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UKRAINE

FAA 119 BIODIVERSITY ANALYSIS



February 2007

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ACRONYMS AND ABBREVIATIONS

AEWA	African-Eurasian Waterbird Agreement
CIS	Commonwealth of Independent States
CITES	Convention on International Trade in Endangered Species
CSD	Commission on Sustainable Development
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EPR	Environmental Performance Reviews
ETC/MCE	European Topic Centre on Marine and Coastal Environment
EU	European Union
FAA	Foreign Assistance Act
FSC	Forest Stewardship Council
GAP	Good Ecological Practices
GDP	Gross Domestic Product
GEF	Global Environmental Facility
Ha	hectare
IBRD	International Bank for Reconstruction and Development
ICPDR	International Commission for the Protection of the Danube River
IPM	Integrated Pest Management
IUCN	International Union for the Conservation of Nature
Km	kilometer
MEP	Ministry of Environmental Protection
NEAP	National Environmental Action Plan
NEN	National Ecological Network
NIS	New Independent States
NGO	Non-governmental organization
PEEN	Pan-European Ecological Network
POPs	Persistent Organic Pollutants
SAP	Strategic Action Plan
SEI	State Ecological Inspectorates
TACIS	Technical Aid to the Commonwealth of Independent States
UAH	Ukrainian hryvna
UN	United Nations
UNDP	United Nations Development Program
UNECE	United Nations Economic Cooperation for Europe
UNEP	United Nations Environment Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United National Framework Convention on Climate Change
USAID	United States Agency for International Development
USCF	Ukrainian State Committee of Forestry
USD	United States Dollar
USG	United States Government
USSR	Union of Soviet Socialist Republics

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PREFACE

In October 2006, the USAID Regional Mission for Ukraine, Moldova, and Belarus commissioned a study by a team of experts led by DevTech Systems, Inc. (DevTech) to determine the region's biodiversity needs in order to comply with the Foreign Assistance Act (FAA) and enhance USAID support in Ukraine. The FAA mandates that USAID Missions, in preparation of their strategic plans, consider (1) the actions necessary in that country to conserve biological diversity, and (2) the extent to which the actions proposed for support by the Agency meet the needs thus identified (FAA, 119(d)). The present Biodiversity Analysis of Ukraine serves as an update to the Biodiversity Assessment of Ukraine conducted in 2001, and as such, in many of the sections of this report specific reference is made to events or changes in that have occurred since 2001.

This report provides the reader with a thorough review of Ukraine from an environmental perspective, focusing on biodiversity. Considerable effort was taken to accurately represent the environmental issues in the country. The findings and recommendations are presented in a manner to be consistent with the USAID Regional Mission's current and foreseen strategic planning processes and to work within the existing framework of the Mission's portfolio. The bulk of this report provides background and descriptions of Ukraine in an environmental context and hopefully provides a valuable overview for those new to, or currently working in, Ukraine.

To ensure consistency with USAID guidelines, the team referenced the *FAA 118-119 Lessons Learned & Best Practices* (USAID 2005) in framing the assessment design. In this report, the following definition of biodiversity, as presented in *Biodiversity Conservation: A Guide for USAID Staff and Partners* (USAID, 2005), is utilized:

“Biological diversity, or biodiversity, is the variety and variability of living organisms broadly including a wide diversity of plant and animal species, communities, and ecosystems. The Earth's biodiversity consists of genes, species, and ecological processes making up terrestrial, marine, and freshwater ecosystems that both support and result from this diversity.”

After a comprehensive review of available resources, meetings with a diverse range of stakeholders, and visits to priority sites, the Team identified the critical threats to biodiversity, the actions necessary to conserve biodiversity, and the extent to which the Mission is meeting these needs.

This assessment is organized in six sections:

- Section I of this report outlines the purpose and objectives of the study, and provides an introduction and general overview of information collected, meetings held, site visits, and information gaps on the status of biodiversity in Ukraine.
- Section II presents an overview of the biodiversity in Ukraine, a description and status of the major ecosystems in the country, and reviews the most important threats to biodiversity conservation.
- Section III discusses the actions taken to date by Ukraine, including the Government of Ukraine, the NGO sector, and donors including USAID.
- The actions necessary to conserve biodiversity are discussed in Section IV.
- Section V is meant to cover an analysis of the extent to which USAID's proposed actions meet the needs identified. At this time, the Mission has not defined its proposed actions, and so this remains to be completed by the Mission once they have defined their new strategy.

- Finally, a summary of the major issues, needs, and recommendations for the effective conservation of biological diversity are addressed in Section VI, along with a consolidated matrix for ease of review.
- The report also includes a series of annexes providing technical information to document the state of biodiversity in Ukraine in 2006.

The DevTech Team would like to extend a special thanks to: Dr. Peter Luzik and USAID Staff in Kiev who hosted the Team; USAID implementers; other donors; officials of the Government of the Republic of Ukraine; officials from research institutes, centers of excellence, scientists, and academics for sharing with their insights into the dynamic world of Ukrainian biodiversity; members of non-governmental organizations (NGOs) for showing us that biodiversity conservation is a reality in Ukraine; and Volodymyr Tykhyy, who provided valuable insight, guidance, and support.

EXECUTIVE SUMMARY

In October 2006, the USAID Regional Mission for Ukraine, Moldova, and Belarus commissioned a study to assess the biodiversity in Ukraine to comply with FAA Section 119, and to enhance USAID support for biodiversity in the country. This study updates the Mission's original Biodiversity Assessment for Ukraine which was completed in 2001.

Definitions: To ensure consistency with USAID guidelines, the team referenced the *FAA 118-119 Lessons Learned & Best Practices* (USAID 2005) in framing the assessment design. In this report, the following definition of biodiversity, as presented in *Biodiversity Conservation: A Guide for USAID Staff and Partners* (USAID, 2005), is utilized:

“Biological diversity, or biodiversity, is the variety and variability of living organisms broadly including a wide diversity of plant and animal species, communities, and ecosystems. The Earth's biodiversity consists of genes, species, and ecological processes making up terrestrial, marine, and freshwater ecosystems that both support and result from this diversity.”

The purpose of this report is to update the USAID Regional Mission for Ukraine, Moldova and Belarus' Biodiversity Assessment for Ukraine, focusing on changes since 2001. Based on this analysis, the report identifies the threats to Ukraine's biodiversity, the actions necessary to address them, and the extent to which the Regional Mission's actions meet these needs.

In the past five years, there has been modest success in reversing dramatic trends of biodiversity loss caused by unchecked development and exploitation of the natural resources in Ukraine. The Government of Ukraine has made positive steps in the development of its policy and legislative framework thanks in part to the assistance of international donors, while an active group of non-governmental organizations has begun to have a positive impact on biodiversity conservation. Unfortunately, the implementation of the new government policies has not been effective in mitigating 60 years of damage and degradation.

Major Threats to Biodiversity

Ukraine's biodiversity is threatened primarily across five sectors, three of which are related to productive use of natural resources (agriculture, forestry, and water), and two institutional sectors (public awareness/socio-economic issues and governance). The DevTech Team identified 18 key threats from agriculture, the forestry sector, water and aquatic ecosystems, public awareness and socio-economic issues, and governance. Of these key threats, the Team identified the top three threats of utmost importance. These threats are:

- **Inadequate system of protected lands:** Ukraine's current system of protected areas is localized in the south and west, leaving critical biomes in the north and east unprotected.
- **Lack of viable wetland and riparian habitats:** Due in large part to land conversion for agricultural practices, and resulting high input farming methods, wetland and riparian habitats have been severely degraded.
- **Lack of public awareness and resulting weak public participation in the political process:** Though Ukraine has a burgeoning civil society that is increasingly interested in environmental issues, a recent survey indicates that a lack of public awareness and participation is a key limiting factor in biodiversity conservation efforts.

Sectoral Analysis of Threats

Ukraine's major threats to biodiversity cut across five sectors:

- **Agriculture.** The sharp increase in intensive agricultural production from 1950 to 1970 severely impacted the country's biodiversity. Post-transition private ownership of the land was accompanied by

decreased use of chemicals and an increased use of biological plant protection. This reduced some of the pressure from intensive agricultural practices, though the legacy remains. The conversion of much of the steppe ecosystem's grasslands to agricultural lands without maintaining natural habitat has had a devastating affect on the populations of many plant and animal species, such as the endangered great bustard (*Otis tarda*) and the steppe eagle (*Aquila rapax*).

- **Forestry.** Following a dramatic drop in the forest cover in Ukraine due to heavy tree felling between 1920 and 1970, forest coverage has stabilized in recent years. Currently, nearly 16 percent of the country is forested. While trends are positive, the existing, largely fragmented forests lack the desirable qualities of viable forest ecosystems. Extending the acreage covered by forests, improving productivity and conserving biodiversity are important objectives outlined in various Government of Ukraine policy and legislative documents, most notably the State Programme “Forests of Ukraine” for 2002–2015. Ukraine's forest coverage provides valuable habitat for threatened species such as the lynx, the Eurasian badger (*Meles meles*), and the hermit beetle (*Osmoderma eremite*).
- **Water.** The reckless use of fertilizers and pesticides during the “Green Revolution” of the 1960s, coupled with the impact of polluting industries such as coal extraction and animal production have negatively impacted the health of Ukraine's waterways that continue today. In the past five years, the Government of Ukraine has taken steps to improve the protection and management of its aquatic ecosystems. While the policies are in place, their effectiveness has been limited. The country's coastal areas are breeding grounds for a number of internationally endangered species, including the white-tailed eagle, the glossy ibis, the pygmy cormorant, and the squacco heron, while numerous endangered species are found in the country's inland waterways, including the Danube salmon (*Hucho hucho*), the European crayfish (*Astacus astacus*), and various species of sturgeon.
- **Public Awareness and Socio-economic Issues.** Several key environment-related non-governmental organizations (NGOs) support social action to conserve biodiversity. One of these, EcoPravo-Kyiv (an NGO which has received USAID funding) conducted a review of citizens' access to environmental information and participation in decision-making and justice in Ukraine. The review concluded that public access to information on environmental emergencies is limited; dissemination via the Internet is lacking; and environmental NGOs generally lack support from the government and as a result search out funding from international organizations.

Socio-economic issues continue to directly impact biodiversity in Ukraine. The 29 percent of the population that falls below the poverty line can adversely affect biodiversity, as evidenced by fish poaching in the rivers and the Black Sea, and illegal logging in the Carpathians. The concern of the poor for biodiversity likely does not override the need to feed one's family or have sufficient wood to keep the house warm. This highlights the role that USAID's economic growth program can play.

- **Governance.** The challenges of good governance and the lack of enforcement of policies and laws have been, and continue to be, obstacles to biodiversity conservation in Ukraine. The lack of effective leadership and oversight was most apparent when the World Bank funded-GEF terminated its coastal biodiversity conservation project within the Azov-Black Sea coastal corridor in 2006 due to delays in providing counterpart funds and the belief that host ministries were not providing sufficient leadership, lacked interagency coordination, and did not take governmental ownership for the project.

The Government of Ukraine has led a slow increase in the number of protected areas. While area-wise the level of protection has increased, the distribution of protected lands remains uneven, with most reserves concentrated in the west and south. This leaves many important biomes with inadequate protected reserves.

Commitment of Key Stakeholders in Protecting Biodiversity

The Government of Ukraine has created a solid base of policies, legislation and regulations to protect as well as enhance biological diversity. However, the Government has not been overly successful in taking the next step of effectively implementing these policies and enforcing these laws and regulations. The Government of Ukraine should be encouraged to apply and enforce these tools to the maximum extent possible in order to protect biodiversity for today's population as well for the future. Ukraine's Government should also meet the obligations accompanying international grants and loans involving biodiversity so as not to lose opportunities and reputation as a pro-biodiversity participant in the international arena.

Productive work is being conducted on biodiversity by institutes, academic institutions, NGOs and ministries in addition to the Ministry of Environmental Protection. There exists a need for effective individuals and organizations involved in these efforts to share their knowledge of biodiversity. To effectively and efficiently utilize the limited financial resources available for conservation, these individuals and organizations could be included in future programs.

Protected lands, wetlands and riparian habitats, and forest management can benefit from a more uniform role of the Government. Additional responsibility falls on society as a whole, and public awareness of the importance of biodiversity conservation is critical. Opening the permitting process to be more transparent and to allow for public opinion to be taken into consideration in reference to construction near or on protected lands and the use of riparian areas should assist in helping to mitigate these threats.

The private sector of Ukraine has a greater responsibility for the protection and conservation of biodiversity than ever before. The private sector must move towards sustainable production through certification schemes such as the International Standard Organization (ISO), Hazard Analysis Critical Control Points (HACCP), and European Retailer Producer's Good Agricultural Practices (EurepGAP). These certifications are critical for any enterprise competing regionally and globally while simultaneously mitigating many environmental risks of such economic growth. Along with the privatization of agricultural land and agricultural services comes the responsibility to manage the agricultural and livestock production process using GAP so as to mitigate negative impacts on biodiversity. Many private farmers are not properly educated concerning the correct handling, application, storage and disposal of agricultural chemicals, and mismanagement may impact biodiversity in the area around the point of use.

Many countries have positive interest in Ukraine's conservation efforts. Ukraine lies on European bird migratory paths and bird enthusiasts in many European countries have supported international government to government and NGO efforts to protect the wetlands of Ukraine in order to support the migration continued success. Future income based on ecotourism focused on bird migration has the possibility to increase and become a substantial source of income for Ukraine.

Assessment of USAID Support and Opportunities

Currently, USAID has no programs in place that are focused specifically on biodiversity conservation in Ukraine. However, programming in strategic areas can have positive impacts on biodiversity conservation in the country. For example, much of USAID's portfolio relating to Ruling Justly and Economic Freedom provides a solid foundation for biodiversity conservation. Although the Mission has no current plans to make substantial investments in biodiversity protection, there are some low-cost solutions through policy dialogue support, participatory training, use of volunteers and arrangements with professional associations. Furthermore, there are potential linkages in the current portfolio which would be good opportunities for interventions. Examples include:

- **Political Process Development.** A direct benefit from supporting democratic reforms is the creation of an effective **parliamentary system to address natural resource issues** on a rational and timely basis. This body would also be able to research and promote passage of legislation to address the long term concerns of biodiversity conservation.

- **Local Governance.** Activities in local and municipal government support are designed to enhance the active participation of citizens in local decision-making. One of the most important decisions citizens make concerns their quality of life, which includes the natural resource base. Knowledge of the return on investment in resource and biodiversity conservation would result in helping city governments to attract investors, promote business development and create jobs. Improved **local governance activities** can also increase capacity at local levels of protected area management.
- **Rule of Law.** Natural resources have long been the target of illicit acts such as poaching, illegal logging, and harvesting fish using illegal methods. Actions to strengthen the rule of law have direct application to the protection and conservation of biodiversity. USAID could focus **rule of law programs** on combating corruption and enforcing anti-poaching and illegal logging regulations.
- **Civil Society.** Civil society plays a crucial role in building awareness and appreciation of natural resources and biodiversity. USAID could provide **small grants to NGOs** in Ukraine with biodiversity advocacy goals.
- **Business Development.** Efforts to **support and promote ecotourism** would be well received in Ukraine. Ecotourism is a reality in Ukraine, though some neighboring countries are more advanced in developing their ecotourism industries. The USAID/Ukraine business development program objectives would fit well to ecotourism. It may be possible to incorporate information concerning biodiversity conservation into BIZPRO-related assistance to the tourism cluster in Crimea.
- **Agriculture.** At the present time, there is considerable interest in Ukraine to develop and implement an agricultural extension service. Privatization of agricultural lands without the appropriate technical support for the new, private farmers could have ramifications on biodiversity of Ukraine. Improper storage, handling, distribution, application, and disposal of pesticides and fertilizers has impacts on ground water, surface water, soils, and, eventually, human health. The **Farmer-to-Farmer program** is a logical mechanism to interface with the National Ecological Network and to provide expertise to farmers on GAP principles.
- **Energy Efficiency and Renewable Energy Development.** USAID/Ukraine recently initiated a program to assist Ukraine increase its **energy efficiency and energy independence**. Included in this program is support for the government to develop a Law on a Production Sharing Agreement for oil and gas exploration in the Black Sea. While exploration has obvious economic benefits and has the potential to reduce reliance on coal mining in Eastern Ukraine and a dependence on wood fuel in Western Ukraine and its corresponding destruction of Carpathian forests, it will be critical to include a thorough assessment of impacts that the exploration and development of oil fields will have on coastal and Black Sea ecosystems and biodiversity. This will be an opportunity to ‘do it right’ from the start, rather than adding to the legacy of prior industrialization activities.

SECTION I: INTRODUCTION AND BACKGROUND

The purpose of this biodiversity analysis is to ensure USAID compliance with the Foreign Assistance Act (FAA), Part 1, Section 119 and help inform and guide the USAID Regional Mission for Ukraine, Moldova, and Belarus's planning with respect to biodiversity needs during the development of their upcoming strategic planning process. Specifically, the objectives of this analysis are the identification of the needs for biodiversity conservation in Ukraine and assessment of how the Mission strategy contributes to meeting such needs. Section 119 requires:

“Each country development strategy statement or other country plan prepared by the Agency for International Development shall include an analysis of (1) the actions necessary in that country to conserve biological diversity, and (2) the extent to which the actions proposed for support by the Agency meet the needs thus identified”.

A. Methodology and Information Gathered

To conduct the assessment, the DevTech Systems, Inc. (DevTech) Team members collected relevant available materials (reports, studies, etc.) and met with representatives of USAID/Washington prior to departure. The Team Leader and the Senior Natural Resources Specialist held meetings with a diverse range of people from government agencies, donors, implementers, the private sector and non-governmental organizations (NGOs) (see Annex D). The Team continued to gather additional information, and summarize and synthesize documents and reports (see References, Annex E).

The Team conducted site visits in Kiev, Zaporizhzhia, Melitopol, and Odessa to make firsthand observations on the status of the environment and to interview local government officials and authorities, private citizens and experts, and NGOs regarding natural resources management and biodiversity issues at the local level. The Team also met with several NGOs, researchers in the areas of botany and ornithology, and representatives from other donors. Finally, telephone interviews were held with representatives of several of the USAID contractors and grantees which would provide insight into their activities and how they might relate to biodiversity conservation.

The findings in this report are based on information gathered during these interviews and site visits, as well as from the documents produced by a variety of sources (see References, Annex E). The findings address FAA 119 requirements, specifically addressing biodiversity threats and actions necessary to meet these threats. Finally, the report provides recommendations on how the USAID Regional Mission for Ukraine, Moldova, and Belarus may be able to integrate biodiversity-related components into programs, projects and activities.

B. Information Gaps and Challenges

The preparation of the Biodiversity Analysis was hampered by a number of critical information gaps. Some of the information gaps were the result of information that did not exist, while other gaps were the result of the Team's inability to acquire the information that may or may not have existed. The most significant information gaps include:

- **Inability to organize a formal meeting with the Ministry of Environmental Protection (MEP)**
The Team requested a meeting with the Ministry of Environmental Protection with a formal letter that presented the purpose of the meeting as well as the Team's request for information from the Ministry. The request was not answered by the Ministry until after the team had departed from Ukraine. Further, the Ministry said that public information we had requested would have to be purchased. Information collection was further complicated by the fact that the Ministry's website was not up to date, with much of the information being two and three years old.
- **Incomplete Third Report on Biological Diversity**
Ukraine has not yet prepared their Third Report on Biological Diversity as per the schedule for the Convention on Biological Diversity. Data collection for the Third Report had begun, but the report

had suffered from lack of direction on the part of the Ministry, as well as from the lack of cooperation on the part of many of those to provide information, mainly the non-governmental organizations (NGOs).

- **Difficulty acquiring funding levels and sources of NGO funding**

NGOs were reluctant to share with the Team their funding levels and sources of funding. In some cases, the topic was simply avoided. In others, the conversation was returned to technical issues. The fact that some of the funding comes directly from the Ministries may have complicated their responses. Also complicating the reluctance to share funding information may have been the NGO's creative manner of finding funds where ever possible and leaving a trail that only the NGO management might be able to fully understand.

- **Conflicting information on status of NGOs**

Various sources cited different status levels of NGOs – certain NGOs were considered “official” and “registered” by one source, and “unofficial” and “unregistered” by another source. This should be taken into consideration when looking at an NGO's official status. These discrepancies raise questions about the registration process, and how well it is documented and regulated.

- **Difficulty acquiring funding levels of Government of Ukraine biodiversity-related activities**

Sources were not readily available to provide funding levels of Government of Ukraine biodiversity-related activities.

SECTION II: THREATS TO BIODIVERSITY

Ukraine has the second largest land mass in Europe, with a total area of 603,700 km². It borders seven countries: Belarus on the north; Russia on the northeast and east; the Black Sea and the Sea of Azov on the south; Moldova on the southwest; Romania on the south and west; and on the west Poland, Slovakia, and Hungary.

Topography: Ukraine's highest elevations are in the Carpathian Mountains in the western part of the country and in the Crimean Mountains found at the southern end of the Crimean peninsula. The Carpathian Mountains are the site of the country's highest peak,

Mount Hoverla, which has an elevation of 2,061 meters. Mountains cover about five percent of Ukraine's territory, while the majority of the country is rolling upland plain. A region of wooded bogs and swamps, known as the Polessia, is located in the north of the country. Much of the Polessia has been drained and cleared for agriculture. The lower Dniro River Basin and the Black Sea coastal region in the southern part of the country are primarily low-lying plains.



Map of Ukraine (Adapted from CIA World Factbook)

Waterways: Ukraine has numerous rivers and more than 3,000 lakes which cover about four percent of the country's territory. The only significant river that flows northward is Zahidnyi Buh (Western Bug, 401 km in length). Each of the other major rivers flow southward into the Black Sea or the Sea of Azov. Ukraine's longest river, the Dnieper, is the third-longest river in Europe (2,290 km total, passing through Russia, Belarus, and Ukraine), with 1,121 kilometers within Ukraine's borders. The Dnieper is like a backbone down the center of the country, and over half the rivers in the country flow into its network. Other large rivers in Ukraine are the Dniester (925 km), the Pivdennyi Buh (Southern Bug, 806 km) and the Siverskyi Donets (700 km). The Danube Delta in the southwest forms part of Ukraine's border with Romania. In addition to a series of rivers, Ukraine has 2,782 kilometers of coastline along the Black Sea.

Soils and Forests: Ukraine has a wide variety of valuable natural resources. Nearly fifty percent of the country, most notably in the central and southern regions, is covered with extremely rich and fertile black chernozem soil. This chernozem makes these areas extremely well-suited for agriculture. Approximately 71.3 percent of the land area of Ukraine is in agriculture. Forest resources also abound, covering 17 percent of the territory.

Minerals: The Donetsk Basin in southeastern Ukraine has sizable coal deposits, and iron ore is abundant in the east central Kryvyi Rih region. The country also has some of the world's largest manganese deposits, which are found near Nikopol. Oil and natural gas deposits can be found in the Carpathian foothills and the Donetsk Basin and along the Crimean coast.

Ukraine's Biodiversity

Ukraine possesses an extremely rich and diverse biota. Despite the fact that Ukraine occupies only six percent of European territory, Ukraine possesses about 35 percent of Europe's biodiversity, a higher percentage than all European countries except Italy and France (Kostyushin, 2003). There are estimated to be more than 70,000 different species of its biota. Of these, there are over 25,000 species of plants; including mushrooms and myxomycetes, algae, lichen, bryophyta, and vascular plants. The richest floral regions in Ukraine are Crimean and Carpathian Mountains with 2,230 and 2,060 species, respectively. The highest endemic rate in Ukraine of 11 percent is found in the Crimean region. The animal kingdom contains over 45,000 species. Invertebrate animals include arthropods, insects, worms, protozoa, and mollusks.

Vertebrates include mammals, birds, reptiles, amphibians, and fish. As with the country's flora, the highest endemic rate of fauna is found in the Crimean region. The steppe region in the south has the largest quantity of endemic species, but the country's forests and marshes have the highest quantity of species.

The rich biodiversity of Ukraine provides valuable benefits to the region. About 1,100 Ukrainian plants contain biologically active compounds with great potential for use in the non-timber forest products and the pharmaceutical industry. Most grow in forests and meadows areas. There are also a considerable number of citrus, feed crops, volatile oils plants, oil-bearing crops and fiber crops. Among animals, important commercial species include fish, birds, mammals, mollusks, and crustaceans. The fishing industry accounts for up to 90 percent of the whole biomass of animals caught in Ukraine.

A. Major Landscapes and Ecosystems

The description of the major landscapes and ecosystems of Ukraine varies from source to source. When taking into account sub-classifications, their number approaches 17. The 2001 Biodiversity Assessment for Ukraine listed eight major landscapes and ecosystems. In order to facilitate comparison between the two reports, the current analysis utilizes the same number of landscapes and ecosystems as the 2001 report. Table 2 provides an overview of these systems.

Table 1. The eight major landscapes and ecosystems in Ukraine and their important species

Landscape/Ecosystem	Description	Important Species
Polessia	Swamp and wetlands area in northern Ukraine, heavily impacted by Chernobyl disaster	Threatened aquatic warbler (<i>Acrocephalus paludicola</i>), extensive sedges (<i>Carex spp.</i>)
Forest-steppe	Historically broadleaf forests and grassland in a band across Ukraine's center, but much of the region has been converted for agricultural use.	Endangered Saker falcon (<i>Falco cherrug</i>)
Steppe	Ukraine's grasslands, mainly in southern Ukraine	Rare bobac marmot and great bustard (<i>Otis tarda</i>), lone breeding site for Steppe eagle (<i>Aquila rapax</i>)
Carpathian Mountains	Site of highest peak in Ukraine, highly diverse ecosystem in west	Globally threatened Imperial Eagle and European bison
Crimean Mountains	Warm, moist climate at southern tip of Ukraine, IUCN-designated center for floral diversity	Endangered plant False Hellebore (<i>Adonis vernalis L.</i>)
Forests	Scattered throughout country	Threatened and endangered lynx, Eurasian badger (<i>Meles meles</i>) and Hermit beetle (<i>Osmoderma eremite</i>)
Black Sea and Sea of Azov	Watershed covers nearly all of Ukraine, both are isolated from the ocean	Habitat and breeding ground for large numbers of waterbirds, including endangered white-tailed eagle and pygmy cormorant; also breeding ground for rare Great black-headed gull (<i>Larus ichthyæetus</i>)
Freshwater Systems	About 22,000 rivers, most of which flow into the Black Sea or Sea of Azov. Include 22 Ramsar wetlands of international importance	Numerous endangered species, including Danube salmon (<i>Hucho hucho</i>), European crayfish (<i>Astacus astacus</i>), and varied species of sturgeon

1. Polessia

The Polessia is a marshy landscape in the northern part of the country bordering on Belarus that is dominated by mixed coniferous and broadleaf trees. In recent years, sizable tracts of land in the region have been

converted to agriculture and other managed landscapes. The swamps and wetlands in the region host a range of diverse species of plants and animals. Peat accumulates below some wetland areas. The area is home to one of the largest wetlands in Europe, which is found along the Pripyat River. This wetland system is a valuable habitat to various endangered species, including the threatened aquatic warbler (*Acrocephalus paludicola*), which can be found in sizable numbers in the area.

The Polesia region was the region of the country most affected by the Chernobyl incident, with 2.2 million hectares of land radioactively contaminated. However, given the lack of human activity in the exclusion zone, many species and ecosystems have shown signs of recovery. Nonetheless, the level of radioactive nucleotides remains very high in plants, trees, and other non-timber products, and will remain contaminated for some time. There is significant concern that wild fires could potentially cause the release of this radioactive material in the form of ash and soot, potentially resulting in another devastating release of radiation.

2. Forest-Steppe

The forest-steppe region of Ukraine runs across the center of the country, with the Polesia to the north, and steppe region to the south. As mentioned in the 2001 report, the forest-steppe region has traditionally been inhabited by broadleaf forests and open grasslands, with wetlands found bordering waterways. However, given the rich nature of the soils in the region, much of the area has been cleared for agriculture. As a result, the biodiversity of the region has declined, due largely to historical habitat loss and an ongoing lack of viable habitat. One example is the endangered Saker falcon (*Falco cherrug*) which traditionally was found in the forest-steppe region. A 2005 survey by the Ukrainian Society for the Protection of Birds found that most of the population of this falcon had moved from the forest-steppe region into the steppe area.

3. Steppe

The steppe region refers to the country's grasslands, mainly in the southern part of the country, which have fertile chernozem soils. Originally dominated by grasses and diverse flowering herbs with scattered forests and wetlands, nearly all of the region has been converted to farmland or managed forests. As such, protecting the few remaining natural habitats in the steppe region has been a priority for conservation groups in the country. The largest protected areas of steppe in Ukraine are 11,000 hectares in the Askania-Nova Biosphere Reserve and the Ukrainian Steppe Nature Reserve in Donetsk Oblast. The Askania-Nova reserve is home to various rare species, such as the bobac marmot and the great bustard (*Otis tarda*). The steppe is also the lone breeding site in the country for the steppe eagle (*Aquila rapax*).

4. Carpathian Mountains

The Carpathian Mountains in western Ukraine host a wide diversity of habitats and species, including many endemic species. With roughly 2,000 plant species and nearly 20 percent of Ukraine's forests, the Carpathians have been called the "gem of Ukraine." Sadly, many of the once-prominent old-growth beech stands have been cut and often replaced with less species-rich forest monocultures.

In 2003, the World Wildlife Fund released a report on *The Carpathian List of Endangered Species*. The report fully details the importance of the Carpathians as home to the most diverse population of mountain-dwelling animal and plants species, including the globally threatened Imperial eagle and the European bison.

5. Crimean Mountains

The Crimean Mountains are located at the southern end of the Crimean peninsula. Their isolation and relatively warm moist climate have created a region of remarkable biodiversity. Given the region's 2,775 species of plants, including 279 that are found nowhere else, the International Union for the Conservation of Nature (IUCN) has designated the region as a center of floristic diversity. One notable endangered species of flora found in the foothills of the Crimean Mountains is the rare False Hellebore (*Adonis vernalis* L.). The Crimea is also rich in terrestrial invertebrates, although there is not a full species inventory. Due to increasing

populations, human impacts have endangered many of the ecosystems in the region, which has led to decreasing populations of animals such as the European pond turtle (*Emys orbicularis*).

In late 2005, an outbreak of Avian Flu was discovered in the Crimea. This outbreak resulted in major concern for the biodiversity of the birds of the Crimea and other birds of the European Migration, many of which pass through this important area as part of the northern and southern migration paths. It was determined the outbreak was concentrated in domestic fowl, and a culling procedure was effective in addressing the threat. The area was declared free of the Avian Flu by mid-February 2006, and appears to have had minimal, if any, impact on biodiversity in the area.

6. Forests

Forested areas are found in each terrestrial landscape region. Forests cover less than 16 percent of Ukraine's surface area, as compared to an estimated 14 percent that were covered in 2001. After high levels of tree felling between 1920 and 1970, forest coverage has stabilized somewhat. The forests remain a valuable habitat for threatened and endangered species such as the lynx, the Eurasian badger (*Meles meles*), and the hermit beetle (*Osmoderma eremite*).

State ownership of forests is the primary form of ownership. According to the State Program "Forests of Ukraine" for 2002-2015, forest area by 2015 will probably increase by about 300,000 hectares (or 3.2 percent) and will total about 9.7 million hectares. The increase of forest areas will be basically through creation of new forest stands mainly in regions with low forest cover.

7. Black Sea and Sea of Azov

The massive Azov-Black Sea Basin encompasses nearly all of Ukraine, and includes the watersheds of the Danube, Dniro, Dniester, Southern Bug rivers. Due to their isolation from the ocean, the Black Sea and Sea of Azov have high levels of biodiversity of both flora and fauna, including many species of unique zooplankton and phytoplankton. The coastal areas provide habitat or resting places for huge numbers of waterfowl, many of which are protected under international treaties. For example, a number of internationally endangered species breed in the Dniester River delta, including the white-tailed eagle, the glossy ibis, the pygmy cormorant, and the squacco heron. The Black Sea coast is also the breeding ground for the rare Great Black-Headed Gull (*Larus ichthyæetus*).

Human impacts have had an adverse impact on the ecological condition of the seas. The "Green Revolution" of the 1960s resulted in widespread use of toxic fertilizers and pesticides, while at the same time, large livestock farms began to become more common. Nutrients from excess fertilizer and farm waste flowed into the waterways, resulting in high nutrient loads. In 2001, the Sea of Azov had the highest level of pollution per one square meter of water surface in the world. Recently, there have been signs of a slow recovery in the Black Sea (discussed further in Section II.B.3).

8. Freshwater Systems and Wetlands

Ukraine's 22,000 rivers total approximately 170,000 km in length, and nearly all end up flowing into the Sea of Azov or the Black Sea. These rivers are spawning habitats for more than twenty species of endangered fish. The Red Data Book (National Academy of Science of Ukraine, 1994) considers the major threats to these fish and other water-dwellers to be: habitat loss associated with changes in hydrology; chemical and biological conditions of the water; pollution; and over fishing. The numerous endangered species found in the country's waterways include the Danube salmon (*Hucho bucho*), the European crayfish (*Astacus astacus*), and various species of sturgeon.

The Ramsar Convention on Wetlands lists 33 wetlands of international importance in Ukraine. The largest of these are found in the delta regions of the country's largest rivers.

