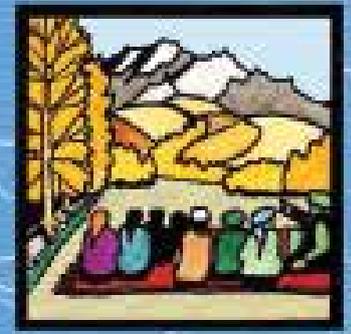


# Biodiversity in the Koh-e-Baba



## An overview



**COAM**  
Conservation Organisation  
for Afghanistan Mountains

### What is Biodiversity?

Biodiversity is the term used to describe the variability of living organisms from all sources, including, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species, and of ecosystems.

### What are ecosystem services?

Ecosystem services are the benefits obtained by people from ecosystems. These include provisioning services, such as food, water, timber, fibre, genetic resources, and medicines; regulating services, such as regulation of climate, water and soil quality, and pollination; cultural services, such as recreational, aesthetic, and spiritual benefits; and supporting services, such as soil formation and nutrient cycling.

### What is agrobiodiversity?

Agrobiodiversity means related to agriculture, and includes all crops and livestock, their wild relatives, and all the interacting species of pollinators, symbionts, pests, parasites, predators, and competitors. Agrobiodiversity has been continuously maintained and conserved by farmers and herders over generations.

### Why is biodiversity important?

Its wellbeing is critical for our survival because the ecosystem services it provides include such fundamental human needs as oxygen, water and food.

# How does biodiversity affect human wellbeing?

What do endemic and indigenous mean?

Indigenous species are simple those species which live naturally in a particular place rather than having been brought there by man. An endemic species is a species which occurs only in a limited area e.g. the yellow Iris (*Iris porphyrochrysa*) that occurs only in the central Afghan mountains can be described as being

How can we quantify biodiversity?

This is a big question, especially in insecure areas. Biodiversity is most frequently quantified as the number of species, but it is difficult to count these accurately. Current global estimates of the number of species range from 5 to 30 million, of which only around 1.8 million have been described. In Afghanistan, the number of species recorded is likely to be a gross underestimation of how many

If there are:  
50,000 different species in Afghanistan  
and the extinction rate is just 0.01%/ year  
at least 5 species go extinct every year

What are Global Biodiversity Hotspots?

Conservation International has identified 34 'Global Biodiversity Hotspots' – areas of global conservation significance with exceptional biodiversity and a large number of endemic species.

Are there any patterns and trends in global biodiversity?

Biodiversity levels vary great unevenly distributed over the globe, with some areas exceptionally rich in biodiversity and/or endemic and rare species, or centres of genetic diversity. Some species can exist in many places, some in only a few (narrow range). Scientists have suggested that the Central Highlands of Afghanistan is an area of high endemism and a very old and major centre of development and evolution of flowering plants. There have been no studies on this as yet and if we don't know how much there is to begin with, we don't know exactly how much we are losing. We do have lots of facts and figures that seem to indicate that the news is not good. Experts calculate that between 0.01% and 0.1% of all species will become extinct\* each year.

\* Extinction is the end of a species existence on the earth.





# Biodiversity in the Koh-e-Baba Mountain Area

## What makes Koh or mountain biodiversity special?

Mountain biodiversity is shaped by altitude and the extremes of physical environment and landscape; climate, soils, elevation, slope and aspect. On account of this range of conditions that is found in the mountains, many different ecosystems tend to occur within a relatively small area. These important mountain ecosystems are fragile and particularly vulnerable to natural and anthropogenic threats and once they begin to degrade their capacity to provide important services to people reduces. The Koh-e-Baba is home to many endemic, unique, and rare species and is thought to be a major centre of evolution of modern food crops. The mountains are a major water source for much of Afghanistan, providing fresh water for millions of people in the lower lands. The health of the

## What are the major threats to the biodiversity?

Biodiversity in the region is influenced by changes in land use and land cover, climate, and demographics. Major biodiversity threats in the Koh-e-Baba include habitat degradation (overgrazing, overharvesting of vegetation, monoculture, drainage). The table shows the estimated number of

Threatened species of Afghanistan (from Vié et al 2009)	
Mammals	11
Birds	13
Reptiles	11
Amphibians	1
Fish	3
Molluscs	12
Other invertebrates	32
Plants	2
<b>Total</b>	<b>32</b>

## How will climate change affect biodiversity in the Koh-e-Baba?

The lack of climate-based biodiversity data and research in the region makes it difficult to assess the impact of climate change on biodiversity. Equally, climate change is only one of many factors affecting biodiversity, and difficult to assess separately. We can make some predictions from the projected climate trends. Climate change may increase the risk of extinction of species and habitats with a restricted range and specialised needs. Of particular concern in high mountain areas is the likely scenario that the cold conditions that currently support unique high altitude habitats will disappear.

