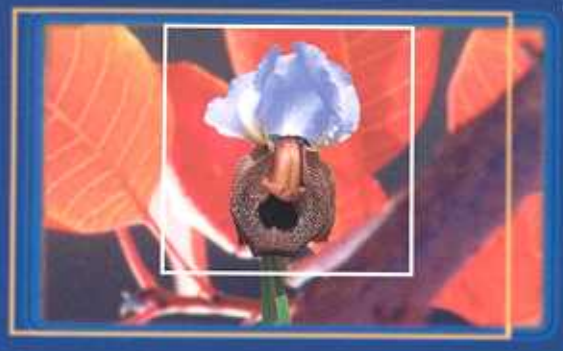
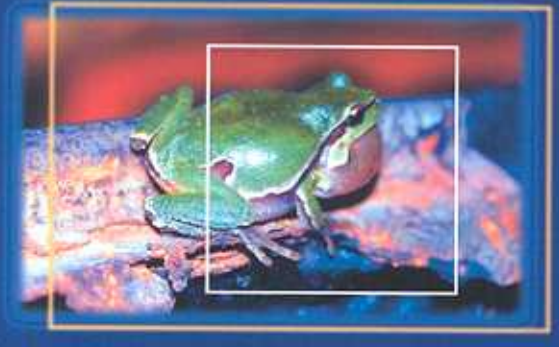
NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN - GEORGIA





NBSAP-GEORGIA

National Biodiversity Strategy and Action Plan - Georgia

2005, Tbilisi

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Biodiversity Strategy and Action Plan
- Georgia –

Tbilisi, 2005

Foreword

Georgia signed the Convention on Biological Diversity in 1994, thus accepting responsibility to safeguard the nation's rich diversity of plant, animal, and microbial life, to begin using biological resources in sustainable way, and to ensure equitable sharing of benefits from biodiversity. Later the country joined other conventions including the Convention on Climate Change, the Ramsar Convention on Wetlands, CITES and the Bonn Convention. As a signatory to these important international environmental treaties, Georgia enters the world scene with the potential for joining the most advanced nations in the field of environmental protection.

At the present moment of transition, Georgia has a unique opportunity to use the early experiences of other countries, and avoid irreversible changes in the quality of its environment. The national legislation on environmental protection adopted over the past few years provides an adequate legal basis for this, although further elaboration and reinforcement of the existing legislation is needed. With the Ministry of Environment being currently reorganised and assuming broader responsibilities, Georgia's institutional arrangements for environmental protection already has the necessary structure for improving the quality of the environment throughout the country. The role of non-governmental groups has been very important in resolving problems related to nature conservation. Georgia has shown an excellent example of co-operation between governmental and non-governmental organizations in the field of environment, and particularly in the field of biodiversity conservation.

After signing the Convention on Biological Diversity, the Georgian Government immediately acted to develop a Biodiversity Country Study, in partnership with UNEP, and implemented by NACRES, a local conservation organisation. This assessment gathered and compiled existing, but to some extent unsystematic, information on the status and trends of Georgia's species and habitats. It identified gaps in information and made recommendations for conserving the nation's biotic wealth. The Government of Georgia, with assistance of the World Bank/GEF, prepared the present National Biodiversity Strategy and Action Plan (NBSAP), in order to: analyse the data and information in the Country Study, to identify goals and objectives and to spell out priority actions for resolving the most urgent threats to biological diversity. This document is yet another significant effort demonstrating that, despite so many social and economical difficulties, the country is ready to begin taking real actions to live up to its international responsibilities and preserve its biodiversity for the benefit of its present and future generations. The NBSAP will be one of the important prerequisites for the country's sustainable development, ensuring wise use of biological resources while developing economically and improving the quality of life of its citizens.

The implementation of the NBSAP will require the mobilisation of existing scientific potential and the close co-operation between governmental and non-governmental institutions, and the general public. Co-operation of other sectors such as agriculture, tourism, and energy will also be essential. The support of the international community and donor organisations will play a crucial role in implementation of the present document.

The Biodiversity Strategy provides a framework for further action planning by articulating what the planning team expects is that the plan aims to achieve in terms of the future status of

biodiversity and conservation mechanisms.

> *"Only once you know where you want to get to (the strategy) is it possible to determine how to get there (the action plan)"*

Following the completion of the Georgian Biodiversity Country Study (supported by UNEP), the Georgian Government requested the Global Environment Facility (through the World Bank) to support the development of the National Biodiversity Strategy and Action Plan (NBSAP), as a key element of meeting the national obligations to the Convention on Biological Diversity (CBD). Work on the NBSAP was initiated in 1998. The process of NBSAP development was coordinated by the Ministry of Environment, and three national NGOs - The Noah's Arc Centre for the Recovery of Endangered Species (NACRES), the Georgian Protected Areas Programme (GPAP), and The Centre for Sustainable Use of Forest Resources - were contracted to prepare components of the NBSAP.

Development of the NBSAP involved a wide range of experts and stakeholders, including representatives from research institutions (including various research institutes of the Georgian Academy of Sciences), as well as governmental and non-governmental agencies. Stakeholders were brought together to discuss elements of the NBSAP and to identify priority future strategies and actions through a series of working groups, meetings and seminars. As a result of this process draft sections of the NBSAP were produced.

However, the development of the final NBSAP document was considerably delayed, and it was necessary to update the draft NBSAP to incorporate rapid changes in the socio-economical situation and the availability of new information. On behalf of the Government, the Ministry of Environment requested NACRES to undertake the completion and finalization of the draft document (which was achieved through an allocation of funds from the UNDP/GEF/NACRES funded project, Conservation of Arid and Semi-arid Ecosystems of South Caucasus). In parallel, the Ministry also requested Fauna & Flora International, (a UK-based NGO) to assist with the edit of the English version of the document.

During the finalisation of the NBSAP document, both NACRES members and external consultants were involved in reviewing, reorganising and completing key sections of the draft NBSAP. The restructured document was circulated among Governmental ministries, non-governmental agencies and research institutes for review. Comments and suggestions from this review process were taken into account, wherever possible, during the preparation of the final document, which was then submitted to the Ministry of Environment for official approval.

The NBSAP was adopted by the Cabinet of Ministers of Georgia on February 2, 2005 (Resolution #27, 19.2.05).

Acknowledgements

The production of the NBSAP was supported by a grant from the Global Environment Facility, through the World Bank.

Further support to enable the finalisation and publication of NBSAP was provided through funding from UNDP/GEF/NACRES project, Conservation of Arid and Semi-arid Ecosystems of the South Caucasus.

Co-funding for publication of the present document was also provided by UNDP/GEF project Self Assessment of Capacity Development Needs for Global Environmental Management (NCSA).

This document has been prepared with the help of numerous people who gave their time and effort over the period when the Georgian NBSAP was developed, and it is not possible to mention all of them here.

We would like to give special thanks to Ms. Darejan Kapanadze of the World Bank Tbilisi Office, for her valuable comments and advice, to Ms. Keti Chachibaia of the UNDP Georgia Country Office for her immense support and to Mr. Irakli Shavgulidze of NACRES for co-ordinating finalisation and publication of NBSAP. We would also like to thank the various ministerial offices that have provided valuable inputs and suggestions to the process.

Sincere appreciation is expressed to Fauna & Flora International (FFI) for assisting us with the final editing and restructuring of the English version of the document, as well as with publishing of both the English and the Georgian versions of NBSAP. Mr. Martin Hollands, Dr. Abigail Entwistle and Ms. Tiffany Aylett (all from FFI) provided support and guidance in improving the accessibility of the document, and in editing the English text. FFI's assistance in editing and publishing the document was supported by British American Tobacco Plc, through the British American Tobacco Biodiversity Partnership.

Table of Contents

FOREWORD **2**

ACKNOWLEDGEMENTS **4**

TABLE OF CONTENTS **5**

EXECUTIVE SUMMARY **7**

1. INTRODUCTION **11**

2. BACKGROUND **12**

2.1 THE VALUE OF BIODIVERSITY 12
2.2 GEORGIA'S LOCATION, GEOGRAPHY AND CLIMATE 12
2.3 GEORGIA'S BIODIVERSITY 12
2.3.1 The Global Significance of Georgian Biodiversity *12*
2.3.2 Major Biomes of Georgia *13*
2.3.3 Floral biodiversity *17*
2.3.4 Faunal Biodiversity *17*
2.3.5 Domesticated plant and animal species *19*

3. KEY ISSUES AFFECTING BIODIVERSITY AND CONSERVATION **21**

3.1 PROTECTED AREAS 21
3.2 SPECIES AND HABITATS 25
3.3 AGROBIODIVERSITY 28
3.4 HUNTING AND FISHING 30
3.5 BIODIVERSITY MONITORING 32
3.6 BIOTECHNOLOGY AND BIOSAFETY 35
3.7 ENVIRONMENTAL EDUCATION, PUBLIC AWARENESS AND PUBLIC PARTICIPATION 36
3.8 FINANCIAL AND ECONOMIC PROGRAMMES 39
3.9 LEGISLATION AND INSTITUTIONAL DEVELOPMENT 40
3.10 SUSTAINABLE FORESTRY 43

4. BIODIVERSITY STRATEGY FOR GEORGIA **46**

4.1 TIMESCALE OF THE BIODIVERSITY STRATEGY 47
4.2 STRATEGIC PRINCIPLES UNDERPINNING THE PLANNING PROCESS 47
4.2.1 Principles of the Pan-European Biological and Landscape Diversity Strategy *47*
4.2.2 Additional strategic principles for the Georgia BSAP *48*
4.3 A STRATEGIC VISION FOR BIODIVERSITY CONSERVATION IN GEORGIA 49
4.4 STRATEGIC GOALS AND OBJECTIVES 50

5. BIODIVERSITY ACTION PLAN FOR GEORGIA **55**

5.1 ACTION PLAN FOR PROTECTED AREAS 56
5.2 ACTION PLAN FOR SPECIES AND HABITATS 59
5.3 ACTION PLAN FOR AGROBIODIVERSITY 63
5.4 HUNTING AND FISHING 66
5.5 BIODIVERSITY MONITORING 68
5.6 BIOTECHNOLOGY AND BIOSAFETY 70
5.7 ENVIRONMENTAL EDUCATION, PUBLIC AWARENESS AND PUBLIC PARTICIPATION 72
5.8 FINANCIAL AND ECONOMIC PROGRAMME 76
5.9 LEGISLATION AND INSTITUTIONAL DEVELOPMENT 77

ANNEXES **79**

ANNEX 1: LIST OF ACRONYMS 79

ANNEX 2: GLOSSARY 80
ANNEX 3 FLORAL SPECIES ASSOCIATED WITH DIFFERENT BIOMES* 82
ANNEX 4: ASSESSMENT OF INVERTEBRATE SPECIES DIVERSITY 99
ANNEX 5: LIST OF KEY ANIMAL SPECIES 102
ANNEX 6: LIST OF CONTRIBUTORS 106

Executive Summary

Georgia is located to the west of the southern Caucasus region. It is a country of diverse landscapes and climates, dominated by mountains in the north, centre and south, whilst to the west and the east, lowland plains extend to the basins of the Black and Caspian Seas. In comparison to other temperate countries Georgia has a notably rich and diverse flora, with a high level of endemism and taxonomic diversity. The area is considered a global 'biodiversity hotspot' because of the richness of species and high level of endemism recorded.

Vertebrate fauna is well represented in Georgia, with 84 species of native fish, 12 amphibians and 52 reptile species. Migratory birds visit Georgia in vast numbers, with over 300 bird species recorded in total, and 76 mammal species are also found in Georgia, including Caucasian endemics. Information on Georgia's invertebrate fauna is inconsistent - although some groups have been extensively studied, information is totally lacking for others. Agrobiodiversity is particularly rich in Georgia, and the country is considered to be one of the centres of origin of domesticated plant and animal species.

This document, the Georgia Biodiversity Strategy and Action Plan (BSAP), outlines a national 10-year strategy for the conservation of this country's unique biodiversity, supported by a 5-year plan for specific activities required to achieve the objectives of the strategy.

Production of a national BSAP is an obligation under the Convention on Biological Diversity (CBD), which aims to protect its biodiversity, to ensure its sustainable use and to enable fair access to the benefits of biodiversity. The CBD was ratified by Georgia in 1994. The BSAP puts forward a set of national policies and plans which will be needed to meet Georgia's responsibility under this convention, as well as providing a framework through which to co-ordinate priority conservation activities, and to share information on biodiversity and key threats facing the natural environment.

This document has been developed with the involvement of a range of specialists and stakeholders within Georgia, and draws on their experience with regard to particular themes relating to biodiversity. The BSAP process started with the publication the Country Study in 1997, an assessment of the current status of Georgia's biodiversity.

In analysing the situation relating to biodiversity based on the information presented in the Country Study, nine key areas or issues affecting biodiversity and conservation were identified, along with specific, more detailed problems relating to each of these issues issue. The key issues identified were:

1 Protected areas;
2 Species and habitats
3 Agrobiodiversity;
4 Hunting and fishing;
5 Monitoring;
6 Biotechnology and biosafety;
7 Environmental education, public awareness and public participation;
8 Finance and economics; and
9 Legislation and institutional development.

In order to provide a strategy for future actions to protect biodiversity, an overall vision for the future was produced, to describe the aim for the future status of biodiversity in Georgia. From this vision statement a series of long-term goals for biodiversity management in Georgia were developed, which reflect the key issues identified from the Country Study.

Georgia's Biodiversity Vision

In ten years time, it is envisages that Georgia will be a country where biological diversity is sustained and rehabilitated within a political, social and economic context that favours the wise use of natural resources and adequate benefit sharing.

Strategic Goals

A. To develop a protected areas system to ensure conservation and sustainable use of biological resources.

B. To maintain and restore Georgia's habitats, species and genetic diversity through *in-situ, ex-situ* and *inter-situ* conservation measures, and through sustainable use of biological resources.

C. To conserve Georgian agrobiodiversity through ensuring its sustainable use and by promoting of *ex-situ* and *in-situ* conservation measures

D. To promote sustainable hunting and fishing through adequate planning, restoration and protection of key biological resource

E. To develop a biodiversity monitoring system and an active and integrated biodiversity database to ensure sustainable use and conservation of biological resources.

F. To protect both the human population and biodiversity from potential threats from genetically modified organisms (biotechnology), through the strengthening the law and through increasing public involvement in decision making.

G. To raise public awareness of biodiversity issues and to encourage public participation in the decision making process.

H. To ensure appropriate financial and economic programmes are in place in order to support effective conservation of biodiversity, and to ensure the delivery of the BSAP.

I. To further improve national legislation (and associated institutions) relating to biodiversity conservation, through the creation of new, and elaboration of existing laws and regulations, and through ensuring harmonisation to international legal responsibilities

These major strategic goals provide the basis for further development of the Strategy and Action Plan, providing a framework for more specific objectives, and for the actions and

activities required to realise them. The Biodiversity Action Plan consists of a series of tables organised around the major goals listed above. These Action Plan tables identify in detail what tasks need to be completed to achieve the conservation goals, including details of how these will be completed, when, by whom, and at what cost.

Finally, the BSAP document provides an integrated approach to biodiversity conservation in Georgia, enabling co-ordination of activities between different focal areas. It has been designed to be used as a day-to-day tool to guide the delivery of conservation in the country, as well as having a role in wider information provision and communications. The document will provide a basis for ongoing monitoring, and will be the baseline for further reporting on the status of biodiversity, and on the efforts made to manage biodiversity protection in Georgia.

Section 1. & 2.

Introduction & Background

1. Introduction

As a party to the Convention on Biological Diversity (CBD) each country is obliged to prepare a national document outlining its future policy and plans to meet its responsibilities under this convention to protect biodiversity, to ensure its sustainable use and to enable fair access to the benefits of biodiversity. The Georgia ratified the CBD in 1994 and the current document represents the National Biodiversity Strategy and Action Plan required under this convention.

This document represents an outline for the future of biodiversity conservation in Georgia over the coming 10 years, including the specific activities required outlined for the next five years. It provides a framework through which to organise and co-ordinate priority conservation activities, and a means to share information about the current state of biodiversity, and the key threats facing Georgia's natural environment. This document has been developed with the involvement of a broad range of specialists within Georgia, and draws on their experience with regard to particular themes relating to biodiversity.

The document is organised logically in a series of sections, including:

1 **Background** (Section 1): this section offers a brief overview of Georgia and the country's biological diversity

Key issues affecting biodiversity and conservation (Section 2): this section explores some of the threats and constraints that may result in declines in the country's biodiversity, and identifies specific current problems. The section is ordered in nine sections, reflecting the set of 'key strategic components' identified as being significant for Georgia's biodiversity. These include:

- Protected Areas
- Species and Habitats
- Agrobiodiversity
- Hunting and Fishing
- Monitoring
- Biotechnology and Biosafety
- Environmental education, Public awareness and Public participation
- Financial and Economic Programme
- Legislation and Institutional Development
- Sustainable forestry

Biodiversity Strategy (Section 3)**:** This section provides an overview of what the plan aims to achieve with regard to biodiversity, and includes a vision for the future, strategic principles, and goals and objectives relating to each of the strategic components.

2 Biodiversity Action Plan (Section 4)**:** This section provides details of the key activities required in order to achieve the goals and objectives, along with likely costs and timescales. The Action Plan is structured around the strategic components listed above.

3 **Structures for implementation** (Section 5)**:** This sections outlines the structures that will be needed to oversee the co-ordination and monitoring of plan implementation, along with delivering the necessary fundraising and reporting support envisaged[1].

[1] The action plan for the forestry section will be developed as a separate document, based on the strategic goals as indicated in this document.

2. Background

This section provides an overview of Georgia's biological diversity. A brief introduction to the value of biodiversity, and Georgia's geographical situation, is followed by a description of Georgia's biome, habitat, floral and faunal diversity.

2.1 The Value of Biodiversity

The world's biological wealth continues to decline at an ever-increasing rate, despite the fact that both governments and general public have began recognising how invaluable biodiversity is both to generations now living and those to come. No regions are exempt from the effects of global environmental degradation. Therefore it is responsibility of each nation to safeguard species and habitats within their territories, thus contributing to the conservation of biodiversity on a global level. This is particularly true for those countries that have so far retained rich species diversity and viable ecosystems.

2.2 Georgia's Location, Geography and Climate

Georgia is located in the west of the South Caucasus region, bordering the Russian Federation in the north, and the Republics of Azerbaijan, Armenia, and Turkey to the south. It is located on the southern slopes of Great Caucasus Mountain Range, on the isthmus between the Black and Caspian Seas. Georgia covers an area of 69,500 square km, between 40' and 47' latitude east, and 42' and 44' longitude north. The land rises from sea level at the Black Sea, to approximately 5,184 meters above sea level (m.a.s.l.) at Mount Shkhara in the Caucasus. Two thirds of the country is mountainous -the average height is 1200 meters a.s.l.

The country has a diverse landscape. Mountains dominate the northern, central and southern parts of the country; the Great Caucasus in the north, the Likhi range in the central part and the lesser Caucasus in the south. To the west, the Kolkheti lowland plains extend to the Black Sea, and the Iberia Plains in the east open to the Caspian basin. The climate of Georgia is similarly diverse; West Georgia is characterised by a relatively humid subtropical climate. East Georgia has a drier, moderately humid climate.

2.3 Georgia's Biodiversity

2.3.1 The Global Significance of Georgian Biodiversity

The Caucasus region – including Georgia – has been recognised as holding an important reservoir of biodiversity, and is indeed considered a globally significant 'biodiversity hotspot' based on the richness of species, and level of endemism, recorded. The reason for the diversity found in this area may be explained by its location (at the juncture of two major biogeographic regions), the land form (the peninsula between the Black and Caspian Seas provides an important migration route and fly way), the topography of the landscape (with great variations in altitudes, and opportunities for isolation) and the climate (which varies significantly across the country, resulting in very varies habitats – from sub-tropical drylands and dry forests, to mountain tundra).

2.3.2 Major Biomes of Georgia

The climatic differences of east and west Georgia account for a major contrast in ecosystem diversity, and vertical zonation between the two areas. West Georgia has five major biome zones that can be identified, but is notably lacking in arid and semi-arid treeless areas. The biome zones are:

1 Forest (coastal plane – 1,900 m.a.s.l.)
2 Subalpine zone (1,900 – 2,500 m.a.s.l.)
3 Alpine zone (2,500 – 3,000 m.a.s.l.)
4 Subnival zone (3,000 – 3,600 m.a.s.l.)
5 Nival zone (> 3,600 m.a.s.l.)

