco naumanni</i> , <i>Huso huso</i> , <i>Acipenser stellatus</i> , <i>Acipenser ruthenus</i> , <i>Acipenser persicus</i> , <i>Acipenser nudiventris</i> , <i>Acipenser gueldenstaedtii</i>	19,653	+	
53	Yallama Rivers	<i>Lutra lutra</i> , <i>Acipenser gueldenstaedtii</i> , <i>A. persicus</i> , <i>A. nudiventris</i> , <i>A. stellatus</i> , <i>A. ruthenus</i> , <i>Huso huso</i>	160,353		
54	Akzibir Lake	<i>Branta ruficollis</i> , <i>Marmaronetta angustirostris</i> , <i>Falco naumanni</i>	6,826	+	
55	Kargabazar and Gush-Gaya Mountains	<i>Falco naumanni</i>	2,427		
56	Absheron Archipelago (north) and Artem Bay		1,843	+	

	CORRIDOR, COUNTRY, AND SITE NAME*	GLOBALLY THREATENED SPECIES**	AREA OF SITES (ha)	OTHER CRITERIA	
				Globally significant congregation	Sites with restricted-range species
57	Absheron Sanctuary	<i>Phoca caspica</i>	1,179		
58	Krasnoye Lake and Absheron Waterbodies	<i>Oxyura leucocephala, Anser erythropus</i>	394		
59	Alat Bay-Baku Archipelago (1)	<i>Oxyura leucocephala</i>	94	+	
60	Alat Bay-Baku Archipelago (2)	<i>Oxyura leucocephala</i>	14	+	
61	Alat Bay-Baku Archipelago (3)	<i>Oxyura leucocephala</i>	267	+	
62	Alat Bay-Baku Archipelago (4)	<i>Oxyura leucocephala</i>	191	+	
63	Alat Bay-Baku Archipelago (5)	<i>Oxyura leucocephala</i>	10	+	
64	Alat Bay-Baku Archipelago (6)	<i>Oxyura leucocephala</i>	58	+	
65	Alat Bay-Baku Archipelago (7)	<i>Oxyura leucocephala</i>	79	+	
66	Alat Bay-Baku Archipelago (8)	<i>Oxyura leucocephala</i>	58	+	
67	Shirvan NR / Shorgel Lakes	<i>Marmaronetta angustirostris, Aquila heliaca, Falco naumanni, Testudo graeca</i>	65,856		
68	Gobustan NR	<i>Testudo graeca</i>	4,299		
69	Kura Delta	<i>Huso huso, Acipenser stellatus, Acipenser ruthenus, Acipenser persicus, Acipenser nudiventris, Acipenser gueldenstaedtii</i>	6,487	+	
70	Gyzyl-Agach Bay	<i>Phoca caspica, Marmaronetta angustirostris, Branta ruficollis, Anser erythropus, Grus leucogeranus, Otis tarda, Falco naumanni, Testudo graeca, Huso huso, Acipenser stellatus, Acipenser ruthenus, Acipenser persicus, Acipenser nudiventris, Acipenser gueldenstaedtii</i>	131,559	+	
71	Mahmud-Chala Lake	<i>Marmaronetta angustirostris</i>	10,773	+	
72	Hadjikabul Lake	<i>Oxyura leucocephala</i>	4,201		
73	Central Shirvan		42,285	+	
74	Mil-Karabakh Steppe		56,656	+	
	Russia		376,859	4	0
75	Dagestan NR and Kizlyar Bay	<i>Rhinolophus hipposideros, Lutra lutra, Saiga tatarica, Spalax giganteus, Testudo graeca, Vipera ursinii</i>	64,148	+	
76	Tarumovsky Sanctuary and Karakolsky Lakes	<i>Lutra lutra, Saiga tatarica, Spalax giganteus</i>	49,981	+	
77	Hamamaturtovsky Sanctuary	<i>Saiga tatarica, Spalax giganteus, Vipera ursinii</i>	104,092		
78	Agrakhansky Bay		31,604	+	
79	Sulak River	<i>Acipenser persicus, A. nudiventris</i>	44,726		
80	Kayakentsky Sanctuary	<i>Rhinolophus mehelyi</i>	50,184		
81	Samur River	<i>Acipenser gueldenstaedtii, A. persicus, A. nudiventris, A. stellatus, A. ruthenus, Huso huso</i>	10,753		
82	Berkubinsky Forest	<i>Anser erythropus, Aquila heliaca, A. clanga, Acipenser gueldenstaedtii, A. persicus, A. nudiventris, A. stellatus, A. ruthenus, Huso huso</i>	21,370	+	
	WEST LESSER CAUCASUS	29	2,291,385	4	5
	Georgia		845,298	3	4
83	Meskheti	<i>Aquila heliaca, A. clanga, Falco naumanni, Vipera davevskii</i>	82,721	+	+
84	Tetrobi Sanctuary	<i>Vipera davevskii</i>	3,042		
85	Ktsia-Tabatskuri Sanctuary	<i>Crex crex, Vipera davevskii</i>	21,369		
86	Trialeti Range	<i>Aquila heliaca</i>	121,522		+
87	Nedzvi Sanctuary	<i>Myotis bechsteini, Mertensiella caucasica, Pelodytes caucasicus, Bufo verrucosissimus</i>	11,427		
88	Borjomi-Kharagauli NP	<i>Barbastella barbastellus, Rhinolophus hipposideros, Myotis emarginatus, M. bechsteini, Vipera kaznakovi, Mertensiella caucasica, Pelodytes caucasicus, Bufo verrucosissimus</i>	261,312		+