Vulnerable ecosystems in Koh-e-Baba include wetlands, sub-alpine and alpine transition zones, and sub-alpine and alpine meadows. Drought

## What is the significance of the region for biodiversity conservation?

The Koh-e-Baba supports important flora and fauna populations and rare habitats including high altitude wetlands. These elements are currently being studied and it is likely that globally important populations of some species occur. Both the quantity and quality of water available to organisms are key determinants of biodiversity. Water originating in the Koh-e-Baba Mountains flows into the Harirud, Helmand, Kabul, Kunduz, and Balkh Rivers. The Kunduz and Balkh Rivers in turn feed the Amu Darya River flowing to the Aral Sea, making the Koh-e-Baba the most important watershed in the country. The integrity of this watershed is therefore important for the biodiversity over a large area.

Assessing the threatened species in Afghanistan is problematic for several reasons,

- Many of the species in Afghanistan have only recently been identified;
- There is very little baseline data on the status of species in Afghanistan; and
- There is very little recent quantitative data on species in Afghanistan.



## What is being done to protect the biodiversity of the Koh-e-Baba?

Much of the information on Afghanistan's biodiversity is old and no longer reliable. Whilst a few valuable studies have been carried out relatively little information has been added since 1978.

However information on the biodiversity of the Koh-e-Baba is now being gathered.

Koh-e-Baba is proposed as a protected landscape (IUCN V) with people-oriented conservation through the ecosystem approach advocated by the CBD.

On a national level, Afghanistan has made considerable efforts over recent years to formulate relevant frameworks for biodiversity and the government sees biodiversity conservation as a national priority. Examples of recent progress include;

- Afghanistan is a signatory to the Convention on Biological Diversity (CBD)
- National Forestry and National Rangeland Plans have been developed
- National Biodiversity Strategic Action Plan launched (2012)
- A protected areas system plan for Afghanistan designed to protect representative areas of high biodiversity in all major eco-regions has been published.
- A national Red-Listing process for Afghan mammals has been initiated with the technical assistance of IUCN
- National and international scholars are in the process of developing a comprehensive flora of Afghanistan

## How can we protect the biodiversity of the Koh-e-Baba?

There are many causes of biodiversity degradation - they are complex and interlinked. Areas that are particularly relevant at the global level to natural resource over-exploitation are;

- 1) Information and awareness. We need to gain a better understanding of interactions among different sources of degradation, the linkages between land-use systems along elevation gradients, and feedback mechanisms from socioeconomic systems.
- 2) Mainstreaming ecosystem services within a conservation framework, and sustaining services through their economic valuation.
- 3) A regional approach should be promoted to narrow the gaps in knowledge and encourage environmental monitoring, to support cli-





## Can economic incentives influence biodiversity conservation?

Biodiversity is closely associated with people's lives and livelihoods. Economic incentives can encourage the conservation and sustainable use of biodiversity resources. Communities are willing to lead conservation actions if they have incentives, for example as direct payment for maintaining certain habitats to ensure continued ecosystem goods and services, or indirect benefits through promotion of alternative livelihood options linked to conservation. Examples of incentives for conservation in Koh-e-Baba,

- Rangeland rehabilitation – as most people in the Koh-e-Baba rely on livestock, good grazing is very important to them;
- Sustainable livelihood alternatives - there are a number of economically important plants in the Koh-e-Baba which could be sustainably exploited to the benefit of local livelihoods; and
- Advancements in green technology - Solar water heaters, economic stoves, economic fuel makers.

## What are the Aichi Biodiversity Targets?

In 2010, at the 10th Conference of the Parties to the CBD held in Nagoya, Japan The Conference of Parties adopted The Strategic Plan for Biodiversity 2011-2020 – A ten-year framework for action by all countries and stakeholders to save biodiversity and enhance its benefits for people.