B. Biodiversity Status, Trends and Threats

According to the estimates of the Ukrainian Land and Resource Management Center, biodiversity has declined in all parts of Ukraine. These trends are not just due to natural causes, but are also due to changes in agricultural practices. In the Steppe region, where the most intensive agriculture is practiced, and in the Forest-Steppe region, where forest and steppe species commingle, the overall downward trend has been the most dramatic.

In order to analyze the multiple ecosystems in Ukraine, the Team condensed the eight ecosystems into three main productive sectors as follows:

Table 2. Ukrainian Ecosystems Condensed by Productive Sector

Ecosystem (as defined by 2001 report) <i>Section II.A</i>	Productive Sector <i>Section II.B</i>
Steppe	Agriculture
Forest-steppe	
Carpathian Mountains	
Crimean Mountains	Forestry
Forests	
Polessia	Fisheries and Irrigation
Black Sea and Sea of Azov	(Rivers, Wetlands and
Freshwater Systems and Wetlands	Aquatic Systems)

In this section, Agriculture will address the Steppe ecosystem; Forestry will deal with the Forest-steppe, Mountains, and Forests ecosystems; and Rivers, Wetlands, and Aquatic Systems will capture the Polessia, the Seas, and the Freshwater Systems and Wetlands. In addition, it will discuss the Public Awareness and Socio-Economic sector, and the Governance sector. For each of these five sectors, the status and trends of each are identified, and critical threats to biodiversity are noted. The purpose for organizing this sector as such is based on the practical consideration that USAID programming is traditionally done by these sectors. Therefore, the users of this assessment can focus on their relevant sector or sectors.

1. Agriculture Sector (*Steppe Ecosystem*)

Approximately 42 million hectares of Ukraine's total land area of 60 million hectares, or 70 percent, is presently classified as agricultural land (USDA, 2005). Agricultural land includes cultivated lands, gardens, orchards, vineyards, and permanent meadows and pastures. This land is distributed throughout the country with two distinguishable centers: the western region, characterized by a moderate climate, and the southern region with its fertile black soils where irrigation plays an important role.

Ukraine has a quarter of the world's chernozem soil and 57 percent of all land in the country is used as arable land, while in the neighboring countries such as Moldova and Belarus, such agricultural lands take up 52 percent and 30 percent of the territory respectively. Ukraine has 7.5 percent of the agricultural lands of the Commonwealth of Independent States (CIS) countries, 15.1 percent of their arable lands, 6.2 percent of their meadows and 1.6 percent of their pastures. Ukraine produces over 20 percent of the grain harvested in the CIS countries and approximately 25 percent of the meat and milk.

Wheat is grown throughout the country and, except for the 2003/2004 crop that suffered from an unusually severe winter, wheat production has recovered from declines in production levels since independence from the Soviet Union. The rebound has been due to generally favorable weather and a steady improvement in the financial condition of many farms. With the dismantling of the state and collective farms in 2000, farmers have been able to benefit from making market-based decisions regarding crop selection and management

which has led to increased efficiency in production. Barley, corn, sunflower seed, and sugar beets follow wheat in importance.

Ukraine continues to suffer from the legacy of nationalized agriculture, which did not resolve the country's problem of insufficient food supply, and did not increase the efficiency of the sector of the economy to the level of the advanced nations of the world. The technical concept of the development of the national agriculture complex based on the quantitative growth of technical, hydro-technical, and agrochemical factors of intensification of agricultural production did not ensure an adequate increase of its efficiency, crop yield, productivity of livestock, and the improvement of product quality. Instead, it resulted in excessively high nutrient loads and other significant impacts on the environment.

a. Major Changes Since 2001

There have been very few substantive changes in the steppe ecosystem since 2001. The negative impact on biodiversity of lands used for agriculture has continued. The erosion of the soils, the decrease in humus content, and the use of agricultural chemicals have all contributed to the decreased biodiversity on agricultural lands. While the biological diversity above the ground is affected, equally important is the effect of the negative impact of intensive agriculture on the biota of the soil below the surface. It is this diversity that will dictate the fertility of the soils and the future productivity of these agricultural lands.

One positive change in recent years is a tendency towards decreased use of chemicals and an increased use of biological plant protection. This change will reduce some of the pressure on Ukraine's agriculture sector, and the country's biodiversity as a whole. Much remains to be accomplished to mitigate the damage that has already been done.

b. Overview of Ecosystem and Recent Trends

Ukraine experienced a rapid decrease in biodiversity from 1950-1970 due to extensive agriculture production for the former Soviet Union. This decrease appears to be nature's response to negative management practices such as tillage frequency, reduced fallow areas, reduced shelterbelt creation, and chronic use of chemicals. In the last thirty years, there has been a slow recovery, but many of the same problems persist.

• Land Utilization and Erosion

The intensification of agriculture, an increased technology load on land resources, and the uncontrolled use of chemicals with a low level of technical understanding have resulted in an accelerated degradation of the soil and a decline in its fertility. In 25 years, the humus content in soils in Ukraine dropped from 3.5 to 3.2 percent; the area of acid soils increased by 30 percent, and that of saline and leached soils increased by 25 percent. Nearly 200,000 hectares of land are destroyed annually; the level of their re-use as cultivatable soils is inadequate.

The current status of the development of agriculture in Ukraine is characterized by complications in the ecological situation: from 1961 to 1995 eroded arable land on farms of all categories increased by 31 percent (from 8.1 to 10.6 million hectares); humus content in soils decreased; and other crisis phenomena were observed, including swamping and souring of soils, over-concentration of the upper stratum of soils, and contamination of the environment by agrochemicals. During the last ten years the average weighted content of humus in Ukraine has decreased. This decrease in humus content has been accompanied by a decrease in soil microbial diversity, which has implications for future crop productivity. Humus content of soils in Ukraine, an important factor in soil quality, in general, shows the soils with the highest humus content are found in central and eastern Ukraine. Low soil humus content is an important indicator of poor land management which, together with other pressures, can provoke habitat loss.

Recent poor agricultural practices have resulted in increased water and wind erosion. For example, the planting of row crops with deep taproots, such as sugar beet and sunflower, has facilitated water erosion

under heavy rainfall conditions. According to the 2006 draft Environmental Performance Review (EPR) by the United Nations Economic Cooperation for Europe (UNECE), approximately 15 million hectares (35.2 percent of agricultural land of Ukraine) has been strongly affected by erosion, and some 60 percent of the chernozem has been eroded to some extent.

Management and conservation efforts. Shelterbelts, plantations of trees to break the damaging impact of surface wind on the land, have traditionally been used in Ukraine and other areas as a means of wind erosion control around farms. During the privatization process, shelterbelt ownership was not clearly defined. Consequently, many shelterbelts were neglected and others were destroyed as a result of illegal harvesting of the trees making up the shelterbelts. As a result, the impacts of wind erosion have been exacerbated.

- **Pollution from industry**

Special concern is caused by the contamination of agricultural lands by chemical compounds, and potentially polluting substances from industry. The major industrialized areas of Ukraine are also centers of high air, soil, and surface and ground water pollution. According to the draft 2006 UNECE EPR, the highest environmental concern is caused by the production and processing of metals and the mining and chemical industries. As a result, toxic substances that have a negative impact on the quality of vegetable and animal produce accumulate in the soil stratum.

In many districts in Ukraine, the productivity of the land has been markedly reduced owing to the poor quality of irrigated and dry land reclamation. Sprinkle irrigation has a negative impact on chernozem soils. It leads to consolidation of the humus horizon, the alkalization of water extract, and an increase in pH value of 8-8.5. As a result of industrial activity in Ukraine, there are about 12 million tons of mountain rocks and industrial waste accumulated on the ground surface, which occupied 100,000 hectares of lands lost by agriculture. A number of specific industrial establishments led not only to reduction of agricultural land areas, but also caused a loss of considerable areas of agricultural lands and forests, and the removal from the latter of arboreal resources from agricultural circulation.

Soils are being polluted with heavy metals and other components of industrial waste, and the residues of fertilizers and pesticides are accumulating at a high rate. According to the draft 2006 UNECE EPR, agriculture pollutes about 60 percent of land resources and approximately 45-48 percent of reservoirs. Its contribution to pollution of the atmosphere fluctuates at between 35 and 40 percent.

More than four million tons of fertilizers and 175,000 tons of chemical pesticides are used annually in agriculture. Of 170 pesticides used in Ukraine, 49 are highly toxic. The Chernobyl accident resulted in the contamination of 4.7 million hectares of farmland, including 3.1 million hectares of arable land.

c. Threats to Biodiversity

Based on the above analysis and update, there are four major threats to the agriculture sector in Ukraine. These threats can be attributed primarily to human acts and lack of knowledge. Threats are presented in order of importance, with the most critical threats listed first.

- **Threat: Lack of Understanding of Agricultural Practices** (*lack of knowledge*)

In recent years, privatization of farms has led to an increased number of smaller fields, less intensive practices, and a greater variety of crops being grown. This land-use change has resulted in a notable increase in the variability trends for plants since 1990 in some agricultural zones.

The new less intensive farming practices and more varieties of crops being planted has apparently slowed biodiversity loss in the soil biota, these positive trends have been offset by the lack of understanding of agricultural practices of these new, small and private farmers. While the former agricultural system had its shortcomings, one aspect was clear: those responsible for the management and use of agricultural

pesticides were generally well trained and closely monitored the application, handling, and disposal of the agricultural chemicals and containers. Accidents from the misuse of agrochemicals have become all too frequent with the private farmers.

Additionally, the shift from the quantity of agricultural production for local and eastern consumption has not yet passed to the quality of agricultural products for local and western European consumption.

- **Threat: Legacy of Large-Tract Intensive Farming** (*due to human acts, lack of knowledge*)
Technically intensive systems of agrarian production have resulted in great harm to biodiversity and the ecological stability in Ukraine. The pervasive use of agrochemicals and pesticides combined with a lack of appreciation for the interconnectivity between the various components of the environment has led to a considerable deterioration in biodiversity and, as a result, to the appearance of a pronounced ecological misbalance and the reduction of agro-ecosystem productivity. The use of ecologically harmful agrochemicals has had a negative impact and a decrease in the biodiversity in meadows, and, correspondingly, on the deterioration of their stability and the quality of cultivated forage for livestock breeding and its produce.

During the Soviet period, farms were consolidated into large tracts on which farmers grew corn, wheat and sugar beets in monoculture using intensive tillage and chemical-based fertilizers and pesticides. In addition to increasing the risk of soil erosion under heavy rain conditions, another consequence of monoculture farming is the lack of vegetative material left in the field to serve as moisture and nutrient retention. As a result, the humus content of the previously fertile chernozem soils has decreased throughout the intensively tilled agricultural areas of Ukraine since the 1950s to the present.

- **Threat: Lack of Viable Habitat** (*due to human acts, lack of protection, national policy*)
Much of the action to increase the agricultural production of the “breadbasket for the Soviet Union” has, over the long term, resulted in habitat loss for biodiversity. Such actions involved, among others, wetland drainage, land leveling, and a variety of land modifications to enable large-scale irrigation. Forested buffers and wetlands were sacrificed in the pursuit of production. This damage has manifested itself in a current lack of viable habitat for much of Ukraine’s biodiversity resources. Though much of the actual habitat loss occurred during the rapid expansion of agricultural land following World War II, after a stabilization of the rate of land conversion in the 1990s, agricultural production has begun to increase again in recent years. This increase has the potential to damage and destroy additional habitat if not carefully monitored.

By far the greatest impact in Ukraine, as well as the world, has been caused by poor land use practices. In Ukraine, poor management of natural areas, exploitation, habitat loss and environmental toxicity are also important drivers. One can expect greater biodiversity in areas with diverse agricultural landscapes than in areas with uniform landscapes. At the same time, large migratory and semi-migratory animals need large habitats, so some species may not adapt well to the small agricultural fields that have been created by the fragmentation of their habitat.

- **Threat: Soil Degradation** (*due to human acts, lack of protection, lack of knowledge*)
Intensive irrigation with contaminated irrigation water has caused the degradation of some of the soils in Ukraine. Once lost as a productive component, soil rehabilitation is an expensive and labor-intensive activity. Further, years of agricultural production using heavy equipment has resulted in compaction of the soils with a consequence of degrading the environment for some biodiversity below the soil surface.

2. Forestry Sector (*Forest-steppe, Mountains, Forests*)

Ukraine’s total forest area totals approximately 9.4 million hectares, which is roughly 15.6 percent of Ukraine’s total surface area, or half the average level for Europe. This coverage is low both in terms of

historic coverage in Ukraine, and in terms of comparison to that in other countries of Eastern and Northern Europe. Nonetheless, the area covered by forests increased by almost 900,000 hectares between 1988 and 2004 as part of a plan to return marginal agricultural land to forested lands. Forest area per capita in Ukraine is in average 14 times less than in Eastern European countries. Though Ukraine ranks 34th in Europe in forest area/total land area ratio, it ranks ninth place in total forest area after Russia, Sweden, Finland, France, Spain, Germany, Turkey and Italy.

For the purposes of this analysis, in general terms, the Carpathian and Crimean regions are covered in the discussion of the Forestry Sector as their general biodiversity trends are captured by this discussion. The coastal areas of the Crimean peninsula are discussed in the Water Sector section, which follows.

a. Major Changes Since 2001

In contrast to the agriculture sector, there have been several significant changes in the utilization of forestry resources and the legislative framework governing the forestry. The transition process of the forest and forest products sector to market economy between 2001 and 2004 had produced a number of impacts on Ukrainian forestry. As forest enterprises became the subjects of a market economy, the State budget financing for the forestry sector decreased. This was impacted by the nonconformity of national forest legislation to socioeconomics and market transformations, and a deterioration of the wood-processing sector and a sharp reduction of consumer demand on internal market of wood. As a result of decreased demand, harvested timber levels decreased and the growing stock increased. With the decreased internal demand, Ukraine has seen a six- to seven-fold increase in the volume of wood export in the last five years.

A complicated network of legal concerns particularly impacts the forest sector. The most important legislation for forestry is the Land Code (2001) and the Forest Code (2006). According to the Forest Code (2006), forests are divided into four groups: protected forests (34 percent), recreational forests (8 percent), forests with environmental importance (14 percent) and production forests (44 percent). The proportion of production forests has been decreasing relative to the other categories of forests.

Extending the acreage covered by forests, improving productivity and conserving biodiversity are important objectives outlined in various policy and legislative documents. In particular, the planting of new forests is an important component of the State Programme “Forests of Ukraine” for 2002–2015. There are plans to increase the rate of planting of protection forests from the current 10,000 hectares a year to 40,000 hectares. The ultimate objective is to “increase the percentage of forest cover to the optimal level in all natural zones” while protected forest workers and contributing to the UN Framework Convention on Climate Change and Convention on Biodiversity Conservation.

The Ukrainian State Committee of Forestry and its system of forestry enterprises fulfill the combined functions of control, administration and policy development with forest management and commercial activities. As a result, in 2006 the Cabinet of Ministers approved a concept for a gradual reform in this direction to separate these functions in the “Concept for the reform and development of forestry.”

b. Overview of Ecosystem and Recent Trends

Forests are geographically dispersed and found in each of the terrestrial ecosystems in Ukraine. The vast size of the country and the wide range of natural climatic conditions have created an uneven distribution of forests throughout Ukraine. The largest forest tracts are concentrated in the north, in Polesia (38 percent of the country's woodlands and 36 percent of wood stock) and in the Carpathian Mountains. Coniferous forests, including pine (*Pinus sylvestris* L.), spruce (*Picea abies* Karst.) and fir (*Abies alba* Mill.) occupy 42 percent of the forest-covered area. Hardwood species, mainly European oak (*Quercus robur* L.) and common beech (*Fagus sylvatica* L.), occupy 43 percent and almost 15 percent of the forest area consists of softwood broadleaves and shrubs.

General forest stock is estimated at 1.7 billion square meters, with mature forest stock accounting for 14.4 percent of the total. Average wood stock is 185 cubic meters/ha. The average increase in forest land of the State Forestry Committee of Ukraine is 4.0 cubic meters/hectare, varying from 5.0 cubic meters/hectare in the Carpathian Mountains to 2.5 cubic meters/hectare in the steppe zone.

Massive felling during World War II and subsequent intensive forest planting has led to a prevalence of middle-aged plantations. Forests aged up to 20 years comprise 31 percent of the total forest area, from 20 to 40 years represent 45 percent, from 40 to 60 years represent 13 percent and older than 60 years represent 11 percent. The average age of a Ukrainian forest is 51 years. Forests of artificial origin account for 40 percent of the entire forest area.

The age structure forest stands is follows: 32 percent young, 44 percent middle aged, 13 percent premature, and 11 percent mature. Artificial stands amount about 50 percent. Average growing stock on one hectare of forest-covered lands is 186 m³/ha, average change of stock is 3.8 m³/ha. Total growing stock exceeds 1.7 million m³. Ukraine has the seventh largest wood stock in Europe after Russia, Sweden, France, Germany, Poland and Finland.

The forestry sector is impacted by the transportation sector in many ways. The primary impacts are from emissions and the fragmentation of natural habitats. Transportation infrastructures fragment the natural habitats and potentially disrupt critical migratory routes, as well.

- **Ownership and utilization**

The bulk of Ukraine's forest reserves (99 percent) are national property. More than 50 state ministries and departments are forest users. The most important are the State Forestry Committee of Ukraine (66 percent) and the Ministry of Agro-Industry (26 percent).

Approximately 68 percent of the forest is managed by the State Committee of Forestry, 17 percent by the Ministry of Agrarian Policy and 7 percent by municipalities. The rest is managed by various authorities such as the Ministry of Defense and the Ministry of Transport and Communication. One percent consists of protected areas under the Ministry of Environmental Protection. According to the present policy, some forest land will be transferred from the Ministry of Agrarian Policy and municipalities to the State Forestry Committee. Forests will continue to be owned by the state or municipalities, but small forest plots, for example, those planted on unproductive or agricultural land as well as field protective belts, can be private.

Ukrainian forests are considered to have recreational and nature protective functions. The popular role as an exploited resource is limited. National parks, other conservancy territories and protected forests cover approximately 14 percent of forestlands managed by the State Committee of Forestry.

Ukraine has a long-standing tradition of non-wood forest use, mainly wild fruits and berries, mushrooms and medicinal herbs. However, the nuclear pollution caused by the Chernobyl disaster led to a dramatic fall in the volume of consumption of wild foodstuffs and medicinal herbs. In the period 1992–96, picking of wild fruits and berries decreased 5.7-fold (848 tons less per annum), mushrooms 4.2-fold (133 tons) and medicinal herbs two-fold (277 tons).

Hunting and tourism also constitute important forms of forest use. Ukraine has five million hectares of hunting territory, the bulk of which is controlled by the Ukrainian Society of Hunters and Fishermen (86.6 percent). The State Forestry Committee of Ukraine owns 9.9 percent of hunting land.

Ukrainian forests are divided in two groups. The first group mainly represents protected forests with restricted timber management and rotation ages much longer than in the commercial forests of the second group. More than half of Ukraine's forests or 55.8 percent are classified as 'first group' - comprising multi-purpose protective forests, sanitary-hygienic forests and forest reserves. In this group, only sanitary,

landscape and forestry fellings are permitted. Other forests, mainly for production, are classified as ‘second group forests’.

- **Logging (legal and illegal)**

The contribution of forestry to Ukraine's Gross National Product is not significant because of the relatively low percentage of forest land and shelter forests. For each forest enterprise, the allowable cut is calculated annually and the cut is based on forest inventory data and by tree species groups. The actual annual cut usually equals between 84 and 90 percent of the allowable volume of cutting.

After independence, commercial wood logging decreased from 1995 to 1997. Commercial logging has gradually increased, and in recent years amounted about 11–14 million m³ (Table 3 below).

Table 3. The volume of commercial wood logging in Ukraine, thousand m³

Year	Harvesting	Thinning and other types of felling	Total
1990	5,755	6,887.4	12,642.4
1995	4,574	5,147	9,721
1996	4,375	4,784.3	9,159.3
1997	4,146.6	4,761	8,907.6
1998	5,139	5,410.2	10,549.2
1999	4,880	5,429	10,309
2000	5,236.4	6,025.3	11,261.7
2001	5,507.3	6,514.9	12,022.2
2002	6,195.8	8,258.1	14,453.9

The share of forest production in the total production in Ukraine is less than one percent. After 1990, wood production in Ukrainian forests decreased because of general fall of purchasing capacity in internal market, however wood production export recently has increased.

Wood cutting is carried out in accordance with prevailing scientifically-based standards approved by the Ministry of Environmental Protection. However, the economic crisis led to a reduction in budgets for forestry financing and, as a consequence, deterioration of care of young trees. In recent years, the forest cutting fund has been under-used, primarily in those regions where cutting area operations are expensive due to complicated natural conditions. This was aggravated by a decline in demand for wood. Since 1990, the volume of main use has decreased 1.3-fold and interim use 2.1-fold.

Currently in 2006, about 13 million cubic meters of wood is cut in Ukraine each year, including thinning (45 percent), with round timber constituting 70 percent of this total. Each year, the enterprises of the State Forestry Committee of Ukraine cut and sell more than 7.6 million cubic meters of wood, including about five million cubic meters of industrial wood. Pine accounts for the largest proportion for industrial wood at 34.9 percent of the cut area per annum, fir represents 19.2 percent of the total, and oak represents 11 percent. Alder, beech and birch each account for 7 to 8 percent of the total.

Illegal logging in forested areas includes cutting of shelterbelts around agricultural land. Violations are investigated by the State Forestry Committee as well as local police. High unemployment and social problems, as well as poverty in rural areas, are major contributors to illegal logging.

Management and Conservation Efforts. State financing of forestry declined substantially after independence, but since 2000 the financing has stabilized and has even increased marginally. Consequently, the “Forests of Ukraine” program has not been fully funded to date.

Special attention is being devoted to the development of sustainable forestry in the Carpathians, where projects supported by donors are being implemented against the background of an intensive illegal logging and clearance of the mountain slopes. Consequences of drastic floods in 1998 and 2001 due to heavy precipitation are considered to be worse because of the tree clearance. Forest Stewardship Council (FSC) certification has been introduced in some forestry enterprises. Even though the volume of commercial logging has increased since 1997 from about eight million m³ to 14 million m³ in 2006, there is nevertheless a shortage of timber.

Box 1. Impact of Chernobyl

An important problem for Ukrainian forestry is the 3.5 million hectares of forest that were contaminated after the Chernobyl Nuclear Power Plant catastrophe. 157,000 hectares of forest have a high level of radioactive contamination by cesium-137 (above 15 Ki/square km). Therefore these forests are not exploited. 43.8 percent of the total contaminated territory is polluted by cesium-137 above 1 Ki/cubic km, and in these areas forest exploitation is limited.

The greatest territories of contaminated forest are situated in Zhytomyr (60 percent contaminated), Kyiv (52.2 percent), and Rivny (56.2 percent) Regions. In Volyn, Chernigiv, Cherkasy, Vinnitsa and Sumy Regions there are 20 percent of the total contaminated forests. For this reason, all raw materials and wood products are checked for radiation. In the State Committee of Forestry a Radiological Service was organized to control radiation in timber. It consists of eight radiation laboratories that focus on work in state forests situated in contaminated areas. The radiological service is equipped with modern dose and radiation measuring devices and all laboratories are certified.

c. Threats to Biodiversity

Based on the above analysis and updates, there are three major threats caused by human acts and a lack of, or inadequate, legislation and enforcement. Threats are presented in order of importance, with the most critical threats listed first.

- **Threat: Poor forestry management** (*lack of legislation, national policy*)

At the present time, more than 90 percent of wood in Ukraine is harvested by clear cutting methods, followed by artificial reforestation. Furthermore, much of the reforested area is planted in monocultures. This much-less-than-normal silviculture is prone to a greater threat of forest fire and opportunity of the attack from pest and disease.

The threat to biodiversity from poor forestry management can be reduced by the introduction of improved management practices such as the integrated forest management plans that comply with European Union standards. Further, the reorientation of the management of forests that are currently in protected areas to truly protect the forests will have a tremendous impact on the biodiversity of those protected areas.

- **Threat: Illegal harvest** (*due to human acts, lack of protection*)

The change of economic conditions for forest enterprises and increasing cost of forest products have influenced behavior of those involved in forest exploitation. Inflation and lack of employment opportunities for those in the rural communities have raised the role of forests as a source of fuel wood and non-wood products, mainly foodstuffs. At the same time, illegal cutting and poaching of forest resources have increased, both in national parks as well as in production forests. The activity has directly impacted forests, in general, and on the biodiversity inherent in these forests, in particular.

- **Threat: Lack of viable forest habitats** (*due to human acts, lack of protection*)

The intensive development of Ukrainian industry of the 1950s to the 1980s had a great negative impact on the environment of the forest habitats in important forest regions in the northern and central part of the country. Some of the negative impacts were pollution of the air and soils, low levels of subterranean

waters, the change of forest growing conditions, large-scale change in forest management caused by global climate change and radionuclide pollution by the accident at the Chernobyl Nuclear Power Plant. Even with the increase of forest land area in Ukraine, much of the habitat is currently not as suitable for tree growth as in the past.

3. Water and Aquatic Ecosystems (*Fisheries and Irrigation*)

Ukraine has several important aquatic systems; including rivers, wetlands, and seas. With a coastline that extends 1,629 kilometers along on the southern border, Ukraine claims a marine ecosystem that extends 12 nautical miles into the sea and covers an area of approximately 24,520 square kilometers. Four species of marine mammals occur in the seas: the monk seal (*Monachus monachus*), which is on the verge of extinction, and three species of dolphins, the bottlenose dolphin (*Tursiops truncatus ponticus*), the common dolphin (*Delphinus delphis ponticus*) and the harbor porpoise (*Phocaena phocaena relictā*). In the beginning of 1950s the Black Sea was home to about 1 million dolphins. Although hunting for dolphins has been banned since 1966 their population by the end of 1980s was less than 50,000 to 100,000 and their number continues to decline, mostly due to habitat loss and decline in prey species.

Approximately 200,000 kilometers of rivers in Ukraine drain into the Black Sea and Sea of Azov. Many of these rivers have been dammed for electricity, converted to fish ponds, or modified for irrigation. Wetlands cover approximately 5.3 percent of Ukraine; these include coastal marshes, peat bogs, river plains, and forest swamps. Of these, Black Sea wetlands and marshes are among Europe's most important habitats for migratory birds along with freshwater and marine fish.

a. Major Changes Since 2001

In the past five years, the Government of Ukraine has taken steps to improve the protection and management of its waterways. In addition to the establishment of wetlands of international importance under the Ramsar Convention and the Convention on Biological Diversity (Rio de Janeiro, 1992), since 2001 two major international legal documents have been approved to improve the protection of the Black Sea:

- **Ministerial Declaration on Protection of the Black Sea Ecosystem** (Varna, June 14, 2002) and **Black Sea Biological and Landscape Diversity Conservation Protocol** (Varna, June 14, 2002 signed by four coastal states) reinforces the regional cooperation for the protection and rehabilitation of biodiversity of the Black Sea.
- **Black Sea Environmental Programme** (1993-1996), **TACIS Black Sea Funds** (1995-2000), and **Black Sea Ecosystem Recovery Project** (2002-2004) provided international assistance for protection and rehabilitation of the Black Sea ecosystem including its biodiversity components and institutional capacity building.

b. Overview of Ecosystem and Recent Trends

The water systems in Ukraine can be divided into three classifications: marine systems; rivers; and wetlands/marsh areas. Though there are unique threats to each, the two systems are connected and share some of the same challenges.

i. Marine ecosystems: The Black Sea and Sea of Azov

The European Environmental Agency has detailed the Black Sea's diversity. The sea's biota reflects the geological processes that have influenced the ecosystem of the sea, and they include:

- **Pontian relics:** The most ancient inhabitants found in low salinity waters (Pontos in ancient Greek is an old name for the Black Sea).
- **Boreal-Atlantic relics:** Species originating from cold seas and living in deep zones.
- **Mediterranean species:** These constitute the most numerous elements in the Black Sea fauna, comprising up to 80 percent of the total fauna. Most prefer warm, saline waters, and are found in the upper layers of the sea.

- Freshwater species: Introduced by river discharges and usually found in the seawater during the maximum river run-off.
- Alien species: Established populations of alien species introduced by various routes. The number of species in the Black Sea is around one third of that in the Mediterranean. Despite recent changes in absolute numbers, the ratio remains close to three-to-one: 10,000 species in the Mediterranean versus 3,700 species in the Black Sea.

The Black Sea is a transboundary marine system. It is a virtually enclosed water body bordered by six countries: Bulgaria, Georgia, Romania, Russia, Turkey and Ukraine. Another transboundary marine system, the Sea of Azov, is bordered by Ukraine (including the Crimean Peninsula) and Russia. Once connected to the world's oceans and the Caspian Sea, these seas are geologic relics with endemic and endangered species. The large and diverse international shipping traffic brings many invasive species into these waters. Once known for their productive, warm-water fisheries, the Black Sea and Sea of Azov are today among the world's most polluted seas.

The Ukrainian coastal area represents the one of the most productive parts of the Black Sea. Termed the "northwestern marine shelf," this area is more oxygenated and shallow (<200 m) than the remaining three-quarters of the Black Sea; which are deep and permanently anoxic (without oxygen). The Rivers Danube, Dniester, and Dnieper drain into the northwestern marine shelf and bring with them nutrients and pollutants. The Azov Sea, fed by mainly by Don and Kuban Rivers in Russia has an area of 38,000 square kilometers with an average depth of only eight meters, and a maximum depth of 14 meters.

- **Water pollution and eutrophication in the Seas**

Today the Black Sea and Sea of Azov suffer from pollution problems. Draining river basins in 17 countries, they receive the wastes of 165 million people - mostly agricultural and industrial pollution from farms and factories. Over the last 25 years, the quantity of mineral fertilizers entering the Black Sea from river waters has increased ten-fold. However this nutrient pollution was greater in Soviet times and the collapse of the Soviet Union resulted in lower river pollution. Yet the Danube alone still adds 60,000 tons of phosphates and 340,000 tons of nitrates each year, mostly from agricultural activity.

Oil and hydrocarbon by-products represent an important pollutant from industry and shipping, in addition to toxic chemicals and heavy metals from industries, especially on the Dnieper River and around large ports such as Sevastopol. Soviet-era dam construction and hydrological modifications to serve agriculture and industry changed the chemistry and biology of aquatic resources and adversely affected biodiversity. For example, the decrease of freshwater input to the Black Sea increased salinity from 16-18 percent to 18-20 percent in 1990. Other impacts include increased amounts of nutrients, lowered oxygen concentrations, decreased plankton biomass, and reduced fish stocks.

Eutrophication and the related problems of low oxygen in the Black Sea represent the biggest threat to marine biodiversity. When high levels of nutrients such as nitrogen and phosphorus enter the Seas, algal biomass grows rapidly and the entire food web shifts. Moreover, the increase in algae is followed by a decrease in oxygen that can be lethal to many benthic organisms. Large inputs of nutrients from the Danube and other river basins first began to enter the Black Sea in the 1970s and caused serious eutrophication problems that peaked in the 1980s. This caused major changes in benthic communities and reduced or eliminated plant and shellfish (macrobenthos) species in affected areas.

Recent data (Borys Aleksandrov, 2006) show a decrease in the effects of eutrophication; however, this process has significantly affected the biodiversity of the Sea over the last 30 years. Important ecosystem changes have been measured such as the rise in primary production due to phytoplankton development of a few dominant species; the increase in the production of pelagic invertebrates, including zooplankton and jelly fish; decrease in water transparency attributed to plankton development; degradation of bottom

communities due to siltation, and hypoxia; and the loss of larger fish species. In the early 1980s, the northwestern shelf of the Black Sea was considered the largest hypertrophic area of the Mediterranean Sea basin and it suffered all these impacts to biodiversity.

In the 1990s two events led to the decrease in eutrophication and the restoration of earlier biodiversity. First, the rapid development of the voracious plankton-feeding alien combjelly *Mnemiopsis leidyi* (further discussed below); and second, the economic crisis Ukraine led to a decrease in agricultural fertilizers which contributed about 50 percent of the nutrient load. Most recent data show a decrease in nutrient concentration and fewer episodes of near bottom hypoxia (low oxygen). Moreover, many long-absent native species returned again to Ukrainian coastal waters, including *Pontellidae* copepods and the brown alga *Cystoseira barbata*. Recorded numbers of macrobenthic species increased from 20 to 53 species in 2004. Crab species also returned including *Pilumnus hirtellus*, *Carcinus aestuarii*, *Xantho poressa* along with the seahorse *Hippocampus ramulosus* and the sole *Solea nasuta*.

Other water pollution problems besides eutrophication have been noted in the Black Sea, most notably oil pollution around large ports such as Sevastopol. In addition, low levels of radioactivity (cesium 137) have been measured in some indicator organisms such as anchovy (*Engraulis ponticus*).