The biome zones of eastern Georgia are more complex, however six major zones can be identified:

1 Semi-deserts, steppe and arid light woodlands (150– 600 m.a.s.l.)
2 Forest (600– 1,900 m.a.s.l.)
3 Subalpine zone (1,900– 2,500 m.a.s.l.)
4 Alpine (2,500– 3,000 m.a.s.l.)
5 Subnival (3,000 – 3,700 m.a.s.l.)
6 Nival zone (> 3,700).

Within these biomes, the diversity of habitat types is also remarkable. The ecologically and biogeographically distinct vegetation of the Kolkheti forest refugium is especially noteworthy in terms of species composition, as are the limestone and high mountain vegetation complexes. The following sections give a brief description of the biomes listed above, with their associated habitat types.

Flood plane forest biome

In eastern Georgia flood plane forests* are only found along the rivers Mtkvari, Alazani, Iori and downstream Ktsia. These forests are dominated by oak (*Quercus pedunculiflora*) and poplar (*Populus canesaeus, Populus hybrida*), and are rich in creepers*. The poplar forests along the river Iori are noteworthy in term of plant diversity. There is a clear distinction in species composition of forests along the river* and in dry gullies*.

Flood plane forests in West Georgia are dominated by the alder *Alnus barbata,* although there are other tree species present (wingnut *Pterocarpa pterocarpa*, oak *Quercus pedunculiflora*, and willow *Salix mican,* and *S. alba)*. Away from the water sea buckthorn *Hippophae rhamnoides* and dewberry *Rubus anatolicus* create dense communities.

Semidesert biome

The plains of eastern Georgia* support a semidesert biome, with patches of saline soils. This biome occurs between 150 and 600 meters a.s.l. The vegetation is characterised by halophytic and ephemeral species.*Nitraria schoeberi* communities are found in Shida Kartli, Kakheti and Meskheti. One form of eroded deserts is found on Iori Plateau. These communities also include the rare endemic *Tulipa eichleri.*

Steppe biome

Steppe vegetation* in eastern Georgia occurs at the altitudes of 300-700 m.a.s.l. The soils in this biome are mostly cherozem and occasionally brown. The climate is subtropical with continental dry winters and hot summers. Snow is rare and snow-cover is unstable. The bearded grass (*Botriochloa ischaemum*) ecosystems are the most significant on the steppe. As a result of human activities, the steppe biome is invaded by forest and shrub.

It should be noted that real steppes occur in Georgia only in the form of small fragments mainly on deforested areas. Species rich *Stipa tirsa* communities are found on depressed chernozem areas in Gareji. *Stipa joanis* and *S. lessingiana* communities are found in dryer areas, where *S. tirsa* does not occur.

Montane steppe* occurs only in southern Georgia at the altitudes of 1,800-2,500 meters a.s.l., mostly on southern slopes and flat areas. The plant community here is dominated by *Festuceto salcata* and *Stipa capillata*

Arid light woodland and hemi-xerophyte scrub biome

Arid light woodlands* are found in the semi-desert and steppe belt of eastern Georgia. This biome consists of hemi-xeropyte tree and drought tolerant grass species. The best example of arid woodlands is represented in the Vashlovani Reserve that covers around 5,000 ha. Arid light woodlands are found on grey-yellow soils where the climate is dry subtropical (Vashlovani) or temperate warm (Mtskheta). *Celtis caucasica* forests are less common.

Juniper woodlands* are found on northern slopes of foothills at Mtkheta and Vashlovani, often occupying previously deforested areas. These woodlands are dominated by *Juniperus foutidissima* (an eastern Mediterranean species) and *J. polycarpus* (a Middle Eastern species). *Pistacia mutica* communities are found on chernozem and yellow-brown soils.

Semi-xeropyte scrub* mainly occurs on southern foothills of east Georgia at the altitudes of 600-800 m in areas formerly occupied by Georgian oak (*Quercus iberica*). Xeromorphic shrubs and semi-shrubs, and ephemerals dominate this habitat type.

Forest biome

Forests are the most common habitat type in Georgia, covering 36.7% of the total area of the country. Forests are found throughout the country, with the exception of the Javakheti plateau. Khevi and mountainous Tusheti are relatively poor in forests. Oriental beech (*Fagus orientalis*) tends to be the dominant species, although there are many other tree species* present in the forests. Notable forest types include:

1 Georgian oak forest (*Quercus iberica*): Occurs at 600-700 m.a.s.l. in eastern Georgia.
2 Xerophilic oak forests*
3 Beech forests *(Fagus orientalis)*: Found in middle and upper zones of the forest belt, these are highly productive ecosystems.
4 Pine forests* : These often develop on the edges of mountain steppes or steppe-meadows (in southern Georgia), between 1,700-2,400 meters a.s.l. and are remarkably species rich.
5 Pine and oak woodland: This forest type is particularly noteworthy. It can be found in eastern Georgia at 800-1,100 m.a.s.l., but in Achara (western Georgia) from 300-1,200 m.a s.l.
6 Yew (*Taxus baccata*) forests: Found in the east of Georgia, these are relic forests, a fragment of which is preserved in the Batsara Reserve.
7 Zelcova* forest: These forests are found in east Georgia. The forest in Babaneuri is

noteworthy due to its relict nature and distribution.

8 Maple (*Acer velutinum*) forests: These forests are found only in Alazani Valley. This species does not occur above 1,000 m. In east Georgia *Acer laetun* is usually found in mixed forests.
9 Colchic forests*: These are forest in the Kolkheti (Colcheti) Lowlands (West Georgia), rich in creepers.
10 Endemic pine (*Pinus pitiunta*)*: These forests are found on the Abkhazian coastline.
11 Chestnut forests: These are found both in east and west Georgia. In west Georgia they occur at 100-1,000 m. In east Georgia are found as high as 1,400-1,450 meters but typically occur from 400-500 meters up to 1,300 - 1,350 meters a.s.l.

Subalpine biome

The high mountain flora of the subalpine zone is generally very diverse. This is believed to be due to the biome's geographical location, contrasting climatic conditions and its very disrupted and complex topography.

The flora of the upper tree line (2,400-2,750 m.a.s.l.) is especially complex and diverse in terms of species composition and community structure. It is rich in rare endemic and relic species. Major plant community types include light woodlands, crook-stem forests*, lying shrubs*, high grasslands, and broadleaf meadows. At about 1,800-1,900 *m.* sparse park-like forests replace closed canopy forests*. Sparse forests* are common on the Great Caucasus as well as on the Lesser Caucasus. Colcheti crook-stem forests* are remarkably rich in endemic and/or relic species.

Alpine zone biome

The alpine zone in Georgia has a lower range of 2,400-2,500, and an upper range of 2,900-3,000 meters a.s.l. It contains communities of: alpine meadows, 'alpine spots', shrubs, rock, and scree micro-communities. There are various grassland communities associated with this biome. They are listed in the appendix with a list of associated species. 'Alpine spots'* are areas where snow cover stays for long periods. These communities are noteworthy, but are typically not rich in species composition and only include 20-25 spp. Northern and eastern slopes are covered with 'dekiani' shrubs*. This community usually only includes 10-15 species. Species rich dwarf shrub communities* are common on wet stony slopes throughout the Great Caucasus range.

Subnival biome

Subnival communities are well represented in central and eastern parts of the Great Caucasus. Only certain groups of plant species are adapted to the extreme conditions of the subnival zone (3,000-3,600 m). Nevertheless the proportion of endemic species* is remarkably high (60-70%).

Wetlands

Swamps and peat lands* are common at various altitudes throughout the country but are especially well represented in the Colcheti lowlands and the volcanic plateau of southern Georgia. The majority are eutrophic wetlands, with many relic species*. In western Georgia peat lands are found from the coast up to the alpine zone. In eastern Georgia due to dryer climate they are not present above 2,000 m.

Hydrophilic tall grasslands* are found in the lowlands and Volcanic Plateau of South Georgia up to 2,000 m. Hydrophilic short grasslands* develop at 2,300 m and above but only cover an insignificant area. Mezotrophic swamps* are found in west Georgia from the coast up to the alpine zone. Some tree species* are associated with wetlands, but shrubs* are rare and mainly

occur at 1700-2000 m.

2.3.3 Floral biodiversity

As a consequence of its location, and its physical and climatic diversity, Georgia has a remarkably rich and diverse flora in comparison to other temperate countries. There is a high level of endemism, which includes components of various biogeographical origins. Many groups of plants are believed to originate in the Caucasus Mountain Range and the process of plant speciation is believed to still be taking place.

A total of 6,350 species of vascular plants have been recorded in the Caucasus region, and Georgia contains 4,100 of these. Additionally the country is also diverse in terms of taxonomic structure. The high level of endemism can be attributed to the physical characteristics of the central and eastern parts of the Great Caucasus, and to the ecological and geographical isolation of certain ecosystems

Georgia has 300 species of vascular plant endemic to the country, and a further 600 species that are endemic to the Caucus region. Georgia's flora also includes a number of endemic genera; 16 genera are considered endemic or sub endemic to the country.

2.3.4 Faunal Biodiversity

Invertebrates

Information on Georgia's invertebrates is somewhat variable – some groups have been very well studied, although information is almost totally lacking for other groups (see Annex 6).

Over 11,100 species of invertebrates have been recorded in Georgia, including almost 9,150 arthropods (and of these over 8,230 insect species). Groups including many of the parasitic worm and flukes have been well studied, as have earthworms and some of the key insect groups – such as Lepidoptera (butterflies) and Coleoptera (beetles). The Coleoptera (with almost 5000 recorded species) along with Diptera (flies) and Hymenoptera (wasps and bees) show high species richness among the groups studied to date*.

At this stage little information is available on the status of individual invertebrate species in Georgia.

Vertebrates

Fish

Georgia has two main river systems or watersheds - one that drains the east of the country (the Caspian basin) and the other that drains the west (the Black Sea basin). In total 84 species of freshwater fish have been recorded in Georgia. The Caspian Sea basin has 29 species, while the Black Sea basin has 66 species (six of these are endemic to the Black Sea basin, and eleven of these are common to both basins). The Mtkvari River is particularly important in terms of fish diversity. Twelve native species are only found in the watershed of the Mtkvari River, and nine of these are endemic to this system, including several economically important barbin species (three *Barbus spp.* and *Varicorhinus capoeta*). Other economically important species in Georgia include the sturgeons *Acipenser sturio* and *Huso huso*.

In addition to the native fish species, there are nine introduced species, of which the crucian carp (*Carasius carasius*) has become most common. All these species were introduced during

Soviet times*, when there was a well-developed network of fish farms that produced fry species. These were released into both artificial and natural lakes (lake Paravani, and lake Tabatskuri).

Amphibians

There are 12 species of amphibians in Georgia including four newts and salamanders (order Caudata), and eight frogs and toads (order Anura)*. Important amphibian habitats include the mountain forests of Colcheti as well as the Gardabani Valley, Borjomi Valley and western parts of the Meskheti range. Significant changes have been noted in the distribution of amphibian populations in Georgia. For example, populations of the Eastern spadefoot toad (*Pelobates syriacus)* and Mediterranean frog (*Hyla savignyi)* are moving towards the south-east. Georgia is the easternmost edge of the global ranges of the smooth newt *Triturus vulgaris lantz*i and the banded newt *Triturus vittatus ophriticus.* Some populations of these species have apparently become extinct.

Reptiles

Most of the reptiles found in Georgia belong to the eastern Mediterranean biogeographical region. There are 52 species in Georgia including:

1 one species of tortoise
2 two turtle species
3 27 lizard species (ten genera from six families)
4 23 snake species (ten genera of four families).

Of these reptiles, three snake and 12 lizard species are endemic to the Caucasus*.

Birds

There are more than 300 species of birds in Georgia. A significant number of these are migratory. The most important bird areas in the country are the Colcheti lowland (including lake Paliastomi and the coastal zone at the Black Sea) and the Javakheti Plateau, that is rich in freshwater lakes. More than 100 species of migratory birds visit these places in great numbers.

There are three Caucasian endemic bird species in Georgia, including: Caucasian black grouse (*Tetrao mlokosiewiczi*), Caucasian snowcock (*Tetraogalus caspius*) and Caucasian warbler (*Phylloscopus lorenzi*).

Mammals

A total of 79 species of small mammals are recorded from Georgia, from four different orders (insectivores, bats, rodents and lagomorphs). The numbers of species in each order are presented in Table 2.1. There are several noteworthy species* of small mammal including Caucasian endemics*, as well as some introduced species of small mammal*. Georgia's fauna also includes 30 species of large and medium-sized mammals, including deer and gazelles, whales, and carnivores. Until the beginning of the last century many of these species were widely distributed in Georgia. For example Asian leopard (*Pantera pardus*), lynx *(Lynx lynx*), and wolf (*Canis lupus*) were found throughout the country and marbled polecat (*Vormela peregusna)* was found everywhere except in the humid Colcheti lowlands ecosystems; and the striped hyena (*Hyaena hyaena*) was common in all arid areas of the country. Since the 1920's there has been a significant decline in the populations and ranges of all these species. For example, only few individual leopards are now thought to remain in very remote and inaccessible areas. Similarly, few striped hyenas now remain, and the goitered gazelle (*Gazella subgutturosa*) is now considered extinct in Georgia. In addition, some important populations of other species have also disappeared, including southern population of the Bezoar goat (*Capra aegagrus*).

Table 2.1 Numbers of mammal species found in Georgia

Order	Family	Number of species
Small mammals		
Insectivora *(insectivores)*		10
Chiroptera *(bats)*		29
Rodentia *(rodents)*		39
Lagomorphs *(rabbits)*		1
Large and medium sized mammals		
Artiodactyla *(even toed ungulates)*		8
Cetacea *(whales dolphins, porpoises)*		3
	Mustelids *(weasels, otters, badgers)*	7
	Procyonids(racoons)	1
	Hyaenids *(hyenas)*	1
	Canids *(wolves and foxes)*	4
	Felids (*wild cats*)	5

2.3.5 Domesticated plant and animal species

As one of the centres of origin for many domestic plant and animal species, Georgia supports rich agrobiodiversity. There are many original and ancient breeds and varieties of plants and animals, particularly of grapes and cereals.

Section 3.

Key Issues

3. Key issues affecting biodiversity and conservation

In reviewing the current situation for biodiversity in Georgia nine key issues have been identified. Each of these issues will be considered separately in the strategic components of the National Biodiversity Strategy and Action Plan. In this section background information on each issue, and specific problems facing biodiversity and its protection, are presented. The nine key areas identified are:

1 Protected Areas
2 Species and Habitats
3 Agrobiodiversity
4 Hunting and Fishing
5 Monitoring
6 Biotechnology and Biosafety
7 Environmental education, Public awareness and Public participation
8 Financial and Economic Programme
9 Legislation and Institutional Development
10 Sustainable forestry

3.1 Protected areas

Current Situation

The first nature reserve in Georgia was established in 1912, and another 14 strict nature reserves and five hunting reserves were subsequently established during the Soviet era (Tables 3.1). Strictly protected reserves cover 2.4%, and hunting reserves cover 0.8%, of the country's land area.

During the initial establishment and management planning of protected areas, it was normal to focus on only one aspect of the reserve. For example, the Vashlovani reserve was designed primarily for the protection of relict vegetation, without due consideration of other components of the ecosystem (including local wildlife) and detailed ecological surveys were not carried out prior to reserve planning. As a result, certain sites important for wildlife were not included in the reserve and populations began to decline. Similar single- species or vegetation based approaches were applied to the planning of many other reserves, and consequently the ecosystem integrity of these areas has not been effectively maintained.

Since 1990, with the support of the international donor community, Georgia has begun to develop a more modern protected areas system. New approaches have been introduced concerning management, institutional capacity, financing, public relations, protection and prevention measures for protected areas.

In 1996, the Georgian government adopted a new law on protected areas, which introduced internationally accepted categories based on IUCN recommendations, and official procedures for their establishment, into the country's protected areas system (Table 3.2). Additionally the law also allows the creation of protected areas under international designations, including Ramsar sites, Biosphere Reserves and World Heritage Sites. The latter two can officially be

established with the approval of UNESCO. Biosphere Reserves and World Heritage Sites can include protected areas of different categories, as long as it can be demonstrated that the area has global importance.

Table 3.1: Summary of protected area types in Georgia

Type of protected area	Management types and permitted activities	IUCN Category
State reserve	Strict protection	I
National park	Ecosystem conservation; recreation	II
Natural monument	Conservation of natural features	III
Managed reserve	Preservation through active management	IV
Protected landscape	Ecosystem conservation; recreation	V
Multiple use territory	Sustainable use of natural ecosystems	VI

Borjomi-Kharagauli national park was established in 1995, based on the Borjomi nature reserve (this was funded by the German Government and KfW bank). This was one of the first stages of the reform of the Protected Areas system in Georgia. In 1996 new legislation was adopted concerning the preservation of wild fauna, and following 'Hunting Reserves' were transformed into 'Managed Reserves'. The Kolkheti wetlands were designated as two Ramsar sites in 1997 (Central Kolkheti –33700 ha and Ispani two -550 ha). Kolkheti National Park was established in 1999. In 2003 Tusheti and Vashlovani National Parks were established, and in the same year Batsara-Babarenuri and Lagodekhi were expanded

Table 3.2: Georgian protected areas

#	Nature reserves	Area (ha)	Established
1.	Lagodekhi	22,358	1912
2.	Tusheti	10,694	1980
3	Babaneuri	770	1960
4.	Batsara	3,042	1935
5.	Vashlovani	8,480	1935
6.	Algeti	6,400	1965
7.	Liakhvi	6,388	1977
8.	Saguramo	5,241	1946
9.	Mariamjvari	1,040	1935
10.	Kazbegi	8,707	1976
11.	Ajameti	4,848	1935
12.	Sataplia	300	1935
13.	Borjomi	17,948	1935
14.	Bichbinta	1,461	1935
15.	Miusera	2,300	1934
16.	Ritsa	17,200	1930
17.	Pskhu	27,333	1978
18.	Gumista	13,400	1976
19.	Skurcha	85	1971
20.	Kintrishi	13,893	1959

21.	Kobuleti	331.25	1999
#	**National parks**		
1.	Borjomi-Kharagauli NP	57,964.44	1995
2.	Kolkheti NP	44,313	1999
3.	Tusheti NP	83,453	2003
4.	Vashlovani MP	25,114	2003
#	**Natural monumets**		
1.	alaznis Walis bunebis Zegli	138	2003
2.	taxti-Tefas bunebis Zegli	0,5	2003
3.	arwivis xeobis bunebis Zegli		2003
#	**Managed reserves**		
1.	Gardabani	3,315	1957
2.	Korugi	2,068	1958
3.	Iori	1,336	1965
4.	Chachuna	5,200	1965
5.	Katsoburi	295	1964
6.	Ktsia-Tabatskuri	-	1995
7.	Nedzvi	-	1995
8.	Tetrobi	-	1995
9.	Kobuleti	438.75	1999
10.	Ilto	5,273	2003
11.	Lagodekhi	1,998	2003
#	**Protected landscapes**		
1.	The Tusheti Protected landscape	27,903	2003

In 2002, the World bank/GEF project "Protected Areas Development Project" began implementation to support biodiversity conservation in Georgia through improving the ecological and social sustainability of the protected areas and their buffer zones. The project is also supporting the development of protected areas management planning of the central Caucasus protected areas, raising public awareness of biodiversity conservation issues in eastern Georgia, and capacity building the department of Protected Areas in the Ministry of Environment.

WWF Caucasus Programme Office initiated a project that identified priority conservation areas within the Caucasus region. Core areas and corridors were identified, including the Javakheti plateaux. Here, a National Park and four Managed Reserves are expected to be set up, and three of the lakes are to be designated as Ramsar sites.

Need for improved co-ordination

As mentioned above, Georgia's protected area system is being reorganised and expanded. However there is an ongoing need for improved co-ordination amongst the existing protected areas, as although each reserve has its own plan, there are no unified policies. As a result, little attention has been paid to important aspects of conservation across the protected areas network, such as establishing biological corridors between the protected areas, information exchange, and sharing each other's experience.

The establishment of new protected areas is constrained because of the different aims of the

various Government agencies owning the land; agencies often disagree over the use of the land, and there is little coordination between their approaches.

