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## FAA 119 – Country Biodiversity Analysis Report Facesheet

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### Brief Description:

The USAID/Macedonia submits the attached FAA 119 analysis for E&E Bureau Environmental Officer approval in preparation for the development of our new strategy.

This analysis addresses: (1) the actions necessary in that country to conserve biological diversity; and (2) the extent to which the actions proposed for support by the Agency meet the needs thus identified (FAA, Sec. 119(d))."

The Mission requests the BEO approval for the report.

### Clearance:

Mission Director:

  
Dick Goldman

Date: 8/31/2006

Mission Environmental Officer:

  
Stafford Baker

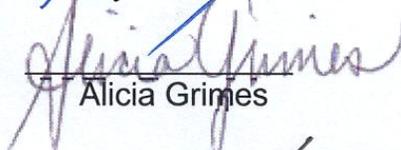
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9/6/2006

Approved:

Disapproved:



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**FAA SECTION 119  
BIODIVERSITY ASSESSMENT UPDATE  
FOR  
THE REPUBLIC OF MACEDONIA**

**MAY 2006**

## INTRODUCTION

This report presents an updated Biodiversity Assessment prepared for the U.S. Agency for International Development (USAID) Macedonia Mission. The report addresses the Foreign Assistance Act (FAA) Section 119 and ADS 201 requirements on analyses for Biodiversity Conservation required for the preparation of new Country Strategic Plans. This report updates the previous report completed in 2001 and does not attempt to resubmit the basic information on the ecology and biodiversity of Macedonia.

The analysis carried out did not discover any dramatic change in the status of biodiversity conservation in Macedonia. There were no new categories of threats discovered nor has there been a discernable change in understanding of the scope and status of the country's biological resources. Aquatic resources remain vulnerable to over fishing, high levels of water extraction and pollution. Forest cover remains fairly constant; however, many sources consider the quality of the forests to be declining. There is still a lack of knowledge on the status of many threatened and endangered species; hence, the real situation is still not known for many species and habitats. Efforts to create new protected areas are still unrealized; however several donor projects have begun to address the conservation needs of the existing protected areas. Macedonia's large tectonic lakes have generated the greatest amount of donor interest in the environment, while the forest resource issues remain only partly understood and under funded.

One of the main success stories of the past five years is the focus on legislative reform. The enabling conditions for improving effective conservation are currently undergoing a substantial change. Since the 2001 Biodiversity assessment, the GoM has made strides to bring its legislative framework into compliance with EU policies, with the eventual goal of EU integration. These processes are still relatively nascent and implementation could lead to substantive changes for biodiversity conservation in the future. However, the institutions that support these policies are in need of strengthening and harmonization.

Some of the nascent legislative processes will overlap with USAID's interests in democracy and governance, economic growth and education. Effective biodiversity conservation is very cross-sectoral and this report is, in part, meant to describe the potential linkages and areas of convergence between USAID/Macedonia's strategic plans and biodiversity needs in Macedonia.

A brief overview of the main ecological zones in Macedonia is presented. This section is followed by an update on the major threats to biodiversity, both direct and indirect. It should be noted that the 2001 USAID report and recent priority setting reports highlight Macedonia's aquatic resources as being highly threatened. While site visits of the aquatic areas were not possible within the scope of this assessment, the status of key aquatic resources is updated from existing documents and some interviews. Several of the critical aquatic habitats are currently being addressed by site specific conservation and environment projects by other donors. The report focuses on areas where interventions are critically lacking and emphasizes the management and monitoring issues within the forest sector and the variety of issues relating to the legislative reform within the environment sector overall. The latter is important to consider for all types of extractive use of resources, both aquatic and terrestrial.

The two-person team from USAID/Washington conducted a series of interviews with government, civil society, multi-lateral and bilateral donors, and technical experts in order to better understand how the biodiversity sector has changed in the past five years. The interviews were not intended to duplicate the vast amount of work that has been carried out in the development of the BSAP, Vision 2008 and other recent analyses. These documents were referenced to gain more information of the status of biodiversity in Macedonia and should be consulted when developing any activities relevant to biodiversity conservation in the country (see Annex IV for a list of relevant documents.)

## **MACEDONIAN BIODIVERSITY**

Macedonia is rich in biodiversity and is considered one of the leading European biodiversity hotspots. The assemblage of flora and fauna is remarkably heterogeneous given the relatively small area (25,713 km<sup>2</sup>); this is due to a marked altitudinal variation, a large number of lakes and a wide array of ecosystems in a convergence area of the Mediterranean and Euro-Siberian ecological zones. Macedonia is mountainous with many valleys, gorges, plateaus, riparian areas, marshes and several lakes. This mix of habitat types presents this small country with a rich biodiversity including a substantial number of endemic and relic species. Many of these are found in Lake Ohrid and the other tectonic lakes that account for the majority of Macedonia's endemic and important biodiversity.

Wild biodiversity is extremely important to everyday life in Macedonia. The majority of the rural population uses firewood for heating. The collection of mushrooms, berries, chestnuts, medicinal plants, herbal teas, and fish are important resources used by a substantial segment of the population. Some taxonomic groups are important sources of revenue as well. For example, export of a small number of mushroom species is estimated at \$2 Million/year. Legal collection and permits are controlled by several ministries. However, it is widely acknowledged that, currently, there is no accurate measure of actual off-take of most of the species and numbers are thought to be declining. Increasing poverty is probably an important factor in increased off-take of natural resources for food.

Detailed information on the current state of knowledge of the biodiversity sector can be found in the recent "Biodiversity Strategy and Action Plan of the Republic of Macedonia (BSAP)" (2004) and are not repeated here. However, a brief description of the most important ecological zones is presented below:

**Forest ecosystems** – These ecosystems are the predominate land cover in Macedonia. The majority of land is covered by deciduous, broadleaf forests with Hornbeam, Chestnut, beech, hop-hornbeam and several oak species. Evergreen spruce and pine forests generally occur in smaller forest patches. This variety of forest types enables a strong diversity of tree and groundcover species including a large number of mushrooms, berries and medicinal plants. These ecosystems are very important in terms of recreational and "commercial" collection of timber and non timber forest products.

Within the forests, the BSAP reports that nine forest vegetation associations are endangered. These are generally specific forest understory plant communities. A number of specific plant groups are thought to have a number of species becoming

increasingly endangered, including: Angiosperms (280-300 endangered species), ferns (15), mosses (20) and Gymnosperms (7). Within the lower plant groups nine species are considered to be extinct and 107 endangered. A preliminary Red List has been developed for fungi, including 67 endangered species from phylum Basidiomycota and 12 from Lichens.

**Aquatic/wetland ecosystems** – Macedonia's geomorphology has produced a rich variety of aquatic ecosystems lakes, rivers and wetlands. There are three large natural lakes of which Lake Ohrid (and its adjacent old city center) is a UNESCO World Cultural and Natural Heritage Site. Ohrid Lake is a relic lake with many species taxonomic remnants of Pleistocene epoch. It has 216 relic endemic taxa making it one of the most important centers of endemism in Europe. Most of the endemic species are invertebrates and are affected by changes in water quality and clarity. Of the seven species of endemic fish, six are listed as Vulnerable on IUCN's red list and one is considered Extinct. Ohrid Trout are highly valued and despite efforts to manage the fishing, their numbers continue to decline.

Riverine and Wetland systems have been heavily influenced by habitat conversion and increased extraction and pollution. Of the six endemic riverine fish species, three are considered globally threatened (IUCN Red list, Annex III). Most of the wetlands have been drained for agricultural purposes and remaining natural habitats are fragmented and highly threatened.

**Dryland/Grassland ecosystems** – Grasslands, meadows and steppe areas occur in the valleys and in the highland areas. Habitats include Mediterranean ecosystems and European alpine tundra and pastures. These habitats have a diverse number of ground birds, rodents and a variety of plant communities found on specific soil types. These habitats are not considered to be particularly threatened, partially as there has been little focus on their status. One of the key issues for many of these areas is the maintenance of sufficient grazing to keep out weedier shrubs and trees. In drier areas, fire - both too much and/or too little may lead to loss of Mediterranean floral species. Potential for mining and some agriculture development may become of concern in the future. There appears to be little information regarding any issues with invasive species.

**Mountain ecosystems** – At over 2,000 m, these areas are small "island" pockets of alpine species. There are a number of relic-endemic species, mainly rodents and butterflies and some alpine plant species. These areas are not highly threatened, however, the status of many species that are collected for food, medicinal and trophy (butterflies) is not well known and the overgrazing and scope of plant collection require further investigation.

## **ISSUES OF CONCERN FOR BIODIVERSITY CONSERVATION**

The 2001 USAID Biodiversity assessment listed a number of threats to biodiversity in Macedonia, mainly linked to uncontrolled extraction (fish, medicinal plants, wood), land conversion, draining of wetlands and overuse of water from lakes, and poor agricultural practices. These continue today and are clearly articulated in the BSAP, which states that aquatic and wetland ecosystems are the most endangered, also listing certain forest types and meadows as highly threatened. The BSAP's list of specific and wide-ranging direct threats is presented below:

- Inadequate management of aquatic ecosystems;
- Drainage of marshes and swamps;
- Construction of hydropower reservoirs in river gorges;
- Lack of water treatment plants (for riverine and lake ecosystems);
- Mine excavations and other geologic works;
- Construction of ski lifts, transmission lines, television transmitters and other antenna systems;
- Loss of habitats (or portions thereof) during unplanned expansion of urban centres, weekend settlements and tourist/recreation zones;
- Modification of habitats;
- Fragmentation of habitats, due mainly to traffic infrastructure, where highways intersect habitats that are important as vertebrate corridors (particularly for large mammals). When aquatic habitats are artificially fragmented, recommendations for maintaining ecological minimum flows in watercourses are not followed;
- Destruction of areas with natural halophytic and meadow vegetation;
- Uncontrolled destruction of forests, forest fires, clearing for building sites, construction of roads and railroads, expansion of tourist settlements and forest desiccation;
- Uncontrolled collection of medicinal plants and wild animals. Illegal collection of rare plants (especially endemic plants) by professional and commercial collectors, illegal collection of birds' eggs and certain species of butterflies, etc.

