EXECUTIVE SUMMARY

Efforts to conserve Bulgaria's biological diversity are at a critical stage. Centuries of intensive human land use, decades of mismanagement of natural resources under the former regime, and the impacts of recent economic and political changes present tremendous challenges to conservation. Unless a concerted program of conservation actions is initiated, Bulgaria stands to lose a substantial portion of its biological diversity over the next several decades. Such losses pose a significant threat both to Bulgaria's long-term economic well-being and to the ecological health of the Bulgarian landscape.

Fortunately, Bulgaria possesses a dedicated body of conservation advocates, scientists, and administrators in its nongovernmental organizations (NGOs), universities, and government agencies, and in the citizenry at large. Furthermore, with its stable population, solid foundation of scientific information and expertise, newly established democratic political structures, and extensive tracts of natural forest and other landscape features, Bulgaria has many advantages that bode well for the future.

In March 1993, more than 75 Bulgarian scientists, government officials, and NGO representatives gathered at a special workshop to discuss the status and fate of Bulgaria's biological diversity. Their goals were to assemble and analyze relevant scientific information, define conservation goals, present recommendations, and identify the next steps needed to conserve biological diversity in Bulgaria. This document is the product of their presentations and discussions.

Bulgaria's Biological Diversity

Although Bulgaria is relatively small in size (110, 912 km^2), it is rich in biological diversity due to its highly varied climatic, geologic, topographic, and hydrologic conditions. These conditions allow Bulgaria to support a biota that includes 94 species of mammals, 383 birds, 36 reptiles, 16 amphibians, 207 Black Sea and freshwater fish, an estimated 27,000 insects and other invertebrate species, between 3,550 and 3,750 species of vascular plants, and more than 6,500 nonvascular plants and fungi. Bulgaria thus ranks among the most biologically diverse countries in Europe.

Bulgaria's biota includes significant numbers of endemic species and subspecies. Endemic plant species constitute about 5 percent of the total flora, a high proportion compared with other, larger European countries. The available information on invertebrate taxa indicate that 8.8 percent of all noninsect species and 4.3 percent of insect species are endemic. Further research on these groups is likely to boost these percentages. Known endemic vertebrates include 12 freshwater fishes, 1 amphibian subspecies, 4 reptile subspecies, and at least 4 subspecies of mammals.

The degree of rarity varies significantly among the taxonomic groups. The rare flora and fauna include more than 700 vascular plants, many of which are endemic species found in the high mountain regions; 567 species of noninsect invertebrates (about 23 percent of all known species); more than 1,500 insect species; 29 species of Black Sea and freshwater fish; 2 species of snakes; 78 birds (including 16 from the World Conservation Union's [IUCN] 1993 List of Globally Threatened Species); and at least 10 large mammals, including the Black Sea monk seal, endemic subspecies of harbor porpoise and bottle-nosed dolphin, chamois, brown bear, wolf, otter, and European marbled polecat.

As a result of anthropogenic pressures, a number of Bulgarian species have in recent decades diminished to the point of extinction. These include at least 31 species of vascular plants, 7 invertebrates, 3 fish, 2 snakes, 3 birds, 2 (possibly 3) mammals, and 6 indigenous animal breeds.

Bulgaria is characterized by a wide variety of plant and animal communities, and supports examples of almost all of the main habitat types found in Europe. Bulgaria has a number of unique and representative communities and ecosystems that are highly valuable in terms of biological diversity, including alpine and subalpine coniferous forests, meadows, wetlands, peat bogs, and lakes; mature coniferous and beech forests; oak woodlands; caves and mountain gorges; Mediterranean and sub-Mediterranean plant communities; steppe grasslands; riparian shrub and forest vegetation along the Danube and smaller rivers; important inland, riparian, and coastal wetlands; sand dunes, coastal limestone communities, and other unique habitats along the Black Sea coast; and the pelagic, littoral, sublittoral, and benthic communities of the Black Sea itself. Of special note are Bulgaria's forests, which cover 3.9 million hectares (35 percent of the nation's total land base). Of this area, 60 percent consists of forests of natural origin.

Bulgaria's biological diversity includes species and genetic resources that are widely used for both commercial and noncommercial purposes and that have the potential to confer important economic and environmental benefits. In addition to economically important species of plants and animals (including timber trees, Black Sea and freshwater fish species, more than 200 species of edible fungi, and several hundred native medicinal plants), Bulgaria is home to many traditional and rare cultivars and breeds, and many wild relatives of domesticated species. Bulgaria's biological diversity also provides ecological services important to the country's environmental health, including nutrient cycling, pest control, pollination, soil and water conservation, recycling of wastes, and regulation of hydrological and biogeochemical cycles.

Threats to Bulgaria's Biological Diversity

Bulgaria's biological diversity faces a broad array of anthropogenic threats. The loss and degradation of both aquatic and terrestrial habitats constitute the most significant threats to biological diversity in Bulgaria, affecting all ecosystems from the high mountain forests and lakes to the open waters and benthic communities of the Black Sea.

Pollution of Bulgaria's air, soil, groundwater, freshwater, and coastal waters has (as in other countries) intensified over the last five decades and constitutes a significant threat to both biological diversity and human health. Virtually all forms of point and non-point source pollution -- household, agricultural, petroleum and petrochemical, industrial, and nuclear -- are present in the Bulgarian landscape and threaten biological diversity to varying degrees.