	CORRIDOR, COUNTRY, AND SITE NAME*	GLOBALLY THREATENED SPECIES**	AREA OF SITES (ha)	OTHER CRITERIA	
				Globally significant congregation	Sites with restricted-range species
89	Goderdzi Pass	<i>Mertensiella caucasica</i>	30,564		
90	Shavsheti Range (1)	<i>Vipera pontica</i> , <i>Mertensiella caucasica</i>	59,192		+
91	Shavsheti Range (2)	<i>Vipera pontica</i>	20,690		
92	Chorokhi	<i>Lacerta clarkorum</i> , <i>Acipenser persicus</i> , <i>A. stellatus</i> , <i>Huso huso</i>	23,238		
93	Batumi	<i>Aquila heliaca</i> , <i>Aquila clanga</i> , <i>Falco naumanni</i> , <i>Lacerta clarkorum</i> , <i>Acipenser persicus</i> , <i>A. stellatus</i> , <i>Huso huso</i>	39,959	+	
94	Mtirala	<i>Barbastella barbastellus</i> , <i>Lacerta clarkorum</i> , <i>Vipera kaznakovi</i> , <i>Mertensiella caucasica</i> , <i>Pelodytes caucasicus</i> , <i>Bufo verrucosissimus</i>	15,289		
95	Kintrishi NR	<i>Barbastella barbastellus</i> , <i>Rhinolophus mehelyi</i> , <i>R. euryale</i> , <i>R. hipposideros</i> , <i>Myotis emarginatus</i> , <i>Lacerta clarkorum</i> , <i>Vipera kaznakovi</i> , <i>Mertensiella caucasica</i> , <i>Pelodytes caucasicus</i> , <i>Bufo verrucosissimus</i>	13,315		
96	Supsa River	<i>Acipenser sturio</i>	2,077		
97	Kolkheti	<i>Lutra lutra</i> , <i>Oxyura leucocephala</i> , <i>Anser erythropus</i> , <i>Crex crex</i> , <i>Acipenser sturio</i> , <i>A. gueldenstaedtii</i> , <i>A. persicus</i> , <i>A. nudiventris</i> , <i>A. stellatus</i> , <i>Huso huso</i>	52,246	+	
98	Rioni River	<i>Acipenser sturio</i> , <i>A. gueldenstaedtii</i> , <i>A. persicus</i> , <i>A. nudiventris</i> , <i>A. stellatus</i> , <i>Huso huso</i>	36,431		
99	Khobi River	<i>Acipenser sturio</i> , <i>Huso huso</i>	3,844		
100	Kolkheti NP (Aquatory)	<i>Acipenser sturio</i> , <i>A. gueldenstaedtii</i> , <i>A. persicus</i> , <i>A. nudiventris</i> , <i>A. stellatus</i>	23,217		
101	Enguri River	<i>Acipenser gueldenstaedtii</i> , <i>A. persicus</i> , <i>A. stellatus</i> , <i>Huso huso</i>	23,842		
	Turkey		1,446,087	1	1
102	Harsit Vadisi	<i>Lutra lutra</i> , <i>Testudo graeca</i> , <i>Lacerta clarkorum</i> , <i>Vipera ursinii</i>	186,074		
103	Dogu Karadeniz Mountains	<i>Barbastella barbastellus</i> , <i>Rhinolophus hipposideros</i> , <i>Myotis bechsteini</i> , <i>Ovis ammon</i> , <i>Falco naumanni</i> , <i>Lacerta clarkorum</i> , <i>Vipera kaznakovi</i> , <i>V. pontica</i> , <i>V. ursinii</i> , <i>Mertensiella caucasica</i> , <i>Pelodytes caucasicus</i> , <i>Bufo verrucosissimus</i> , <i>Acipenser persicus</i> , <i>A. stellatus</i> , <i>Huso huso</i>	1,260,013	+	+
	JAVAKHETI	6	217,865	10	3
	Armenia		100,329	2	1
104	Javakheti Range (Arm)	<i>Vipera dorevskii</i>	27,705		+
105	Tashir		42,484	+	
106	Amasia	<i>Aquila heliaca</i> , <i>Falco naumanni</i>	30,139	+	
	Georgia		81,230	6	1
107	Paravani Lake	<i>Crex crex</i>	5,830	+	
108	Javakheti Range (Geo)	<i>Vipera dorevskii</i>	65,970		+
109	Saghamo Lake	<i>Lutra lutra</i> , <i>Crex crex</i>	857	+	
110	Madatapa Lake	<i>Aquila heliaca</i> , <i>Crex crex</i>	1,978	+	
111	Bugdasheni Lake	<i>Lutra lutra</i> , <i>Crex crex</i>	397	+	
112	Khanchali Lake	<i>Crex crex</i>	2,580	+	
113	Kartsakhi Lake	<i>Lutra lutra</i> , <i>Crex crex</i>	3,619	+	
	Turkey		36,306	2	1
114	Aktas Lake		1,262	+	
115	Erakatar	<i>Ovis ammon</i>	14,993		+
116	Cildir Lake		20,051	+	

