Islamic Republic of Afghanistan

NATIONAL BIODIVERSITY
STRATEGY & ACTION PLAN

Building Environmental Resilience

Framework for Implementation 2014 - 2017

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This National Biodiversity Strategy and Action Plan for Afghanistan has been prepared by the National Environmental Protection Agency, with technical and advisory inputs from relevant government agencies, non-governmental organizations, international organizations and user groups at national and provincial levels. Its purpose is two-fold: firstly, to provide the Government of Afghanistan with a policy document that will be useful in guiding development of its future biodiversity conservation and management programming, and secondly for communicating biodiversity conservation priorities in Afghanistan to the Secretariat of the Convention on Biological Diversity (a requirement of all countries acceding to the Convention), to other government agencies in Afghanistan, and to Afghanistan’s development partners.

The Strategy and Action Plan have been developed on the basis of a thorough review of available information on Afghanistan’s biodiversity and its current status, as documented in published reports and currently available databases, and as reported during consultations with government officials and residents representing all of Afghanistan’s 34 provinces. The process has been facilitated by the excellent field work, status reporting and analysis previously undertaken by a variety of organizations. The staff and management of the Wildlife Conservation Society and United Nations Environment Programme have been particularly helpful in providing access both to their reporting and to unpublished information.

Although a relatively large amount of information on the biodiversity of Afghanistan is available, much remains to be documented in the remote corners of this large, rugged and ecologically diverse country. Years of ongoing warfare have certainly taken a toll on the nation's biodiversity resources, but the extent of biodiversity loss and degradation remain largely undocumented. Nevertheless, sufficient biodiversity resources remain to justify concerted management efforts. Additional survey work, focussed monitoring efforts, and continuing external support for biodiversity management also are required to ensure the effective conservation of Afghanistan’s biodiversity resources.

Additional funding support also will be needed for further implementation and monitoring of key biodiversity management activities at national and provincial levels. Various legislative and planning initiatives have been undertaken and/or are ongoing. Training needs assessment has been completed at a strategic level but concrete engagement and curriculum development with Ministry of Education, Ministry of Higher Education and vocational training plans is required to ensure deeper integration of biodiversity into formal and semi-formal training on biodiversity. Attention will need to be paid to ensuring that the legislative and planning foundations, and implementation capacity for biodiversity management, are both adequate and functional over the long-term.

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FOREWORD

This report was produced by a team from the National Environmental Protection Agency of the Islamic Republic of Afghanistan, supported by funds for enabling activities under the Global Environmental Facility (GEF) project “Afghanistan: Development of National Biodiversity Strategy and Action Plan (NBSAP), Assessment of Capacity Building Needs for In-situ and Ex-situ Biodiversity Conservation.”

Project execution and consolidation support was provided by the Post-Conflict and Disaster Management Branch (PCDMB) of the United Nations Environment Programme (UNEP), supported by the UK Department for International Development (DFID). Additional resources were provided by the United States Agency for International Development (USAID), through a grant to their partner ECODIT. All original artwork was produced by UNEP consultants, Jon Coe, together with Mareile Paley.
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The goals of the Convention on Biological Diversity are to: promote the conservation of the biological diversity of ecosystems, habitats and biomes; promote the conservation of species diversity; promote conservation of genetic diversity; promote sustainable use and consumption; reduce pressures from habitat loss, land use change and degradation, and unsustainable water use; control threats from invasive alien species; address changes to biodiversity from climate change and pollution; maintain capacity of ecosystems to deliver goods and services and to support livelihoods; maintain socio-cultural diversity of indigenous and local communities; ensure the fair and equitable sharing of benefits arising out of the use of genetic resources; and ensure that Parties have improved financial, human, scientific, technical and technological capacity to implement the Convention. All Parties to the Convention, which Afghanistan signed in 1992 and formally acceded to in 2002, are urged to develop a National Biodiversity Strategy and Action Plan (NBSAP) as a framework for implementing the Convention’s goals.

Afghanistan’s NBSAP, which aims at conserving all aspects of Afghanistan’s biodiversity, and ensuring that future utilization of biodiversity resources is sustainable, comprises the following elements:

- to continue ongoing assessments of Afghanistan’s floral and faunal communities, with the overall aim of improving understanding of Afghanistan’s biodiversity resources and their conservation requirements
- to expand the protected areas system to ensure that it is representative of all major ecosystems and areas of outstanding conservation or natural heritage value
- to develop and implement the support mechanisms (incentives, rules, regulations, environmental education, public awareness) necessary for the effective conservation of biodiversity and other natural resources
- to continue ongoing assessments of the status of Afghanistan’s floral and faunal species, with the overall aim of improving understanding of Afghanistan’s biodiversity resources and their conservation requirements
- to develop the mechanisms required for effective conservation of economically important species
- to develop and implement mechanisms to ensure sustainable use of biodiversity resources, including funding, capacity and policy considerations
- to prevent the illegal or unsustainable use of biodiversity resources
- to develop and implement mechanisms for preventing damage to natural ecosystems from invasive alien species
- to control impacts on biodiversity resources resulting from climate change, desertification and pollution
- to develop and implement mechanisms and plans for maintaining goods and services obtained from critical ecosystems, focussing on forests and woodlands
- to maintain cultural diversity by recognizing and valuing traditional knowledge and land uses
- to manage genetic resources for the benefit of all citizens of Afghanistan, and
- to ensure that government organizations have sufficient capacity and resources to carry out Afghanistan’s obligations as a signatory to the CBD and other Multilateral Environmental Agreements

The Environment Law enacted in 2007 assigns National Environmental Protection Agency (NEPA) the responsibility for coordinating and monitoring conservation and rehabilitation of Afghanistan’s environment. This mandate gives NEPA overall responsibility for implementation of the National Biodiversity Strategy and Action Plan, in partnership with Ministry of Agriculture, Irrigation and Livestock and other government organizations, and with the technical and financial assistance of international organizations and non-governmental organization partners.
INTRODUCTION

BACKGROUND

The Convention on Biological Diversity (CBD), developed in response to growing threats to species and ecosystems, and inspired by a world-wide commitment to sustainable development, was opened for signature in 1992. Parties to the Convention are urged to develop a National Biodiversity Strategy and Action Plan (NBSAP) as a framework for implementation. A total of 177 Parties have now done so. The ninth meeting of the Conference of the Parties (COP) in 2008 called on the remaining 26 Parties to develop their NBSAPs by 2010.

Afghanistan signed the CBD agreement in 1992 and became a Party in 2002. The Environment Law (2007) requires the National Environmental Protection Agency (NEPA) to prepare, in consultation with relevant ministries, a NBSAP that addresses both in situ and ex situ conservation within two years of entry into force of the Act.

This NBSAP has been produced by NEPA in compliance with both of these requirements. COP guidance on developing NBSAPs (Annex iv) has been followed in terms of process and issues to be addressed.

PROCESS

The development of Afghanistan’s National Biodiversity Strategy and Action Plan was a participatory process led by NEPA, with the technical guidance of a 19 member Biodiversity Working Group comprising senior representatives from Kabul University, NEPA and Ministry of Agriculture, Irrigation and Livestock (MAIL).

Development of the NBSAP was based on the following process and activities:

- a review of the CBD and its guidance on NBSAP preparation.
- a review of NBSAPs prepared for surrounding countries, and of representative NBSAPs from elsewhere, to extract lessons learned and guidance on best-practice approaches and techniques.
- a comprehensive assessment of available information on biodiversity status and threats to biodiversity in Afghanistan, based on a review of available reporting and interviews with government, international donors and non-governmental organisation (NGO) personnel. The review of background and scientific information was based on English language reporting, as little if any original reporting is available in other foreign languages or the national languages of Dari and Pashto.
- provincial-level consultations in Bamiyan, Mazar, Herat, and Kabul, primarily involving personnel from provincial NEPA offices, but also community members, NGOs and journalists. The provincial level consultations were designed to solicit information on biodiversity status, threats, and management options, and included representatives from 27 of Afghanistan’s 34 provinces. Follow up telephone interviews were conducted by NEPA to solicit information from the remaining seven provinces.
- a comprehensive review and ranking of management options (as developed through the above process) by the Biodiversity Working Group.
- preparation of a threats assessment, including ranking of threats to biodiversity in Afghanistan by the Biodiversity Working Group.
- preparation and review of a strategic framework for the future conservation of Afghanistan’s biodiversity resources, identifying priority actions required to address the 11 goals and 13 strategic objectives incorporated in the strategy, the proposed timeframe for each action, the responsible government organization (RGO) under existing legislation policy, and the designated implementing government organization (IGO).

NATIONAL BIODIVERSITY STRATEGY:
PRINCIPLES, PRIORITIES AND TARGETS

Afghanistan’s NBSAP aligns with other national environmental strategies that are already in place or under development. Two such policies of particular importance and relevance are the Environment Sector Strategy 1387-1391 (2007/08-2012/13) (Government of Afghanistan 2007) and the National Priority Programme 1: National Water and Natural Resources Development Programme (Government of Afghanistan 2012). The overarching longer-term goals and objectives of these policies and strategies are mirrored in this NBSAP.

The Environment Sector Strategy 1387-1391 (2007/08-2012/13) focuses predominantly on the use of protected areas to manage and sustain Afghanistan’s biodiversity. Acknowledging that Afghanistan has never had the benefit of an effective protected areas system, it recognises the history of Afghanistan’s protected area system from the 1970s through to a review carried out in the 1990s. However, the lack of overall enabling legislation providing for the establishment and management of protected areas has meant that the precise current legal status of each protected area is uncertain (Government of Afghanistan 2007). The strategy therefore seeks to secure clarity on the legal status and boundaries of each protected area, with enabling legislation to facilitate the establishment and management a protected area network, including accession to the Ramsar Convention on Wetlands to support internationally important migratory and breeding waterbird populations. It also looks for assessments on the impacts of human settlements, war, drought, tourism and landmines on these areas, as well as on associated hydrological systems and biodiversity. Finally, the strategy seeks to address specific threats such as the regulation of hunting and other human activities within the protected areas, and the clearance of land mines (Government of Afghanistan 2007).
The National Priority Programme 1: National Water and Natural Resources Development Programme has set its goal to be “ensure effective utilization, together with proper management, of existing water and other natural resources to accelerate agricultural productivity and provide safe drinking water and a hygienic environment, with viable rural energy options for rural prosperity” (Government of Afghanistan 2012). It therefore has a series of three overarching objectives:

1. Better irrigation systems that will conserve water, expand agriculture, and increase access to potable water.

2. Water, forests and rangeland will be restored and protected by incentivized communities with technical support.

3. Enhancing access to rural energy will improve rural livelihoods and allow opportunities for new agribusiness to create sustainable jobs.

Through the collation and analysis of existing data, the Programme aims to improve future environmental conservation and management with strengthened governance mechanisms and the design and implementation of practical Community-Based Natural Resource Management (CBNRM) environmental conservation and management interventions. It therefore aims to restore at least 15% of existing degraded forests and rangeland areas (195,000 ha (1,950 sq. km) of forests and 4.5 million ha (45,000 sq. km) of rangelands). It also expects a substantial increase in the protected area network, with at least eight new protected areas established and fully operational with management structures in place and biodiversity conservation interventions initiated (Government of Afghanistan 2012).
The primary value of biodiversity to Afghans lies in the tangible goods and services that biodiversity provides to them. The most obvious of these are the direct uses of the components of biodiversity from traditional crops, fruits, grazing, fuel, timber harvesting, fishing, and hunting. Less obvious are the indirect “ecosystem services” provided by biodiversity. These include soil fertility, erosion control, crop pollination, and climatic stability, to name a few. The ecosystem services provided by biodiversity are rarely understood and usually taken for granted, but as Diamond (2005) has argued, loss of these ecosystem services has often contributed in a central way to the decline and ultimate collapse of societies.

Biodiversity has been termed “the wealth of the poor” (World Resources Institute 2005) because the poor tend to be rural people living close to the land and dependent on it for the goods and services provided by biodiversity, e.g. productive crop and grazing land, fuel, building materials, wild fish and game. Land rich in biodiversity is a form of wealth, even if that wealth cannot be measured in strictly monetary terms. The converse is that a country that has eliminated its biodiversity is a country condemned to remain poor. Without the basic goods and services provided by biodiversity it is not possible for rural people to make a living from the land. Poverty and emigration are the only options. If Afghanistan is to develop into a vibrant and economically secure nation, it must first control the loss of its biodiversity.

LEGISLATIVE AND INSTITUTIONAL CONTEXT

Biodiversity resources in Afghanistan comprise an estimated 3,500-4,000 native species of vascular plants, 428-515 bird species, 137-150 mammal species, 101-139 fish species, 92-112 reptile species, and 6-8 amphibian species (UNEP 2009). The number of endemic species is relatively low for vertebrates (7 species), but relatively high for plants (possibly more than 1,000 species). Wild biodiversity resources have historically been primary sources of food, medicine, building materials and trade items, and continue to be important at all levels of the economy.

Landraces of crop and livestock species are critically important elements of Afghanistan’s agricultural biodiversity, being adapted to the often severe environmental conditions across the country and providing the basis for rural livelihoods. Fodder and forage plants in particular sustain the estimated 30 million strong goat and sheep flocks.

Responsibility for management of biodiversity resources is currently split between two agencies: the NEPA and MAIL. Both agencies currently have a presence at both national and provincial levels. International organizations (WCS, UEP, International Centre for Integrated Mountain Development (ICIMOD), among others) currently play an active role in support of biodiversity assessment and conservation initiatives. However, overall financial and human resources capacity for effective biodiversity conservation and management remain relatively low.

Biodiversity conservation issues in Afghanistan are reasonably well known (UNEP 2009), but basic survey work, development of management capacity and establishment of a representative system of protected areas are needed. Conservation actions The collateral impacts of climate change on biodiversity resources remain to be determined, but may be significant given that almost all of Afghanistan’s water resources are derived from precipitation falling directly within the country (UNEP 2009).

EDUCATION AND PUBLIC AWARENESS ABOUT BIODIVERSITY

The National Environmental Protection Agency (NEPA) is responsible for coordinating formal and informal approaches to environmental education in Afghanistan, under its own mandate and the 2007 Environment Law. As of 2012, significant progress has been made. A department of environment informal approaches to environmental education in Afghanistan, under its own mandate and the NEPA and MAIL. Both agencies currently have a presence at both national and provincial levels. International organizations (WCS, UEP, International Centre for Integrated Mountain Development (ICIMOD), among others) currently play an active role in support of biodiversity assessment and conservation initiatives. However, overall financial and human resources capacity for effective biodiversity conservation and management remain relatively low.

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In addition to the development of teaching and training materials, preparation of a draft national priority programme sub-component on Environmental Education in the NEP from Ministry of Finance was approved in 2012. NEPA has a small functioning Environmental Awareness and Outreach unit, which strives to mobilise other line ministries and civil society towards more concrete action on environment.

One of the legacies of war: Data collection has been hampered in recent years owing to restricted access to many parts of the country.

Species Assessments

Afghanistan is not a global biodiversity "hotspot". Groombridge and Jenkins (1994) calculated a comparative index of biodiversity for all countries over 5,000 km² based on the number of mammals, birds, reptiles, amphibians, vascular plants and endemic species. The index is scaled to account for the different sizes of countries. A score of 0 is the median with half the countries having a higher biodiversity index and half a lower one. Afghanistan's index is 0.246 indicating that its biodiversity index is somewhat lower than the median. Indices of neighbouring Pakistan (-0.121) and Iran (-0.194) are somewhat higher, but still below the median. Indices for Turkmenistan (-0.572), Tajikistan (-0.586), Uzbekistan (-0.413), and Kazakhstan (-0.581) are all lower than Afghanistan's. Afghanistan's relatively low score results largely from the lack of vertebrate endemics.

Analysis of species records in UNEP (2009) indicates that there are 137-150 species of mammals, 428-515 birds, 92-112 reptiles, 6-8 amphibians, 101-119 fish, 245 butterflies, and 3,500-4,000 species of vascular plants. Other species are suspected to occur in Afghanistan, but no authority citing first-hand evidence could be found. Table 2.1 is a summary of these checklists. It suggests that there are 789-916 species of mammals, 137 13 birds, 428 87 reptiles, 92 20 amphibians, 6 2 fish, and 3,500-4,000 vascular plant species native to Afghanistan. The range in numbers results from uncertainty in taxonomy and the questionable validity of some records. Only 7 vertebrate species (Mammals; none; Birds, Afghan Snow Finch [Montifringilla thereseae], Reptiles, Leviton's Gecko [Asiocolotes levitoni], Cyrtopodion voraginosus, Eremias arfia, Point-snouted Racerunner [Eremias afghanistanica], Amphibians, Pagham Mountain Salamander [Batrachuperus mustersi], Fish, Triplophysa farwelli) are known to be endemic to Afghanistan, but estimates for endemic plant species range as high as 30% (Breckle 2007). Much more basic biological survey work and synthesis needs to be done to fully understand the country's biodiversity.

