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Fauna of the Western Ghats and Their Protection

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Abstract – The Western Ghats are a chain of hills that run along the western edge of peninsular India. Their proximity to the ocean and through orographic effect, they receive high rainfall. These regions have moist deciduous forest and rain forest. The Western Ghats, known locally as the Sahyadri Hills. They cover an area of about 160,000 km² and stretch for 1,600 kilometers from the country's southern tip to Gujarat in the north, interrupted only by the 30 kilometers Palghat Gap. The region shows high species diversity as well as high levels of endemism. Nearly 77% of the amphibians and 62% of the reptile species found here are found nowhere else. Western Ghats are one of the major biodiversity hotspots in the world. The purpose of biodiversity hotspots is not simply to identify regions that are of high biodiversity value, but to prioritize conservation spending. The Western Ghats mediates the rainfall regime of peninsular India by intercepting the southwestern monsoon winds. There are four main reasons for the loss of biodiversity vz., 1. Habitat destruction 2. Resource mismanagement 3. Poaching & 4. Climate change. Conservation efforts are on through protected areas.

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UNIQUE AND THREATENED BIODIVERSITY

Plants

The Western Ghats harbors approximately 5,000 species of vascular plants belonging to nearly 2,200 genera; about 1,700 species (34 percent) are endemic. There are also 58 endemic plant genera, and, while some are remarkably speciose (like Niligrianthus, which has 20 species), nearly three-quarters of the endemic genera have only a single species.

Some prominent genera and families are represented by large numbers of endemic species, such as Impatiens with 76 of 86 species endemic, Dipterocarpus with 12 of 13 species endemic, and Calamus with 23 of 25 species endemic.

Of the 490 tree species recorded from low- and mid-elevation forests, 308 species are endemic. The only gymnosperm tree, Podocarpus (=Nageia) wallichianus, is also endemic. Of the 267 species of orchids, 130 are endemic.

In the Western Ghats, the Agasthyamalai Hills in the extreme south are believed to harbor the highest levels of plant diversity and endemism at the species level. Nearly 87 percent of the region's flowering plants are found south of the Palghat Gap (37 percent being exclusive to this sub-region); these figures decrease to about 60 percent and 5 percent, respectively, in the Nilgiri Hills.

MAMMALS

The hotspot is home to about 140 mammal species, but less than 20 are endemic. While mammal diversity is lower here than in some other tropical hotspots, the hotspot does support a significant diversity of bats, with nearly 50 species and one endemic genus, represented by the bat *Latidens salimalii* , which is endemic to the High Wavy Mountains in the Western Ghats.

Among flagship mammal species, the most prominent are the lion-tailed macaque (*Macaca silenus*, EN), found in highly fragmented tropical rain forests in the Western Ghats, and the endemic Nilgiri tahr (*Hemitragus hylocrius*, EN), which lives in the montane grasslands of the Western Ghats.

One of the most threatened Indian mammals, the Malabar civet (*Viverra civettina*,), is known only from the Malabar Plains, which are densely populated and the focus of most development activities.

The hotspot also has important populations of the Asian elephant (*Elephas maximus*,). The Nilgiri Bio-sphere is home to the largest population of Asian Elephants and forms an important project Elephant and project Tiger reserve. The largest population of India's Tigers outside the Sundarbans is in the unbroken forests bordering Karnataka, Tamil Nadu and Kerala.

BIRDS

The avifauna of the Western Ghats is diverse, but endemism is not exceptional. There are more than 450 known bird species from the hotspot, of which about 16 are endemic. The Western Ghats is considered as Endemic Bird Areas by BirdLife International.

Of the endemic species, 10 are considered threatened, including the green-billed coucal (*Centropus chlororhynchos*,), rufous-breasted laughingthrush (*Garrulax cachinnans*,). The hotspot also holds several widespread threatened waterbird species, including the spot-billed pelican (*Pelecanus philippensis*,) and the lesser adjutant (*Leptoptilos javanicus*,).

REPTILES

The highest levels of vertebrates endemism in the Western Ghats hotspot are among reptiles and amphibians. Of the region's more than 260 reptile species, about 175 (66 percent) are endemic. One quarter of the nearly 90 reptile genera in the hotspot are endemic, and nine of these are represented by single species. Families such as Uropeltidae (47 of 48 species), Gekkonidae (18 of 30), and Agamidae (20 of 26) exhibit very high endemism.

AMPHIBIANS

Endemism is particularly marked among amphibians in this hotspot, six genera (out of a total of 28) are endemic to the Western Ghats. Recently, a new amphibian family was discovered in Kerala in the Western Ghats; the burrowing anuran family, Nasikabatrachidae, with the single species *Nasikabatrachus sahyadrensis* represents the only endemic amphibian family in the hotspot. The closest living relatives of this family are the Sooglosside in the Seychelles.

Unfortunately, the amphibian fauna fare particularly high levels of threat, driven particularly by the continuing levels of habitat loss. Among the endemics, over 85 species are considered threatened. Amphibian extinctions are also relatively well documented, with some 20 historically recorded extinctions.