Land Ownership issues

Processes of land privatisation in recent years have been poorly recorded and the situation of land ownership is often confused; this has lead to problems during the establishment of Protected Areas. The issue is further complicated when recently privatised lands fall within areas that become designated as a Protected Areas.

Public Awareness

Limited public awareness poses a particular problem for protected areas development. In many areas, the local population knows very little about new initiatives and government plans concerning protected areas, and they are not adequately informed about the roles and importance of national parks. As a result local attitudes towards protected areas are frequently negative, and may deteriorate into active antagonism when protected areas are expanded with consequent limitation of access to natural resources. All this severely affects further development of protected areas and the effective functioning of existing national parks. A number of education programmes have been ongoing for several years but results have been minimal, perhaps because the scope or methods used in these programmes may have been inappropriate.

Illegal use of natural resources

The illegal use of biological resources within Protected Areas is a widespread problem. This generally stems from a lack of alternative resources or sources of income for local communities surrounding the area.

Illegal hunting is a serious problem throughout the country, but particularly within protected areas where animals have been hunted for both sport and income. Poaching is closely linked with (a) the decline in game species elsewhere, (b) poverty among local communities and (c) negative attitudes to protected areas. These underlying reasons must be dealt with before the problem of poaching is resolved. In parallel, it is essential to provide sufficient protection for protected areas in order to minimise poaching. This in turn can only be achieved if protected areas have adequate resources and facilities.

Monitoring

Many protected areas in Georgia do not conduct regular monitoring of local wildlife and ecosystems. There is a lack of information and it is difficult to (a) assess the efficiency of management techniques employed in the reserve, (b) identify trends and make predictions, and (c) plan adequate management measures based on such information.

Summary of specific problems relating to protected areas

1.1 Degradation of natural and cultural landscapes are resulting in a reduction of biodiversity.
1.2 Lack of an integrated protected areas system in the country;
1.3 Many important biodiversity sites are not included in the protected areas system (Central Caucasus, Javakheti Plateau);
1.4 There are few sites of global importance (e.g. Biosphere) designated in Georgia
1.5 There is a lack of international cooperation to support protected areas of Georgia.

1.6 Some reserves are too small to be viable
1.7 Lack of regular monitoring of protected areas;
1.8 Limited environmental awareness, and lack of knowledge of current activities, among local communities;
1.9 Perceived conflict of interest between protected areas and local communities;
1.10 Illegal use of natural resources within protected areas; and
1.11 There is a lack of regulations controlling the management of Protected Areas

3.2 Species and habitats

Every section in this document directly or indirectly relates to the conservation of species and habitats. Nevertheless, in order to achieve effective biodiversity conservation it is necessary to implement specific and concrete conservation activities that target particular species, habitat types or key sites. A number of species and habitats are highly threatened and their conservation requires specific and immediate measures.

Research

Inadequate conservation in the past, as well as recent economic changes and poor law enforcement, have had a tremendous impact on Georgia's biodiversity. Despite the extent of biological research already completed in Georgia, there are groups of species that are under-studied and their current status needs to be established. Relatively complete information is required in order to identify priorities and to plan conservation activities. The existing Georgian Red Data Book (1982) is now considered outdated and no longer reflects the current status of certain species. Furthermore, the criteria and categories used for assessment of threatened species have been significantly changed by IUCN. Therefore the development of an updated Georgian Red List of threatened species has become an important priority, along with specific surveys to obtain current information on many rare and threatened species, in order to supplement existing information.

Habitat degradation and destruction

Over the centuries, agriculture and other forms of human activity have significantly altered Georgia's countryside – extensive areas of forest have disappeared, wetlands have been drained, and vast areas of natural habitat have been transformed into artificial or semi-natural landscapes. As a result, hundreds of restricted range plant species are threatened with extinction in the country, including many endemic or otherwise important species. A number of primary plant communities of national or global importance are also highly threatened.

Species loss

Habitat destruction, including forest felling, elimination of biological corridors and hunting have posed serious threats to wildlife especially forest and game species. As a result of their biological characteristics (such as low reproductive rates and naturally low densities) large mammals have been the most affected. Some large mammals, including most ungulate species, have become critically endangered and immediate actions are needed to recover their populations. Certain species (such as striped hyena, goitered gazelle and leopard) are now only represented by a few individuals in the county, and immediate restoration efforts will be required to secure the future survival of these animals. In addition, marine mammals have declined as a result of habitat change, specifically pollution and depletion of their food base. A number of water birds (including nationally and globally rare species) are threatened by both degradation of water ecosystems and hunting.

Keystone species have been particularly affected by the degradation of natural ecosystems. The conservation of keystone species is particularly important for the maintenance of ecosystem integrity. In Georgia's ecosystems the wolf and certain species of raptors have been shown to be keystone species many of the important raptor species are considered to be very rare and require special conservation measures.

Ex-situ Conservation measures

It is understood that species protection requires the application of a number of conservation tools, over at the same time. During the Soviet period measures were put in place for *in situ* conservation, including the establishment of protected areas throughout the country. In addition, at that time a number of botanical gardens in different parts of the country were established and ran successfully, providing for the *ex situ* conservation of plants. However, no captive breeding institutions were established to support *ex-situ* conservation of Georgia's fauna. Although the Tbilisi Zoo and Batumi Dolphinarium were established, these have not run projects on the captive breeding of local species for conservation purposes.

Botanical gardens in Georgia include: the Central Botanic Gardens of Tbilisi, which also has a branch in Kutaisi; Batumi Botanic Gardens; Sukhumi Botanic Gardens, and Bakuriani Alpine Botanic Gardens. Several of these are operated under the Academy of Sciences, but there are no private botanic gardens in Georgia. According to the Botanic Gardens Strategy (BGCI, 1994), any botanic garden should have three main functions: conservation, plant propagation and education. The conservation of local plant species should be a priority and special attention should be paid to rare, relic and endemic species, taxonomically isolated species, keystone species, and economically important species*. Due to restricted funding and facilities, Georgian botanical gardens currently undertake few direct conservation activities, and instead focus on an educational role; although rare exceptions include recent projects of the Institute of Botany of the Academy of Sciences focused on particular rare and threatened native species. In addition to strengthening existing botanical gardens, it is considered important to promote (a) small private/state owned agro-botanical gardens, (b) collection plots on private farms and (c) the restoration of school botanical plots. Such small gardens could offer conservation value, on top of an educational role.

Seed banks are an important and relatively cheap tool for plant conservation and, if well maintained, seeds may be stored for up to 100 years. However, such efforts would require long-term secure funding, an uninterrupted power supply, research into appropriate storage conditions for key species (unlike domestic plants, little is known about the storage requirements of wild species); and regular testing of the regeneration capacity of seeds. In addition, only species with non-recalcitrant seeds may be kept, and species that rarely produce seeds, produce recalcitrant seeds, or reproduce vegetatively need to be preserved in gene banks instead on plots with suitable soil and climatic conditions. It is also considered that some species might be preserved over several years in seedling banks (with conditions of low light). In other situations, modern technologies such as cell cultures may be used for artificial propagation and preservation of rare plant species, as occurs in many other botanical gardens worldwide.

Considering the current threats facing Georgian wildlife, a combination of *in-situ* and *ex-situ* measures are likely to be necessary for the maintenance and/or restoration of certain animal species. To this end, the creation of a central integrated *ex-situ* conservation centre would prove

more effective and economic than establishing isolated captive breeding centres for individual species.

Hunting

Apart from controlled sport and trophy hunting, the harvesting of animal resources for domestic and/or international trade poses serious threats to certain wild species. The scale of international wildlife trade from Georgia is expected to rise, given current economic trends and the increasing number of contacts with foreign traders and dealers. Quotas based on scientific assessments are required for a number of economically important (non-game) species.

Habitats outside Protected Areas

A range of important natural and semi-natural habitats exist outside the protected areas system, and these require some form of sustainable management to ensure their persistence. There is a need to continue to identify and assess important wildlife areas (for example migration corridors) currently outside protected areas. Priority areas may include potential corridors such as the Surami range connecting the Great and Lesser Caucasus ranges, and the Gombori range linking the Great Caucasus range and Iori Plateau.

One ongoing problem is the increased use of plant resources throughout the country, as a result of the current economic difficulties. Edible, medicinal and garden species are intensively exploited, while pastures have been severely degraded by over-grazing. Winter pastures show signs of increasing desertification, while both summer and winter pastures are affected by increased erosion – resulting in impacts on both biodiversity and the local economy. Sustainable use of pasturelands has become an urgent requirement.

Key habitats threatened by human activities include flood plain forests, which are an important component of Georgian landscapes, and are also wildlife refuges. In addition, many wetlands have been modified through human activity – including inappropriate regulation of water levels and complete or partial drainage of some systems. As a result the ecological structure and values of many wetlands have been reduced, and little care has been taken to maintain the economic role of wetlands in maintaining water tables. There is a need to assess the status of existing wetlands and to define a national strategy for wetland conservation. In particular, wetlands on major migration routes and flyways are of international significance and require urgent protection.

Summary of specific problems relating to species and habitats

2.1 The current status of most species is unknown; this makes it difficult to plan and prioritise conservation activities and ensure the sustainable use of resources.
2.2 The Georgian Red Data Book is out of date;
2.3 Many species of animals are critically endangered;
2.4 Many species of plants are critically endangered (including endemic and relic species, as well paleoendemics);
2.5 Existing botanical gardens cannot undertake conservation activities and there are no captive breeding centres for threatened native animal species;
2.6 Quotas have not been established for economically important plant and non-game animal species
2.7 Many rare and relic plant communities are threatened;
2.8 Habitats such as semi-deserts, steppes, wetlands, flood plain forests, and Colchic

forests are endangered;

2.9 Primary, globally important and sensitive plant communities have not been identified and assessed;

2.10 Overexploitation of pasturelands has resulted in the degradation of plant communities and soils both in winter and summer pastures, in some cases leading to permanent damage;

2.11 There is limited information on important areas for biodiversity outside protected areas, and such areas are not managed sustainably.

2.12 There is no information on the impact of alien species on ecosystems

3.3 Agrobiodiversity

Georgia as a centre of origin for cultivated crops

Historically, Georgia has been a country of agriculture. The country lies in the area of where plant breeding and agricultures is thought to have originated. Georgian agriculture began to develop in the 5th and 6th century B.C. when local tribes began to domesticate wild plants and animals.

The native and cultivated flora of Georgia is remarkably rich as a result of: (i) the diversity of soils and climatic zones (the country encompasses 23 distinctive edapho-climatic zones) (ii) the geographic location of the country, (iii) the long history of agricultural activities. Cultivated varieties in Georgia include representatives of most major groups of domesticated plants, including cereals, vegetables and fruits (particularly grapes). Locally occurring cereals include 350 native specie from 100 families, including many endemics. For example, of 15 species of wheat found in Georgia, five are endemic. Other important cereals include barley, rye, and oats. The country's agrobiodiversity also includes introduced species such as French beans, maize, and soy. Through selective breeding, a number of endemic varieties of these plants have been developed, and up to 50 varieties of beans are now found in Georgia. Among fruits, high varietal diversity is found in apples, pears, sour cherries and quinces. The country is believed to be the origin of grapes - up to 500 different varieties of grapes have been recorded here, although 200 of these are now thought to be extinct. Georgia' also supports a rich variety of vegetable species, oil-bearing plants, medicinal plants and wild relatives of cultivated plant species.

By the beginning of 20th century, many native breeds of domesticated animals were recorded in Georgia, and were considered to be adapted to local conditions. These included breeds such as Khevsureti cattle, Caucasian water buffalo, and Imeretian sheep. Native domestic pigs are closely related to wild boar and although not as productive as other breeds it can survive well on a very poor diet.

Need for conservation of agrobiodiversity

At present many endemic and native representatives of agrobiodiversity are in danger of extinction, and face severe problems of genetic erosion. National policies and comprehensive measures are urgently needed to address the problem.

Georgia's agrobiodiversity was greatly affected by Soviet agricultural policies, when Georgia had to maximise its agricultural production to satisfy extensive demands across the USSR. In

order to increase the quantity of production native varieties were replaced by more productive and uniform ones, with pressure on farmers to use new introduced varieties, over the higher quality local breeds. In addition, new non-native crops - including tea and citrus- were introduced in suitable areas. Furthermore, during the Soviet era agricultural systems were significantly changed, as local private farms were abolished and farmers worked effectively as a hired workforce. The little land that individual farmers could own barely met their personal needs, and a policy of displacing people from the high mountains to the lowlands also disrupted traditional farming systems.

After the break up of the Soviet Union, economic problems led to further deterioration in the richness of agrobiodiversity. When centralised distribution systems were abolished most farmers were left without the means and capacity to continue sustainable farming, and in some cases individuals had to rely on using seed stocks for food. Following land reform each farmer received a 1 ha plot of land. Although a significant improvement at the time, the limited size of plots was not sufficient to support further development of private agriculture, and long-term strategies for the agricultural development of the country were not put in place. Lack of funding prevented plant breeding centres and seed farms from operating, and the agricultural sector became entirely dependant on imported seed materials provided by humanitarian aid organisations or though government credits. Many of these seed materials are considered of a lower quality and lack natural variability, compared to native stocks.

Furthermore, during a period of economic constraints, research institutes became unable to maintain their agrobiodiversity collections. Unique seed banks and live collections of cereal, fruit and grape varieties could no longer be maintained. Many species or varieties appear to have become extinct or only remain in foreign collections, and funding is not available to secure remaining specimens.

In summary, the country is gradually losing an important part of its cultural and biological heritage. Native and/or endemic varieties of plants and animals that are ideally adapted to local conditions, genetic variability, valuable products, and associated traditions are all disappearing.

Summary of specific problems relating to agrobiodiversity

3.1 Little attention is paid to the conservation of agrobiodiversity at the national level
3.2 Accessible and good information on the country's agrobiodiversity, its current status, associated products and traditions is lacking
3.3 Legislation for the preservation of agrobiodiversity is lacking
3.4 Import/export of genetic materials is not controlled
3.5 Introduction of new technologies is not supervised
3.6 There is a lack of knowledge of, and experience in, modern techniques of *ex situ* and *in situ* conservation of agrobiodiversity
3.7 There is little information exchange or experience sharing either within the country or with other states
3.8 There are few relevant research programmes
3.9 Many of the existing collections, selection stations and seed farms are no longer operational
3.10 Access to genetic materials is limited for both farmers and research programmes
3.11 Traditional knowledge regarding the use of agrobiodiversity is being lost

3.12	Existing research institutes have declining capacity
3.13	There are no effective programmes to support farmers in biodiversity-friendly agricultural practices
3.14	Economic incentives for the conservation of Georgian agrobiodiversity are lacking
3.15	Relevant education programmes do not exist
3.16	There is no mechanism to increase popular recognition of agrobiodiversity and associated products and traditions.

3.4 Hunting and fishing

Hunting and biodiversity

Hunting has been classified as one of the four major threats to biodiversity (part of Diamond's Evil Quartet). Over-hunting has been responsible for up to 23% of the extinctions during human history. Many hunted species have very low rates of reproduction (such as large mammals), and are also some of the most vulnerable components of natural ecosystems. However, hunting can also be used to generate income, thus creating incentives for biodiversity preservation, and in some cases direct funding for conservation activities. Taking into account the socio-economic needs, controlled sustainable may actually be of benefit in the long term.

Hunting in Georgia

Hunting has always been very popular in Georgia. With the exception of certain mountainous areas, hunting in Georgia is for sport and is regarded as a form of recreation. In high mountains areas subsistence hunting still prevails, while tur hunting has great cultural significance. However, inappropriate game management practices over the last century have led to significant declines in many game species. Populations of species such as red deer (*Cervus elaphus*) and mountain goat (*Capra aegagrus*) have been severely reduced and remain only in protected areas, and the goitered gazelle (*Gazella subgutturosa*) has completely disappeared. Carnivore populations have been significantly affected by a bounty system, although this has recently been abolished .

Hunting farms

During the Soviet times, Georgia had five state hunting farms, which have now been transformed into managed reserves. In addition there were so called "assigned hunting farms", most of which were managed by the Hunters Union. Until 1990, the Hunters Union ran 54 hunting farms with a total area of 2,644,667 ha. Other assigned hunting farms were owned by the Military Hunters Union and various governmental agencies. The State Hunting Inspection was responsible for controlling hunting during the Soviet period.

Fishing in Georgia

Both natural and artificial inland freshwater bodies have been traditionally used for commercial fishing. These include major rivers (such as Mtkvari and Alazani), lakes (including Jandari, Paravani, Tabatskuri, Sagamo, and Nadarbazevi) and artificial water bodies built for irrigation or hydropower schemes (such as Zhinvali, Algheti, Tbilisi, Sioni, Tsalka, Tkibuli, and Lipi reservoirs).

Anthropogenic activities and inappropriate management practices have caused deterioration in the condition of many rivers and lakes. Populations of fish species including *Acipenser sturio* and *Salmo trutta* have been significantly reduced, and in many cases the stocks of economically important fish species are significantly below estimated carrying capacity. Recovery of fish

populations in such lakes as Jandari, Tabatskuri, Nadarbazevi, Faravani, and Tsalka, is unlikely to occur without active conservation invention.

However, over recent years there have been a number of positive changes relating to protection of fish stocks, initiated by the Ministry of Environment. Commercial fishing has been banned in the Mtkvari River in the Tbilisi area and in the Alazani River (along the proposed Vashlovani National Park). No commercial fishing of species such as trout (*Salmo fario)*, Barbel chanari (*Barbus capito)* the lake Paravani European mirror carp (*Cyprinos carpio)*is allowed.

Fish farms

Since Soviet times fish farms have been operating in many of the lakes listed above. The Ministry of Environment supervises these fish farming activities. There are also smaller fish farms and fish breeding centres, regulated by the Ministry of Agriculture. One of the departments of this ministry ("Saktevzi") is responsible for the overall supervision of fish farms and also deals with issues relating to fish processing.

Since 1991 fish breeding activities have declined significantly, and a number of fish farms have ceased to operate. In the past, fish farming and fish acclimatization activities were supported by two agencies -"*Saktevzmretsvi*' and "*Sakshavzgvamsheni*'- the latter funded by the Soviet central budget. However, after the collapse of the Soviet Union, this agency was renamed as *the Department of Black Sea Fisheries and Fish Stock Protection and Regeneration* (under the Ministry of Internal Affairs). Subsequently this department was transformed into the Department of Ecopolice, which is currently responsible controlling the use of all forms of natural resources - including hunting.

During the Soviet period each fish farm was protected by qualified guards who had a good knowledge of the status of fish stocks in the specific lake or reservoir. Despite the involvement of a number of government agencies, current mechanisms for fish stock protection and control of illegal fishing are proving less effective, and poaching levels have increased over the recent years. Poachers use illegal methods of fishing such as chemicals, electrofishing, and explosives. Anadromous fish species (e.g. sturgeons) are severely affected by fishing with 'forks', a method which is used in shallow waters of rivers and causes blockage of fish migration routes to the spawning grounds. The overall effect of illegal fishing has not been assessed, and long term monitoring studies are required to estimate the annual loss of fish resources. Currently the economic cost of each particular case of poaching is calculated according to market prices approved by the Ministry of Economics.

Legal situation

The Law on Wild Fauna defines hunting and fishing as "a form of special use of wild fauna components that is subject to licensing". Two types of licences are issued for hunting and fishing - general and personal. According to the law, both sport and commercial fishing, but only sport hunting, are allowed in Georgia. Sport fishing does not require a licence. Within the Ministry of Environment the Interagency Experts Council has been established to review and set quotas for each game species, and to develop recommendations on appropriate fees for licences. This council includes representatives from a wide range of governmental agencies, research institutions and the non-governmental sector.

With the exception of migratory birds, hunting only permitted on specially designated areas called hunting farms or hunting reserves. Hunting reserves may be owned by a legal entity

(e.g. a registered company or organisation, either governmental or non-governmental) or by a private individual. General licences for hunting reserves are awarded by the Ministry of Environment through a competition for each potential site. Prior to announcing the competition two conditions must be met: (i) there must be preliminary official approval from the land owner (National Forest Fund, National Water Fund or National Land Fund) for the establishment of a hunting reserve and (ii) an official report must be prepared by the Ministry of Environment. This report must be based upon results of preliminary ecological, biological and economical surveys, including baseline zoological studies and animal censuses, and must define hunting quotas. However due to current financial constraints, the state budget is unable to fund the preparation of such reports, and under the law private money may not be used to fund these studies. Consequentially the creation of hunting farms proves very complicated in practice.