A variety of processes assess the status Afghan species and assigns a level of threat. The IUCN Red List assesses risk at the global scale using quantitative criteria. Afghanistan has very recently formed the Afghanistan Wildlife Executive Committee (AWEC) to assess risk of Afghan species at the national scale using International Union for the Conservation of Nature (IUCN) regional criteria. The AWEC also recommends to NEPA whether species should be legally listed as Harvestable or Protected according to Article 47 of the Environment Law. The Convention on the International Trade in Endangered Species (CITES) lists species on Appendices if they are threatened by international trade. The United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC 2009) provide a list of Afghan species of “conservation concern”, but the list is so broad and the criteria for inclusion so uncertain that it is not particularly valuable for prioritization purposes.

As a broad generalization, biodiversity appears to be declining at an accelerating rate throughout Afghanistan. Satellite image analysis and assessment of commercial wood volumes show that forests, both closed forest and open woodlands, are rapidly disappearing. Overgrazing and shrub collection for fuel is markedly reducing plant biomass and altering plant communities.

Diversions of water and increasingly frequent drought is drying wetlands and rivers with unknown effects on aquatic biodiversity. The ubiquity of weapons following years of war is leading to the loss of large mammals throughout much of the country. Footprint analysis shows that Afghanistan’s per capita bio-capacity is declining. Large scale remote sensing analysis suggests that Afghanistan nearly 8,000 km² of land was degraded between 1981 and 2003.

Afghanistan’s extremely varied mountain and desert topography result in numerous habitat types. Temperature and precipitation change dramatically with elevation differences, resulting in a variety of habitats and differing suites of species adapted to them. Afghanistan’s mountains also act as a barrier to precipitation, resulting in higher moisture in the eastern part of the country, considerable snow at higher elevations, and a rain shadow to the north and west. The result is a variety of species adapted to the entire gamut of moisture regimes, ranging from desert to monsoon forest.

Afghanistan is on the boundary of Palearctic. The Argali or Marco Polo sheep (Ovis ammon poli) inhabits the mountain areas of central Asia above 1,000m. The Argali is a vulnerable species (IUCN 2000) threatened by hunters for their highly prized horns and habitat loss from the grazing of domestic sheep and Indo-Malayan Realms. Although the majority of species are Palearctic in origin, many Indo-Malayan species have dispersed into Afghanistan.

The number of species in an ecosystem tends to be greatest at moderate levels of productivity, with fewer species in areas of very high or very low productivity. Afghanistan is a dry, high altitude and human disturbed country with low primary productivity. Consequently, Afghanistan is predisposed to having relatively few species. Afghanistan is a continental country with no major mountain barriers to the north and west, allowing the free mixing of species of Palearctic origin with neighbouring countries. Consequently, Afghanistan has relatively few endemic animal species. Afghanistan is a land-locked country and therefore lacks marine biodiversity.

A number of databases list the number of Afghan species, but they differ from one another and are usually not explicit on their data sources. The vertebrate checklists are very conservative in that they include only species for which there are citable references for occurrence in Afghanistan. Many other species are suspected to occur in Afghanistan, but no authority citing first-hand evidence could be found. Table 2.1 is a summary of these checklists. It suggests that there are 789-916 species of vertebrates in Afghanistan and 3,500-4,000 species of vascular plants.

### Table 2.1. Number of species known to exist in Afghanistan

<table>
<thead>
<tr>
<th>Category</th>
<th>Known Species</th>
<th>Uncertain Species</th>
<th>Estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mammals</td>
<td>137</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Birds</td>
<td>428</td>
<td>87</td>
<td></td>
</tr>
<tr>
<td>Reptiles</td>
<td>92</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Amphibians</td>
<td>6</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td>101</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>Insects</td>
<td></td>
<td></td>
<td>10% of 1,000s</td>
</tr>
<tr>
<td>Vascular Plants</td>
<td>208</td>
<td>?</td>
<td>3,500-4,000</td>
</tr>
<tr>
<td>Lichens</td>
<td></td>
<td></td>
<td>1,000s</td>
</tr>
<tr>
<td>Fungi</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Afghanistan has a rich avian diversity, largely as a result of the combination of many Indo-Malayan species in the eastern part of the country and the predominantly Palaearctic avifauna over the remainder of the country (Evans 1994). The list of Afghan bird species estimates the number of known Afghan bird species at 428, with another 87 classified as uncertain (Dickinson 2004). The majority of the 137 species listed as uncertain may in future be demonstrated to occur in Afghanistan. Evans (1994) suggests that as many as 235 species may breed in Afghanistan.

Most of the data on Afghan birds is more than 30 years old and probably does not reflect the current situation. Habibi (nd) reviewed the pre-war literature and produced a list of over 450 species based on published observations.

Five species are on the IUCN Red List as globally Critically Endangered, two are listed as Endangered and 14 as Vulnerable. New Afghan bird species are listed on CITES Appendix I and II on Appendix II. There has been no examination of risk status at the national level. The last reliable sightings in Afghanistan of the Critically Endangered Siberian Crane (Grus leucogeranus) was one shot in 2000 by a hunter in the Shurtepa District of Balkh Province near the Amu Darya River (Qais Agah of Save the Environment Afghanistan, pers. comm., April 2006). The subspecies of Siberian Cranes that migrated through Afghanistan is now extinct.

There is only one bird species considered as endemic to Afghanistan, The Afghan Snowfinch (Montifringilla (Pyrgilauda) thomasi), although a part of the population winters in Turkmenistan (Rassamian and Anderton 2000). There are also six “near-endemics” (Colombia eversmanni, Phylloscopus neglectus, P. subrubens, Oenanthe picata and Passer modestus) meaning that Afghanistan represents a large proportion of their breeding range (Evans 1994). Of particular significance is the Yellow-eyed Pigeon (Colombia eversmanni) which is listed as “Vulnerable” by IUCN. Afghanistan also likely supports significant numbers of breeding Lammmergeier (Gypaetus barbatus), Egyptian Vulture (Neophron percnopterus), Cinerous Vulture (Aegypius monachus) and other birds of prey (Evans 1994).

The entire Himalayan uplift region presents a formidable barrier to migrant small birds travelling between wintering grounds in the Indian subcontinent and breeding areas in central and northern Asia. Afghanistan is situated at the lower, western end of the Himalayan chain and therefore receives a large passerine migration (BirdLife Internationale nd). Afghanistan also lies in the path of the Central Asian Flyway and receives migratory waterbirds breeding in Central and western Siberia.

The few large Afghan wetlands (e.g. Ab-i-Istada, Dash-i-Nawar, Hamun-i-Puzak, Hamun-i-Saberi) are critical migration stop-over points. Water-dependent species may be seen along the banks of the rivers and in the flooded floodplains. Using a consistent set of criteria, Evans (1994) has proposed 17 areas in Afghanistan as internationally Important Bird Areas (IBAs). Nine of these areas have also been separately proposed as protected areas.

Other areas of major significance to Afghan birds, suggested by Khushal Habibi (pers. com. 2006), are the Konar drainage on north slopes of the Hindu Kush, the Salang and Sarde rivers. In the 1970s, another hatchery was located near Paghman west of Kabul. From 1987-1989, efforts were made by UNDP/Fao to rehabilitate the Qargha hatchery, but the venture was abandoned because of the deteriorating security situation (Peri 1999). Rainbow trout are considered by the IUCN Invasive Species Specialist Group as one of the “100 Worlds’ Worst Alien Invasive Species” (Low et al. 2000). It is unknown how detrimental the release of rainbow trout has been to the stream ecosystems of Afghanistan.

Now a long history of introduced fish stocking. A rainbow trout hatchery was established in 1967 at Qargha Dam near Kabul. In the 1970s, it produced about 30,000 fingerlings which were stocked in Qargha Reservoir and the Panjshir, Bamiyan, Salang and Sarde Rivers. In the 1980s, another hatchery was located near Paghman west of Kabul. From 1987-1989, efforts were made by UNDP/Fao to rehabilitate the Qargha hatchery, but the venture was abandoned because of the deteriorating security situation (Peri 1999). Rainbow trout are considered by the IUCN Invasive Species Specialist Group as one of the “100 Worlds’ Worst Alien Invasive Species” (Low et al. 2000). It is unknown how detrimental the release of rainbow trout has been to the stream ecosystems of Afghanistan.
INVERTEBRATES
The vast majority of the world’s species are invertebrate animals, yet very little investigation has been made of Afghanistan’s invertebrate fauna and the information that is available has not been collated. It is likely that there are several tens of thousands of insect species in Afghanistan. Butterflies are the most readily identifiable and best known of the insects.

Of the 37 species collected by two expeditions, Solem (1979) found 20 to be new to Afghanistan suggesting “only the tip of Afghanistan mollusc diversity has been sampled”. His review concluded that there were 73 mollusc species known from Afghanistan in 1979. Only one Afghan invertebrate, the butterfly Parmassius automeris from the Paniris, is on the IUCN Red List as being globally threatened. No Afghan invertebrates are listed by CITES.

PLANTS
There is a large amount of information on the vascular plants of Afghanistan, but little attempt has been made to consolidate the information. The most comprehensive work is the Flora Iranica begun in 1963 and now comprised of 174 separate volumes dealing with individual plant families. Afghanistan is within the Flora Iranica region. The number of Afghan vascular plants is variously cited as between 3,500 (Groombridge 1992) and 4,000 (Groombridge and Jenkins 1994).

Afghanistan’s Hindu Kush is located in an area of high vascular plant diversity extending through the Paniris and Tarn Shan Ranges. However, plant diversity declines as one moves west through the Hindu Kush and its western extensions.

Liverworts are the most primitive true plants and consist of moss-like or ribbon-like leaves. They tend to grow in moist areas. There are 16 Afghan species, as noted by Frey (1977). Only one plant species, Ulmus wallichiana, the Himalayan elm, is on the IUCN Red List. Eight plant species are listed on CITES Appendix II.

LICHENS AND FUNGI
Fungi are plant-like organisms that lack chlorophyll and absorb food from their habitats. They do not require sunlight for their growth and can therefore live in dark places. Only three very preliminary papers were found treating the fungi of Afghanistan.

There are probably thousands of Afghan fungi species. Lichens are combinations of a fungus and an alga growing together in a symbiotic relationship. In Afghanistan, there are 208 known species of lichens. Xanthoria elegans is the most common lichen in Afghanistan. X. elegantissima, an orange-red, nitrogen-loving lichen with a worldwide distribution and is often associated with bird and mammal urine. Other common lichens are Lecanora muralis and Caloplaca bidentata. Genera widespread elsewhere in the world, such as Cladonia, Alloeora, Hypogymnia and Usnea, do not appear to occur in Afghanistan (Steiner and Pfadl 1990).

The more accessible conifer forests of Nuristan Province are increasingly being threatened by illegal logging. Timber is often illegally transported to Pakistan where it is sold to traders and on to carpentry workshops for secondary transformation.

AGRICULTURAL BIODIVERSITY
Agricultural biodiversity refers to the variety of species of crops and livestock that farmers employ, the genetic variability within each of those species as indicated by the diversity of varieties raised, and the genetic variability of the wild progenitors of domesticated species.

THE SIGNIFICANCE OF AGRICULTURAL BIODIVERSITY
Agricultural biodiversity is important because it provides the farmer with the flexibility to adapt to changing conditions. Under any given set of stable conditions, the best single variety of the best species will provide the greatest yield per unit of land, labour and money invested. Consequently farmers often concentrate their efforts on raising the most favourable species and variety to the exclusion of others. When times are good, this mono-cropping strategy can result in large yields. However, the strategy is risky because if the rains do not come, if an insect attacks the crops, or if a disease strikes the livestock, the farmer who depends on one species or variety can lose everything. Mono-cropping is therefore a high yield/high risk approach to agriculture.

VARIETIES OF AGRICULTURAL SPECIES
“Landraces” are varieties of a crop or livestock species developed by farmers through conscious or unconscious selective breeding. Landraces are highly adapted to local conditions. Different landraces incorporate a huge amount of genetic variability and are the source of most genetic resistance incorporated into improved seed sources. Mountainous regions, such as Afghanistan, are rich in landraces because of the isolation and differing conditions in nearby mountain valleys. Landraces often do not produce yields as large as new, “improved” varieties, although they almost always require fewer chemicals and less land preparation and they are more resistant to the specific environmental challenges found in the local environment. Planting landraces is often less expensive and risky compared to planting high-tech imported seed. In Afghanistan, most crops planted in rainfed areas are still local landraces while improved seed is increasingly being used in irrigated areas (ICARDA 2000).

Experiments in Afghanistan showed that improved, foreign breeds of sheep could not survive the poor ranges that local breeds were able to utilize (Yalcin 1979 in Adil 2000).

Many traditional varieties and landraces of cultivated species are being lost. Several hundred years ago, carrots grew in a rainbow of colours—red, purple, white and orange, but now only orange and reddish carrots remain. Early farmers had to plant many varieties of each crop so at least something would make it to harvest through the vagaries of drought, flood and disease during the growing season. The development of hybrid seeds, improved livestock breeds, veterinary drugs, pesticides, chemical fertilizers and farm machinery gives farmers more control over growing conditions allowing the use of only few of the most productive varieties. Consequently, many landraces of plants and animals are in danger of being lost along with their genetic resources.

The value of genetic variability encompassed by farmer-developed landraces of crop plants has long been known. Consequently, there are many seed banks around the world that preserve as wide a diversity of genetic adaptations as possible. Prior to the war, Afghanistan had a world-renowned crop seed collection. Unfortunately, the Kabul University collection was destroyed between 1992 and 1994 by factional conflict. Researchers then re-collected samples of the country’s major food and cash crops. During the Taliban era, scientists quietly stockpiled hundreds of seed samples and hid these collections in private homes. Sometime prior to 2002, these collections were again ransacked, apparently to steal the plastic containers in which the seed was stored. The destroyed seed collection included varieties descended from many wild ancestors, representing a rich genetic diversity that may have contained rare traits for things such as disease and pest resistance and drought tolerance (Future Harvest 2002). A number of international collections of Afghan seed biodiversity is still well preserved. Royal Botanical Gardens Kew, England; Edinburgh Botanical Gardens, Scotland; Vienna Herbarium and Vavilov Institute in Moscow Herbarium in particular have significant Afghan botanical collections. In addition, the original Afghan herbarium collections were somewhat preserved by professors in Kabul University, and today over 37,000 plant pressed samples have been recorded, digitised and databased.

Table 2.2. Species known to be endemic to Afghanistan

<table>
<thead>
<tr>
<th>Category</th>
<th>Species</th>
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</thead>
<tbody>
<tr>
<td>Endemic Mammals</td>
<td>None</td>
</tr>
<tr>
<td>Endemic Birds</td>
<td>Afghan Snow Finch (Montifringilla (Pyriglauda) theresaee)</td>
</tr>
<tr>
<td>Endemic Reptiles</td>
<td>Leviton’s Gecko (Asiocolotes levitoni)</td>
</tr>
<tr>
<td></td>
<td>Oryctopteron voraginosus</td>
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<tr>
<td></td>
<td>Eremias ari</td>
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<tr>
<td></td>
<td>Point-snouted Racerunner (Eremias afghanistanica)</td>
</tr>
<tr>
<td></td>
<td>(Uncertain in Afghanistan)</td>
</tr>
<tr>
<td>Endemic Amphibians</td>
<td>Paghman Mountain Salamander (Batrachuperus musters)</td>
</tr>
<tr>
<td>Endemic Fish</td>
<td>Triplophysa farwelli</td>
</tr>
<tr>
<td>Endemic Invertebrates</td>
<td>Unknown</td>
</tr>
<tr>
<td>Endemic Plants</td>
<td>Estimated at 20-30% of 3,500-4,000 species</td>
</tr>
</tbody>
</table>
WILD SPECIES AS THE ANCESTORS OF AGRICULTURAL SPECIES

All agricultural plants and animals were developed by early hunter-gatherers, farmers and herders from wild species through a process of selection of the most favourable types over a process of millennia. There are about 200,000 species of flowering plants. Of these, thousands are edible, but humans have domesticated only a few hundred species. Only 12 species (wheat, maize, rice, barley, sorghum, soybean, potato, manioc, sweet potato, sugar cane, sugar beet and banana) provide 80% of the biomass eaten by humans worldwide. Just three species, wheat, maize and rice, account for half the calories consumed by the world’s population. Even more surprising than the lack of diversity in our food crops is the fact that no new crops of any significance have been developed in the past several thousand years (Diamond 1999).

Those animal species most likely to be domesticated are terrestrial, herbivorous mammals weighing more than 100 pounds (45 kg). There are 148 such species in the world that are candidates for domestication. However, only 14 livestock species have ever been truly domesticated and only five of these (sheep, goats, cows, pigs and horses) are widespread around the world (Diamond 1999). The pioneering Russian plant geneticist N.V. Vavilov discovered in the 1920s that there are seven major regions in the world in which almost all of humanity’s crop plants were developed by early farmers from wild species. All of them are concentrated between 20 and 45 degrees latitude and are associated with mountain ranges; conditions that describe Afghanistan perfectly. Indeed, Vavilov considered Afghanistan and its nearest neighboring countries to be the third most important centre of crop origin in the world and the original home of bread wheat, rye, barley, chickpeas, peas, flax, alfalfa, clover, apple, pear, pomegranate, quince, sweet cherry, melons, grapes, pistachio and some vegetables. Preserving the genetic diversity of these wild ancestors of humanity’s crop species is therefore a global imperative.