This list mixes specific and broad threats. Direct threats to biodiversity and the environment can be loosely grouped as follows and are further described below:

- Habitat loss, modification and fragmentation (land conversion, land degradation)
- Overuse of biological resources (forests, overgrazing of grassland and pastures, overfishing/hunting, trade in plants and wildlife, water extractions)
- Pollution of the environment (water, terrestrial and soil, and air pollution)
- 

### **Habitat Modification**

The Macedonian landscape has been heavily modified by centuries of agriculture and, more recently, by urban growth. In the years following World War II, almost all the major marshes and swamps were drained for agriculture and malaria control. More recently, to provide drinking water to urban areas and for agriculture, a number of reservoirs have been constructed. Flooding of terrestrial areas has resulted in many terrestrial species becoming threatened or extinct (CBD first country report). As urban centers grow, additional land has been fragmented by increased developments and roadway infrastructure. In rural areas, building for recreational use including weekend homes is leading to increased habitat fragmentation. The resulting habitat fragmentation disrupts wildlife movement and, in the case of reservoirs, changes spawning cycles.

Interestingly, meadows and pasture lands are becoming degraded by a lack of grazing. Some grassland species are becoming more threatened as woody plants overrun traditional grazing areas. In many areas native, wild grazers do not occur or numbers are too low to keep meadows from being overgrown in the absence of sufficient numbers of domestic livestock.

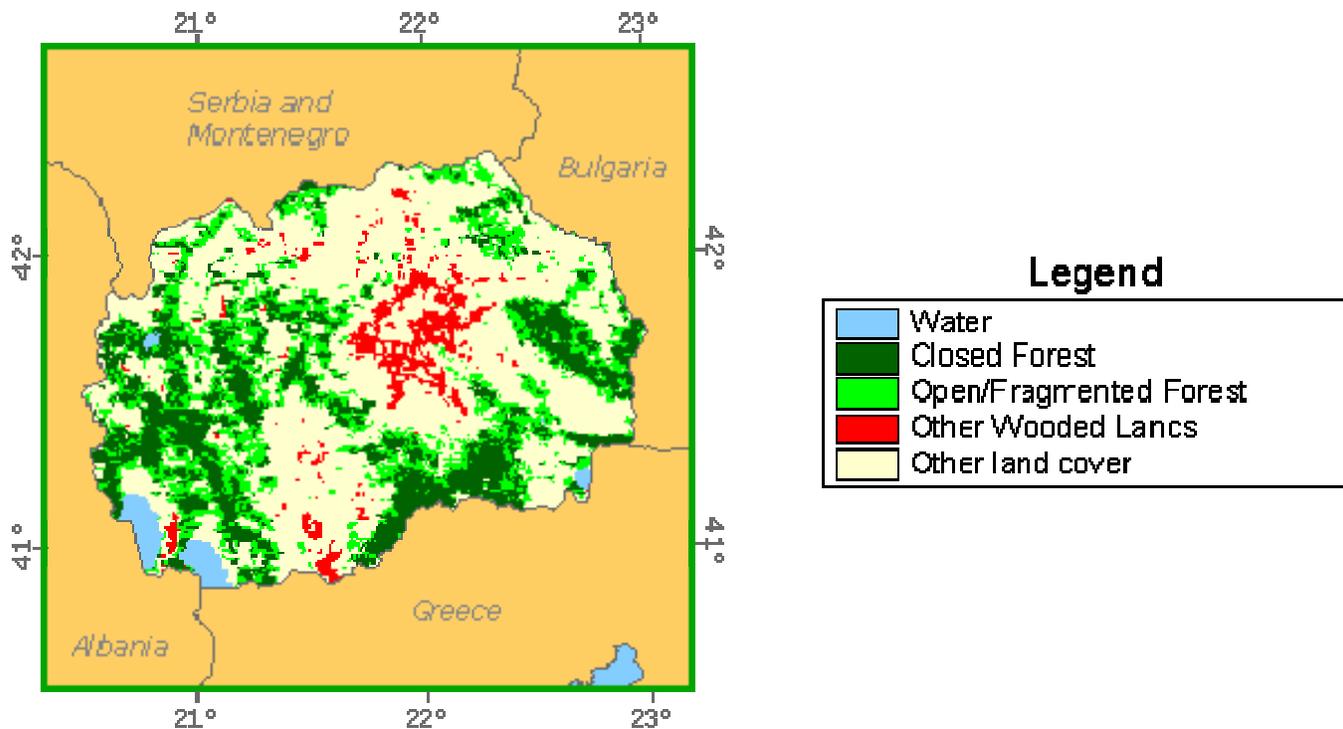
Habitat conversion is difficult to counteract. Hydrological processes can be modified to be more biodiversity friendly. However, the key action is to implement better land use planning, zoning and environmental impact assessments to prevent additional, unsustainable modification of existing lands.

### Overuse of biological resources

**Forests** - Forests are one of Macedonia's most critical and utilized natural resources. Forests are the most significant natural resource in the system of maintenance, restoration, and promotion of primary natural resources (water, soil, air). In addition to watershed protection, forests provide many extractable resources including: wood, mushrooms, medicinal plants, berries, and animals (hunting). The habitats are important areas for tourism and local recreation.

The FAO's *Forest Resources Assessment 2005* reports that Macedonia is covered by 35.8% gazetted (legally established) forest land (approximately 955,300 ha). None of the forest land is classified as primary forest and fully 82% is classified as production forest. Plantation forests are a small part of the whole with only 30,000 ha. These data are similar to the composition and land cover reported in the USAID 2001 Biodiversity Analysis.

**Map 1. Forest Cover in Macedonia**



From FAO FRA 2000, working paper # 19.

Information from the 2005 report suggests that the condition of the forests is relatively unchanged in the past five years. However, inferred trends and perceived threats seem to vary considerably. Many people interviewed for this report commented that forests continue to decline, are poorly managed and there is no good information on the amount of timber cut illegally. Other people commented that the forest cover has not changed and that deforestation is not a large problem.

In the short time provided, the analysis team was able to gather a good deal of information on the forestry sector, much of which is provided below. The FAO and Ministry of Agriculture reports give an idea of the current state of the forest sector in Macedonia. It is difficult to suggest specific trends or areas of concern. However, there is general agreement that the current structures are not effective in managing this resource, and so most likely the forests are not being managed for biological diversity. Lack of transparency and understanding of the status of forest health needs to be addressed. Adequate systems need to be in place to measure and monitor biodiversity. This is important because as the rural population continues to rely on firewood for heating, habitat loss and over-harvesting will continue to grow.

The following list of statistics about the forestry sector present a good deal of information without providing a clear picture of the situation. Overall, off-take does appear to be increasing. For example, the production of timber in 2003 at 930,000 m<sup>3</sup> represented an increase of 15% on the previous year. Most of it was harvested in state owned forests (82%) consisting mostly of firewood (76%) and commercial timber (16%). The FAO report states that between 2000-2005 the total reforestation rate was considered "not significant" and the true deforestation rate is not available. However, wood removal was estimated at only 1% of the growing stock, a level that has remained the same annually since 2000 (FAO 2005). On average approximately 55-60 % of the annual forest growth is harvested (Macedonian Agriculture Report 2004), meaning that the annual growth is greater than the amount of board feet known to be harvested. Statistics vary as do the sources of information but, in general, Macedonia's forest cover appears to be relatively constant.

While the forested land cover appears to be stable, the quality of the forests is generally considered to be decreasing. Macedonian forestry is characterized by a high number of short-trunked (off-spring) trees, many of which are highly degraded, and a small number of tall-trunked trees (with seed origin) but which are of good quality. This has resulted in low timber reserves and low annual timber growth per unit of land. Sixty percent of forests are considered degraded (FAO 2005). This is slightly lower than reported in the 2001 USAID analysis; however the source of that data is unclear.

This array of numbers can be used to explain any number of trends. Much of the confusion and conflicting information may stem from the fact that the major problems facing the forestry sector are illegal logging (estimates between 20-50%, FAO estimates about 40%) and poor management due to an outdated state-run Forest Public Enterprise. Illegal logging is a serious and long term problem, jeopardizing sustainable forest management and resulting in poorly managed forests that are not harvested to their optimal potential for either board feet of timber or for overall forest ecosystem health or biodiversity. As a result of illegal logging natural and artificial regeneration is disturbed, while erosion, forest fires and pest infestations are more likely to occur.

The Forest Public Enterprise owns 78% of forests, while the remaining land is privately held. Several people with whom we spoke estimated that much of the illegal cutting is carried out by or with the knowledge of the Forest Public Enterprise itself, which is then either used for personal consumption or sold. Illegal logging is a problem mostly in the western areas of the country. The forest police are not effective (according to a local NGO). With a staff of only 75 police and the possibility that a large amount of cutting is carried out with the knowledge of the Forest Public Enterprise, there is clearly a management problem. Only 2% of cases go to court. A disturbing recent incident highlights the dire scope of this issue: two forest police were killed by timber poachers driving four lorries "laden with woods". The news release stated: "The experts estimate that this illegal business generates about 6 million euros on annual basis. Suspicions have been raised that persons employed in the institutions whose responsibility is to prevent this kind of crime were involved in some cases" (Makfax Agency report May 2006).

Regardless of whether the Forest Public Enterprise is knowledgeable of the illegal cutting or not, the current management system and enforcement chain is not effective. NORAD funded a forest management assessment of the Forest Public Enterprise which has a staff of 3000 and is operating at a loss. The assessment determined that the Public Enterprise needed a total transformation, starting with a 50% cut in staff. The forest sector is financed mainly through the sale of timber and primary wood processing. The income from these sales comprises around 90% of the total annual income. The forestry sector does not receive any subsidies from the state.