Furthermore, the scheme process of licensing for hunting of migratory birds is also very complicated and bureaucratic. Thus, despite their low price, many hunters do not buy licences. Furthermore, the current legal arrangements for hunting do not satisfactorily address falconry – and activity that remains very popular, especially in western Georgia. The law generally fails to address the role of hunting as a part of community or cultural traditions. Although 'special hunting regimes' for certain areas are mentioned as a means to increase the access of local people to wild natural resources, these regimes are not clearly defined. In general the Law on Wild Fauna - the main legal instrument for the regulation of limited enforcement mechanisms.

Summary of specific problems relating to hunting and fishing

4.1	Gaps exist in current legislation relating to hunting and fishing
4.2	The Law on Wild Fauna is not adequately enforced, due to lack of regulations and enforcement mechanisms
4.3	Control mechanisms for poaching are ineffective
4.4.	Experience in the creation and management of private hunting reserves is limited
4.5	The current licensing scheme does not distinguish between trophy and non-trophy hunting, leading to bias in individuals killed within the populations
4.6	The capture of birds of prey for falconry purposes is not regulated
4.7	There is no training facility for the appropriate governmental officers or private hunting farm personnel
4.8	The awareness of hunting regulations (quotas, season, etc.) is extremely low among Georgian hunters
4.9	There is much uncertainty about the maintenance of traditional hunting
4.10	The recovery of certain economically important fish species will require specific restoration efforts
4.11	Specific mechanisms for fish stock restoration and protection have not been put in place

3.5 Biodiversity monitoring

Academic and research institutions began to gather information on Georgia's biodiversity in the 1930's. A special publication "*Bunebis matiane*' (Chronicles of Nature) was complied annually describing the status of biodiversity on protected areas, special data sheets (*2ТП охота; форма 1 заповедник*) were filled out regularly and forest resources (timber resources and species composition) were also regularly assessed. However much of this data was collected in an

unsystematic manner and the different single-purpose surveys were not coordinated, resulting in a lack of integrated biodiversity monitoring information. Furthermore, different institutions used different methods for data collection and analysis.

In the 1990s, various governmental and non-governmental agencies also began to gather information on elements of biodiversity. The Georgian Biodiversity Country Study (published in 1996) was the first step towards a national biodiversity inventory, involving the compilation of all existing information on the major taxonomic groups of the country's fauna and flora. However, within the Georgian Biodiversity Country Study Report there are noticeable information gaps and discrepancies in the amount of information (and its accuracy) available for different groups of organisms.

Over the last decade Georgia's biodiversity has been severely affected, as a result of deteriorating social and economic conditions. Underdeveloped institutional infrastructures and limited enforcement of legislation have contributed to major changes in the status of many species and habitats. Furthermore, modern and effective mechanisms for data collection, storage and analysis are lacking in order to record these changes effectively. As a result it has proved extremely difficult to assess the real status of biodiversity and to estimate current trends. All this means that credible evidence on which to base decision making for conservation is limited.

Legal basis for monitoring

The framework of the Law on Environmental Protection (1996) provides general provisions relating to biodiversity monitoring. Chapter VII of this law defines the Environmental Information System as a combination of (a) information collection (Article 26) and (b) monitoring systems (defined as data collection, storage and analyses) (Article 27). A Law on Environmental Monitoring is yet to be developed, but this would be the instrument to define the details of monitoring.

Both the Forest Code and the Law on Wild Fauna provide a legal basis for biodiversity protection and include general provisions on biodiversity data collection, storage and analysis. According to these laws the responsibility for biodiversity monitoring is distributed among the following agencies:

1 *The Ministry of the Environment* has a role in coordinating environmental monitoring, including biodiversity monitoring (Law on Environmental Protection, Article 27; Law on Protected Areas System, Article 18). This agency is also responsible for maintaining the registry of wild fauna (Law on Wild Fauna Protection, Article 59).

2 *The State Department of Protected Areas* conducts biodiversity monitoring within protected areas and maintains the Cadastre of Protected Areas (Law on Protected Areas System, Article 17).

3 *The Forestry Department* conducts monitoring of forests and maintains the Forest Cadastre (Forest Code, Articles 24 and 25), including the economical assessment of forest resources.

In addition, current legislation obliges all users of biodiversity to conduct systematic monitoring and assessment of the resource(s) they exploit. All the data they collect must be

submitted to one of the above agencies. According to the Georgian Forest Code, legal entities and individuals may conduct forest and wildlife monitoring within protected areas, hunting farms and in forests owned by the National Forest Fund. Funding for such monitoring may be provided either by the Government or private sector.

Although legislation defines the roles and responsibilities for biodiversity monitoring, these duties are often too general, the relative roles of different agencies are not clearly defined and the responsibilities of the above agencies to each other have not been stated. For example, the Ministry of Environment is required to coordinate environmental monitoring, and other agencies are required to conduct monitoring work 'within their competence', but these competences have not clearly been defined. The legislation also lacks any guidance on monitoring procedures and methodologies. The development of new legislation - such as a Law on Environmental Monitoring - is an urgent need. Legal definitions are required for a unified system of monitoring and for the exact responsibilities of all the agencies involved.

In summary, the current status of biodiversity monitoring in Georgia (to some extant derived from the Soviet systems) can be characterised as follows: (i) biodiversity data is collected and stored by various agencies among which there is little or no systematic information exchange, and thus there is no unified monitoring system; (ii) responsible agencies have limited knowledge of modern monitoring techniques (such as GIS), and lack of an integrated system means that different agencies use different methods of data collection, analysis and thus there are discrepancies in the interpretation of results; and no easily accessible or shared electronic database on the status of biodiversity has yet been established.

Summary of specific problems relating to biodiversity monitoring

5.1 Current legislation on biodiversity monitoring is inadequate and general;
5.2 Responsibilities are not clearly defined among the responsible agencies;
5.3 There are no agreed and integrated methods of biodiversity monitoring;
5.4 The lack of unified census techniques means that much biodiversity data is collected in an unsystematic and irregular manner;
5.5 Information exchange between responsible agencies is poor;
5.6 An easily accessible electronic data base does not yet exist;
5.7 There is limited understanding of modern monitoring techniques within the country.

3.6 Biotechnology and biosafety

As mentioned above, Georgia is considered as an important area for cultivated plant diversity. Due to the high risk of genetic contamination of native cultivars and their wild relatives, testing and use of genetically modified (GM) plants or seed materials may pose serious threats to Georgian agrobiodiversity.

There has already been a controversial case of the use of a GM organism in Georgia. In 1996, a "Monsanto potato" was imported into Georgia, which included two introduced genes (one from *Bacillus thuryngiesis* and one a marker-gene of *Canamicine*). The potato was imported and grown in Georgia without quarantine or the legally specified three-year probation period. The variety turned out to be completely ill-adapted to the local conditions, and was highly susceptible to fungal diseases, unattractive in appearance, and proved less productive that native varieties. A state permit for commercial production was rejected for this potato. The case received much international attention and the project was eventually blocked.
However, during the two years it was grown it had apparently became quite widespread.

For some time since this case, no similar experiments have been initiated. However, in the light of current limitations in law enforcement and lack of customs control, it is difficult to assess whether GM varieties or products are being imported, or whether any unauthorised research programmes relating to genetic engineering exist in the country. No official or unofficial information on this is available at present. The existing gaps in legislation and enforcement in Georgia may lead to risks of: (i) uncontrolled and unauthorised importation and distribution of GM varieties and seed materials, or of GM products; (ii) foreign companies having the right to fund research and experiments in GM technology which are prohibited by law elsewhere.

Summary of specific problems relating to biotechnology and biosafety

6.1 Current legislation fails to regulate the use of biotechnology
6.2 Current legislation fails to control the national, or international movement of GMOs
6.3 There is little information on the short or long term impacts (ecological, social or economical) of GMOs
6.4 There is little information concerning alternative options to the use of GMOs in Georgia
6.5 There is little capacity to assess the risks of biotechnology use
6.6 There is poor understanding of how to prevent the accidental release of GMOs in to the environment, and low capacity of how to respond in this situation
6.7 There is little information concerning the current situation relating to the use and transport of GMOs in Georgia, and low awareness of safe use of GMOs
6.8 Current legislation fails to provide for the public right to monitor the GMOs
6.9 There is low capacity of the authorities regulating this field, and of the experts involved in the use and distribution of GMOs

3.7 Environmental education, public awareness and public participation

During the Soviet period, environmental awareness and the idea of public information on the status of the environment were virtually unheard of. Decisions were based on centralised Soviet legislation and state standards, and the specific needs of region, local conditions and community attitudes were not taken into account. Only those issues that were considered priorities for all the USSR were publicised. Although environmental education was included to some extent in the curricula of natural sciences, this was insufficient for schoolchildren to develop any real appreciation of environmental and conservation values.

In 1977 UNEP and UNESCO organised the first international conference on environmental education in Tbilisi, Georgia. A number of important topics were discussed at the meeting, including:

1 Modern society and environmental problems (including conservation issues);
2 The role of education in solving environmental problems;
3 Past experience in environmental education;
4 Development of national strategies for environmental education.

The conference adopted a declaration (referred to as the Tbilisi Declaration) which called for the implementation of principles of environmental education at local, national and global levels. Unfortunately this conference and its declaration had little impact on Soviet policy development.

Access to information and decision-making

Since Georgia regained its independence in 1990, the Georgian Parliament has adopted a number of important acts on environmental protection. This new legislation provides a legal basis for public participation in decision-making processes, and improves the public rights to receive timely and accurate environmental information. The new Administrative Code (1999) clearly defines "freedom of information" (Section III) and obliges governmental agencies to provide all relevant information to the public. It also defines the right of all Georgian citizens to request and receive this information. In addition, Georgia ratified the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus, 1998) on February 10, 2000.

The following laws ensure public participation in environmental decision-making processes:

1 *Law on the Protected Areas System:* Article 22 of this law provides the right for public participation in:
   - Decisions concerning the establishment, development, reduction or abolishment of protected areas;
   - Reviews of management plans and other relevant documents;
   - Management of buffer zones;
   - Activities of consultation councils;
   - Supervision of non-budgetary funds, etc.

2 *The Law on Environmental Permits*: Section III (Articles 15,16,17) entitles individuals and representatives of public unions to:
   - Participate in public hearings of EIA documents;

- Present their comments and suggestions on Category I development projects;
- Conduct independent assessments of Category I development projects (and results of public assessments must be considered in the process of issuing any environmental permit).
- Request full information on Category I and II development projects during the planning and EIA stages, except special cases defined by legislation;

3 *The Law on State Ecological Expertise:* this law is based on The Law on Environmental Permits and ensures public participation in formal procedures of decision-making.

4 *The Forest Code of Georgia*: according to Section X of this law, representatives of the public and public organisations have the right to:
- Participate in forest management planning;
- Propose their comments and suggestions concerning forest management;
- Obtain timely and accurate information on the status of the forests.

Environmental education

The role of environmental education is defined in the framework law on the environment (Law on Environmental Protection, 1996). This law calls for the creation of a unified environmental education system that includes a network of academic institutions and training facilities. It also ensures continued environmental education at pre-school, school and higher education levels (Section III, Articles 8 and 9).

The program of public ecological education emphasises the role of informal education through training centres, youth societies, eco-camps, national parks and other means. To this end NGO's are expected to play an important role, however few such organisations exist in rural areas.

Attitudes towards legal protection

Current national and international legislation provides a good basis for the protection of the country's environment, however both governmental agencies and the public often show indifference to ongoing violation of environmental laws, particularly given other priorities in the current economic climate. This attitude towards the environment (and associated poor enforcement of the legislation) has resulted in real damage to species and landscapes. Very often inappropriate or excess use of natural resources and damage to the environment are linked to: (i) low environmental awareness, (ii) poor knowledge of legislation and (iii) lack of coordination between governmental, public and private sectors. In addition, lack of enforcement is also an important contributory factor.

Biodiversity and the media

The role of the media in environmental education is currently extremely limited. Neither state nor private universities have courses in environmental journalism, and in general journalists show little interest in environmental issues and less in biodiversity. The low priority given to ecological news reflects public lack of interest and its non-commercial nature, and as a result ecological stories appear only occasionally in the media. TV documentaries are only produced with direct funding, however the governmental agencies dealing with biodiversity conservation (such as the Ministry of the Environment, the Department of Protected Areas, and the Forestry Department) have insufficient funds to pay for expensive TV and radio programs.

Environmental Advertising

Public advertisements are recognised as an important means to deliver key environmental messages to the general public. However such methods have not been widely used in Georgia to date, as a result of lack of finance and limited time available for public service advertising. Governmental institutions are generally unable to afford advertising campaigns (exceptions include advertisements and educational videos funded by particular international programmes). State-funded broadcasting companies (but not private ones) are obliged to allocate 5% of their advertising time to social advertisements without charge (Law on Advertisement; Article 12). Social advertisement covers issues such as healthcare and protection of citizen's lives and property, as well as the environment. There is fierce competition between issues to be covered by such advertisements, and the 5% maximum limit means that broadcasting companies can rarely provide environmental advertisements, as the allocation is rapidly filled.

Education in Environmental Law

Environmental law is another field of study that is also virtually neglected within the existing higher education system, and none of the Georgian law faculties run courses or modules on this topic, no formal curricula exist, and there is lack of information relating to environmental law. However, the Department of Civil Law does offer courses in environmental law, largely based on the initiative of individual professors and course conveners. In the light of Georgia's recent ratification of the Aarhus convention, the demand for specialists in environmental law is expected to increase.

Summary of specific problems relating to environmental education, public awareness and public participation

7.1 Public awareness of environmental issues is low, and precise levels of knowledge have not been formally assessed;
7.2 Knowledge of public rights provided by national and international legislation results in low public participation in decision-making;
7.3 Informal environmental education is unsystematic and fragmented;
7.4 The media shows little interest in the environment and lacks specialist knowledge in this field;
7.5 There are few environmental NGO's in rural areas;
7.6 There is a lack of widespread expertise in environmental law;
7.7 Knowledge of biodiversity issues among local communities is poor;
7.8 Governmental, business and public organisations have failed to recognise common interests relating to biodiversity, resulting in a lack of cooperation among those sectors.
7.9 An integrated biodiversity information base does not exist, to provide improved access to information;
7.10 The 5% limit on free social advertisement at state broadcasting companies is insufficient.

3.8 Financial and Economic Programmes

Prior to 1990, environmental economics fell within the scope of the one-year and five-year plans drawn up by the State Planning Committee of Georgia. Between 1976 and 1980 Georgia spent a total of 250.1 million roubles (1976 to 1980) of government funds on activities designed to protect the environment and to ensure management and rational use of natural resources. In the years 1981 to 1984 the equivalent expenditure was 194.1 million roubles. Thus, environmental protection was financed from the central budget taking into account such parameters as:

1 The area of protected territories;
2 The approximate number of protected species;
3 The approximate number of personnel;
4 Personnel professional education and qualifications.

This system was grounded in, and regulated by, the state legislation and regulations that interpreted the law, and the public demonstrated little real interest in the protection of environment. Due to gaps in the legislation (such as restrictions and regulations on industrial activities) significant environmental pollution was produced by industry, without any limits such as emission or pollution charges.

Current legislative basis for finance

Despite the many problems confronting the country in the period of its transition to a market economy, the Government of Georgia has strived to introduce environmental policies. The 1996-2000 Indicative Plan for the Socio-Economic Development of Georgia laid down the foundations of environmental policy, and this were later reflected in the Law on Environmental Protection. The basic principles of the law include:

1 The principle of risk reduction;
2 The principle of sustainability;
3 The principle of priority identification;
4 The need for user fees;
5 The principle of "polluter pays";
6 The principle of waste minimisation;
7 The need for public participation in the decision-making.

However, the Law on Environmental Protection lacks any firm financial basis, and makes provisions for economic mechanisms that do not yet exist in Georgia, such as: mandatory environmental insurance for projects involving particularly hazardous activities; application of economic incentives for environmentally friendly activities;and eco-labelling. So far there has been no enforcement of the provisions contained in Article 17 of the law - namely, the requirement for mandatory environmental insurance for projects involving hazardous activities. The income from these insurance contributions is earmarked for the costs associated with the prevention of, or clear up after, environmental accidents and/or disasters. Given the local situation in Georgia, and experiences related to insurance in recent years, it is considered necessary to establish a state company for compulsory environmental insurance that will implement measures designed to mitigate and prevent environmental damage.

Furthermore, at present few efforts have been made to assess the economic value of biological diversity in Georgia, and to express its usefulness in financial terms, which will be necessary to underlie appropriate pricing for environmental services and damage.

Summary of specific problems relating to financial and economic programmes

8.1 Financial mechanisms exist to manage environmental issues in Georgia; however these mechanisms have not been implemented to date;
8.2 There is a lack of experience of environmental management
8.3 Georgian enterprises do not address environmental issues
8.4 Georgia fails to apply international environmental standards, and few enterprises work to ISO 14000 standard (environmental management certificate) or to ISO 14001 standard (Environmental management systems, requirements and oversight);
8.5 The economic value of biological diversity, the costs for biodiversity compensation and relevant rates for user groups have not been calculated and established;
8.6 The lack of an integrated information network on biodiversity conservation makes souring relevant information expensive;
8.7 The real values of biodiversity (and possible costs of damage to the resource base) are not taken into account in determining taxes on natural resource use, resulting in unsustainable use of natural resources and under-valuation;
8.8 The current pollution charging system does not consider costs associated with damage to biodiversity;
8.9 The penalties established under the law "On Changes and Amendments to the Code if Administrative Offences, Criminal Code and Code of Criminal Procedures of Georgia" are too low to provide a real deterrent (particularly for category 1 and 2 offences) and do not reflect the current economic realties and real costs of damage.

3.9 Legislation and institutional development

Legal issues relating to biodiversity conservation are mentioned in all sections of this document. However due to the significance of this issue, it was considered necessary to provide a separate section on the legal and institutional problems related to biodiversity.

Historical context for legislation

There is a long history of responsible attitudes towards the environment in Georgia, including traditional attitudes towards, and management of, forests and wildlife as well environmental legislation. The need to protect forests and nature was first recorded in legal documents dating to the 12th century. More modern approaches to nature protection have been applied in Georgia since the beginning of the twentieth century, when the first Georgian nature reserves were officially established. The development of protected areas continued during the Soviet period, and by the end of the 20th century Georgia had established 14 state reserves and five hunting reserves.

In Soviet Georgia (GSSR) the legislation included a number of laws and regulations on nature protection and the rational use of natural resources. Examples include:

1 The GSSR Law on Natural Protection (1958);
2 The Resolution of the Georgian Council of Ministers on the Improvement of Nature Protection and Use of Natural Resources (1972);
3 The USSR Law on the Basics of Forestry (1977);
4 The USSR Law on the Protection and use of Wild Fauna (1977);
5 The Georgian Red Data Book (1982).

Within the Soviet Union no private sector existed, and all resources were state property, to be exploited exclusively by the state. However in many ways there was free access to natural resources, and some forms natural resource use (such as sport hunting and fishing) were free. In general, it is considered that the Soviet system did not support principles of rational use and sustainable development, but rather employed strict (and effective) measures of nature protection, while allowing (and in some cases encouraging) ecologically harmful activities, such as the introduction of alien species and artificial control of wildlife populations, without due consideration of the long-term consequences.

Recent changes in legal frameworks

Over the past decade, Soviet legislation has gradually been replaced by new laws that are largely based on European legislation and the principles of the Rio Declaration and Agenda 21. During the period 1995 to 1999, the Parliament of Georgia adopted 22 acts relating to environmental protection and use of natural resources. Subsequently many changes in management systems have been adopted in response to the new legislation. For example, Georgia's new environmental legislation has introduced the principle that users must pay to exploit natural resources, and consequently licence and permit schemes have been established for many forms of natural resource use.

Georgia's accession to a number of key international conventions and treaties (including the Convention on Biological Diversity, the Ramsar Convention, CITES and the Bonn Convention and associated agreements such as AEWA, ACCOBAMS and Eurobats), commits the country to international responsibilities for the conservation of biological and natural resources. According to the Georgian Constitution obligations under international treaties and memoranda are given priority over national legislation, provided they do not contradict with the constitution. In turn, the Georgian Constitution provides the basis for environmental legislation. Article 37 (paragraphs 3 and 4) of this document states that:

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

Based on these provisions the Environmental Protection Act was developed and adopted in 1996. This is a framework law that underlies a number of other laws in the field. However, it does not have the status of a supreme law, and where contradicted by the provision of more recently created laws, these will take precedence.