AFGHANISTAN’S CROP AND LIVESTOCK SPECIES AND VARIETIES

Table 2.3 is a summary of the food and commodity crops known to be grown in Afghanistan. Plant information is adapted from an unattributed table found on Afghanistan Online (nd) with some additions (FAO 2003) and some deletions. The list is almost certainly not complete. Afghanistan’s cereal production is heavily skewed towards production of wheat. In 2006, Afghanistan’s predicted cereal production was 5.5 million tonnes of which 80% is wheat, 7% is rice, 6% maize and 7% barley (FAO 2006).

Bread wheat (Triticum aestivum) was first created about 4,700 years ago by hybridizing emmer wheat (Triticum turgidum) and wild goat grass (Aegilops squarrosa) to create a hexaploid wheat (i.e. six sets of chromosomes). It is thought by some experts that Afghanistan has more native bread wheat varieties than anywhere else in the world and is therefore likely to be the cradle of its birth (Feder 2003). Vavilov himself collected 110 landraces of wheat from Afghanistan. The Vavilov Institute in Moscow currently records 1,721 varieties from Afghanistan while the ICRISAT database lists 1,892 accessions from Afghanistan (ICARDA 2002). It is not known how many of these varieties are still in use. Less information is available on Afghan landraces of other cultivated crops.

Grapes were probably first domesticated in Herat. Currently, there are reported to be 72–76 local varieties of grapes in the Herat region (Olive 2004). Some of these Afghan landraces are being used by plant breeders in the US to develop new varieties (Bohan 2003).

A March 2012 livestock report carried out by the MAIL and the FAO indicated that there are an estimated 5 million cattle, 12 million sheep, 11 million goats and 200,000 camels in Afghanistan (RAMP nd). There are at least nine landraces of sheep raised in Afghanistan (Baluchi, Panjshir Gadik, Wazikar Gadik, Ghijali, Hazaragi, Kandahari, Karakul, Afghan Arabi, and Turk). Eight breeds of cattle (Afghan Kafli, Badakhshani Bouy, Badakhshani Dasnver, Kandahari, Konar, Shankhansuri, Systani and hybrids of Friesian, Jersey and Brown Swiss), seven breeds of goats (Asmari, Kabli, Kandahari, Kashmiri, Rahnama, Tajiki, and Wati), six horse breeds (Herali, Mazari, Gatgani, Turkistani, Wazin and Yabu) and four varieties of chickens (Khaksari, Kulangi, Rangin and Satow) (Khan and Iqbal nd). Although they were not first domesticated in Afghanistan, the wild progenitors of domestic sheep, goats and donkeys (urial, wild goat and onagers respectively) still exist in Afghanistan, although all are threatened with extinction.

Table 2.3. Species Diversity of Afghanistan’s Agriculture

<table>
<thead>
<tr>
<th>FRUIT &amp; NUTS</th>
<th>VEGETABLES</th>
<th>CEREALS</th>
<th>PULSES</th>
<th>FODDER</th>
<th>COMMODITIES</th>
<th>LIVESTOCK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figs</td>
<td>Beets</td>
<td>Rice</td>
<td>Lentils</td>
<td>Clover</td>
<td>Cotton</td>
<td>Sheep</td>
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<tr>
<td>Pumms</td>
<td>Sesame</td>
<td>Rye</td>
<td>Chick pea</td>
<td>Alfalfa</td>
<td>Tobacco</td>
<td>Cattle</td>
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<tr>
<td>Bananas</td>
<td>Spinach</td>
<td>Wheat</td>
<td>Broad bean</td>
<td>Vetch</td>
<td>Opium poppy</td>
<td>Goats</td>
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<tr>
<td>Dates</td>
<td>Radish</td>
<td>Barley</td>
<td>Flax</td>
<td>Rape</td>
<td>Horse</td>
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<tr>
<td>Peers</td>
<td>Pumppin</td>
<td>Maize</td>
<td>Sugarcane</td>
<td>Bactrian camel</td>
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<tr>
<td>Peaches</td>
<td>Potatoes</td>
<td>Milet</td>
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<tr>
<td>Apricots</td>
<td>Lettuce</td>
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<tr>
<td>Mulberries</td>
<td>Cabbage</td>
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<tr>
<td>Grapes</td>
<td>Garlic</td>
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<tr>
<td>Pomegranates</td>
<td>Leeks</td>
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<tr>
<td>Apples</td>
<td>Turnips</td>
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<tr>
<td>Quince</td>
<td>Asparagus</td>
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<tr>
<td>Oranges</td>
<td>Brussels sprouts</td>
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<tr>
<td>Cherries</td>
<td>Eggplants</td>
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<tr>
<td>Strawberries</td>
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<td>Walnuts</td>
<td>Cauliflower</td>
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<td>Almonds</td>
<td>Garden pea</td>
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<tr>
<td>Pine nuts</td>
<td>Onions</td>
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<tr>
<td>Pistachio nuts</td>
<td>Mustard</td>
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<td>Jujube</td>
<td>Cucumbers</td>
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<td>Loquat</td>
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<td>Persimmon</td>
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<tr>
<td>Mandarin</td>
<td>Melons</td>
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<tr>
<td>Lemon</td>
<td>Sunflowers</td>
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<td></td>
<td>Artichoke</td>
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<td></td>
<td>Tomatoes</td>
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<td></td>
<td>Pepper</td>
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<td>Broccoli</td>
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<td></td>
<td>Cabbage</td>
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</table>
ECOSYSTEM STATUS

CLOSED FOREST VEGETATION

Closed forests of oak and conifers were probably always limited to the eastern part of the country where the westernmost extension of the Indian monsoon breaks the summer drought that limits plant life throughout most of the country. Examination of the potential vegetation maps of Freitag (1971, 1972) suggests that closed forests (not including northern juniper communities) may once have covered about 5% of the country, or about 14,000 km². Sayer and Van der Zon (1981) estimated that there was 5,600 km² of closed canopy forest (i.e. Coniferous, Quercus and Olea-Reptonia) remaining in the late 1970s. If the estimates of UNEP's (2004a) satellite image analysis can be extrapolated, half of that has been lost since 1980 leaving some 1,800 km². Based on these assumptions, Afghanistan is currently left with roughly 5% of its pristine closed forest vegetation, representing about 0.25% of the country's area. Forests that have been cut do not regenerate, largely because of livestock grazing pressure and high soil temperatures and therefore they revert to shrubland.

EAST AFGHAN MONTANE CONIFER FORESTS (PA0506)

The East Afghan Montane Conifer Forest ecoregion (PA0506) corresponds to the majority of Freitag's Himalayan deciduous forest and montane conifer forests. These forests are found in the areas of eastern Afghanistan receiving summer monsoon rains and are dominated by Quercus (oak), Pinus (pine), Cedrus (cedar), Picea (spruce) and Abies (fir). East Afghan Montane Conifer Forests are found primarily in Nuristan, Kunar and Nangarhar, Paktia, Khost and Paktika Provinces. Protection is higher here than elsewhere in Afghanistan, is more evenly distributed throughout the year, and is less erratic between years.

Between 2,100 and 2,500 m elevation, Quercus baloot gains preponderance over Pinus gerardiana (chilgoza pine) stands. In natural forests, shrubs are a minor component of this community, but develop quickly when trees are cut. Between 2,500 and 3,300 m, Cedrus deodara (Deodar cedar) begins to dominate. This is the most economically important forest type in Afghanistan with trees 6-35 m in height and a ground cover of up to 80%. In very moist areas (>800 mm), Picea smithiana (Himalayan spruce) and Abies webbiana (Himalayan fir) dominate up to 2,900-3,000 m. The trees are 15-30 m tall and create a dense, closed forest. In drier areas, Juniperus species are evident.

East Afghan Montane Conifer Forests are currently being illegally harvested at a rapid rate. Analyses by UNEP (2003a) show that between 1977 and 2002 52% of the existing forest was lost in three provinces. Nangarhar was the most affected, with a 71% decrease in forest cover. Nuristan lost 53% and Kunar 29%. Similar losses for the other Paktia, Khost and Paktika were predicted. Deodar cedar is the primary species harvested.

BALUCHISTAN XERIC WOODLANDS (PA1307)

Freitag (1972) terms this type the Evergreen Sclerophyllous Forests and Woodlands community (sclerophysyllous: small, leathery leaves). Sayer and Van der Zon (1981) refer to it as Himalayan Deciduous Forest. The eco-region is located along the Pakistan border in Laghman, Nuristan, Kunar, Khost and Paktika Provinces. It is well represented in neighbouring Pakistan. Freitag (1972) suggests that much of Afghanistan would be dominated by this forest type if the summer dry period lasted for 3-4 months rather than 5-7 months. In eastern Afghanistan, the summer monsoon rains break the long summer dry period just long enough to allow these forests to develop. Pottcock and Larson (1977) provide a detailed summary of the Baluchistan Xeric Woodland vegetation in central Nuristan. At lower elevations (800-1,300 m), a Reptoria buxifolia (gurgura) community develops. Numerous small tree species cover 30-75% of the ground. Quercus baloot (Holly Oak) dominates at elevations between 1,200 and 2,000 m. Depending upon local rainfall levels, Q. baloot stands can be scattered trees 3-6 m tall or pure stands of trees over 15 m in height. In areas with heavy summer rainfall, the Q. baloot community is replaced by a Quercus dilatata at 1,900-2,000 m and Quercus semecarpifolia becomes dominant at 2,400-2,900 m. Both species of Quercus form rich forests 8-30 m in height.

CENTRAL AFGHAN MOUNTAINS XERIC WOODLANDS (PA1309)

This eco-region is comprised of two of Freitag's (1971 and 1972) community types and forms a broad, crescent shaped belt surrounding the eastern and southern sides of the central mountains. Pistacia atlantica (Mount Atlas pistachio) communities are found at an altitude of 1,150-1,800 m where precipitation amounts to 250-400 mm. Pistacia atlantica trees grow to four to six meters in height and under natural conditions cover 15-20% of the ground. At altitudes of 2,000-2,800 m, where 300-350 mm of precipitation falls, Amygdalus (almond) communities form the transition between Pistacia atlantica communities and subalpine vegetation.

OPEN WOODLAND VEGETATION

Open forests have a naturally low density of trees, creating a savannah-like landscape. Open forests originally formed a wide crescent around the north, west and south flanks of the Hindu Kush Sayer and Van der Zon (1981) present information from archaeological sites indicating, between 3,000-1,000 years ago, a much greater diversity of trees and other woody plants than is present in current open woodlands. Very roughly, open woodlands originally comprised some 3% (ca. 250,000 km²) of the Afghan landscape (calculated as the 48% cited by Earthtrends (2003) less 10% closed forests). In the late 1970s, approximately 12,000 km² remained, representing about 1% of the original open woodland and 5% of the Afghan landscape. UNEP's (2004a) satellite image analysis detected no remaining open woodland in two provinces, suggesting that open woodlands are now on the verge of extinction as a viable ecosystem throughout much of Afghanistan.

On the north side of the central mountains, increasing altitude and greater precipitation (250-300 mm) allows open, xeric woodlands to replace the semi-desert shrublands. These woodlands are characterized by scattered trees, relatively low shrub density and a significant amount of herbaceous cover. This eco-region includes Freitag's Pistacia vera and northern Juniperus communities.

Pistacia vera communities occur in a band along the northern mountains at altitudes of 600-1,500 m. Pistacia vera (Pistachio) and Amygdalus bucharica (Bushara almond) trees originally covered as much as 40% of the ground. Shrubs are generally poorly represented and meadow-like ground cover occurs. UNEP (2003a) undertook a satellite image analysis of Pistacia vera communities. In 1977, woodlands comprised of 40-100 trees per ha were found over 50% of the land in Badghis Province and 37% of Takhar Province. In 2002, no woodlands were detected in either province, indicating that tree density had declined below 40 trees per ha. UNEP (2003a) reports that most of the trees were cut for fuel and also in order to reduce hiding and ambush cover during the years of war. UNEP (2003a) found no regeneration of pistachio trees as a result of seeding destruction by grazing animals and intensive collection of pistachio nuts for sale by local residents.

Above the Pistacia vera communities at elevations of 1,500-3,200 m is a band of Juniperus communities. UNEP (2003a) reported that at least 50% of juniper woodlands in Herat Province have been lost in the last 30 years and as much as 80% in Badghis Province.
**SEMI-DESERT VEGETATION**

Semi-deserts are characterized by precipitation below 250-300 mm. Generally, ground cover is less than 25% and trees are absent. Semi-deserts occur primarily in a broad arc around the Hindu Kush at lower elevations than open woodlands.

**AFGHAN MOUNTAINS SEMI-DESERT (PA1301)**

This eco-region is comprised of small, dry interior valleys of the northern Hindu Kush. The eco-region corresponds to the northern portion of Freitag's Amygdalus Semi-Desert community type. Under Freitag’s scheme, the Amygdalus Semi-Desert extends in a narrow band around the western and southern Hindu Kush and forms a transition between the extreme semi-desert of the Badkhis-Karabil eco-region and the open woodland of the Central Afghan Mountains Xeric Woodlands. The eco-region is characterized by various thorny shrubs 0.5-1.5 m in height and covering 10% of the ground surface.

**CENTRAL PERSIAN DESERT BASINS (PA1313)**

This eco-region lies in the extreme north-western corner of the country and corresponds to the majority of Freitag’s (1971) Chenopodium Rich community complex. The family Chenopodiaceae is comprised most of xerophytic (dry-loving) and halophytic (salt-loving) shrubs and herbs. This community develops in areas with <150 mm of precipitation and on non-sandy, salt-laden soils.

**BADKHIZ (BADGHSI)-KARABIL SEMI-DESERT (PA1306)**

This eco-region is a composite of several of Freitag’s (1971-1972) semi-desert communities lying between the Amu Darya River and Parthropomus Xeric woodlands.

A Calligonum-Aristida community occurs as a thin band along the Amu Darya River where there are mobile sand dunes and precipitation is <150 mm. Vegetation covers 1-25% of the land. The Calligonum-Aristida community is bounded on the south by a Chenopodium Rich community and an Ephemeris Semi-Desert community on loess soil. The Ephemeris Semi-Desert is characterized by lush, shallow-rooted herbaceous vegetation early in the year, but by the middle of May the vegetation dries up and dies. Very few woody plants occur.

**REGISTAN-NORTH PAKISTAN SANDY DESERT (PA1326)**

The eco-region covers the large semi-desert region of southern Afghanistan including the Registan Desert and the Sistan Basin. It combines all of Freitag’s (1971-1972) semi-desert communities in the south-western part of the country. This includes the Northwestern Semidesert, Calligonum-Aristida Semi-Desert, Chenopodium Rich and Amygdalus Semi-Desert communities. Desh-e-Nawar Flamingo and Waterfowl Sanctuary is not legally protected by the Afghan Government and the insecurity that characterizes the area limits the realization of practical conservation measures.

**SUBALPINE AND ALPINE VEGETATION**

Alpine and subalpine vegetation develops at elevations of 2,800-2,900 m in the central mountains and between 3,000 and 3,500 m in the east. In the eastern Hindu Kush, subalpine vegetation is dominated by juniper while in central Afghanistan it is largely comprised of cushion shrublands. True alpine vegetation is generally found at elevations >4,000 m. The central Hindu Kush is not as species-rich as alpine areas further to the east and north.

**KARAKORAM-WEST TIBETAN PLATEAU ALPINE STEPPE (PA1006)**

This eco-region is represented in Afghanistan only on the south side of the Wakhan Corridor and is the westernmost extension of an extensive eco-region in the Himalayas and Karakorum Mountains to the east. Freitag (1971, 1972) labels this eco-region as a mixed (snow-covered) zone and does not describe the vegetation.

**HINDU KUSH ALPINE MEADOW (PA1005)**

This eco-region corresponds to the eastern and northern extension of Freitag’s Subalpine Knieholz-Gesellschaften und Dornpolster-Fluren (1971) or Subalpine Thickets and Cushion Shrublands (1972). Unlike the remainder of the Hindu Kush subalpine, this area receives enough precipitation to allow development of subalpine thickets of juniper at 3,000 m.

**PAMIR ALPINE DESERT AND TUNDRA (PA1014)**

This eco-region is represented in Afghanistan only on the north side of the Wakhan corridor and is the southern extension of the extensive eco-region through the Pamir Mountains. Freitag (1971, 1972) labels this eco-region as a combination of the Subalpine Thickets and Cushion Shrublands community and a tundra zone.