**Non Timber Forest Products** - Uncontrolled collection of Non-Timber Forest Products (NTFPs) such as mushrooms, blueberries, and medicinal herbs, some of which are rare and endangered, continues to be a problem. The main issue is how to control this practice. In National Parks, collection should be controlled by annual environmental assessments and setting of harvest quotas. However, currently there is no budget or personnel allocated for this. Mushrooms need a special exporting license so are now more controlled. However, collection of NTFPs outside of National Parks is unregulated. There is no control on the local use on the majority of public lands. Information campaigns are needed to educate people about sustainable systems of collection and to create awareness among local communities and to involve them in management. Efficient marketing, including education on sustainable offtake are also needed.

It is worth noting that the effect of degraded forests on sustaining adequate understory for the various NTFPs is not known. Information on the wide variety of NTFPs resources is essentially lacking and declining resources base is attributed to over-harvesting. The relationship between degraded forest and levels of NTFPs is unclear but may be a significant threat to some species regardless of collection levels.

**Trade in Wildlife and Plants** - In regard to unsustainable use, collection, and hunting of specific species, there is a general acknowledgement that this is a problem but that as there is no systematic monitoring, the scope of the problem is not known. Several groups interviewed stressed the need for better understanding of the status of species both for the IUCN Red Book and the Convention in International Trade in Endangered Species (CITES). According to the BSAP, a large part of the problem is the confused overlap of administrative responsibilities, mainly within the MAFWE. This results in several ministries having some responsibility for management of resources, but rarely

complete responsibility. There is a need for increased communication and streamlining within and between ministries to better manage responsibilities along resource chains.

**Hunting** – A total of 2.35 million ha falls within the Macedonian hunting group land (MAFWE Agricultural report 2004). Legal hunting is managed in 11 hunting areas which include 107 sites for large game and 145 sites for small game. Licenses are managed by The Hunting Union of Macedonia and various forestry organizations. Most of the hunting occurs on forests and forested areas. Users of the hunting areas are obligated to pay 20% of the planned annual game taken. No data was found on the effectiveness of collection of fees. The licenses are controlled by the MAFWE and Forests and not by the MEPP. This is a key area for legislative and Ministerial reform and coordination. The MAFWE is responsible for the management of forests and not wildlife. Often these two objectives have different management regimes and better coordination of sectors is needed. Illegal hunting or poaching is considered to be at high levels, although numbers are not known. Several big and small games species are permanently protected including bears (*Ursus arctos*), lynx (*Lynx lynx*), otters (*Lutra lutra*) storks (*Ciconia* spp) and several others. Estimates of illegal take of these species could not be found.

**Fishing** – Licensed fishing is allowed on all natural lakes, reservoirs and rivers. Both sport fishing and commercial fishing are licensed. Illegal fishing and use of prohibited fishing gear is a large problem, the BSAP states that a major portion of the catch is not recorded. The issues of overfishing are well known and some villages have set up additional patrols to curb illegal fishing. The scope of the problems is fairly well understood for Lake Ohrid and there is wide spread realization of the declining fish stock. Solutions are more difficult, especially as enforcement chains are weak.

**Water extraction** - The BSAP identifies several issues regarding unsustainable water use and extraction, much of which focuses on the increasing number of entry points for withdrawal of drinking water. Serious issues include:

- Accurate water flow measurement is not available for most of the small waterways.
- Minimum water requirements for maintaining water flow to sufficiently maintain ecological function.
- Control/compliance mechanisms and methods for sanctioning are lacking.

In addition to streams and rivers, the water extraction from Lakes Dorjan and Prespa outlined in the 2001 study continue. Efforts are being made to restore water to Lake Dorjan from existing water in Macedonia. The long term effects of this action on the water table and other aquatic resources are not known and should be investigated.

### **Pollution**

The BSAP cites water, soil and air pollution as important environmental conditions that are generally worsening. In terms of biodiversity, water pollution from chemical, agriculture, and urban waste run-off are serious threats to aquatic and wetland resources. One of the main problems is eutrophication of lakes and other systems. The BSAP reports that efforts are improving these conditions in Ohrid Lake but Prespa Lake is still highly threatened. Again, management and enforcement of water regulations appears to be of concern and responsibilities between relevant ministries are not clearly understood.

## **Management of Lakes – a combination of all three main direct threats**

Macedonia's Lakes are among the country's best known biological treasures. They are also subject to all the main threats to biodiversity occurring in Macedonia, including: over fishing, over extraction of water resources, and pollution from habitat conversion related agriculture and industry. Highlighted in the 2001 USAID 119 analysis, a brief discussion of activities dating since the last report is presented here.

Lake Ohrid is a largest of the lakes (358 km<sup>2</sup>) and is thought to be one of four lakes (including Baikal) worldwide dating back to the Tertiary period (approx 2-4 million years ago). It is home to a number of remnant, or relic, endemic species related to that period. The Lake is oligotrophic and contains 10-17 endemic fish species as well as many endemic invertebrate species including sponge, snails and worms.

Lake Ohrid is a transboundary lake with 2/3 of its surface area in Macedonia and the remaining 1/3 in Albania. In late 1998, with funding from the GEF, the Lake Ohrid Conservation Project (LOCP) began with the objective to conserve and protect the natural resources and biodiversity of Lake Ohrid by developing and supporting effective cooperation between Albania and Macedonia for the joint environmental management of the watershed. The first phase of the project ended in 2004, prior to which both the Governments of Macedonia and Albania signed a joint protection agreement that outlines the responsibilities for both States in the joint and independent protection of the Lake Ohrid Watershed. The agreement and supporting documents discuss the various entities responsible for management of the Lake, cooperation between scientists, government officials, and experts in addressing the Joint Action Plan; training and capacity building; and, support for relevant NGOs that concentrate on Green centers and raising public awareness and the involvement of civil society.

According to the MEPP, some of the most successful elements of the LOCP have been the bottom up efforts of small pilot and catalytic projects. Some of these included: reforestation of eroded areas near tributaries, procurement trash cans for high use areas, marking of approved trails, a campaign for use of phosphate free detergents, manure management programs (thereby reducing agricultural runoff pollution), and a project that addressed the food sources for Ohrid trout hatcheries.

By MEPP analysis, approximately 80% of the project actions were carried out and a new phase of the project is being planned for potential GEF funding.

Nearby Lake Prespa (314 km<sup>2</sup>) falls within the Lake Ohrid watershed and partially feeds into Lake Ohrid through underground water flows. Also transboundary, Lake Prespa is shared by Greece (84.8 km<sup>2</sup>), Albania (38.8 km<sup>2</sup>), and the Republic of Macedonia (190 km<sup>2</sup>). In 2000, on World Wetlands Day, the Prime Ministers of all three countries declared the establishment of Prespa park, including the large and small Prespa lakes and surrounding forests. This was the first ecologically protected area in the Balkans. Since then, however, there appears to have been limited efforts on improving management. Currently several donors are looking at funding potential management planning and action.

Lake Dojran lies further to the east on the Macedonia – Greece border. This is the smallest of the large Macedonian tectonic lakes lake (43.1 km<sup>2</sup>) and is eutrophic with a

rich algal and animal life. Lake Dojran has suffered extreme water extraction, mainly on the other side of the border for Greek agricultural use. A short UNESCO funded project in 2001 estimated that the annual water recharge of the Lake was approximately 30 million m<sup>3</sup> and water use plus net evaporation from the lake amounted to 40 million m<sup>3</sup>, equaling an annual water balance deficit of 10 million m<sup>3</sup>. Reduced water level has led to increasing orthophosphate-phosphorus concentrations making the lake extremely eutrophic and leading to severe oxygen deprivation conditions during algal blooms. This has potentially lethal effects on the endemic fish and crustacean populations.

Efforts to reverse the water loss have concentrated on using well water from the well system in nearby Glavato. It is unclear how this is affecting the local water table and definitely needs to be investigated.

As discussed earlier, over fishing remains a threat in all lakes although increased awareness and a number of community led projects appear to be addressing over harvesting to some extent in several areas. Transboundary management of fishing appears to remain a significant issue.

Issues of migratory birds and potential Avian Flu issues were discussed but there appears to be no information available on either biodiversity or health concerns relating to these fauna.

## **UNDERLYING INDIRECT THREATS**

The BSAP points out many underlying factors that lead to biodiversity loss including increasing poverty, poor information and education on environmental issues, and lack of enforcement or implementation of laws. Broadly grouped, these factors include:

- Low environmental awareness, especially in rural areas
- Growing poverty and lack of affordable alternatives to unsustainable extraction of resources
- Unsustainable development in regard to spatial planning and general development
- Lack of clear mandates and enforcement by Ministries responsible for management of resources
- Growing pressure for increased globalization.

Many of the underlying factors relate to the historically low priority given to the sector by the Government of Macedonia and the corresponding low value that civil society places on environmental issues. In recent years, environmental NGOs are gaining a stronger voice, particularly in terms of air pollution issues and overall environmental management. At the same time, the Government is placing greater emphasis on reforming legislation to conform to EU standards and the environment is a key part of this reform. These changes could greatly increase the enabling conditions for positive environmental management. Strengthening civil society and legislation reform are cross-cutting development issues that may have the greatest potential linkage with USAID/Macedonia's strategic interests.

## STRENGTHENING THE ENABLING ENVIRONMENT

Overall, the largest change since the 2001 USAID Biodiversity Assessment is in the area of legislation reform. As mentioned earlier, the strongest driver of this is the push towards EU integration and eventual membership in the EU. This has quickened the pace of legislative reform to bring national legislation in approximation with the EU *acquis communautaire*, an extensive compilation of EU laws and legislation on 31 separate topics, including environment.