Direct exploitation, and especially overexploitation of economically valuable species, affects many ecosystems, habitats, and taxa. This includes such specific threats as illegal gathering (and export) of edible fungi, medicinal plants, snails, and several reptiles and amphibians; overharvesting of commercial fish species in the Black Sea coastal and open waters; poach-

ing and sport hunting of large mammals and birds (especially waterfowl and birds of prey); and the control of predators, especially those (such as the wolf and cormorant) that subsist on game animals and commercially valuable fish species.

As a European country long occupied by humans and their domesticated plants and animals, the invasion of exotic species is a less critical threat. Nevertheless, invasions (for example, of the Black Sea by a new species of ctenophore) have significantly affected the dynamics of major ecosystems. The intentional introduction of nonnative fish, game, and timber trees has also had detrimental impacts on indigenous ecosystems, species, and subspecies. Bulgaria's unique genetic resources -- local crop varieties, wild relatives of cultivated plants, and local and primitive domestic animal breeds -- have diminished as a result of changes in land use and in the agricultural economy.

Changing land tenure constitutes an important *potential* threat to biological diversity as citizens and communities regain title to land through the process of land restitution. Restitution offers significant opportunities for conservation. However, if citizens and local governments are not fully informed or encouraged to adopt conservative or restorative land use practices, the restitution process may have adverse impacts on biological diversity both in protected areas and on nonreserved lands.

Accelerated rates of global climate change could have far-reaching effects on Bulgaria's biological diversity, given its transitional position amid three major bioclimatic regions. If global warming should result in a rise in sea levels, the adverse effects along the Black Sea coast would also be substantial.

Lack of knowledge and ineffective policies can also be considered threats. While the foundation of scientific information on Bulgaria's biological diversity is one of the nation's most significant strengths, it has a number of gaps. The most significant are insufficient information on species richness, distribution, current populations, and population trends for many taxonomic groups; insufficient information on biological diversity in specific geographic regions; and insufficient information on the impact of various anthropogenic threats and on mitigation methods and restoration procedures. In addition, there is inadequate public understanding of biological diversity and the threats to it. Reliable and accessible information that might allow the public to achieve a higher level of awareness is lacking. Policy-related weaknesses include poor enforcement of conservation laws and environmental regulations; ineffective management and administration of protected areas; ineffective (or nonexistent) penalties and sanctions; and lack of registration and effective monitoring of harvested biological resources.

Developing a Comprehensive Conservation Program

None of the threats to Bulgaria's biological diversity can be easily addressed. In most ecosystems, various threats interact and diminish the ability of species and communities to perpetuate themselves. To prevent future losses of biological diversity, the many threats must be addressed in a coordinated and mutually reinforcing manner. A comprehensive conservation program, entailing a wide variety of activities, is needed. The recommendations summarized below reflect two overriding criteria: these actions are both *urgently needed* and largely *achievable with existing institutions, financial resources, and personnel.*

Land and Resource Management

The key to conserving biological diversity in Bulgaria is the adoption of an approach to land and resource management that recognizes the value of retaining and restoring diversity at all scales, on both reserved and nonreserved lands, and under various management regimes. The recommendations offered under this category stress the need to better integrate the management of all land, water, and biological re-

sources in order to protect and renew the ecological processes on which biological diversity depends.

Protected Areas

The foundation of Bulgaria's efforts to conserve biological diversity is its network of protected areas. This network needs to be both expanded and strengthened to provide protection for Bulgaria's most important and threatened natural areas. High-priority regions for new or expanded protected areas are the Rhodope Mountains; the Black Sea coast; Strandzha Mountain; areas surrounding and connecting the existing national parks in the Rila, Pirin, Vitosha, and Stara Planina Mountains; and the valley of the Strouma River. Further steps should immediately be taken to delineate new protected areas and to review the goals and methods of the network as a whole. In addition, measures should be taken to strengthen the administrative capabilities of the network. These measures should emphasize improvements in land management, law enforcement, biodiversity monitoring, education and interpretation, training of personnel, information services, and research capabilities.

Nonreserved Lands

Even if the official goal of placing 7.5 percent of Bulgaria's land base in protected areas is met, the protected areas network will still be able to protect only a small portion of the nation's biological diversity. Moreover, the fate of the protected areas and the biological diversity they contain is influenced to a great degree by actions within the surrounding landscape. Greater attention must be given to managing lands beyond the protected areas, especially those that are soon to be returned to private or municipal ownership. Conservation on nonreserved lands should be encouraged through new economic incentives, better integrated resource management programs, effective environmental assessments and modified benefit-cost analyses, appropriate regulations, and other policy reforms.

Sustainable Resource Management

To ensure that economically important species, habitat types, and soil and water resources are used in a sustainable manner, their management must be based on sound ecological principles. The sustainable management of fisheries, commercial forests, wildlife populations, and agricultural lands should be promoted through the enactment of new laws regulating domestic use and export of important species; the adoption of stronger pollution controls and improved forestry and agricultural practices; unilateral and regional actions to protect the fish and water resources of the Black Sea; and Balkan-wide cooperative conservation initiatives.

Habitat Restoration

Extensive areas of Bulgaria -- especially wetlands, forests, lands supporting intensive crop agriculture, pastures, riparian zones, and industrial zones -- have been degraded or even destroyed in the past by unwise management practices. To restore biological diversity, vitality, and productivity to these lands, greater investments of time, labor, skill, and knowledge are required. Restoration should be promoted by adopting economic incentives, disseminating information on restoration ecology and management techniques, developing seed banks and nurseries, and collaborating with other countries on transboundary restoration projects, among other measures.