**Ghorat-Hazarajat Alpine Meadow (PA1004)**

This eco-region corresponds to the western extension of Freitag’s Subalpine Knieholz-Gesellschaften und Dornpolster-Fluren (1971) or Subalpine Thickets and Cushion Shrublands (1972). Lack of summer moisture limits vegetation to woody cushion shrubland species, such as Oxy- brychis, Astragalus, Acantholimon, Cousia, Artemisia and Ephedrus. Deterle (1973, in Larsson 1978) considers the original vegetation to have been grass steppe, but centuries of heavy grazing have resulted in a shrubland community. Larsson (1978) provides a general overview of vegetation and management issues in this eco-region.
ECO-REGION STATUS

There is little current information allowing an objective and accurate determination of how Afghanistan’s ecosystems are faring with respect to composition, structure and function. However, it is possible to assess subjectively and roughly how each of the WWF eco-regions rank in each category. Table 2.4 ranks ecosystem attributes subjectively for the 11 eco-regions that are extensively represented in Afghanistan. The assessment refers to the entire eco-region and does not address localized effects, for example, along rivers or near settlements.

A number of patterns are evident in this table:

- The species composition of all eco-regions has been significantly reduced through a combination of overgrazing, fuel collection and exploitation by large herbivorous animals. Open woodland types have probably been most affected, over millennia of habitat alteration. The species composition of alpine regions has probably been least affected.
- Ecosystem structure has been most affected in forest and open woodland types as a result of tree cutting. To a lesser extent, the structure of semi-deserts has been affected by shrub collection and cutting of Pistacia trees. Deserts have little structure to begin with and are therefore not significantly affected.
- Ecosystem function is very difficult to assess, but it appears that highly altered forests have been most affected and deserts the least affected. The effects of accelerated loss of monsoon-influenced forest on ecosystem function is not known, but expected to be significant.

AFGHANISTAN’S WETLANDS

Afghanistan is an arid country and the few wetlands that do exist are therefore of great significance to biodiversity. Wetlands provide habitat for many migrating water birds. They are also teeming with numerous species of aquatic plants and invertebrates, fish, and amphibians. Artificial lakes are generally not as ecologically valuable as natural lakes because of fluctuating water levels and because natural plant and animal assemblages have not had time to develop. Nevertheless, they can provide important habitat for some species.

AFGHANISTAN’S RIPARIAN AREAS

Tugai is a special type of riparian forest found in the floodplains and valleys of Central Asian deserts. It is characterized by poplar and willow trees and shrubs of various genera such as tamarisk (Tamarix), oleaster (Eleagnus), and sea buckthorn (Hippophae), along with a patchwork of tall reedgrass (Phragmites australis) and grassland clearings. Tugai ecosystems are critical to many species and are increasingly threatened by conversion to agriculture along the Amu Darya (Ahmad Khan, pers comm., 2006). There is little information about the original and current extent of tugai forest in Afghanistan.

Table 2.4. Subjective classification of human impact on composition, structure and function of some of the WWF-US Eco-regions in Afghanistan.

<table>
<thead>
<tr>
<th>Forests</th>
<th>Composition</th>
<th>Structure</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Afghan Montane Conifer Forests</td>
<td>High</td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td>Baluchistan Xeric Woodlands</td>
<td>Very High</td>
<td>Very High</td>
<td>High</td>
</tr>
<tr>
<td>Open Woodlands</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central Afghan Mountains Xeric Woodlands</td>
<td>High</td>
<td>Very High</td>
<td>High</td>
</tr>
<tr>
<td>Paropamisus Xeric Woodlands</td>
<td>High</td>
<td>Very High</td>
<td>Medium</td>
</tr>
<tr>
<td>Semi-Desert</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Afghan Mountains Semi-Desert</td>
<td>Medium</td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td>Badghiz (Badghis)-Karabil Semi-Desert</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Central Persian Desert Basins</td>
<td>High</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>Registan-North Pakistan Sandy Desert</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Montane Grasslands and Shrublands</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pamir Alpine Desert And Tundra</td>
<td>Medium</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Hindu Kush Alpine Meadow</td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Oxirat Hazarasp Alpine Meadow</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
</tr>
</tbody>
</table>
AFGHANISTAN PROTECTED AREA NETWORK AND PRIORITY AREAS FOR CONSERVATION ACTION

The World Database of Protected Areas (IUCN and UNEP 2014) lists 14 protected areas in Afghanistan. Seven were provided with some level of recognition by the Government of Afghanistan in the 1970s and are recognized by IUCN (one Category II national park and six Category IV wildlife or waterfowl reserves). However, none has ever been given full legal status or official or otherwise recognized boundaries. They are not managed as protected areas.

Darqad, Imam Sahib, North-western Afghanistan and Registan Desert were all proposed as unspecified protected areas by Sayer and van der Zon (1981). No further efforts have been made to designate these as protected areas. The World Database of Protected Areas also lists Zadran, Bamiyan National Heritage, and Khulm Landmark as protected areas based on a letter from Dr Tahir Enayat in 1990. No justification was provided in the letter. Bamiyan and Khulm are likely of more cultural interest than environmental. Two areas (Small Pamir and Waghjir Valley) have been proposed as protected areas by Bamiyan and Khulm based on a letter from Dr Tahir Enayat in 1990. No further efforts have been made to designate these as protected areas. The World Database of Protected Areas also lists Zadran, Bamiyan National Heritage, and Khulm Landmark as protected areas based on a letter from Dr Tahir Enayat in 1990. No justification was provided in the letter. Bamiyan and Khulm are likely of more cultural interest than environmental.

Band-e Amir National Park

Band-e Amir’s six lakes of crystal-clear azure water, separated by travertine dams and surrounded by spectacular red cliffs, comprise one of the world’s most uniquely beautiful natural landscapes. Band-e Amir National Park is located in the western Hindu Kush in Bamiyan Province. It lies about 225 km northwest of Kabul and 55 km west of Bamiyan town. The Band-e Amir lakes lie in an east-west trending valley at approximately 2,900 m elevation. From west to east, the lakes are Gholaman, Qambar, Haibat, Panir, Pudina and Zulfiqar. The travertine dams separating the lakes form when gaseous carbon dioxide from calcium-rich spring water is driven out by bacterial or algal activity causing the dissolved calcite (CaCO₃) to precipitate out, forming the mineral deposits. Because of the high calcium content of the water, the lakes are extraordinarily clear and blue. The lakes are bounded by sheer limestone cliffs topped by a high plateau.

The individual lakes differ markedly in character. Band-i-Gholaman is shallow, has extensive reedbeds and is commonly used by waterfowl. Band-i-Qambar is filled only seasonally and forms a large, wet marshy area. Band-i-Haibat has deep waters and a narrow, vertical-sided travertine dam on the eastern end. The dam on Band-i-Panir has a broad, smooth and undulating creamy-white surface. Band-i-Pudina is very small but surrounded by a labyrinth of small, interconnected potholes and dense vegetation. Band-i-Zulfiqar is large, deep and surrounded by steep cliffs virtually devoid of vegetation.

Band-e Amir was declared as Afghanistan’s first and only National Park on September 30, 1973, in response to a petition from the Afghan Tourist Organization. This declaration was not published in the official government Gazette by the Ministry of Justice and, therefore, has no legal status (Sayer and van der Zon 1981, IUCN 1993). The World Database on Protected Areas lists Band-e Amir as IUCN Category II, but indicates that there is currently no active management. The boundaries of the National Park were defined by the Afghan Tourist Organization in the 1970s as being between 67°05’ to 67°30’E and 34°45’ to 34°55’N. However, these boundaries were never officially gazetted. Shank and Rodenburg (1977) proposed boundaries for Band-e Amir National Park delineated by the lakes’ headwaters, and these boundaries were reflected in UNEP’s (2003a) map of the park.

The UNEP Post-Conflict Assessment Team visited the area in 2002 and found the Band-e Amir lakes largely unchanged ecologically from their condition prior to the period of conflict, which began in 1978 (UNEP 2003a). The lakes were full of water, despite the worst drought in living memory. Although no water quality testing was done, the water remains crystal clear and strikingly blue. The travertine dams appeared to be intact and the vegetation was little changed.
Diomysia in bloom in a limestone crevice.

© UNEP

Bactrian deer (Cervus elaphus bactrianus) and introduced Capra ibex, and introduced ibex (Capra ibex) and smaller numbers of urial (Ovis orientalis), feral yaks (Bos grunniens), and introduced Bactrian deer (Cervus elaphus bactrianus). The Ajir Valley (Dara-i-Ajar) is located in Bamiyan and Baghlan Provinces 70 km northwest of the town of Bamiyan. The eastern portion of the area is in Kahrmand woleswali (i.e. district) while the central and western portions are located in the woleswali of Yakawlang.

Considerable development has occurred at Band-e Amir since 2002. The Asia Development Bank constructed an architecturally-pleasing Ranger Station in 2006. The poorly-sited bazaar that had sprung up after the war was removed in late 2007 and associated clean-up activities were supported by the Afghan Conservation Corps (ACC). With the assistance of WCS, the Band-e Amir Protected Area Committee was formed in 2007. This cooperative management committee is chaired by the Bamiyan Governor and has elected representatives from all Band-e Amir communities. This committee approved a preliminary management plan, paving the way for Band-e Amir to be legally designated as a Provincial National Park.

**AJAR VALLEY WILDLIFE RESERVE**

The Ajar Valley Wildlife Reserve is a mountainous area in Afghanistan’s central Hindu Kush that was protected for many years as a royal hunting reserve. Prior to the outbreak of hostilities in 1979, the area surrounding the Ajar Valley was ecologically undisturbed compared with most Afghan rangelands and contained large populations of ibex (Capra ibex) and smaller numbers of urial (Ovis orientalis), feral yaks (Bos grunniens), and introduced Bactrian deer (Cervus elaphus bactrianus). The Ajar Valley (Dara-i-Ajar) is located in Bamiyan and Baghlan Provinces 70 km northwest of the town of Bamiyan. The eastern portion of the area is in Kahrmand woleswali (i.e. district) while the central and western portions are located in the woleswali of Yakawlang.

**AB-I-ESTADA**

Ab-i-Estada is a large, saline lake occupying a flat depression on the southern edge of the Hindu Kush Mountains in Ghazni Province. The lake is a critical stopover point for thousands of migratory birds that once included the endangered Siberian Crane. Ab-i-Estada is also an important breeding ground for thousands of Greater Flamingo (Phoenicopterus ruber) and other wetland-dependent birds. Ab-i-Estada was visited by the UNEP Post-Conflict Assessment team in 2002. Because of the security situation, little information is available about recent conditions at Ab-i-Estada.

Ab-i-Estada was reported by Förstner and Bartsch (1970) to have a normal spring volume of 270 million m³, falling to about 140 m³ in the autumn and exposing many km² of mudflats in the process. It is fed by the Ghazi, Gardez and Nahara Rivers collectively draining eastern Ghazni Province and the extreme northwest of Paktika Province. The Gardez River is now dammed at Band-i-Sardesh and the Ghazi River at Band-i-Sultan. Inflow of water from the rivers is primarily from snowmelt and is largely limited to the spring. Throughout the rest of the year, the water level of Ab-i-Estada is dependent on ground water (IUCN 1993). Förstner and Bartsch (1970) characterized it as primarily a ground-water lake. During very wet years, water flows out of Ab-i-Estada through the Lora from the west side of the lake. The Lora ultimately joins the Helmand River through the Arghastan and the Dok (Khan 2002). There are currently about 30 water pumps on the west side of the lake and as many as 150 in Nawa woleswali. Typically, water pumps are run by diesel engines and water is transported through 4-inch (9-cm) diameter galvanized steel pipe (Khan 2002). According to locals, the water table is falling and the quality of the water is declining. Ab-i-Estada also experiences periodic droughts, the last one extending from 1998 to 2003. The lake is reported to have again been dry in 2004 (Omran and Leeman 2005, pp. 706). Using information based on previous reports, Khan (2002) estimated the bird diversity of Ab-i-Estada and surroundings to be 122 species.

Ab-i-Estada is remarkable for the large numbers of greater flamingos that breed on the islands. Flamingoes arrive at high water levels in late March or April and depart when water levels decline in late September or early October. Shank and Rodenburg (1977) summarized data on numbers of flamingos breeding between 1947 and 1976. Numbers varied from none to more than 9,000. No estimates have been available since the mid-1970s. Flamingoes and other waterfowl have always been hunted by locals, but hunting was reported to be especially heavy during the period 1979-1991 when a military garrison was stationed near the lake (Jamil 1994).

Ab-i-Estada was once a critical stopover for the central population of Siberian Cranes. These cranes bred in the Russian tundra and wintered in north-central India. In 1977, the western population was estimated at only 57 individuals (Saucy 1985). The last reliable report of a Siberian Crane at Ab-i-Estada was one shot in 1986 (Khan 2002). In 2002, falcon trappers were observed working the dry flats of Ab-i-Estada targeting peregrine falcons (Falco peregrinus). There were reportedly 12 teams working the lake, each with 5-6 members. Historically there were no settlements in the semi-desert around Ab-i-Estada, although nomads from Qandahar visited the area in summer. In the recent past, nomadic Ghelzai Taraki nomads settled at Ab-i-Estada and throughout Nawa (UNHCR 1990). Currently, there are eight villages lying within 10 kilometres of Ab-i-Estada, with a population...
Dasht-i-Nawar serves as an important breeding and staging ground for a large number of migratory waterfowl and waders. There are records of breeding populations of avocets (Recurvirostra avosetta), redshanks (Tringa totanus), greater sandpipers (Charadrius leschenaultia), and common terns (Sterna hirundo) (Klochenhoff and Madel 1970 in Shanks & Rodenburg 1977). The area is the world’s highest elevation breeding ground for the Greater Flamingos. Flamingo presence and breeding success is highly variable and dependent upon water levels. Petocz and Habibi (1975) report seeing 1,200 adults in 1974. UNEP (2003a) stated that flamingos had not bred between 1998 and 2002 because of drought conditions. Petocz (2006a) reported seeing 2,500 flamingos in April 2006, but by June the water had dried up and no birds were seen.

Freitag (1986) reports a remarkable case of plant endemism from Dasht-i-Nawar. He found four species (Cousinia ammophila, Fibigia cumpacta, Agastassag (Aegacantha) anthropophatus and Papilherium rechingeri) confined to a 1 km² sand field. He concluded that these psammophytic (i.e. sand-loving) endemics evolved from nearby Camels in Dasht-i-Nawar Waterfowl Sanctuary, Ghazni Province. This Sanctuary has no legal or effective protection and is increasingly being affected by heavy grazing at the alpine vegetation and not from pre-adapted psammophytes, as is common elsewhere. This suggests that Dasht-i-Nawar has experienced highly effective and long-lasting ecological isolation. Further investigations may discover other species to have evolved in situ making Dasht-i-Nawar a potential evolutionary hotspot. According to local reports, the mountains to the west of Dasht-i-Nawar area still support a small population of Himalayan ibex and urial. Locals indicated that ungulates can sometimes be sighted with binooculars in the nearby mountains during winter months. Some big game hunting is undertaken by locals, but it appears to be minimal. Locals do almost no waterfowl hunting. They are particularly averse to hunting flamingos because they associate the pink color of the plumage with the blood of the martyred Imam Hussain. In the 1970s, Shank and Rodenburg (1977) roughly estimated the settled Hazara population living around the dasht to be about 1,200-1,500 people. More recently, there were about 3,500 households and approximately 24,000 people living in 38 villages distributed mostly on the east side of the dasht (Petocz 2006a).

In the 1970s, Shank and Rodenburg (1977) estimated that about 1,300 nomadic people (kuchis) grazed approximately 5,000-7,000 sheep and goats and 700 camels on the dasht during the summer months. The kuchis claimed to have farmans (permits) endorsed by former Afghan kings giving them grazing rights in Dasht-i-Nawar. The traditional movement patterns of the nomadic people were disrupted during 25 years of war. The settled Hazaras initially expelled the nomads, but the kuchis returned when the dominantly Pashtun Taliban took power. Reportedly, 1,000 kuchi families now graze as many as 100,000 head of livestock in the area during the summer months. Animosity runs so high between the residents and the nomads that it sometimes erupts into violence (Petocz 2006a).

Dasht-i-Nawar was declared as a National Flamingo and Waterfowl Sanctuary by the Directorate of Wildlife and National Parks in 1974 (FAO 1978). This designation was approved by the Head of State on December 20, 1977 vide Order No. 707 on the basis of Petition no. 1765 dated June 6, 1977 (IUCN 1993). Game guards were stationed at Dasht-i-Nawar in 1976, but their legal authority was questionable. The protection previously afforded Dasht-i-Nawar is no longer in effect. Dasht-i-Nawar is not currently on the international list of recognized Ramsar sites, although nomination documents were presented to the Afghan Parliament for approval of accession.

**HAMUN-I-PUZAK**

Hamun-i-Puzak was proposed as a national park by Sayer and van der Zon (1981). It is a large, shallow, permanent lake located in the Sistan Basin along the border with Iran. It is part of a larger complex of shallow, intermittent lakes that includes Baringak, Chorge-sorkh, Hamuni-Hirmand, Hamuni-saberi, and Hamun-i-Puzak.

Although the lake complex is fed almost entirely from snow melt originating in Afghanistan, only Hamun-i-Puzak is largely Afghan; approximately 1,453 km² lies in Afghanistan and 61 km² in Iran (UNEP 2006). At high water, the Hamun-i-Puzak is characterized by huge expanses of tall reeds (Phragmites australis). At one time, it was a significant wetland for waterfowl with 357,000 counted in January 1976 (Petocz et al. 1976).