At a global level, Macedonia is party to a number of treaties and agreements that require supportive national legislation. A two year project “National Capacity Needs Self-Assessment for Global Environmental Management (NCSA)” assessed the capacities of the Republic of Macedonia to meet its obligations under the three Rio Conventions on Biological Diversity (CBD), climate change (UNFCCC) and desertification (UNCCD). The NCSA focused on analysis of national level priorities and the level of capacity development needed to fulfill the range of obligations under the three conventions. The ability of the relevant ministries to carry out these and other obligations are described in the following sections:

In terms of implementing the CBD, the NCSA reinforces the points raised by previous analyses and reports on biodiversity (BSAP, reports to CBD) by calling for wide ranging reforms in the sector. The urgency of this is made clear by pointing out that Macedonia has signed on to over 30 global and regional conventions protocols and amendments, all regarding biodiversity conservation, that are included in various areas of national legislation. This reinforces the points made in several reports that there is a lack of clarity of specific roles and management interests in addressing resources management. The Law on Environment Protection was adopted in 2004 and goes a long way in clarifying roles and responsibilities in the ministries. However, effective reform and capacity building will require additional and human resources to conform to new policies and mandates.

The NCSA identifies 20 priority issues for biodiversity, six of which were “most important” and are inserted below:

1. “Adopt appropriate measures for in-situ conservation of the natural ecosystems and species, restoration of degraded ecosystems and recovery of threatened species;
2. Identification and monitoring of components of biological diversity important for its conservation and sustainable use;
3. Decreasing the number of threatened species and habitats (especially wetlands and forests);
4. Strengthening the capacities of the national and local institutions responsible for the management, conservation, and sustainable use of biodiversity, with assistance of external agencies;
5. Increasing of the national and international investments in biodiversity conservation;
6. Reaching the effective national biodiversity planning.”

None of these priorities are new and all are widely recognized issues. The NCSA assessment of the overall implementation effectiveness of environmental policy is given at low-medium. The key constraint in implementing the policy is the lack of clearly

defined institutional mandates and the importance placed by the government (or lack thereof) on biodiversity conservation implementation in relation to other duties and roles.

With new laws in place and other being developed, the real work of improving ecological and environmental conditions is just beginning. As several reports and interviews pointed out, implementation of the new laws, regulations and policies is and will be slow. Part of the issue is a split role of the management of resources between the relevant ministries with MEPP and the MAFWM. The BSAP outlines the roles of these two key ministries as follows:

Ministry of Environment and Physical Planning (MEPP) addresses:

- Monitoring of the state of the environment
- Conservation of water, soil, flora and fauna
- Protection of the air and ozone layer from pollution
- Protection from noise and radiation
- Protection of biodiversity, geodiversity, national parks and protected areas

Within MEPP there are two special organizational units:

- Department for biodiversity
- Department for conservation of specific national treasures

Ministry of Agriculture, Forestry and Water Economy (MAFWE) addresses:

- Agriculture, forestry and water management
- Use of agricultural land, forests and other natural resources
- Hunting and fishing
- Protection of livestock and plants from diseases and pests
- Other issues determined by law

The 2001 Biodiversity assessment pointed out several areas that are critical to biodiversity conservation in Macedonia. One of the most critical that still remains an issue is the lack of coordination and communication between MEPP and the MAFWE. Management of resources is divided with conservation, monitoring and planning placed in the MEPP and the management of off-take of these same resources is the responsibility of the MAFWE. Several natural resources including water, forests and wildlife currently fall within several Ministries. For example, the protection of wildlife falls within MEPP while the issuing of hunting licenses occurs within the MAFWE. This is not an uncommon division of resource management. In many ways, the separation between the economic use of resources and the conservation of resources enables different voices and roles in proper management. To be effective, the lines of communication need to be strong and the chain of command in management planning, implementation and enforcement have to be clear to all players. Unfortunately, many people interviewed stressed that there is a historical lack of cooperation and communication between the two Ministries. From interviews carried out for this study, it is clear that the relevant ministries require capacity building and organizational reform to be able to effectively co-manage these resources. Several people commented that current financial and human resources are not sufficient to achieve the necessary reform.

The Laws on Nature Protection and on Environment were adopted in 2004 & 2005, respectively. Currently, FAO is assisting with the strategic planning of the forest sector with the development of a new law on forests to be completed by summer 2006. Given

the order of legislative development, the MEPP has moved forward with aspects of institutional reform. Undoubtedly, these reforms will also need to be carried out in the MAFWE to address the changes in forest law. The following sections provide a quick snapshot of current management issues in the two ministries.

### **Management issues in the MEPP**

The EU European Agency for Reconstruction is assisting the GOM to develop policy, law and management plans. One project “Strengthening the Capacity of the Ministry for Environment and Physical Planning” has produced the “Vision 2008 – The Roadmap of the Ministry of Environment and Physical Planning.”

This “Roadmap” clearly outlines the goals and objectives of the MEPP over a period of five years. The main objectives are:

- Achieve the EU standards for environment quality by developing and implementing the framework law on environment, the physical planning law and the laws related to water, air, nature and waste management as well as related programmes and strategies.
- Develop the capacity of the environmental sector in FYR Macedonia - including local self government, industry, environmental service providers, government institutions and non-governmental organisations - to fulfill its responsibilities.
- Reduce the risks to human health and natural ecosystems by focusing on environmental solutions with the highest impact
- Maintain an active role of FYR Macedonia in environmental cooperation with the EU, the neighboring countries and in multilateral mechanisms.

The breadth and scope of this list includes all aspects of environment and planning; biodiversity conservation is an important but not a predominate sector in the overall Ministry. The Government of Macedonia has made decentralization a major focus with the aim of having increased decision making at the Municipal level. The MEPP is the only Ministry that is currently not decentralized. It is in the process of developing representation at the local level, especially in regard to waste management and environmental compliance. For some resources, the devolution of decision making to the local level will increase the potential for effective management.

However, like forests, other biological resources do require national and regional management and oversight. At the national level there are resource needs for institutional strengthening and clarification of mandates of central government institutions necessary for country-wide implementation of the BSAP. The MEPP Office of Environment, which deals with species and resource protection, is scheduled to become elevated to an Agency level. The Agency will address many of the issues that pertain to the CBD and is intended to have more centralized control and knowledge of resource use. The hierarchy and role of the Agency as a quasi-independent body are, as of yet, not well articulated.

Under the new Law on Nature Protection, these three national parks as well as the other 62 nationally protected areas (reserves, monuments) (all falling within IUCN classification guidelines) need to be “reappointed” and will need to develop management plans. The first of these plans, for Pelister National Park, is nearing completion under assistance from the Swiss Development Corporation (SDC). Given the small size of the relevant Ministry departments and a lack of funds, it will be difficult to generate the capacity to accomplish the necessary management plans in a timely manner. At the time of this study, the details of the scope and range of this shift in management is not clear and the role of the parks and the MEPP are not clearly understood by either entity.

Financing plans and the MEPP’s Vision is expected to be an issue. The Environmental Protection Fund that was established has been depleted with little support from donors for renewal because of mismanagement. However, the Ministry of Environment’s “Vision 2008” proposes re-establishing an Environmental Fund as one of many “to do” priorities. No reference is made to this in the BSAP however, which could indicate the lack of support

Currently 7.8% of Macedonia is under some kind of protected status (see Map 2). The goal is to raise this to 12.5% by 2015. There are still only three national parks and two strictly protected areas. The 2001 Biodiversity assessment states that the three national parks were essentially independent enterprises, receiving no funding from the central government, and were relatively well run and self sustaining. Currently there are a variety of opinions as to whether the parks are well managed. Under recent reform, the management of all three national parks has moved to within an independent environment section within the MEPP. However, it appears that they are still financially independent, deriving funds from forestry, non- timber forest products (NTFPs)(blueberries, pine cones) and hunting licenses, the offtake of which comes under the jurisdiction of the MAFWE.

An integrated management plan is being developed for Pelister National Park with funding from the Swiss Agency for Development and Cooperation (SDC). Careful attention to how this plan is implemented both locally and by the national government agencies should help understand the future potential for effective management of the key protected areas. Some funding for management plans has been identified for Galicica National Park; however, Mavrovo is still operating under old plans and lacks sufficient external or national funding.

These three parks and the associated strictly protected area Ezerani on Prespa Lake are just four of the 62 areas under some sort of national protection. Management status of the other areas is not well understood but is, in all likelihood, mixed up within the overlapping responsibilities of the MEPP and MAFWE.

Implementation of changes in laws and legislative directives is just starting and clarification of jurisdictional oversight between Ministries is not yet clearly defined. As the Ministries and their existing agencies and offices change, capacity will need to be developed and cross-Ministry linkages reformed and developed.

Overall, the MEPP is a relatively new Ministry and appears to be regarded as one of the best Ministries in terms of direct dialogue with NGOs and university scientists in developing strategy documents and action plans. Most sources describe the MEPP as a fairly progressive institution with strong technical capacity and limited human resources.

In discussion with a number of MEPP officials, most indicated that there is a strong need for better knowledge of the current status of the county's biological resources. While there is an overall general consensus that some populations of key species are declining, there is very little actual evidence of population decline outside of a few regularly monitored areas. The IUCN Redlist database only lists information on 82 species, mostly birds, fish and mammals (See Annex III). The current status is known for only a few species and most of those are declining. More information is known for the European Redlist but greater information is needed for addressing many of the CBD's 2010 targets.

Map 2. Protected areas of Macedonia.



From Biodiversity and protected areas in Macedonia." [UNEP/GRID-Arendal Maps and Graphics Library](http://maps.grida.no/go/graphic/biodiversity_and_protected_areas_in_macedonia). 2000. UNEP/GRID-Arendal. **Philippe Rekacewicz**, [http://maps.grida.no/go/graphic/biodiversity\\_and\\_protected\\_areas\\_in\\_macedonia](http://maps.grida.no/go/graphic/biodiversity_and_protected_areas_in_macedonia)

## **The Forestry sector within the MAFWE**

As stated earlier, the new law on forests is expected in the summer 2006. The draft Forest Strategy, which addresses changes in forest management, is currently being revised. Since 2001, the Government of Macedonia has transferred some public land to private ownership though statistics vary. Discussions with the FAO and general consensus is that not more than 1-2% has been transferred. Under the draft Forest Strategy, the plan is to transfer up to 20% to former landowners, while the State will retain at least 75%. What happens to the land is still in discussion, though the draft Forest Strategy presently says it must be maintained as forest. The draft Forest Strategy also lays out a strategy for increasing the area and quality of forests. The Forest Strategy calls for developing a model for financing the forest sector, including state subsidies and revenues from commercial activities, and a renewal of a fund for afforestation of bare lands. How this fund would be subsidized is still vague.