Ex Situ *Conservation*

Ex situ facilities -- seed banks, experimental farms, aquaculture structures, captive propagation centers, and other facilities (including herbaria, arboreta, aquaria, botanical gardens, zoos, and museums) -- are needed to bolster and complement *in situ* conservation programs. These institutions should be strengthened and their activities integrated into the broader conservation strategy, supporting appropriate commercial development of biological resources as well as sustainable agriculture, reintroduction, public education, and ecological restoration projects.

Legislative Initiatives and International Agreements

Law is an essential tool for ensuring that public policy and governmental actions accurately and consistently reflect scientific information, public opinion, and social values. New and revised national laws, and the ratification and implementation of international agreements, are needed to ensure the protection and sustainable use of biological diversity in Bulgaria. As specific legislation and implementation provisions are developed, lawmakers should strive to create laws that are well coordinated, consistent, and enforceable, and that anticipate advances in scientific knowledge and changing social conditions. NGO involvement is especially important if the laws are to reflect existing scientific expertise and the full range of viewpoints among conservationists and the public at large.

Conservation Administration and Policy

The formulation of effective conservation policies and the execution of laws affecting biological diversity require a solid administrative structure. A critical goal of this national strategy must be to secure a stronger and better coordinated administrative structure to conserve biological diversity *both within and outside the protected areas*. There are various models that the Bulgarian Ministry of Environment (MOE), the Committee of Forests (COF), other government agencies and NGOs can adopt to manage more effectively the nation's protected areas, and to cooperate in the conservation of biodiversity on private, municipal, and state-owned lands. As a high priority, the agencies should examine these different modes of collaboration to determine which fit existing needs and emerging mandates.

Research and Technical Support

Scientific information on Bulgaria's biological diversity and its conservation is the foundation on which this strategy is built. Fortunately, the body of existing knowledge about Bulgaria's biodiversity is relatively extensive and detailed. However, conservation is hindered by numerous knowledge gaps and technical constraints. To provide a stronger scientific and technical basis for conservation policy and action in Bulgaria, support should be given to research that fills these gaps, as detailed in the research recommendations of this report and in the background scientific papers.

Environmental Education

This strategy will not succeed without strong public understanding and support. These, in turn, can only be fostered by communicating information about the values, status, and conservation of biological diversity in Bulgaria in the public school curriculum, in professional training and development programs, and in various public forums (including museums, zoos, national parks, information and visitors' centers, and the mass media). Conservation education programs should aim to increase public awareness of biological diversity issues, stimulate pride in and enjoyment of Bulgaria's unique biota, communicate existing and emerging scientific information about biodiversity, convey new concepts in conservation, and foster constructive debate over conservation strategies. Finally, education about biological diversity should be undertaken as part of a still broader national environmental education program.

Ecotourism

Bulgaria, with its many mountain ranges, national parks and other protected areas, Black Sea coast, wine-producing regions, monasteries, and other cultural and historical sites, presents abundant ecotourism opportunities. These opportunities, if developed in an appropriate manner, can encourage broad interest in the protection and restoration of biological diversity while providing economic returns for conservation at the local level. Bulgaria has recently taken steps to promote ecotourism. It should build on these

by adopting a national policy on ecotourism and by integrating ecotourism into the municipal and regional planning process, environmental assessments, and environmental education programs.

Collaborative Partnerships

Partnerships involving a wide range of individuals and organizations can and should play a key role in conserving biological diversity in Bulgaria. Partnerships can be formed to support many conservation activities, including park and trail maintenance, education and interpretation programs, biological inventory and monitoring, and fund raising. In Bulgaria, innovative conservation partnerships are still relatively uncommon. However, it is a country rich in the human skills, knowledge, and commitment needed to build successful partnerships.

The program outlined here must evolve continually. All of the components will require constant public involvement and feedback, and will need to change as they are implemented and as new opportunities and constraints arise. Implementation must involve all who have a stake in the future of Bulgaria's biological diversity, including farmers, land managers, agency officials, recreationists, educators, students, scientists, environmental advocates, and decision makers. All must contribute if this program is to succeed. Finally, successful implementation will require different activities at the international, regional (European and Balkan), national, municipal, and local levels. If properly coordinated, activities at these different levels can promote and reinforce one another.

Priorities for Immediate Action and Support

Several activities are key to the overall success of this conservation strategy and deserve immediate support within Bulgaria and from the international community. The following seven areas are of urgent importance, offer diverse long-term benefits, and provide much of the foundation for the full conservation strategy.

Strengthening the Scientific Basis for Conservation

Support should be given to strengthen the scientific understanding of biological diversity in Bulgaria. These efforts should focus on the gaps identified within the strategy, especially the need for basic information on specific taxonomic groups, geographic areas, anthropogenic threats and impacts, and mitigation and restoration methods. Other high-priority needs include improvements in basic scientific equipment and supplies; revision of the Bulgarian *Red Data Books* and creation of new red data books for taxonomic categories that lack them; additional species- and community-level information; encouragement of interdisciplinary research; greater access to, and more effective dissemination of, existing scientific information.

Support for Legislative Initiatives

Legal reforms and initiatives related to conservation in Bulgaria have reached a critical stage. New laws, and revisions of existing laws, are now being formulated. These proposals include a new protected areas act, a new forestry law, a new game law, a comprehensive biodiversity law, and legislation implementing the Convention on International Trade in Endangered Species. To ensure that these laws are based on the most complete scientific information and that they reflect the broadest possible public input and NGO involvement, support should be given to the in-country legal experts and non-Bulgarian advisers that have been working with Bulgarian scientists, NGO representatives, and government officials to draft these laws. This support should extend to efforts to ensure that new laws are fully and effectively implemented.