UNEP (2003a) provides a series of satellite image analyses showing how the Sistan Basin dried up between 1976 and 2001. However, periodic desiccation is natural phenomenon and recovery of the ecosystem may be possible if water flows are restored. An analysis by UNEP (2006) indicates that that there have been four recent phases in the hydrology of the Hamun system:

2. **Drying out phase (1976-2001)**
3. **Possible recovery phase (2001-present)**

At least 40% of Hamun-i-Puzak was inundated from 1985–2000 at which time the lake went dry until the 2005. Vegetative biomass remained fairly constant until 1999 when it collapsed sharply. There have been no recent assessments of waterfowl populations or of other aspects of biodiversity. The World Database of Protected Areas (IUCN and UNEP 2014) records Hamun-i-Puzak as a Category IV Waterfowl Sanctuary; however, the area has never been recognized or gazetted by the Government of Afghanistan. No boundaries have been proposed.

**KOL-I-HASHMAT KHAN**

Kol-i-Hashmat Khan is a shallow, reed-covered lake uniquely situated at the southwest edge of the metropolis of Kabul. Kol-i-Hashmat Khan is significant as an important stopover for vast numbers of migratory birds and as a significant natural landscape within a predominantly urban setting. Kol-i-Hashmat Khan was first mentioned in the memoirs of the Moghul Emperor Babur Shah in the 16th century. Amir Abdul Rahman Khan used the lake as a royal hunting area between 1880 and 1903. His successor, Amir Habibullah Khan (1901-1919), constructed the fort Qala-i-Hashmat Khan as a guesthouse and hunting lodge on the southeast shore of the lake. He also built an elevated brick road to the fort directly across the lake. In the 1930s, King Zahir Shah declared the area as a waterfowl reserve and afforded its protection by the royal garrison. Following the 1973 coup, Kol-i-Hashmat Khan was under the protection of the Guard-I-Jumurait (Republican Guard) attached to the presidential office. The area around Kol-i-Hashmat Khan contains many historical sites, including Latif’s Garden, formerly located to the northwest of the lake, the shrine of Jabur Ansar built in 645 AD, and the Jabar Ansar Wali Cemetery. To the northwest lies the imposing fort of Bala Hisar overlooking the lake from a high hill.

According to Rahim and Larsson (1978), the lake proper was state property in the 1970s and was administered by the Department of Ceremonies of the President’s Office. The fields to the south of the lake were property of the public baths while the fields on the northern part of the lake were owned by local residents. Ownership of other lands surrounding the lake was not registered. Rahim and Larsson (1978) noted that there were only a dozen houses between the east side of the lake and the Kabul-Gardez highway. Historically, Kol-i-Hashmat Khan was part of a much larger marsh system on the Logar River. Rahim and Larsson (1978) reported the lake as being about 190 ha in size and that it becomes “nearly dry” during the summer months.

Kol-i-Hashmat Khan’s primary importance is as a stopover location for waterfowl migrating through the Logar Valley to and from breeding grounds to the north. Only a few species actually use the lake for breeding, although their numbers are significant. Rahim and Larsson (1978) provide a list of species observed at Kol-i-Hashmat Khan by FAO project staff and Niethammer (1967 in Rahim and Larsson 1978). Niethammer saw nearly 33,000 individual birds at the lake over a period of two years in the 1960s. Kol-i-Hashmat Khan was part of an extensive marsh system created as the Logar River emptied into the broad plain south of Kabul (Scott 1995). A series of irrigation channels were developed over the years. The Kamari canal has first priority for water allocation, developed into reserve education and awareness centre, was been sold and removed. Latif’s Garden below the historical qala-i-hashmat Khan on the southwestern shore of the lake, once used as a guest house by former royalty and earmarked to be added to the depletion of lake waters. Car washers have established illegal businesses just below the Bala Hisar, adding to the population expansion in the area and pressure on the water resources. Tube wells have been drilled along the lake shore to service the needs of the expanding population adding to the depletion of lake waters. Car washers have set up illegal businesses just below the Bala Hisar and are polluting the lake with the run-off. Hospital waste and garbage have also ended up in the lake itself, and there is also a sometimes by government owned trucks from Kabul municipality. Local people continue to cut reeds and grasses in the lake, and women launders cloth and household goods at the lake shore. Hunting and harassment of wildlife is still common but now is mainly the prerogative of children and teenagers. The historical Qala-i-Hashmat Khan in the southeastern shore of the lake, once used as a guest house by former royalty and earmarked to be developed into reserve education and awareness centre, has been been sold and removed. Latif’s garden below the Bala Hisar was once a beautiful site but is severely degraded.

Kol-i-Hashmat Khan has never received legal status as a protected area, although it has long been protected by Afghan rulers. The lake proper is currently administered and managed by the Department of Natural Resource Management (DNRM). The agricultural fields south of the lake are private property, and the northern fields are owned by local residents. Other land claims are either suspect, not registered or perhaps held on a forgotten land title documents (Petocz 2006c). A new government multiagency coalition has been formed spearheaded by the National Environmental Protection Agency (NEPA) and MAI to deal with the most immediate issues that threaten the integrity and survival of the Kol-i-Hashmat Khan wetland. A workshop was hosted by the NEPA Director General and facilitated by UNEP in 2006 to discuss the future of Kol-i-Hashmat Khan and an interim management plan was prepared (Petocz 2006c).

**WAKHAN**

The Wakhán Corridor is a long (200 km) and narrow (20-60 km) panhandle of alpine valleys and high mountains stretching eastward from the province of Badakhshan. It borders Tajikistan to the north, Pakistan to the south, and China to the east. The Wakhán is part of the “Pamir Knot” from which radiate the Hindu Kush, Karakorum, Himalaya, and Tien Shan Ranges. The rich biodiversity of the Wakhán Corridor, Badakhshan Province, includes yaks (Bos grunniens) which are frequently used by local people for transportation, milk and meat.

Wakhán was described in most detail by Petocz (1978b) and appears to be largely intact after 25 years of war and instability (UNEP 2003a and b). UNEP (2003b) divides the Wakhán into three geographical areas:

- The narrow Wakhán Valley, running approximately 110 km from Ishkashim to Qal-i-Panjā, bordering Pakistan on the south and Tajikistan to the north.
- The Big Pamir, lying between the Pamir and Wakhán Rivers in the north-central portion of the Corridor and bordering Tajikistan.
- The Small Pamir consists of two mountain blocks at the eastern end of the Wakhán, separated by the Waghjir River and borders on Pakistan, China and Tajikistan.

The fabled Silk Road ran through the Wakhán and the archaeological, historical, and cultural characteristics of the area are unique. The Wakhán Valley and Big Pamir are inhabited by sedentary Wakhī people while the Small Pamir is home to the transhumant Kirghiz herdsmen.

The Pamir-i-Buzung or “Big Pamir”, is a high mountain and plateau area rising to 6,100 m and dominated by alpine vegetation with grasses and sedges in the valley bottoms. The area is most famous for the magnificent Marco Polo sheep (Ovis ammon polii). In 1973, Petocz (1978b) counted 500 Marco Polo sheep in the Big Pamir. In the 1950s, King Zahir Shah ordered that wild sheep be protected in a single valley of the Big Pamir and in the 1970s this protection was extended to four major valleys comprising 679 km² (Petocz 1978c). A successful tourist hunting program was run in the Big Pamir by the Afghan Tourist Organization from 1968 – 1979. The Pamir-i-Buzung was gazetted as a Wildlife Reserve in 1978, but it currently has no protected status.

UNEP (2003b) found the Marco Polo sheep (especially females and young) were competing intensively with livestock in the wintering areas of the western Big Pamir. The UNEP team found that livestock was being overwintered in the area and that trampling had caused considerable degradation of the pastures between 4,000 to 4,300 m. Wild sheep were also hunted opportunistically for meat. Besides Marco Polo sheep, there is a diversity of mountain fauna including ibex (Capra ibex), brown bear (Ursus arctos), wolf (Canis lupus), lynx (Lynx
sensing analysis undertaken by UNEP indicated that 52% of forest cover was lost in Nuristan, Laghman and Nangarhar Provinces between 1977 and 2002 (UNEP 2003). WCS has been undertaking wildlife studies in Nuristan and have confirmed the identity and distribution of mammal species through snow tracking, scent identification and camera trapping. The National Park remains a proposal and has not had formal recognition.

ZADRAN
Little information is available for Zadrani. It was proposed in 1990 as a letter from Dr. Tahir Enayat, then Rector of Kabul University, to UNEP-WCMC. Omrani and Leemann (2005) state that the main inter-reserve area is the coniferous and deciduous forests that once flourished there. They note that the area saw fighting during the Soviet war (1979–1989) and during the civil wars in 1990 and again in 2001–2002. In 2006, the area remained unstable.

IMAM SAHIB
Imam Sahib is a floodplain complex of islands and river banks in the Amu Darya River. The area derives its name from an historic mosque and shrine reputed to contain the head of Hazrat Imam Hussein, the Prophet's grandson (Omrani and Leemann 2005). It was proposed as a wildlife management or nature reserve by Sayer and van der Zon (1981). Measurements using Google Earth indicate the area to be approximately 50 km in length and as much as 12 km wide. Together with Darqad, it may represent the last significant remnants of tujagi vegetation in Afghanistan. The tujagi in and around Imam Sahib is the last remaining habitat for the endangered Bactrian deer (Cervus elaphus bactrianus) in Afghanistan.

The UNEP Post-Conflict team visited in 2002 and reported apparently intact forests. It was reported that 300 families settled on the islands during Taliban times with about 100 remaining. These people are cutting fuelwood and clearing land for agriculture. Anthony Fitzherbert visited the area in 2004 and was told that elites commonly crossed to the island to go hunting (Omrani and Leemann 2005). Local people reported to him that some smaller wildlife, and possibly Bactrian deer, still exist on the islands. Ahmad Khan (pers. comm. 2006) visited Imam Sahib in 2005 on behalf of the Asia Development Bank and found the area almost completely converted to agricultural lands. UNEP (2003a) reports that Imam Sahib was declared as a Royal Hunting Reserve sometime in the 20th century with restrictions on land use. The area may have been declared a government reserve in the mid-1990s, but considerable uncertainty remains (UNEP 2003a). Regardless, the area has never been gazetted or provided with formal boundaries.

DARQAD
Darqad is the sister reserve to Imam Sahib and located some 25 km upstream. Sayer and van der Zon (1981) proposed it as a wildlife management or nature reserve. Rough measurements using Google Earth indicate the area to be approximately 40km in length and as much as 20m wide. Like Imam Sahib, Darqad is significant for its tujagi vegetation.

The last sign of tigers in Afghanistan were seen at Darqad in 1967 (Habibi 2003). Ahmad Khan (pers. comm., 2006) visited Darqad in 2005 on behalf of the Asia Development Bank and found the area to be severely degraded. Like Imam Sahib, Darqad was declared as a Royal Hunting Reserve sometime in the 20th century with restrictions on land use. However, the area has never been gazetted or provided with formal boundaries.

NORTHWEST AFGHANISTAN
Northwest Afghanistan was proposed as a wildlife management reserve or nature reserve by Sayer and Van der Zon (1981). It is located in the extreme north-western corner of the country along the Turkmennistan and Iranian borders. Its conservation value is primarily as a representative of Pistacia vera forests at higher elevations and Artemisia steppe in lower areas. Wild ass were reported as being hunted in the area as late as 1975, but they are almost certainly gone now (Omrani and Leemann 2005). Little current information exists on the area. It has never received any level of formal recognition and the boundaries have not been delineated. At one time, a government horse pasture existed on Hazrat Baba (33°58′46″ N, 62°14′21″ E), a north-western spur of the
Feroz Koh about 30 km north of Herat. In the late 1970s, Hazrat Baba had some of the best range conditions in Afghanistan. This area should be investigated to determine its current status and suitability for inclusion in any future Northwest Afghanistan Wildlife Reserve. The area has never received any level of formal recognition and the boundaries have not been delineated.

**REGISTAN DESERT**

Registan Desert was proposed as a wildlife management or nature reserve by Sayer and Van der Zon (1981). It is located in Kandahar and Helmand Provinces in the south-eastern corner of the country. The Registan Desert is comprised of a variety of landscapes from moving sand dunes to gravel flats. Its conservation value is as a representative of Afghanistan’s desert region and for protection of its rich floral, reptile and rodent diversity.

Large herbivores (onager, chinkara, goitered gazelles) and their predators (cheetah, hyaena) were once common, but are now largely, if not completely, gone. Omrani and Leeman (2005) report that during the Taliban years, wealthy Arabs built an airstrip to provide access to gazelle and bustard hunting and that these species are now rarely seen. Toderich and Tsukatani (2005) provide some plant species lists and productivity estimates for the area, but little other information seems to be available. The area has never received any level of formal recognition and the boundaries have not been delineated.
Afghanistan’s rapidly increasing human population presents the major underlying challenge to biodiversity conservation and ultimately to the quality of life of Afghans. There has never been a complete census of Afghanistan and population estimates vary broadly. But, it is clear that despite years of warfare that killed perhaps 2.5 million Afghans and displaced millions more, the population of Afghanistan has approximately doubled since 1979 to an estimated 32.7 million in 2008 (CIA 2009). However, official Afghan statistics (Statistical Yearbook nd; in Dari) indicate a population of only 24.3 million.

The CIA figure cited above approximates the highest population increase scenario predicted by the UN Department of Economic and Social Affairs, Population Division (2007). However, official Afghan statistics ( Statistical Yearbook nd; in Dari) indicate a population of only 24.3 million.

Associated with rapid population growth is the major underlying threat to biodiversity in Afghanistan—the abject poverty of most Afghan citizens. Afghanistan is one of the poorest nations on Earth with 42% of Afghans living on less than $1 per day (Chatterjee 2009). Faced with such overwhelming poverty and a lack of alternatives to the use of natural resources, Afghans have no option but to exploit biodiversity unsustainably, leading to conflicts among resource users, degradation of habitats, unsustainable hunting practices, and illegal trade. Unless this issue is more effectively and more rapidly addressed, biodiversity in Afghanistan faces a bleak future.

The absence of underlying conditions required for effective resource management in Afghanistan has been a significant driver of the country’s biodiversity loss. Exacerbated by war and conflict, a lack of social security has led to a lack of policy and suitable legal instruments, and where they do exist there is poor law enforcement or implementation. Financial constraints and other national concerns have led to a lack of education and awareness regarding biodiversity and natural resources, poor transport and access for government staff, and limited coordination among government agencies. Finally, there is conflicting influence of warlords and powerful people that contravene the advice and influence of government and NGO staff.

In addition to broad-scale threats that include natural disasters such as flooding, more proximal threats to Afghanistan’s biodiversity are over-hunting, deforestation, overgrazing, shrub collection, dryland farming, water diversion, climate change and desertification. All of these threats have worsened in recent years.

HUNTING, TRAPPING AND TRADE

Hunting and trapping are perhaps the greatest threats to many large mammals and birds in Afghanistan. Prior to the war in 1979, firearms were generally rare, primitive or small calibre. Many firearms were single-shot muzzle-loaders. The most common modern firearm was the low-powered .22, widely called a mush-koosh (mouse-killer). But, firearms and ammunition were generally unavailable to the average Afghan. This all changed with the onset of hostilities when firearms and ammunition became ubiquitous.

During the war years, wildlife suffered as heavily armed Afghans were dispersed widely throughout the countryside and depended partially on wild meat for subsistence. Today, waterfowl hunting is widely practiced, especially in the winter months, while large mammals hunting is undertaken for sport by the elite in some places or opportunistically by local people. However, large animals are now so rare that many once keen hunters have given it up.

There remains a thriving fur trade in Kabul, Mazar-i-Sharif and other centres. Many of the species represented are not native and clearly imported. It remains unclear what proportion of native species actually originate from Afghanistan. One of the major outlets for furs is the security-controlled markets on military bases. Cooperative efforts by the military, the US State Department and WCS have been successful in removing CITES listed species from most of these venues.

Afghans love to keep birds. There are active bird bazaars in Kabul and Mazar-i-Sharif (Ostrowski 2006a and b, Ostrowski et al. 2009) as well as other Afghan centres. These markets trade a wide variety of wild caught native species and captive-bred imports. Falcon-trapping is extensive with most of the desirable species (e.g., Saker Falcons [Falco cherrug], Peregrine Falcons [Falco peregrinus]) being sold to Pakistani middlemen who in turn sell them to wealthy Arabs. Falconry in Afghanistan is practiced largely with lower value species such as Sparrowhawks (Accipter nisus). Chukar Partridges (Alectoris chukar) are extensively trapped and commonly kept for fighting and show. Small birds are trapped or netted for food.

On 20 March 2005, Afghan President Hamid Karzai issued Presidential Decree No. 53 banning hunting in any form for a period of 5 years. There is, however, no enforcement and most ordinary Afghans are unaware of the Decree while powerful and influential persons simply ignore it. A Fauna Conservation and Hunting Regulation is under development which will regulate hunting, but it may be several years before it is approved by the Cabinet and even longer before it can be effectively implemented.
DEFORESTATION

Afghanistan has two basic forest types: closed forest of oak and conifer in the monsoon-influenced areas of eastern Afghanistan and savannah-like, open pistachio woodlands originally located in an arc around the mountains.