Protected Areas Legislation

In relation to biodiversity conservation the "Law on the Protected Areas System" is one of the most important acts adopted in recent years. This law provides the legal basis for the development of protected areas, based on internationally accepted standards. However, the legislation is limited in some ways as it fails to define clear codes of management, and gives only general principles – some of which prove contradictory. Most of the existing protected areas were established before 1991 by decisions of the Soviet Government of Georgia, and under Soviet legislation the establishment of a protected area involved not only the designation of the actual land area, but also creation of an administrative unit. The new law fails to distinguish between the protected area as a designated territory and the protected area as a

management unit – an issue that requires further clarification. In addition, the economic and financial elements of this law do not fully reflect existing budgetary regulations. Furthermore, provisions made in the protected areas law have not been adequately reflected in more recent legislation including the "Law on Land Use".

Biodiversity protection in border (transboundary) zones is not adequately regulated. Whilst general provisions on environmental protection are provided in the "Law on the State Border", these are rather general, and in some ways appear inconsistent with existing legislation on biodiversity. The situation in marine border zones is of particular concern, and further controls are needed for these areas.

Wildlife Legislation

The main legal instrument for the conservation and sustainable use of wildlife is the "Law on Wild Fauna" (1996). This law governs the relationship between the authorities and key users (both individuals and legal entities) relating to the use and protection of wild fauna, and declares all wildlife as state property. It protects wild animal species, their habitats, and their products, it provides for the sustainable use of Georgia's wild fauna and establishes a legal basis for both *ex situ* and *in situ* conservation of wild animal species. According to this law many aspects of wildlife conservation and sustainable use should be covered by regulations – and a total of 33 such regulations should be developed by the executing agency, under Article 69 of the law. While this approach gives some flexibility, the delays in establishing regulations (linked to current financial constraints and poor inter-agency relations) mean that some important issues are likely to remain unregulated. In addition, the "Law on Wild Fauna" also fails to encourage the involvement of private sector and the use of private funds for conservation activities.

Forest legislation

The new "Forest Code of Georgia" was adopted in 1999 and established "legal grounds for conducting tending, protection, restoration and use of the Georgian Forest Fund and its resources". With regard to biodiversity, the Forest Code aims to protect Georgia's forests, maintain the integrity of primary forests, and to preserve endemic, relic and otherwise important species of plants. Under the Code biodiversity conservation is fully based on the provisions of the Convention on Biological Diversity and national legislation (Article 46).

The code defines the State Forest Fund as "an integrity of state-owned forests and lands and resources attributed to it". Under the Forest Code, all forests are state property, although private ownership is also permitted. The process of forest privatisation must be regulated by another law (defined in Article 9.2), which has still to be developed.

Other laws protecting biodiversity outside protected areas

In addition to the above laws, the protection of biodiversity outside protected areas is addressed by the "Law on Environmental Permits" (1997) and the "Law on State Ecological Expertise" (1997). According to these laws, permits for any type of development project can only be issued after environmental impact assessments and state ecological expertise have been completed. If a project is expected to have an irreversible negative impact on biodiversity, then an environmental permit may not be issued. Where the impact is less serious and may be minimised by special mitigation measures, these activities appear in the permit as conditions to be met by the developer. Such conditions may include: habitat protection; species conservation activities; protection of migration corridors; minimisation of disturbance, for example by

altering the timing of activities; and habitat improvement and restoration. Implementation of mitigation measures outlined in environmental permits is monitored by the governmental agencies responsible.

Summary of specific problems relating to legislation and institutional development

9.1 There is not yet any legislation on plant protection;
9.2 The legal basis for agrobiodiversity and biosafety is poor;
9.3 There is no legislation on biodiversity monitoring
9.4 The legal basis for economic incentives for sustainable use of biodiversity is weak;
9.5 A number of regulations are yet to be developed, as specified in recently adopted laws related to environmental protection;
9.6 There are discrepancies between national legislation and international obligations under inter-governmental treaties and conventions;
9.7 Some Georgian laws have been developed on the basis of foreign legislation and have not been adequately adapted to the national situation.
9.8 There no permanent structure in place with the responsibility to assess the conservation status of species in Georgia

3.10 Sustainable forestry

Historically, Georgia's forests were owned by either Royalty, the Church, Private individuals or Communities. This arrangement ensured the sustainable use of forest. In 1921, following the establishment of Soviet Rule, all the forests became State property. The old systems of forest management were lost, and new Soviet practices were implemented. From this time, forests began to be unsustainably exploited. Much damage was done to the integrity of forest systems, particularly in the periods between the 20's and 30's, and the 50's and 60's. Since the 1960's, forest policies were improved and the rate of exploitation was reduced, because most forests were managed for recreation and soil protection. Timber was supplied from other sources in the former Soviet Union to fulfil the demand for timber within Georgia.

When Georgia regained it's independence in 1991, pressure on the forests significantly increased. This was due to the cessation of timber imports, the increased demand for fuel wood (as a result of economic declines) and the collapse of control of timber extraction and export. Consequentially, many of Georgia's forests have become degraded and fragmented.

The status of forests

Although Georgia is rich is forests, almost half of the forests have been degraded through excessive thinning. These forests no longer provide vital ecosystem functions such as soil protection and flood control, and can no longer regenerate naturally.

The process of licensing for timber extraction is complicated, and lacks transparency, and the current institutional arrangements are in-effective at controlling illegal logging. Furthermore there is a lack of public participation in forest management and decision making. Given this situation, there is little control over the use of forest resources, and rate of unsustainable exploitation is increasing. In order to apply an ecosystem approach to forest management close cooperation is required between the various agencies involved in decision making, and more up to-date scientific information.

There is currently a project being implemented by WorldBank ("Forest Development Project") that is addressing these issues, and will develop a strategy to ensure the future sustainable management of Georgia's forest sector.

Summary of specific problems relating to forestry

10.1 The current decline in forest area and quality is causing negative ecological and economic impacts

10.2 There is a lack of institutional structures, appropriate legalisation and financial resources to ensure the sustainable use of forest resources.

10.3 Current levels of illegal logging, and unsustainable forest exploitation is causing irreversible degradation of the forest ecosystem.

10.4 Low local cost of timber, in relation to international markets, results in the unsustainable exploitation of forests in Georgia

10.5 Lack of funding is preventing the sustainable development of the forestry sector

10.6 Current forestry practices do not take into consideration principles of biodiversity conservation

10.7 Forests are primarily assessed for their monetary value rather than their conservation status

10.8 The system of forest classification to manage exploitation, does not take into account dynamics of the ecosystem

Section 4.

Biodiversity Strategy

4. Biodiversity Strategy for Georgia

The Biodiversity Strategy provides a framework for further action planning by articulating what the planning team expects is that the plan aims to achieve in terms of the future status of biodiversity and conservation mechanisms.

> *"Only once you know where you want to get to (the strategy) is it possible to determine how to get there (the action plan)"*

Following the completion of the Georgian Biodiversity Country Study (supported by UNEP), the Georgian Government requested the Global Environment Facility (through the World Bank) to support the development of the National Biodiversity Strategy and Action Plan (NBSAP), as a key element of meeting the national obligations to the Convention on Biological Diversity (CBD). Work on the NBSAP was initiated in 1998. The process of NBSAP development was coordinated by the Ministry of Environment, and three national NGOs - The Noah's Arc Centre for the Recovery of Endangered Species (NACRES), the Georgian Protected Areas Programme (GPAP), and The Centre for Sustainable Use of Forest Resources - were contracted to prepare components of the NBSAP.

Development of the NBSAP involved a wide range of experts and stakeholders, including representatives from research institutions (including various research institutes of the Georgian Academy of Sciences), as well as governmental and non-governmental agencies. Stakeholders were brought together to discuss elements of the NBSAP and to identify priority future strategies and actions through a series of working groups, meetings and seminars. As a result of this process draft sections of the NBSAP were produced.

However, the development of the final NBSAP document was considerably delayed, and it was necessary to update the draft NBSAP to incorporate rapid changes in the socio-economical situation and the availability of new information. On behalf of the Government, the Ministry of Environment requested NACRES to undertake the completion and finalization of the draft document (which was achieved through an allocation of funds from the UNDP/GEF funded project, Conservation of Arid and Semi-arid Ecosystems of South Caucasus). In parallel, the Ministry also requested Fauna & Flora International, (a UK-based NGO) to assist with the edit of the English version of the document.

During the finalisation of the NBSAP document, both NACRES members and external consultants were involved in reviewing, reorganising and completing key sections of the draft NBSAP. The restructured document was circulated among Governmental ministries, non-governmental agencies and research institutes for review. Comments and suggestions from this review process were taken into account, wherever possible, during the preparation of the final document, which was then submitted to the Ministry of Environment for official approval.

4.1 Timescale of the Biodiversity Strategy

The biodiversity strategy has been designed with a ten-year time line, following the adoption of this document. The specific actions to be implemented for elaborated for the first five years of this period (in the following section), and it is proposed that the action plan would be review ed after five years to enable achievements to date, and changing conditions, to be taken into account.

4.2 Strategic Principles underpinning the planning process

The Biodiversity Strategy and Action Plan of Georgia has been developed taking into account the principles of The Pan-European Biological and Landscape Diversity Strategy, and an additional set of principles identified during the BSAP development process.

4.2.1 Principles of the Pan-European Biological and Landscape Diversity Strategy

PEBLDS include the following strategic principles:

1 ***The Principle of Careful Decision Making:*** decisions should be made on the basis of the best available information; economically and socially sound measures that act as incentives for the conservation of biological and landscape diversity should be adopted.

2 ***The Principle of Avoidance:*** environmental impact assessment should be introduced for projects that are likely to have significant adverse effects on biological and landscape diversity.

3 ***The Precautionary Principle*****:** action to avoid potentially adverse impact of activities on biological and landscape diversity should not be postponed if the causal link between those activities and the impact has not yet been fully confirmed.

4 ***The Principle of Translocation:*** activities that are exceptionally harmful to biological and landscape diversity and cannot be avoided should be relocated to areas where they will cause less impact.

5 ***The Principle of Ecological Compensation:*** if harmful effects of physical changes in areas with high biological and landscape diversity value cannot be avoided, they should be balanced by compensatory conservation measures.

6 ***The Principle of Ecological Integrity:*** the ecological processes responsible for the survival of species should be protected and the habitats on which their survival depends maintained.

7 ***The Principle of Restoration and Recreation:*** where possible biological and landscape diversity should be restored and/or recreated, this includes measures for the rehabilitation and reintroduction of threatened species.

8 ***The Principles of Best Available Technology and Best Environmental Practice:*** access to and transfer of technology are essential elements for conservation, and where possible

technologies that are relevant to the conservation and sustainable use of biological and landscape diversity should be made available to others.

9 ***The Polluter Pays Principle*****:** costs of measures to prevent, control and reduce damage to biological and landscape diversity shall be borne by the responsible party.

10 ***The Principles of Public*** *Participation* and ***Public Access to Information:*** public support for measures regarding biological and landscape diversity should be created by involving public and private landowners, the scientific community, and other individuals and civic groups.

4.2.2 Additional strategic principles for the Georgia BSAP

The following principles have been identified and applied during the planning process:

1 Every living organism is of unique value.

2 The Government of Georgia at all levels recognizes full responsibility for maintaining the country's biological wealth in the interests of present and future generations.

3 The Government aims to actively co-operate with conservation groups and local communities to achieve biodiversity objectives.

4 Every citizen of Georgia contributes to the preservation of biodiversity.

5 Utilization of living and non-living natural resources must be ecologically justified, carefully planned, cost-effective and transparent.

6 Development must be ecologically and economically sustainable.

7 *In-situ* conservation is the best way to preserve biodiversity.

8 *Ex-situ* conservation may be the only way to save those species that are critically endangered and are threatened by extinction.

9 Loss of biodiversity can only be avoided by synchronizing *in-situ* and *ex-situ* conservation measures.

10 Research and monitoring is essential for biodiversity conservation.

11 Preservation of agrobiodiversity is important and traditional agricultural practices can aid biodiversity conservation.

12 It is very important to control the use of GMOs to ensure the future preservation of Georgia's biodiversity

13 Georgia's biodiversity has a great value on a national level, as well as at regional and global levels

14 International co-operation is essential for biodiversity preservation.

4.3 A Strategic Vision for biodiversity conservation in Georgia

In order to guide strategic development of the action planning process, an agreed vision for the future was produced to describe the long-term goals and ambitions for the future status of biodiversity and its management in Georgia.

"In ten years time, it is envisaged that Georgia will be a country where biological diversity is sustained and rehabilitated within a political, social and economic context that favours the wise use of natural recourses and adequate benefit sharing through:

1. ***Comprehensive conservation legislation; ratified global, regional, bilateral and multilateral treaties; and well-developed law enforcement institutions.***

2. ***Harmonized resource ownership, management and consumption; established fair distribution of revenues; enhanced system of costs, tax and incentives; and mechanism for balancing demands and provisions of natural resources.***

3. ***An efficient protected areas network that safeguards biological diversity, that is managed by well-equipped and highly qualified staff and is supported by local communities, and the wider public.***

4. ***Stabilised ecological systems, natural habitats, species, endemic/native varieties and breeds, through the implementation of in-situ and ex-situ conservation activities.***

5. ***Sustainable forestry, employing legally, scientifically, environmentally, and economically sound practices that minimise the impact on the wildlife, preserve forest biodiversity and maintains the integrity of forest ecosystem.***

6. ***Raised public awareness, where the majority of society fully appreciates the value of the country's natural heritage and the importance of its preservation for future generations.***

7. ***Sustainable practices applied in agriculture, that minimise the impact on biodiversity, maintaining the wildlife of farmlands and the rich agrobiodiversity of the country, whilst contributing to the welfare of local communities."***

4.4 Strategic goals and objectives

Strategic goals		Specific objectives
A. To develop a protected areas system to ensure conservation and sustainable use of biological resources.		• *To establish an effective protected areas network* • *To improve the process of protected areas planning and management* • *To improve and/or develop financial mechanisms for protected areas* • *To set up a data base of Georgia's protected areas* • *To increase the level of political support and develop cross sectoral cooperation within the Government* • *To increase international and transboundary cooperation* • *To improve education and interpretation for visitors to protected area* • *To develop ecotourism potential within protected areas* • *To increase the involvement of local communities in the planning and management of protected areas*
B. To maintain and restore Georgia's habitats, species and genetic diversity through *in-situ, ex-situ* and *inter-situ* conservation measures, and through sustainable use of biological resources.		• *To assess the status of species and habitats* • *To ensure the conservation of the most threatened species and reintroduce extinct species as appropriate and feasible* • *To ensure conservation and sustainable use of biodiversity hot spots located outside protected areas* • *To promote ex-situ and inter-situ conservation*
C. To conserve Georgian agrobiodiversity through ensuring its sustainable use and by promoting of *ex-situ* and *in-situ* conservation measures.		• *To improve capacity for the recovery and preservation of, and research into, agrobiodiversity* • *To create an agrobiodiversity inventory and a red list of Georgian domestic plants and animals* • *To conduct research and conservation relating to the wild relatives of native domestic species and varieties* • *To promote agrobiodiversity, its products and associated traditions, as well as national and international knowledge of the use of agrobiodiversity* • *To evaluate Georgian agrobiodiversity as part of the national cultural heritage.*

D. To promote sustainable <u>hunting and fishing</u> through adequate planning, restoration and protection of key biological resources		• *To ensure the maintenance of genetic diversity of game species* • *To maintain the populations of each game species at an optimal levels* • *To develop effective tools for protection of wild animals and control of poaching.*
E. To develop a <u>biodiversity monitoring</u> system and an active and integrated biodiversity database to ensure sustainable use and conservation of biological resources.		• *To enhance the legal base for biodiversity monitoring* • *To strengthen the role of the Environmental Ministry in the field of biodiversity monitoring* • *To create a regularly up-dated biodiversity data base* • *To provide systematic reports to the general public about the status of biodiversity* • *To designate an independent entity responsible for biodiversity data analysis and for the development of recommendations from monitoring.*
F. To protect both the human population and biodiversity from potential threats from genetically modified organisms (<u>biotechnology</u>), through the strengthening the law and through increasing public involvement in decision making.		• *To a create a sufficiently strong legal enough legal basis to address biosafety issues in the country* • *To develop effective official and public control mechanisms* • *To ensure the transparency of any initiatives involving GM organisms or products*
G. To raise <u>public awareness</u> of biodiversity issues and to encourage <u>public participation</u> in the decision making process.		• *To include biodiversity and sustainable use principles into school curricula* • *To increase the circulation of biodiversity information in rural areas* • *To improve the use of international experience in environmental education* • *To increase the role of the media in ecological education and strengthen conservation information dissemination* • *To encourage the development of local NGOs focusing on conservation and environmental education*

H. To ensure appropriate financial and economic programmes are in place in order to support effective conservation of biodiversity, and to ensure the delivery of the BSAP.		• *To formulate an indicative economic plan for biodiversity conservation, based on international experience, and ensuring regional and local application* • *To bring the budget law and tax law in line with environmental legislation of Georgia, to ensure economic mechanisms such as environmental insurance and eco-labelling are introduced, and that environmentally friendly technologies are promoted.* • *To create additional financial mechanisms to promote biodiversity conservation (taking into account the risk factors facing protected areas, the need for insurance mechanisms to indemnify financial risks, and the opportunity for cross-sectoral debate between state crediting institutions and ministries.* • *To take into consideration the main aspects of biodiversity conservation when formulating economic policies. To assess and value biodiversity in protected areas using new methods and techniques.* • *To create sustainable economic mechanisms for the conservation of biodiversity.* • *To provide economic incentives for low-waste production methods and for waste treatment.*
J. To further improve national <u>legislation</u> (and associated <u>institutions</u>) relating to biodiversity conservation, through the creation of new, and elaboration of existing laws and regulations, and through ensuring harmonisation to international legal responsibilities		• *To adopt new laws and regulations* • *To harmonise national legislation with international law* • *To improve the effectiveness of institutional systems through further elaboration of legal mechanisms (including normative acts on institutional issues)*

K. To conserve forest biodiversity through sustainable forest management		• *To develop sustainable forest policies and management strategy, based on an ecosystem approach* • *To introduce forestry regulations and methodology that take into consideration biodiversity issues and the principles of sustainable use* • *To develop indicators for sustainable forestry management that take into consideration the local biodiversity conditions* • *To establish a forest certification system for the sale of timber from sustainably managed sources* • *To simplify and improve the organisation of the timber licensing system, in order to increase the financial income from forests and to attract increased financial investments* • *To establish a moratorium of timber extraction from old growth forests, and those of high conservation value* • *To restore degraded forests, and re-establish forest on previously forested land* • *To establish managed plantations using native species*

Section 5 Biodiversity Action Plan

5. Biodiversity Action Plan for Georgia

The Biodiversity Strategy outlined the ambitions and goals for the future of biodiversity in Georgia, and the action plan sets out a set of actions and activities by which to achieve these goals and objectives.

The Action Plan is organised into a series of sections, which relate directly to the strategic components and associated strategic goals. The actions (or activity) to be completed have been tabulated, along with other information relating to their implementation. The action plan tables include the following details:

1 **Activity number –** each activity has a unique code to allow it to be cross-referenced within the plan.

2 **Activity name –** a brief description of each activity.

3 **Problem number –** each activity is cross-referenced with at least of one of the specific problems affecting biodiversity in relation to each strategic component (listed in section 3) so that it is possible to identify what issues each activity intends to address

4 **Year –** the recommended year(s) of implementation is given (from year 1 to 5 of the action plan implementation period).

5 **Budget code –**an estimated budget range has been assigned to each activity, defined as:
   6 Low < 50,000 USD
   7 Medium 50,000 – 500,000 USD
   8 High > 500,000 USD

6 **CBD article –** the articles of the Convention on Biological Diversity relevant to each activity are listed

7 **Related activity –** where there are other similar or inter-related activities listed elsewhere in the plan, their code number is included in this column.

8 **Indicator –** the indicators (or outputs) for each activity provide a means to monitor and evaluate its implementation.