Expanding and Strengthening the Protected Areas Network

Further steps should immediately be taken to expand and strengthen the network of pro-

tected areas. These steps should include adoption of the proposed new protected areas act; full authorization of the new National Nature Protection Service, definition of its responsibilities, and support for efforts to coordinate its functions with those of other government agencies; appointment of a task force to review the mission and goals of the protected areas network and the effectiveness of the existing system of protected areas; identification of areas of special interest and concern for inclusion in the network; regional meetings, open to public participation, leading to a national meeting to develop detailed plans for revising and expanding the network; delineation of research needs; and a review of the status of Bulgaria's 17 Biosphere Reserves and their management needs. Support should be given for improvements in managing the protected areas, including development of public education, information, and interpretation programs; strengthening of enforcement capabilities; assessments of staffing requirements; development of effective management plans; and increased opportunities for professional training.

Environmental Education and Cooperative Extension

Much more time and energy need to be devoted to environmental education at all levels. This is a long-term undertaking, but immediate steps can be taken to begin the process. These steps include developing a national strategy for environmental education; appointing an advisory group of scientists, educators, and conservationists to provide guidance and advice in the design of curricula involving biological diversity and its conservation; developing teacher training programs; and supporting opportunities for Bulgarians to interact with environmental educators in other countries. Educational programs should not be limited to students or to schools. This is especially important to the land restitution process. Extension services should be organized on the national level to disseminate information about biological diversity to new (as well as current) landholders, and to communicate landholder concerns back to the scientists and policy makers.

Developing and Implementing an Ecotourism Policy

Support should be given to Bulgarian conservation and regional planning agencies to develop and implement a clear, workable national policy on ecotourism. This policy should involve support for a number of practical activities, including the publication of tourism-related literature on protected areas; establishment by the Ministry of Environment of tourism management guidelines for protected areas; definition of conservation design guidelines for essential construction activities; establishment of an incentive system for conservation projects; and the dissemination of business development and marketing advice for craft industries.

Stimulating Conservation in the Black Sea Basin

The Black Sea requires both national and international measures to recover and conserve its biological diversity and economic resources. At the national level, support is needed for efforts to identify biologically important areas for inclusion in the protected areas network; to implement nationwide integrated coastal zone planning; to undertake restoration and pollution mitigation measures; and to strengthen the enforcement of environmental regulations. At the international level, support is needed for cooperative efforts to address the problems of transboundary pollution, overexploitation, and inappropriate development; for biodiversity monitoring and conservation planning; for the restoration of marine biodiversity; for ecosystem-level scientific research on the Black Sea and its biological diversity; and for the implementation of the Convention on the Protection of the Black Sea from Pollution and further development of the Black Sea Action Plan.

Stimulating Conservation in the Balkan Peninsula

The conservation of biological diversity within Bulgaria requires cooperation and coordination with neighboring countries. Conversely, actions taken within Bulgaria have ramifications for conservation beyond its borders. Support should be given to efforts to explore shared concerns, exchange information, and coordinate biodiversity conservation plans with the other countries of the Balkan Peninsula. Short-term actions that can be taken to strengthen existing ties and to build the foundation for cooperative conservation projects include investigations of biodiversity conservation issues in important transboundary areas; sponsoring of a region-wide conference on the biological diversity of the Balkan Peninsula and its conservation; establishment of advisory councils in each of the Balkan countries; collaborative scientific research on the biogeography and biological diversity of the Balkan Peninsula; the preparation of Balkan-wide red data books; and landscape-level conservation planning in border areas. Although such actions are difficult to initiate given the current levels of political and economic instability in the region, cooperative conservation projects can provide a positive focus for the region's peoples and contribute to the realization of a more secure and peaceful future for the Balkan Peninsula as a whole.

INTRODUCTION

Over the last several years, the country of Bulgaria has experienced profound social, economic, and political changes. These changes have had, and will continue to have, far-reaching implications for the protection and sustainable use of biological diversity. Bulgarian officials, scientists, and conservationists have been working to respond to these changes and to initiate reforms. At the same time, foreign environmental assessment teams have visited Bulgaria and reported the need for a national biodiversity conservation strategy.

The National Biological Diversity Conservation Strategy (NBDCS) is the culmination of a 3-year process. This process was funded by the Bureau for Europe and the New Independent States of the U.S. Agency for International Development (USAID/ENI) and was carried out as technical assistance to the government of Bulgaria's Ministry of Environment (MOE). The NBDCS was coordinated through the U.S.-based Biodiversity Support Program, a consortium of World Wildlife Fund, The Nature Conservancy, and World Resources Institute. The Biodiversity Support Program promotes efforts to protect biological diversity while enhancing human livelihoods in developing countries through improved conservation and use of biological resources.

This strategy has been developed in accordance with the requirement for national-level conservation planning outlined in the 1992 Convention on Biological Diversity, to which Bulgaria is a signatory. It also reflects recommendations contained in the World Bank's 1992 *Bulgaria Environment Strategy Study*. The NBDCS represents the first national-level strategic plan for conserving biological diversity to be developed in Central and Eastern Europe.

The centerpiece of the planning process was the National Biological Diversity Conservation Strategy workshop, held at Sveti Vrach, outside Sandanski, Bulgaria, on March 12-20, 1993. The workshop, and the documents prepared for it, were designed to develop consensus for this national strategy and to provide a framework for future foreign assistance on conservation and development projects. The objectives of the workshop were the following:

- Assemble and evaluate available information leading to an understanding of the biological basis for conservation planning in Bulgaria.

- Identify goals for the conservation of biological resources and biological diversity in Bulgaria, including the identification of biologically important areas and priorities for conservation action.

- Clarify the legal and social framework for conserving biological resources and for generating revenues to support conservation.