The BSAP describes the following as necessary changes in the forestry sector:

- Assess the condition of forests and undertake measures for their restoration (must collect valid data concerning the level of threats to forests and restored forest ecosystems)
- Identify and investigate significant forest areas
- Promote sustainable use and restoration of Forest Resources by: conducting certification of forests, reestablish funds for reforestation, promote reforestation, develop indicators of deforestation
- Prepare a Study to develop a national strategy for protection against fire
- Revise and adopt Law on Forest by 2005 (The draft Forest Strategy and a new Forest Law are poised to be passed this year).

It is somewhat unclear how much of this can or will be implemented given the lack of budget and the upcoming elections. Forests are managed by the central government within the MAFWE. The Public Enterprise (PE) "Macedonian Forest" manages almost all forests under state ownership. A small fraction is managed by the Directorate for National Parks and by the public municipal enterprises. All forests are distributed over 193 economic units with a maximum area per unit of 10,000 ha. The management is based on special ten-year forest management plans. According to the NCSA, "Well-trained staff" from the enterprise branches or from the Faculty of Forestry develop the management plans for every economic unit, covering silviculture, protection, harvesting, planting, forest road network, etc. (However, one official interviewed stated that the Forestry PE is operating at a loss, due to lack of management and illegal logging, doesn't have adequate forest data, and is overstaffed). There is some confusion over the role of environment inspectors and forest inspectors as they relate to National Parks. This is an example of the issues which the draft Forest Strategy is trying to grapple with.

There is still no new Forest Law, only amendments have been done to comply with EU standards. It was recommended that forests be reclassified under the New Forest Law from "economic" but this has evolved into a broader set of references to the forests as

national treasures under the new Law on Nature Protection and will be further defined in the draft Forest Strategy to maintain forests for their biodiversity, social and cultural, and economic value. A National Strategy on Forestry has been prepared and is in draft as of February 2006. It includes a Fund for Afforestation. Currently, the Forest Department is replanting with broadleaf, imported Douglas fir, Eastern white pine, Austrian pine, some of which are non-native trees. The potential for these to become problem invasive was not investigated for this report.

Incentivising the forestry sector may provide an avenue for improving management. Forestry accounts for 2% of the total GDP which is “low according to potential” (Ministry of Agriculture *Agriculture Report 2004*). The low use of forestry volume in comparison to the planned quantities that appear in “special plans for forestry management” is due to low accessibility to the forests (rugged mountains, forest roads, insufficient equipment, and a lack of market interest in certain types of timber available) as well as an inefficient state organizational structure. Macedonia could position itself to export construction wood to a booming Eastern European market, but the quantity and quality of its industrial roundwood comprises only 10% of the wood removal presently, while 90% of it is fuel wood.

There is no forest association yet, though some forest societies have been organized. These need technical assistance in sustainable forest management as well as in association building, marketing, etc. One recommendation was made to create a special liaison office in the Forest Department to deal especially with private/community forests.

### **Ways forward**

The above sections do not provide a clear way forward for improving natural resource management in Macedonia. Donor coordination will be critical in helping harmonize laws and processes and in providing input to government strategies and plans in the sector. For Forests, it will be critical for bilaterals and technical experts to review and influence the forest strategy and plan being supported through the FAO to ensure its viability, official approval and implementation. This includes encouraging adequate stakeholder and private sector participation.

The relevant Ministries involved in natural resources management and protection are undergoing considerable changes as new laws are passed and policies for implementation are being developed. Both human and financial resources will need to be identified to carry out the rapid changes in management. Donor and government coordination is critical for effective reform. However, both large and small projects can positively influence these outcomes. For activities that utilize natural resources, it is important to begin looking at the entire enforcement/management chain in an effort to strengthen both management and coordination between relevant Ministries. For example, a project addressing bird hunting tourism needs to work with the MEPP to figure out the status of the relevant populations and reasonable quotas, and with the MAFWE to obtain relevant permits. Monitoring and data collection of the resources should also be fed back into the relevant bodies that make resource management decisions.

### **Civil Society**

To effect improved management of resources, the population using those resources needs to be better informed and educated on the potential for sustained use of their

environment. While EU integration is certainly a driving force behind the legislative reform underway in Macedonia, Macedonian civil society is developing its voice in the call for improved environmental management and conservation. Currently there are approximately 300 environmental NGOs registered of which 50-60 were considered viable by those interviewed. Most of the NGOs are dependent on foreign donors as there is still distrust by some with campaigns involving various ministries. The Dutch government is supporting annual environment NGO meetings. This year's meeting is on "How to become an environmental movement". The NGO "Ecological Movement of Macedonia" has had a successful campaign for several years and has awarded "the green apple" and "rotten apple" awards for positive and negative environmental practices, respectively.

One area of particular NGO focus is environmental education. Environmental awareness has been "steadily increasing" since 1990 but it is still relatively low, especially outside of issues on water and air quality. Environment issues are covered in special, elective courses at school and efforts are underway to work towards integration into school curricula.

## **DONOR ACTIVITIES**

There are a number of donors working in the environment sector. Projects focus on specific technical analysis and also longer-term management of specific areas.

On a central level, The European Union and the European Agency for Reconstruction have strongly supported the development of action plans and assisted in moving legislative reform forward. Donor coordination is occasional and carried out more on a site specific level. The MEPP is responsible for organizing donor coordination meetings but has not been active in this regard. Donors have, by in large, worked to complement each other's activities rather than to overlap. Much of the funding is at the site level and has not adequately addressed the institutional needs required to implement the new legislative frameworks.

The Swiss Agency for Development and Cooperation (SDC) has funded a long-term program for improving the management and planning capacity of Pelistar National Park. Pelistar is one of the three National Parks and is responsible for funding itself through tourism and use of its natural resources. SDC has funded numerous activities to improve the capacity of park management as well as the monitoring of its resources. This is a very important project to assist the self-sustaining capabilities of the Park. For the other two Parks, the Italian government is supporting the Management Plan Development for Galichitsa National Park. There is no apparent activity for Mavrovo National Park. The assessment team met with the Head Warden of Mavrovo National Park and it appears that the park is able to generate sufficient resources for current management plans (as reported in the 2001 USAID report). It is unclear whether changes in legislation and EU compliance will require substantive additional costs in the future.

A variety of other projects are underway or are planned. Partial Information on these projects is provided in Annex I. The partial list is a compilation of the projects that the assessment team was able to discover during interviews and on the web. The projects listed are fairly large and have biodiversity and environment as central themes. The list

in no way captures the smaller projects that support biodiversity from a cross-sectoral approach.

The majority of donor efforts have focuses on (1) brining Macedonian legislation in accordance with EU standards, and (2) funding of management action plans for the best known and important National parks and lakes. These are good steps forward but there is a recognized gap between legislative reform and the ability to implement new policies and structures. While civil society is becoming stronger, it is unclear whether the environmental voice is strong enough to urge the government to fund and implement the new environmental legislation in competition with a myriad of other needs.

Donor efforts at strengthening the civil society voice, both through NGO development and greater environmental education are important efforts that need to be carried out in support of new legislation.

**USAID:** While the new USAID strategy does not include an environment focus, both its current and future programs do support strengthening civil society and resourced based economic opportunities, .

For example, during the last Strategy period USAID's Democracy and Governance Office funded a small grants program aimed at the Municipal level. By their own initiative, several Municipalities under the Community Self-Help Initiative (CSHI) proposed activities to improve local biodiversity conservation. Some of these include:

- Establishment of Eco-Consulting information center in Struga - USAID/CSHI provide support to NGO "Natura" to assist in its mission to address ecological issues in the important Lake Ohrid area. "Natura" and the six other NGOs formed an Advisory Board that coordinates environmental actives such as the establishment of "green phone" service for reporting of illegal dumping, eco-patrols of the lake, and media campaigns for raising public awareness".
- CSHI funded the ecological associating "Desat" from Debar municipality as part of a larger management plan. The activities included equipping the NGO to better patrol the lake in collaboration with the local fishing association "Trofta". Illegal activities are reported to the police. "The groups have also established close collaboration with the local self-government authorities and together they have organized shore clean-ups and placing trash bins along the lakeshore..."

Similar projects from other donors as well as the Government of Macedonia were not, in general, discussed in the range of meetings held for this assessment. However, while not slotted into a formal biodiversity framework, these types of projects play an important role in improving local governance and sustainability of natural resource use.

## **USAID COMPARATIVE ADVANTAGE: Extent to which Actions Proposed by USAID meet the needs Identified in Macedonia and Recommendations**

[**Note:** USAID/Macedonia has the authority, capacity, knowledge and creativity to correct, expand, and build upon any points or ideas recommended. This is meant, in part, to give the Mission ideas on how it can articulate the ways in which its programs relate to environment and contribute to conservation.]

The 2001 biodiversity assessment made a number of recommendations for USAID/Macedonia action, many of which have been partially addressed in broad environmental terms. Others have yet to be realized but are still worthwhile pursuing in future action. The main recommendations included: (1) supporting environmental education and awareness; (2) supporting market oriented economic growth for natural resource based business; (3) providing technical assistance and training to state environmental agency staff; (4) supporting environmental NGOs; (5) supporting decentralization control of resources; and (5) promoting regional collaboration and transboundary initiatives. The following paragraphs examine how these have been addressed and suggest ways in which USAID/Macedonia can include aspects of these issues in their future programming. The only element for exclusion is #5 – the transboundary work. Currently there are a number of donors active in this area and while there is always opportunity and need to do more, this regional aspect does not fall within USAID/Macedonia's current focus.