Closed forests (not including northern juniper communities) may once have covered about 5% of the country or about 14,000 km². There were about 3,600 km² of closed canopy forest remaining in the late 1970s, i.e., only about 11% of pristine forest cover. Based on a number of assumptions, as much as half of that has been lost since 1980 leaving some 1,800 km². Although there are many uncertainties, Afghanistan is probably left with roughly 5% of its pristine closed forest vegetation representing about 0.25% of the country’s area (UNEP 2009).

Very roughly, open woodlands originally comprised some 38% (ca. 250,000 km²) of the Afghan landscape. In the late 1970s, approximately 32,000 km² remained representing about 15% of the original open woodland and 5% of the Afghan landscape (UNEP 2009).

UNEP’s (2003a) satellite image analysis could detect no remaining open woodland (>40 trees per ha) in two provinces suggesting that open woodlands may now be on the verge of extinction as a viable ecosystem throughout much of Afghanistan.

Deforestation appears to continue unabated today. Wingard et al. (2008) estimated that firewood harvest for the Kabul market alone results in the destruction of 10,000 ha of oak forest and 15,000 ha of juniper forest each year in Paktiya and Khost Provinces. Illegal export of timber to Pakistan through the lawless tribal areas is significant, but unquantifiable because of security concerns. The Presidential Decree banning forest harvest is unfamiliar to most Afghans, or is simply ignored.

OVER-GRAZING

Afghanistan has been grazed for the past 4,000–5,000 years and plant communities have accordingly adapted to heavy grazing pressure. Perennial grasses and herbs exhibit features such as bulbs, rhizomes, rootstocks, dormant seed, awns and barbs. Many forb species are annuals. Shrubs tend to be armed with thorns or have high levels of protective toxic compounds.

A detailed census of Afghanistan’s livestock was undertaken in 2002–2003 (FAO, 2008). The census showed that there were 3.7 million cattle, 8.8 million sheep, 7.3 million goats, 1.6 million donkeys, 0.2 million camels and 0.1 million horses. Based on these figures, year-round stocking rates for the ca. 300,000 km² of Afghan rangeland are about 0.15 animal unit months (AUMs) per ha. This is a low stocking level relative to similar environments elsewhere in the world and together with the lack of herd increase following the drought, suggests very generally a) that Afghanistan’s ranges are near carrying capacity, and b) that millennia of overgrazing has reduced carrying capacity relative to the potential of the land. The apparent conclusion that livestock are taking nearly all available herbage biomass certainly has a profound effect on biodiversity, but the lack of baseline data makes this impact impossible to document.

SHRUB COLLECTION

Much of Afghanistan is dominated by thorny cushion-shaped shrubs. This vegetative community itself results from millennia of overgrazing of a landscape that was originally may have been mostly grass - Artemisia steppe.

Together with dried dung, shrubs are the major source of fuel in much of rural Afghanistan. Shrubs are dug up by the roots and burned for bread-making, general cooking and heating. With increasing populations, ranges near inhabited areas are becoming denuded of shrub vegetation and shrub collectors are being forced to travel further afield. Little information is available on recovery rates of shrub vegetation. Loss of shrubs is of particular concern because their dense, thorny matrix provides protection from grazing for a vast number of native herbaceous and grass species, many of which are endemic. Shrub loss also increases soil erosion by wind and water. According to some communities, catastrophic landslides and floods associated with spring rains and snowmelt have become increasingly common in recent years.

DRYLAND FARMING

By some estimates, only about 20% of Afghan cropland is currently irrigated with the remainder being dry-land or rain-fed farming. In the arid and semi-arid Afghan environment, dry land farming is a usually a risky undertaking and often an act of desperation borne of food insecurity. Rain-fed cropland is most productive when newly plowed and lies fallow for long periods with the result being that ever-increasing amounts of productive grazing land are converted to erosion-prone fields.

WATER DIVERSION AND LOSS OF WETLANDS

Afghanistan has few lakes and wetlands relative to neighbouring countries and many of those that do exist are increasingly at threat from a combination of water diversion and drought. Few systematic data are available to determine the extent of this threat, but there is anecdotal evidence from Afghanistan’s best known wetlands.

Kol-i-Hashmat Khan is a seasonal wetland located within the city of Kabul. It is an important staging area for waterfowl and was used as a hunting ground for Afghan royalty for nearly 500 years. Water diversions from the Logar River have reduced the amount of water reaching the lake and therefore the area flooded and the time that the lake contains water have both declined (Petoce 2006).

Dams on the Gardez and Ghazni Rivers and tube-wells threaten the viability of Ab-i-Estada, a 290km² saline wetland in Ghazni Province (Khan 2006). Ab-i-Estada was once a staging area for the Critically Endangered Siberian Crane (Grus leucophaeus).

Although there are no recent data, Ab-i-Estada was once an important breeding area for Greater Flamingos (Phoenicopterus roseus). The Sistan wetlands on the Afghanistan-Iran border are a waterbird area of international importance. The entire system of shallow lakes essentially dried up in the period 2000–2004 (UNEP Post-Conflict Branch 2006).

In future, the problem of wetland loss can be expected to worsen as Afghanistan diverts more water for irrigation, hydroelectric and flood control, as wetlands are drained for agriculture and urbanization and as drought becomes more common through climate change.
Mean annual temperatures in Afghanistan have increased by 0.6°C since 1960 or about 0.13°C per decade. Increased temperatures have been most pronounced during the autumn, with increases of 0.29°C per decade. Mean rainfall has decreased slightly at an average rate of 2% per decade, mainly due to decreases in spring precipitation (Savage et al. 2008).

Afghanistan has historically experienced climate cycles of about 15 years, of which 2–3 are generally drought. In recent years, however, there has been a marked tendency for this drought cycle to occur more frequently than the historical model predicts. Since 1960, the country has experienced drought in 1960-64, 1966-67, 1970-72 and 1998-2006. The period 1998 to 2005/6 marked the longest and most severe drought in Afghanistan’s known climatic history (ECHO 2006). This increased frequency of drought in recent years appears to be a consequence of increased temperature coupled with reduced spring precipitation (Savage et al. 2008).

Modeling reported by Savage et al. (2008) indicates that by 2030, mean annual temperatures are likely to rise by about 1.4°C with little change in overall precipitation. By 2050, increases in average temperature are likely to be between 2.6°C higher, dependent upon global emissions scenarios. Conditions will become drier, especially in spring, with reductions in rainfall of between 10-40mm and with drier conditions in the south.

The US Department of Agriculture world map depicting threat of human-induced desertification shows most of Afghanistan to be in the Very High risk category. Most of the remainder of the country is already classified as desert. According to the MAIL 2006 National Report, desertification in Afghanistan already affects more than 75 percent of the total land area in northern, western and southern regions where widespread grazing and deforestation have reduced vegetation cover and catalyzed accelerated land degradation.

Savage et al. (2008) predict that Afghanistan will be confronted by a range of increased climatic hazards. These are likely to be primarily drought related, and associated with increased desertification and land degradation. Drought is likely to be regarded as the norm by 2030, rather than as a temporary or cyclical event. They suggest that flood impacts will likely be amplified by more rapid spring snow melt combined with greater runoff associated with land degradation, loss of vegetative cover and land mismanagement.

Increased soil evaporation, reduced river flow from earlier snow melt, and less frequent rain during peak cultivation seasons will all impact upon agricultural productivity and crop choice availability. Crop failures will probably increase in frequency and areas of abandoned, uncultivated land will likely increase. Crop choices will shift to more drought hardy species. By 2060, agricultural will become marginal without significant investment in water management and irrigation (Savage 2008).

Climate change has the capacity to plunge many more Afghans into poverty. Nevertheless, climate change has not been a consideration in the national or sectoral plans of the Government of Afghanistan.
NATIONAL BIODIVERSITY STRATEGY

The strategy for the conservation and sustainable use of biodiversity in the immediate future is to begin to address all relevant goals of the CBD in a more structured manner than has previously been possible. Given that government capacity is limited, it is anticipated that implementation of biodiversity conservation activities will continue to rely heavily on donor-funded programming into the foreseeable future. This programming has to-date generally been well-focused and appropriate, and has contributed materially to the development of a knowledge base and maintenance of Afghanistan’s biodiversity resources.

A key objective of the NBSAP is to provide a point of reference for setting future, long-term action priorities, and for ensuring that available resources are focussed on both the most urgent and most relevant biodiversity conservation issues. Table 4.1 lists the 11 preliminary national targets based on current priorities for biodiversity conservation and management actions in Afghanistan. The conservation and management actions were prioritized from a long, all-inclusive list developed from previous conservation planning, field reports, expert consultations, and provincial and national level consultations. These were reviewed by the Biodiversity Working Group on 15 November 2009. The Group was asked to select the single most important action listed under 10 subject headings (Current Status of Biodiversity, National Biodiversity Strategy and Action Plan, Protected Areas, Vegetation Management, Community-based Natural Resource Management, Desertification, Policy and Legal Instruments, Capacity Building, Environmental Education, Public Awareness), and then to broaden the selection to include 1-5 additional important actions, the number to be selected depending on the total number listed. The selected actions were then matched with the goals of the CBD. Where the process yielded no “Most Important” activities under a specific CBD Aichi Target, the list of activities was reviewed by NEPA’s technical team and key activities were promoted from “Important” to “Most Important” based on relative numerical scores. Activities listed as “Other” were not selected by the Working Group or the NEPA technical team using the above process, but remain of potential use in rounding out the scope of the NBSAP and comprehensively addressing relevant CBD goals, and hence remain listed in the table. It is recognised that further work will be required for the NBSAP 2015-2019 to set SMART (Specific, Measurable, Attainable, Relevant, Time-bound) national targets based on this preliminary list.

AFGHANISTAN’S NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN

GOAL: TO CONSERVE ALL ASPECTS OF AFGHANISTAN’S BIODIVERSITY, AND TO ENSURE THAT FUTURE UTILIZATION OF AFGHANISTAN’S BIODIVERSITY RESOURCES IS SUSTAINABLE

STRATEGY: TO CREATE AND IMPLEMENT A VIABLE, COST-EFFECTIVE AND SUSTAINABLE FRAMEWORK FOR THE CONSERVATION AND MANAGEMENT OF ALL ELEMENTS OF AFGHANISTAN’S BIODIVERSITY, BASED ON THE MOBILIZATION AND EFFECTIVE UTILIZATION OF AVAILABLE NATIONAL HUMAN AND FINANCIAL RESOURCES, AND ON INTERNATIONAL PARTNERSHIPS

ACTION PLAN: TO IDENTIFY AND IMPLEMENT SHORT, MEDIUM AND LONG-TERM ACTIONS THAT NEED TO BE TAKEN, INSTITUTIONAL RESPONSIBILITIES, AND (TO THE EXTENT POSSIBLE) OBTAIN THE BUDGETARY REQUIREMENTS FOR IMPLEMENTATION OF THE IDENTIFIED ACTIONS

Section 8(i) of COP Guidance on Developing NBSAPs requires Parties to identify the main threats to biodiversity, including direct and indirect drivers of biodiversity change, and to include actions for addressing the identified threats. The more than 40 threats identified from published sources and consultations during the Afghanistan NBSAP development process fall naturally into four categories:

- broad-scale natural and human-induced influences (e.g., natural disasters [for example flooding], climate change, overpopulation);
- local-scale pressures on resources (e.g., hunting, fishing, fuel wood collection)
- absence of underlying conditions required for effective resource management (e.g., lack of law enforcement, lack of livelihoods options)
- to ensure that government organizations have sufficient capacity and resources to carry out Afghanistan’s obligations as a signatory to the CBD and other Multilateral Environmental Agreements

The top ten threats identified by the Working Group were insecurity; lack of law enforcement and implementation; lack of education; degradation of rangelands and forests; lack of education and awareness regarding biodiversity and natural resources; poverty, unemployment and hunger; air pollution; conflict and war; illegal cutting of forests; and illegal trade. While these provide an initial focus for planning biodiversity management and protection measures, in order to be effective the NBSAP also needs to address all other types of threats to biodiversity in Afghanistan. Specification of appropriate actions to counter the full spectrum of threats is therefore a key component of the Action Plan. An overview of the identified threats to biodiversity in Afghanistan to date in Section 2.
Table 4.1. Preliminary national targets, including timeframe and implementation responsibilities for priority biodiversity conservation actions in Afghanistan

<table>
<thead>
<tr>
<th>Afghan National Biodiversity Strategy</th>
<th>Table 4.1. Preliminary national targets, including timeframe and implementation responsibilities for priority biodiversity conservation actions in Afghanistan</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Afghanistan preliminary target 1</strong></td>
<td>At least 10% of each ecological region effectively conserved, and areas of particular importance to biodiversity protected</td>
</tr>
<tr>
<td><strong>CBD Aichi Target 11</strong></td>
<td>By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas are conserved through systems of protected areas</td>
</tr>
<tr>
<td><strong>Strategy 1.1</strong></td>
<td>Continue ongoing assessments of Afghanistan’s floral and faunal communities, with the overall aim of improving understanding of Afghanistan’s biodiversity resources and their conservation requirements</td>
</tr>
<tr>
<td><strong>Strategy 1.2</strong></td>
<td>To expand the protected areas system to ensure that it is representative of all major ecosystems and areas of outstanding conservation or natural heritage value</td>
</tr>
<tr>
<td><strong>Strategy 1.3</strong></td>
<td>To develop and implement the support mechanisms (incentives, rules, regulations, environmental education, public awareness) necessary for the effective conservation of biodiversity and other natural resources</td>
</tr>
<tr>
<td><strong>ACTION REQUIREMENTS IN AFGHANISTAN</strong></td>
<td><strong>TIMEFRAME</strong></td>
</tr>
<tr>
<td>develop a scientific inventory of flora and fauna</td>
<td>S</td>
</tr>
<tr>
<td>finalize a protected area system plan for Afghanistan designed to protect representative areas of high biodiversity in all major ecoregions, including trans-boundary areas, and articulating clear targets for the protected area system and methods for implementing it</td>
<td>S</td>
</tr>
<tr>
<td>establish priority and feasible protected areas as legally recognized, adequately funded and effectively managed entities. Candidate priority areas are Band-i-amir, Ajar Valley, Pami in-Buzung/ the entire Wakhan Corridor region, Dashke Nawar and Shah Foladi</td>
<td>S</td>
</tr>
<tr>
<td>develop adequate legal instruments including laws, regulations, policies and procedures to regulate and address the challenges of biodiversity conservation</td>
<td>S</td>
</tr>
<tr>
<td>encourage national and international scholars to develop a comprehensive flora of Afghanistan, drawing particularly on Afghan collections in herbaria in Europe, North America and Russia</td>
<td>M</td>
</tr>
<tr>
<td>develop an environmental education curriculum and teacher training</td>
<td>M</td>
</tr>
<tr>
<td>develop a national programme of biodiversity education and awareness</td>
<td>M</td>
</tr>
</tbody>
</table>

*Effective actions undertaken/results produced in the short-term (S: within a one year timeframe); in the medium-term (M: within a 1-5 year timeframe), in the long-term (L: within a 5-10 year timeframe)
**RGO=Responsible Government Organization(s) having the legal mandate/authority for overseeing this action
***IGO=Implementing Government Organization(s) designated by administrative authority to implement this action
Afghanistan preliminary target 2: populations of species of selected taxonomic groups restored, maintained or decline reduced; status of threatened species improved

CBD Aichi Target 12: By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained

Strategy 2.1 to continue ongoing assessments of the status of Afghanistan’s floral and faunal species, consistent with actions 1 and 2, with the overall aim of improving understanding of Afghanistan’s biodiversity resources and their conservation requirements

<table>
<thead>
<tr>
<th>ACTION REQUIREMENTS IN AFGHANISTAN</th>
<th>TIMEFRAME</th>
<th>RGO</th>
<th>IGO</th>
</tr>
</thead>
<tbody>
<tr>
<td>continue the national red-listing process, assessing conservation status and types and level of threats for Afghan mammals and birds, and incorporating targeted surveys to establish current status of priority species (note: the listing process is currently being undertaken by the Afghanistan Wildlife Executive Committee)</td>
<td>S</td>
<td>NEPA</td>
<td>AWEC</td>
</tr>
<tr>
<td>determine the status of Afghanistan’s biodiversity</td>
<td>M</td>
<td>NEPA</td>
<td>NEPA/MAIL</td>
</tr>
<tr>
<td>identify biodiversity hotspots and set protection targets</td>
<td>M</td>
<td>NEPA</td>
<td>NEPA</td>
</tr>
<tr>
<td>undertake field studies of selected species and ecosystems to better understand biodiversity status and trends</td>
<td>M</td>
<td>NEPA</td>
<td>NEPA/MAIL</td>
</tr>
<tr>
<td>develop biodiversity information systems</td>
<td>M</td>
<td>NEPA</td>
<td>NEPA</td>
</tr>
<tr>
<td>implement local research to determine what species are endangered</td>
<td>L</td>
<td>NEPA</td>
<td>MoHE/universities</td>
</tr>
<tr>
<td>MOST IMPORTANT</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>hire Rangers to protect wildlife/biodiversity resources</td>
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</tr>
<tr>
<td>develop ex situ conservation measures (captive breeding, botanical gardens etc.)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>OTHER IMPORTANT</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>develop conservation</td>
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</table>

Afghanistan preliminary target 3: genetic diversity of crops, livestock and of harvested species of trees, fish and wildlife and other valuable species conserved, and associated indigenous and local knowledge maintained

CBD Aichi Target 13: By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives is maintained

Strategy 3.1 to develop the mechanisms required for effective conservation of economically important species

<table>
<thead>
<tr>
<th>ACTION REQUIREMENTS IN AFGHANISTAN</th>
<th>TIMEFRAME</th>
<th>RGO</th>
<th>IGO</th>
</tr>
</thead>
<tbody>
<tr>
<td>develop programs to preserve native Afghan land races of crop plants and livestock</td>
<td>L</td>
<td>MAIL</td>
<td>MAIL</td>
</tr>
<tr>
<td>assess trends in abundance and distribution of harvested species of trees</td>
<td>M</td>
<td>MAIL</td>
<td>MAIL</td>
</tr>
<tr>
<td>assess trends in abundance and distribution of wild biodiversity species used for food, medicine, or other consumptive purposes</td>
<td>L</td>
<td>MAIL</td>
<td>MAIL</td>
</tr>
<tr>
<td>MOST IMPORTANT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>assess trends in genetic diversity of domesticated animals, cultivated plants and fish species that are of major socioeconomic importance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OTHER IMPORTANT</td>
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</tbody>
</table>
Afghanistan preliminary target 4: biodiversity-based products derived from sources that are sustainably managed, and production areas managed consistent with the conservation of biodiversity.