- Identify and rank mechanism(s) for attaining conservation goals.

- Draft recommendations.

- Recommend further steps to resolve outstanding issues.

The 75 workshop participants included a broad range of Bulgarian scientists, government officials, and nongovernmental organization (NGO) representatives, as well as several non-Bulgarian advisers. Prior to the workshop, in mid-1992, five teams were formed to provide input to the process, prepare background reports, and develop recommendations.

A *biological diversity team*, composed of specialists in the biological sciences, prepared reports on Bulgaria's vertebrates, invertebrates, vascular and nonvascular plants, fungi, forests and other plant communities, and freshwater and Black Sea biota. Using geographic information system (GIS) technology, the members of this team prepared maps to synthesize information on the distribution and status of biological diversity.

An *applied biological diversity team* provided information on applied aspects of resource use and conservation, focusing on traditional and modern uses of medicinal plants and fungi, plant and animal genetic resources, soils, forests, and other biological resources.

A *social science team*, composed of foreign and Bulgarian specialists, provided expertise on legal aspects of biodiversity conservation, protected areas planning and management, natural resource economics, and regional planning.

A *nongovernmental organization (NGO) team* worked to define the key social, economic, and political issues related to the environment and conservation in Bulgaria. To this end, the five participating NGOs held discussions among their members and prepared reports based on analyses of their meetings and on specially commissioned surveys of landowners and other interested citizens.

An *information team*, composed of geographic information specialists from Bulgarian institutions and the U.S.-based Environmental Systems Research Institute (ESRI), worked with the other teams to prepare maps for the workshop and for the national strategy documents. These maps have played a critical role in developing the national strategy, providing new tools for land use planning and for sustainable management of biological diversity both within and outside Bulgaria's protected areas. The GIS component of the strategy process has been supported by USAID, the U.S. Environmental Protection Agency, and the European Community Poland and Hungary Action for Restructuring the Economy (PHARE) program.

The workshop brought together these five teams, as well as the deputy minister of the environment, the environmental adviser to the president, and representatives from the Commission on the Environment of the Bulgarian Parliament; the Ministry of Environment's Office of Biodiversity, Protected Areas and Forests; the Bulgarian Academy of Sciences; the Ministry of Agriculture; the Ministry of Regional Development and Construction; the Committee of Forests; and the Committee on Tourism. Over the course of the 8-day workshop, participants listened to one another's reports, engaged in extensive discussions of the findings, and debated conservation recommendations and priorities. With the aid of the newly generated maps, participants were able to display, compare, and

synthesize data in support of their discussions.

This report summarizes the findings and recommendations of the workshop. While it contains information and recommendations of broad relevance to all who are interested in conservation and sustainable development, it is directed specifically to several audiences:

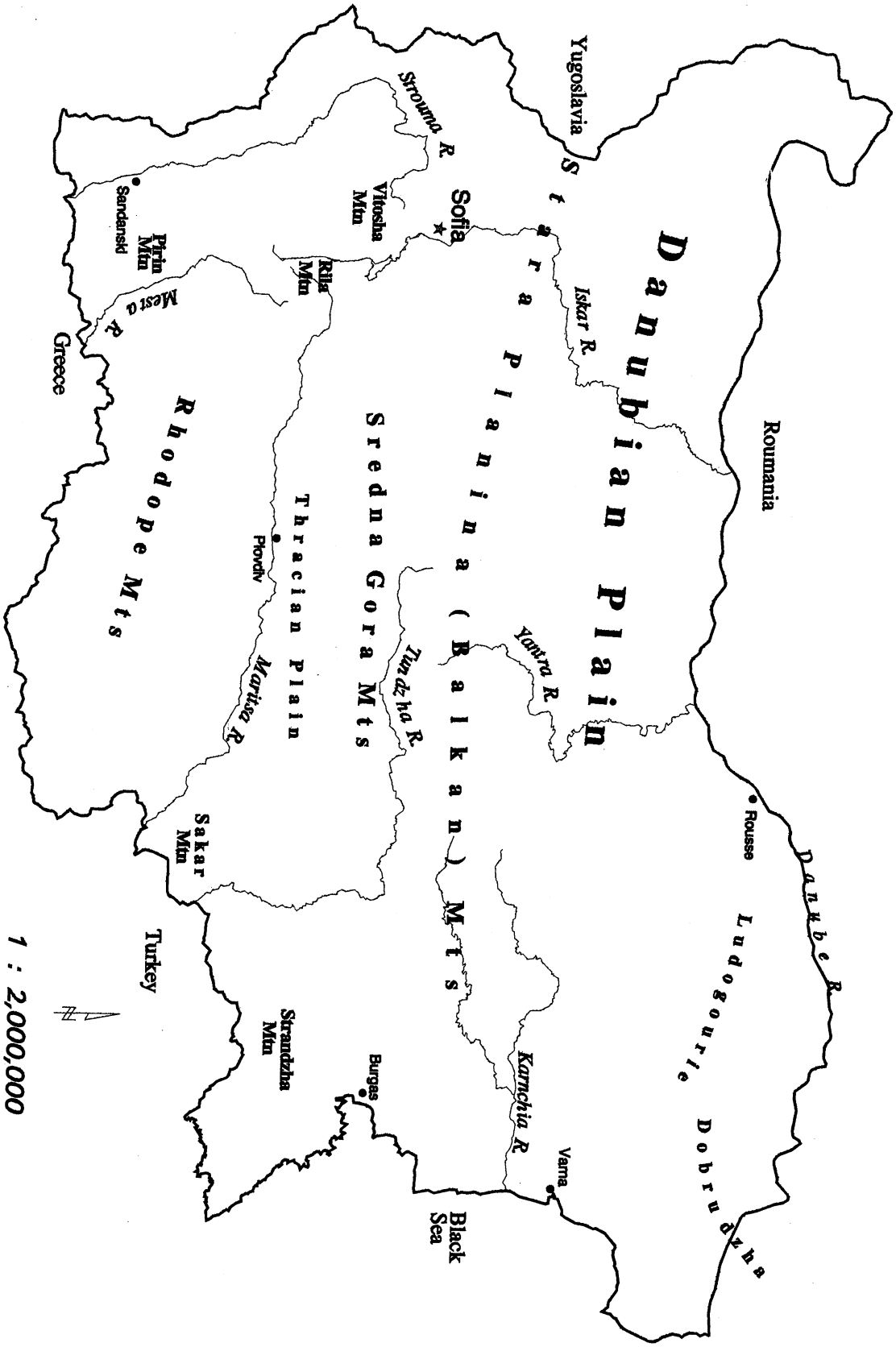
- The NBDCS workshop participants, whose hard work, in partnership with their many colleagues and on behalf of their fellow citizens, provided the foundation on which this strategy is built. The full text of each of the workshop reports, with corresponding maps, are being published separately by the Biodiversity Support Program.