- **Utilization: Fisheries**

Coastal fishing has a long local tradition and represents one of the oldest professions around the Black Sea. It remains an important source of employment and income for the local population, as well as their most important source of protein. Over-exploitation has affected fish stocks. Commercial fishing in the Dnieper and Dniester estuaries has been significantly reduced. Some valuable and large fish species have disappeared since the 1970s, including mackerel (*Scomber scomber*), and bonito in the Black Sea and pike, perch, roach and bream in the Sea of Azov. These big fish have been replaced by smaller fish such as anchovy and sprat. Of the 26 commercial fish species found in the period 1960 to 1970, only five were left by 1980. However, fish stocks appear to be rebounding along with reductions in eutrophication and scientists now recognize about ten important commercial species in the fishery.

Until the early 1990s, anchovy was the principal commercial species caught, forming approximately 80 percent of the catch. In 1989–1991, anchovy biomass collapsed and brought down the entire Black Sea and Azov Sea catches. The crisis resulted from an intense impact on the food chain by an Atlantic intruder – the jellyfish (ctenophore) *Mnemiopsis leidyi* – as a food competitor of anchovy and other small pelagic fishes. The ctenophore had probably been introduced into the Black Sea with tanker ballast water; it was recorded for the first time in the Black Sea in 1982, and reached a peak in 1989–90. This invasive species continues to influence the ecosystem and scientists attributed the recent (2005 to 2006) reduction in eutrophication as a result of *Mnemiopsis leidyi* impacts on the food chain.

In 2003, Ukrainian catch in the Black Sea amounted to 45,000 tons of fish and sea products (approximate value USD 20 million), in the Azov Sea – 19,000 tons (approximate value USD 14 million). Major species in the Azov-Black Sea Basin were European sprat (*Sprattus sprattus*), Azov tyulka, (*Clupeonella cultriventris*), anchovy (*Engraulis encrasicolus*), pike-perch (*Stizostedion lucioperca*), grey mullet (Mugilidae), brill (*Psetta maxima*), mussels, and clams. Whiting (*Merlangus merlangus*) and dogfish (*Squalus acanthias*) are fished as by-catch with sprat.

Table 4. Status of stocks of key Black Sea fisheries

	<i>State of stock</i>	<i>Fisheries management measures</i>
Sprat	High	Could allow moderate expansion of catches
Whiting	High	Could allow moderate expansion of catches
Anchovy	Stock recovery restricted by uncontrolled exploitation	Negotiate internationally and introduce catch limits
Horse mackerel	Some recovery	Allow only accidental catches
Turbot	Stocks declining seriously	Essential to decide on national fishing zones
Spiny dogfish	Slow decline	Fishing not to exceed current levels
Giant sturgeon	Endangered	Adopt strict national measures to reduce poaching
Other sturgeon	Depleted	Place fisheries for sturgeons under strict international law

Adapted from: www.fao.org/fil/publ/circular

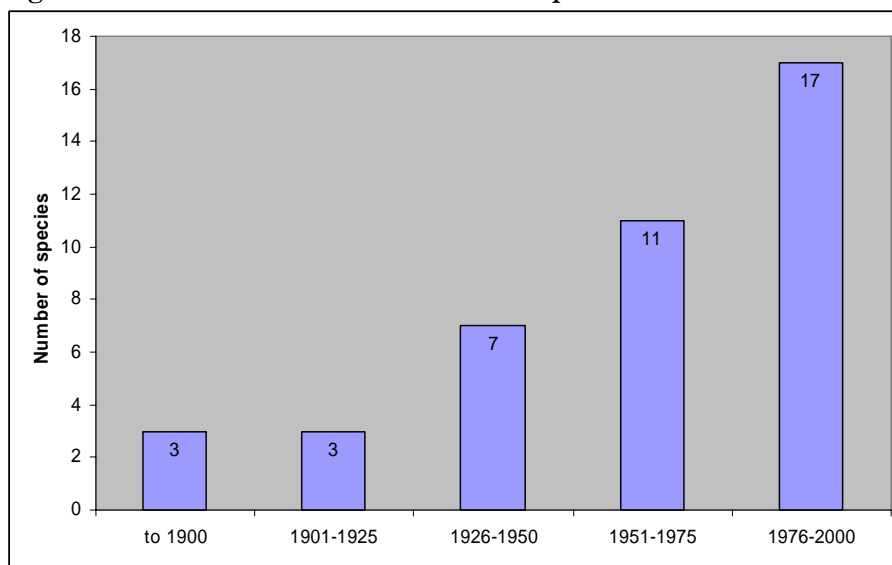
Small trawlers and purse seiners account for about 90 percent of the fishery catch. The remaining ten percent comes from local artisanal fishermen using traps, gill nets, and longlines from small boats. Until a ban in 2000, sturgeon were the most important commercial species for small fishermen, but today the main catch focuses on grey mullet. Other important coastal species include small fish such as European anchovy, tyulka, flatfishes, silversides, and Pacific mullet (*Mugil soiny*).

Native sturgeon species have been largely replaced by hatchery fish. Fish farmers artificially grow sturgeon species in coastal net cages and Important hatchery species include: stellate sturgeon (*Acipenser stellatus*), white sturgeon (*A. gueldenstaedti*), (*Acipenser ruthenus*), bester (a hybrid of beluga and Siberian sterlet, and Danube trout (*Huso huso*). The annual sturgeon harvest was about 1000 tons in the 1980s about the same level as the in the 1930s, but 90 percent of the catch were hatchery fish. Bans on sturgeon harvest went into effect in 2000.

At the end of 1960s YugNIRO started developing mariculture on the Black Sea shelf and introduced methods to breed commercial amounts of mussels, mullets, turbot, flounder, striped bass (*Morone saxatilis*), and steelhead trout (*Oncorhynchus mykiss*). Small coastal co-operatives continue to commercially farm shellfish such as Mediterranean mussels on the Black Sea shelf and scientists have worked to develop aquaculture for the Pacific oyster (*Crossostrea gigas*).

There are estimated to be 41 introduced alien species in Ukraine, 34 percent of which have been imported for aquaculture and 66 percent have entered the Black Sea as pelagic larvae in ballast waters and/or fouling organisms on ship hulls. The number of introduced species continues to increase, as shown in Figure 3 (below). About one fifth of these (eight species) have invaded the Black Sea during the past decade, all through ballast waters, due to insufficient measures to control such introductions. Most of the newcomers are fish imported for fish farming. The Far-Eastern haarder *Mugil soiny* and the carp *Oryzias latipes* were introduced accidentally to the Black Sea after escaping from fish farms, which increased the total fish fauna in the Black Sea to 171 species in 2005.

Figure 1. Trend in the introduction of alien species into the Black Sea



Source: Compiled by ETC/MCE

Management and Conservation. There have been several efforts to better manage the fisheries resource in Ukraine. These include regional efforts, catch quotas, and licensing.

Regional fishery cooperation in the Seas. Under Ukrainian law, biological resources and the sea bed within the territorial waters are the property of the State; the biological resources in the EEZ and the sea bed are under the jurisdiction of the State; and marine areas and the sea bed cannot be assigned as private property. The bulk of Ukrainian catch in the Black Sea originates from territorial waters and the EEZ. In the Sea of Azov, Ukrainian fishermen have the right to fish over all the sea area in accordance with an agreement with the Russian Federation, but, in 2002, Ukraine unilaterally limited the area permitted for Ukrainian fishing activities to the country's own waters following establishment of a presumed marine border with the Russian Federation. Ukrainian fishermen seasonally fish anchovy (*Engraulis encrasicolus*) in the waters of Georgia on the basis of a bilateral agreement. In the Sea of Azov, Ukraine operates on the basis of an agreement with the Russian Federation.

Fishery management in the Seas. From 2000 to 2001, the catch quota for fisheries in the Black and Azov Seas was allocated to some 200 fisheries companies, cooperatives, fish canneries and private persons. About 20,000 people were involved in fisheries on a temporary or permanent basis. Starting from 2002, a fisheries license system was introduced. The legislative basis for fishing is the Fisheries Regulation (“Rules of Fisheries”). Control and surveillance for Fisheries Regulations compliance are carried out by the Regional State Inspectorates of Fish Protection, integrated into the Chief Administration for the Protection and Reproduction of Water Living Resources “Holovrybvod.”

In 2003, about 800 fishing joint-stock companies, co-operatives, canneries, physical persons who obtained quotas were engaged in fishing in the Black and the Azov Seas (including about 60 fishing co-operatives). About 20,000 people were permanently or temporarily employed.

Starting with 2002, commercial fishing requires a license issued by the State Department for Fisheries (Ukrgosrybhoz) on the basis of reliable scientific data provided by the national fishery research centre of Ukraine – Southern Scientific Research institute of Marine Fisheries and Oceanography (YugNIRO) in Kerch. According to the applications from licensed fishermen, Ukrgosrybhoz distributes quotas on commercial species. Amounts of the quotas are proportionate to the declared fishing effort; quotas are subject to a small payment. Fishing is carried out under a special document – Permission issued by the

Central Administration for Protection and Reproduction of Living Water Resources and Fishing Management (Glavrybvod) according to the given quota and the legislation of the country. Fishery protection bodies control the location of fishing vessels and observance of fishing rules.

ii. Rivers

According to 2003 data, there are 63,200 rivers in Ukraine extending 206,400 kilometers. The vast majority (98 percent) of these rivers drain into the Black Sea. Due to their large size, three of these rivers are of particular importance to coastal and wetland aquatic ecosystems; including.

- **Danube:** The second largest river in the Mediterranean/Black Sea basin after the Nile; but only a small part of it flows through Ukraine along the Romanian border as it enters the Sea.
- **Dniester:** With a watershed of 72,100 square kilometers, it extends 1,352 km in Ukraine and contributes 8.7 cubic kilometers into the Black Sea each year. It drains large agricultural fields in Moldova and Ukraine and forms the boundary of the break-away Republic of Trans-Nistria on the Moldova-Ukraine border.
- **Dnipro (Dnieper):** The largest watershed in Ukraine, the Dnieper flows 981 kilometers in Ukraine and reaches extends into Belarus and Russia. Largely dammed, drained, and channeled, the river still provides water resources to 32 million Ukrainians and two thirds of the economy.
- **Southern Bug:** Smaller, but important river draining central Ukraine.

Large scale hydrological modifications, primarily for hydroelectric power and agricultural irrigation, have altered natural river and riparian habitats. For example, on the Dnieper River, six major dams covered over 600,000 hectares with newly created lake reservoirs with 3,000 kilometers of shoreline. Scientists estimate that almost one third of reservoir shorelines are subject to intensive bank abrasion and erosion with subsequent high rates of siltation and creation of shallow areas. With excess nutrient and chemical loads, these reservoirs often become eutrophic systems with nuisance algal blooms, low oxygen levels, high concentrations of toxic chemicals, and frequent fish kills.

According to 1998 State of Environment, river pollution from heavy metals remained high in almost all river basins, especially the Danube, Dniester, Southern Bug, Dnieper, Siverskyi and Donets rivers. These rivers also contain high concentrations of nitrogen, oil products, and phenols. The highest counts of pollution violations were recorded in: the Dnieper (240); Siverskyi Donets (205), the Dniester (65), Azov area rivers (64), Western Bug (48), the Danube (38), and Southern Bug (30). The impact of the industrial sector on the quality of river water is significant. According to the draft 2006 UNECE EPR, water discharges from industrial and household uses into the Ukrainian rivers decrease during the past seven years, industrial processes still result in high levels of wastewater discharges. The highest volumes of wastewater discharges in 2004 were from metallurgy, followed by the coal industry and the chemical and petrochemical subsections.

• Utilization: Freshwater Aquaculture in the Rivers

Ukraine has Europe's largest system of artificial reservoirs consisting of 2,780 fresh-water ponds with a total area of more than 2,230 km², including 530 km² of special rearing ponds including 135 km² situated in the numerous cooling reservoirs of hydroelectric power stations. These pond farms were built in 1960-1980s primarily for breeding carp over an intensive two-year period. In 1980s the pond farms of the republic produced 120,000-140,000 tons of commercial fish a year. However, due to the economic crisis, in 2003 only about 35,000 tons of commercial fish were produced by aquaculture (about USD 21 million). About 25,000 people are engaged in aquaculture. Ponds built for aquaculture can damage natural habitats and fish introduced for farming can become invasive species with adverse impacts.

Today aquaculture is represented by 13 regional fish farming complexes and 118 fish farming joint-stock companies, private enterprises, farms and fish hatcheries. Many of these companies are members of Ukrribhoz Fishery Association and produce commercial fish and fries for stocking both ponds and

reservoirs of federal importance. Eight to 10 public, joint-stock and private companies from the cities of Sevastopol, Odessa and Kerch are fishing in the open oceans.

Major fresh-water cultured species are common carp, silver carp (*Hypophthalmichthys molitrix*) and bighead carp (*Hypophthalmichthys nobilis*). Fresh-water aquaculture is very important for supplying the domestic market with high-quality fish products which are mostly sold live or fresh (chilled).

At present pond farms operate at only 20-25 percent of their full potential realized in the 1980s. Returning to their full capacity would require re-stocking and extensive repair. By 2004 almost all pond farms in Ukraine had been privatized; private and co-operative fish farming is developing. However, the level of investments is low; the share of private capital invested in fish farming is lower than ten percent of the value of capital assets. The crisis in economy during the transition period caused a significant increase in prices for energy resources, fish meal and micro additives, which brought to a drop in demand and decrease in the production of fish feeds together with a decrease in their use in aquaculture. In 2001 only 20 percent of specialized rearing ponds were technically suitable for intensive fish farming. In these conditions most farmers develop polyculture using extensive technology and raise the share of herbivorous species to 70-80 percent. Many pond farms combine traditional species – common carp and herbivorous fishes with pike-perch, European catfish, pike, tench and crucian carp. Many farmers in the south of the country grow Pacific mullet.

Attempts are made to farm new species like buffalofishes (*Ictiobus spp.*), channel catfish (*Ictalurus punctatus*) and brown bullhead (*Ameiurus nebulosus*), tilapia (*Tilapia spp.*), black carp (*Mylopharyngodon piceus*) as well as high-priced species like rainbow trout (*Oncorhynchus sp.*), giant river prawn (*Macrobrachium rosenbergii*), and crayfish (*Astacus spp.*). Experiments are made to culture Mississippi paddlefish (*Polyodon spathula*) and a fresh-water clam ampullaria (*Ampullaria glauca*) using warm waste water of hydraulic power stations. Farmers are working on culturing new, ecologically strong carp breeds by hybridization of Ukrainian carp with Eastern carp, which will allow switching to a 3-year farming cycle. Some farmers, who own artificial ponds close to big cities, stock them with several fish species, feed the fish intensively, and use the ponds for amateur and sports fishing on a commercial basis.

iii. Wetlands and Marshes along the Rivers

Ukrainian wetlands include reed marshes, forest-dominated river plains, inland lakes and lagoons, limans, deltas, sea lagoons and bays, silt or sand shells, and artificial bodies of water such as fish-breeding ponds, rice paddies, and salt collecting areas. By Ukrainian definitions, there are eight coastal bays with a total of 1,770 square kilometers and 14 estuaries and limans covering 1,952 square kilometers. These are distinguished based on salinity and flow patterns.

The wetlands along the Black Sea maintain critical ecological processes to support the rich flora and fauna of the region. These unique networks of marine, riverine, and steppe environments serve as critical habitat for millions of migratory waterbirds in the East African and Mediterranean flyways and play a key policy role in the African-Eurasian Waterbird Agreement (AEWA, under the Bonn Convention). These lowland rivers and coastal wetlands also provide essential spawning, rearing, and migration habitats for many fish species. Moreover, the Black Sea coastal wetlands serve as natural filters trapping pollutants and sediments from the river basins. Ukrainian wetlands include 15 current Ramsar sites and four proposed ones.

Scientists estimate that Black Sea coastal wetlands provide refuge for 25 million migrating waterfowl every year. There are about 160,000 pairs of nesting waterfowl and 480,000 individual wintering birds in the Black Sea wetlands. Most of the significant habitats are situated in the coastal area of the Danube Delta, and the Ukrainian coast from the Danube Delta to the Tamansky Peninsula in the Kerch Strait. More than 75 percent of the Black Sea birds concentrate here, and one third of their number inhabit the Danube Delta. There are 320 bird species in the Danube Delta including the pygmy cormorant *Phalacrocorax pygmeus*; the red-breasted goose *Branta ruficollis*; the white pelican *Pelecanus onocrotalus*; the Dalmatian pelican *Pelecanus*

crispus, and the white-tailed eagle *Haliaeetus albicilla*. The region's sea birds include gulls (*Larus*) and terns (*Sterna*). During migration season, the bird fauna includes numerous species of sandpipers and ducks.

c. Threats to Biodiversity

After comprehensive review of the water ecosystems in Ukraine and the recent trends since 2001, five threats were identified that are due to human impacts and lack of protection.

- **Threat: Changes to hydrological regime** (*due to human impacts, lack of protection*)
Drainage, irrigation schemes, and water diversions have affected wetland habitats. Modified freshwater inputs into coastal systems, and resulting changes in salinity, have changed entire ecosystems with subsequent impacts on flora and fauna. Many hydrological modifications are legacies of earlier large-scale, Soviet agricultural development projects. With the collapse of collective farms and government subsidies, and increases in water and energy costs, these irrigation systems often lie in disrepair or do not function at all. As future planners re-develop or abandon these systems, they should conduct careful environmental impact assessments on impacts to wetland and aquatic systems.
- **Threat: Agricultural pollution** (*due to human acts, lack of protection*)
Most of the nitrates fueling eutrophication come from non-point source agricultural activities. In addition, persistent organic pollutants (POPs) enter rivers and streams as farm runoff from pesticides and other agro-chemicals. Agricultural pollution represents about 50 percent of the pollutant load and has been the biggest problem. By affecting water quality, these pollutants reduce habitats and weaken important native populations. To address non-point source pollution problems, officials should enforce and landowners should respect the Land Code. It clearly specifies buffer zones and protection status to riverside and coastal areas.
- **Threat: Loss of wetlands and riparian habitat** (*due to human acts, lack of protection*)
Aggressive coastal development combined with poor enforcement of Land and Water Laws result in significant habitat loss in coastal and river areas. Wetland loss associated with filling and draining activities adversely affect bird and fish communities.
- **Threat: Unsustainable fishing practices and poaching** (*due to human acts*)
Poor fishery management presents a threat to fish stocks. Some important trans-boundary species have no effective fishery management plans. Lack of enforcement by state authorities enables poaching and illegal fishing. Some fishery practices, such as bottom trawling in important benthic habitats, cause lasting damage to fishery resources.
- **Threat: Invasive species** (*due to human acts, ecological causes, lack of protection*)
Discharged ship ballast water represents a serious source of invasive species that can have dramatic impacts on the marine ecosystem. Escaped fish from freshwater and coastal aquaculture introduce another significant source of invasive species.

4. Public Awareness and Socio-Economic Issues

The general awareness of the public on issues related to biodiversity is difficult to measure. Suffice to say that the recent economic pressures on the public, in general, and the rural inhabitants of Ukraine, in particular, represent a threat to biodiversity. Further, well-intentioned NGOs have been encouraged to be creative in order to have the financial resources to impact on the need to increase the public's awareness of issues related to biodiversity.

a. Major Changes Since 2001

USAID/Ukraine has strategically provided funding in support of environmental NGOs. In particular, support was given to Ednannia, an initiative center to support social action in coordination with ISAR, an American NGO. Ednannia provides grant making and technical assistance for NGOs, technical assistance, and coordination services to strengthen civil society and improve the quality of life in Ukraine.

During FY 2004, the USAID/Regional Mission for Ukraine, Moldova and Belarus funded the NGO EcoPravo-Kyiv to review the access to environmental information, participation in decision-making and justice in Ukraine. The review concluded that public access to information on environmental emergencies is limited; dissemination via the Internet is lacking; and environmental NGOs generally lack support from the government and so they search out funding from international organizations. The Team experienced these same challenges in their search for environmental information from official sources.

Socio-economic issues directly impact on biodiversity in Ukraine. Approximately 29 percent of the population falls below the poverty line, according to published 2003 estimates. The rural poor can have an adverse affect on biodiversity, as noted by the fish poaching in the Black Sea and illegal logging in the Carpathians. The concern of the poor for biodiversity likely does not override the need to feed one's family or have sufficient wood to keep the house warm. This highlights the importance that USAID's economic growth program can play. Continued progress in the area of economic growth (mirroring "poverty reduction" as an important theme of the Millennium Development Goals) can minimize the impact that poverty can have on the biological resources.

The individuals at the other end of the economic scale also impact the biodiversity of the country. Those with sufficient means can buy their way to build, buy, hunt, log or fish anywhere they wish, to the extent they desire – irrespective of environmental policy, legislation or regulations. In comparison to those in poverty, the negative footprint of the rich could be considered greater and longer lasting.

b. Overview of Sector and Recent Trends

The Team visited an NGO on the Khorytsya Island in the Dnipro River across from the industrial city of Zaporizhyya. Much of the island is a nature reserve with many historical sites ranging from pre-historic times to the period of Catherine the Great when approximately 20,000 Cossacks were gathered on the island to WWII when the Nazis shelled the city from the island. The NGO is attempting to return the cultivated steppe lands of the island to native habitat which is important for several reasons, most importantly the fact that the wetlands of the island are important stops for the European bird migration. At the same time, the NGO wishes to enhance the availability of the island's cultural sites to the public.

The Ministry of Culture provides a basic level of support to these activities; however, the NGO did not have sufficient funding for their desired public awareness programs, among others. The NGO partially solved the problem by turning to the private sector. The Khorytsya Vodka Company provided trucks and workers for the NGO to conduct a cleanup campaign on the nature reserve part of the island. Also, the NGO has selectively gone to some of the non-polluting industries of Zaporizhyya for financial support, as well.

NGOs are also actively improving the public awareness of the general public to biodiversity issues. In particular, the after school program visited by the Team in Zaporizhyya appeared to be a model in the training of high school age students to nature and biodiversity. This program has limited funding and relies heavily on volunteer technical experts. The program receives financial assistance from the Ministry of Education to promote "Young Naturalists" activities in the classroom as well as outdoors in nature. Successfully preparing the school aged children to understand and value nature will directly support an improvement in general awareness of biodiversity, as well.

c. Threats to Biodiversity

The Team identified three major threats to biodiversity in the sector of public awareness and socio-economic issues. These threats are due to a lack of knowledge, lack of legislation and national policy, a lack of protection, and human acts. The threats below are listed in order of importance, with the most critical threats listed first.

- **Threat: Lack of public awareness** (*lack of knowledge*)

The fledgling attempt to develop an agricultural extension service loosely copied after the county extension service of the US may, in part, help address the lack of awareness. In previous times, the technical information for agricultural production and forest management came from well-trained technical experts. With privatization, new sources of information have become available for the private farmers and foresters. This information comes from the abundant private sector publications, such as magazines. Unfortunately, much of this information is published by the same businesses that are selling the agricultural or forestry products. Consequently, the information may be biased toward an undiscerning reader without the technical capacity to differentiate between good, solid technical information and biased information.

- **Threat: Land privatization** (*lack of legislation, national policy, lack of protection*)

The dire economic situation in the rural areas of Ukraine have resulted in negative impacts on biodiversity in the form of illegal harvesting of timber for cheap and accessible fuel wood, fish and non-timber forest products. Further, even if the poor rural population wished to improve their lot with improved inputs, they generally would not be able to afford them.

The land privatization process has not, in all cases, been an open and transparent process. As a result, there have been occasions when lands have been opened to timber harvesting that had been otherwise set aside and protected. In other cases, environmental impact assessments have been conducted without the inclusion of the public participation and decision-making included in the process.

- **Threat: Non-sustainable tourism and recreation** (*lack of protection, human acts*)

While many Ukrainians enjoy the opportunity to “walk into nature” much of this recreational exposure to nature negatively impacts on the biodiversity base. While visiting natural areas, the amount of waste in the form of plastic, discarded bottles, and other waste belied the belief of the public that were causing no harm to nature, much less to the biodiversity base.

5. Governance Issues

Good governance and weak application of the law are major obstacles to the conservation of biodiversity in Ukraine. Without strong institutions and proper enforcement of policies and regulations, Ukraine’s natural resources are in danger of continued damage and depletion.

a. Major Changes Since 2001

The challenges of good governance and lack of enforcement of policies and laws have continued since the 2001 report. The failure to apply good governance practices can have international consequences, as clearly evidenced in the implementation of a major biodiversity conservation project that was recently halted and resulted in the early termination of the project. The World Bank funded-GEF had initiated a project to conserve coastal biodiversity within the Azov-Black Sea coastal corridor. During implementation, there were delays in providing counterpart funds. The host ministries were thought to not provide sufficient leadership, lacked interagency coordination, and generally had not taken governmental ownership for the project. More serious rule of law issues were suspected and the project was terminated in 2006. The termination had serious consequences on biodiversity activities of the area. Because the project did not meet its goals, the intended benefits to the conservation of coastal biodiversity were not achieved. Also, the management unit

for the project was located at the facility of the Southern Ukraine ornithological efforts. Continued contributions to the monitoring of the European Bird Migration will be impacted, as well.

b. Overview of Sector and Recent Trends

In Ukraine, laws, rules, regulations, and policies exist to protect the country's biodiversity base. The enforcement of these tools has been selective, at best. One example of these laws is the laws that have been developed to stabilize the coastlines and assure an acceptable environment in the wetlands. Such laws and regulations delineate how close to the coast one can build a house, the kinds of economic activity that can be conducted in a watershed near a wetlands, and the need for a vegetative barrier surrounding the perimeter of a wetland. The Team observed many cases where these laws and regulations have not been enforced or have easily been avoided.

The weak application of the rule of law is also demonstrated by illegal harvesting of timber, illegal fishing practices, and poaching. While fully understood as an act in spite of legislation or regulation, such action has direct impact on the biodiversity. The Team observed private hunting facilities constructed within the protected wetlands at the Sea of Azov. These facilities were clearly permanent and against the law.

Corruption has impacted the biodiversity of Ukraine as well. Inspectors of the Ministry of Environmental Protection are responsible for the permit process prior to construct a building on a particular location. The permitting process lends itself to corruption demonstrated as a person being able to build without a permit or a permit issued for a construction that would clearly be unacceptable due to its impact on the environment, in general, and the biodiversity, in particular.

c. Threats to Biodiversity

There are three major threats to biodiversity in the sector of governance. These threats are vivid examples of how the lack of enforced legislation, lack of knowledge, and human acts can have an adverse impact on Ukraine's natural resources. Threats are listed in order of importance.

- **Threat: Weak application of rule of law and corrupt dealings** (*lack of enforced legislation, human acts*)
In practice, the enforcement of the country's laws of environmental protection is not always followed. In many cases, the Team documented occasions where the lack of enforcement has resulted in the opposite of protection of the biodiversity. One example was relatively common instances of illegal fishing using unlawful nets, poaching, and illegal harvesting of timber from protected areas. Much of these activities were directly related to a weak application of rule of law.

Much of the decision-making related to natural resource management and its direct impact on the biodiversity stems from government practices that are not open, transparent, nor accountable. The individual action may not appear to be significant; however, in sum the impact on the natural resource base can be considerable. The example of a GEF project that was terminated by the donor demonstrates the case.

- **Threat: Weak public participation in the political process** (*lack of knowledge*)
Civil society continues to develop in Ukraine. In regard to the environmental sector, the environmental NGO community has two major issues. First, the NGOs are financially strapped and find it difficult to maintain an active program as their membership may desire. Second, the NGOs receive funding from the government ministries and find it difficult to speak out against the concerns they have. Obviously, concerns that are a result of the governmental action or inaction may be compromised or minimized in order to maintain their level of funding.

6. Protected Area Issues

The amount of land under the category of protected lands in Ukraine is slowly increasing. Legislation defines the categories of land protection, ownership and the authorities responsible for the enforcement of the legislation. However, environmental protection continues to be ineffective due to inadequate financing, lack of trained personnel and equipment, and the weakness of the state organizations in charge of land protection activities.

a. Major Changes Since 2001

In 2005, approximately 4.5 percent of the territory of Ukraine was under the category of protected lands, an increase of approximately 0.2 percent from 2001.

Since 2001, progress has been made towards the realization of the National Ecological Network (NEN) of Ukraine. In a country such as Ukraine where agriculture is so dominant, the establishment of the network is an important step for the protection of biodiversity as well as landscapes. The proposed NEN will establish corridors between protected areas. However, the NEN was not considered during land privatization and many lands were allocated to private owners, including tracks of land now proposed for protection or restriction status under the NEN. As a result, a process to buy or acquire the lands needed to develop the protected green corridors on agricultural land in the NEN has been recommended.

b. Overview of Sector and Recent Trends

Management of protected areas is broadly shared among many government entities. For example, the Ministry of Environmental Protection, the State Committee of Forestry, the Ministry of Agrarian Policy, the Ministry of Defense, the Ministry of Transport and Communication, and municipalities, as well as the State Committee on Land Resources have certain management responsibilities of the protected areas.

A positive trend has been the relatively recent passage of legislation in favor of protected areas. The Law on Land Protection of 2003, the Law on Land Use Arrangements of 2003, and the Law on State Control of Use and Protection of Land of 2003 include provisions to restrict improper use of land, but resources for ensuring their application are limited. According to Millennium Development Goals and national plans, Ukraine intends to expand the network of protected areas to 10.4 percent of the overall territory.

c. Threat to Biodiversity (lack of protection)

- Although the area under protected lands has increased by 74 percent since 1993, the current level of 4.5 percent continues to be inadequate to maintain or improve upon the biodiversity base. The low percentage of protected lands is compounded by an uneven distribution across the country as well as across landscape types. Due to poor management and weak enforcement, existing areas are often referred to as “paper parks”.

SECTION III: ACTIONS TAKEN BY THE GOVERNMENT, DONORS, AND NGO COMMUNITY

The Government of Ukraine has taken a considerable number of actions to conserve its biodiversity, though the outcomes of these actions have been modest. Since 2001, the country increased the number and coverage of protected areas. It adapted new legislation to develop a “National Ecological Network” that integrates biodiversity conservation into sector development policies - especially for agriculture, forestry, hunting, and water management. At the legislative level, the Parliament approved new codes for land, water, and forestry management. To harmonize policy and legal mandates with international standards, especially the European Union, Ukraine signed multi-lateral agreements such as the European Neighborhood Action Plan and bi-lateral agreements to manage cross-boundary protected areas with neighboring Poland, Romania, Belarus, and Slovakia. Environmental NGOs remain strong and committed in Ukraine and continue to make important contributions, based mainly on the funds of international donors.

However, these changes have not brought about the expected environmental improvements. Several factors contributed to the slow progress in biodiversity conservation and environmental protection. First, economic growth has been the primary goal of the Government. The “growth at any cost” attitude at national and local levels has resulted in weakened environmental institutions and laws. Second, the frequent reorganizations at the Ministry of Environment, along with shifting mandates, has slowed implementation of good policies and laws enacted in the late 1990s. Finally, a lack of public awareness regarding environmental issues, especially among the agricultural community, results in insufficient political will to enforce laws and promote private land stewardship.

The previous section was dedicated to updating the status of the natural ecosystems of Ukraine and the current and potential threats to these systems. In this section, an update is presented of the actions taken by the key stakeholders of the country to conserve the country’s biodiversity.

It identifies progress and setbacks in setting aside protected areas and integrating biodiversity conservation in relevant economic sectors. This section also reviews relevant policies, laws, institutions, and international agreements and evaluates their effectiveness in meeting conservation goals. The discussion that follows covers three main topic areas:

- Policy, Law and Civil Society
- Protected Areas and Landscape
- International Agreements, Commitments and Donors

A. Policy, Law and Civil Society

Since 2001, the Government of Ukraine has developed and approved new policies to protect the environment and to manage natural resources. However, institutional reorganizations combined with the lack of political will and commitment to reform has slowed the implementation of effective policy and legal framework. As a result, the current economic expansion most likely will result in higher pollution levels and increased loss of critical habitats.

1. Policy Framework

Several trends have shaped the current and evolving policy framework. First, several important domestic policies determine priorities and set directions to protect the environment and to integrate environmental concerns into economic reforms. Second, key international treaties and conventions bind Ukraine to meet international standards and protocols, especially related to joining the European Union. This section reviews the domestic policy framework. Section III.C describes key policy elements in the international policy framework.

In 2006, the key domestic policy document remains as titled “Main Directions of the National Policy of Ukraine for the Environmental Protection,” or “Main Directions.” Initially proclaimed in 1998, Main Directions is also referred to as the National Environmental Action Plan, or NEAP. Despite pressure from environmental groups and authorities, the Government has not published a revised NEAP and the current one does not contain explicit qualitative and quantitative targets, expected in comparable international policies. Nevertheless, several regional and local communities have developed strategic documents to guide their own environmental activities, including the City of Mariupol, regional programs for the Donetsk area, Crimea, and others. These Local Environmental Action Plans (or LEAPs) offer a good opportunity for public participation in environmental decision making.

The Government of Ukraine has adopted two other planning documents over the past five years. These included the 2004–2015 Strategy for Economic and Social Development of Ukraine (known as “On the Way to European Integration”) of 2004 and the Action Programme of the Cabinet Ministers known as “Towards People” of 2005. These two documents gave individual ministries procedures to develop better tools to develop actions on environmental issues that they considered high-priority. Under this authority, the Ministry of Environmental Protection prepares key priorities each year.