5.1 Action plan for protected areas

Strategic Goal A: To develop a protected areas system to ensure conservation and sustainable use of biological resources.						
#	**Activity**	**Problem number**	**Year**	**Budget code**	**CBD article**	**Indicator**
A1	Prepare a project to develop Georgia's protected area system	1.1; 1.2; 1.3	2005-2006	L	8	Systems plan improved by the Government
A2	Establish protected areas in the central Caucasus;	1.1; 1.3	2005-2010	M	8	Protected areas set up in the central Caucasus; Management plans for the protected areas developed and officially approved.
A3	Establish protected areas on the Javakheti Plateau	1.2; 1.3	2005-2006	L	8	Protected areas set up on the Javakheti plateau; Management plans for the protected areas developed and officially approved.
A4	Designate new Ramsar sites in Javakheti Plateau (lakes Khanchali, Madatapa, Bugdasheni)	1.3; 1.4; 1.6	2005	L	8	Javakheti wetlands included in the List of Wetlands of International Importance
A5	Reorganise existing reserves (including expansion and up-grading into national parks, as appropriate) to improve their effectiveness	1.1; 13; 1.5; 1.7	2005-2010	H	8	At least 3 reserves reorganised
A6	Improve the effectiveness and management of existing protected areas	1.1; 1. 7	2005-2010	H	8	Results of evaluation by governmental and public organisations
A7	Identify potential Ramsar sites, and prepare necessary designation proposals	1.4; 1.6.	2009-2010	L	8	At least one Ramsar site proposal submitted for designation

A8	Develop a list of potential Natural Monument Sites. Draft and adopt laws in support of these sites. Develop management plans for these sites	1.1; 1.3	2005-2010	H	8	List of potential sites developed. Relevant laws adopted, and management plans approved
A9	Designate biosphere reserves	1.3; 1.7;		L	8	Official designation of biosphere reserves in Georgia
A10	Compile a list of potential world heritage sites and prepare documentation for their submission to UNESCO	1.1; 1.3	2005-2008	L	8	Relevant documents submitted to UNESCO
A11	Identify potential transboundary protected areas and initiate their establishment	1.1; 1.2; 1.3; 1.6	2005-2010	M	5; 8; 17; 18	Official agreement with neighbouring countries on the establishment of transboundary protected area
A12	Set up biodiversity monitoring schemes in protected areas	1.8	2005-2008	H	12; 7	Biodiversity monitoring schemes established in protected areas, and integrated into the national biodiversity monitoring system.
A13	Set up protected areas information centre and a database at the Department of Protected Areas	1.1; 1.2; 1.5	2005-2008	L	17	Widely available data base of protected areas; Various publications on protected areas produced
A14	Prepare an action plan for the protection of large mammal migration corridors and birds flyways	1.1; 1.2; 1.3	2005-2010	H	7	Identified migration corridors designated as protected areas of appropriate category
A15	Implement pilot projects in buffer (support) zones of protected areas	1.10; 1.11	2005-2008	M	13	At least one pilot project implemented at each national park
A16	Develop compensation schemes for local people living in or at protected areas	1.10; 1.11; 1.12	2005-2006	H	8	Relevant legal instrument developed to provide compensation
A17	Improve funding of protected areas by ensuring any funds generated from fines and damage reimbursement are allocated to the protected area budget	1.5; 1.11; 1.12	2005-2006	L	8	Improved (i) financial situation and (ii) infrastructure of protected areas

A18	Ensure that the income from visitors is allocated to the protected area budget	1.8; 1.9	2005-2006	L	20	Improved (i) financial situation and (ii) infrastructure of protected areas
A19	Carry out an inventory of known paleontological sites (Dmanisi, Taribana, Dzegvtahevi, Udabno, Ialguja, etc).	1.1; 1.3	2005-2008	L	8	Published database of Georgia's paleontological sites
A20	Develop management plans for paleonological sites that are expected to remain outside protected areas	1.1; 1.3	2006-2007	L	8	Officially approved management plan(s)

5.2 Action plan for species and habitats

Strategic Goal B: To maintain and restore Georgia's habitats, species and genetic diversity through *in-situ, ex-situ* and *inter-situ* conservation measures, and through sustainable use of biological resources.						
#	**Activity**	**Problem number**	**Year**	**Budget code**	**CBD article**	**Indicators**
B1	Conduct an inventory of plant and animal species and assess their status using IUCN categories of threat	2.1	2005-2010	H	7	Conservation status is assigned to at least 75% of estimated threatened species; A database of threatened species available on the internet
B2	Create a new red list of threatened species and publish a new red data book	2.2	2005-2008	M	7	Law on red list of threatened species adopted; New Georgian red data book produced
B3	Identify threatened plant communities (rare, relic, primary and near primary, globally important, and sensitive communities)	2.5; 2.6; 2.7; 2. 8	2005-2009	M	8	At least 80% of known threatened plant communities assessed and documented
B4	Implement conservation programmes for endangered, rare, endemic and relic species	2.3	2005-2006	M	8	Conservation programs initiated for at least 20% of key species
B5	Develop a national recovery programme for goitered gazelles and start its implementation	2.3	2005-2010	M	8	National goitered gazelle recovery programme approved by the government, and implementation started
B6	Develop a Striped Hyena Conservation Action Plan and initiate its implementation	2.3	2005-2010	M	8	Striped Hyena CAP published and approved by the government, and activities started.
B7	Prepare a Cervidae Conservation Action	2.3	2005-	M	8	Cervidae CAP published and

	Plan and initiate its implementation		2010			approved by the government, and activities started
B8	Prepare a Caprinae Conservation Action Plan and initiate its implementation	2.3	2005-2010	M	8	Caprinae CAP published and approved by the government, and activities started
B9	Prepare a *Leopard Conservation Action Plan* and initiate its implementation.	2.3	2005-2010	M	8	The Leopard CAP published and approved by the government, and activities started
B10	Prepare a *Conservation Action Plan for Raptors* and initiate its implementation.	2.3	2005-2010	M	8	The Raptors CAP published and approved by the government, and activities started
B11	Prepare an *Conservation Action Plan for Waterbirds* and initiate its implementation.	2.3	2005-2010	M	8	The Waterbirds CAP published and approved by the government, and activities started
B12	Conduct a bat inventory and create a *Bat Conservation Action Plan*	2.3	2005-2010	M	8	Inventory completed for at least 75% of bat species thought to be present; The Bat CAP published and approved by the government, and activities started.
B13	Prepare a *Marine Mammal Conservation Action Plan* and initiate its implementation.	2.3	2005-2010	M	8	The Marine Mammals CAP published and approved by the government, and activities started
B14	Prepare a *Wolf Conservation Action Plan* and initiate its implementation.	2.3	2005-2010	M	8	The Wolf CAP published and approved by the government, and activities started
B15	To develop conservation action plans for other key species (not mentioned above)	2.3	2005-2010	M	8	CAP's for various key species published and approved by the government, and activities started
B16	Establish bird ringing centres	2.1; 2.3	2005-2008	M	8	At least 2 bird ringing centres set up and integrated in international bird ringing schemes

B17	Assess the impact of invasive species and develop management strategies for these species.	2.12	2005-2010	M	8	Major invasive species assessed, and management plans developed
B18	Identify biodiversity hot spots located outside protected areas and define tools for their conservation.	2.6; 2. 7	2005-2010	M	8	List of biodiversity hot spots published; Recommendations for conservation and sustainable use outlined for most important sites
B19	Complete identification of Important Bird Areas (IBAs) in Georgia (including transboundary IBAs) and define tools for their sustainable management	2.8; 2.9; 2.11	2005-2010	H	7,8,10,12	All Georgian IBAs approved and listed in international databases and publications. Management frameworks defined for most sites (including assigning protection status as appropriate) and activities started.
B20	Conduct a nationwide inventory of wetland ecosystems	2.6	2005-2010	H	8	Published database and ecosystem maps
B21	Develop a National Strategy for Wetlands	2.6; 2.7.	2005-2006	L	8	National Wetland Strategy
B22	Implement the existing Javakheti Wetlands Conservation Management Plan	2.6	2005-2010	H	8	Officially approved agreement between the neighbouring countries (Armenia, Georgia, Turkey) on a large-scale transboundary project achieved; Funds secured for the project; Implementation started.
B23	Prepare a national program on conservation of flood plain forests	2.6	2005-2010	L	8	National program on flood plain forests conservation approved by the Government; Concrete actions implemented
B24	Conduct pastureland inventory and assessment relative to carrying capacity, and out in place measures to promote rehabilitation of degraded pastures.	2.6	2005-2010	H	8	Most pasture lands categorised and mapped; Optimum grazing levels defined and enforced by relevant legal instruments; Pilot pasture

						restoration activities underway
B25	Assess the Surami Range as a biological corridor and define management tools for its sustainable use.	2.6; 2.7	2005-2010	L	8	Surami Range management plan published, and activities initiated.
B26	Assess Gombori Range as a biological corridor and define management tools for its sustainable use.	2.6; 2.7	2005-2010	L	8	Gombori Range management plan published, and activities initiated.
B27	Continue the implementation of the Arid and Semi-arid Ecosystems Management Plan	2.6; 2.7	2005-2010	H	8	At least 75% of the activities outlined in the Arid and Semi-arid Ecosystems Management Plan implemented.
B28	Establish a captive breeding conservation centre and strengthen existing botanic gardens.	2.4	2005-2008	H	9	Programs to restore and/or strengthen botanic gardens approved; At least one of the programs implemented as a pilot project; Captive breeding conservation centre established.
B29	Assess the plant species subject to international trade and define collection and export quotas for these species.	2.1	2005-2010	H	10	Internationally traded plant species assessed and quotas for collection and export are defined.
B30	Determine harvest quotas for non-game species of wild animals.	2.1	2006-2007	M	10	Officially approved harvest and export quotas for non-game species of wild animals

5.3 Action plan for agrobiodiversity

Strategic Goal C: To conserve Georgian agrobiodiversity through ensuring its sustainable use and by promoting of *ex-situ* and *in-situ* conservation measures.						
#	**Activity**	**Problem number**	**Year**	**Budget code**	**CBD article**	**Indicator**
C1	Develop a national agrobiodiversity conservation programme with active participation of public organisations	3.1	2005	L		National programme of agrobiodiversity conservation officially approved
C2	Develop a legal basis for the conservation and wise use of agrobiodiversity	3.1; 3.4; 3.5; 3.6; 3.9; 3.14	2005-2006	L	4	Georgian biodiversity declared as national cultural heritage; Relevant legislation that ensures conservation of agrobiodiversity developed
C3	Strengthen the capacity of relevant governmental agencies through (among other mechanisms) provision of specialised training	3.1, 3.7, 3.9, 3.13	2009	M	12	Professionalism of relevant staff increased; An agrobiodiversity division established at the Ministry of Food and Agriculture
C4	Conduct an inventory of Georgian agrobiodiversity, create a Red List of domestic plants and animals and develop concrete action plans for endangered species and varieties.	3.2; 3.3; 3.9	2005-2008	H	7	Red list of Georgian domestic plants and animals published; Action plans for endangered domestic species and varieties created
C5	Create a database of Georgian agrobiodiversity	3.2; 3.3	2006-2010	M	7	Easily accessible data base of Georgian agrobiodiversity established
C6	Improve control of export and import of genetic resources, including through the strengthening the capacity of relevant agencies.	3.5; 3.6	2005-2010	H	4	Capacity of Georgian customs to control export/import of genetic resources improved

C7	Improve national expertise in agrobiodiversity conservation and management	3.2; 3.7	2005-2010	H	12	Sufficient in-country expertise in agrobiodiversity conservation and management in place
C8	Strengthen research institutions dealing with agrobiodiversity research and conservation.	3.7; 3.8; 3.9; 3.10; 3.13	2005-2010	H	12	Capacity of research institutes related to agrobiodiversity improved
C9	Rehabilitate or improve existing collections, selection stations and seed farms	3.9; 3.10; 3.11	2005-2010	H	9; 15	Availability of agrobiodiversity genetic resources to farmers and research programmes improved
C10	Establish a framework for the future development of a national Gene Bank	3.1; 3.2; 3.11	2008-2010	M	9	Framework for National Gene Bank established
C11	Create a data base of endemic and native species and varieties in order to establish national ownership	3.1; 3.4; 3.5	2005-2006	M	19	Endemic and native species and varieties are protected from bio piracy.
C12	Set up mini-reserves for the conservation of wild relatives of domestic species and medicinal plants	3.11	2008-2010	M	8; 15	Several mini-reserves established in different areas
C13	Encourage traditional and organic agriculture especially in buffer (support) zones of protected areas and in high mountain areas	3.12; 3.14	2007-2010	H	11	Increased share of organic farming in Georgian agricultural production; Number of officially registered organic farmers increased (up to 500)
C14	Establish a Georgian agrobiodiversity foundation dedicated to the conservation of agrobiodiversity, related research and information exchange	3.2; 3.3; 3.9; 3.10; 3.12	2007-2010	H	12; 16	Georgian agrobiodiversity foundation established and rehabilitation of traditional varieties launched on local farms.
C15	Promote on-farm conservation of agrobiodiversity	3.14	2006-2010	M	11	Local farmers growing at least 10% of endangered varieties of domestic plants
C16	Improve existing legislation to provide access to genetic agrobiodiversity resources in accordance to the provisions	3.1; 3.4; 3.15	2005-2006	L	15	Legislation in place to provide access to genetic resources in full accordance with the CBD.

	of CBD					
C17	Encourage seed production by local farmers and facilitate seed exchange among them	3.4; 3.11; 3.15	2005-2010	M	15	Relevant changes introduced to the Law on Seed Circulation; At least 3 seed production farms operational
C18	Develop effective mechanisms for information exchange and experience sharing within the country and internationally	3.8; 3.12; 3.18	2006-2010	M	16, 17	Easily accessible information network exists; Web page prepared and placed on internet
C19	Integrate agrobiodiversity issues into general education	3.2	2008-2010	L	13	Supplementary textbook on agrobiodiversity (officially approved by the Ministry of Education) published, and included in the list of compulsory textbooks
C20	Organise training courses and workshops on agrobiodiversity for various target groups	3.2; 3.16; 3.18	2006-2010	M	13	Workshops and training courses held in at least 3 priority regions
C21	Publish scientific and popular literature on agrobiodiversity	3.16; 3.18	2006-2010	M	13	At least 2 publications prepared annually
C22	To produce TV and radio programmes, documentaries and newspaper publications on agrobiodiversity	3.16; 3.18	2006-2010	M	13	At least 2 TV programmes, 5 radio programmes, 5 news paper articles, prepared annually; At least 2 documentaries produced within 5 years

5.4 Hunting and Fishing

Strategic Goal D: To promote sustainable hunting and fishing through adequate planning, restoration and protection of key biological resources							
#	**Activities**	**Problem number**	**Year**	**Budget code**	**CBD article**	**Related activity**	**Indicator**
D1	Improve the licensing procedure for hunting of migratory birds	4.1; 4.2	1-2	_	8	B11,B18, H1,H3, H4,H5	Changes in the relevant legislation officially approved
D2	Define hunting quotas for migratory birds and conduct studies on hunting (to identify sites where wildfowling will be permitted and those where all hunting should be banned, based on bird counts on these sites)	4.1	1-5	M	8	B11,B18	Hunting quotas and list of sites officially approved
D3	Define special (higher) fees for trophy kills	4.5	2-3	_	8; 11	H1,H3, H4,H5	Relevant amendments introduced to legislation
D4	Identify the list of birds of prey which can be used in falconry and define quotas for these species.	4.6	1-5	_	8; 10		Relevant amendments introduced to legislation.
D5	Restore the former Agency of Hunting Control and set up public inspection schemes.	4.3	2	M	8; 12		Legal basis for these changes established
D6	Provide professional training to government officers and hunting farm employees.	4.7	1-5	L	12; 13	G14	Numbers of government officers and hunting farm employees show improved skills and knowledge as a result of training

D7	Publish leaflets and/or brochures that explain hunting seasons and quotas with special emphasis on rare game species.	4.8	1-5	L	13	G4	Relevant publications prepared and distributed among hunters.
D8	Develop the concept of traditional hunting	4.9	1-3		8; 10; 11	C13,G8	Additions to the legislation concerning traditional hunting put in place
D9	Restore or establish hatcheries dedicated to the recovery of native fish species using modern technologies.	4.10	1-5	H	9		Fully equipped hatcheries using modern fish breeding techniques established.
D10	Ensure that income generated from the use of biological resources may be used for conservation and renewal of these resources.	4.11	1-5	_	11; 20	A17	Relevant amendments to legislation put in place

5.5 Biodiversity Monitoring

Strategic Goal E: To develop a biodiversity monitoring system and an active and integrated biodiversity database to ensure sustainable use and conservation of biological resources.							
#	**Activity**	**Problem number**	**Year**	**Budget code**	**CBD article**	**Related activity**	**Indicators**
E1	Improve legislation to provide for clear distribution of functions and responsibilities among relevant institutions;	5.1; 5.2; 5.8	1	_		A8,(F10)	
E2	Designate governmental and non-governmental agencies responsible for the coordination and/or implementation of biodiversity monitoring	5.2; 5.8	1	_		A8,(F10) G13	
E3	Establish (or designate a special entity that will act as) a biodiversity monitoring information centre	5.5; 5.6; 5.8	1	M	24; 25	A8, A9, B27, (F10)	Fully equipped biodiversity monitoring information centre set up
E4	Develop methodological guidelines for biodiversity monitoring with (i) unified methods of data collection, storage and analysis and (ii) identified target components for monitoring**	5.4; 5.3; 5.7; 5.8	1	L	6; 7	A8	Information on (i) guidelines and approved methods of biodiversity monitoring and (ii) a list of key biodiversity components presented in an official publication of the Ministry of Environment
E5	Designate agency(s) with sufficient qualifications and capacity for analysing biodiversity data;	5.4; 5.5; 5.8	1-2	L	25	A8,G14	Official designation of agency(s) identified through a tender; Regular reports of biodiversity monitoring giving concrete recommendations.

E6	Strengthen the capacity of responsible agencies with an emphasis on improving the qualifications and skills of key personnel	5.1; 5.2; 5.7; 5.8	1-2	H	12	A8,G14	Qualifications of key personnel of different agencies improved as a result of specialised training; Responsible agencies fully equipped to implement biodiversity monitoring activities within their responsibilities
E7	Compile and organise in a single database all existing information on biodiversity gathered and stored by different agencies up to now	5.5	1-2	H	7	A8,A9, B27,C9, C5,C10	
E8	Ensure publicity of the results of biodiversity monitoring through systematic information exchange and reporting to the general public and interested parties	5.5; 5.6	3-5	M	13; 14; 17	A8,G4, G10	
E9	Begin monitoring of key components using official guidelines and methods.	5.3; 5.7	2-5	M	7	A8	

5.6 Biotechnology and Biosafety

Strategic Goal F: To protect both the human population and biodiversity from potential threats from genetically modified organisms (biotechnology), through the strengthening the law and through increasing public involvement in decision making.							
#	**Activity**	**Problem number**	**Year**	**Budget code**	**CBD article**	**Related activity**	**Indicator**
F1	Prepare for ratification of the Biosafety protocol	6.1	1	L	8; 19		Biosafety protocol ratified
F2	Prepare a draft law on biosafety and organise public hearings on this	6.1; 6.2; 6.3; 6.4; 6.6; 6.9	1	M	8; 19		Law on biosafety adopted
F3	Develop biosafety control mechanisms and designate or set up a responsible agency	6.2; 6.3; 6.5; 6.8; 6.9	2-3	M	8		Transparent control mechanisms in place; Agency responsible for controlling all risks associated with import, use and release of GM organisms designated or established
F4	Strengthen the national capacity for enforcing biosafety	6.2; 6.3; 6.5	2-5	H	8	G14	At least one laboratory capable of detecting content of GM organisms in raw materials as well as in products in existence
F5	Prepare education programmes and organise	6.3; 6.4;	2-5	M	8	G12	At least 2 workshops

	workshops for different target groups	6.5; 6.6; 6.7; 6.9					held annually
F6	Organise regular TV and radio programmes and press conferences on biosafety	6.3; 6.4; 6.9	1-5	L	8	G5	At least 3 TV and 4 radio programmes produced and 2 press conferences held annually
F7	Integrate biosafety principles into general education programmes	6.6; 6.7	3-5	L	8		A supplementary textbook of biosafety produced which is officially approved by the Ministry of Education and is included in the list of compulsory textbooks
F8	Produce publications on biosafety in the Georgian language	6.3; 6.4; 6.5; 6.7	1-5	L	8	G4	At least 3 publications produced during 5 year period
F9	Develop effective mechanisms for information exchange within the country and internationally	6.5; 6.8	1-5	L	8; 19	G10,G15 G16,G17	Easily accessible information network established; Web page prepared and placed on internet
F10	Set up a public biosafety monitoring system	6.2; 6.3; 6.5; 6.9	2-3	L	8	(E1,E2, E3)	A work plan for biosafety monitoring and relevant indicators prepared by the end of 2004; At least 2 public institutions working on biosafety issues.