Since 2001, USAID/Macedonia's programs have contributed to conservation and biodiversity through their overall contributions toward democracy, stability, and economic growth. These programs have positive **indirect benefits** to conservation because the management and protection of natural resources is predicated on a stable government, sound policy frameworks, transparency, accountability, an active civil society and vibrant private sector, economic incentives, and a free independent media. These contributions should not be discounted for their contributions to biodiversity and environment overall.

However, USAID/Macedonia programs in Democracy and Government, Economic Growth and Education have not in the past and will not in the future focus on addressing the **direct threats** to biodiversity. As per cross sectoral examples provided on the previous page, the following are examples where the programs do or could address the indirect threats, most of which are centered on improved sustainability in all sectors of government and strengthening civil society.

### **Specifically:**

USAID activities in **Democracy and Government** (DG) contributed towards strengthening community leadership, working with associations and municipalities, and promoting citizen participation at the local level. These activities can have positive spin-off effects on strengthening local environment action. During the past strategic plan period, the DG office ran a very successful small grants program. As noted above, several towns used their funds to support better environmental management including setting up additional patrols to reduce illegal fishing. Where appropriate, the DG team could make efforts to take advantage of opportunities to support civil society's calls for better environmental stewardship and to increase the Government's ability to manage the country's natural resources. One specific area the Mission could focus on would be to strengthen the court system to address challenges to the EIA process and to improve

the chain of enforcement both at the decentralized local level and in the court system. This could include addressing the potential corruption of the Forest Public Enterprise for example.

In Macedonia, there are a few but growing number of environmental NGOs. Environmental NGOs have typically played a strong role in advocacy and civil action. USAID/Macedonia should consider including Environmental NGOs in their target beneficiaries, given the potential linkages to economic growth and democracy in the environmental sector. Environmental NGOs can augment environmental awareness and can provide a watchdog function on governments and institutions.

Within the **Economic Growth** sector, the Mission's competitive clusters include wood processing (furniture), tourism, and non-timber forest products (i.e., mushrooms). If these clusters are to be continued, care should be taken to look at the entire chain of use of any of these renewable resources when completing Initial Environmental Examinations per 22CRF216 (Reg 216). For example, if small scale furniture making is going to be supported, USAID should ensure that the wood supply is sustainable and that the implementation of forest legislation is strengthened. USAID/Macedonia should consider not only meeting the legal requirements under Reg 216, but also contributing to expanding the information base of inventories and distribution chains in order to maintain sustainable enterprises and to build capacity on "greening the supply chain".

In addition, within the Mission's focus on improving the business environment, the Mission could address policies, e-customs, and taxes as they pertain to the use of biodiversity-derived products. The Mission could also strengthen the capacity within MEPP and MAFWP to carry out effective Environmental Analyses and to monitor target species and set sustainable quotas. The Mission must ensure that any agricultural activities do not interfere with natural wetland processes.

The Mission's **Education** activities in the past included a component on recycling and an anti-smoking campaign. Environmental education could be expanded and is critical to supporting the small but growing civil society interest in the environment. For the long term, environmental education needs to be incorporated into the required basic education curriculum. Building on USAID's strong recycling campaign, USAID's basic education program could promote the integration of environmental awareness and management into the permanent school curricula. The Mission could also consider creating an informal mechanism of communication and cooperation among reporters, editors, and other environmental professionals. The goal would be to forge lasting relationships and facilitate a focused effort to educate the public via the media regarding environmental issues.

**General Recommendations:** Whenever possible, USAID/Macedonia should continue to integrate biodiversity concerns in implementing requirements of Initial Environmental Examinations per 22CRF216 (Reg 216). Implementers should use the Environmental Review (ER) and Screening Process to identify significant environmental impacts of any of their activities during design, implementation and operation. An ER should be conducted for each activity prior to the beginning of the project. The ER process will ensure that the Best Management Practices (BMPs) to mitigate biological environmental impacts including a threat to critical habitat of endangered and threatened species, are undertaken in the field, and that a site-specific analysis is conducted, environmental

consequences are assessed, potential impacts mitigated, and also indirect and cumulative effects are considered for each phase of the activity.

USAID/Macedonia should also examine where its activities can support implementation of the BSAP, in particular the nature and forest laws. There are numerous law enforcement failures, and consequently the valuable natural resources of Macedonia are no doubt in jeopardy. While information on levels of prosecutions related to environmental crimes was unavailable, it is likely that environmental crimes are not being effectively prosecuted, and that there is ample opportunity for capacity building of judges and lawyers in this field, so that new environmental laws can be effectively implemented and the environment protected. This would also have the added effect of creating employment in the process.

While EIA procedures supposedly have been improved with new laws, their application and enforcement must be carried out to mitigate threats to Macedonia's environment. Improving EIA procedures will likely involve continued civil service reform and efforts to reduce corruption generally and new definitions for public private cooperation on environmental protection. USAID/Macedonia's strategy has been focused on both civil service reform and reducing corruption. USAID should continue this support and should consider including a major public awareness campaign informing the public of new regulations and their importance through major news media outlets and through strategic outlets at municipal levels.

**Conclusion:** Detailed information on actions proposed by USAID/Macedonia were not available at the time and therefore, conclusions are based on brief interviews with available Mission personnel. It is evident that some programs will continue, but have revised objectives which emphasize economic growth as a priority. Other programs will end, and still others created to support the new strategic framework. It is important that the new strategic framework does not discount the contribution that the enabling factors make to sustained economic growth from environment and social sector/democratic reforms. Emphasizing the link between sustained economic growth and the environment in Macedonia is critical for sustaining economic results for several reasons. First, environmental problems carry a great cost to society in terms of health and natural resources damage. This cost must be borne by society in terms of greater health costs, mitigation costs, legal actions and lost tourism revenues. Second, the natural resources sector is rich in a number of assets which provide revenue-generating opportunities including foods (wild berries, mushrooms, wild cultivars/genetic resources), timber, wild game (hunting) aesthetic value (beauty/tourism/real estate value), ecosystem services such as water supply and air quality, and tourist assets such as rivers (rafting), caves (exploring), and birds (watching).

The following table points out specific areas for building linkages between USAID/Macedonia's strategic interests and Macedonia's biodiversity needs.

## Actions Needed to Conserve Biodiversity - Recommended links to potential USAID/Macedonia programming

The table below is a consolidated matrix that presents several of the major identified threats to Macedonian Biodiversity, actions needed to address these threats and recommendations for USAID consideration to help address and reduce these threats. The Team has made every effort to present recommendations that fit within the Mission’s intended strategy focus across all Strategic Objective focal areas. Descriptions of threats in *green italics* are taken directly from the “*Biodiversity Strategy and Action Plan of the Republic of Macedonia*”

Where possible, the Team has identified the appropriate USAID Sector for implementing each recommendation. The recommendations are based on the Team’s findings and represent suitable measures the Mission could take to address the threats identified. These recommendations should not be interpreted as mandatory, but wherever possible within the Missions project areas, and if feasible, they should be duly considered. The Team acknowledges that it is probably not feasible at this time for all recommendations to be implemented.

**Table 1. Consolidated Matrix of Threats, Actions, and Recommendations.**

No	Threats to biodiversity Overarching/Direct	Actions necessary to address the threat	Recommendations for USAID consideration.
	Illegal cutting of forests <i>(Uncontrolled destruction of forests, forest fires, clearing for building sites, construction of roads and railroads, expansion of tourist settlements and forest desiccation)</i>	Improve enforcement of cutting regulations  Improve siting of infrastructure development	Address potential corruption of the Forest Public Enterprise (DG)  Address enforcement chain both at decentralized local level and in court system (DG)  Ensure all EG sector clusters using wood or wood products address sustainable use issues along the entire commodity chain (extraction to export regulations) (EG)
	Land conversion - infrastructure <i>Loss of habitats (or portions thereof) during unplanned expansion of urban centres, weekend settlements and tourist/recreation zones</i>	Improve zoning management to incorporate natural resource and biodiversity requirements	Improve capacity of Ministry of Environment and Physical Planning to carry out effective Environmental Analyses (Cross Sectoral)  Strengthen court system to address challenges to EIA process
	Land Conversion – agriculture/infrastructure	Site agricultural and development projects outside	Strengthen use of Environmental impact assessment process.

	<i>Drainage of marshes and swamps;</i>	of wetlands and marshes	Ensure that agricultural activities do not interfere with natural wetland processes (EG)
	Unsustainable use of non-timber resources  <i>Uncontrolled collection of medicinal plants and wild animals. Illegal collection of rare plants (especially endemic plants) by professional and commercial collectors, illegal collection of birds' eggs and certain species of butterflies etc.</i>	Improved enforcement of collecting regulations  Improved quota setting and monitoring of key economic or desired species.	Address enforcement chain both at decentralized local level and in court system (DG)  Ensure all EG sector clusters using non-timber forest products or other biological resources incorporate sustainable use issues along the entire commodity chain (extraction to export regulations) (EG)  Strengthen capacity within MEPP and MAFWP to monitor target species and set sustainable quotas  Improve business environment addressing policies, e-customs, taxes as they pertain to use of biodiversity-derived products (EG)
	Limited environmental awareness	Raise public awareness of environmental issues – with a goal of strengthening public attention on environmental issues (pollution, water, biodiversity)	Build environmental awareness into the science curricula at Primary education level (ED)  Green Media Campaign – creation of an informal mechanism of communication and cooperation among reporters, editors, and other environmental professionals. The goal: forging lasting relationships and facilitating a focused consistent effort to educate the public via the media regarding environmental issues. <i>*The BCEG project in Bulgaria had great success with this model for more information contact Svetlana Aladjem at <a href="mailto:consult@ecologybg.com">consult@ecologybg.com</a></i>  Strengthening capacity of environmental NGOs to deliver environmental awareness and watchdog function on government and institutional transparency
	Water management • <i>Lack of water treatment</i>	Improve municipal and village	Strengthen use of Environmental impact assessment process

	<p><i>plants (for riverine and lake ecosystems);</i></p> <ul style="list-style-type: none"> <li>• <i>Construction of hydropower reservoirs in river gorges</i></li> </ul>	<p>water treatment plants</p> <p>Develop mitigation measures for hydropower structures and “no go” criteria for areas of key biological importance</p>	<p>and ensure mitigation of threats to biodiversity.</p>
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Annex I. **Partial list of biodiversity related donor projects.** This table contains information on recent donor projects addressing biodiversity issues. Data on complete lists of donor involvement and funding levels is difficult to obtain as more sources cite conflicting totals and involvement, the authors apologize for any inadvertent mistakes.