The Government’s main priorities in the field of environmental protection in 2006 follow:

- Creating the legislative base for implementation of the UNFCCC requirements and efficient implementation of the Kyoto Protocol mechanisms;
- Improving the environmental situation of the Black Sea and the Sea of Azov and preventing their pollution;
- Preserving biodiversity and landscape diversity;
- Improving waste management taking into account international standards and norms;
- Improving the management of nature reserves and protected territories based on a systemic accounting for environmental, economic, social and other interests of the society, and international commitments;
- Ensuring state ownership of natural resources.

Source: Resolution of the Board of the Ministry of Environmental Protection, April 2006

In 2002, performance-oriented budgeting was introduced into the process of developing and managing the state programs. Since then, their preparation and reporting have followed comprehensive appraisal and approval procedures which involve reporting on progress using a number of qualitative and quantitative indicators. Even though such procedures exist, the programs suffer from under-funding, as limited funds are spread across several expenditure items. A lack of in-depth assessment of their efficiency and effectiveness leads to continued allocation of funds to ongoing programs rather than to those which are most necessary or cost-effective. Moreover, the programs’ short-term perspective and lack of impact evaluation make them unsuitable for providing strategic guidance for improving the state of the environment.

The State Programme for the Creation of a National Ecological Network in Ukraine for 2000–2015 was developed in 2000. To implement this program, the Law on Ecological Network (2004) was adopted and the Concept (Outline) of the State Programme on Biodiversity Conservation for 2005–2025 and the Concept (Outline) of the State Programme on Developing Nature Protected Areas were developed in 2004 and 2006 respectively.

Additional policy documents have been prepared to meet commitments for international treaties and conventions. These include laws passed to design and implement the National Ecological Network, which is based on the Pan-European Biological and Landscape Diversity Strategy as described above.

Similarly, in the context of the implementation of the program to protect the environment of the Black Sea and Sea of Azov (2001), a draft of the Law on Sea Coastal Zones has been developed and an

interdepartmental commission and a special unit at the Ministry of Environmental Protection was created to coordinate the program's implementation. This draft law envisions integrated coastal zones management. Also, a program on toxic waste management has led to the adoption of basic principles for the state system for waste as secondary raw materials, revision of Ukraine's Law on Waste in 2002 and the introduction of the provisions of the Basel Convention into Ukraine's legislative framework.

The Ministry of Environmental Protection (MEP) is the main governmental body for all environmental protection issues, including biodiversity conservation. The MEP works in coordination with various institutes, academic institutions and non-governmental organizations. As such, the Ministry is responsible for environmental management and implementation of national environmental management policy in all sectors of the economy including industry, transport, and energy, among others.

In general, the progress toward meeting strategic goals and important policy changes since 2001 has been limited. The lack of progress can be attributed to several reasons, including:

- Limited funds for priority items
- Lack of strategic prioritization of existing funds
- Lack of continuity toward meeting strategic goals due to the number of reorganizations of the Ministries responsible for environmental efforts.

2. Legislative Framework

The Ukrainian regulatory framework for environmental protection is very comprehensive. According to the draft 2006 UNECE report, in 2005, the environmental legislation comprised over 200 laws and by-laws. A significant number of laws, President's orders and Government acts were adopted in the period since the previous Biodiversity Assessment in 2001. Currently, the number of national level laws enacted is lower than the 1990s. Current legislation emphasizes lower-level regulations, government decisions, and methodological and procedural documents that aim to provide further guidance for implementation. Some examples include:

- The Law on Animals (2001)
- A new edition of the Law on Air Protection (2001)
- Laws on the Red Book of Ukraine (2002)
- Drinking Water and the Drinking Water Supply (2002)
- State Control of the Use and Protection of Land (2003)
- Land Protection (2003)
- Environmental Audits (2004)
- The Network of Nature-Protected Areas (2004)

Many of these laws update and focus core legislation to establish and regulate protected areas, including: "On Protected Areas in Ukraine," "On Animal Wildlife," "On Plant Wildlife," and "On the Red Book of Ukraine"

In addition to formal laws, legal codes in the land, forestry, and water management sectors regulate activities related environmental and habitat protection. Important codes include:

- Land Code (updated 2001): Defines appropriate land use activities and establishes exclusion zones and protection areas for critical habitats such a wetlands and riparian buffers.
- Forestry Code (updated 2006): Establishes categories and zones for forestry activities; expands from two to four the categories of forest use. Reconciles overlaps with Water Code related to riparian buffers.
- Water Code (adopted in 1996): Establishes protection zones, or belts, alongside rivers, lakes, and coastlines. It also limits certain land use activities that may pollute water bodies, such as pesticide application.

Of particular importance to biodiversity and the protection of endangered species, important new laws relating to the National Ecological Network have been enacted since 2001. Examples of such laws include:

- State Program of National Ukrainian Ecological Network Development for 2000–2015;
- Law On the Ecological Network (2004)
- Action Plan was prepared and approved (by the Order of a Cabinet of Ministers) for maintenance of coordination of the Law Implementation (2004)
- The Guidelines for Development of the Ecological Network at Local Level (2003–2005)
- The Order of a Cabinet of Ministers "On Assertion of the Concept of the State Program on Biodiversity Conservation 2005–2025" was developed and approved (2004)
- The State Programme on Biodiversity Conservation 2005–2025 is being developed
- The draft Law on Ratification of the Protocol for the Black Sea Biodiversity and Landscapes Conservation (to the Convention on Black Sea Protection against Contamination) was introduced for consideration in 2004 to the Ukrainian Parliament
- State Reserve Service of the Ministry of Environmental Protection Program came into effect in 2001
- The National Coordination Board for EcoNet Development prepared and proposed to authorities changes and additions in October 2003 and June 2005

The State Ecological Inspectorate (SEI) of the Ministry of Environmental Protection (MEP) enforces these laws and codes as did in 2001. The Regulation on the State Ecological Inspectorate (Resolution of the Cabinet Ministers No. 770, 2004) outlines and updates the roles and responsibilities of the SEI. Moreover, Ukraine relies on volunteer, public inspectors who receive official certificate and conduct independent inspections. As of June 2006, there were about 1,450 public inspectors. In general, the inspectors are poorly paid and poorly supplied with means of transportation and communication. They are vulnerable to influence from their clients and often receive payments for inspections favorable to their clients and not necessarily to the best interests of the environment, much less the biological resources.

The Law on Ecological Expertise (IEE) of 1995 remains the framework for environmental impact assessments (EIAs) that apply to new projects that may have adverse impacts on the environment. EIAs are part of the state ecological expertise (SEE) authority. Twenty two different types of activities have been identified as prone to cause adverse environmental impacts, in various economic sectors, except agriculture. According to UNECE reports, public access to EIAs has improved over the last five years. Citizens and public organizations have access to EIAs and can express their views according to Aarhus and Esposo conventions (See Section III.C). To broaden the process to include transboundary issues, Ukraine signed the Protocol on Strategic Environmental Assessment (SEA) to the Esposo Convention in 2003, but had not ratified the protocol by 2006. But it cooperates with UNDP and REC for Central and Eastern Europe to undertake pilot projects.

Assessment of effectiveness: Overall enforcement of these laws is weak. Many activities seem to move forward without regard to environmental laws. Several NGO groups have complained about the EIA process and the influence of wealthy developers, particularly in riparian and coastal areas. Of particular concern is the observation the Team heard on several occasions of officials breaking the laws that were written to protect the biological resources and endangered species. There appears to be two kinds of poachers (as discussed in Section II.B.4): those poor people who took illegal fish and game to feed their families, and those wealthy individuals who buy favors from local officials to hunt and fish for rare or out-of-season wildlife.

Although comprehensive, the environmental legislative system is complicated and difficult to interpret. The rapid and extensive legal developments over the last ten years have resulted in a system of laws that can be inconsistent, incompatible, and vague. For example, the Land Code and Water Code both regulate the status of productive zones along rivers. The Water Codes also contradict parts of the nature protected area laws. For these reasons, they are difficult to follow and enforce. The accumulation of recent complexities and contradictions has stimulated discussions about the codification of environmental laws; especially to

harmonize with those of the EU. But progress is slow and no formal draft laws or amendments have been submitted to the Parliament by the end of 2006.

As in many areas of legislation and regulation in Ukraine, there is a multi-layered structure that is intended to control both State and private organizations. However, there is a marked divergence between intention and action. Because of the multiple legislative and administrative organizations, it is very difficult to find a clearly defined process or procedure for either administration or implementation.

3. Institutional Framework

The Ministry of Environmental Protection (MEP) has a key role in developing and coordinating the implementation of environmental policies in Ukraine. Since 2001, MEP has had two major re-organizations. In 2003, the management of mineral resources was removed from the Ministry's responsibilities, and in 2005, the management of natural resources was transferred back to MEP. Concurrent with this reform, the responsibility of coordinating activities of the Land Resources, Forests and Water State Committees also was incorporated into the Ministry.

The MEP interacts with the Parliament and, in particular, the Committee on Environmental Policy, Use of Natural Resources and Mitigation of the Consequences of the Chernobyl Accident. The Committee's principal task is to oversee the development of environmental policy and the environmental regulatory framework, prepare draft laws and regulations for the Parliament's consideration, and assess their implementation, including public consultations and parliamentary hearings. Following a constitutional amendment of 2006, the Committee is also entrusted to oversee the work of the Ministry of Environmental Protection and to give its recommendations when a new minister of environment is to be appointed. In the current structure, MEP manages the State Ecological Inspectorates (SEI) and coordinates the activities of State Committees on Land, Water, and Forestry Resources. It also manages protected areas and oversees development of the National Ecological Network.

MEP operates through special executive bodies and supervised five inspectorates. The State Ecological Inspectorate and the State Inspectorate for the Supervision of the Protection, Utilization and Regeneration of Forests are managed at the national level. The State Ecological Inspectorate for the Environmental Protection of the Black Sea (North-West Region) the State Ecological Inspectorate of the Sea of Azov, and the State Azov-Black Sea Ecological Inspectorate report to the State Ecological Inspectorate. The five inspectorates have a total staff of approximately 4,000.

As an institution, MEP has continued to face several obstacles to fulfilling its role as the key government agency responsible for environmental protection. These include reduced staff levels and insufficient funding to train, equip, and mobilize staff. As a result, the Ministry has begun to charge fees for services that were previously free. Unfortunately, there are reports that collection of these new fees has been less than transparent, with instances of petty corruption and/or more consequential acts of lack of enforcement for financial remuneration. A deleterious consequence is that biodiversity is lost.

At the sub-national level, environmental policy is the responsibility of the offices of state administration for environmental protection and natural resources in 24 oblasts and the cities of Kiev and Sevastopol, as well as the corresponding office of the Republican Committee of the Autonomous Republic of the Crimea. These offices correspond to the Ministry of Environmental Protection while coordinated with the regional administrations. At the lowest level of organization, every rayon has at least one environmental inspector.

When visiting an environmental inspector at the rayon level, the Team learned his primary wish was to enhance his position professionally. This individual's desire was to leave the Ministry to pursue employment which had more optimistic future with a greater remuneration and possibilities to advancement. If this attitude is a common attitude throughout the Ministry, the future of the Ministry is bleak.

4. Civil society and Non-governmental organizations (NGOs)

Public and citizen groups with interests in nature have been active in Ukraine for decades. Some of the first citizen groups to be recognized by official organizations in the former Soviet Union were groups with a focus on nature. The groups were considered positive elements with no serious consequences. Following 1991, public and citizen groups have played a critical and active role in environmental and conservation activities. The number of environmental and conservation NGOs has grown with the growth primarily at the regional and local level.

Many NGOs receive funding from official sources. In order to coordinate environmental and conservational activities of NGOs and their cooperation with state agencies, the MEP has established the Public Ecological Councils. In some cases, the goal of the organization falls more on the social and less on the organizational side. Regardless of size, organization, and structure, the environment and conservation NGOs are generally recognized as having been instrumental in increased awareness, protection and, potentially, enhancement of the natural resource base.

The roles of some of these organizations are quite fixed. For example, the Ukrainian Association of Hunters and Fishermen and their local membership issue hunting licenses and fishing licenses. Some ornithological organizations provide arrange tours and provide tour guides for foreigners wishing to participate in the watching of the European bird migration.

Box 2. NGO Profile: Ukrainian Society for the Protection of Birds

The Ukrainian Society for the Protection of Birds (USPB) represents a typical, small environmental NGO working to conserve biodiversity. The organization operates with under an Executive Board, a small staff based in Kiev, and 26 branch offices around the country. It is the Ukrainian “partner designate” of Birdlife International, European Division, a large international NGO with important programs in Eastern Europe. USPB is a registered NGO and meets the organizational and legal requirements of the Ministry of Justice.

In 2005, USPB had 1460 paying members in five categories. Normal members pay 12 UAH (about \$2.25) annual dues; and 1.2 UAH (about \$0.22) for youth group members. Total membership dropped from 1817 members in 1999; but new members increased in youth groups. Collecting dues can be a challenge for the NGO. Members receive quarterly newsletters, join in bird watching expeditions, and participate in local camps, seminars, and habitat protection activities.

According a recent Annual Report, USPB spent 694,870 UAH (about \$137,325) to fund 12 projects and maintain an office and staff. Along with related staff activities, important project types include:

- Conservation projects
- Public outreach and media
- Ecotourism and education
- Advocacy and lobbying

In addition to membership fees, USPB receives grants and donations from international and local sources. Over the last five years, it received contributions from organizations such as:

- Birdlife International, European Division
- The Royal Society for the Protection of Birds, UK
- Ukrainian Citizen Action Network (UCAN)
- Ministry of Environmental Protection of Ukraine, Vinnytsa Department
- US Agency for International Development (USAID)

The exact number of environmental and conservation NGOs in Ukraine is difficult to determine. The draft UNECE EPR of 2006 reported that many new NGOs have emerged since their report of 1999, including more than 20 NGOs at the national level and more than 300 local and regional ones. The following NGOs are six of the influential environmental and conservation in Ukraine:

- **The National Ecological Center of Ukraine (NECU):** The mission of National Ecological Center of Ukraine is to work for the healthy environment and improvement of the quality of life of the Ukrainian population. Its activities are based on the maintenance of the state independence of Ukraine, on establishment of civic society on the basis of unification of achievements of the ecological and humanitarian science and best Christian traditions of the Ukrainian people.

The interests of the NECU are biological diversity conservation; econet development; establishment and management of protected areas; activities against climate change; safe energy and economic use of natural resources; ecological education; elaboration and publication of books, booklets and magazines on ecology and environment conservation; scientific support and implementation of public environment-protecting projects; and opposing expansion of nuclear energy use in Ukraine and promotion of sustainable energy. Of primary interest to biodiversity of Ukraine, the NECU has the lead in the National Ecological Network which will lead to the participation of Ukraine into the Pan-European Biological and Landscape Diversity Strategy.

- **The Ukrainian Society for Nature Protection:** The Ukrainian Society for Nature Protection focuses on eco-education, the creation of a public environmental university and school for young ecologists, and the release of a science journal and independent environmental newspaper. They are particularly interested in information networking, training environmental literacy, nature protection activities, and environmental law.
- **Green World Association (Zeleny Svit):** Zeleny Svit leads environmental activities with the participation of the public, leads environmental impact assessments, and cooperates with nature protection organizations and government agencies. Their main interests involve environmental monitoring, environmental impact assessment, and environmental law.
- **Greenpeace:** Greenpeace, a worldwide environmental NGO, has been active in Ukraine since 1990. Their primary areas of focus have been the promotion of alternative energy sources; continued advocacy for the cleanup of areas contaminated by the Chernobyl disaster and assistance to people affected by radiation; and focusing attention on cleanup efforts of the pollution in Ukraine's air, land and water.
- **Ukrainian Society for the Protection of Birds:** The Society regularly holds nature protection activities and campaigns, works to discover and protect rare species of birds, and works closely with communities and the mass media. Their goals revolve around raising environmental literacy and protecting nature, particularly birds.
- **Ukrainian Botanical Society:** The Ukrainian Botanical Society promotes scientific information related to botany, focusing on environmental education, environmental monitoring, nature protection, and raising environmental public awareness.
- **EcoPravo:** EcoPravo's mission is to contribute to building civil society through environmental advocacy and enforcement, representing citizens and NGOs on environmental and organizational issues in order to stimulate public participation in environmental decision-making, and to promote the reform of the country's legal system to better support democratic processes.

The interests of EcoPravo include advisory help to NGOs and individuals; promoting legal environmental awareness and eco-legislation; protecting environmental rights; holding conferences, training sessions and seminars on environmental legislation; preparing a legal environmental brochure; and, participate in the development of laws and legal acts.

Of primary interest to biodiversity, EcoPravo has worked closely with the United Nations Environment Program (UNEP) and the Ministry of Environmental Protection of Ukraine to draft the Third National Report on Biodiversity Conservation in Ukraine.

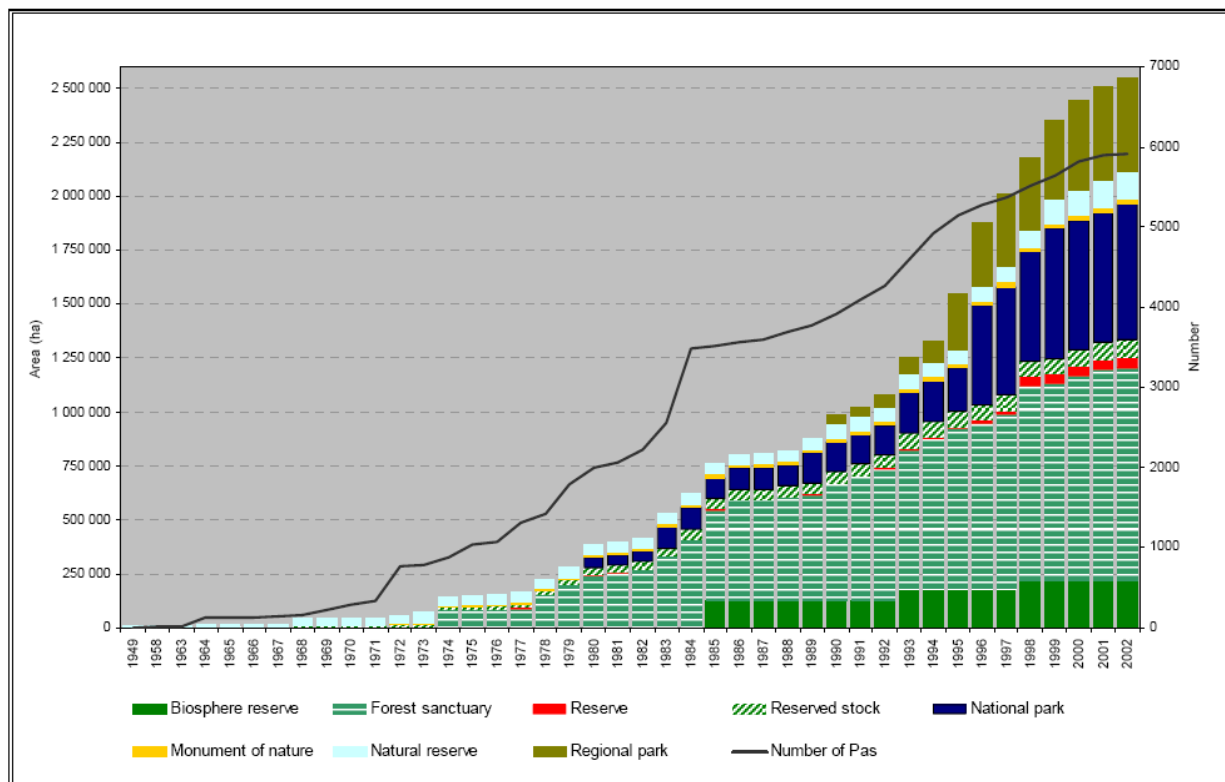
In addition to the national NGOs, international NGOs play a critical role in the protection, conservation, and enhancement of biodiversity and endangered species protection. The international NGO, Wetlands International, has funded a number of well prepared and respected scientists to prepare publications and programs in support of the Ukrainian wetlands, a critical component of the migration of birds across Ukraine. Many of these scientists are employed in universities, scientific institutes, or scientific societies and contribute their available time to such activities. It is only through contributions from international NGOs to local NGOs that these individuals have the resources to work and a respected platform from which to speak.

B. Protected Areas and Endangered Species

In recent years, Ukraine has made steady progress to expand protected areas. These protected areas are managed areas with a certain level of protection or restrictions. Currently protected areas make up about 4.5 percent of the Ukrainian land area; up by 74 percent from 1993 and a slight increase since 2001 (see Figure 2 below). Yet the current level of 4.5 percent remains too low to sustain biodiversity in the long term.

The Government of Ukraine plans to expand the network of protected areas to 10.4 percent by 2015 in accordance with Millennium Development Goals and national plans. Moreover, the distribution of the protected lands is uneven with most reserves concentrated in western and southern regions. As a result not all biomes have adequate protected reserves. This is most noticeable in the steppe regions, which have very little protected areas.

Figure 2. Area and number of Protected Areas over time by Protected Area Category



Adapted from Ukraine Forestry Sector Note: Status and Opportunities for Development, March 2006

The structure and inter-relations of the institutions managing the protected areas is diverse. They include the Ministry of Environmental Protection, the State Committee of Forestry, the National Academy of Sciences, scientific academies, cities, and hunters associations. The loose administrative structure contributes to poor management and weak enforcement. As a result some current areas are often referred to as “paper parks,” or areas with no real enforcement of their protected status.

1. Current Protected Areas

In 2003, Ukraine had 7,040 specially protected areas, covering 2,715,400 hectares. As of 2005, the country had registered 33 Ramsar Convention wetlands of international importance, up from 15 in 2001. (See Annex A for lists and relevant maps of Protected Areas of Ukraine)

Core protected areas include:

- Four Biosphere Reserves and Ukraine-Poland-Slovak Biosphere Reserve: 159,600 hectares
- 17 nature reserves (Pryrodni Zapovidnyks): 130,000 hectares
- 12 national nature parks: 450,000 hectares
- 2,960 natural monuments of national and local importance
- 132 national importance, Category III sites (defined by IUCN as “Natural Monuments”)
- 2,265 wildlife reserves of national and local importance (Zakaznyks): 19,800 hectares
- 292 area of national importance, Category IV sites (defined by IUCN as “Habitat/Species Management Areas”)
- 26 regional landscape parks: 399,907 hectares, Category V sites (defined by IUCN as “Protected Landscapes”)
- 29 dendroparks: 1,250 hectares
- 21 botanical gardens: 1,900 hectares
- 499 natural monuments art of garden-parks
- 6 zoos: 0.1 hectares
- 754 natural protect tracts (Zapovidni Urochyscha): 80,800 hectares
- 33 wetland sites of international importance (Ramsar Sites)

2. Potential New Protected Areas

There are areas that are not yet protected that either because of their unique location and habitat or susceptibility to threats are strong candidates to become protected areas. However, the process is not a simple one. To create a protected area, authorities and key stakeholders such as NGOs undergo a process that includes scientific surveys, identification of key areas, and administrative procedures to change legal land status. The State Service for Protected Areas conducts inventories and collects data about potential new protected areas. However, in Ukraine, NGOs often play a more active role in the establishment of new protected areas, due to their access to international resources. Despite large amounts of scientific data from institutes and agencies, there is no state system to monitor and inventory biodiversity. For this reason, Ukrainian NGOs with support of large environmental organizations such as Birdlife International, Wetlands International, IUCN and the World Wildlife Fund usually conduct field work and prepare applications for new protected areas of various statuses. For example, with sponsorship of Birdlife International, the Ukrainian Society for Bird Conservation surveyed four million hectares and described 138 new Important Bird Areas (IBAs) covering a total of 2.3 million hectares. Wetlands International coordinated Azov-Black Sea studies and in 2003 published a list of 37 Ukrainian wetlands important to biodiversity conservation. In the steppe region, IUCN supported two NGOs, the Institute of Ecology and the National Ecological Center of Ukraine, to conduct studies about intact steppe regions of southern Ukraine. Their study recommended 50 protected areas for consideration by the Ministry of Environmental Protection.

Other protected areas result from international agreements on cross-boundary territories. For example, Ukraine cooperates with Romania over the transboundary Dunajsky Biosphere Reserve “Danube Delta.”

And the “Eastern Carpathian” Biosphere Reserve is managed by Ukraine, Slovakia, and Poland. Current talks are underway to create and/or expand new transboundary protected areas, including:

- Ukrainian-Polish “Western Polissia” Biosphere Reserve in association with Shatsky National Park in Volyn Region
- Ukrainian-Polish “Roztochchia” Biosphere Reserve in association with Javorivsky National Park and Roztochchia Nature Reserve near Lviv
- Ukrainian-Russian “Starogutsky and Bryansky Forests” in association with Desniansko-Starogutsky National Park in Suny region

3. Protection of Endangered Species

In late 1992, Ukraine’s parliament adopted the Statute "On the Red Data Book of Ukraine". The Book documents the country’s rare and endangered species of plants and animals. It is made up of two volumes.

The first volume focuses on plants and fungi. It includes descriptions, illustrations and other data on 541 taxa of plants and fungi, including vascular plants (439 species), mosses (28), algae (17), lichens (27), and fungi (30 species).

Many widely-recognized plants can be found in the Red Data Book: *Taxus baccata*, *Betula borysthena*, *B. humilis*, *B. obscura*, *B. klotkovii*, *Paeonia daurica*, *P. tenuifolia*, *Viola alba*, *Salix herbacea*, *S. reticulata*, *S. starkeana*, *Oxycoccus microcarpus*, *Daphne cneorum*, *Drosera anglica*, *D. intermedia*, *Trapa natans s.l.*, *Atropa belladonna*, 13 species of *Centaurea*, 8 species of *Crocus*, 26 species of *Stipa*, and 6 species of *Carex*.

The second volume is devoted to animals, and includes 382: hydroids (2 species), roundworms (2), segmented worms (7), crustaceans (26), arachnids (2), myriapods (3), insects (173), mollusks (12), jawless fishes (2), fishes (32), amphibians (5), reptiles (8), birds (67), and mammals (41).

Figure 3
Fauna Species listed in the Red Data Book of Ukraine (number of species)

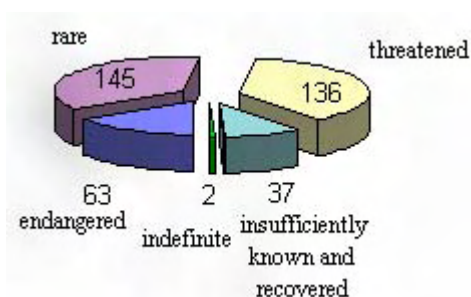
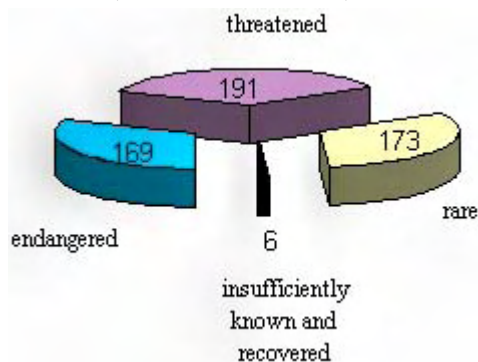


Figure 4
Flora Species listed in the Red Data Book of Ukraine (number of species)



See Annex A for a map of Red Data Book sites, and Annex C for a complete list of endangered species.

In 1997, the Ministry of Environment and Natural Resources approved the Regulation of the Green Book of Ukraine providing a framework upon which to develop conservation measures. The Green Book lists critical plant habitats and associations for conservation. See Annex A for a map presenting Green Book habitats.

Management and Conservation of Endangered Species: The National Ecological Network. Since 2001, the Government of Ukraine has worked to integrate biodiversity conservation goals into other sectors of the economy, outside of protected areas. The National Ecological Network (NEN) serves as the most important example. In Europe, NENs have become popular methods for linking core protected areas, migration corridors, and

buffer zones that protect key habitats at regional and international scales. Networks include not only reserves and other protected areas, but also private and state lands that have special conservation importance. These lands may be subject to special considerations such as tax breaks, economic incentives, or restricted land use to protect living resources. Moreover, through the utilization of the National Ecological Network, biodiversity conservation will more strongly integrate measures into key economic sectors such as agriculture, forestry, hunting, and water management. To achieve these goals, planners can implement various provisions of the Land, Forest, and Water Codes of the law. This is a commendable and ambitious program that links Ukraine to a larger Pan-European Ecological Network (PEEN).

In order to begin working on the NEN for Ukraine, the government passed the Law on the Ecological Network in 2004. This law implements the “National Programme for the Development of a National Ecological Network for 2000-2015” approved by Parliament in 2000. But the concept dates back to the Pan-European Biological and Landscape Diversity Strategy (Sofia, Bulgaria, 1995) that outlined the need to plan large-scale, international ecological networks for migrating species, such as birds. This represents an important scientific and policy change because it shifts from conserving species to conserving habitats; and integrates conservation into sectoral development policies related to agriculture, forestry, water management, and other economic activities.

Moreover, Ukraine hopes to implement the National Ecological Network as part of their broader strategy to harmonize policies with the EU. The Network directly addresses commitments made under several treaties. In addition to the 1995 Pan-European Strategy, relevant agreements include: the Convention on the Conservation of Migratory Species of Wild Animals (Bonn, 1979), The Convention on the Conservation of European Wildlife and Natural Habitats (Bern, 1979) and the European Landscape Convention.

While work is underway to create new protected areas, Ukraine has seen slower progress establishing natural corridors between core areas. The problem lies with the privatization of agricultural lands designated without any conservation status. The 2001 USAID Biodiversity Assessment Report and the first UN Environmental Performance Review both warned about the adverse consequences of reckless agricultural land privatization and recommended designating protected areas before the privatization process started. This seems to be real lost opportunity.

Other corridors for the National Ecological Network include water protection zones around rivers and lakes and the coasts of the Black Sea and Sea of Azov. In this case, the Water Code provides legal support to maintain sustainable land use practices such as buffer zones and wetland protection. Similarly the Forest Code provides opportunities to expand riparian buffers and forest protection belts across the landscape.

Ukraine lacks funds to fully implement the National Ecological Network, and the concept requires more solid knowledge and scientific methodology. In addition, the issues surrounding private land use remain as a major obstacle. To introduce proper land use restrictions and land use zone, planners must develop economic incentives and raise awareness among landowners. For more discussion on this topic, see also Section IV: Actions Necessary to Conserve Biodiversity.

C. International Agreements & Commitments

Ukraine is a party to 20 major international environmental conventions and is a signatory to two additional ones. It has acceded to nine and signed six protocols to environment conventions. These international agreements and commitments help set priorities for policies, laws, and institutions in the country and they bring in international donor funds to implement programs. Nonetheless, compliance with and enforcement of international agreements are weak, mainly due to poor funding and weak governance. For example, the MEP had not completed the scheduled third report on the Convention for Biological Conservation as scheduled by the end of 2006. From 1999-2004, Ukraine did not pay required contributions to various conventions and by 2004 this debt totaled around \$800,000. The country paid off the debt by lifting the restriction against using money from the National Environmental Fund in 2005.

In 1998, Ukraine announced its desire to become an associate member of the European Union (EU). The expansion of the EU in 2004 and again in 2006 further encouraged the government to harmonize environmental policies and legislation to meet EU standards. In this context, integration with the EU represents a comprehensive theme for many Ukrainian international agreements, conventions, and treaties. The 1998 Main Directions (or NEAP) document covers plans to implement about 70 bilateral and multilateral treaties and cooperation with main UN programs, such as UNEP, GEF, UNECE, IAEA, FAO, and CSD. It also defines responsibilities for bilateral and regional cooperation in protecting the Black Sea and the Sea of Azov, the Dnipro and Danube rivers, the Carpathian Mountains, and regions affected by the Chernobyl Nuclear Power Plant disaster. By 2006, the Government had not updated this international cooperation strategy. Within the Ministry of Environment, a Department of European Integration and Cooperation supposedly coordinates international activities, but in reality, specific programs seem to be controlled by those departments in charge of implementation.

1. Highlighted International Treaties and Cooperation Since 2001

Convention of Biological Diversity (CBD)

Since Ukraine ratified the CBD in 1995, international donors, mostly the Global Environment Facility (GEF), have provided about \$10 million in technical assistance to support biodiversity conservation. In 2003 the GEF/World Bank allocated \$6.9 million to implement an Azov-Black Sea Corridor Biodiversity Conservation project. Unfortunately, the program failed due to poor government management, and GEF cancelled it in 2006 having allocated less than 20 percent of the funds. In 2001-2003, another GEF project, the Biodiversity Phase II Enabling Activities helped draft laws and amendments to support biodiversity conservation. Ukraine produced the second national CBD report, *Preservation of Ukraine's biodiversity* in 2003, but the country failed to its the third national report by 2006. NGOs complained that they no opportunity to review the report and they asked that the report be translated into Ukrainian. Regardless, the DevTech Team found only a very incomplete version of the scheduled third CBD national report. Apparently, the Ministry of Environmental Protection is preparing a new strategic document, the *Programme for Biodiversity Conservation for 2006-2025*, to define an implementation strategy and integrate international conventions.

Carpathian Mountains

The Convention on the Protection and Sustainable Development of the Carpathians (2005) defines cooperation among Ukraine, Romania, and Slovakia to manage this mountainous region that includes eastern Ukraine. Currently GEF and UNDP are supporting a project to enhance biodiversity conservation called *Conserving Globally Significant Biodiversity and Mitigating/ Reducing Environmental Risk in Ukraine's Carpathians*. This is an important step to preserve unique European broadleaved forests in Ukraine.