	CORRIDOR, COUNTRY, AND SITE NAME*	GLOBALLY THREATENED SPECIES**	AREA OF SITES (ha)	OTHER CRITERIA	
				Globally significant congregation	Sites with restricted-range species
	EAST LESSER CAUCASUS	14	750,466	1	5
	Armenia		640,356	1	3
117	Dsegh-Haghartsin-Pambak Chain and Dilijan NP	<i>Barbastella barbastellus</i> , <i>Rhinolophus mehelyi</i> , <i>R. hipposideros</i> , <i>Sicista armenica</i> , <i>Aquila heliaca</i> , <i>Crex crex</i> , <i>Testudo graeca</i> , <i>Sambucus tigrani</i>	188,874		+
118	Lake Sevan	<i>Lutra lutra</i> , <i>Anser erythropus</i>	155,425	+	
119	Shakhdag Range	<i>Rhinolophus euryale</i>	28,427		+
120	Khosrov NR	<i>Rhinolophus hipposideros</i> , <i>R. mehelyi</i> , <i>Testudo graeca</i>	120,248		
121	Gndasar	<i>Crex crex</i> , <i>Falco naumanni</i>	7,041		
122	Djermuk	<i>Rhinolophus mehelyi</i> , <i>Crex crex</i>	3,070		
123	Gorike	<i>Crex crex</i> , <i>Falco naumanni</i>	1,290		
124	Meghri	<i>Capra aegagrus</i> , <i>Ovis ammon</i>	121,518		+
125	Noravank	<i>Falco naumanni</i>	14,463		
	Azerbaijan		110,110	0	2
126	Ordubad Sanctuary	<i>Rhinolophus mehelyi</i> , <i>R. euryale</i> , <i>Capra aegagrus</i> , <i>Ovis ammon</i>	27,462		+
127	Bichenek	<i>Capra aegagrus</i>	9,707		
128	Ordubad	<i>Ovis ammon</i> , <i>Testudo graeca</i>	64,396		+
129	Sardarak Caves	<i>Rhinolophus mehelyi</i> , <i>R. euryale</i>	8,546		
	IORI-MINGECHAUR	9	549,585	3	0
	Azerbaijan		225,353	2	0
130	Garayazy-Agstafa Sanctuary	<i>Rhinolophus hipposideros</i> , <i>Aquila heliaca</i> , <i>Testudo graeca</i>	8,496		
131	Samukh	<i>Anser erythropus</i> , <i>Aquila heliaca</i> , <i>Falco naumanni</i>	76,992		
132	Korchai Sanctuary	<i>Rhinolophus mehelyi</i> , <i>Myotis emarginatus</i> , <i>Testudo graeca</i>	32,163		
133	Barda Sanctuary	<i>Crex crex</i> , <i>Aquila heliaca</i> , <i>Falco naumanni</i> , <i>Testudo graeca</i>	29,404		
134	Garayazy NR	<i>Rhinolophus hipposideros</i> , <i>Aquila heliaca</i>	4,567		
135	Alazani Valley (Az)	<i>Lutra lutra</i> , <i>Aquila heliaca</i>	41,104		
136	Jandar Lake	<i>Anser erythropus</i> , <i>Aquila heliaca</i>	557	+	
137	Gekchai Bozdag Mountains	<i>Aquila heliaca</i>	17,603		
138	Shamkhor	<i>Testudo graeca</i>	12,481		
139	Ajinaur Lake		1,986	+	
	Georgia		324,232	1	0
140	Iori Plateau	<i>Myotis emarginatus</i> , <i>Lutra lutra</i> , <i>Anser erythropus</i> , <i>Aquila heliaca</i> , <i>Falco naumanni</i> , <i>Testudo graeca</i>	264,975		
141	Gardabani Sanctuary	<i>Rhinolophus hipposideros</i> , <i>Anser erythropus</i> , <i>Crex crex</i> , <i>Aquila heliaca</i> , <i>Testudo graeca</i>	10,896		
142	Alazani Valley (Geo)	<i>Lutra lutra</i> , <i>Aquila heliaca</i> , <i>Anser erythropus</i>	46,119		
143	Jandari Lake		2,242	+	
	SOUTHERN UPLANDS	23	1,261,008	2	11
	Armenia		146,219	1	2
144	Araks River	<i>Lutra lutra</i> , <i>Marmaronetta angustirostris</i> , <i>Otis tarda</i> , <i>Sambucus tigranii</i>	121,386		
145	Armash	<i>Myotis schaubi</i> , <i>Meriones dahli</i>	16,121		+