5.7 Environmental education, public awareness and public participation

Strategic Goal G: To raise public awareness of biodiversity issues and to encourage public participation in the decision making process							
#	**Activities**	**Problem number**	**Year**	**Budget code**	**CBD article**	**Related activity**	**Indicator**
G1	Carry out a sociological survey of selected target groups to assess public awareness, understanding of biodiversity issues and knowledge of national and international legislation in the field	7.1; 7.7	1	H	13		Results from sociological surveys indicating the scale and type of work needed to raise public awareness
G2	Organise an information campaign involving NGO's and local communities especially women and youth.	7.1; 7.3; 7.5; 7.7	1-3	M	_	C18	Information leaflets and brochures published; At least 2 campaigns conducted in each administrative region, all actively involving local volunteers
G4	Produce information materials (publications, videos, etc) on biodiversity and sustainable use.	7.1; 7.2; 7.3; 7.7	1-5	M	_	B2,C21, D7,E8,F8	Information materials (including scientific-popular publications) published; At least two articles published in the press each year; Ten videos produced and shown on national and local television channels.
G5	Produce a series of conservation TV and radio programmes with an emphasis on sustainable use of biological resources.	7.1; 7.2; 7.4; 7.7; 7.8	2-5	H	_	C22,F6	Series of conservation programmes on state TV and radio produced

G6	Organise media-tours and site-visits for increased engagement of journalists with local biodiversity issues.	7.4	1-3	L	_		At least two media-tours per year organised to each region for national and local media representatives
G7	Improve cooperation between local authorities and the public sector	7.1; 7.7; 7.8	1-5	L	_		Relevant facilities set up at the local offices of the Ministry of Environment for regular meetings with local public sector
G8	Study traditional attitudes towards nature and prepare popular publication on the subject	7.1; 7.7	2-4	M	_	C15,C13, D8	Results of desktop and field studies in all regions of the country; Publication on traditional attitudes towards nature in Georgia produced
G9	Promote protected areas through a special publication dedicated to (1) the role and importance of protected areas and (2) existing protected areas and (3) future perspectives.	7.1; 7.7	2-3	L		A8,C13	A special publication on the subject produced
G10	Set up a nationwide network of fully equipped libraries offering information on biodiversity (publications and conservation films in the Georgian language).	7.1; 7.2; 7.7; 7.9	1-3	H	_	C18,E8,F8	At least 4 fully equipped libraries set up at Regional Offices of the Ministry of Environment
G11	Organise environmental events and actions (including quiz shows, competitions, so called "alpiniads" (excursions) with substantial education components.	7.1; 7.3; 7.4; 7.7; 7.8	1-5	H	_		Environmental actions and events organised throughout the country.
G12	Organise biodiversity workshops for the	7.1; 7.2;	1-2	M	_	C20,F5	At least one workshop

	general public in different parts of the country	7.4; 7.7; 7.8					held in each region
G13	Organise regular meetings with representatives of the Governmental, public and business sectors in order to encourage multilateral cooperation and identification of common interests	7.8	1-5	L	_	C1,E2	Meetings held annually
G14	Set up biodiversity management and conservation training facilities for a wide range of target groups	7.1; 7.7; 7.9	1-4	H	_	C3,C7,C8, D6,E5,E6, F4	Facilities for professional training in biodiversity management and conservation estbalished
G15	Provide special biodiversity training for school teachers in different regions of the country	7.1; 7.7	1-5	M		C19,F9	At least 35% of local teachers have participated in the programme
G16	Integrate biodiversity principles at all levels of education (pre-school, primary, secondary and higher).	7.1; 7.2; 7.7	1-2	L	_	C19,F9	Biodiversity principles integrated into training programmes at all levels of education
G17	Develop supporting textbooks on biodiversity for all levels of education (pre-school, primary, secondary and higher).	7.1; 7.2; 7.7	1-2	M		C19,F9	At least one biodiversity textbook published and officially approved for each level of education.
G18	Create visual education materials (illustrated literature, games, animated films) for the pre-school age group.	7.1	1-2	M	_		Existing materials translated into Georgian; Original materials developed as appropriate including publications, games, films, etc.
G19	Set up biodiversity societies (or clubs) at schools	7.1	2-3	L	_	C19	As a pilot project several schools with biodiversity societies and equipped

							rooms.
G20	Organise mobile biodiversity demonstration rooms for regional schools.	7.1; 7.7	3-4	M	_	C19	Special mobile biodiversity demonstration rooms established; A series of trips to regional schools launched
G21	Organise eco-camps for high school and university students.	7.1; 7.7	2-5	M	_	C19	At least 4 eco-camps organised
G22	Introduce changes into the law on Advertisement of Georgia to facilitate greater allocation of TV and radio advertising time to biodiversity problems.	7.10	1	L	_	C22	Relevant amendments to the legislation submitted to the Parliament
G23	Set up courses in eco-journalism	7.4	3-5	M			One major university running a special course in eco-journalism (as a pilot project)
G24	Set up courses in environmental law	7.6	1-5	M			One major university running a special course in environmental law (as a pilot project).
G25	Design a web page about the NBSAP for better publicity	7.1	5	L	_		NBSAP web page prepared and placed on the web.

5.8 Financial and Economic Programme

Strategic Goal H: To ensure appropriate financial and economic programmes are in place in order to support effective conservation of biodiversity, and to ensure the delivery of the BSAP						
#	**Activity**	**Problem number**	**Year**	**Budget code***	**CBD article**	**Indicator**
H1	Collect data necessary for the valuation of biodiversity *(including opinion surveys with key stakeholders, identification of primary risk factors and use of internationally accepted methods)*	8.5; 8.6; 8.7; 8.8; 8.9	2005-2006	L	1, 6	Reliable, relevant and accessible information available
H2	Evaluate the economic structure using macroeconomic and sector-specific strategies	8.5; 8.6; 8.7; 8.8; 8.9	2005	L	6, 8, 10, 12, 14, 16, 20, 21	Macroeconomic assessment available
H3	Study the impact of economic policies and economic activities on biodiversity	8.3; 8.5; 8.6; 8.7	2006	L	7	The extent of impacts of economic policies and activities determined
H4	Identify and estimate the benefit to major sectors of products and services derived from biodiversity and analyse its use	8.1; 8.4; 8.5; 8.6	2006	L	8, 9, 14, 16, 20, 21	Benefit derived from biodiversity conservation calculated
H5	Conduct economic assessment of the consequences of the loss of biodiversity	8.1; 8.3; 8.4; 8.5; 8.6; 8.8	2006	L	7	Damaged caused by loss of biodiversity calculated
H6	Estimate financial needs for biodiversity conservation based on valuation assessments	8.7; 8.8; 8.9	2007	L	8, 9, 20, 21	TEV calculation completed
H7	Plan for biodiversity conservation management based on economic indicators	8.5; 8. 6; 8.7; 8.8	2010	M	6, 7, 7, 8, 21, 21	An economic plan for the promotion of biodiversity developed

5.9 Legislation and institutional development

Strategic Goal I: To further improve national legislation (and associated institutions) relating to biodiversity conservation, through the creation of new, and elaboration of existing laws and regulations, and through ensuring harmonisation to international legal responsibilities							
#	**Activity**	**Problem number**	**Year**	**Budge code**	**CBD article**	**Related activity**	**Indicator**
I1	Develop a new law on Vegetation	9.1; 9.4	1-2	L	6; 7; 8	C2	
I2	Adopt a law on the Red List of Threatened Species	9.2; 9.4	1-2	L	8; 9; 10	B1,B2	
I3	Develop a law on Agrobiodiversity	9.3; 9.7	2-3	L	5;6;7;8	C2,C6	
I4	Develop a law on Ecological Insurance	9.5; 9.6; 9.7	2-3	L	14		
I5	Develop law on Ecological Auditing	9.4; 9.6;	2-3	L	6		
I6	Develop law on Biodiversity Monitoring	9.4; 9.5; 9.6	1-2	L	7	A8	
I7	Prepare and adopt a new law on Forest Privatisation	9.4; 9.5; 9.6	3-4	L	6		
I8	Create legal mechanisms for economic incentives for sustainable use of biodiversity	9.5; 9.6; 9.7; 9.8	3-5	H	20	A15,C13 C15	Normative act the national biodiversity fund developed
I9	Create legal framework for the establishment of the national Taxon Advisory Group	9.2; 9.7; 9.9	1	L	8; 9	B4-15	Normative act to legally underpin the national Taxon Advisory Group established
I10	Create legal mechanisms for harmonisation of national legislation with international law	9.2; 9.3; 9.4; 9.7; 9.8	1-5	-	10		Presidential order based on which interdisciplinary group will be established at the Ministry of Justice to deal with these issues

Annexes

Annexes

Annex 1: List of acronyms

AEWA	African-Eurasian Migratory Water Bird Agreement
ACCOBAMS	Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area
BSAP	Biodiversity Strategy and Action Plan
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CBD	Convention on Biological Diversity
EMAS	Eco-management and Audit Scheme
EUROBATS	The Agreement on the Conservation of Bats in Europe
GEF	Global Environment Facility
GSSR	Soviet Georgia
ISO	International Standard Organisation
NACRES	Noah's Ark Centre for the Recovery of Endangered Species
UNEP	United Nations Environment Programme
USSR	Union of Soviet Socialist Republics

Annex 2: Glossary

Anadromous	Fish spend most of their adult lives in salt water, and migrate to freshwater rivers and lakes to reproduce.
Agrobiodiversity	Agricultural biodiversity, encompasses the variety and variability of animals, plants and micro-organisms which are necessary to sustain key functions of the agro-ecosystem, its structure and processes for food production.
Arthropods	The animal phylum comprised of crustaceans, spiders, mites, centipedes, insects, and related forms. The largest of the phyla, containing more than three times the number of all other animal phyla combined.
Biodiversity	The totality of genes, species, and ecosystems in a region or the world.
Biome	A major portion of the living environment of a particular region (such as a fir forest or grassland), characterized by its distinctive vegetation and maintained by local climatic conditions.
Breed	See variety
Class	In taxonomy, a category just beneath the phylum and above the order; a group of related, similar orders.
Ecosystem	The organisms of a particular habitat, together with the physical environment in which they live.
Endemic	Restricted to a particular geographic region and found nowhere else in the world
Ex situ conservation	A conservation method that entails the removal of germplasm resources (seed, pollen, sperm, individual organisms, from their original habitat or natural environment. Keeping components of biodiversity alive outside of their original habitat or natural environment.
Fauna	All of the animals found in a given area.
Flora	All of the plants found in a given area.
Habitat	The environment in which an organism lives. Habitat can also refer to the organisms and physical environment in a particular place.
Hemi-xerophyte scrub	Scrub growing in dry conditions
Introduced species	A species occurring in an area outside of its historically known natural range as a result of intentional or accidental dispersal by human activities. Also known as Alien species.
In situ conservation	A conservation method that attempts to preserve the genetic

	integrity of gene resources by conserving them within the evolutionary dynamic ecosystems of the original habitat or natural environment
Invertebrate	Animals that lack a back-bone (vertebrae).
Native Species	Plants, animals, fungi, and microorganisms that occur naturally in a given area or region.
Paleoendemics	"Old" species that have become endemic to an area due to a reduction in their range (the opposite "neoendemics" are young species, that have restricted ranges because they have not had time to expand their ranges from their point of origin)
Phylum	In taxonomy, a high-level category just beneath the kingdom and above the class; a group of related, similar classes.
Rehabilitation	The recovery of specific ecosystem services in a degraded ecosystem or habitat.
Relic forests	Old growth forest, of which only several thousand hectares remain in Europe.
Species	A group of organisms capable of interbreeding freely with each other but not with members of other species.
Steppe	Large, dry, level, grassland having few or no trees
Subendemic	Taxa which are nearly confined to the certain area, but which also occur in other areas to a limited extent.
Subspecies	A subdivision of a species; a population or series of populations occupying a discrete range of differing genetically from other subspecies of the same species.
Taxonomy	The naming and organising of organisms into taxa.
Vascular plants	Plants with a well-developed vascular system that transports water, minerals, sugars, and other nutrients throughout the plant body. Excludes the bryophytes: mosses, hornworts, and liverworts.
Variety /breed	A cultivated form (genetic strain) of a domesticated crop plant or animal.
Vertebrates	Animals with a bony or cartilaginous backbone (vertebrae).

Annex 3 Floral species associated with different biomes*

Species commonly associated with flood plain forest biomes

Latin name	Common name	Notes	IUCN Red list status
Species common in east Georgia flood plains:			
Quercus pedunculiflora	Oak sp.	Dominant tree species	Not listed
Populus canesaeus	Poplar sp.	Dominant tree species	Not listed
Populus hybrida	Poplar sp.	Dominant tree species	Not listed
Smilax excelsa	Green or cat briar, bamboo vines	Common creeper	Not listed
Periploca graeca	Silk vine	Common creeper	Not listed
Clematis vitalba	Old man's beard, travellers joy	Common creeper	Not listed
Clematis orientalis		Common creeper	Not listed
Pterocarya pterocarpa	Wingnut sp.		Not listed
Species dominating the flood plains along the Iori river			
Populus cahescens	Poplar sp.		Not listed
Ulmus foliacea	Elm sp.		Not listed
Morus alba	White mulberry		Not listed
Quercus pedunculiflora	Oak sp		Not listed
Salix excelsa	Crack willow, brittle willow		Not listed
Tamarix ramosisima			Not listed
Species dominating the dry gullies along the Iori river			
Populus euphratica	Weeping willow		Not listed
Ficus carica	Common fig		Not listed
Acer iberica	Maple sp.		Not listed
Ulmus georgica	Elm sp.		Not listed

Juniperus spp	Juniper		Not listed
Clematis orientalis			Not listed
Jasminum fruticans	Jasmine sp.		Not listed
(Cerasus mahaleb) = Prunus mahaleb	Mahaleb (cherry)		Not listed
Pyrus spp	Pear spp.		Not listed
Elaeagnus			Not listed
Common species in the flood plains of west Georgia			
Pterocarya pterocarpa	Wingnut sp.		Not listed
Quercus pedunculiflora	Oak sp.		Not listed
Salix micans	Willow sp.		Not listed
Salix alba	White willow		Not listed
Hippophae rhamnoides	Sea buckthorn, sallow thorn		Not listed
Rubus anatolicus	Bramble sp.		Not listed
Chamaenerium angustissimum		Abundant	Unknown
Tamarix tetrandra		Abundant	Not listed
Myricazia alopecuroides		Less common	Unknown
Hedera colchica	Persian ivy	Noteworthy liana	Not listed
Smilax exscelsa	Green or cat briar, bamboo vines	Noteworthy liana	Not listed
Vitis sylvestris	Grape vine	Noteworthy liana	Not listed

Species commonly associated with semi-desert biomes:

Latin name	**Common name**	**Notes**	**IUCN Red list status**
Species common on the planes of east Georgia:			
Salsola ericoides			Not listed
Salsola dendroides			Not listed

Gamanthus pilosus			Not listed
Suaeda microphylla			Not listed
Petrosimonia brachiata			Not listed
Kalidium caspicum			Not listed
Artemisia fragrans		Important dominant species	Not listed
Poa bulbosa	Grass sp.	Characteristic ephemeral species	Not listed
Colpodium humile	Grass sp.	Characteristic ephemeral species	Not listed
Bromus japonicum	Grass sp.	Characteristic ephemeral species	Not listed
Eremopyrum orientale	Grass sp.	Characteristic ephemeral species	Not listed
Alyssum desertorum		Characteristic ephemeral species	Not listed
Festuca sulcata	Grass sp.	Iori Plateau eroded desert species	Not listed
Stipa szovitsiana	Grass sp.	Iori Plateau eroded desert species	Not listed
Artemisia fragrans		Iori Plateau eroded desert species	Not listed
Tulipa eichleri	Wild tulip	Rare endemic	Not listed
Adonis aestivalis		Characteristic ephemeral species of Kveda KarTli	Not listed
Astragalus brachyceras		Characteristic ephemeral species of Kveda KarTli	Not listed
Koelpinia linearis		Characteristic ephemeral species of Kveda KarTli	Not listed

Species commonly associated with steppe biomes

Latin name	Common name	Notes	IUCN Red List status
Characteristic steppe species:			
Stipa tirsa	Bearded grass		Not listed
Stipa lessingiana	Grass sp.		Not listed
Stipa pulcherrima	Grass sp.		Not listed
Stipa capillata	Grass sp.		Not listed
Glycyrrhiza glalra			Not listed
Medicago coerulea			Not listed
Koeleria critata	Grass sp.		Not listed
Stipa joanis	Grass sp.		Not listed
Stipa lessingiana	Grass sp.		Not listed
Dianthus subulosus			Not listed
(Pyrethrum corymbosum) = Tanacetum corymbosum			Not listed
Common montane steppe species			
Festuca salcata	Grass sp.		Not listed
Stipa capillata	Grass sp.		Not listed
Dactylis glomerata	Cock's foot		Not listed
Stipa tirsa	Grass sp.		Not listed
Trifolium alpestre			Not listed
Medicago dzavakhetica			Not listed
(Betonica macrantha) = Stachys macrantha		High mountain meadow species	Not listed
Aster ibericus		High mountain meadow species	Not listed

Species commonly associated with arid light woodland, and semixerophyte scrub biome

Latin name	Common name	Notes	IUCN Red List status
Characteristic arid woodland Pistacia mutica community species:			
Pistacia mutica			Not listed
Paliurus spina-christi	Christ's thorn		Not listed
Rhamnus pallasii			Not listed
Cotinus coggygria	Smoke tree or bush, wig tree		Not listed
(Cerasus incana) = Prunus incana			Not listed
Lonicera iberica			Not listed
(Cerasus incana) = Prunus incana			Not listed
(Amygdalus georgica) = Prunus georgica			Not listed
Colutea orientalis			Not listed
Caragana grandiflora			Not listed
Ephedra procera			Not listed
Juniperus fortidissima	Juniper sp.		Not listed
Punica granatum	Pomegranate		Not listed
Rhus coriaria	Sumac		Not listed
Botriochloa ischaemum	Grass sp.	Herbaceous species	Not listed
Festuca sulcata	Grass sp.	Herbaceous species	Not listed
Stipa spp	Grass sp.	Herbaceous species	Not listed
Pistacia mutica		Herbaceous species	Not listed
Ulmus carpinifolia	Elm sp.	Occasional species	Not listed
Celtis caucasica		Occasional species	Not listed
Pyrus salicifolia	Pear sp.	Occasional species	LR: nt

Pyrus salicifolia community	Pear sp.	Variant of light woodland	LR: nt
Pyrus georgicas community	Pear sp.		Not listed
Characteristic arid woodland Juniper community species:			
Juniperus foutidissima	Juniper sp.		Not listed
Juniperus polycarpus	Juniper sp.		Not listed
Juniperus oblonga	Juniper sp.		Not listed
Juniperus rufescens	Juniper sp.		Not listed
Celtis caucasica			Not listed
Characteristic hemyxeropyte scrub community species:			
Shiblijac:			
Paliurus spina-christi	Christ's thorn	Important species	Not listed
Berberis vulgaris	Common or European barberry	Important species	Not listed
Cotinus coggygria	Smoke tree or bush, wig tree	Important species	Not listed
Punica granatum	Pomegranate	Important species	Not listed
Carpinus orientalis		Important species	Not listed
Crataegus orientalis		Common species	Not listed
Lonicera iberica	Honeysuckle sp.	Common species	Not listed
Rhamnus pallasii	Pallas's buckthorn	In dry rocky areas	Not listed
Caragana grandiflora		In dry rocky areas	Not listed
Athraphaxis spinosa		In dry rocky areas	Not listed
Ephedra procera		In dry rocky areas	Not listed
Phrygana:			
Astragalus caucasicus			Not listed
Astragalus microcephalus			Not listed

Acantholimon lepturoides			Not listed
Thymus spp	Thyme spp.		Not listed
Salvia spp			Not listed
Satureja spp			Not listed