Danube Basin

Ukraine signed the International Commission for the Protection of the Danube River (ICPDR) in 2003 under the EU Danube/Black Sea Task Force framework. Ukraine benefited from this partnership by receiving monitoring equipment. In a controversy involving Governments of Ukraine and Romania along with NGOs, Romania sued Ukraine over the reconstruction of the Danube-Black Sea shipping canal in the Danube delta region. Pointing to provisions in the Convention on Environmental Impact Assessment in a Transboundary Context (1997), the Romanians argued that Ukrainian construction activities adversely affected the border region. This convention, also called Espopo Convention, requires border countries to notify each other when projects have adverse trans-boundary affects. Moreover, the convention also calls for public environmental impact assessments (EIAs). Later findings, under the Aarhus Convention framework in 2005, and the UNECE framework in 2006 confirmed that the Danube-Black Sea Canal is likely to have adverse transboundary impacts. Moreover, the project did not consider the impact on and the authority of the nearby Danube Biosphere Reserve. By 2006 the governments were planning to re-start the EIA process.

Black Sea and Sea of Azov

Ukraine signed the Convention on the Protection of the Black Sea against pollution (Bucharest, 1992) and developed a Black Sea Strategic Action Plan (BS-SAP) (Odessa, 1993) to implement it. Along with Bulgaria, Georgia, Romania, Russia, and Turkey, Ukraine participates in the Black Sea Commission and receives international assistance to implement the Convention. Since 2001, several laws and programs contributed toward implementation of Black Sea Convention, including:

- **Ministerial Declaration on Protection of the Black Sea Ecosystem** (Varna, June 14, 2002) and Black Sea Biological and Landscape Diversity Conservation Protocol (Varna, June 14, 2002 signed by four coastal states) reinforces the regional cooperation for the protection and rehabilitation of biodiversity of the Black Sea; and
- **Black Sea Environmental Programme** (1993-1996), **TACIS Black Sea Funds** (1995-2000), and **Black Sea Ecosystem Recovery Project** (2002-2004) delivered the international assistance for protection and rehabilitation of the Black Sea ecosystem including its biodiversity components and institutional capacity building.

Climate Change

Ukraine ratified the UN Framework Convention of Climate Change (UNFCCC) and its Kyoto Protocol in 2004. As an economy in transition, Ukraine is an Annex I member of the convention and has committed itself to stabilize greenhouse gas (GHG) emissions to 1990 levels during the period 2008 -2012. In 2005, the Cabinet of Ministers approved a National Plan to implement provisions of the Kyoto protocol that included steps to inventory pollutants, identify sources and sinks, establishing a trading system, and setting up a structure to implement projects. By 2006, the Ministry of Environmental Protection was considering about 26 projects for joint implementation with potential partners from Canada, Netherlands, Austria, France, Italy, and Japan. These projects amount to about 1.96 million tons of CO². In addition to joint implementation projects, Ukraine could potentially trade about 1.7 billion tons of CO² assigned as surplus Assigned Amount Units (AAUs). However, several parties to the Kyoto Protocol, including Austria, Germany, and the Netherlands will not buy AAUs unless they are linked to environmental benefits. In response, the World Bank commissioned a study to evaluate so-called Green Investment Schemes and to examine the institutional and political obstacles to their implementation. The study was scheduled for release in fall 2006 and the Ministry of Environmental Protection hopes initiate Green Investment Scheme deals after that. This could be a good opportunity for reforestation efforts in support of the biological diversity and payments for ecosystem services.

2. Conventions with Impact on Biodiversity

Ukraine is a party to the following international agreements or conventions which have impact on biodiversity:

- Convention on Wetland of International Importance (Ramsar, 1971)
- Convention Concerning Protection of World Cultural and Natural Heritage (Paris, 1972)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, 1975)
- Convention on Conservation of Migratory Species of Wild Animals (Bonn, 1979)
- Convention on Conservation of European Wildlife and Natural Habitats (Bern, 1979)
- Convention on Long-Range Transboundary Air Pollution (1979)
- Protocol of 1978 to the International Convention for the Prevention of Pollution from Ships (1983)
- Montreal Protocol on Substances that Deplete the Ozone Layer (1989)
- Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution Concerning the Control of Emissions of Nitrogen Oxides or their Transboundary Fluxes (1991)
- Convention of Biological Diversity (Rio de Janeiro, 1992)
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1992)

- Convention on the Protection and Restoration of the Environment of the Black Sea and Sea of Azov (Bucharest, 1994)
- United Nations Convention on the Law of the Sea (1994)
- Pan-European Biological and Landscape Diversity Strategy (1995)
- UN Framework Convention on Climate Change (1996)
- Convention on the Protection and Use of Transboundary Watercourses and International Lakes (1996)
- Convention on Environmental Impact Assessment in a Transboundary Context (1997)
- Aarhus Convention on Access to Information, Public Participation, in Decision Making and Access to Justice in Environmental Matters (2001)
- International Commission for the Protection of the Danube River (ICPDR) (2003)
- International Convention for the Control and Management of Ships' Ballast Water and Sediments (2004)
- Convention on the Protection and Sustainable Development of the Carpathians (2005)

3. Treaties and Conventions Remaining to be Signed and Ratified

No major environmental treaties and conventions are outstanding and waiting signatory approval by Ukraine. However, a number of significant environmental treaties and conventions have been signed but not yet ratified because certain protocols have not yet been completed, including:

- Protocol on Environmental Protection of the Antarctic Treaty (1989)
- Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution Concerning the Control of Emissions of Volatile Organic Compounds or their Transboundary Fluxes (1997)
- Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on Further Reduction of Sulphur Emissions (1998)
- Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on Persistent Organic Pollutants (Not yet in force)
- Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on the Reduction of Sulphur Emissions or their Transboundary Fluxes by at least 30% (1987)

D. Relevant International Donor Programs

There have been a number of internationally-funded programs directed at biodiversity conservation. Some of these have the potential to provide synergies with USAID-funded activities in the country. The UNDP GEF Dnipro Basin Environment Programme and the UNDP GEF Consolidation of the Polesia Ecological Corridor are example of programs that could work in parallel to USAID/Ukraine programs. With planning, coordination may result in these and other complementary activities by USAID. For example, with the two above-mentioned UNDP/GEF projects, USAID may find it possible to help in information dissemination of the projects' results or focus some economic growth activities in the same area. Knowledge of other donor projects during the various project development phases may maximize the efficient utilization of scarce funding and allow the USAID funding to facilitate activities that may be outside the funding limitations of the UNDP/GEF project or beyond the project's scope.

The potential relationship of USAID/Ukraine programs to other donor programs in biodiversity is presented in this illustrative listing below:

- The World Bank Rural Land Titling & Cadastre Development Project may be addressed to contribute information to the Ukraine Land Titling Legal Centers concerning their rights and responsibilities concerning agricultural chemical handling, use and disposal. Through that process the biological resources could be protected.
- The World Bank-funded Reforestation Biocarbon Fund Project plans to reconstruct and manage 15,000 hectares of forest on abandoned agricultural lands through replanting of indigenous tree

species. This reforestation will take place primarily in the Polessia region in the vicinity of Chernobyl. The forested areas will not only sequester carbon from the atmosphere, in line with Ukraine's ratification of the Kyoto Protocol, but will provide habitat for the area's biodiversity and serve as an economically productive use of the abandoned land.

- The British funded EcoLan: Sustainable Land Use in Ukraine addresses rural development through sustainable use of natural resources could complement Agribusiness Volunteer Project as well as the Agricultural Lending in Rural Areas Project of USAID. The common goal is to facilitate income generation for the rural population. As a result, the pressure on the natural resource base would be lessened and the threat of the rural poor on biodiversity will be minimized.
- The Swedish funded Strategic Plan for the Ukrainian Forest Sector Development and the Swiss Funded Swiss-Ukrainian Forest Development Project in the TransCarpathian, although ended, produced information that could be utilized by the Agricultural Policy Legal and Regulatory Reform Project.

A Donor Funding Table is presented in Annex B.

E. Current USAID Activities in Ukraine

At the time of this report, the USAID/Ukraine strategy was operating under an extension of, and remained the same as, the strategy in place at the time of the original 2001 report. Prior to the arrival of the DevTech team, the USAID/Ukraine portfolio had five strategic objectives and one cross-cutting objective. The Strategic Objectives were:

1. Improved Investment Climate
2. Accelerated Growth of Small and Medium Enterprises (SMEs) and Agriculture
3. Citizenry Increasingly Engaged in Promoting its Interests and Rights for a More Democratic, Market-Oriented State
4. Government Institutions are More Effective, transparent, and Accountable to their Citizens
5. Improved Social Conditions and Health Status

Since the 2001 Biodiversity Assessment, there have been several USAID programs that have contributed to conservation and environmental needs in Ukraine. It is important to note that overall USAID contributions toward democracy, institutional reforms, stability, and economic growth have positive, indirect benefits to conservation and biodiversity. The management and protection of natural resources is predicated on a stable government, sound policy frameworks, transparency, accountability, and active civil society and vibrant private sector, economic incentives, and a free independent media. These contributions should not be discounted for their contributions to the environment. For example, the support to the Ukrainian Land and Resource Management Center strengthened the institution to be able to address biodiversity issues as well as other issues. Also, the support to ISAR has been valuable to the organization as well as to the strengthening of the NGO community throughout Ukraine. In particular, the ISAR support to Ednannia has benefited NGOs in general and biodiversity

USAID/Ukraine has been instrumental in the support of environmental and conservation NGOs in Ukraine through the financial support of ISAR: Resources for Environmental Activists. ISAR's mission has been to support practical and collaborative resolutions to the environmental threats faced by communities in the former Soviet Union by providing training, technical, and informational resources to individuals and organizations working on environmental issues in the region. These resources serve to build advocacy skills, increase public participation in environmental decision-making, and encourage community level environmental problem-solving. ISAR also works to galvanize international environmental networks by building partnerships based upon common objectives and founded on mutual respect. In Ukraine, ISAR has worked with Ednannia (Joining Forces) Initiative Center to Support Social Action. Among other roles, Ednannia maintains a data base of Ukrainian environmental and conservation NGOs.

NGOs in particular through its support of the development of the NGO sector through fostering cooperation among NGOs and between NGOs and other sectors of the Ukrainian society.

SECTION IV: ACTIONS NECESSARY TO CONSERVE BIODIVERSITY

While there are many threats to biodiversity in Ukraine, they are not insurmountable. With focused efforts, the obstacles can be overcome, and biodiversity conservation efforts can be improved. In fact, in recent years, Ukraine has made significant advances in the conservation of biodiversity, and these advances can be built upon. This section summarizes the major issues that require confirmed attention by productive sector, institutional and legislative weaknesses, and seven issues for protected areas and endangered species. For ease of follow up, and per FAA 119, this section identifies actions necessary to conserve biodiversity. As presented in Section II.B, these threats are presented in order of significance, with the most significant threats listed first.

A. Agriculture Sector

- **Threat: Lack of understanding of agricultural practices**

The increased demand of rapidly expanding agricultural production outpaced the spread of knowledge of proper agricultural practices. As a result, many farmers are not aware of good agricultural practices, nor do they fully understand the impact their work can have on biological diversity.

- ✓ **Action:** One critical step in disseminating knowledge is to have an effective agricultural extension service, which is currently being developed in Ukraine. Once such a system is developed and functional, to raise public awareness, extension agents can introduce and strengthen good agricultural practices, and educate farmers about biodiversity-friendly farming. Often times these extension programs are supported by local governments and/or universities. Such programs can provide technical assistance, legal and zoning consultation, marketing advice, machinery parts and service, and even farm credit. Moreover, such agricultural extension programs can provide capacity to conduct public outreach and decision-making over local land use decisions.

- **Threat: Negative impact of intensive farming**

Intensive farming practices utilizing high amounts of fertilizers and pesticides have had an adverse impact on the environment and biodiversity.

- ✓ **Action:** Farmers should limit the use of mineral fertilizers, pesticides, and herbicides on farm fields as excess chemicals contaminate surrounding ecosystems. Known areas of chemical pollution and water and soil contamination, especially close to rivers and forest zones should be monitored, and mitigation measures should be taken in areas where levels are particularly high. Agriculture officials can develop and promote production systems which rely on low level of chemicals such as bio-organic fertilizer systems. Such practices are a part of integrated pest management (IPM) and comply with expectations of good agricultural practices (GAP). Such practices will have the benefit of reducing eutrophication in the country's waterways.

- **Threat: Lack of viable habitat**

The drive to increase agricultural production resulted in dramatic habitat loss over the past fifty years. Land conversion was prevalent in the steppe and forested regions of the country, and increased sediment and nutrient runoff degraded wetland habitat as well. Though the pace of agricultural development has stabilized, the habitat that has been lost has not been restored, placing tremendous pressure on the biodiversity found in remaining ecosystems.

- ✓ **Action:** In order to restore lost habitat, it would be beneficial to design agricultural landscapes with expanded habitats for native species; especially in the steppe region. This could be coordinated with the Government of Ukraine's implementation of the National Ecological Network (NEN), with a specific focus on including agricultural lands. In order to provide incentives to landowners who may otherwise clear land, the government may consider compensating landowners with economic incentives such as payments for watershed protection and carbon sequestration.

- **Threat: Soil degradation**
Irrigation with contaminated irrigation water has led to serious soil degradation, both in terms of soil quality and the soil structure.
- ✓ **Action:** Farmers can limit excessive soil erosion from agricultural lands through good agricultural practices. Such practices include contour plowing, no-till techniques and crop rotations, which also serves to address decreasing humus organic content. Efforts to afforest riparian zones would trap sediments and nutrients and increase agro-ecology and riparian habitats. In addition, many of the remaining shelter belts are damaged and not effective in blocking surface winds. Damaged belts should be repaired, and additional shelter belts should be planted to provide protection against wind erosion.

B. Forestry Sector

- **Threat: Poor forestry management**
The management of the country's forest resources has created an unsustainable future for the natural resource. Productive forests are being harvested at a faster rate than they are being replenished, and those stocks that are being replenished are being done so through monoculture methods that do not support a wide range of biological diversity.
- ✓ **Action:** The first step for the Ukrainian State Committee of Forestry (USCF) to improve forestry management is to develop integrated forest management plans that comply with EU standards. This will lead the USCF to avoid monoculture plantings in afforestation projects, and consider revising forest classification schemes to balance timber harvest and ecological services. Eventually, forestry programs should be extended to cover non-timber forest products and ecotourism. The USCF can also work to integrate market-based incentives into forestry. One possibility would be to expand certification programs, such as the Forest Stewardship Council (FSC) in forestry practices, and to reward good stewardship companies with greater market access.
- **Threat: Illegal harvest**
Forests are exploited through illegal cutting and harvest, dramatically impacting the country's forests.
- ✓ **Action:** Quite simply, the Ukrainian State Committee of Forestry must eliminate illegal activities in protected areas by strengthening enforcement and implementation of existing laws. Given that much of the illegal harvest of timber is for fire and fuel wood, it would be beneficial to provide local populations with alternative sources of energy, such as natural gas. Poor public awareness also results in high levels of illegal harvest, as many people simple are not aware of the impacts of their actions. Public awareness can be increased through education and training activities.
- **Threat: Lack of viable forest habitats**
The rapid expansion of industry and the extensive harvest of wood and other forest products have destroyed natural forest habitats.
- ✓ **Action:** It is necessary to expand fragmented forest systems into landscape-scale functioning forest networks. This can be done by afforesting new areas, including degraded plots, and improving management in existing forests. This could be a part of the government's efforts to comply with the National Ecological Network (NEN) concept.

C. Water and Aquatic Ecosystems

- **Threat: Loss of wetlands and riparian habitat**
The rampant development of coastal and waterfront areas for residential and business use has led to rapid habitat loss, and this "development at any cost" attitude disregards the impact of such growth.
- ✓ **Action:** The Government of Ukraine must enforce laws to protect sensitive wetland and riparian habitats to ensure that there is respect for the existing Land Code and Water Code laws that specify land use requirements that protect habitats and water quality. New systems could be put in place to provide incentives to landowners for wetland management. The government also should participate more

actively in international transboundary programs in the Lower Danube, Dniester and Black Sea regions to address conservation issues.

- **Threat: Agricultural pollution**

Large amounts of pollution from agriculture, primarily from fertilizers and animal waste, flow in to waterways and aquatic ecosystems. The excess nutrients have a tremendous impact on water quality and on the organisms living in and around the water.

- ✓ **Action:** Policies should be put in place that will limit non-point source runoff, as most of the nitrates fueling eutrophication come from non-point source agricultural activities. Emerging agriculture extension programs can integrate non-point source pollution awareness building into their programs. This also will minimize the persistent organic pollutants (POPs) that enter rivers and streams as farm runoff from pesticides and other agro-chemicals. By affecting water quality, these pollutants severely degrade habitats and weaken important native populations.

- **Threat: Poaching**

A lack of enforcement of regulations, and increased illegal fishing has depleted fish stocks.

- ✓ **Action:** Enforcement agencies must build respect for the law and strengthen enforcement for poaching, especially for endangered, but high value species. Work needs to be done with local communities to establish sustainable fishery management practices for rivers, lakes and ponds. The Ministry of Environmental Protection can support fish reintroduction programs and implement aquaculture practices to conserve native species.

- **Threat: Changes to hydrological regime**

Physical changes, such as dams and irrigation schemes, have changed the natural flow of Ukraine's waterways. These changes to the natural ecosystem have impacts on the behavior and health of the flora and fauna in and around the altered waterways.

- ✓ **Action:** It is important to mitigate the impacts of the old, but highly modified hydrological structures used for drainage, irrigation, and fish ponds to ensure that their ongoing impact is minimized. Prior to implementation of any new projects, environmental impact assessments (EIAs) should be conducted to determine the impacts to biodiversity. The Dnipro Basin Strategic Action Plan (SAP) is an excellent model of integrated river basin management that balances water uses for different purposes, and can be used as a model for other future projects. The existing Land Code and Water Code laws that specify land use requirements that protect habitats and water quality must be enforced and respected.

- **Threat: Invasive species**

Invasive species have been introduced by various means into the country's aquatic ecosystems. New species have a deleterious impact on these systems by competing with native species for food and resources, as well as directly preying on other native species.

- ✓ **Action:** The Harbor Master at local ports should ensure that vessels safely dispose of ballast water. International ships entering and leaving the Black Sea should pump and store ship ballast water according to safe standards outlined by the International Maritime Organization's convention on invasive species in order to not allow invasive organisms to enter local waters. The use of invasive fresh water species in fish ponds should be avoided as well, as these fish often escape the ponds and end up in natural waterways.

D. Public Awareness and Socio-economic issues

- **Threat: Lack of public awareness**

At the current time, biodiversity protection and conservation is secondary to the need to produce agricultural products and to harvest renewable natural resources. This is due primarily to a lack of public awareness of the potential value of a species or an ecosystem for the future. Such factors are currently not readily understood and therefore not taken into consideration when making many decisions.

- ✓ **Action:** In order to raise public understanding of the value of biodiversity for present and future generations, public outreach efforts need to be expanded. Greater resources should be provided for information dissemination, including publications, TV and radio, and public meetings. Additional support can come through extension services to the agricultural community. Training however should not be limited to agricultural communities, and should also be expanded to include training for government officials, inspectors and local administrators. Geographic information systems (GIS) technology can be a valuable tool among decision-makers in Ministries, local governments, NGOs and the business community. Once awareness and understanding increases, efforts can be made to conduct pilot community-based natural resource management programs to facilitate public participation in regional environmental decision making.
- **Threat: Land privatization**
The utilization of privatized land without consideration of the natural resource base can result in the depletion or, in extreme cases, elimination of the biodiversity. Land privatization practices have expanded faster than regulations can keep up, resulting in reckless expansion and land use.
- ✓ **Action:** One main goal should be to encourage openness and transparency in land privatization process. This is currently lacking. Proper environmental impact assessments that include public participation and decision-making should be conducted, and the findings of the assessments implemented in order to minimize adverse impacts. As lands are privatized, owners and developers should respect laws and policies related to the Land Code and Water Code.
- **Threat: Non-sustainable tourism and recreation**
Tourism and recreational fishing and hunting can be a part of the human experience without negatively impacting on the natural resource base. Guidelines and standards are available to be applied to biodiversity conservation requiring low or no costs that will allow for sustainable tourism and recreation.
- ✓ **Action:** The government of Ukraine should prevent new tourism facilities and development in important ecological areas; especially along coastlines and river banks. For those areas that are developed, it is critical to enforce Land Code and Water Codes that restrict tourism facilities and development in ecologically important areas. Another key focus should be on reducing corruption among state ecological inspectors and local officials who accept payments for non-enforcement of laws. This should help prevent illegal hunting and fishing by those who find it possible to pay to be exempt from conservation measures. The government would benefit from the development of an integrated sustainable ecotourism strategy that brings together national parks, NGOs, and international standards.

E. Governance

- **Threat: Weak application of rule of law and corrupt dealings**
Selective enforcement and adherence of laws to protect or conserve the biodiversity threaten the natural resource base, primarily in regards to poaching, illegal logging, and secretive land deals that result in damaging development of fragile ecosystems. The private and public decision-making processes impacting on biodiversity have not always been open, transparent and accountable, resulting in actions and activities that degrade the country's biological base.
- ✓ **Action:** To protect biodiversity, all laws related to environmental protection should be respected and enforced. Ukraine's civil society needs to continue to encourage openness, transparency and accountability in government process. The Ukraine government should increase its vigilance of payoff schemes for land development and inappropriate use of natural resources.
- **Threat: Weak public participation in the political process**
The involvement of the NGO community in the political processes which impact biodiversity has decreased, and environmental NGOs have been less involved in decision-making. There is a strained relationship between many NGOs and the government that needs to be repaired so that civil society as a whole can work in unison with the government towards a common goal of biodiversity conservation.

- ✓ **Action:** Environmental NGOs need to be strengthened, especially those related to protected area management, environmental education, and environmental policy making related to biodiversity conservation. This support can come from external donors, from increased interaction with government and ministries, and from increased outreach to constituents.

F. Protected Areas

- **Threat: Inadequate system of protected areas**

Although the area under protected lands has increased by 74 percent since 1993, the current level of 4.5 percent continues to be inadequate to maintain or improve upon the biodiversity base. The low percentage of protected lands is compounded by an uneven distribution across the country as well as across landscape types. Due to poor management and weak enforcement, existing areas are often referred to as “paper parks”.
- ✓ **Action:** The Ministry of Environmental Protection must strengthen and expand the system of protected areas. This includes improving enforcement of existing laws to protect nature reserves and building capacity at the local level, especially through NGOs, to help manage nature reserves. As the protected areas network increases, these areas will become the backbone of the National Ecological Network of Ukraine. It will be important to promote public awareness of the value of biodiversity and biodiversity conservation to Ukraine to strengthen the in-country capacity of Ukraine to maintain support for, and interest in, protected areas.

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SECTION V: EXTENT TO WHICH USAID ACTIONS MEET THE NEEDS IDENTIFIED

At this time it is not possible to develop a section to address FAA, Sec 119(d)(2), “the extent to which the actions proposed for support by the Agency meet the needs thus identified,” as future programming information has not yet been defined. The authors of this report would like to note that to effectively cover the FAA, the USAID Regional Mission for Ukraine, Moldova and Belarus has the authority, capacity, knowledge and creativity to build this section on “The Extent to Which,” based upon the information provided in this report and their own additional knowledge and experiences not covered herein. The Mission should be well-positioned to articulate the ways in which its programs relate to environmental needs and contribute to conservation. Following the elaboration of the new Strategic Plan in 2007 and as new projects and activities are designed, the USAID Regional Mission for Ukraine, Moldova and Belarus should revisit and revise this section to address how the actions proposed for support by the USAID Regional Mission meet the needs identified in this analysis.

Future Programming & Recommendations for USAID Mission

USAID’s programming in certain strategic areas can have positive impacts on biodiversity conservation in the country. Much of USAID’s portfolio relating to Ruling Justly and Economic Freedom provide a solid foundation for biodiversity conservation. Notwithstanding the consideration that the Mission has no current plans to make substantial investments in biodiversity protection, there are some low-cost solutions through policy dialogue support, participatory training, the use of volunteers and arrangements with professional associations. Furthermore, there are potential linkages in the current portfolio which would be good opportunities for interventions.

- **Political process development.** A direct benefit from supporting democratic reforms is the creation of an effective parliamentary system to address natural resource issues on a rational and timely basis. Such a parliament would also have the capacity to research, prioritize and promote passage of legislation that could address the long term concerns of biodiversity conservation.
- **Local governance.** Activities in local and municipal government support are designed to enhance the active participation of the citizenry in local decision-making. One of the most important decisions the citizens should make concerns their quality of life. Part of their quality of life is the natural resource base that makes up their environment. Knowledge of the return to the investment in the natural resource base including biodiversity could result in helping city governments to attract investment, promote business development and create jobs.
- **Business Development.** Any efforts to support and promote ecotourism would be well received in Ukraine. Ecotourism is a reality in Ukraine; however, some neighboring countries are ahead in their ecotourism development and, consequently, are taking clients away from those who might be Ukrainian clients. To the advantage of Ukraine ecotourism, there already exist some good examples of ecotourism in the country. The USAID/Ukraine business development program objectives would fit well to ecotourism.
- **Anti-Corruption.** Natural resources have long been the target of corruption. Poaching, illegal logging, and harvesting fish using illegal methods are only few of the ways that the natural resource base has been exploited. Actions to strengthen the rule of law have direct application to the protection and conservation of biodiversity.

- **Civil Society and Media.** Activities for the civil society and media support the development and sustainability of NGOs and lend itself to the development and sustainability of environmental NGOs as well.
- **Agriculture.** At the present time, there is considerable interest in Ukraine to develop and implement an agricultural extension service. Privatization of agricultural lands without the appropriate technical support for the new, private farmers could have ramifications on biodiversity of Ukraine. Improper application of pesticides and fertilizers has impacts on ground water, surface water, and, eventually, human health. Well-trained agricultural extension agents supported by a network of specialists from a ministry or agricultural university would be valuable elements in the protection and conservation of biodiversity.
- **Energy Efficiency and Renewable Energy Development.** In the summer of 2006, USAID/Ukraine initiated a program to assist Ukraine to increase its energy efficiency and energy independence. Included in this program is support for the Government of Ukraine to develop a law on a Production Sharing Agreement for oil and gas exploration in the Black Sea. As part of such ongoing efforts, the Government recently awarded a contract for the exploration of two oil fields in the Black Sea. While this exploration has obvious economic benefits and has the potential to reduce reliance on coal mining in Eastern Ukraine and a dependence on wood fuel in Western Ukraine and its corresponding destruction of Carpathian forests, it will be critical to consider the impact the exploration and development of oil fields will have on coastal and Black Sea ecosystems and biodiversity. Any future work done under this program should undergo a thorough environmental impact assessment before work is initiated, and any necessary mitigation must be considered a required element of biodiversity conservation.

SECTION VI: CONSOLIDATED MATRIX – THREATS, ACTIONS, EXTENT TO WHICH, & RECOMMENDATIONS

The table below is a consolidated matrix which presents the threats identified, actions necessary to address the threats, extent to which USAID existing programs address the threat, and recommendations for USAID consideration. Information is extremely condensed, for more detail explanation of Threats and Actions please see Section II and Section IV respectively. Recommendations are covered in Section V. The Team has made every effort to present recommendations that fit within existing and known future programming. These recommendations, while exhaustive, represent a range of measures (both low cost which fit within existing programs to more comprehensive new efforts) the Mission could take to address the threats identified. These recommendations should not be interpreted as mandatory, but wherever possible should be duly considered. The Team acknowledges that it is not feasible at this time for all recommendations to be implemented.

Threats to Biodiversity	Actions Necessary to Address the Threat	Extent to Which USAID Currently Addresses Threat	Recommendations for USAID Consideration
Over arching threat: Environmental degradation due to agricultural practices			
Lack of understanding of agricultural practices	<ul style="list-style-type: none"> Ministry of Agriculture should work with universities and public institutions to develop an agricultural extension service. To raise public awareness, introduce and strengthen good agricultural practices, and to educate farmers about biodiversity-friendly farm plans, local governments and/or universities should support agricultural extension programs. 	<ul style="list-style-type: none"> No current USAID activities in place to address the threat 	<ul style="list-style-type: none"> The CNFA program may contribute by way of focused volunteer placement to assist in the development of the agricultural extension service.
Negative impact of intensive farming	<ul style="list-style-type: none"> Limit use of mineral fertilizers, pesticides, and herbicides on farm fields. Mitigate known areas of chemical pollution and water and soil contamination, especially close to rivers and forest zones. Develop and promote production systems which rely on low level of chemicals such as bio-organic fertilizer systems. Practice integrated pest management (IPM) principles and agricultural handling practices. Comply with expectations of good agricultural practices (GAP). 		<ul style="list-style-type: none"> Incorporate into the Land Titling efforts components to minimize the negative impacts of intensive farming. For example, pesticide handling, application and disposal information could be part of the education efforts of the Ukraine Land Titling Legal Centers. Farmer-to-Farmer program may contribute here also.

Threats to Biodiversity	Actions Necessary to Address the Threat	Extent to Which USAID Currently Addresses Threat	Recommendations for USAID Consideration
Over arching threat: Environmental degradation due to agricultural practices			
Lack of viable habitat	<ul style="list-style-type: none"> • Design an agricultural landscape with expanded habitats for native species; especially in the steppe region. • Implement the National Ecological Network (NEN) including agricultural lands. • Protect and expand agro-ecology habitats, such as forested buffers and wetlands. • Integrate conservation practices, such as good agricultural practices (GAP) into farm management plans. • Compensate landowners with economic incentives such as payments for watershed protection and carbon sequestration. 		<ul style="list-style-type: none"> • Farmer-to-Farmer program may focus a volunteer to interface with those implementing the National Ecological Network and the good agricultural practices and integrate these concepts into the agricultural program of USAID/Ukraine.
Soil degradation	<ul style="list-style-type: none"> • Limit excessive soil erosion from agricultural lands through good agricultural practices. • Practice contour plowing, no-till techniques and crop rotations to address decreasing humus organic content. • Restore damaged shelter belts, and plant new ones to minimize damage from surface wind. • Afforest riparian zones to trap sediments and nutrients and increase agro-ecology and riparian habitats. 		<ul style="list-style-type: none"> • Farmer-to-Farmer program may focus a volunteer on long-term impact of poor agricultural practices which result in soil degradation.

Threats to Biodiversity	Actions Necessary to Address the Threat	Extent to Which USAID Currently Addresses Threat	Recommendations for USAID Consideration
Over arching threat: Adverse impacts on forestry sector			
Poor forestry management	<ul style="list-style-type: none"> • Ukrainian State Committee of Forestry should develop integrated forest management plans that comply with EU standards. • Avoid monoculture plantings in afforestation projects. • Consider revising forest classification schemes to balance timber harvest and ecological services. • Extend forestry programs for non-timber forest products and ecotourism. • Integrate market-based incentives into forestry. • Expand certification programs, such as the Forest Stewardship Council (FSC) in forestry practices. • Reward good stewardship companies with greater market access. 	<ul style="list-style-type: none"> • No current USAID activities in place to address the threat 	<ul style="list-style-type: none"> • Ag policy activity may focus policy recommendations which will have direct application to forestry management. Action followed by Farmer-to-Farmer volunteers to incorporate such improved techniques to improve forest management.
Illegal harvest	<ul style="list-style-type: none"> • Prohibit illegal activities in protected areas. • Provide local populations with alternative sources of energy, such as natural gas. • Increase public awareness through education and training activities. • Strengthen enforcement and implement existing laws. 		<ul style="list-style-type: none"> • Include examples from the forestry sector, such as illegal harvesting in the Rule of Law program with the expectation to increase transparency.
Lack of viable forest habitats	<ul style="list-style-type: none"> • Expand fragmented forest systems into landscape-scale functioning forest networks. • Afforest new areas (included degraded plots) and improve management in existing forests. • Comply with the National Ecological Network (NEN) concept. 		<ul style="list-style-type: none"> • The Farmer-to-Farmer program may be focused to provide direction to the forest networks and forestry aspects of the National Ecological Network.

Threats to Biodiversity	Actions Necessary to Address the Threat	Extent to Which USAID Currently Addresses Threat	Recommendations for USAID Consideration
Over arching threat: Degradation of Ukraine’s waters and aquatic ecosystems			
Loss of wetlands and riparian habitat	<ul style="list-style-type: none"> • The State Department of Fisheries should work with law enforcement agencies to enforce laws in order to protect sensitive wetland and riparian habitats. • Avoid negative impacts of fish farms. • Provide incentives to landowners for wetland management. • More actively participate in international transboundary programs in the Lower Danube, Dniester and Black Sea regions. • Respect the existing Land Code and Water Code laws that specify land use requirements that protect habitats and water quality. 	<ul style="list-style-type: none"> • No current USAID activities in place to address the threat 	<ul style="list-style-type: none"> • Suggest the Agricultural Policy, Legal and Regulatory Reform program incorporate the concept of the enforcement of existing laws, such as the Land and Water Code laws, as they work with the Ukrainian government to support growth of the agricultural and food sectors. • Include examples from the forestry sector, such as enforcement of laws designed to protect habitats in the Rule of Law program with the expectation to increase transparency.
Agricultural pollution	<ul style="list-style-type: none"> • Limit non-point source runoff through reduced use of fertilizers. • Use agricultural extension services to increase awareness of impacts of non-point source runoff. 		<ul style="list-style-type: none"> • Farmer-to-Farmer program may focus volunteers to assist in the development of the agricultural extension program as well as to provide materials that can be disseminated to farmers at point of agricultural chemical sales.
Poaching	<ul style="list-style-type: none"> • Respect the law and strengthen enforcement for poaching, especially for endangered, but high value species. • Work with local communities to establish sustainable fishery management practices for rivers, lakes and ponds. • Support fish reintroduction programs and implement aquaculture practices to conserve native species. 		<ul style="list-style-type: none"> • Further opportunity for Rule of Law application with focus on anti-poaching efforts. • Farmer-to-Farmer program may focus on improved aquaculture practices to conserve native species.