	CORRIDOR, COUNTRY, AND SITE NAME*	GLOBALLY THREATENED SPECIES**	AREA OF SITES (ha)	OTHER CRITERIA	
				Globally significant congregation	Sites with restricted-range species
146	Goravan Sands Sanctuary	<i>Myotis schaubi</i>	3,558		+
147	Armash Fish-Farm	<i>Marmaronetta angustirostris, Oxyura leucocephala</i>	5,154	+	
	Iran		448,862	1	2
148	Maku and Iran West Border	<i>Rhinolophus euryale, Myotis schaubi, M. bechsteini, Aquila heliaca, A. clanga, Falco naumanni</i>	336,902	+	
149	Maku	<i>Rhinolophus euryale, Myotis schaubi, M. bechsteini</i>	84,437		+
150	Agh-Gel	<i>Rhinolophus euryale, Myotis schaubi, M. bechsteini, Anser erythropus, Branta ruficollis, Marmaronetta angustirostris, Oxyura leucocephala, Vanellus gregarius, Grus leucogeranus, Otis tarda, Crex crex, Aquila clanga</i>	27,524		+
	Turkey		665,926	0	7
151	Mt. Zialet Forest	<i>Testudo graeca, Vipera wagneri, Mertensiella caucasica, Pelodytes caucasicus</i>	55,914		+
152	Karasu Plain	<i>Otis tarda</i>	19,215		
153	Sarakamish Forest	<i>Ovis ammon, Testudo graeca, Vipera wagneri, Mertensiella caucasica, Pelodytes caucasicus</i>	73,706		+
154	Igdir Plain	<i>Myotis schaubi, Marmaronetta angustirostris, Testudo graeca, Vipera wagneri</i>	177,767		+
155	Tendurek Mountain	<i>Ovis ammon</i>	30,617		+
156	Van Dogusu Mountains	<i>Ovis ammon</i>	80,898		+
157	Karakose	<i>Marmaronetta angustirostris, Testudo graeca, Vipera wagneri</i>	113,847		+
158	North-East Ararat	<i>Myotis schaubi, Marmaronetta angustirostris</i>	41,134		
159	Ararat	<i>Capra aegagrus, Ovis ammon</i>	72,829		+
	ARASBARAN	16	652,211	3	3
	Iran		652,211	3	3
160	Kaleibar and Arasbaran	<i>Rhinolophus mehelyi, R. hipposideros, Lutra lutra, Capra aegagrus, Aquila heliaca, A. clanga, Falco naumanni, Testudo graeca, Batrachuperus persicus***</i>	374,320	+	+
161	Parsabad	<i>Anser erythropus, Branta ruficollis, Marmaronetta angustirostris, Oxyura leucocephala, Grus leucogeranus, Aquila clanga, Falco naumanni</i>	56,222	+	
162	Marakan	<i>Lutra lutra, Capra aegagrus, Ovis ammon, Testudo graeca</i>	105,951		+
163	Kiamaky	<i>Lutra lutra, Capra aegagrus, Ovis ammon, Testudo graeca</i>	106,239		+
164	Aras Dam Lake	<i>Marmaronetta angustirostris, Oxyura leucocephala, Crex crex</i>	9,479	+	
	HYRCAN	18	384,808	2	0
	Azerbaijan		18,545	0	0
165	Hyrcan NR	<i>Barbastella barbastellus, Rhinolophus hipposideros, Myotis emarginatus, Lutra lutra</i>	3,601		
166	Zuvand Sanctuary	<i>Testudo graeca</i>	14,944		