Donor	Project Description	Funding details
Global Environment Facility	<p>GEF/WB Ohrid Lake - In late 1998, with funding from the GEF, the Lake Ohrid Conservation Project (LOCP) began with the objective to conserve and protect the natural resources and biodiversity of Lake Ohrid by developing and supporting effective cooperation between Albania and Macedonia for the joint environmental management of the watershed. The first phase of the project ended in 2004, prior to which both the Governments of Macedonia and Albania signed a joint protection agreement that outlines the responsibilities for both States in the joint and independent protection of the Lake Ohrid Watershed. The agreement and supporting documents discuss the various entities responsible for management of the Lake, cooperation between scientists, government officials, and experts in addressing the Joint Action Plan; training and capacity building; and, support for relevant NGOs that concentrate on Green centers and raising public awareness and the involvement of civil society.</p> <p>This project has had the support of many bilateral donors within the project framework and with supporting projects. The projects are too diverse and numerous to be listed here (many are regional and global in nature)</p>	US\$ 4,370,000
GEF	GEF/WB Biodiversity Strategy, Action Plan, National Report, Clearing House Mechanism; Assessment of Capacity Building, and CHM (Phase I)	US\$370,00
GEF/UNDP KfW,SDC  11/05- 11/2010	<p>UNDP is acting as a neutral partner able to help foster an integrated approach to the Prespa Park region's conservation problems, UNDP is supporting the cooperative Trans-boundary Prespa Park Project. Implementing with the Ministries of Environment, local governments, NGOs from the three riparian countries</p> <p>The project objective is to promote and implement ecosystem management interventions in the Prespa lakes Basin of Macedonia, Albania and Greece that integrates ecological, economic and social goals. It aims to conserve globally significant biodiversity and to reduce pollution of the trans-boundary lakes and their contributing waters.</p> <p>The main concept behind this project is to make ecosystem objectives and priorities a part of sectoral practices/policies such as agriculture, fisheries or forestry. This will strengthen the ability to restore ecosystem health. The piloted ecosystem oriented approaches to spatial planning, water use management, agriculture, forest and fishery management, conservation and protected area management, will furthermore contribute to conserving biodiversity.</p> <p>Additional support for elements within the areas include potential funding by the Italian Government for a management plan for Galicica National Park</p>	
GEF	<p>GEF Sustainable Land Use Management in Eastern Macedonia</p> <p>A <b>potential</b> project using an integrated approach in agricultural forestry and water economy. It's a pilot to be replicated—the vision is for Ministries to collaborate with joint plans for OP15 (Land Degradation window).</p>	

GEF	GEF <b>Potential</b> Project focused on Protected Areas, establishing protected area network, financial sustainability, and management of protected areas. A draft is being shared with stakeholders. \$1.5 million. This is one of the actions identified in the Biodiversity Action Plan.	
FAO -TCP	To develop Forest Strategy and Action Plan (in draft)	US\$400,00
EU	<p>EU CARDS (Community Assistance for Reconstruction, Development and Stabilization) Program Strengthening capacity of MEPP (managed by the European Agency for Reconstruction) includes a series of projects dating from 2001:</p> <ul style="list-style-type: none"> <li>- Updating of the National Environmental Action Plan (NEAP II), funded under CARDS 2001. To be completed in mid-2005.</li> <li>- The production of a solid waste management master plan and feasibility studies (CARDS 2001) which is currently underway. The studies will be completed in 2005.</li> <li>- Supplies of air-quality monitoring equipment, funded under Phare 1999 and CARDS 2001. All installation works done by of 2004.</li> <li>- CARDS 2003 embarks on a joint river basin management plan with Greece</li> <li>- The CARDS 2004 project on strengthening environmental management, due to be completed at the end of 2006 will focus on the introduction of an environmental permitting regime based on Integrated Pollution Prevention and Control (IPPC) and Environmental Impact Assessment (EIA). It will transpose regulations pertaining to Emission Limit Values and introduce skills required for the development of economic instruments for pollution control, project preparation and appraisal and investment planning, anticipating relevant future pre-accession assistance.</li> <li>- Strengthening of the institutional capacity of the Ministry of Environment and Physical Planning (MEPP), funded under Phare 1999 and completed in 2004. The project has included support to the development of EU Acquis compliant primary legislation relating to water, air quality, waste management, nature protection, and regulations pertaining to environmental permitting.</li> <li>- The project addresses the objectives set out in the MIP 2005-2006 for the environment sector. In particular, it will aim <i>“to promote the conditions for sustainable development”</i>; <i>“to support the further alignment of the country’s environmental legislation with EU environmental Acquis ”</i>; <i>“to strengthen Government’s capacity to monitor and enforce environmental standards”</i>; and <i>“to support the implementation of the second National Environmental Action Plan”</i>.</li> <li>- The project will address the medium-term priorities of the European Partnership in the area of environment: <i>“Further approximate legislation with European standards Implement the legislation adopted. Improve environmental monitoring and further build administrative capacity.”</i> The project is also consistent with the principles of the Ohrid Framework Agreement on decentralising environmental management to the municipal level. Current <b>EC contribution: €2 million (approx.)</b></li> </ul>	

Austrian Development Agency	On May 15, 2006, Macedonian Minister of Environment and Physical Planning Zoran Sapuric, Macedonian Minister of Education and Science Aziz Polozani, Austrian Ambassador Filip Hojos, and Macedonian REC Country Office Director Katarina Stojkovska signed a contract to implement the Green Pack in the former Yugoslav Republic of Macedonia. (civil society)	EUR 321,000 GOM EUR 20,000.
Italian Government	Improve management plan of large predators in Balkans (details unknown – regional program)	
Norwegian Ministry of Foreign Affairs	2003 - Feasibility Study for Institutional Collaboration between the Public Enterprise Macedonia Forests and Statskog for technical support and training of PEMF staff. 2006 - Institutional Cooperation with Public Enterprise Macedonia Forest. This project has a focus on organisation development and IT management	
Swiss Development	Pelister Mountain Conservation project. The project started in 2000 and is currently in its 3 <sup>rd</sup> phase, ending in December 2006. In 2005 the major effort focused on a participatory process leading to the Park Management Plan  The Pelister Mountain Conservation Project (PMCP) is a project run by the Swiss Agency for Development and Cooperation (SDC) in cooperation with the Ministry of Environment and Physical Planning, and with technical support of Pro Natura-Friends of the Earth in Switzerland. Overall goal of the project is to contribute to the reinforcement of a state-civil society dialogue in the context of natural resources management.	
Sweden	SIDA –Project on Framework for Sustainable Development strategy, working with the MEPP and many other Ministries. Since 2005 SIDA has become involved with some environment projects mainly working on water supply and irrigation.	

## Annex II – List of people interviewed

<b>USAID/Macedonia</b>	
Richard Goldman	Mission Director
Alfreda Brewer	Director of programs
Stafford Baker	Project Development Advisor
Michael Eddy	Democracy and Government Team Leader
Peter Lampesis	Economic Growth Team Leader
Ivica Vasev	Cross-cutting Team leader
Cecilia Sun	Education Team Leader
Tatjana Mitevaska	Program Assistant & Gender Officer
Sladjana Srbinovska	Project manager – Democracy & Local Government Office
Meri Cuculovska	Project management specialist - Economic Growth Office
Tanja Markovska	USAID –MCA
<b>USAID/Macedonia Contractors</b>	
Iva Orceva	Acting Chief of Party MCA
Ines Curapova	Tourism Cluster MCA
<b>USAID/Washington</b>	
Mohammed Latif	BEO E&E Bureau
Alicia Grimes	Forestry specialist EGAT/Forestry Team and E&E Bureau
Jeffery Ploetz	Contractor E&E Bureau
<b>Government of Macedonia</b>	
Gordana Kozuharova,	Ministry of Environment and Physical Planning (MEPP) Head of European Integration Department GEF focal point
Menka Spirovaska	MEPP State Counselor Focal Point for the CBD
Smilijka Teneva	MEPP –Agency of Environment Advisor
Pandorka Nikuseva	MEPP
Cane Petrevski	Director of National Park Mavrovo

Ljupco Ristovski	Ministry of Agriculture, Forestry and Water Economy (MAFWE) State Counselor for International Coordination and Development
Aliriza Elezi	MAFWE State Advisor
Bojan Durlev	MAFWE - Water economy
<b>UN Organizations</b>	
Anita Kodzoman	UNDP – Programme analyst, Energy and Environment Cluster
Aleksander Nikolovski	FAO – Program officer
<b>Dors</b>	
Dimitar Malinovski	EAR Agriculture and Environment Program EU / EAR (European Agency for Reconstruction)
Ivan Borisavljevic	EAR Agriculture and Environment Program EU / EAR (European Agency for Reconstruction)
Billjana Dzartovska Petrovska	Environment SIDA
Ana Jankvlovska	Project Coordinator – Pelistar Mountain Conservation Project
<b>NGOs</b>	
Dragi Pop Stojanov	Balkan Foundation for Sustainable Development – NGO
Boban Bojkovski	President of Ecological Movement of Macedonia
Cvetan Nikolovski	President of Youth Ecological movement of Macedonia
<b>Consultants &amp; Technical Experts</b>	
Vlatko Andonovski	Professor of Faculty of Forestry
Ljupco Avramovski	Environment Consultant Enviro - Mak
Denis Zernovski	Environment Consultant Enviro
Svetozar Petkovski	local consultant – Museum of Nature of Macedonia

Annex III

World Conservation Union (IUCN) – IUCN Red list of listed species for Macedonia. The table below lists the status of species found in Macedonia for which global status is known. All discussions with relevant officials and technical advisors remarked that the status of most species is not known and additional information is urgently needed.