- Bulgaria's citizens, scientists, NGOs, and government officials, on whom depends the future development and successful implementation of the strategy.

- Conservationists in other countries, especially in Central and Eastern Europe and the former Soviet Union, who are confronting many of the same challenges as Bulgaria, and many of whom are involved in developing their own national strategies.

- International conservation, development, and funding organizations, whose support will be critical in achieving the long-term goals of this strategy.

The protection of biological diversity, the strengthening of democratic traditions, and the building of a sustainable economy are interwoven challenges that will demand the attention and commitment of all of Bulgaria's 9 million citizens and their elected representatives for many years to come. It is the hope of all those who have worked to prepare this strategy that it will be useful in stimulating actions to safeguard Bulgaria's biological diversity at the community and national levels, while generating social and economic benefits for current and future generations.



Map 1. Selected Features Of Bulgaria

THE CONSERVATION CHALLENGE

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History and geography have combined to present Bulgaria with tremendous challenges as well as special opportunities in its efforts to conserve biological diversity. Its natural ecosystems, like those of other Mediterranean and Balkan countries, have been extensively altered by millennia of intensive human land use. In recent decades Bulgaria has -- along with the industrialized world, in general, and the other nations of Central and Eastern Europe and the former Soviet Union in particular -- burdened itself with profound pollution problems and other forms of degradation of its air, water, and land resources. These forces continue to take a heavy toll on biological diversity and on ecological processes within the Bulgarian landscape.

Despite these circumstances, there is much room for optimism as the people of Bulgaria work to protect and restore environmental quality. The nation's landscape has retained, even through its long history of human settlement, a high degree of biological diversity, wildness, and beauty. In addition, Bulgaria does not face many of the pressing problems associated with rapid population growth (from 1980 to 1990, its population remained stable at just under 8.9 million). Bulgaria also possesses a wealth of scientific expertise and a strong historical commitment to conservation. The Bulgarian flora and fauna are well studied. Although important gaps in scientific knowledge do exist, many of the most urgent actions needed to conserve biological diversity can be taken based on existing information. Finally, Bulgaria has a dedicated body of conservation advocates, scientists, and administrators in nongovernmental organizations (NGOs), universities, and government agencies, and in the citizenry at large.

The obstacles, however, should not be un-

Box 1. Bulgaria's Conservation Agencies

The conservation of biological diversity and management of natural resources are overseen and affected by several agencies of the Bulgarian government. The administrative functions of the Bulgarian government are carried out through 15 ministries, the heads of which are elected by the Parliament and constitute the Council of Ministers. Committees have more restricted functions; their heads are appointed by the Prime Minister and do not sit on the Council of Ministers. All agency responsibilities are defined through special decrees of the council.

The Ministry of Environment (MOE) is the primary agency responsible for implementing national environmental policy. Under the Environmental Protection Act (1991, amended 1992) and Decree No. 14 (1992) the duties of the MOE are

- "[define] the government strategy for environmental protection in cooperation with the ministers concerned with the problem" (Art. 24, para. 1-1);
- "control the quality of the environment in the territory and territorial waters of the Republic of Bulgaria, [and] prohibit or stop activities that damage the environment" (Art. 24, para. 1-3);
- "coordinate the control functions discharged by other ministries and departments with respect to the environment" (Art. 24, para. 1-4);
- "endorse in consultation with the Minister of Health, the Minister of Agricultural Development, Land Use and Restoration of Land Ownership, the Minister of Regional Development and Construction and other state bodies, fee schedules for the use of natural resources and for admissible pollution" (Art. 24, para. 1-7d and Dec. No. 14, art 2-8-8); and
- "guide and control the preservation of biological diversity and natural ecosystems, [and] designate protected species and territories" (Art. 24, para. 1-8).

The MOE executes governmental policy regarding environmental protection and nature conservation, as well as the ecologically-based use of natural resources (Dec. No. 14, art. 1 and 3-1). In consultation with other governmental agencies and public organizations, it develops management plans for regions with threatened natural features and protected areas (Dec. No. 14, art. 2-4). The MOE has authority to control and manage protected areas, protect biological diversity and natural ecosystems, as well as designate protected species and areas.

In March 1994, the MOE created the National Nature Protection Service (NNPS), "a specialized body [within the MOE] for the management, control, and protection of biological diversity, protected natural sites and natural ecosystems." It incorporates the former Office of Biodiversity, Protected Areas, and Forests. Though the structure and functions of this new service are still evolving, it is expected to be the lead unit for biodiversity conservation in the MOE.