	CORRIDOR, COUNTRY, AND SITE NAME*	GLOBALLY THREATENED SPECIES**	AREA OF SITES (ha)	OTHER CRITERIA	
				Globally significant congregation	Sites with restricted-range species
	Iran		366,263	2	0
167	Lisar NR	<i>Rhinolophus hipposideros</i>	34,449		
168	Sepirud River	<i>Acipenser gueldenstaedtii</i> , <i>A. persicus</i> , <i>A. nudiventris</i> , <i>A. stellatus</i> , <i>Huso huso</i>	26,824		
169	Lavandevil	<i>Crex crex</i> , <i>Aquila heliaca</i> , <i>A. clanga</i> , <i>Acipenser gueldenstaedtii</i> , <i>A. persicus</i> , <i>A. nudiventris</i> , <i>A. stellatus</i> , <i>Huso huso</i>	44,228	+	
170	Anzali Lagoon	<i>Rhinolophus hipposideros</i> , <i>Anser erythropus</i> , <i>Marmaronetta angustirostris</i> , <i>Oxyura leucocephala</i> , <i>Vanellus gregarius</i> , <i>Grus leucogeranus</i> , <i>Crex crex</i> , <i>Aquila heliaca</i> , <i>A. clanga</i> , <i>Acipenser gueldenstaedtii</i> , <i>A. persicus</i> , <i>A. nudiventris</i> , <i>A. stellatus</i> , <i>Huso huso</i>	134,151		
171	Gasht-e Rudkhan and Siahmazgy	<i>Rhinolophus hipposideros</i>	41,692		
172	Bojagh	<i>Anser erythropus</i> , <i>Oxyura leucocephala</i> , <i>Aquila heliaca</i> , <i>A. clanga</i> , <i>Crex crex</i>	84,919	+	
	SITES NOT COVERED BY CORRIDORS	26	675,341	6	6
	Armenia		18,778	1	3
173	Ara Mount	<i>Crex crex</i>	4,443	+	+
174	Artashavan	<i>Sambucus tigranii</i>	3,842		+
175	Ani	<i>Sambucus tigranii</i>	4,756		+
176	Goris Sanctuary	<i>Rhinolophus mehelyi</i>	5,737		
	Azerbaijan		174,616	4	2
177	Sarysu Lake	<i>Anser erythropus</i> , <i>Marmaronetta angustirostris</i> , <i>Oxyura leucocephala</i> , <i>Falco naumanni</i>	16,555	+	
178	Ag-Gel Lake	<i>Anser erythropus</i> , <i>Marmaronetta angustirostris</i> , <i>Oxyura leucocephala</i> , <i>Falco naumanni</i>	15,676	+	
179	Dashaiti NR	<i>Barbastella barbastellus</i> , <i>Rhinolophus mehelyi</i> , <i>R. euryale</i>	1,312		
180	Lake Boz-Koba	<i>Marmaronetta angustirostris</i> , <i>Falco naumanni</i>	14,577	+	
181	Gizildja Sanctuary	<i>Barbastella barbastellus</i> , <i>Testudo graeca</i>	13,704		
182	Gubadly Sanctuary	<i>Barbastella barbastellus</i> , <i>Testudo graeca</i>	47,348		
183	Lapchin Sanctuary	<i>Barbastella barbastellus</i>	27,990		
184	Sheqi Sanctuary	<i>Testudo graeca</i>	5,119		
185	Shemakha	<i>Vipera dinniki</i>	11,388		+
186	Araz-Behremtepe	<i>Grus leucogeranus</i>	2,678		
187	Gey-Gel Lake	<i>Lutra lutra</i>	6,276		
188	Factory Shelf		3,418	+	
189	Giamysh Mount		8,575		+
	Georgia		58,775	0	0
190	Askhi Massif	<i>Barbastella barbastellus</i> , <i>Rhinolophus mehelyi</i> , <i>R. euryale</i> , <i>R. hipposideros</i> , <i>Myotis emarginatus</i> , <i>M. bechsteini</i> , <i>Vipera kaznakovi</i> , <i>Pelodytes caucasicus</i> , <i>Bufo verrucosissimus</i>	40,211		
191	Kvernaki	<i>Aquila heliaca</i> , <i>Crex crex</i> , <i>Testudo graeca</i>	12,969		
192	Saguramo NR	<i>Barbastella barbastellus</i> , <i>Rhinolophus mehelyi</i>	5,209		
193	Sataplia NR	<i>Rhinolophus mehelyi</i> , <i>Rhinolophus euryale</i>	386		
	Iran		180,195	0	1
194	Mount Sahand and Sabalan	<i>Myotis schaubi</i> , <i>M. bechsteini</i> , <i>Ovis ammon</i> , <i>Falco naumanni</i> , <i>Aquila clanga</i> , <i>A. heliaca</i>	180,195		+