Threats to Biodiversity	Actions Necessary to Address the Threat	Extent to Which USAID Currently Addresses Threat	Recommendations for USAID Consideration
Over arching threat: Degradation of Ukraine’s waters and aquatic ecosystems			
Changes to hydrological regime	<ul style="list-style-type: none"> • Mitigate the impacts of the old, but highly modified hydrological structures used for drainage, irrigation, and fish ponds. • Prior to implementing new projects, conduct environmental impact assessments (EIAs) to determine the impacts to biodiversity. • Undertake integrated river basin management to balance water uses for different purposes; such as the Dnipro Basin Strategic Action Plan (SAP). • Balance uses related to agricultural irrigation, fish farming, hydroelectric energy and biodiversity conservation. • Respect the existing Land Code and Water Code laws that specify land use requirements that protect habitats and water quality 		<ul style="list-style-type: none"> • Local-level public services in water and wastewater could be linked to the Water Code. • Suggest the Agricultural Policy, Legal and Regulatory Reform program incorporate the concept of the enforcement of existing laws, such as the Land and Water Code laws, as they work with the Ukrainian government to support growth of the agricultural and food sectors.
Invasive species	<ul style="list-style-type: none"> • Safely dispose of ballast water. • International ships entering and leaving the Black Sea should pump and store ship ballast water according to safe standards that do not allow invasive organisms to enter local waters. • Avoid invasive fresh water species in fish ponds. 		<ul style="list-style-type: none"> • The International Institute for Food Safety and Quality may be directed to address the concerns of invasive species and the potential impact on the supply chain in the food industry.

Threats to Biodiversity	Actions Necessary to Address the Threat	Extent to Which USAID Currently Addresses Threat	Recommendations for USAID Consideration
Over arching threat: Public Awareness, and Socio-economic issues			
Lack of public awareness	<ul style="list-style-type: none"> Ministry of Environmental Protection should expand public outreach efforts. Provide greater resources for information dissemination; including publications, TV and radio, public meetings etc. Support extension services to the agricultural community. Increase training for government officials, inspectors and local administrators. Implement the geographic information systems (GIS) technology among decision-makers in Ministries, local governments, NGOs and the business community etc. Conduct pilot community-based natural resource management programs to facilitate public participation in regional environmental decision making. 		<ul style="list-style-type: none"> Incorporate information concerning biodiversity conservation into the BIZPRO assistance to the tourism cluster in Crimea. The civil society and media program may incorporate biodiversity conservation as a program sub-objective.
Land privatization	<ul style="list-style-type: none"> Conduct proper environmental impact assessments that include public participation and decision-making and implement the findings. Encourage openness and transparency in land privatization process. Respect laws and policies related to the Land Code and Water Code. 	<ul style="list-style-type: none"> No current USAID activities in place to address the threat 	<ul style="list-style-type: none"> Focus Rule of Law program on land privatization program. Land Titling program may work with the private sector agricultural associations to encourage land privatization in an open and transparent manner.
Non-sustainable tourism and recreation	<ul style="list-style-type: none"> Prevent new tourism facilities and development in important ecological areas; especially along coastlines and river banks. Enforce Land Code and Water Codes that restrict development in ecologically important areas. Prevent illegal hunting and fishing by wealthy tourists. Reduce corruption among state ecological inspectors and local officials who accept payments for non-enforcement of laws. Develop sustainable ecotourism as an integrated strategy that brings together national parks, NGOs, and international standards. 		<ul style="list-style-type: none"> The Farmer-to-Farmer program may expand its tourism efforts. The Rule of Law activities apply here, especially for the wealthy. USAID Grants to Ukrainian NGOs with biodiversity conservation advocacy interests may be valuable.

Threats to Biodiversity	Actions Necessary to Address the Threat	Extent to Which USAID Currently Addresses Threat	Recommendations for USAID Consideration
Over arching threat: Governance Issues			
Weak application of rule of law and corrupt dealings	<ul style="list-style-type: none"> • Respect and enforce all laws related to environmental protection. • Encourage openness, transparency and accountability in government process. Avoid payoff schemes for land development and inappropriate use of natural resources. • Improve internal support for the State Ecological Inspectorate (SEI) to reduce incentives for staff to look for additional sources of revenue. 	<ul style="list-style-type: none"> • No current USAID activities in place to address the threat 	<ul style="list-style-type: none"> • Focus the Legal Reform and Rule of Law program on the weak application of laws such as anti-poaching, protected areas, and other laws pertaining to biodiversity conservation. • As USAID continues to address combating corruption and strengthening the Rule of Law, concerns of biodiversity conservation may be incorporated into the training programs.
Weak public participation in the political process	<ul style="list-style-type: none"> • Strengthen environmental NGOs; especially those related to protected area management, environmental education, and environmental policy making related to biodiversity conservation. 		<ul style="list-style-type: none"> • Whenever possible, incorporate biodiversity conservation issues into programs which foster civic activism, support NGO development and promote civic activism in support of biodiversity concerns.

Threats to Biodiversity	Actions Necessary to Address the Threat	Extent to Which USAID Currently Addresses Threat	Recommendations for USAID Consideration
Over arching threat: Inadequate system of protected areas			
Current system of protection is inadequate	<ul style="list-style-type: none"> • Strengthen and expand the system of protected areas. • Enforce the existing laws to protect nature reserves. • Build capacity at the local level, especially through NGOs, to help manage nature reserves. • Support the implementation of the National Ecological Network of Ukraine • Promote public awareness of the value of biodiversity and biodiversity conservation to Ukraine to strengthen the in-country capacity of Ukraine to maintain support • Coordinate internal and external support for the sustainability of biodiversity • Create a new international image of Ukraine environment, including the diverse and valuable biodiversity in need of conserving 	<ul style="list-style-type: none"> • No current USAID activities in place to address the threat 	<ul style="list-style-type: none"> • Local governance activities may address capacity at local level for management of protected areas. • Recommend exploring community-based resource management model in programs.

ANNEXES:

Annex A: Protected Areas – Lists and Maps

Ukraine's Protected Area Types and Management Schemes

(adapted from Ukraine Forestry Sector Note: Status and Opportunities for Development, World Bank, March 2006)

Type of Protected Area	Management Objectives	Establishment and Management Opportunities and Constraints
National Park (introduced in 1992)	<ul style="list-style-type: none"> • Conservation, restoration and efficient use of natural and historical/cultural complexes and elements of the ecosystem, which have conservation, recreational, historic and cultural, scientific, educational and aesthetic value; • Organization of tourism and various types of recreation activities in natural environment while keeping strict protection regime for selected complexes and elements of the ecosystem; • Scientific research and development of recommendations on environmental protection and use of natural resources; • Environmental awareness and education activities. 	<ul style="list-style-type: none"> • Established by Presidential Decree after a complex approval procedure (multiple clearances from local stakeholders); • Funded from the national budget through managing agency (i.e. Ministry of Environmental Protection, SFC, etc.) and National Environmental Fund; • Establishment requires withdrawal of land from land-users or land owners only for the strictly protected zone. Other zones may remain with original land-owners/users; • Recreation and traditional economic activity allowed.
Biosphere Reserve	<ul style="list-style-type: none"> • Preserve in natural condition the most typical natural complexes of the biosphere; • Environment monitoring; • Research of the environment and its changes as a result of anthropogenic factors. 	<ul style="list-style-type: none"> • Established by Presidential Decree; • Funded from the national budget through managing agency (i.e. Ministry of Environmental Protection, SFC, etc.) and National Environmental Fund; • Recreation and traditional economic activity allowed; • Historically biosphere reserves did not allow economic activity. Zoning and protection regimes are now being revised.
Nature Reserve	<ul style="list-style-type: none"> • Conservation of natural complexes with all their components in natural condition which are typical or unique for a given landscape; • Scientific research and development of nature conservation recommendations; • Environmental awareness; • Training of environmentalists and conservation specialists; • Scientific supervision of sanctuaries, monuments of nature and reserved stoves in the region. 	<ul style="list-style-type: none"> • Established by Presidential Decree; • National level of funding through managing agency and National Environmental Fund; • Strict protection; • No public access; • Focus on scientific research.

Type of Protected Area	Management Objectives	Establishment and Management Opportunities and Constraints
Regional Landscape Parks (introduced in 1992)	<ul style="list-style-type: none"> • Conservation of valuable natural and historical/cultural complexes and elements; • Tourism and recreation while keeping strict protection regime for selected complexes and elements of the ecosystem; • Environmental awareness. 	<ul style="list-style-type: none"> • Established by decision of Oblast council; • Establishment requires withdrawal of land from land-users or land owners only for the strictly protected zone. Other zones may remain with original land-owners/users; • Funded by Oblast budget.
Sanctuary	<ul style="list-style-type: none"> • Preservation and restoration of natural complexes or their specific components. 	<ul style="list-style-type: none"> • Establishment does not require withdrawal of land from land-owners/users; • Management does not require PA administration and staff. Managed by landowner/user; • Territories are not demarcated; • No designated warden service
Monument of Nature	<ul style="list-style-type: none"> • Preservation in the natural state of unique natural elements of landscape. 	<ul style="list-style-type: none"> • Establishment does not require withdrawal of land from land-owners/users; • Management does not require PA administration and staff. Managed by landowner or land-user; • Territories are not demarcated; • No designated warden service.
Reserved Stock	<ul style="list-style-type: none"> • Preservation in the natural state of unique natural landscape(s). 	<ul style="list-style-type: none"> • Establishment does not require withdrawal of land from land-users or land owners; • Strict protection regimes similar to Nature Reserve; • Management does not require PA administration and staff. Managed by landowner/user; • Territories are not demarcated; • No designated warden service.

Ukraine's Protected Areas (by type)

(adapted from World Commission on Protected Areas – World Database on Protected Areas)

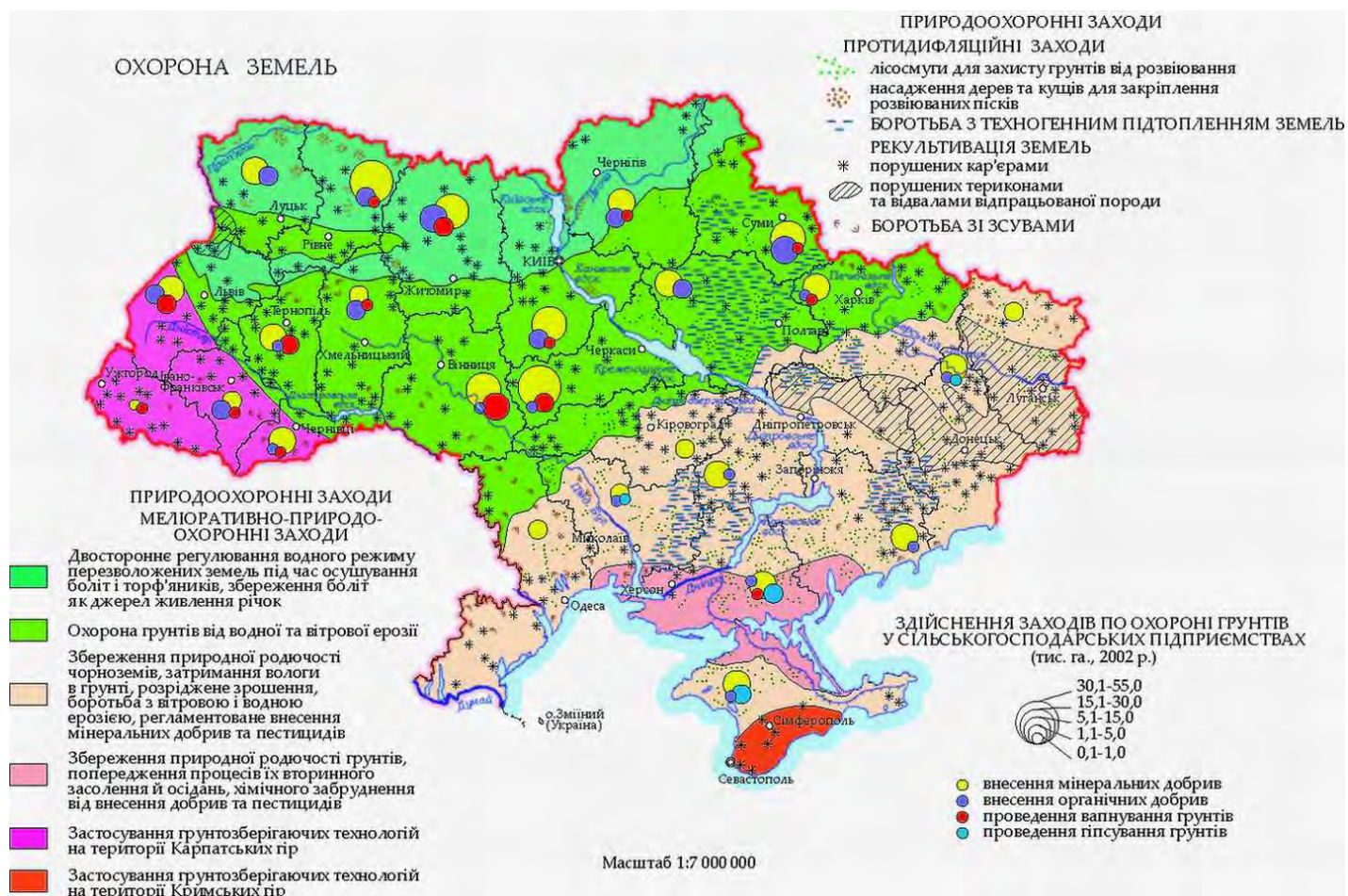
Type of Protected Area	Number
National Designations	
National Biosphere Zapovednik	4
National Nature Park	1
National Park	8
Nature Zapovednik	15
Regional Landscape Park	19
Regional Nature Monument	1921
Regional Park - Monument of Orchard - Park Art	277
Regional Zakaznik	1817
State Botanical Garden	16
State Nature Monument	114
State Nature Reserve	1
State Park - Monument of Orchard - Park Art	78
State Zakaznik	264
Zapovedne Urotchische	664
International Conventions and Programs	
Wetlands of International Importance (Ramsar)	33
World Heritage Convention	6
UNESCO-MAB Biosphere Reserve	6
European Diploma Type 'A'	1

Registered Ramsar Wetland Sites

Site Name	Designation Date	Location	Size (in ha)
Aquatic-cliff complex of Cape Kazantyp	29/07/04	Crimean AR	251
Aquatic-cliff complex of Karadag	29/07/04	Crimean AR	224
Aquatic-coastal complex of Cape Opuk	29/07/04	Crimean AR	775
Bakotska Bay	29/07/04	Khmelnyska Oblast	1,590
Berda River Mouth and Berdianka Spit and Berdianska Bay	23/11/95	Zaporizka Oblast	1,800
Big Chapelsk Depression	29/07/04	Khersonska Oblast	2,359
Bilosaraiska Bay and Bilosaraiska Spit	23/11/95	Donetska Oblast	2,000
Central Syvash	23/11/95	Khersonska Oblast, Crimean AR	80,000
Desna River Floodplains	29/07/04	Sumska Oblast	4,270
Dniester-Turunchuk Crossrivers Area	23/11/95	Odeska Oblast	76,000
Dnipro-Oril Floodplains	29/07/04	Dnipropetrovska Oblast	2,560
Dnipro River Delta	23/11/95	Khersonska Oblast	26,000
Eastern Syvash	23/11/95	Khersonska Oblast, Crimean AR	165,000
Karkinitzka and Dzharylgatska Bays	23/11/95	Khersonska Oblast, Crimean AR	87,000
Kartal Lake	23/11/95	Odeska Oblast	500
Kryva Bay and Kryva Spit	23/11/95	Donetska Oblast	1,400
Kugurlui Lake	23/11/95	Odeska Oblast	6,500
Kyliiske Mouth	23/11/95	Odeska Oblast	32,800
Lake Synevyr	29/07/04	Zakarpatska Oblast	29
Lower Smotrych River	29/07/04	Khmelnyska Oblast	1,480
Molochnyi Liman	23/11/95	Zaporizka Oblast	22,400
Northern Part of the Dniester Liman	23/11/95	Odeska Oblast	20,000
Obytochna Spit and Obytochna Bay	23/11/95	Zaporizka Oblast	2,000
Perebrody Peatlands	29/07/04	Rivnenska Oblast	12,718
Polissia Mires	29/07/04	Zhytomyrska Oblast	2,145
Prypiat River Floodplains	23/11/95	Volynska Oblast	12,000
Sasyk Lake	23/11/95	Odeska Oblast	21,000
Shagany-Alibei-Burnas Lakes System	23/11/95	Odeska Oblast	19,000
Shatsk Lakes	23/11/95	Volynska Oblast	32,850
Stokhid River Floodplains	23/11/95	Volynska Oblast	10,000
Tendravska Bay	23/11/95	Khersonska Oblast	38,000
Tylygulskiy Liman	23/11/95	Odeska, Mykolaivska Oblasts	26,000
Yagorlytska Bay	23/11/95	Khersonska, Mykolaivska Oblasts	34,000

Protected Areas in Ukraine

(Map adapted from Ministry of Environmental Protection of Ukraine, available only in Ukrainian)



Red Data Book of Ukraine

(Map adapted from Ministry of Environmental Protection of Ukraine, available only in Ukrainian)

ЧЕРВОНА КНИГА



Green Book of Ukraine

(Map adapted from Ministry of Environmental Protection of Ukraine, available only in Ukrainian)



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Annex B: Donor Funding Tables

Title	Funding Source	Duration	Funding	Summary
UNDP GEF Dnipro Basin Environment Programme (Transboundary)	UNDP GEF	2005-2007	\$14.25 m	To reduce transboundary industrial chemical pollution from small industries currently discharging through municipal waste systems and to provide information requisite to complete project proposals and necessary documentation” for a Full Project Proposal.
Consolidation of the Polissya Ecological Corridor (Biodiversity)	UNDP GEF	2006-2008	\$6.33 m	The project will be targeted at elaborating long-term program of the reserved territories development, strengthening capacity of both parks, supporting green tourism development in Polissya, as well as strengthening cooperation between Belarus and Ukraine on establishing transboundary ecological territory in Polissya.
Rural Land Titling & Cadastre Development Project (related)	World Bank	2003-2008	\$350.51 m	The Project will establish a national cadastre and title registry system, allocate land parcels to individuals in rural areas on an equitable basis, establish their property rights by issuing state deeds for land, and encourage the restructuring of farms into more efficient units.
Strategic plan of Ukrainian forest sector development	Sweden International Development Agency (SIDA)	2001-2004	Not available	<p>Project content - Development of the strategic plan of forest sector development in Ukraine.</p> <p>Expected results:</p> <ul style="list-style-type: none"> Proposals of changes in forest legislation Development of proposals on forest sector institutional structure improvement Proposals of strategic and technical decisions on timber trade development at the local and international market <p>To test methods of forest management and planning, oriented towards income increase, which observe environmental aspects.</p>
Development and testing of the national forest certification standards in Ukraine	Alliance of World Bank and WWF	2003-2004	Not available	<p>Project content - to establish of the national initiative and to compete of working group for developing and testing of national forest certification standards in Ukraine under FSC guidance</p> <p>Expected results: the Ukrainian national forest certification standards.</p>

Title	Funding Source	Duration	Funding	Summary
Swiss-Ukrainian Forest Development Project in TransCarpathian, FOR-ZA	Swiss Agency for Development and Cooperation (SDC)	2003-2005	\$1.616 m	<p>Project content - project addresses the need for the forestry of TransCarpathian to adapt to the new social and economic environment, takes a landscape approach to sustainable management of forest resources and conservation.</p> <p>Expected results:</p> <ul style="list-style-type: none"> • To diversify and further strengthen multi-purpose forest management planning and close-to-nature silviculture, in order to sustain forest functions and enhance productivity of forests goods and services. • To strengthen forest policy in order to enhance the contribution of forests to socio-economic development and to landscape protection, particularly in relation to natural disasters. • To valorise forest products and forest services for the economic benefits of the local population.
Development of the Ukrainian Forestry Web-page for EFI Forest Information Service	European Forest Institute (EFI)	2002-2004	Not available	<p>Project content - Creation of a web-page “Forests and Forest Management in Ukraine”, in the format proposed of EFI (under requirement of FINE project).</p> <p>Expected results:</p> <ul style="list-style-type: none"> • creating web pages with regional information about Ukrainian forestry • compiling a link list on timber and wood products companies, small and medium (forest-related) enterprises etc. • Ukrainian contributing to the EFI’s ‘Forestry Law Database.’
Greening Industrial Modernization Project	World Bank, IBRD/IDA		\$95.55 m	Pipeline
Black Sea Umbrella/Crimea Coastal Zone Management	World Bank, Global Environment Project		\$12 m	World Bank pulled funding after counterpart funds were not provided and governmental ownership was not demonstrated for the project. More serious rule of law issues were suspected and the project was terminated in 2006.

Title	Funding Source	Duration	Funding	Summary
Carbon Sequestration/ Chernobyl Reforestation Community Development Carbon Finance Project	World Bank, Carbon Offset		\$17.6 m	The objective of the project is to reconstruct, maintain and manage natural pine and beech forest on approximately 15,000 hectares of abandoned agricultural lands in the vicinity of Chernobyl in order to re-establish forestry as the most economically productive land use for the area, and also sequester Kyoto-compliant carbon from the atmosphere.
Agricultural Competitiveness & Food Safety Project	World Bank, IBRD/IDA		\$150 m	Pipeline
UA Donetsk Environment	World Bank, IBRD/IDA		\$25 m	World Bank pulled funding after counterpart funds were not provided and governmental ownership was not demonstrated for the project. More serious rule of law issues were suspected and the project was terminated in 2006.
Lviv Water and Wastewater Project	World Bank, IBRD/IDA	2001- 2006	\$40.8 m	In cooperation with SIDA.
Ozone Depleting Substances Phase-Out GEF Project	World Bank, Global Environment Project	1998- 2004	\$32.6 m	
EcoLan: Sustainable Land Use in Ukraine	SDC	2003- 2007	\$1.85 m	The project focuses on support of organic agriculture initiatives in Vinnytsya and Ternopil regions. Since it is a new area in Ukraine, the project simultaneously supports the development of organic agriculture movement in the country. It aims to contribute to rural development through sustainable use of natural resources and facilitating income generation for the rural population.
Organic Certification and Market Development in Ukraine	SDC	2006- 2010	\$1.48 m	The goal of the project is to contribute to the growth of the Ukrainian organic sector and to its integration into the world trade market while alleviating poverty – especially in rural areas – through ensuring small and medium farmers and other stakeholders of the organic value chain an equal access to new market opportunities.
Access to Rural Financial Services in the Vinnytsya Region of Ukraine	SDC	2006- 2008	\$621,500	The overall goal of the project fits into the mission of other Swiss projects in the region and is to promote sustainable development in rural areas of Ukraine in order to preserve natural resources, to generate income and to reduce migration from the countryside. The purpose of the project is granting access to financial services on a sustainable basis to small and medium size producers in rural areas of the Vinnytsya oblast.

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Annex C: Environment-Related Legislation & Concepts, Plans, Programs, and Strategies

Key Policy Documents

- “Main Directions of the National Policy of Ukraine for the Environmental Protection,” or “Main Directions.” Initially proclaimed in 1998, Main Directions is also referred to as the National Environmental Action Plan, or NEAP.
- The 2004-2015 Strategy for Economic and Social Development of Ukraine (known as “On the Way to European Integration”) of 2004
- Action Programme of the Cabinet Ministers known as “Towards People” of 2005.
- The State Programme for the Creation of a National Ecological Network in Ukraine for 2000–2015
- Law on Ecological Network (2004)
- Concept (Outline) of the State Programme on Biodiversity Conservation for 2005–2025
- Concept (Outline) of the State Programme on Developing Nature Protected Areas

Legal Codes

- Land Code (updated 2001): Defines appropriate land use activities and establishes exclusion zones and protection areas for critical habitats such as wetlands and riparian buffers.
- Forestry Code (updated 2006): Establishes categories and zones for forestry activities; expands from two to four the categories of forest use. Reconciles overlaps with Water Code related to riparian buffers.
- Water Code (adopted in 1996): Establishes protection zones, or belts, alongside rivers, lakes, and coastlines. It also limits certain land use activities that may pollute water bodies, such as pesticide application.

Other important laws

- State Program of National Ukrainian Ecological Network Development for 2000–2015;
- Law On the Ecological Network (2004)
- Action Plan was prepared and approved (by the Order of a Cabinet of Ministers) for maintenance of coordination of the Law Implementation (2004)
- The Guidelines for Development of the Ecological Network at Local Level (2003–2005)
- The Order of a Cabinet of Ministers "On Assertion of the Concept of the State Program on Biodiversity Conservation 2005–2025" was developed and approved (2004)
- The State Programme on Biodiversity Conservation 2005–2025 is being developed
- The draft Law on Ratification of the Protocol for the Black Sea Biodiversity and Landscapes Conservation (to the Convention on Black Sea Protection against Contamination) was introduced for consideration in 2004 to the Ukrainian Parliament
- State Reserve Service of the Ministry of Environmental Protection Program came into effect in 2001
- The National Coordination Board for EcoNet Development prepared and proposed to authorities changes and additions in October 2003 and June 2005
- The Law on Animals (2001)
- A new edition of the Law on Air Protection (2001)
- Laws on the Red Book of Ukraine (2002)
- Drinking Water and the Drinking Water Supply (2002)
- State Control of the Use and Protection of Land (2003)

- Land Protection (2003)
- Environmental Audits (2004)
- The Network of Nature-Protected Areas (2004)
- The Regulation on the State Ecological Inspectorate (Resolution of the Cabinet Ministers No. 770, 2004)
- The Law on Ecological Expertise (IEE) of 1995

International Conventions and Treaties

Ukraine is a party to the following international agreements or conventions:

- Convention on Wetland of International Importance (Ramsar, 1971)
- Convention Concerning Protection of World Cultural and Natural Heritage (Paris, 1972)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, 1975)
- Convention on Conservation of Migratory Species of Wild Animals (Bonn, 1979)
- Convention on Conservation of European Wildlife and Natural Habitats (Bern, 1979)
- Convention on Long-Range Transboundary Air Pollution (1979)
- Protocol of 1978 to the International Convention for the Prevention of Pollution from Ships (1983)
- Montreal Protocol on Substances that Deplete the Ozone Layer (1989)
- Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution Concerning the Control of Emissions of Nitrogen Oxides or their Transboundary Fluxes (1991)
- Convention of Biological Diversity (Rio de Janeiro, 1992)
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1992)
- Convention on the Protection and Restoration of the Environment of the Black Sea and Sea of Azov (Bucharest, 1994)
- United Nations Convention on the Law of the Sea (1994)
- Pan-European Biological and Landscape Diversity Strategy (1995)
- UN Framework Convention on Climate Change (1996)
- Convention on the Protection and Use of Transboundary Watercourses and International Lakes (1996)
- Convention on Environmental Impact Assessment in a Transboundary Context (1997)
- Aarhus Convention on Access to Information, Public Participation, in Decision Making and Access to Justice in Environmental Matters (2001)
- International Commission for the Protection of the Danube River (ICPDR) (2003)
- International Convention for the Control and Management of Ships' Ballast Water and Sediments (2004)
- Convention on the Protection and Sustainable Development of the Carpathians (2005)

Treaties yet to be ratified:

- Protocol on Environmental Protection of the Antarctic Treaty (1989)
- Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution Concerning the Control of Emissions of Volatile Organic Compounds or their Transboundary Fluxes (1997)
- Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on Further Reduction of Sulphur Emissions (1998)
- Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on Persistent Organic Pollutants (Not yet in force)
- Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on the Reduction of Sulphur Emissions or their Transboundary Fluxes by at least 30% (1987)

Annex D: List of Endangered Species: IUCN & Red Book of Ukraine

Extinct in the Wild (EW)		
Scientific Name	Species Author	Common Name
Equus ferus	Boddaert, 1785	HORSE, WILD HORSE

Critically Endangered (CR)		
Scientific Name	Species Author	Common Name
Acipenser sturio	Linnaeus, 1758	BALTIC STURGEON, COMMON STURGEON
Monachus monachus	(Hermann, 1779)	MEDITERRANEAN MONK SEAL
Numenius tenuirostris	Vieillot, 1817	SLENDER-BILLED CURLEW
Saiga tatarica	(Linnaeus, 1766)	SAIGA ANTELOPE, SAIGA
Squatina squatina	(Linnaeus, 1758)	ANGEL SHARK

Endangered (EN)		
Scientific Name	Species Author	Common Name
Acipenser gueldenstaedtii	Brandt, 1833	RUSSIAN STURGEON
Acipenser nudiiventris	Lovetsky, 1828	BASTARD STURGEON, FRINGEBARBEL STURGEON,
Acipenser stellatus	Pallas, 1771	STAR STURGEON, STELLATE STURGEON
Bison bonasus	(Linnaeus, 1758)	EUROPEAN BISON, WISENT
Falco cherrug	Gray, 1834	SAKER FALCON
Hucho hucho	(Linnaeus, 1758)	DANUBE SALMON, HUCHEN
Huso huso	(Linnaeus, 1758)	BELUGA, EUROPEAN STURGEON,
Mustela lutreola	(Linnaeus, 1761)	EUROPEAN MINK
Oxyura leucocephala	(Scopoli, 1769)	WHITE-HEADED DUCK
Vipera ursinii	(Bonaparte, 1835)	MEADOW VIPER, ORSINI'S VIPER

Vulnerable (VU)		
Scientific Name	Species Author	Common Name
Acipenser ruthenus	Linnaeus, 1758	STERLET
Acrocephalus paludicola	(Vieillot, 1817)	AQUATIC WARBLER
Anser erythropus	(Linnaeus, 1758)	LESSER WHITE-FRONTED GOOSE
Aquila clanga	Pallas, 1811	GREATER SPOTTED EAGLE
Aquila heliaca	Savigny, 1809	IMPERIAL EAGLE

Vulnerable (VU)		
Scientific Name	Species Author	Common Name
<i>Astacus astacus</i>	(Linnaeus, 1758)	NOBLE CRAYFISH
<i>Barbastella barbastellus</i>	(Schreber, 1774)	WESTERN BARBASTELLE
<i>Betula oycoviensis</i>	Besser	
<i>Branta ruficollis</i>	(Pallas, 1769)	RED-BREASTED GOOSE
<i>Cerambyx cerdo</i>	Linnaeus, 1758	CERAMBYX LONGICORN
<i>Chalepoxenus tauricus</i>	Radchenko, 1989	
<i>Chlamydotis undulata</i>	(Jacquin, 1784)	HOUBARA BUSTARD
<i>Desmana moschata</i>	(Linnaeus, 1758)	RUSSIAN DESMAN
<i>Dytiscus latissimus</i>	Blunck, 1923	
<i>Eliomys quercinus</i>	(Linnaeus, 1766)	GARDEN DORMOUSE
<i>Falco naumanni</i>	Fleischer, 1818	LESSER KESTREL
<i>Graphoderus bilineatus</i>	Galewski, 1976	
<i>Gymnocephalus schraetzer</i>	(Linnaeus, 1758)	SCHRAETZER, STRIPED RUFFE
<i>Haliaeetus leucoryphus</i>	(Pallas, 1771)	PALLAS'S FISH-EAGLE
<i>Morimus funereus</i>	Mulsant, 1863	
<i>Myotis bechsteini</i>	(Kuhl, 1817)	BECHSTEIN'S BAT
<i>Myotis dasycneme</i>	(Boie, 1825)	POND BAT
<i>Myotis emarginatus</i>	(É. Geoffroy, 1806)	GEOFFROY'S BAT
<i>Nannospalax leucodon</i>	(Nordmann, 1840)	LESSER MOLE RAT
<i>Osmoderma eremita</i>	(Scopoli, 1763)	HERMIT BEETLE
<i>Otis tarda</i>	Linnaeus, 1758	GREAT BUSTARD
<i>Parnassius apollo</i>	Linnaeus, 1758	APOLLO BUTTERFLY, APOLLO
<i>Pelecanus crispus</i>	Bruch, 1832	DALMATIAN PELICAN
<i>Percarina demidoffi</i>	Nordmann, 1840	
<i>Phocoena phocoena</i>	(Linnaeus, 1758)	COMMON PORPOISE, HARBOUR PORPOISE
<i>Phyllodesma ilicifolia</i>	(Linnaeus, 1758)	SMALL LAPPET MOTH
<i>Pseudochazara euxina</i>	(Kusnetsov, 1909)	
<i>Rosalia alpina</i>	(Linnaeus, 1758)	ROSALIA LONGICORN
<i>Saga pedo</i>	(Pallas, 1771)	PREDATORY BUSH CRICKET
<i>Spalax arenarius</i>	Reshetnik, 1939	SANDY MOLE RAT
<i>Spalax graecus</i>	Nehring, 1898	BALKAN MOLE RAT, BUKOVIN MOLE RAT
<i>Spalax microphthalmus</i>	Guldenstaedt, 1770	GREATER MOLE RAT
<i>Spermophilus citellus</i>	(Linnaeus, 1766)	EUROPEAN GROUND SQUIRREL
<i>Spermophilus suslicus</i>	(Güldenstädt, 1770)	SPECKLED GROUND SQUIRREL, SPOTTED SOUSLIK
<i>Squalus acanthias</i>	Linnaeus, 1758	CAPE SHARK, PIKED DOGFISH, SPURDOG
<i>Strongylognathus karawajevi</i>	Pisarski, 1966	
<i>Testudo graeca</i>	Linnaeus, 1758	COMMON TORTOISE, GREEK TORTOISE