CBD Aichi Target 7: By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.

Strategy 4.1 to develop and implement mechanisms to ensure sustainable use of biodiversity resources, including funding, capacity and policy considerations.

<table>
<thead>
<tr>
<th>ACTION REQUIREMENTS IN AFGHANISTAN</th>
<th>TIMEFRAME</th>
<th>RGO</th>
<th>IGO</th>
</tr>
</thead>
<tbody>
<tr>
<td>understand and utilize traditional practices and knowledge of conservation and sustainable use</td>
<td>M</td>
<td>NEPA</td>
<td>NEPA/MAIL</td>
</tr>
<tr>
<td>develop innovative ways to undertake biodiversity conservation in concert with poverty alleviation</td>
<td>M</td>
<td>NEPA</td>
<td>NEPA/MAIL</td>
</tr>
<tr>
<td>develop and implement community forestry, range management and wildlife initiatives using an approach that integrates agricultural, forestry, range and wildlife uses</td>
<td>L</td>
<td>MAIL</td>
<td>MAIL/NEPA</td>
</tr>
<tr>
<td>improve and ensure security</td>
<td>S</td>
<td>MoI</td>
<td>MoI</td>
</tr>
<tr>
<td>develop the capacity of government and communities through the exchange of expertise</td>
<td>M</td>
<td>MAIL</td>
<td>MAIL</td>
</tr>
<tr>
<td>attract international donor assistance for sustainable land management</td>
<td>L</td>
<td>MAIL</td>
<td>MAIL</td>
</tr>
</tbody>
</table>

**ACTION REQUIREMENTS IN AFGHANISTAN**

- Reduce illegal logging, especially large-scale and trans-boundary activities, by enforcing the timber moratorium issued by the central government.
- Prohibit grazing in areas that are undergoing managed regeneration.
- Restore degraded wetlands.
- Prohibit the burning of vegetation cover.
- Develop effective plans for preserving and recovering remnant pistachio and juniper forests in northern Afghanistan, and monsoon-dependent forests in eastern Afghanistan.

Afghanistan preliminary target 5: rate of loss and degradation of natural habitats decreased.

CBD Aichi Target 5: By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.

Strategy 5.1 to prevent the illegal or unsustainable use of biodiversity resources.

**ACTION REQUIREMENTS IN AFGHANISTAN**

- Assess the pathways for introduction of invasive alien species and how these can be controlled.
- Develop management plans for invasive alien species.
- Assess regional and international experience in managing invasive alien species and its applicability to Afghanistan.
- Assess the status, biological and economic importance of invasive alien species in Afghanistan.

Afghanistan preliminary target 6: pathways for major potential alien species controlled, and management plans for major alien species that threaten ecosystems, habitats or species in place.

CBD Aichi Target 9: By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.

Strategy 6.1 to develop and implement mechanisms for preventing damage to natural ecosystems from invasive alien species.

**ACTION REQUIREMENTS IN AFGHANISTAN**

- Establish law enforcement, including regulation of hunting, fishing and access to firewood and other forest products, and procedures for fines and penalties.
Afghanistan preliminary target 7: Resilience of the components of biodiversity to adapt to climate change maintained and enhanced, pollution and its impacts on biodiversity reduced

CBD Aichi Target 8: By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity

CBD Aichi Target 10: By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning

Strategy 7.1 to control impacts on biodiversity resources resulting from climate change, desertification and pollution

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<tr>
<th>ACTION REQUIREMENTS IN AFGHANISTAN</th>
<th>TIMEFRAME</th>
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<tbody>
<tr>
<td>Prepare and implement a national program concerning climate change adaptation, focusing on impacts of glacial retreat, temperature increase, and more frequent droughts and floods</td>
<td>M</td>
<td>NEPA</td>
<td>NEPA/MOEW</td>
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<tr>
<td>Prepare and implement a national program concerning desertification and its prevention</td>
<td>M</td>
<td>MAIL</td>
<td>MAIL</td>
</tr>
<tr>
<td>Establish an information system to monitor and help implement programs which address climate change, desertification and land degradation issues</td>
<td>M</td>
<td>NEPA</td>
<td>NEPA</td>
</tr>
<tr>
<td>Create suitable mechanisms among the relevant government and non-government organizations to implement Afghanistan’s obligations under the Climate Change Convention and the Convention to Combat Desertification</td>
<td>S</td>
<td>NEPA</td>
<td>NEPA/MAIL</td>
</tr>
<tr>
<td>Design and build biodiversity-friendly and climate-resilient infrastructure</td>
<td>S</td>
<td>MoPW</td>
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<tr>
<td>Expand the protected area network, and promote an ecosystem-based approach to biodiversity conservation as an integral part of a climate change adaptation and mitigation strategy</td>
<td>M</td>
<td>NEPA</td>
<td>NEPA/MAIL</td>
</tr>
<tr>
<td>Make biodiversity and ecosystem management key components in development projects, climate mitigation, adaptation and risk management</td>
<td>M</td>
<td>NEPA</td>
<td>NEPA</td>
</tr>
<tr>
<td>Assess the impacts of pollution on water quality in natural aquatic ecosystems</td>
<td>M</td>
<td>NEPA</td>
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<tr>
<td>Restore degraded lands, stabilize sand dunes and soils, reseed highly degraded rangeland, reduce grazing and dry land cultivation in vulnerable areas, map areas vulnerable to desertification, and establish representative rangeland areas where grazing is excluded or experimentally controlled</td>
<td>L</td>
<td>MAIL</td>
<td>MAIL</td>
</tr>
<tr>
<td>Establish community-based organizations for planning and decision-making concerning local strategies for adapting to climate change and combating desertification, including community-based rangeland assessment and management plans</td>
<td>L</td>
<td>MAIL</td>
<td>MAIL/NEPA</td>
</tr>
</tbody>
</table>

Afghanistan preliminary target 8: Capacity of ecosystems to deliver goods and services maintained, biological resources that support sustainable livelihoods, local food security and health care, especially of poor people, maintained

CBD Aichi Target 14: By 2020, ecosystems that provide essential services, including services are restored and safeguarded

Strategy 8.1 to develop and implement mechanisms and plans for maintaining goods and services obtained from critical ecosystems, focusing on forests and woodlands

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<tr>
<th>ACTION REQUIREMENTS IN AFGHANISTAN</th>
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<tbody>
<tr>
<td>Develop plans to manage eastern conifer forests: rebuild community control and government influence; improve trans-boundary cooperation; introduce a timber cooperative; control road access to forests; estimate future timber demands; establish forest management legislation; undertake gradual implementation of export controls; institute grazing management and rotation systems; develop demonstration sites showing the viability and benefits of forest conservation; promote strict protection of forest sites as components of a national protected areas system</td>
<td>M</td>
<td>MAIL</td>
<td>MAIL</td>
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<tr>
<td>Develop plans to manage open woodlands: undertake immediate soil stabilization measures; begin community-based reforestation; reinstitute a community-based forest warden system; allocate woodlands to communities; employ grazing management and rotation systems; establish community-based woodlots; establish woodland management legislation; establish seed banks; establish woodland protected areas; develop alternative incomes</td>
<td>M</td>
<td>MAIL</td>
<td>MAIL</td>
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<tr>
<td>Conduct reforestation and tree planting activities, especially in areas where communities are using forest, range and other biological resources sustainably</td>
<td>M</td>
<td>MAIL</td>
<td>MAIL</td>
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<tr>
<td>Conserve natural forests</td>
<td>L</td>
<td>NEPA</td>
<td>NEPA/MAIL</td>
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<tr>
<td>Develop national and international gene banks</td>
<td>L</td>
<td>NEPA</td>
<td>NEPA/MAIL</td>
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<tr>
<td>Give priority to the conservation of riparian vegetation</td>
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<tr>
<td>Prepare a list of protected medicinal plant species</td>
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<tr>
<td>Introduce appropriate measures to control the harvest of medicinal plants in high risk areas</td>
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<tr>
<td>Develop/rehabilitate rangelands</td>
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<tr>
<td>Control trade in medicinal plants</td>
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</tbody>
</table>
Afghanistan preliminary target 9: traditional knowledge, innovations and practices protected, and rights of indigenous and local communities over their traditional knowledge, innovations and practices, including their rights to benefits sharing, are respected

CBD Aichi Target 18: By 2020, the traditional knowledge, innovations and practices of indigenous and local communities and their customary use, are respected

Strategy 9.1 to maintain cultural diversity by recognizing and valuing traditional knowledge and land uses

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<tbody>
<tr>
<td>develop a profile of traditional knowledge, innovations and practices regarding use of biodiversity resources in Afghanistan</td>
<td>M</td>
<td>NEPA</td>
<td>NEPA</td>
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<tr>
<td>identify and implement mechanisms for ensuring rights of indigenous and local communities over their traditional knowledge, practices and benefits sharing</td>
<td>L</td>
<td>NEPA</td>
<td>NEPA</td>
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<tr>
<td>develop a profile of socio-cultural and linguistic diversity in Afghanistan</td>
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Afghanistan preliminary target 10: all access to genetic resources in line with the Convention on Biological Diversity and its relevant provisions, and benefits arising from the commercial and other utilization of genetic resources shared in a fair and equitable way with the countries, providing such resources in line with the Convention on Biological Diversity and its relevant provisions

CBD Aichi Target 16: By 2015, the Nagoya Protocol on Access and Benefits Sharing is in force and operational

Strategy 10.1 to manage genetic resources for the benefit of all citizens of Afghanistan Action

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<tbody>
<tr>
<td>develop and implement a legal and regulatory framework that ensures sustainable use of natural resources</td>
<td>M</td>
<td>NEPA</td>
<td>MoJ/MoU</td>
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<tr>
<td>establish procedures for countering the influence of elites/powerful people regarding unauthorized forest cutting and land seizures</td>
<td>M</td>
<td>MAIL</td>
<td>MAIL/MoJ</td>
</tr>
<tr>
<td>assess needs for ensuring that benefits of natural resources exported from Afghanistan are shared in a fair and equitable way</td>
<td>M</td>
<td>NEPA</td>
<td>NEPA/MoC</td>
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<tr>
<td>establish a special court to deal with environmental violators</td>
<td>L</td>
<td>MoJ</td>
<td>MoJ</td>
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Afghanistan preliminary target 11: New and additional financial resources and technology transferred to Afghanistan, to allow for the effective implementation of commitments under the Convention

CBD Aichi Target 20: By 2020, the mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, should increase substantially

Strategy 11.1 to ensure that NEPA and MAIL have sufficient capacity and resources to carry out Afghanistan’s obligations as a signatory to CBD and other MEAs

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<th>ACTION REQUIREMENTS IN AFGHANISTAN</th>
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<tr>
<td>develop a detailed, long-term and complete National Biodiversity Strategy for Afghanistan incorporating biodiversity indicators, targets and specific strategies for implementing the CBD</td>
<td>S</td>
<td>NEPA</td>
<td>NEPA</td>
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<tr>
<td>comply with all CBD requirements for national reporting</td>
<td>S</td>
<td>MAIL</td>
<td>MAIL/NEPA</td>
</tr>
<tr>
<td>strengthen NEPA regarding budget and personnel, authority to implement policies, and cooperate with regard to implementation of the environment law</td>
<td>M</td>
<td>NEPA</td>
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<tr>
<td>clarify responsibilities in the environmental arena and strengthen the capacity of NEPA</td>
<td>M</td>
<td>NEPA</td>
<td>NEPA</td>
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<tr>
<td>build environment and natural resource use capacities within line ministries</td>
<td>L</td>
<td>NEPA</td>
<td>NEPA/MAIL</td>
</tr>
<tr>
<td>develop the human and institutional capacities of MAIL and NEPA, as well as other institutions having cross-cutting connections, at the national and sub-national levels</td>
<td>L</td>
<td>NEPA</td>
<td>NEPA/MAIL</td>
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<tr>
<td>provide basic infrastructure and professional training to improve the capacity of government institutions to effectively manage biodiversity</td>
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<tr>
<td>establish inter-agency technical committees and an inter-ministerial coordination mechanism, and mainstream environmental issues in all institutions</td>
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<tr>
<td>strengthen the focal point for Multilateral Environmental Agreements, implement existing agreements, and prioritize participation in other international environmental conventions</td>
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<tr>
<td>develop enforcement capacity within NEPA, including development of cooperative mechanisms between NEPA and other government agencies, NGOs and security organizations regarding protection of forests and rangelands</td>
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<tr>
<td>develop support and funding for program/project implementation, and encourage international investments in capacity development</td>
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<tr>
<td>assign a focal point and develop expertise and capacity relevant to the CBD, engage the government more fully in the activities of the CBD and CITES (Convention on International Trade in Endangered Species), and set up a functioning system to administer CITES permitting</td>
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<tr>
<td>strengthen regional and international cooperation</td>
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APPLICATION OF THE NBSAP TO SUB-NATIONAL ENTITIES

In Afghanistan, the Sub-National Government National Priority Programme, Subnational Governance Strategy will be key to providing a path forward for application of the NBSAP to sub-national entities. In terms of implementing NBSAP at provincial level in the 34 provinces, it will be possible in the 2015-2019 National Development plan to include environmental plans first and biodiversity as a sub-component of these plans. There are major implementation concerns with such an approach, since government and UN/NGO access is limited to not more than 50% of the country at present, and even then only district and provincial hubs.

NEPA, with physical presence in 32 provinces is best placed to lead integration of the National BSAP into Subnational level. Updates to the NBSAP for 2015-2019 will include extensive material on this objective.

SECTORAL ACTION

Afghanistan’s National Development Strategy (2008-2013) currently serves as its National Poverty Reduction Paper. The cross-cutting environmental issues section of the ANDS contains a section on Biodiversity, and action plans for biodiversity and other issues. The cross cutting paper is a critical document to illustrate how Afghanistan will link up its development, security, and environmental issues, combining with sectoral policies and plans. Private Sector and civil society environmental action is mentioned in the ANDS environment section, but not in detail. The new ANDS will run from 2015-2019, and it is critical that the NEPA, MAIL and partners work to include practical actions for biodiversity conservation in it.

Afghanistan has completed its UNFCCC National Adaptation Plan of Action (NAPA) in 2009, and has prepared its Initial National Communication on Climate Change in 2012. Both of these documents make extensive reference to biodiversity and its role in supporting ecosystems, and especially rural communities to adapt to changing climate.
The Environment Law enacted in 2007 assigns NEPA the responsibility for coordinating and monitoring the conservation and rehabilitation of Afghanistan’s environment. This mandate gives NEPA overall responsibility for implementation of the NBSAP, in partnership with MAIL and other government organizations, and with the technical and financial assistance of international organizations and NGO partners. In order to be truly national in scope, implementation will need to involve all 34 NEPA provincial offices (and preferably also provincial MAIL offices). Priority action assessments and adaptive planning will need to be undertaken periodically in order to ensure that human and financial resources are allocated efficiently.

**WHO NEEDS TO BE TRAINED?**

Implementation of the NBSAP will rest with NEPA working from central and provincial offices. All relevant management and technical personnel at central level (estimated as 5-10 persons representing Natural Heritage and Protection Division; Division of Environmental Management and Sustainable Development; Division of Research, Policy and Information; Division of International Environmental Affairs; and Division of Implementation and Enforcement) and one or more persons from each Provincial NEPA Office (total 34) needs “awareness” training regarding the content of the NBSAP, and follow-up training regarding implementation and monitoring. The minimum number of persons requiring training within NEPA is therefore 40-45, with the maximum number being limited only by the current numbers of NEPA staff at national and provincial levels.