	CORRIDOR, COUNTRY, AND SITE NAME*	GLOBALLY THREATENED SPECIES**	AREA OF SITES (ha)	OTHER CRITERIA	
				Globally significant congregation	Sites with restricted- range species
	Russia		141,015	0	0
195	Novotroitskoye Reservoir	<i>Anser erythropus, Branta ruficollis</i>	7,008		
196	Meleshtinsky Sanctuary	<i>Rhinolophus mehelyi</i>	21,387		
197	Novo-Berezansky Sanctuary	<i>Lutra lutra</i>	28,713		
198	Shovgenovsky Sanctuary	<i>Lutra lutra</i>	22,336		
199	Irgaklinskaya Forest Area	<i>Otis tarda</i>	2,390		
200	Varkhatau Ridge	<i>Aquila heliaca</i>	40,823		
201	Surrounding of Kislovodsk	<i>Aquila heliaca</i>	18,359		
	Turkey		101,961	1	0
202	Kars Plain	<i>Oxyura leucocephala, Otis tarda</i>	6,511		
203	Yalnizcam Mountains	<i>Capra aegagrus, Lutra lutra</i>	93,907		
204	Cali Lake	<i>Oxyura leucocephala</i>	1,071		
205	Kuyucuk Lake	<i>Oxyura leucocephala</i>	472	+	

* NR - nature reserves; NP - national parks.

** Critically endangered, endangered or vulnerable according to the 2002 IUCN Red List.

*** The Persian brook salamander (*Batrachuperus persicus*), has since been determined to occur only in the Hyrcan Corridor, the priority corridor in Iran. In addition its global conservation status has since been determined to be near threatened, rather than vulnerable as originally indicated. This species was originally included based on preliminary results of the Global Amphibian Assessment. However, these results and data have since been finalized and this species will be classified as near threatened on the 2004 IUCN Red List. As a result of this new information about the species' status, *Batrachuperus persicus* can no longer be considered a species outcome or a priority for CEPF investment.

Appendix 4

Corridor outcomes for the Caucasus hotspot

CORRIDORS	Area (ha)	# of Species Outcomes (globally threatened species)	Critically Endangered Species	Landscape Species	Restricted-Range Species	Bird Congregation Areas	# of Site outcomes	Percent in Protected Areas	Number of Protected Areas
Kuma-Manych	2,080,462	10	0	3	0	8	11	4.1	3
Greater Caucasus	4,677,560	20	0	8	7	1	40	35.2	41
Caspian	3,234,678	23	2	9	0	20	31	14.4	15
West Lesser Caucasus	2,999,245	29	3	12	7	4	21	11.3	24
Javakheti	419,537	6	1	2	2	10	13	0.0	0
East Lesser Caucasus	1,433,267	14	1	5	3	1	13	24.6	21
Iori-Mingechaur	966,785	9	0	3	0	3	14	15.1	12
Southern Uplands	2,041,972	24	1	4	7	2	16	0.6	3
Arasbaran	1,239,743	16	1	4	2	3	5	23.8	5
Hyrcan	1,851,242	19	1	9	0	2	8	8.6	13

All Corridors	20,893,467	51	6	18	18	54	172	16.5%	137
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