Vulnerable (VU)		
Scientific Name	Species Author	Common Name
Umbra krameri	Walbaum, 1792	EUROPEAN MUD-MINNOW
Zingel streber	(Siebold, 1863)	STREBER
Zingel zingel	(Linnaeus, 1766)	ZINGEL

Lower Risk/Conservation Dependent (LR/cd)		
Scientific Name	Species Author	Common Name
Marmota bobak	(Müller, 1776)	BOBAK MARMOT
Vertigo angustior	Jeffreys, 1830	NARROW-MOUTHED WHORL SNAIL
Vertigo moulinsiana	Dupuy, 1849	DES MOULIN'S SNAIL

Lower Risk/Near Threatened (LR/nt)		
Scientific Name	Species Author	Common Name
Aegypius monachus	(Linnaeus, 1766)	CINEREOUS VULTURE
Aythya nyroca	(Güldenstädt, 1770)	FERRUGINOUS DUCK
Castor fiber	Linnaeus, 1758	EURASIAN BEAVER
Chionomys nivalis	(Martins, 1842)	EUROPEAN SNOW VOLE, SNOW VOLE
Circus macrourus	(Gmelin, 1770)	PALLID HARRIER
Coenonympha oedippus	(Fabricius, 1787)	FALSE RINGLET
Coracias garrulus	Linnaeus, 1758	EUROPEAN ROLLER
Crex crex	(Linnaeus, 1758)	CORNCRAKE
Cricetulus migratorius	(Pallas, 1773)	GRAY DWARF HAMSTER, GREY HAMSTER
Dryomys nitedula	(Pallas, 1778)	FOREST DORMOUSE
Emys orbicularis	(Linnaeus, 1758)	EUROPEAN POND TURTLE
Eudontomyzon danfordi	Regan, 1911	CARPATHIAN BROOK LAMPREY
Falco vespertinus	Linnaeus, 1766	RED-FOOTED FALCON
Formica polyctena	Foerster, 1850	EUROPEAN RED WOOD ANT
Formica pratensis	Retzius, 1783	EUROPEAN RED WOOD ANT
Formica rufa	Linnaeus, 1761	RED WOOD ANT
Formica uralensis	Ruzsky, 1895	
Gallinago media	(Latham, 1787)	GREAT SNIPE
Glareola nordmanni	Fischer, 1842	BLACK-WINGED PRATINCOLE
Glis glis	(Linnaeus, 1766)	FAT DORMOUSE
Hirudo medicinalis	Linnaeus, 1758	MEDICINAL LEECH
Limosa limosa	(Linnaeus, 1758)	BLACK-TAILED GODWIT
Lutra lutra	(Linnaeus, 1758)	COMMON OTTER, EURASIAN OTTER
Lycaena dispar	(Haworth, 1802)	LARGE COPPER

Lower Risk/Near Threatened (LR/nt)		
Scientific Name	Species Author	Common Name
Maculineaalcon	(Denis & Schiffermüller, 1775)	ALCON LARGE BLUE
Maculinea arion	(Linnaeus, 1758)	LARGE BLUE
Maculinea nausithous	(Bergstrasser, 1779)	DUSKY LARGE BLUE
Maculinea teleius	(Bergsträsser, 1779)	SCARCE LARGE BLUE
Micromys minutus	(Pallas, 1771)	EURASIAN HARVEST MOUSE, HARVEST MOUSE
Microtus tatricus	Kratochvil, 1952	TATRA VOLE
Milvus milvus	(Linnaeus, 1758)	RED KITE
Misgurnus fossilis	(Berg, 1949)	WEATHERFISH
Mus spicilegus	Petenyi, 1882	MOUND-BUILDING MOUSE, STEPPE MOUSE
Muscardinus avellanarius	(Linnaeus, 1758)	COMMON DORMOUSE, HAZEL DORMOUSE
Myotis myotis	(Borkhausen, 1797)	GREATER MOUSE-EARED BAT, LARGE MOUSE-EARED BAT, MOUSE-EARED BAT
Nehalennia speciosa	(Charpentier, 1840)	
Nyctalus lasiopterus	(Schreber, 1780)	GIANT NOCTULE
Nyctalus leisleri	(Kuhl, 1817)	LESSER NOCTULE
Pseudanodonta complanata	Rossmössler, 1835	
Rhinolophus ferrumequinum	(Schreber, 1774)	GREATER HORSESHOE BAT
Sciurus vulgaris	Linnaeus, 1758	EURASIAN RED SQUIRREL, RED SQUIRREL
Sicista betulina	Pallas, 1779	NORTHERN BIRCH MOUSE
Sicista subtilis	(Pallas, 1773)	SOUTHERN BIRCH MOUSE
Tetrax tetrax	(Linnaeus, 1758)	LITTLE BUSTARD
Triturus dobrogicus	(Kiritzescu, 1903)	DANUBE CRESTED NEWT
Tryngites subruficollis	(Vieillot, 1819)	BUFF-BREASTED SANDPIPER
Unio crassus	Philipsson, 1788	

Lower Risk/Least Concern (LR/lc)		
Scientific Name	Species Author	Common Name
Abies alba	Mill.	
Abramis bjoerkna	(Linnaeus, 1758)	SILVER BREAM
Accipiter brevipes	(Severtsov, 1850)	LEVANT SPARROWHAWK
Accipiter gentilis	(Linnaeus, 1758)	NORTHERN GOSHAWK
Accipiter nisus	(Linnaeus, 1758)	EURASIAN SPARROWHAWK
Acrocephalus agricola	(Jerdon, 1845)	PADDYFIELD WARBLER
Acrocephalus arundinaceus	(Temminck & Schlegel, 1847)	GREAT REED-WARBLER
Acrocephalus melanopogon	(Temminck, 1823)	MOUSTACHED WARBLER
Acrocephalus palustris	(Bechstein, 1798)	MARSH WARBLER
Acrocephalus schoenobaenus	(Linnaeus, 1758)	SEDGE WARBLER
Acrocephalus scirpaceus	(Hermann, 1804)	REED WARBLER

Lower Risk/Least Concern (LR/Lc)		
Scientific Name	Species Author	Common Name
<i>Actitis hypoleucos</i>	Linnaeus, 1758	COMMON SANDPIPER
<i>Aegithalos caudatus</i>	(Linnaeus, 1758)	LONG-TAILED TIT
<i>Aegolius funereus</i>	(Linnaeus, 1758)	BOREAL OWL
<i>Aeshna viridis</i>	Eversmann, 1836	GREEN HAWKER
<i>Alauda arvensis</i>	Linnaeus, 1758	EURASIAN SKYLARK
<i>Alburnoides bipunctatus</i>	(Bloch, 1782)	SPIRLIN
<i>Alburnus alburnus</i>	(Linnaeus, 1758)	BLEAK
<i>Alcedo atthis</i>	(Linnaeus, 1758)	COMMON KINGFISHER
<i>Alces alces</i>	(Linnaeus, 1758)	EUROPEAN ELK, MOOSE
<i>Alectoris chukar</i>	(Gray, 1830)	CHUKAR
<i>Alle alle</i>	(Linnaeus, 1758)	DOVEKIE
<i>Anas acuta</i>	Linnaeus, 1758	NORTHERN PINTAIL
<i>Anas clypeata</i>	Linnaeus, 1758	NORTHERN SHOVELER
<i>Anas crecca</i>	Linnaeus, 1758	COMMON TEAL
<i>Anas penelope</i>	Linnaeus, 1758	EURASIAN WIGEON
<i>Anas platyrhynchos</i>	Linnaeus, 1758	MALLARD
<i>Anas querquedula</i>	Linnaeus, 1758	GARGANEY
<i>Anas strepera</i>	Linnaeus, 1758	GADWALL
<i>Anser albifrons</i>	(Scopoli, 1769)	GREATER WHITE-FRONTED GOOSE
<i>Anser anser</i>	(Linnaeus, 1758)	GREYLAG GOOSE
<i>Anser fabalis</i>	(Latham, 1787)	BEAN GOOSE
<i>Anthus campestris</i>	(Linnaeus, 1758)	TAWNY PIPIT
<i>Anthus cervinus</i>	(Pallas, 1811)	RED-THROATED PIPIT
<i>Anthus pratensis</i>	(Linnaeus, 1758)	MEADOW PIPIT
<i>Anthus spinoletta</i>	(Linnaeus, 1758)	WATER PIPIT
<i>Anthus trivialis</i>	(Linnaeus, 1758)	TREE PIPIT
<i>Apodemus agrarius</i>	(Pallas, 1771)	STRIPED FIELD MOUSE
<i>Apodemus flavicollis</i>	(Melchior, 1834)	YELLOW-NECKED FIELD MOUSE
<i>Apodemus fulvipectus</i>	Ognev, 1924	YELLOW-BREASTED FIELD MOUSE
<i>Apodemus sylvaticus</i>	(Linnaeus, 1758)	LONG-TAILED FIELD MOUSE, WOOD MOUSE
<i>Apodemus uralensis</i>	(Pallas, 1811)	URAL FIELD MOUSE
<i>Apus apus</i>	(Linnaeus, 1758)	COMMON SWIFT
<i>Aquila chrysaetos</i>	(Linnaeus, 1758)	GOLDEN EAGLE
<i>Aquila nipalensis</i>	Hodgson, 1833	STEPPE EAGLE
<i>Aquila pomarina</i>	Brehm, 1831	LESSER SPOTTED EAGLE
<i>Aquila rapax</i>	(Temminck, 1828)	TAWNY EAGLE
<i>Ardea cinerea</i>	Linnaeus, 1758	GREY HERON
<i>Ardea purpurea</i>	Linnaeus, 1766	PURPLE HERON
<i>Ardeola ralloides</i>	(Scopoli, 1769)	SQUACCO HERON
<i>Arenaria interpres</i>	(Linnaeus, 1758)	RUDDY TURNSTONE
<i>Arvicola terrestris</i>	(Linnaeus, 1758)	EUROPEAN WATER VOLE

Lower Risk/Least Concern (LR/Lc)		
Scientific Name	Species Author	Common Name
<i>Asio flammeus</i>	(Pontoppidan, 1763)	SHORT-EARED OWL
<i>Asio otus</i>	(Linnaeus, 1758)	LONG-EARED OWL
<i>Athene noctua</i>	(Scopoli, 1769)	LITTLE OWL
<i>Aythya ferina</i>	(Linnaeus, 1758)	COMMON POCHARD
<i>Aythya fuligula</i>	(Linnaeus, 1758)	TUFTED DUCK
<i>Aythya marila</i>	(Linnaeus, 1761)	GREATER SCAUP
<i>Bombina bombina</i>	(Linnaeus, 1761)	EUROPEAN FIRE-BELLIED TOAD, FIRE-BELLIED TOAD
<i>Bombina variegata</i>	(Linnaeus, 1758)	YELLOW ₂ BELLIED TOAD
<i>Bombycilla garrulus</i>	(Linnaeus, 1758)	BOHEMIAN WAXWING
<i>Bonasa bonasia</i>	(Linnaeus, 1758)	HAZEL GROUSE
<i>Botaurus stellaris</i>	(Linnaeus, 1758)	GREAT BITTERN
<i>Bubo bubo</i>	(Linnaeus, 1758)	EURASIAN EAGLE-OWL
<i>Bucephala clangula</i>	(Linnaeus, 1758)	COMMON GOLDENEYE
<i>Bufo bufo</i>	(Linnaeus, 1758)	COMMON TOAD
<i>Bufo calamita</i>	Laurenti, 1768	NATTERJACK TOAD
<i>Bufo viridis</i>	Laurenti, 1768	GREEN TOAD
<i>Burhinus oedicnemus</i>	(Linnaeus, 1758)	EURASIAN THICK-KNEE
<i>Buteo buteo</i>	(Linnaeus, 1758)	COMMON BUZZARD
<i>Buteo lagopus</i>	(Pontoppidan, 1763)	ROUGH-LEGGED HAWK
<i>Buteo rufinus</i>	(Cretzschmar, 1827)	LONG-LEGGED BUZZARD
<i>Calandrella brachydactyla</i>	(Leisler, 1814)	GREATER SHORT-TOED LARK
<i>Calandrella rufescens</i>	(Vieillot, 1820)	LESSER SHORT-TOED LARK
<i>Calcarius lapponicus</i>	(Linnaeus, 1758)	LAPLAND LONGSPUR
<i>Calidris alba</i>	(Pallas, 1764)	SANDERLING
<i>Calidris alpina</i>	(Linnaeus, 1758)	DUNLIN
<i>Calidris canutus</i>	(Linnaeus, 1758)	RED KNOT
<i>Calidris ferruginea</i>	(Vieillot, 1819)	CURLEW SANDPIPER
<i>Calidris maritima</i>	(Brünnich, 1764)	PURPLE SANDPIPER
<i>Calidris minuta</i>	(Leisler, 1812)	LITTLE STINT
<i>Calidris temminckii</i>	(Leisler, 1812)	TEMMINCK'S STINT
<i>Canis lupus</i>	Linnaeus, 1758	ARCTIC WOLF, GRAY WOLF
<i>Caprimulgus europaeus</i>	Linnaeus, 1758	EURASIAN NIGHTJAR
<i>Carassius carassius</i>	(Linnaeus, 1758)	CRUCIAN CARP
<i>Carduelis cannabina</i>	(Linnaeus, 1758)	EURASIAN LINNET
<i>Carduelis carduelis</i>	(Linnaeus, 1758)	EUROPEAN GOLDFINCH
<i>Carduelis chloris</i>	(Linnaeus, 1758)	EUROPEAN GREENFINCH
<i>Carduelis flammea</i>	(Linnaeus, 1758)	COMMON REDPOLL
<i>Carduelis flavirostris</i>	(Linnaeus, 1758)	TWITE
<i>Carduelis hornemanni</i>	(Holböll, 1843)	HOARY REDPOLL
<i>Carduelis spinus</i>	(Linnaeus, 1758)	EURASIAN SISKIN
<i>Carpodacus erythrinus</i>	(Pallas, 1770)	COMMON ROSEFINCH
<i>Casmerodius albus</i>	(Linnaeus, 1758)	GREAT EGRET
<i>Certhia brachydactyla</i>	Brehm, 1820	SHORT-TOED TREE-

Lower Risk/Least Concern (LR/lc)		
Scientific Name	Species Author	Common Name
		CREEPER
<i>Certhia familiaris</i>	Linnaeus, 1758	EURASIAN TREE-CREEPER
<i>Cervus elaphus</i>	Linnaeus, 1758	ELK, RED DEER, WAPITI
<i>Ceryle rudis</i>	(Linnaeus, 1758)	PIED KINGFISHER
<i>Charadrius alexandrinus</i>	Linnaeus, 1758	KENTISH PLOVER
<i>Charadrius dubius</i>	Scopoli, 1786	LITTLE RINGED PLOVER
<i>Charadrius hiaticula</i>	Linnaeus, 1758	COMMON RINGED PLOVER
<i>Charadrius leschenaultii</i>	Lesson, 1826	GREATER SAND PLOVER
<i>Chlidonias hybrida</i>	(Pallas, 1811)	WHISKERED TERN
<i>Chlidonias leucopterus</i>	(Temminck, 1815)	WHITE-WINGED TERN
<i>Chlidonias niger</i>	(Linnaeus, 1758)	BLACK TERN
<i>Chondrostoma nasus</i>	(Linnaeus, 1758)	NASE
<i>Ciconia ciconia</i>	(Linnaeus, 1758)	WHITE STORK
<i>Ciconia nigra</i>	(Linnaeus, 1758)	BLACK STORK
<i>Cinclus cinclus</i>	(Linnaeus, 1758)	WHITE-THROATED DIPPER
<i>Circaetus gallicus</i>	(Gmelin, 1788)	SHORT-TOED SNAKE-EAGLE
<i>Circus aeruginosus</i>	(Linnaeus, 1758)	WESTERN MARSH-HARRIER
<i>Circus cyaneus</i>	(Linnaeus, 1766)	NORTHERN HARRIER
<i>Circus pygargus</i>	(Linnaeus, 1758)	MONTAGU'S HARRIER
<i>Clangula hyemalis</i>	(Linnaeus, 1758)	LONG-TAILED DUCK
<i>Clethrionomys glareolus</i>	(Schreber, 1780)	BANK VOLE
<i>Cobitis taenia</i>	Linnaeus, 1758	SPINED LOACH
<i>Coccothraustes coccothraustes</i>	(Linnaeus, 1758)	HAWFINCH
<i>Cochlicopa nitens</i>	Gallenstein, 1848	
<i>Columba livia</i>	Gmelin, 1789	ROCK PIGEON
<i>Columba oenas</i>	Linnaeus, 1758	STOCK PIGEON
<i>Columba palumbus</i>	Linnaeus, 1758	COMMON WOOD-PIGEON
<i>Corvus corax</i>	Linnaeus, 1758	COMMON RAVEN
<i>Corvus corone</i>	Linnaeus, 1758	CARRION CROW
<i>Corvus frugilegus</i>	Linnaeus, 1758	ROOK
<i>Corvus monedula</i>	Linnaeus, 1758	EURASIAN JACKDAW
<i>Cottus gobio</i>	Linnaeus, 1758	BULLHEAD
<i>Cottus poecilopus</i>	Heckel, 1837	SIBERIAN BULLHEAD
<i>Coturnix coturnix</i>	(Linnaeus, 1758)	COMMON QUAIL
<i>Crocidura leucodon</i>	(Hermann, 1780)	BICOLORED SHREW, BICOLOURED WHITE-TOOTHED SHREW
<i>Crocidura suaveolens</i>	(Pallas, 1811)	LESSER SHREW, LESSER WHITE-TOOTHED SHREW
<i>Cuculus canorus</i>	Linnaeus, 1758	COMMON CUCKOO
<i>Cygnus columbianus</i>	(Ord, 1815)	TUNDRA SWAN
<i>Cygnus cygnus</i>	(Linnaeus, 1758)	WHOOOPER SWAN
<i>Cygnus olor</i>	(Gmelin, 1789)	MUTE SWAN
<i>Delichon urbicum</i>	(Linnaeus, 1758)	NORTHERN HOUSE-MARTIN

Lower Risk/Least Concern (LR/Lc)		
Scientific Name	Species Author	Common Name
<i>Delphinus delphis</i>	Linnaeus, 1758	ATLANTIC DOLPHIN, PACIFIC DOLPHIN
<i>Dendrocopos leucotos</i>	(Bechstein, 1803)	WHITE-BACKED WOODPECKER
<i>Dendrocopos major</i>	(Linnaeus, 1758)	GREAT SPOTTED WOODPECKER
<i>Dendrocopos medius</i>	(Linnaeus, 1758)	MIDDLE SPOTTED WOODPECKER
<i>Dendrocopos minor</i>	(Linnaeus, 1758)	LESSER SPOTTED WOODPECKER
<i>Dendrocopos syriacus</i>	(Ehrenberg, 1833)	SYRIAN WOODPECKER
<i>Dryocopus martius</i>	(Linnaeus, 1758)	BLACK WOODPECKER
<i>Egretta garzetta</i>	(Linnaeus, 1766)	LITTLE EGRET
<i>Ellobius talpinus</i>	(Pallas, 1770)	NORTHERN MOLE VOLE
<i>Emberiza caesia</i>	Cretzschmar, 1828	CRETZSCHMAR'S BUNTING
<i>Emberiza chrysophrys</i>	Pallas, 1776	YELLOW-BROWED BUNTING
<i>Emberiza cia</i>	Linnaeus, 1766	ROCK BUNTING
<i>Emberiza cirulus</i>	Linnaeus, 1766	CIRL BUNTING
<i>Emberiza citrinella</i>	Linnaeus, 1758	YELLOWHAMMER
<i>Emberiza hortulana</i>	Linnaeus, 1758	ORTOLAN BUNTING
<i>Emberiza leucocephalos</i>	Gmelin, 1771	PINE BUNTING
<i>Emberiza melanocephala</i>	Scopoli, 1769	BLACK-HEADED BUNTING
<i>Emberiza pusilla</i>	Pallas, 1776	LITTLE BUNTING
<i>Emberiza schoeniclus</i>	(Linnaeus, 1758)	REED BUNTING
<i>Eremophila alpestris</i>	(Linnaeus, 1758)	HORNED LARK
<i>Erinaceus concolor</i>	Martin, 1838	EASTERN EUROPEAN HEDGEHOG
<i>Erithacus rubecula</i>	(Linnaeus, 1758)	EUROPEAN ROBIN
<i>Erythropygia galactotes</i>	(Temminck, 1820)	RUFIOUS-TAILED SCRUB- ROBIN
<i>Eudromias morinellus</i>	(Linnaeus, 1758)	EURASIAN DOTTEREL
<i>Falco columbarius</i>	Linnaeus, 1758	MERLIN
<i>Falco peregrinus</i>	Tunstall, 1771	PEREGRINE FALCON
<i>Falco rusticolus</i>	Linnaeus, 1758	GYRFALCON
<i>Falco subbuteo</i>	Linnaeus, 1758	EURASIAN HOBBY
<i>Falco tinnunculus</i>	Linnaeus, 1758	COMMON KESTREL
<i>Felis silvestris</i>	Schreber, 1775	WILD CAT, WILDCAT
<i>Ficedula albicollis</i>	(Temminck, 1815)	COLLARED FLYCATCHER
<i>Ficedula hypoleuca</i>	(Pallas, 1764)	EUROPEAN PIED FLYCATCHER
<i>Ficedula parva</i>	(Bechstein, 1792)	RED-BREASTED FLYCATCHER
<i>Fringilla coelebs</i>	Linnaeus, 1758	CHAFFINCH
<i>Fringilla montifringilla</i>	Linnaeus, 1758	BRAMBLING
<i>Fulica atra</i>	Linnaeus, 1758	COMMON COOT

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Scientific Name	Species Author	Common Name
<i>Galerida cristata</i>	(Linnaeus, 1758)	CRESTED LARK
<i>Gallinago gallinago</i>	(Linnaeus, 1758)	COMMON SNIPE
<i>Gallinula chloropus</i>	(Linnaeus, 1758)	COMMON MOORHEN
<i>Garrulus glandarius</i>	(Linnaeus, 1758)	EURASIAN JAY
<i>Gasterosteus aculeatus</i>	Linnaeus, 1758	THREE-SPINED STICKLEBACK
<i>Gavia adamsii</i>	(Gray, 1859)	YELLOW-BILLED LOON
<i>Gavia arctica</i>	(Linnaeus, 1758)	ARCTIC LOON
<i>Gavia immer</i>	(Brünnich, 1764)	COMMON LOON
<i>Gavia stellata</i>	(Pontoppidan, 1763)	RED-THROATED LOON
<i>Glareola pratincola</i>	(Linnaeus, 1766)	COLLARED PRATINCOLE
<i>Glaucidium passerinum</i>	(Linnaeus, 1758)	EURASIAN PYGMY-OWL
<i>Gobio gobio</i>	(Linnaeus, 1758)	GUDGEON
<i>Grus grus</i>	(Linnaeus, 1758)	COMMON CRANE
<i>Grus virgo</i>	(Linnaeus, 1758)	DEMOISELLE CRANE
<i>Gymnocephalus cernua</i>	(Linnaeus, 1758)	RUFFE
<i>Gyps fulvus</i>	(Hablizl, 1783)	EURASIAN GRIFFON
<i>Haematopus ostralegus</i>	Linnaeus, 1758	EURASIAN OYSTERCATCHER
<i>Haliaeetus albicilla</i>	(Linnaeus, 1758)	WHITE-TAILED EAGLE
<i>Hieraaetus pennatus</i>	(Gmelin, 1788)	BOOTED EAGLE
<i>Himantopus himantopus</i>	(Linnaeus, 1758)	BLACK-WINGED STILT
<i>Hippolais icterina</i>	(Vieillot, 1817)	ICTERINE WARBLER
<i>Hippolais olivetorum</i>	(Strickland, 1837)	OLIVE-TREE WARBLER
<i>Hirundo rustica</i>	Linnaeus, 1758	BARN SWALLOW
<i>Histrionicus histrionicus</i>	(Linnaeus, 1758)	HARLEQUIN DUCK
<i>Hydrobates pelagicus</i>	(Linnaeus, 1758)	EUROPEAN STORM-PETREL
<i>Hyla arborea</i>	(Linnaeus, 1758)	EUROPEAN COMMON TREE FROG, EUROPEAN TREE FROG
<i>Hypsugo savii</i>	(Bonaparte, 1837)	SAVI'S PIPISTRELLE
<i>Ixobrychus minutus</i>	(Linnaeus, 1766)	LITTLE BITTERN
<i>Juniperus communis</i>	L.	
<i>Juniperus excelsa</i>	M.Bieb.	
<i>Juniperus foetidissima</i>	Willd.	
<i>Juniperus oxycedrus</i>	L.	
<i>Juniperus sabina</i>	L.	
<i>Jynx torquilla</i>	Linnaeus, 1758	EURASIAN WRYNECK
<i>Lacerta viridis</i>	(Laurenti, 1768)	GREEN LIZARD
<i>Lagurus lagurus</i>	(Pallas, 1773)	STEPPE LEMMING
<i>Lanius collurio</i>	Linnaeus, 1758	RED-BACKED SHRIKE
<i>Lanius excubitor</i>	Linnaeus, 1758	GREAT GREY SHRIKE
<i>Lanius minor</i>	Gmelin, 1788	LESSER GREY SHRIKE
<i>Lanius senator</i>	Linnaeus, 1758	WOODCHAT SHRIKE
<i>Larix decidua</i>	Mill.	

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Scientific Name	Species Author	Common Name
<i>Larus argentatus</i>	Pontoppidan, 1763	HERRING GULL
<i>Larus cachinnans</i>	Pallas, 1811	YELLOW-LEGGED GULL
<i>Larus canus</i>	Linnaeus, 1758	MEW GULL
<i>Larus fuscus</i>	Linnaeus, 1758	LESSER BLACK-BACKED GULL
<i>Larus genei</i>	Brème, 1839	SLENDER-BILLED GULL
<i>Larus hyperboreus</i>	Gunnerus, 1767	GLAUCOUS GULL
<i>Larus ichthyaetus</i>	Pallas, 1773	GREAT BLACK-HEADED GULL
<i>Larus melanocephalus</i>	Temminck, 1820	MEDITERRANEAN GULL
<i>Larus minutus</i>	Pallas, 1776	LITTLE GULL
<i>Larus ridibundus</i>	Linnaeus, 1766	COMMON BLACK-HEADED GULL
<i>Lepus europaeus</i>	Pallas, 1778	BROWN HARE, EUROPEAN HARE
<i>Lepus timidus</i>	Linnaeus, 1758	ARCTIC HARE, MOUNTAIN HARE
<i>Leucaspis delineatus</i>	(Heckel, 1843)	MODERLIESCHEN
<i>Leuciscus idus</i>	(Linnaeus, 1758)	IDE
<i>Leuciscus leuciscus</i>	(Linnaeus, 1758)	DACE
<i>Leucorrhinia albifrons</i>	(Burmeister, 1839)	
<i>Leucorrhinia caudalis</i>	(Charpentier, 1840)	
<i>Limicola falcinellus</i>	(Pontoppidan, 1763)	BROAD-BILLED SANDPIPER
<i>Limosa lapponica</i>	(Linnaeus, 1758)	BAR-TAILED GODWIT
<i>Locustella fluviatilis</i>	(Wolf, 1810)	EURASIAN RIVER WARBLER
<i>Locustella luscinioides</i>	(Savi, 1824)	SAVI'S WARBLER
<i>Locustella naevia</i>	(Boddaert, 1783)	COMMON GRASSHOPPER-WARBLER
<i>Loxia curvirostra</i>	Linnaeus, 1758	RED CROSSBILL
<i>Loxia leucoptera</i>	Gmelin, 1789	WHITE-WINGED CROSSBILL
<i>Lullula arborea</i>	(Linnaeus, 1758)	WOOD LARK
<i>Luscinia luscinia</i>	(Linnaeus, 1758)	THRUSH NIGHTINGALE
<i>Luscinia megarhynchos</i>	(Brehm, 1831)	COMMON NIGHTINGALE
<i>Luscinia svecica</i>	(Linnaeus, 1758)	BLUETHROAT
<i>Lymnocyptes minimus</i>	(Brünnich, 1764)	JACK SNIPE
<i>Martes foina</i>	(Erxleben, 1777)	BEECH MARTEN
<i>Melanitta fusca</i>	(Linnaeus, 1758)	WHITE-WINGED SCOTER
<i>Melanitta nigra</i>	(Linnaeus, 1758)	BLACK SCOTER
<i>Melanocorypha calandra</i>	(Linnaeus, 1766)	CALANDRA LARK
<i>Melanocorypha leucoptera</i>	(Pallas, 1811)	WHITE-WINGED LARK
<i>Melanocorypha yeltoniensis</i>	(Forster, 1767)	BLACK LARK
<i>Meles meles</i>	(Linnaeus, 1758)	BADGER, EURASIAN BADGER
<i>Mergellus albellus</i>	(Linnaeus, 1758)	SMEW
<i>Mergus merganser</i>	Linnaeus, 1758	COMMON MERGANSER
<i>Mergus serrator</i>	Linnaeus, 1758	RED-BREASTED

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Scientific Name	Species Author	Common Name
		MERGANSER
<i>Merops apiaster</i>	Linnaeus, 1758	EUROPEAN BEE-EATER
<i>Microtus arvalis</i>	(Pallas, 1778)	COMMON VOLE
<i>Microtus oeconomus</i>	(Pallas, 1776)	ROOT VOLE, TUNDRA VOLE
<i>Microtus rossiaemeridionalis</i>	Ognev, 1924	SOUTHERN VOLE
<i>Microtus socialis</i>	(Pallas, 1773)	SOCIAL VOLE
<i>Microtus subterraneus</i>	(de Selys-Longchamps, 1836)	EUROPEAN PINE VOLE
<i>Miliaria calandra</i>	Linnaeus, 1758	CORN BUNTING
<i>Milvus migrans</i>	(Boddaert, 1783)	BLACK KITE
<i>Monticola saxatilis</i>	(Linnaeus, 1766)	RUFIOUS-TAILED ROCK-THRUSH
<i>Motacilla alba</i>	Linnaeus, 1758	WHITE WAGTAIL
<i>Motacilla cinerea</i>	Tunstall, 1771	GREY WAGTAIL
<i>Motacilla citreola</i>	Pallas, 1776	CITRINE WAGTAIL
<i>Motacilla flava</i>	Linnaeus, 1758	YELLOW WAGTAIL
<i>Muscicapa striata</i>	(Pallas, 1764)	SPOTTED FLYCATCHER
<i>Mustela erminea</i>	Linnaeus, 1758	ERMINE, STOAT
<i>Mustela eversmannii</i>	Lesson, 1827	STEPPE POLECAT, STEPPE WEASEL
<i>Mustela nivalis</i>	Linnaeus, 1766	LEAST WEASEL, WEASEL
<i>Mustela putorius</i>	Linnaeus, 1758	EUROPEAN POLECAT
<i>Myotis nattereri</i>	(Kuhl, 1817)	NATTERER'S BAT
<i>Natrix natrix</i>	(Linnaeus, 1758)	GRASS SNAKE
<i>Nemacheilus barbatulus</i>	(Linnaeus, 1758)	STONE LOACH
<i>Neomys anomalus</i>	Cabrera, 1907	SOUTHERN WATER SHREW
<i>Neophron percnopterus</i>	(Linnaeus, 1758)	EGYPTIAN VULTURE
<i>Netta rufina</i>	(Pallas, 1773)	RED-CRESTED POCHARD
<i>Nucifraga caryocatactes</i>	(Linnaeus, 1758)	SPOTTED NUTCRACKER
<i>Numenius arquata</i>	(Linnaeus, 1758)	EURASIAN CURLEW
<i>Numenius phaeopus</i>	(Linnaeus, 1758)	WHIMBREL
<i>Nyctea scandiaca</i>	(Linnaeus, 1758)	SNOWY OWL
<i>Nycticorax nycticorax</i>	(Linnaeus, 1758)	BLACK-CROWNED NIGHT-HERON
<i>Oenanthe hispanica</i>	(Linnaeus, 1758)	BLACK-EARED WHEATEAR
<i>Oenanthe isabellina</i>	(Temminck, 1829)	ISABELLINE WHEATEAR
<i>Oenanthe oenanthe</i>	(Linnaeus, 1758)	NORTHERN WHEATEAR
<i>Oenanthe pleschanka</i>	(Lepechin, 1770)	PIED WHEATEAR
<i>Ophiogomphus cecilia</i>	(Fourcroy, 1785)	GRUNE KEILJUNGTER
<i>Oriolus oriolus</i>	(Linnaeus, 1758)	EURASIAN GOLDEN-ORIOLE
<i>Otus scops</i>	(Linnaeus, 1758)	COMMON SCOPS-OWL
<i>Pandion haliaetus</i>	(Linnaeus, 1758)	OSPREY
<i>Panurus biarmicus</i>	(Linnaeus, 1758)	BEARDED PARROTBILL
<i>Parus ater</i>	Linnaeus, 1758	COAL TIT
<i>Parus caeruleus</i>	Linnaeus, 1758	BLUE TIT