For additional information for species listed below please refer to [www.redlist.org](http://www.redlist.org). The key for status codes below is: EX –extinct, CR – Critically endangered, EN – Endangered. VU – Vulnerable, LR – Least risk, DD – Data deficient.

Type	Family name	Scientific Name	Common Name	IUCN Red List category	IUCN criteria for listing	Population trend
Crustaceans	ASTACIDAE	Astacus astacus	NOBLE CRAYFISH	VU	B2bce+3bcd	decreasing
Crustaceans	ASTACIDAE	Austropotamobius torrentium	STONE CRAYFISH	VU	B2bce+3bcd	decreasing
Crustaceans	CHIROCEPHALIDAE	Chirocephalus pelagonicus		VU	D2	decreasing
Crustaceans	CHYDORIDAE	Alona smirnovi		VU	D2	increasing
Gastropods	HYDROBIIDAE	Graecoanatolica macedonica		EX		unknown
Insects	LYCAENIDAE	Lycaena ottomanus	<butterfly>	VU	A1ac	
Fish	COBITIDAE	Cobitis meridionalis		VU	D2	increasing
Fish	CYPRINIDAE	Alburnus belvica		VU	D2	stable
Fish	CYPRINIDAE	Aspius aspius	ASP	DD		stable
Fish	CYPRINIDAE	Barbus macedonicus		DD		stable
Fish	CYPRINIDAE	Barbus prespensis	BRIÁNA	VU	D2	stable
Fish	CYPRINIDAE	Chalcalburnus belvica		LR/nt		stable
Fish	CYPRINIDAE	Chondrostoma prespense		VU	D2	unknown
Fish	CYPRINIDAE	Chondrostoma vardareense		NT		unknown
Fish	CYPRINIDAE	Gobio elimeius		DD		unknown
Fish	CYPRINIDAE	Pachychilon macedonicum		DD		unknown
Fish	CYPRINIDAE	Phoxinellus epiroticus		DD		unknown
Fish	CYPRINIDAE	Pseudophoxinus minutus		DD		unknown
Fish	CYPRINIDAE	Pseudophoxinus prespensis		EN	B1ab(iii,iv,v)+2ab(iii,iv,v)	unknown
Fish	CYPRINIDAE	Rutilus prespensis		VU	D2	unknown
Fish	CYPRINIDAE	Vimba melanops	MALAMÍDA	DD		unknown
Fish	PERCIDAE	Zingel balcanicus		DD		unknown
Fish	SALMONIDAE	Acantholingua ohridana		VU	D2	unknown
Fish	SALMONIDAE	Salmo aphelios		DD		unknown
Fish	SALMONIDAE	Salmo balcanicus		DD		unknown
Fish	SALMONIDAE	Salmo letnica	OHRID TROUT	DD		unknown

Fish	SALMONIDAE	Salmo lumi		DD		unknown
Fish	SALMONIDAE	Salmo macedonicus		DD		unknown
Fish	SALMONIDAE	Salmo peristericus		EN	B1ab(iii)+2ab(iii)	unknown
Birds	ANATIDAE	Anser erythropus	LESSER WHITE-FRONTED GOOSE	VU	A2bcd+3bcd	
Birds	ANATIDAE	Aythya nyroca	FERRUGINOUS DUCK	NT		decreasing
Birds	ANATIDAE	Branta ruficollis	RED-BREASTED GOOSE	VU	B2ab(iii)	decreasing
Birds	ANATIDAE	Marmaronetta angustirostris	MARBLED TEAL	VU	A2cd+3cd	decreasing
Birds	ANATIDAE	Oxyura leucocephala	WHITE-HEADED DUCK	EN	A2bcde	decreasing
Birds	GLAREOLIDAE	Glareola nordmanni	BLACK-WINGED PRATINCOLE	NT		decreasing
Birds	LARIDAE	Larus audouinii	AUDOUIN'S GULL	NT		decreasing
Birds	SCOLOPACIDAE	Gallinago media	GREAT SNIPE	NT		decreasing
Birds	SCOLOPACIDAE	Limosa limosa	BLACK-TAILED GODWIT	NT		decreasing
Birds	SCOLOPACIDAE	Numenius tenuirostris	SLENDER-BILLED CURLEW	CR	C2a(ii); D	decreasing
Birds	PELECANIDAE	Pelecanus crispus	DALMATIAN PELICAN	VU	A2ce+3ce	decreasing
Birds	CORACIIDAE	Coracias garrulus	EUROPEAN ROLLER	NT		decreasing
Birds	ACCIPITRIDAE	Aegypius monachus	CINEREOUS VULTURE	NT		decreasing
Birds	ACCIPITRIDAE	Aquila clanga	GREATER SPOTTED EAGLE	VU	C1	decreasing
Birds	ACCIPITRIDAE	Aquila heliaca	IMPERIAL EAGLE	VU	C1	decreasing
Birds	ACCIPITRIDAE	Circus macrourus	PALLID HARRIER	NT		decreasing
Birds	ACCIPITRIDAE	Milvus milvus	RED KITE	NT		decreasing
Birds	FALCONIDAE	Falco naumanni	LESSER KESTREL	VU	A2bce+3bce	decreasing
Birds	FALCONIDAE	Falco vespertinus	RED-FOOTED FALCON	NT		decreasing
Birds	OTIDIDAE	Otis tarda	GREAT BUSTARD	VU	A3c	decreasing
Birds	OTIDIDAE	Tetrax tetrax	LITTLE BUSTARD	NT		decreasing
Birds	RALLIDAE	Crex crex	CORNCRAKE	NT		decreasing
Birds	MUSCICAPIDAE	Ficedula semitorquata	SEMICOLLARED FLYCATCHER	NT		decreasing
Birds	SYLVIIDAE	Acrocephalus paludicola	AQUATIC WARBLER	VU	A2c+3c	decreasing
Mammals	RHINOLOPHIDAE	Rhinolophus euryale	MEDITERRANEAN HORSESHOE BAT	VU	A2c	
Mammals	RHINOLOPHIDAE	Rhinolophus ferrumequinum	GREATER HORSESHOE BAT	LR/nt		

Mammals	RHINOLOPHIDAE	Rhinolophus mehelyi	MEHELY'S HORSESHOE BAT	VU	A2c
Mammals	VESPERTILIONIDAE	Barbastella barbastellus	WESTERN BARBASTELLE	VU	A2c
Mammals	VESPERTILIONIDAE	Myotis bechsteini	BECHSTEIN'S BAT	VU	A2c
Mammals	VESPERTILIONIDAE	Myotis capaccinii	LONG-FINGERED BAT	VU	A2c
Mammals	VESPERTILIONIDAE	Myotis emarginatus	GEOFFROY'S BAT	VU	A2c
Mammals	VESPERTILIONIDAE	Nyctalus lasiopterus	GIANT NOCTULE	LR/nt	
Mammals	VESPERTILIONIDAE	Nyctalus leisleri	LESSER NOCTULE	LR/nt	
Mammals	MURIDAE	Chionomys nivalis	EUROPEAN SNOW VOLE, SNOW VOLE	LR/nt	
Mammals	MURIDAE	Dinaromys bogdanovi	BALKAN SNOW VOLE, MARTINO'S SNOW VOLE	LR/nt	
Mammals	MURIDAE	Micromys minutus	EURASIAN HARVEST MOUSE, HARVEST MOUSE	LR/nt	
Mammals	MURIDAE	Microtus felteni	FELTEN'S VOLE	LR/nt	
Mammals	MURIDAE	Microtus guentheri	GÜNTHER'S VOLE	LR/nt	
Mammals	MURIDAE	Microtus thomasi	THOMAS'S PINE VOLE	LR/nt	
Mammals	MURIDAE	Mus spicilegus	MOUND-BUILDING MOUSE, STEPPE MOUSE	LR/nt	
Mammals	MURIDAE	Nannospalax leucodon	LESSER MOLE RAT	VU	D2
Mammals	MYOXIDAE	Dryomys nitedula	FOREST DORMOUSE	LR/nt	
Mammals	MYOXIDAE	Eliomys quercinus	GARDEN DORMOUSE	VU	A1c
Mammals	MYOXIDAE	Glis glis	FAT DORMOUSE	LR/nt	
Mammals	MYOXIDAE	Muscardinus avellanarius	COMMON DORMOUSE, HAZEL DORMOUSE	LR/nt	
Mammals	SCIURIDAE	Sciurus vulgaris	EURASIAN RED SQUIRREL, RED SQUIRREL	NT	
Mammals	SCIURIDAE	Spermophilus citellus	EUROPEAN GROUND SQUIRREL, EUROPEAN SOUSLIK, EUROPEAN SQUIRREL	VU	A1c
Mammals	FELIDAE	Lynx lynx	EURASIAN LYNX	NT	

Mammals	MUSTELIDAE	Lutra lutra	COMMON OTTER, EURASIAN OTTER, EUROPEAN OTTER, EUROPEAN RIVER OTTER, OLD WORLD OTTER	NT	
Reptiles	EMYDIDAE	Emys orbicularis	EUROPEAN POND TURTLE	LR/nt	
Reptiles	TESTUDINIDAE	Testudo graeca	COMMON TORTOISE, GREEK TORTOISE, MOORISH TORTOISE, SPUR-THIGHED TORTOISE	VU	A1cd
Reptiles	TESTUDINIDAE	Testudo hermanni	HERMANN'S TORTOISE	LR/nt	
Reptiles	VIPERIDAE	Vipera ursinii	MEADOW VIPER, ORSINI'S VIPER	EN	A1c+2c

#### Annex IV - References (partial listing)

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