The Committee of Forests (COF) is the administrative body under the Council of Ministers responsible for carrying out state policy involving the management, protection, and use of the country's forests, game, and noncommercial fisheries. Under Decree No. 35 (1991), the COF

(CONTINUED ON PAGE 3)

derestimated. Scientific understanding of Bulgaria's biological diversity, though relatively advanced, still has significant gaps. Moreover, the need for environmental reform comes at a

Box 1. Bulgaria's Conservation Agencies (CONTINUED FROM PAGE 2)

- "organizes the maintenance and patrolling of protected areas in the forest fund and participates in their establishment and expansion" (Art. 3-1);
- "organizes the preservation of protected flora and fauna and controls the ecologically-based use of other forest species" (Art. 3-2);
- "controls and coordinates the use and restoration of game and noncommercial fishery resources" (Art. 4-1); and
- "controls and coordinates the economic use of secondary forest [products]" (Art. 6-3).

Under Bulgarian law, forests are classified into two groups. "Forests of commercial purpose" are managed primarily for producing timber. "Forests of special purpose" are managed primarily for their environmental, recreational, and scientific values; harvesting of timber and other raw materials in these areas is limited and occurs only according to strict environmental standards. Over the last three decades, the proportion of "special purpose" forests has increased from 10.2 percent to 30.4 percent of the total forestland under the COF's jurisdiction.

The Ministry of Regional Development and Construction is responsible for coordinating planning and development at the regional level. In collaboration with other agencies, it provides conditions for the effective use of land, energy, and other resources, and for sustainable regional and community development.

The Ministry of Agriculture administers programs that involve soil conservation, environmentally sound agriculture, and the restoration of damaged and polluted soils. The State Fisheries Inspectorate, which oversees the use and management of aquatic biological resources, is also located within the Ministry of Agriculture.

The Bulgarian Academy of Agriculture administers research institutes and experimental stations that explore, protect, and develop local germplasm resources for breeding programs and for direct use. The Academy also administers the Institute for Plant Genetic Resources at Sodovo, which is the nation's primary seed storage facility.

The National Water Council is responsible for the allocation and use of water resources.

The Committee of Geology and Mineral Resources directs activities related to the exploration and extraction of mineral resources.

The Committee on Tourism oversees the development and promotion of tourism.

The Bulgarian Academy of Sciences (BAS) consists of some 30 separate research institutes. Environmental research and monitoring takes place mainly through its Institutes of Botany, Ecology, Water Problems, and Zoology, the Forest Research Institute, and the National Center of Hydrology and Meteorology. The National Natural History Museum, associated with the Institute of Zoology, serves as the nation's main repository of natural history collections. In the past, the Institute of Ecology has often taken the lead in proposing new protected areas.

Municipal councils and local government bodies are also involved in environmental protection and management. These local entities develop more specific environmental programs, report environmental offenses, administer municipal services, work with the national government in setting environmental pollution standards, and contribute to the regional planning process. They also administer some protected areas (part of Vitosha National Park, for example, falls under the jurisdiction of the city of Sofia).

time when social, economic, and political conditions inside Bulgaria, and in the Balkan Peninsula more widely, are unstable. As in the other fledgling democracies of the former Soviet bloc,

the political processes within Bulgaria are evolving rapidly. This has important consequences for the governmental agencies that administer environmental laws and regulations (see Box 1). The lack of political continuity creates special difficulties not only for environmental advocates and decision makers within the country, but for international assistance agencies as well. In-country financial resources for conservation are limited. The financial resources that do exist are devoted to more immediate social, economic, and environmental needs, while foreign investments are directed primarily toward establishing private business ventures and opening new markets for Western goods and services.

But the new path that Bulgaria is charting must involve extensive environmental reform. The consequences of past environmental abuse can no longer be neglected. Reforms are needed to ensure that the social and economic changes now taking place contribute to, and benefit from, long-term improvements in environmental quality. Support for environmental reform reflects both the nation's heritage of conservation commitment and the democratic changes now occurring within Bulgarian society. Environmental NGOs have long played an important role in advancing conservation and were at the forefront of the events that brought democracy to Bulgaria in November 1989 (see Box 2). Even under the difficult economic conditions that have followed, the community of NGOs has remained strong and active in promoting sustainable management of natural resources, protection and restoration of natural areas, and conservation-related research, policy reform, and educational activities. At the same time, changes taking place within the government agencies hold great promise for implementing stronger and broader environmental protection policies.

There is a strong desire for a more secure environmental future among the people of Bulgaria. This high level of interest has already focused attention on the problems of air, water, and soil quality, and will continue to play an essential role in the nation's efforts to develop in a sustainable manner. With the development of this strategy, greater attention will now be given as well to a cherished goal of Bulgarians: the conservation of the nation's biological diversity. This document provides a framework by which progress toward this goal can be achieved through a concerted and coordinated program of actions.

The need for such a program is evident. Bulgaria's biota was historically, and remains, among the richest in Europe. Now a variety of anthropogenic factors threaten the survival of many members of that biota. Over the last 50 years, as degradation of Bulgaria's natural environment has accelerated, habitat conditions throughout the country have suffered. Large portions of some habitat types, such as wetlands, steppes, and lowland forests, have been lost. Other biotic communities, such as mid-elevation hardwood forests, have been greatly altered by human exploitation. Pollution, overexploitation, changing patterns of land use, and other threats compound the problem of habitat loss and degradation.