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Scientific Name	Species Author	Common Name
<i>Parus cristatus</i>	Linnaeus, 1758	CRESTED TIT
<i>Parus cyanus</i>	Pallas, 1770	AZURE TIT
<i>Parus major</i>	Linnaeus, 1758	GREAT TIT
<i>Parus montanus</i>	Conrad von Baldenstein, 1827	WILLOW TIT
<i>Parus palustris</i>	Linnaeus, 1758	MARSH TIT
<i>Passer domesticus</i>	(Linnaeus, 1758)	HOUSE SPARROW
<i>Passer montanus</i>	(Linnaeus, 1758)	EURASIAN TREE SPARROW
<i>Pelecanus onocrotalus</i>	Linnaeus, 1758	GREAT WHITE PELICAN
<i>Pelobates fuscus</i>	(Laurenti, 1768)	COMMON SPADEFOOT
<i>Pelobates syriacus</i>	Boettger, 1889	EASTERN SPADEFOOT, SYRIAN SPADEFOOT
<i>Perca fluviatilis</i>	Linnaeus, 1758	PERCH
<i>Perdix perdix</i>	(Linnaeus, 1758)	GREY PARTRIDGE
<i>Perisoreus infaustus</i>	(Linnaeus, 1758)	SIBERIAN JAY
<i>Pernis apivorus</i>	(Linnaeus, 1758)	EUROPEAN HONEY- BUZZARD
<i>Phalacrocorax aristotelis</i>	(Linnaeus, 1761)	EUROPEAN SHAG
<i>Phalacrocorax carbo</i>	(Linnaeus, 1758)	GREAT CORMORANT
<i>Phalacrocorax pygmeus</i>	(Pallas, 1773)	PYGMY CORMORANT
<i>Phalaropus fulicarius</i>	(Linnaeus, 1758)	GREY PHALAROPE
<i>Phalaropus lobatus</i>	(Linnaeus, 1758)	RED-NECKED PHALAROPE
<i>Phasianus colchicus</i>	(Linnaeus, 1758)	COMMON PHEASANT
<i>Philomachus pugnax</i>	(Linnaeus, 1758)	RUFF
<i>Phoenicurus ochruros</i>	(Gmelin, 1774)	BLACK REDSTART
<i>Phoenicurus phoenicurus</i>	(Linnaeus, 1758)	COMMON REDSTART
<i>Phoxinus phoxinus</i>	(Linnaeus, 1758)	MINNOW
<i>Phylloscopus bonelli</i>	(Vieillot, 1819)	BONELLI'S WARBLER
<i>Phylloscopus collybita</i>	(Vieillot, 1817)	COMMON CHIFFCHAFF
<i>Phylloscopus proregulus</i>	(Pallas, 1811)	LEMON-RUMPED WARBLER
<i>Phylloscopus sibilatrix</i>	(Bechstein, 1793)	WOOD WARBLER
<i>Phylloscopus trochiloides</i>	Swinhoe, 1861	GREENISH WARBLER
<i>Phylloscopus trochilus</i>	(Linnaeus, 1758)	WILLOW WARBLER
<i>Pica pica</i>	(Linnaeus, 1758)	BLACK-BILLED MAGPIE
<i>Picea abies</i>	(L.) H.Karst.	
<i>Picoides tridactylus</i>	(Linnaeus, 1758)	THREE-TOED WOODPECKER
<i>Picus canus</i>	Gmelin, 1788	GREY-FACED WOODPECKER
<i>Picus viridis</i>	Linnaeus, 1758	EURASIAN GREEN WOODPECKER
<i>Pinicola enucleator</i>	(Linnaeus, 1758)	PINE GROSBEAK
<i>Pinus brutia</i>	Ten.	
<i>Pinus cembra</i>	L.	
<i>Pinus mugo</i>	Turra	
<i>Pinus nigra</i>	J.F.Arnold	AUSTRIAN PINE
<i>Pinus sylvestris</i>	L.	SCOTS PINE

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Scientific Name	Species Author	Common Name
<i>Pipistrellus kuhlii</i>	(Kuhl, 1817)	KUHL'S PIPISTRELLE
<i>Platalea leucorodia</i>	Linnaeus, 1758	EURASIAN SPOONBILL
<i>Plecotus auritus</i>	(Linnaeus, 1758)	BROWN BIG-EARED BAT, BROWN LONG-EARED BAT
<i>Plecotus austriacus</i>	(Fischer, 1829)	GRAY BIG-EARED BAT, GREY LONG-EARED BAT
<i>Plectrophenax nivalis</i>	(Linnaeus, 1758)	SNOW BUNTING
<i>Plegadis falcinellus</i>	(Linnaeus, 1766)	GLOSSY IBIS
<i>Pluvialis squatarola</i>	(Linnaeus, 1758)	GREY PLOVER
<i>Podarcis taurica</i>	(Pallas, 1814)	BALKAN WALL LIZARD
<i>Podiceps auritus</i>	(Linnaeus, 1758)	HORNED GREBE
<i>Podiceps cristatus</i>	(Linnaeus, 1758)	GREAT CRESTED GREBE
<i>Podiceps grisegena</i>	(Boddaert, 1783)	RED-NECKED GREBE
<i>Podiceps nigricollis</i>	Brehm, 1831	BLACK-NECKED GREBE
<i>Porzana parva</i>	(Scopoli, 1769)	LITTLE CRAKE
<i>Porzana porzana</i>	(Linnaeus, 1766)	SPOTTED CRAKE
<i>Porzana pusilla</i>	(Pallas, 1776)	BAILLON'S CRAKE
<i>Proterorhinus marmoratus</i>	(Pallas, 1814)	TUBENOSE GOBY
<i>Prunella collaris</i>	(Scopoli, 1769)	ALPINE ACCENTOR
<i>Prunella modularis</i>	(Linnaeus, 1758)	HEDGE ACCENTOR
<i>Puffinus yelkouan</i>	(Acerbi, 1827)	YELKOUAN SHEARWATER
<i>Pungitius platygaster</i>	(Kessler, 1859)	UKRANIAN STICKLEBACK
<i>Pyrrhula pyrrhula</i>	(Linnaeus, 1758)	EURASIAN BULLFINCH
<i>Rallus aquaticus</i>	(Linnaeus, 1758)	WATER RAIL
<i>Rana arvalis</i>	Nilsson, 1842	ALTAI BROWN FROG
<i>Rana dalmatina</i>	Bonaparte, 1840	AGILE FROG
<i>Rana esculenta</i>	Linnaeus, 1758	EDIBLE FROG
<i>Rana lessonae</i>	Camerano, 1882	POOL FROG
<i>Rana ridibunda</i>	Pallas, 1771	EURASIAN MARSH FROG
<i>Recurvirostra avosetta</i>	(Linnaeus, 1758)	PIED AVOCET
<i>Regulus ignicapilla</i>	(Temminck, 1820)	FIRECREST
<i>Regulus regulus</i>	(Linnaeus, 1758)	GOLDCREST
<i>Remiz pendulinus</i>	(Linnaeus, 1758)	EURASIAN PENDULINE-TIT
<i>Rhinolophus hipposideros</i>	(Bechstein, 1800)	LESSER HORSESHOE BAT
<i>Riparia riparia</i>	(Linnaeus, 1758)	SAND MARTIN
<i>Rissa tridactyla</i>	(Linnaeus, 1758)	BLACK-LEGGED KITTIWAKE
<i>Rutilus rutilus</i>	(Linnaeus, 1758)	ROACH
<i>Salamandra salamandra</i>	(Linnaeus, 1758)	COMMON FIRE SALAMANDER
<i>Saxicola rubetra</i>	(Linnaeus, 1758)	WHINCHAT
<i>Saxicola torquatus</i>	(Linnaeus, 1766)	COMMON STONECHAT
<i>Scardinius erythrophthalmus</i>	(Linnaeus, 1758)	RUDD
<i>Scolopax rusticola</i>	Linnaeus, 1758	EURASIAN WOODCOCK
<i>Serinus serinus</i>	(Linnaeus, 1766)	EUROPEAN SERIN

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Scientific Name	Species Author	Common Name
<i>Silurus glanis</i>	Linnaeus, 1758	WELS CATFISH
<i>Sitta europaea</i>	Linnaeus, 1758	WOOD NUTHATCH
<i>Somateria mollissima</i>	(Linnaeus, 1758)	COMMON EIDER
<i>Sorex araneus</i>	Linnaeus, 1758	COMMON SHREW, EURASIAN SHREW
<i>Sorex caecutiens</i>	Laxmann, 1788	LAXMANN'S SHREW
<i>Sorex minutus</i>	Linnaeus, 1766	EURASIAN PYGMY SHREW, PYGMY SHREW
<i>Sorex volnuchini</i>	Ognev, 1922	CAUCASIAN PYGMY SHREW, UKRAINIAN SHREW
<i>Spalax zemni</i>	Erxleben, 1777	PODOLSK MOLE RAT
<i>Spermophilus pygmaeus</i>	(Pallas, 1778)	LITTLE GROUND SQUIRREL
<i>Squalius cephalus</i>	(Linnaeus, 1758)	CHUB
<i>Sterna albifrons</i>	Pallas, 1764	LITTLE TERN
<i>Sterna caspia</i>	Pallas, 1770	CASPIAN TERN
<i>Sterna hirundo</i>	Linnaeus, 1758	COMMON TERN
<i>Sterna nilotica</i>	Gmelin, 1789	GULL-BILLED TERN
<i>Sterna paradisaea</i>	Pontoppidan, 1763	ARCTIC TERN
<i>Sterna sandvicensis</i>	Latham, 1787	SANDWICH TERN
<i>Stizostedion lucioperca</i>	(Linnaeus, 1758)	ZANDER
<i>Streptopelia decaocto</i>	(Frivaldszky, 1838)	EURASIAN COLLARED- DOVE
<i>Streptopelia turtur</i>	(Linnaeus, 1758)	EUROPEAN TURTLE-DOVE
<i>Strix aluco</i>	Linnaeus, 1758	TAWNY OWL
<i>Strix nebulosa</i>	Forster, 1772	GREAT GREY OWL
<i>Strix uralensis</i>	Pallas, 1771	URAL OWL
<i>Sturnus roseus</i>	(Linnaeus, 1758)	ROSY STARLING
<i>Sturnus vulgaris</i>	Linnaeus, 1758	COMMON STARLING
<i>Stylodipus telum</i>	(Lichtenstein, 1823)	THICK-TAILED THREE- TOED JERBOA
<i>Surnia ulula</i>	(Linnaeus, 1758)	NORTHERN HAWK OWL
<i>Sus scrofa</i>	Linnaeus, 1758	WILD BOAR
<i>Sylvia atricapilla</i>	(Linnaeus, 1758)	BLACKCAP
<i>Sylvia borin</i>	(Boddaert, 1783)	GARDEN WARBLER
<i>Sylvia cantillans</i>	(Pallas, 1764)	SUBALPINE WARBLER
<i>Sylvia communis</i>	Latham, 1787	COMMON WHITETHROAT
<i>Sylvia curruca</i>	(Linnaeus, 1758)	LESSER WHITETHROAT
<i>Sylvia melanocephala</i>	(Gmelin, 1789)	SARDINIAN WARBLER
<i>Sylvia nisoria</i>	(Bechstein, 1795)	BARRED WARBLER
<i>Tachybaptus ruficollis</i>	(Pallas, 1764)	LITTLE GREBE
<i>Tachymarptis melba</i>	(Linnaeus, 1758)	ALPINE SWIFT
<i>Tadarida teniotis</i>	(Rafinesque, 1814)	EUROPEAN FREE-TAILED BAT
<i>Tadorna ferruginea</i>	(Pallas, 1764)	RUDDY SHELDUCK
<i>Tadorna tadorna</i>	(Linnaeus, 1758)	COMMON SHELDUCK
<i>Taxus baccata</i>	L.	

Lower Risk/Least Concern (LR/Lc)		
Scientific Name	Species Author	Common Name
Tetrao tetrix	(Linnaeus, 1758)	BLACK GROUSE
Tetrao urogallus	Linnaeus, 1758	WESTERN CAPERCAILLIE
Tichodroma muraria	(Linnaeus, 1766)	WALLCREEPER
Tinca tinca	(Linnaeus, 1758)	TENCH
Tringa erythropus	(Pallas, 1764)	SPOTTED REDSHANK
Tringa glareola	Linnaeus, 1758	WOOD SANDPIPER
Tringa nebularia	(Gunnerus, 1767)	COMMON GREENSHANK
Tringa ochropus	Linnaeus, 1758	GREEN SANDPIPER
Tringa stagnatilis	(Bechstein, 1803)	MARSH SANDPIPER
Tringa totanus	(Linnaeus, 1758)	COMMON REDSHANK
Triturus alpestris	(Laurenti, 1768)	ALPINE NEWT
Triturus cristatus	(Laurenti, 1768)	GREAT CRESTED NEWT, NORTHERN CRESTED NEWT, WARTY NEWT
Triturus karelinii	(Strauch, 1870)	SOUTHERN CRESTED NEWT
Triturus montandoni	(Boulenger, 1860)	CARPATHIAN NEWT
Triturus vulgaris	(Linnaeus, 1758)	SMOOTH NEWT
Troglodytes troglodytes	(Linnaeus, 1758)	WINTER WREN
Turdus iliacus	Linnaeus, 1766	REDWING
Turdus merula	Linnaeus, 1758	EURASIAN BLACKBIRD
Turdus philomelos	Brehm, 1831	SONG THRUSH
Turdus pilaris	Linnaeus, 1758	FIELDFARE
Turdus torquatus	Linnaeus, 1758	RING OUZEL
Turdus viscivorus	Linnaeus, 1758	MISTLE THRUSH
Tyto alba	(Scopoli, 1769)	BARN OWL
Upupa epops	Linnaeus, 1758	EURASIAN HOOPOE
Ursus arctos	Linnaeus, 1758	BROWN BEAR, GRIZZLY BEAR
Vanellus spinosus	(Linnaeus, 1758)	SPUR-WINGED LAPWING
Vanellus vanellus	(Linnaeus, 1758)	NORTHERN LAPWING
Vimba vimba	(Linnaeus, 1758)	ZARTE
Vormela peregusna	(Güldenstädt, 1770)	MARBLED POLECAT
Xenus cinereus	(Güldenstädt, 1775)	TEREK SANDPIPER
Zamenis situla	(Linnaeus, 1758)	EUROPEAN RATSNAKE, LEOPARD SNAKE
Zootoca vivipara	(Von Jacquin, 1787)	

Data Deficient (DD)		
Scientific Name	Species Author	Common Name
Alosa maotica	(Grimm, 1901)	
Alosa pontica	(Eichwald, 1838)	
Aspius aspius	(Linnaeus, 1758)	ASP
Benthophiloides brauneri	Beling & Iljin, 1927	

Data Deficient (DD)		
Scientific Name	Species Author	Common Name
Clupeonella cultriventris	(Nordmann, 1840)	
Coregonus lavaretus	(Linnaeus, 1758)	LAVARET'
Cyprinus carpio	Linnaeus, 1758	WILD COMMON CARP
Eudontomyzon mariae	(Berg, 1931)	UKRANIAN BROOK LAMPREY
Fagotia esperi	(Ferussac, 1823)	
Gobio albipinnatus	Lukasch, 1933	WHITE-FINNED GUDGEON
Gobio kessleri	Dybowski, 1862	KESSLER'S GUDGEON
Gobio uranoscopus	(Agassiz, 1828)	DANUBE GUDGEON
Gymnocephalus acerina	(Güldenstädt, 1774)	
Mesogobius batrachocephalus	(Pallas, 1814)	
Myxas glutinosa	(Müller, 1774)	GLUTINOUS SNAIL
Neogobius fluviatilis	(Pallas, 1814)	
Neogobius gymnotrachelus	(Kessler, 1857)	
Neogobius kessleri	(Günther, 1861)	KESSLER'S GOBY
Neogobius melanostomus	(Pallas, 1814)	
Neogobius syrman	(Nordmann, 1840)	
Pelecus cultratus	(Linnaeus, 1758)	ZIEGE
Petroleuciscus borysthenicus	(Kessler, 1859)	BLACK SEA CHUB
Phoxinus phoxinurus	(Pallas, 1814)	SWAMP MINNOW
Rutilus frisii	(Nordmann, 1840)	BLACK SEA ROACH
Rutilus pigus	(Lacepède, 1803)	DANUBE ROACH
Sabanejewia aurata	(De Filippi, 1863)	GOLDSIDE LOACH
Stizostedion marinum	(Cuvier, 1828)	
Stizostedion volgensis	(Gmelin, 1789)	VOLGA ZANDER
Theodoxus transversalis	(C. Pfeiffer, 1828)	
Thunnus thynnus	Linnaeus, 1758	NORTHERN BLUEFIN TUNA
Tursiops truncatus	(Montagu, 1821)	BOTTLE-NOSED DOLPHIN
Vallonia enniensis	Gredler, 1856	
Xiphias gladius	Linnaeus, 1758	SWORDFISH
Zosterisessor ophiocephalus	(Pallas, 1814)	

Adapted from: IUCN 2006. *2006 IUCN Red List of Threatened Species*. <www.iucnredlist.org>. Downloaded on **01 December 2006**

Annex E: Persons Interviewed

1. USAID, Donor, and Implementer Contacts

Name & Contact	Title & Organization
Kevin Brownswell kbrownswell@usaid.gov	Program Officer USAID/EE/EA
Aleksandra Braginski abraginski@usaid.gov	Team Leader, Ukraine, Moldova and Belarus Desk USAID/EE/EA
Mohammad Latif mlatif@usaid.gov	Bureau Environmental Officer USAID/EE/EG
Alicia Grimes agrimes@usaid.gov	Senior Natural Resources Management Specialist USAID/EGAT
Peter Argo pargo@usaid.gov	Deputy Mission Director USAID Regional Mission for Ukraine, Moldova and Belarus
Peter Luzik pluzik@usaid.gov	Program Development Specialist/Economist USAID Regional Mission for Ukraine, Moldova and Belarus
Judith Schumacher jschumacher@usaid.gov	Program Officer USAID Regional Mission for Ukraine, Moldova and Belarus
Lina Dotsenko ldotsenko@cnfa-kiev.org	Agribusiness Expert/Project Coordinator CNFA – Agribusiness Development Project
Patrick Rader prader@dai.com	Chief of Party BIZPRO Project in Ukraine, Moldova and Belarus
Robert E. Lee rlee@lol.org.uz	Chief of Party Land O'Lakes Agricultural Marketing Project
Robert Krause rkrause@abtassoc.com	Chief of Party Abt. Associates, Inc. Agricultural Policy Project
Alexei Selnzak aselnzak@worldbank.org	Senior Operations Officer/Environmental Sector The World Bank - Ukraine
Stephen Parsons Stephen.Parsons@mottmac.com	Team Leader EU/Transboundary River Basin Management; Phase 2 for Pripjat River
Alexei Iarochevitch pripyat@i.kiev.ua	Deputy Team Leader EU/Transboundary River Basin Management; Phase 2 for Pripjat River

2. NGO

Name & Contact	Organization
	Association of Environmental Education Khortytysya Island, Dnipro River, Zaporozhye

3. Government

Name & Contact	Organization
	Deputy Director Ecological Education Association; Zaporozhye Ecological and Nature Centre -- EcoClub Ministry of Education
	Director of Cultural Development Activities for the Ministry of Culture Khortystysya Island, Dnipro River, Zaporozhye

4. Private Sector

Name	Organization
Ivan Rusev, PhD	Ornithologist and Guide, Odessa, Ukraine.
Vlad Konovalchuk Vvk104@pst.edu	Agricultural Economics and Marketing – PhD Kiev, Ukraine

5. Institutes, Universities and Research Organizations

Name	Organization
Borys Aleksandrov, PhD	Director, Odessa Branch, Institute of Biology of the Southern Seas. Academy of Sciences of Ukraine.
Roman Schmidt	President, Dorada. National Association of Agricultural Advisory Services of Ukraine, Kiev.
Olesander Mykytiuk, PhD	Executive Director, Institute for Communities Development, Kiev.
Valerie Siokhin station@radiocom.net.ua	Deputy Director of Research Activities, Management of Ecological Projects Scientific Research Institute of Biodiversity of Land and Water Ecosystems of the Ukraine. Azov-Black Sea Ornithological Station
Joseph Chernychko station@radiocom.net.ua	Director of the Ornithological Station; Deputy Director of SRI : Director of Wetland Management Unit; Principal Scientist of Institute of Zoology AS of Ukraine Scientific Research Institute of MSPU; Azov-Black Sea Ornithological Station
Nikolay Lubyanyoy prpk@list.ru	Vice-Rector on Extension, Advisory Service and International Relations Tavria State Agrotechnical Academy
Alexandr Zharkov vita@dctel.info	Director Ecological Education Association; Zaporozhye Ecological and Nature Centre
Vasiliy A. Kostyshyn kost@izan.kiev.ua kv@wetl.kiev.ua	Head of Department of Monitoring and Conservation of Animals Institute of Zoology And Program Coordinator of the Black Sea Programme Wetlands International
tarashch@i.com.ua	Director National Ecological Centre of Ukraine
Igor Sirenko I_sirenko@univ.kiev.ua	Information System Expert National Ecological Centre of Ukraine

Name	Organization
Vasyl I. Prydatko v.prydatko@ulrnc.org.ua	Specialist for Biodiversity and Sustainable Development Ukrainian Land and Resource Management Center
Valeriy V. Serenko V.Serenko@ulrnc.org.ua	Head, Project Department Ukrainian Land and Resource Management Center
Oleksandr A. Kolodyazhnyy o.kolodyazhnyy@ulrnc.org.ua	General Director Ukrainian Land and Resource Management Center

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USDA. Ukraine: Agricultural Overview, Production Estimates and Crop Assessment Division, Foreign Agricultural Service. December 16, 2004, updated October 21, 2005.

Warner, R., A. Borok, D. Gibson, I. Rusev. USAID Biodiversity Assessment for Ukraine. 2001

World Bank: Azov-Black Sea Corridor Biodiversity Conservation Project, Project Appraisal Document. 2006

World Bank: Danube Delta Biodiversity Project, Project Performance Assessment Report, 2005

World Bank: Ukraine Forestry Sector Note: Status and Opportunities for Development. 2006

Annex G: Scope of Work

TITLE: BIODIVERSITY ASSESSMENT

A.1 OBJECTIVES

The purpose of this task is to conduct an update of country biodiversity analyses for Ukraine, Moldova and Belarus which were completed in the Fall of 2001. These analyses will respond to requirements of Section 119(d) of the Foreign Assistance Act of 1961 (as amended (FAA)) and ADS 201.3.8.2 regarding biodiversity analyses for country strategic plans. The assessments are intended to assist the Regional Mission for Ukraine, Moldova and Belarus during the upcoming strategic planning process by identifying necessary actions in each country to conserve biodiversity. Upon completion of the analyses, the Mission will submit these reports to the Bureau's Environmental Officer for final approval.

These country specific analyses will also serve as a planning tool to assist USAID to identify stand alone and/or cross-cutting opportunities to promote sustainable, environmentally-sound employment, trade, investment and income interventions while integrating environment concerns into its overall programs.

A.2 STATEMENT OF WORK

To prepare the biodiversity analyses for Ukraine, Moldova, and Belarus, the Contractor will carry out the following tasks:

Pre Departure:

1. Gather and get acquainted with already existing background information about Ukraine, Moldova, and Belarus, such as each country's natural resources, geographical, ecological and biological specificities, current status of biodiversity, institutional organization on entity and state level responsible for biodiversity, key stakeholders and donors in environment and biodiversity, legislation related to biodiversity, and other relevant information required for the each country analysis. The Contractor should also review the biodiversity assessments conducted in 2001 for important baseline information to be referenced as appropriate. The Contractor will also be familiar with past USAID Programmatic Environmental Assessments and key environmental assessments when available as prepared by donors (i.e., EU, UNDP, WB, and GEF).
2. Convene meetings with the Europe and Eurasia Bureau's Environmental Officer (BEO) in Washington, the E&E Desk Officer, representatives from "pillar" bureaus such as EGAT, DCHA and Global Health, and others suggested by the BEO and Desk Officer to ensure full understanding of E&E program in Ukraine, Belarus and Moldova, USAID environmental procedures and purpose of this assignment.
3. The Contractor will also include meetings with relevant USG and World Bank officials and with appropriate international NGOs to obtain current information on relevant studies, projects and initiatives.

Field activities:

4. For each country, the Contractor will hold mandatory meetings with all key Mission personal including Program Office staff and sector experts. For Moldova and Belarus these meetings may be held in the Regional Mission in Kiev or potentially in the Country Offices. During the meetings with the USAID Mission, the Contractor will obtain detailed information about the programs, objectives, and goals under the Mission strategic plan. The Contractor will be briefed about other stakeholders, USAID partners, local government agencies and their hierarchy, and other key players of interest for the assessment. The

Contractor and USAID Mission will discuss the planned activities required for each analysis well as the approach that the Contractor will take during the performance.

5. For each country, the Contractor will hold meetings with the relevant local government institutions, agencies and Ministries. The Contractor will gather information, recommendations and experiences about past and planned activities from the local officials and persons directly involved in biodiversity issues. The Contractor will gather detailed information about the country's specificities, such as protected areas and endangered plants and species.

6. For each country, the Contractor will hold meetings with other international donors, agencies and NGOs involved in environmental programs in order to be well informed about ongoing and planned activities by other donors and agencies.

7. For each country, the Contractor will, in coordination with USAID, plan and conduct several (the exact number to be determined at a later date and in coordination with USAID) site visits to the areas of the special interest for biodiversity assessment and priority conservation to supplement understanding of interviews and literature.

A.3 DELIVERABLES

1. The Contractor will produce a separate report for each country, which satisfies the mandatory FAA 119 reporting requirements regarding the actions necessary to conserve biodiversity and the extent to which USAID Strategic Process should address those needs. Specifically, the deliverables are as follows:

- A. Schedule submitted to USAID within five working days of start date.
- B. Oral debriefing to Mission Staff prior to departure (Team Leader and Sr. Specialist).
- C. Three separate Country Specific FAA Section 119 Biodiversity Analysis reports containing the information described in Section A.3.2 below.

Report Review and Approval Process:

- i. Draft reports submitted for Mission review/comment in electronic form (saved in MS Word format) at the time of the exit briefing with Mission Director. Mission will have five business days to provide comments.
 - ii. Second Draft with Mission comments incorporated submitted to the BEO for review/comment within two weeks of receipt of Mission comments. BEO will provide comments on the reports within two weeks.
 - iii. Final Report with all comments incorporated submitted to the Mission within two weeks of receipt of comments from the BEO.
- D. A brief (10-15 p.) Strategy Process Environmental Annex, which consists of a combined summary and syntheses of the findings and recommendations of the three analyses. The introduction to the Summary will include the following statement:

"The Environmental Annex is an SP-specific analysis that examines environmental threats and opportunities inherent to the Mission's strategy and assesses the extent to which the Mission's strategy incorporates or addresses biodiversity concerns. This assessment does not substitute for the Initial Environmental Examination (IEE). Each Technical Office is responsible for ensuring that an IEE or a Request for a Categorical Exclusion is conducted at the SO level for all activities funded by USAID."

- E. Ten bound copies of each country Final FAA 119 Analysis and the Strategy Process Environmental Annex will be delivered within two weeks of final approval by the Mission.

2. Each country specific report should include but not be limited to:

- A. Introduction and general overview of information available, sources, meetings held, site visits, and possible information gaps on the status of biological diversity.
- B. Update of changes since the 2001 report of the strategic and policy framework of the Government in the environment sector and structure and inter-relations of the institutions related to the biodiversity. This should include institutions at the state, as well as at the oblast, and local levels where appropriate and available and the specific area of their interest; funding of the projects related to the biodiversity; past and planned activities; the interest and commitment of the government to the protection of its resources; national strategies related to the protection and management of biological resources.
- C. Overview of key environmental NGOs and their projects for the conservation of biodiversity. This will include description of their specific interest in biodiversity; past, ongoing and planned activities related to biodiversity; and level of funding for each of the activities identified.
- D. Description of other relevant donor activities, levels of funding, planned activities, relation to USAID projects and programs.
- E. Update of changes since the 2001 report with respect to the analysis of current legislation related to the environment and biodiversity. This section should include identification of laws related to the protection and management of biological resources and endangered species. This section should also give a review of the international treaties signed and ratified, as well as those that need to be signed and ratified in the near future in order to conserve and manage its biological resources more efficiently.
- F. Management, conservation and condition of the areas with special status (protected areas); should also include an updated list or maps (if available) of all protected national parks, forest resources, animal sanctuaries, wildlife refuges and other protected areas as well as a brief description of each of the protected areas with highlighted specificities. The section should also identify potential protected areas in the country. This section should identify the institutions or agencies that are responsible for managing the protected areas (government or non-government) and their effectiveness. This section should provide guidelines for more effective management and usage of the protected areas for economic purposes, such as eco-tourism.
- G. The section dedicated to protection of the endangered species should include an updated list of all IUCN classified endangered and rare species found in the country. The section should provide a map (if available) identifying their habitats. The section should analyze the protective measures and potential threats and pressures on the habitats. The section should analyze the effectiveness of the protective measures and legislation related to this issue.
- H. Status of natural ecosystems should be updated in a section, with descriptions of the major ecosystems in the country. The review and analyses of their present management and conservation should be given in this section. The section should highlight the unique aspects of the country's biodiversity, including specific and endemic plants and animal species. The section should analyze changes to the status of each major ecosystem since the 2001 report.
- I. Current and potential threats to biodiversity whether they are related to human acts, ecological causes, natural diseases, lack of legislation or protection or any other causes. Within this section a particular sub-section should be devoted to urgent problems being faced by each country such as:
 - Deforestation/unsustainable forestry/illegal logging
 - River/Water pollution

- Erosion of land
- Land utilization

- J. Description of the major issues, needs, and recommendations for the effective conservation of biological diversity in the country. This section should include a summary of all the major issues identified during the analysis that require immediate attention in order to improve the protection of biodiversity. The needs assessment should cover all areas including institutional and legislative weaknesses to issues related to the management of biodiversity, protected areas and related natural resources. The recommendations should include brief descriptions of objectives and outcomes/benefits for the country's biodiversity.
- K. An assessment of the Extent to which USAID's Strategic Process meets the needs identified (FAA Sec. 119 d (2)). This section will review Mission strategic objectives and proposed activities (where appropriate) and identify any current and potential linkages with biodiversity conservation. The law does not require, and the Mission has no current plans to make substantial investments in Biodiversity protection; therefore, findings and recommendations will need to consider linkages and opportunities which are consistent and supportive of the Missions' Strategic Objectives. This particular aspect of the analysis will require significant interaction with Mission staff.

Annex H. Environment Related Internet Resources for Ukraine

Ministries and government institutions:

Government of Ukraine	www.kmu.gov.ua
Ministry of Agricultural Policy of Ukraine	www.minagro.gov.ua
Ministry of Environmental Protection of Ukraine	www.menr.gov.ua
Ministry of Economy of Ukraine	www.me.kmu.gov.ua
Ministry of Finance of Ukraine	www.minfin.gov.ua
Ministry of Industrial Policy of Ukraine	www.industry.kmu.gov.ua

Other Internet sites:

Azov-Black Sea Ornithological Station	www.ornitology.narod.ru
Biology of the Southern Seas of Ukraine	www.ibss.iuf.net
CIA Factbook	www.cia.gov
CIS Stat.	www.cisstat.com
Citizen's Network for Foreign Affairs	www.cnfa.org
EarthTrends: Environmental Information	www.earthtrends.wri.org
EcoPravo	www.ecopravo.kiev.ua
Ednannia: Innovative Center to Support Social Action	www.ednannia.kiev.ua
European Bank for Reconstruction and Development	www.ebrd.com
Institute of Zoology	www.izan.kiev.ua
International Monetary Fund	www.imf.org
National Ecological Center of Ukraine	www.necu.org.ua
National Association of Agricultural Advisory Services	www.dorada.org.ua
OECD Development Assistance Committee	www.oecd.org
Ukrainian Land and Resource Management Center	www.ulrmc.org.ua
Ukrainian Society for the Protection of Birds	www.birdlife.org.ua
UNECE Trends	www.unece.org
US Agency for International Development in Kiev	www.usaid.kiev.ua
Wetlands International Black Sea Program	www.wetl.kiev.ua
Wikipedia	www.wikipedia.org
World Bank Office in Kiev	www.worldbank.org.ua