Apart from NEPA, MAIL is the primary line ministry responsible for implementation of future Action Plan activities, either through their existing programming or specific activities designed to comply with the NBSAP goals and objectives. MAIL personnel will also require appropriate awareness training.

**WHAT SKILLS ARE REQUIRED?**

Both management skills (personnel and program management) and technical skills (focusing on biodiversity resources in the broadest sense, across a spectrum ranging from sustainable use to protection of both agricultural and wild species and ecosystems) are required.

**WHAT IS THE EXISTING CAPACITY IN RELATION TO SKILLS REQUIRED?**

According to a recent assessment based on group and individual interviews and a written survey, the current capacity of NEPA staff is highly variable, but in general there is a need for improved skills in all areas. The Natural Heritage Division, which is responsible for protected areas and wildlife management (including both aquatic and terrestrial environments), and is the institutional “home” for the NBSAP, has a general need for field equipment and computers, for female staff to interact with female community members, and for increased coordination with provincial staff.

**HOW CAN THE NECESSARY CAPACITY BE DEVELOPED?**

Training arrangements specifically with regard to the NBSAP are potentially complicated and expensive. An initial option might be to develop a simple “awareness package” in Dari and distribute this via CD to all relevant NEPA staff. This would also be useful for communication of the NBSAP content to other agencies. Subsequent needs for implementation training remain to be determined.

The aims of the NBSAP should also be reflected in any general public awareness programming developed/delivered by BSP/NEPA. This will effectively broaden the “audience” for the NBSAP and provide a stronger basis for its implementation. While a specific public awareness campaign regarding the NBSAP might be most effective, the potential for linking promotion of the NBSAP with other NEPA initiatives also needs to be investigated.

**COMMUNICATION AND OUTREACH STRATEGY FOR THE NBSAP**

The NBSAP will be formally launched as part of an awareness campaign at national level. A series of executive summary products are also being designed to accompany the main document, tailored for different audiences. These will include fact-sheets, posters and national language items, including media broadcasts.

NEPA will ensure that both the Cabinet and the Parliament receive officially endorsed versions of the NBSAP, and are given opportunities to integrate the documentation into their own sectoral plans, and libraries. An outreach campaign from the NEPA Heritage Protection Division will include multimedia, in-person and document components.
PLAN FOR RESOURCE MOBILIZATION FOR NBSAP IMPLEMENTATION

NEPA will utilise the NBSAP as a well-prepared and researched national document and attempt to realistically integrate its action section into the National Development Budget for a start. In this way, the civil service costs, research and development costs, and innovative mechanisms available through the Afghanistan Ministry of Finance can be leveraged to support biodiversity, both in its climate change, ecosystem protection, land restoration and poverty alleviation functions.

Additional resources will be sought from the STAR allocation under the Global Environmental Facility. Afghanistan, together with the Wildlife Conservation Society and UNEP has additionally prepared a series of proposal to the CBD Lifeweb Platform, in particular supporting the National Protected Areas System Plan implementation. A number of bilateral efforts have been started, in particular with botanical or species conservation objectives, with philanthropic and donor funds from Sheikh Zayed Fund, UK Darwin Initiative, FAO funds from Germany for biodiversity conservation in forests.

NATIONAL COORDINATION STRUCTURES

The Committee for Environmental Coordination is instituted under the 2007 Environment Law and is the first national body responsible for clear identification of roles and responsibilities for all the institutional actors in government towards biodiversity conservation. NEPA is the secretariat of this body as well as being the convening agent, and the curator of the meeting notes, and reports to President Office and Cabinet.

MAIL is responsible for implementing natural resource exploitation, management and conservation activities in Afghanistan. It is primarily the role of MAIL to manage or oversee projects on watershed management, rangeland protection, and national parks, forests and species protection.

The Line Ministries and their provincial and district departments will be key in ensuring that communication and activity planning is carried out, as the NBSAP is being rolled out. At the same time, the Independent Directorate of Local Government is a key player ensuring that subnational governance and Provincial Governors offices, as well as municipal offices are integrated in plan making and action.
ANNEX I : DEFINITIONS

BIODIVERSITY: the variation (diversity) of life forms at the genetic, species or ecosystem level

BIOME: a large and distinctive complex of plant communities created and maintained by climatic factors. Afghanistan is located at the interface of tropical and temperate biomes (desert and steppe)

ECOSYSTEM: a climatically and geographically defined area supporting typical communities of plants and animals

EX SITU: the conservation of plant or animal species outside of their natural habitats (e.g., 2000, gene banks)

FAUNA: animal species

FLORA: plant species

GENE BANK: a means of preserving plant or animal genetic material. Animal gene banks store frozen sperm and eggs; plant gene banks store seeds or frozen cuttings.

HABITAT: the physical and biological environment in which an organism lives

IN SITU: the conservation of natural landscapes and habitats and their physical and biological components

INVASIVE ALIEN SPECIES: species that are not native to an area but that become easily established when introduced by man, competing with and displacing native species

LAND RACE: animals or plants adapted to the natural and cultural environment in which they live (or originated)

RED LIST: a list of plants and animals in danger of extinction, usually from habitat loss or direct mortality resulting from human activities

ANNEX II : REFERENCES


Fedak, G. nd. From a single seed: Tracing the Marquis wheat success story in Canada to its roots in the Ukraine. http://res2.agr.ca/publications/marquis/page01_e.htm#early_history


ANNEX II : REFERENCES


ANNEX II : REFERENCES


Environmental Considerations Relevant to Water Resource Conservation and Management; Biodiversity and Natural Resource Conservation and Management (including National Biodiversity Strategy, Protected Areas Management, Management of Natural Resources Outside of Protected Areas, Sustainable Use and Conservation of Species, Species Trade, Access to Genetic Resources); Environmental Information, Education and Training; and Research, and Compliance and Enforcement.

MAIL. 2009. Afghanistan's Fourth National Report to the Convention on Biological Diversity, Ministry of Agriculture, Irrigation and Livestock, Islamic Republic of Afghanistan. Assesses the degree to which Afghanistan is being successful in addressing the CBD and Millennium Development Goal targets of reducing the rate of biodiversity loss. The rapidly increasing human population is the major underlying challenge to biodiversity conservation. Proximal threats are land encroachment, over-hunting, deforestation, over-grazing, shrub collection, dry land farming, and climate change, all of which are worsening. Afghanistan will not be able to meet the CBD's goal of reducing biodiversity loss in the foreseeable future.


MAIL. 2006. National Report of Islamic Republic of Afghanistan on the implementation of United Nations Convention to Combat Desertification (UNCCD). Ministry of Agriculture and Irrigation, Islamic Republic of Afghanistan. Identifies factors in the spread of desertification in Afghanistan and identifies initiatives relevant to desertification control. Desertification currently affects more than 72% of the total land area in the northern, western, and southern regions of the country, resulting in loss of valuable forest resources, loss of access to grazing lands, and soil erosion and impacts on water supplies due to accelerated runoff.

NEPA. 2007. National Environmental Protection Agency Strategy for Afghanistan National Development Strategy (with focus on prioritization). National Environmental Protection Agency, Islamic Republic of Afghanistan. Details NEPA's strategy and priority expected results within ANDS, the goal of which is “to protect the environmental integrity of Afghanistan and support sustainable development of its natural resources through the provision of effective environmental policies, regulatory frameworks and management services that are also in line with the Afghanistan Millennium Development Goals”.

NEPA and UNDP. 2008. Afghanistan's Environment 2008. National Environmental Protection Agency of the Islamic Republic of Afghanistan and United Nations Environment Programme. Reviews the state of the Environment in Afghanistan as of 2008 including key challenges and opportunities; geography, economy and population; environmental governance; water resources; rangelands, forests and biodiversity; land use, agriculture and soils; urban environment; natural disasters and climate change; and energy and mineral resources. Significant gains have been made in environmental management in the last five years. Substantial gains are expected from mainstreaming environmental into the reconstruction agenda and the national budget.


Shank, C. 2006. A proposed action plan for the conservation of Afghanistan's biodiversity and wetlands: 2007-2010. National Capacity Self-Assessment (NCSA) and National Adaptation Programme of Action (NAPA) for Afghanistan. Outlines priority actions necessary for Afghanistan to address the Convention on Biological Diversity. These include: 1) Convention on Biological Diversity: assignment of a focal point and development of expertise and capacity; 2) Afghanistan Biodiversity Strategy: development of a detailed, long-term and complete national biodiversity strategy; 3) status of biodiversity: development of a red-listing process for Afghanistan’s mammals; 4) protection of protected areas; establishment of at least one protected area; 5) status of protected areas system; 6) CITES permitting system: setting up of a functioning system to administer CITES.
permitting; 6) public awareness and education for biodiversity and sustainable use: development of a national programme of biodiversity education and awareness; 7) community-based management of forests, rangelands and wetlands; 8) traditional practice and knowledge of conservation and sustainable use: development of a single strategic approach to implementing a national programme of community-based conservation that fully incorporates traditional knowledge and practices.

UNEP. 2009. From Conflict to Peace building. The Role of Natural Resources and the Environment, United Nations Environment Programme, Nairobi. Provides a global overview and recommendations for integrating environment and natural resource issues into peace-building interventions and conflict prevention, including case studies from Afghanistan.


UNEP. 2003. Afghanistan post-conflict environmental assessment. United Nations Environment Programme, Nairobi. Provides a detailed assessment and analysis of the post-conflict environmental situation in Afghanistan, including descriptions of the country context, urban environment, natural resources and environmental governance, and detailed recommendations many of which are of direct relevance to protected areas and biodiversity conservation.

UNEP and NEPA. 2009. National Capacity Needs Self-Assessment for Global Environmental Management (NSCA) and National Adaptation Programme of Action for Climate Change (NAPA). Final Joint Report, United Nations Environment Programme. Provides comprehensive reporting on the NSCA and NAPA processes and follow-up action that needs to be taken. NAPA objectives are to "identify priority projects and activities that can help communities adapt to the adverse effects of climate change; 2) seek synergies with existing MEAs and development activities, with an emphasis on both mainstreaming and adapting to the adverse effects of climate change; and, 3) integrate climate change considerations into the national planning processes".

UNEP and NEPA. 2008. Afghanistan’s environment 2008. National Environmental Protection Agency of the Islamic Republic of Afghanistan and United Nations Environment Programme. Reviews the state of the environment in Afghanistan as of 2008 including key challenges and opportunities; geography, economy and population; environmental governance; water resources; rangelands, forests and biodiversity; land use, agriculture and soils; urban environment; natural disasters and climate change; and energy and mineral resources. Significant gains have been made in environmental management in the last five years. Substantial gains are expected from mainstreaming environmental into the reconstruction agenda and the national budget.

UNEP and NEPA. 2007. A Guide to Afghanistan’s 2007 Environment Law. UNEP Capacity Building and Institutional Development Programme for Environmental Management in Afghanistan, United Nations Environment Programme and National Environmental Protection Agency. Describes the purpose and institutional background of the new environment law, which “creates a regulatory framework for the sustainable use and management of Afghanistan’s natural resource base, and provides for the conservation and rehabilitation of the environment towards achieving specified social, economic, reconstruction and ecological goals”.


WEB SITES

CBD 2011-2020 Strategic Plan: http://www.cbd.int/sp/

CBD Capacity Building Modules: http://www.cbd.int/nbsap/training/

CBD Quick Guides for Aichi Targets: http://www.cbd.int/nbsap/training/quick-guides/

CBD Strategic Plan Indicators: http://www.cbd.int/sp/indicators/

BIP National Biodiversity Indicators Portal: http://www.bipnational.net/

NBSAP Forum: http://www.nbsapforum.net/

PUBLICATIONS


UNEP-WCMC. 2011. Developing ecosystem service indicators: Experiences and lessons learned from sub-global assessments and other initiatives. Technical Series No. 59. CBD, Montréal, Canada.

UNEP-WCMC & IEEP. 2013. Incorporating Biodiversity and Ecosystem Service Values into NBSAPs: Guidance to Support NBSAP Practitioners. UNEP-WCMC, Cambridge, UK.

UNEP-WCMC & IEEP. 2013. Incorporating Biodiversity and Ecosystem Service Values into NBSAPs: Roadmap to Support NBSAP Practitioners. UNEP-WCMC, Cambridge, UK.
CBD COP GUIDANCE ON DEVELOPING NBSAPs

COP-9 Decision IX/8 on the “Review of implementation of Goals 2 and 3 of the Strategic Plan” paragraph 8 provides consolidated guidance to assist Parties in the development and revision of their NBSAP. This text is extracted below.

National Biodiversity Strategies and Action Plans

8. “…urges Parties in developing, implementing and revising their national and, where appropriate, regional, biodiversity strategies and action plans, and equivalent instruments, in implementing the three objectives of the Convention, to:

Meeting the three objectives of the Convention:

a) Ensure that national biodiversity strategies and action plans are action-driven, practical and prioritized, and provide an effective and up-to-date national framework for the implementation of the three objectives of the Convention, its relevant provisions and relevant guidance developed under the Convention;

b) Ensure that national biodiversity strategies and action plans take into account the principles in the Rio Declaration on Environment and Development adopted at the United Nations Conference on Environment and Development;

c) Emphasize the integration of the three objectives of the Convention into relevant sectoral or cross-sectoral plans, programmes and policies;

d) Promote the mainstreaming of gender considerations;

e) Promote synergies between activities to implement the Convention and poverty eradication;

f) Identify priority actions at national or regional level, including strategic actions to achieve the three objectives of the Convention;

g) Develop a plan to mobilize national, regional and international financial resources in support of priority activities, considering existing and new funding sources;

Components of biodiversity strategies and action plans

h) Take into account the ecosystem approach;

i) Highlight the contribution of biodiversity, including, as appropriate, ecosystem services, to poverty eradication, national development and human well-being, as well as the economic, social, cultural and other values of biodiversity as emphasized in the Convention on Biological Diversity, making use, as appropriate, of the methodologies and conceptual framework of the Millennium Ecosystem Assessment;

j) Identify the main threats to biodiversity, including direct and indirect drivers of biodiversity change, and include actions for addressing the identified threats;

k) As appropriate, establish national, or where applicable, sub-national, targets, to support the implementation of national biodiversity strategies and action plans, consistent with the flexible framework established in decisions VII/50 and VIII/15, taking into account, as appropriate, other relevant strategies and programmes, such as the Global Strategy for Plant Conservation focusing on national priorities.

Support processes

l) Include and implement national capacity-development plans for the implementation of national biodiversity strategies and action plans, making use of the outcomes of national capacity self-assessments in this process, as appropriate;

m) Engage indigenous and local communities, and all relevant sectors and stakeholders including representatives of society and the economy that have a significant impact on, benefit from or use biodiversity and its related ecosystem services. Activities might include:

(i) Preparing, updating and implementing national biodiversity strategies and action plans with the participation of a broad set of representatives from all major groups to build ownership and commitment;

(ii) Identifying relevant stakeholders from all major groups for each of the actions of the national biodiversity strategies and action plans;

(iii) Consulting those responsible for policies in other areas so as to promote policy integration and multidisciplinary, cross-sectoral and horizontal co-operation to ensure coherence;

(iv) Establishing appropriate mechanisms to improve the participation and involvement of indigenous and local communities and civil society representatives;

(v) Striving for improved action and cooperation to encourage the involvement of the private sector, namely through the development of partnerships at the national level;

(vi) Strengthening the contribution of the scientific community in order to improve the science/policy interface to support research-based advice on biodiversity;

n) Respect, preserve and maintain the traditional knowledge, innovations and practices of indigenous and local communities consistent with Article 8(j);

o) Establish or strengthen national institutional arrangements for the promotion, coordination and monitoring of the implementation of the national biodiversity strategy and action plans;

p) Develop and implement a communication strategy for the national biodiversity strategy and action plan;

q) Address existing planning processes in order to mainstream biodiversity concerns in other national strategies, including, in particular, poverty eradication strategies, national strategies for the Millennium Development Goals, sustainable development strategies, and strategies to adapt to climate change and combat desertification, as well as sectoral strategies, and ensure that national biodiversity strategies and action plans are implemented in coordination with these other strategies;

r) Make use of or develop, as appropriate, regional, subregional or subnational networks to support implementation of the Convention;

s) Promote and support local action for the implementation of national biodiversity strategies and action plans, by integrating biodiversity considerations into subnational and local level assessments and planning processes, and, as and where appropriate, the development of sub-national and local biodiversity strategies and/or action plans, consistent with national biodiversity strategies and action plans;
t) Establish national mechanisms including indicators, as appropriate, and promote regional cooperation to monitor implementation of national biodiversity strategies and action plans and progress towards national targets, to allow for adaptive management, and provide regular reports on progress, including outcome-oriented information, to the Secretariat for the Convention on Biological Diversity;

u) Review national biodiversity strategies and action plans to identify successes, constraints and impediments, including revision of the strategies where necessary;

v) Make available through the Convention’s clearing-house mechanism national biodiversity strategies and action plans, including periodic revisions, and where applicable, reports on implementation, case studies of good practice, and lessons learned.