If the trends of the last several decades are allowed to continue, Bulgaria stands to lose over the next several decades a substantial portion of its biological diversity. Especially vulnerable are its vascular plants, mature forests, rare cultivars and domestic breeds, important edible fungi and medicinal plants, and a number of vertebrate species (including freshwater and Black Sea fish). For some groups of organisms facing specific threats, the situation may be even more perilous. It is possible, for example, that illegal harvesting will, within the next 10 years, endanger or even drive to extinction many of Bulgaria's medicinal plants. Such losses would have far-reaching environmental and economic consequences -- consequences that are even more significant in view of the nation's efforts to rebuild its economy and restore environmental quality.

Bulgaria's biological diversity confers direct and indirect economic benefits in the form of commercially valuable species, traditional and

Box 2. Environmental Nongovernmental Organizations

Nongovernmental organizations (NGOs) have played a critical role in the recent environmental and political reform movements in Bulgaria. Their efforts, however, rest on a century-long foundation of citizen involvement in environmental issues. The first citizen groups devoted to environmental activities, which appeared in the late nineteenth century, focused mainly on education. The first national conservation organization was the Council for the Protection of the Countryside, a "union for nature protection" formed in 1928 with the support of scientists as well as the general public. This organization worked successfully for the establishment of the nation's first protected areas.

The formation of legitimate NGOs was difficult during the communist era. A Popular Committee for Nature Protection was officially established as a public organization, but information about conservation, environmental issues, and health hazards was often suppressed. Citizens had no mechanisms through which they could influence environmental policy or protest abuses. Despite political constraints, Bulgaria's first environmental NGO -- the Civil Committee for the Ecological Defense of Ruse -- was founded in March 1988. Although harassed by governmental authorities, the committee opened the way for other NGOs. The first NGO to be formally registered was the Bulgarian Society for the Protection of Birds, founded in June 1988.

The most prominent environmental NGO prior to, and in the course of, the fall of the communist regime in Bulgaria was Ecoglasnost, founded in April 1989. One of Ecoglasnost's main tasks was to collect information about the health and environmental effects of pollution, including the contamination of water and soil with arsenic and mercury and the release of radiation during the Chernobyl accident. Ecoglasnost provided many of the founders and leaders of the United Democratic Forces (UDF), which is now a major political force within Bulgaria.

With the coming of democracy to Bulgaria, many new environmental NGOs have been established at the national, regional, and local levels. These groups work toward varied goals, including the protection of natural areas, more effective pollution control, stronger environmental education programs, and the conservation of specific areas. Among these newly created groups are the Union for Nature Protection, the Wilderness Fund, the Bulgarian Society for Protection of the Rhodope Mountains, the Green Balkans Movement, the Ecomonitoring Club, the Green Society Foundation, the Ecoforum for Peace, the Ecos Foundation, and the Green Patrols. Some of these groups have begun to work on local projects with the support of international organizations.

While environmental NGOs remain strong in Bulgaria, current economic conditions limit their effectiveness. To function normally, these organizations require assistance in a number of areas:

- Adequate funding to develop their programs;
- Consultation on scientific, legal, and socioeconomic aspects of environmental issues;
- Knowledge of the structure and activities of similar organizations in other countries;
- Training in methods of working with local people and communities; and
- Access to information.

In connection with the last of these, a national conference of Bulgaria's environmental NGOs was held in 1993 to discuss, among other needs, the development of an effective information clearinghouse -- the Environmental NGO Information Center. This center is in the process of being established.

rare plant cultivars and animal breeds, primitive relatives of domesticated species, and opportunities for ecotourism and other recreational activities. The long-term economic benefits of these biological resources need to be secured by managing them on a more sustainable basis. This pertains not only to economically important resources such as timber trees and commercial fish species that have long been intensively managed, but also to species harvested from the wild, semiwild and domesticated species, and unique genetic resources.

Even as many biological resources have declined, their real and potential value has been overlooked. For example, species of fungi, medicinal plants, and other plants and animals that occur in the wild may, with improved methods of cultivation and commercial production, offer important opportunities to integrate conservation and economic development at the local level. Similarly, when distinctive semiwild plant relatives, local cultivars, and animal breeds are lost, so are options for their future use. The genetic diversity of these cultivars and breeds has endowed them with resistance to disease, tolerance of climatic extremes, and special adaptations to local environmental conditions. These qualities may prove critical in ensuring the viability of modern domestic forms under changing economic and environmental conditions.

Biodiversity also plays a fundamental role in the functioning of Bulgaria's terrestrial and aquatic ecosystems, and thus in the restoration and maintenance of ecosystem health. Biological diversity serves to protect soils, recycle nutrients, maintain fertility, control pests, remove wastes, and regulate hydrologic cycles. By conserving biological diversity, society conserves these critical environmental services and the foundations on which sustainable development rests.

In addition to these tangible economic and environmental benefits, biological diversity also provides the means through which unique cultural, aesthetic, and spiritual values are expressed. Although these values elude measurement, they are pervasive in Bulgaria's art, history, music, literature, cuisine, and language. The plants, animals, and landscapes of Bulgaria serve as subjects and symbols in sculpture, painting, songs, and fables, in festivals and celebrations, and in the imagery and artistry of Bulgaria's religious traditions. Biological diversity is in this sense the fundamental source of much of the country's distinctive culture.

For all of these reasons, Bulgaria's future well-being -- social, economic, cultural, and environmental -- depends on the conservation of its biological diversity. To prevent the loss of biodiversity and to secure its tangible and intangible benefits for future generations, a broadly conceived national strategy must begin now to address the many, varied, and interrelated factors that threaten it.