Species commonly associated with the forest biome

Latin name	**Common name**	**Notes***	**IUCN Red List status**
Trees common in forest biome			
Fagus orientalis	Oriental beech	51%	Not listed
Abies nordmanniana	Caucasian fir	10%	Not listed
Picea orientalis	Oriental spruce	6.3%	Not listed
Pinus kochiana	Pine sp.	3.6%	Not listed
Quercus iberica and other species of oak	Oak sp,	3.3%	Not listed
Alnus barbata	Alder sp.	3%	Not listed
Castanea sativa	Chestnut sp.	2.1%	Not listed
Betula litvinovi and other Betula spp.	Birch sp.	2%	Not listed
Carpinus caucasica		Occasional	Not listed
Tilia caucasica		Occasional	Not listed
Acer platanoides	Norway maple	Occasional	Not listed
Acer trantvetteri	Maple sp.	Occasional	Not listed
Fraxinus exscelsior	European ash	Occasional	Not listed
Acer laetun	Maple sp.	Found in mixed forests	Not listed
Acer velutinum	Maple sp.	Dominant in forest in Alazani Valley. Does not occur above 1000 meters.	Not listed
Taxus baccata	English yew		Not listed

Species associated with Georgian Oak Forests			
Quercus iberica	Georgian Oak	Dominant tree species	Not listed
Carpinus orientalis		Common in foothills	Not listed
Carpinus caucasica		Found in relatively wet environments in upper zones	Not listed
Species associated with Beech Forests			
Fagus orientalis	Oriental beech		Not listed
Carpinus caucasica		Common in these forests and tends to replace beech in more continental environments.	Not listed
Species found in Xerophytic forests			
Cotinus coggygria	Smoke tree or bush, wig tree		Not listed
Spiraea hypericifolia			Not listed
Pyracantha coccinea	Firethorn		Not listed
Juniperus oblonga	Juniper sp.		Not listed
Genista transcaucasica	Broom sp.		Not listed
Species found in montane pine forests			
Betula litvinowii	Birch sp.		Not listed
Abies nordmanniana	Caucasian fir		Not listed
Sorbus caucasigena			Not listed
Fagus orientalis	Oriental beech		Not listed
Fraxinus exselsior	European ash		Not listed
Species found in zelcova forest in east Georgia			
Zelkova carpinifolia		grow on northern slopes with thin or	LR: nt

		well-developed soils	
Paliurus spina-christi	Christ's thorn		Not listed
Astragalus brachycarpus			Not listed
Yunglans regia.			Unknown
Species found in Colchic forests, west Georgia			
Alnus barbata	Alder sp.	Found in wet conditions	Not listed
Pterocarya pterocarpa	wingnut	Found in wet conditions	Not listed
Quercus iberica	Georgian Oak	Found in drier conditions	Not listed
Quercus hartwissiana	Oak sp.	Found in drier conditions	Not listed
Carpinus caucasica		Found in drier conditions	Not listed
Castanea sativa	Chestnut sp.	Found in drier conditions	Not listed
Hedera colchica	Persian ivy	Creeper	Not listed
Smilax excelsa	Green or cat briar, bamboo vines	Creeper	Not listed
Vitis sylvestris	Grape vine	Creeper	Not listed
Species found in endemic pine forests, west Georgia			
Pinus pitiunta	Pine sp.	An endemic pine	Not listed
Azbutus andrachne		Mediterranean species (rare in Georgia)	Unknown
Erica arborea	Tree heath	Mediterranean species (rare in Georgia)	Not listed
Pancratium maritimum	Sea daffodil	Mediterranean species (rare in Georgia)	Not listed
Species found in endemic modified forests			
Quercus iberica,	Georgian Oak	500-600 meters	Not listed
Quercus hartwissiana	Oak sp.	500-600 meters	Not listed
Fagus spp.	Beech spp.	>600 meters	Not listed

Picea orientalis	Oriental spruce	>1000 meters	Not listed
Abies nordmanniana	Caucasian fir	>1000 meters	Not listed
Species found in evergreen sub-forests			
Jauroceraus officinalis		Relic shrub	Unknown
Rhododendron ponticum	Rhododendron sp.	Relic shrub	Not listed
Rhododendron ungerni	Rhododendron sp.	Relic shrub	Not listed
Ilex colchica	Holly spp	Relic shrub	Not listed
Ruscus ponticus		Relic shrub	Not listed
Buxus colchica	Box spp	Especially in limestone hills	Not listed
Quercus imeretina	Imeretian oak	Dominant in Imereti lower and middle forest zones	Not listed
Zelkova carpinifolia		Mixed with Imeretian Oak in Ajameti reserve	LR: nt

Species commonly associated with the sub-alpine biome

Latin name	**Common name**	**Notes**	**IUCN Red list status**
Common shrubbery species:			
Rhododendron caucasicum	Rhododendron sp.		Not listed
Rhododendron ungernii	Rhododendron sp.		Not listed
Juniperus depressa	Juniper sp.		Not listed
Salix arbuscula	Willow sp.		Not listed
Daphne pontica			Not listed
Common park forest species:			
Acer trautvetteri	Maple sp.	Dominates park forests on north-western slopes	Not listed

Quercus macranthera	Oak sp.	Dominates park forests on southern slopes	Not listed
Fagus orientalis	Oriental beech		Not listed
Picea orientalis	Oriental spruce		Not listed
Abies nordmanniana	Caucasian fir		Not listed
Pinus kochiana	Pine sp.		Not listed
Common sparse forest species:			
Betula litwinowii	Birch sp.	Sparse forest species	Not listed
Sorbus caucasigena		Sparse forests species	Not listed
Common crook stem forest species:			
Quercus pontica	Oak sp.	Colcheti crook stem forest species	Not listed
Betula megrelica	Birch sp.	Colcheti crook stem forest species	Not listed
Betula medwedewi	Birch sp.	Colcheti crook stem forest species	Not listed
Fagus orientalis	Oriental beech	Common in general crook stem forest at 2,050-2,100 m	Not listed
Betula litwinowii	Birch sp.	Common in general crook stem forest at 2,100–2,600 m	Not listed
B. medwedewi	Birch sp.	Common in general crook stem forest at 2,100–2,400 m	Not listed
Acer trautvetteri	Maple sp.		Not listed
Betula megrelica	Birch sp.	endemic to Mengrelia	Not listed
B. raddeana	Birch sp.		LR: nt
Corylus colchica	Hazel sp.	Found in shorter communities	Not listed

Rhamnus imeretina		Found in shorter communities	Not listed
Gadellia spp.		Common herbaceous species	Unknown
Dolychorrisa spp.		Common herbaceous species	Unknown
(Grossheimia spp) = Centaurea spp.		Common herbaceous species	Not listed

*Species commonly associated with the alpine biome**

Latin name	**Common name**	**Notes**	**IUCN Red List status**
Common grassland species:			
Nardus glabriculmis	Grass sp.	Dominant on cold wet slopes, and flat areas	Not listed
Deschampsia flexuosa	Grass sp.	Found in *Nardus glabriculmis* communities	Not listed
Phleum alpinum	Grass sp.	Found in *Nardus glabriculmis* communities	Not listed
Sibbaldia aemiglabra		Found in *Nardus glabriculmis* communities	Not listed
Festuca varia	Grass sp.	Found in *Nardus glabriculmis* communities	Not listed
Festucetum variae	Grass sp.	Dominant on southern slops	Unknown
Carex tristis	Sedge sp.	Found in *Festucetum variae* communities	Not listed
Kobresia schoenides		Found in *Festucetum variae* communities	Not listed
Polygonum carueum	Knotweed	Found in *Festucetum variae*	Not listed

		communities	
Helictotrichon pubescens	Oatgrass	Found in *Festucetum variae* communities	Not listed
(Bromopsis variegata) = Bromus variegata	Grass sp.	Dominant at high altitudes	Not listed
Agrostis planifolia	Bent grass	Found in *Bromopsis variegata* communities	Not listed
Trifolium ambiguum	Clover sp.	Found in *Bromopsis variegata* communities	Not listed
Leontodon hispidius.		Found in *Bromopsis variegata* communities	Not listed
Geranium gymnocaulon	Geranium	Common on northern slopes	Not listed
Poa alpina	Meadow grass	Found on northern slopes	Not listed
Pedicularis crassirostris	Lousewort	Found on northern slopes	Not listed
Sibbaldia semiglabra		Found on northern slopes	Not listed
Common 'alpine spot' species:			
Taraxacum porphyrantum			Not listed
Veronica gentianoides	Speedwell sp.		Not listed
Gnaphalium supinum	Cudweed sp.		Not listed
Pedicularis saxeobebi	Lousewort sp.		Not listed
Sibbaldia semiglabra			Not listed
Ranunculus oreophilus			Not listed
Common 'dekiani' shrubbery species:			
Rhododendron caucasicum	Rhododendron sp.	Dominant species	Not listed
Vaccinium myrtillus	Bilberry		Not listed
V. vitis-idaea	Cowberry		Not listed

Pyrola minor	Winter green		Not listed
Empetrum hermaphroditum			Not listed
Juniperus hemispaerica (=*J.depressa*)	Juniper sp.	Present in dekiani, generally found in the alpine zone	Not listed
Juniperus sabina	Savin	As above	Not listed
Common dwarf shrub species:			
Dryas caucasica	Mountain Aven	Dominant species	Not listed
Deschampsia flexuosa,			Not listed
Daphne glomerata			Not listed
Helictotrichon asiaticus	Oat Grass		Not listed
Selaginella selaginoides			Not listed

Species commonly associated with the sub-nival biome

Latin name	**Common name**	**Notes**	**IUCN Red List status**
Noteworthy endemic monotypic genera of the biome:			
Pseudovesicaria		Family Brassicaceae	Not listed
Gymphyloma		Family Apiaceae	Unknown
Pseudobetckea		Family Valerianaceae	Not listed
Coluteocarpus		Family Didimophysa	Not listed
(Eunomia) = Aethionema		Family Brassicaceae	Not listed
Vavilovia		Family Fabaceae	Not listed

Species commonly associated with wetlands

Latin name	Common name	Notes	IUCN Red List status
Characteristic species of the east Georgia wetlands			
Viola palustris	Marsh violet		Not listed
(Sredinskya grandis) = Primula			Not listed
Rhynchospora alba			Not listed
Drosera rotundifolia	Sundew sp.		Not listed
D. intermedia	Sundew sp.		Not listed
D. anglica	Sundew sp.		Not listed
Cardamine seidlitziana,			Not listed
Heracleum apiifolium			Not listed
Relic species of the Colcheti peatlands			
Rhododendron ponticum	Rhododendron sp.		Not listed
Rhododendron luteum	Rhododendron sp.		Not listed
Vaccinium arctostaphylos	Broussa tea		Not listed
Frwengula alnus			Unknown
Osmunda regulia			Not listed
Hydrophilic tall grasslands species:			
Phragmites australis	Reed		Not listed
Typha latifolia	Reed mace, bulrush		Not listed
Typha angustifolia	Reed mace, bulrush		Not listed
Typha laxmanii	Reed mace, bulrush		Not listed
Schoenoplectus lacustris	Clubrush		Not listed
Schoenoplectus tabernaemontani			Not listed

Hydrophilic short grasslands species:			
Equisetum heleoharis	Horsetail sp.	Lower mountain zones	Not listed
Equisetum palustris	Horsetail sp.	Lower mountain zones	Not listed
Equisetum ramosissimum	Horsetail sp.	Lower mountain zones	Not listed
Noteworthy hydrophilic grasslands species:			
Cariceta dichoandrae,			Unknown
Cariceta acutiformis,			Unknown
Cariceta elatae,			Unknown
Cariceta caespitosae,			Unknown
Cariceta wilnicae			Unknown
Cariceta magnojunceta			Unknown
Cariceta elatae.		Rare in Georgia.	Unknown
Cariceta caespitosae,		Only on volcanic plateau of South Georgia and Achaian mountains.	Unknown
Cariceta wilnicae		Only on the volcanic plateau of South Georgia at 2,000-2,100 m	Unknown
Noteworthy mezotrophic swamp species:			
Scheuchzeria palustrae		Only found in Svanetia at 1,700-2,100 m.	Not listed
Cariceta limosae		Typical of mezotrophic swamps.	Unknown
Cariceta irriguae		Common at the altitudes of 1,750 – 2,400 m.	Unknown
Tree & shrub species associated with wetlands:			
Alnus glutinosa,	European alder	Common in lowlands of	Not listed

		west Georgia,	
Alnus incana	Alder sp.	is dominant at higher altitudes	Not listed
Alnus glutinosa	Alder sp.		Not listed
Alnus incana	Alder sp.		Not listed
Saliceta varioherbosa		Shrub speices	Unknown
Saliceta-herboso-spagnosa		Shrub speices	Unknown
Species associated with wetlands:			
Hydrocharis		Slow waters; creates tall wetland vegetation.	Not listed
Ruppia		Dominates brackish waters communities	Not listed
Potamogeton luscens	Pondweed sp.	Fresh water species	Not listed
Potamogeton natans	Pondweed sp.	Fresh water species	Not listed
Potamogeton crispius	Pondweed sp.	Fresh water species	Not listed
Myriophyllum spicatum	Water milfoil	Fresh water species	Not listed
Nymphaea candida	Waterlily sp.	Fresh water species	Not listed
Numphar luteum		Fresh water species	Unknown
Trapa colchica	Water chestnut	Fresh water species	Not listed

Annex 4: Assessment of invertebrate species diversity

There is no, or very limited information about the composition of many invertebrate groups in Georgia, however some have been widely researched.

The table below lists various invertebrate groups that have been studied in Georgia, categorised according to their taxonomic levels. Where species numbers are known these are presented.

Class	Order	Family	Notes
Phylum Platyhelminthes *- flatworms*			
Monogenea – *flukes* (163 spp)			
Trematoda – *flukes* (17 0 spp)			
Cestoda – *tapeworm*s (192 spp)			
Phylum Mollusca *– molluscs*			
Gastropoda -*gastropods* (20 spp)			Gastropods are relatively well-studied
Phylum Nemata *– nemas, threadworms, roundworms, nematodes* (over 1160 spp)			
			303 are human and animal parasites, 450 are free-living and phytoparasites and 410 are insect parasites
Phylum Acanthocephala *- spiny-headed worms* (30 spp)			
Phylum Annelida – *Annelids*			
Hirudinea –*leeches* (16spp)			
		Lumbricidae– *earthworms* (60 spp)	well researched
		Enchytraeidae (65 spp)	
Phylum Arthropoda *- arthropods*			
Subclass Copepoda – *copeopods* (41 spp)			
Branchiopoda –*water fleas and shrimps*	Suborder Cladocera *-water fleas* (70 spp)		
	Scorpiones– *scorpions* (1 spp)		

	Pseudoscorpiones –*false scorpions* (70 spp)		
		Acaridea–*acaroid mites* (75 spp)	
		Gamasida – *gamasid mites* (105 spp)	
		Ixoides – *ticks* (37 spp)	
		Tetranichoidea – *spider mites* (115 spp)	
	Araneae –*spiders* (350 spp)		
Diplopoda (52 spp)			
Subphylum Insecta – insects			
Colembola –*springtails* (60 spp)			
	Orthoptera – *grasshoppers, crickets, locusts* (200 spp)		
	Blattoidea –*cockroaches* (6 spp)		
	Odonata –*dragonflies and damselflies* (64 spp)		
	Homoptera *cicadas, aphids, and allies* (675 spp) (including 140 Psylloidea).		
	Hemiptera – *true bugs* (476 spp)		
		Scarabaeidae – *scarab beetles* (214 spp)	
		Cerombycidae – *long horn beetles* (250 spp)	
		Elateroidae –*click beetles* (128 spp)	
		Coccinellidae – *ladybird beetles* (90 spp)	
		Scolytidae–*bark beetles* (217 spp)	

	Lepidoptera –*butterflies and moths*	Geometridae – *inchworm moths* (434 spp)	This order has been well studied
		Apoidea -*bees & sphecid wasps* (298 spp)	
		Aphelinidae (100 spp)	
		Encyrtidae – *parasitic wasps* (210 spp)	
		Syrphidae – *syphid flies* (142 spp)	
		Formicidae –*ants* (155 spp)	
	Diptera – *flies, mosquitos and gnats* (500 spp)	Sarcophagidae (71 spp)	Other families are under researched
	Thysanoptera (160 spp)		Other orders such as Neuroptera (*lacewings, antlions, and snakeflies*) and Ephemeroptera (*mayflies*) need further study

Annex 5: List of key animal species

Fish

Latin name	Common name	Notes	IUCN Red list status
Commercial fish species:			
Barbus lacerta	Mtkvari Barbel		
Leuciscus cephalus	Caucasian Chub		
Carassius carassius	Crucian carp		
Coregonus albula	European cisco		DD
Ctenopharyngodon idella	Grass carp		
Vimba vimba tenella	Vimba		
Chalcalburnus chaleoides	Caspian shemaya		
Aspius aspius	Caspian asp		DD
Hypophtalmichthys molitrix	Silver carp		
Aristichthys nobilis	Spotted silver carp		
Fish species no longer commercially exploited:			
Salmo fario	Trout		
Barbus capito	Barbel chanari		
Cyprinos carpio	Lake Paravani European mirror carp		
Endangered fish species:			
Acipenser sturio	Baltic sturgeon		CR
Salmo trutta	Brown Trout		

Amphibians

Latin name	Common name	Notes	IUCN Red list status
Order Anura – frogs and toads			
Pelodytes caucasicus	Caucasian Parsley frog		DD
Pelobates syriacus	Eastern spadefoot toad		
Bufo viridis viridis	Eurasian Green Toad		
Bufo verrucosissimus	Caucasian Toad		DD
Hyla arborea shelkownikowi	European Tree Frogs		
Hyla savignyi	Mediterranean Frog		
Rana macrocnemis	Brown Frog		
Rana macrocnemis camerani	Brown Frog subsp.		
Rana ridibunda	Lake frog		
Order Caudata –newts and salamanders			
Mertensiella caucasica	Caucasian salamander		LR
Triturus vittatus ophriticus	Banded newt		
Triturus vulgaris lantzi	Smooth newt		
Triturus karelinii	Southern crested newts		

Reptiles

Latin name	Common name	Notes	IUCN Red list status
Species endemic to the Caucasus			
Elaphe hohenackeri	Transcaucasian Ratsnake		
Pelias kaznakovi= Vipera kaznakovi	Caucasian Viper		EN
Pelias dinniki =Vipera dinniki	No common name		VU
Natrix megalocephala	European Grass snake		

Lacerta rudis			
Lacerta mixta			
Lacerta derjugini			
Lacerta portchinskii			

Mammals

Latin name	Common name	Notes	IUCN Red list status
Species endemic to Georgia include:			
Sorex caucasica	Caucasian Long Tailed Shrew		
Sorex volnuchini	Caucasian Pygmy Shrew		
Talpa caucasica	Caucasian mole		
Neomys schelkovnikovi	Transcaucasian Water Shrew		
Sicista caucasica	Caucasian Birch Mouse		
Sicista kluchorica	Kluchor Birch Mouse		DD
Sicista kazbegica	Kazbeg Birch Mouse		DD
Prometheomys schaposchnikowi	Long-clawed Mole Vole		
Chionomys gud	Caucasian Snow Vole		LR
Other important species			
Suncus etruscus			
Lepus europaeus			
Sciurus anomalus	Persian Squirrel		LR
Allactaga elater			
Rhinolopus euriale			
Rhinolopus mehelyi			
Myotis emarginatus	Geoffroy's Bat		VU

Introduced species			
Sciurus vulgaris			
Myocastor coypus			
Ondatra zibethicus			

Annex 6: List of Contributors

Component		Author
Protected areas	-	NACRES GPAP
Species and Habitats (Flora)	-	G. Arabuli, State Muzeum of Georgia O. Abdaladze, Institute of Botany of the Georgian Academy of Sciences
Species and Habitats (Fauna)	-	NACRES
Agrobiodiversity; Biotechnology and biosafety.	-	M. Jorjadze, Biofarmers Association: Elkana
Hunting	-	NACRES
Fishing	-	G. Bitadze, Department of Biodievrsity, Ministry of the Environment of Georgia
Monitoring	-	NACRES
Environmental education, public awareness and public participation	-	M. Kapanadze, Department of Public Relations, Ministry of the Environment of Georgia
Financial and Economic Programmes	-	K. Jakeli, Humanitarian Instite of Georgia
Legislation and institutional development	-	NACRES