FRESH WATER FISHES

Many freshwater fish occupy very limited ranges in the Western Ghats. Nearly 140 of more than 190 species of strictly freshwater fishes are endemic to the hotspot.. In the Western Ghats, the southern region is known to be more diverse than the central and northern regions. Many freshwater fish occupy very limited ranges in the Western Ghats 102 species of fish are listed for the Western Ghats water bodies. Western Ghats streams are home to several brilliantly coloured ornamental fishes like Red line torpedo barb, Red-tailed barb, Osteobrama bakeri, Günther's catfish and freshwater puffer fish Tetraodon travancoricus, Carinotetraodon imitator and marine forms like Chelonodon patoca (Buchanan-Hamilton, 1822); mahseers such as Malabar mahseer.

INSECTS

There are roughly 6,000 insect species from Kerala alone. Of 334 butterfly species recorded from the Western Ghats, 316 species have been reported from the Nilgiri Biosphere Reserve.

MOLLUSCS

Seasonal rainfall patterns of the Western Ghats necessitate a period of dormancy for its land snails, resulting in their high abundance and diversity including at least 258 species of gastropods from 57 genera and 24 families.

REASONS FOR BIODIVERSITY LOSS IN HOTSPOTS

There are four main reasons why species are being threatened in these biodiversity hotspots

1. ***Habitat destruction:*** As recently as 30 years ago, most of the regions in these biodiversity hotspots were inaccessible and remote. Now, due to better infrastructure, contact of these areas with humans has increased. Activities such as logging of wood, increased agriculture, increased human habitation has led to destruction of forests and pollution of rivers. These factors are causing species ranges to reduce and habitats to become choppy. The government planned to establish habitat corridors, but these plans have not yet materialized in most areas. Activities such as mining, construction of large dams, highway construction has also caused significant destruction of habitats.

2. ***Resource mismanagement:*** Increased tourism without proper regulation has led to pollution and environmental degradation. These spots, once nestled in the pristine ranges, are now dirty commercial destinations.

3. ***Poaching:*** Large mammals such as the tiger, rhinoceros and the elephant once faced the distinct possibility of complete extinction due to rampant hunting and poaching. However, efforts by conservationists since the 1970s has helped stabilize and grow these populations. Still, the trade in tiger hide,

elephant tusks, tiger teeth, rhinoceros horn remains profitable and rampant.

4. ***Climate change:*** In the Western Ghats, studies have shown that the deciduous and the evergreen forests of Karnataka are the most at risk. Climate change may significantly affect the temperatures, rainfalls and water tables in the Western Ghats.

HUMAN IMPACTS

Extremely high population pressure in this hotspot has seriously stressed the region's biodiversity. Today, approximately 20 percent of the original forest cover remains in more or less pristine state.

The forests of the Western Ghats have been selectively logged and highly fragmented throughout their entire range. Forests have been converted to agricultural land for monoculture plantations of tea, coffee, rubber, oil palm, teak, eucalyptus, and wattle, and are also cleared for building reservoirs, roads, and railways. Encroachment into protected areas further reduces the extent of forests. Grazing by cattle and goats within and near protected areas causes severe erosion on previously forested slopes. Much of the remaining forest cover consists of timber plantations or disturbed secondary growth forest fires are additional concerns.

The growth of populations around protected areas and other forests has led to increasing human-wildlife conflict. Raiding elephants cause crop loss, and leopards kill livestock. Compensation for farmers is generally inadequate, and wild animals are often killed or injured in an attempt to reduce further damage.

CONSERVATION ACTION THROUGH PROTECTED AREAS

India has a long history of environmental protection and reverence for nature. Western Ghats India has a long history of conservation and environmental legislation, complimented by a protected area system that is more than a century old. In 1980, the Forest Conservation Act was enacted, providing an important means of biodiversity protection for the entire nation. This act states that forested land cannot be used for any purpose without approval by the central government. As a result, all legal logging operations in the hotspot were halted in the mid-1980s.

The national and state governments provide the majority of conservation investment in India. For instance, the State Forest Departments work towards managing forests, conserving biodiversity, reforestation, and social forestry.

The Ministry of Environment and Forests, the Planning Commission, and other agencies invest in environmental projects nationwide. Multilateral and bilateral donor agencies, including the World Bank, the Asian Development Bank, and the international development agencies of Japan, the United States, the United Kingdom, and other nations provide loans and grants to both the government and to research institutions and NGOs. Many national, regional, and local NGOs actively participate in biodiversity conservation, particularly through the involvement of communities in sustainable natural resource utilization. While research institutions and NGOs have access to much lower amounts of funding than the government agencies, their work tends to be more targeted towards biodiversity conservation.

Less than fifteen percent of the Western Ghats is protected in 20 national parks and 68 sanctuaries. Considering IUCN categories I-IV, which offer a higher level of protection, the figure drops to around 11percent, according to the World Database on Protected Areas. Thus, the protected area network is far from complete. One way of ensuring that the network of protected areas adequately conserves biodiversity is through the identification and conservation of “Key Biodiversity Areas” (KBAs).

The identification of KBAs in the Western Ghats was initiated in 2003, coordinated locally by Ashoka Trust for Research in Ecology and the Environment (ATREE), and in collaboration with The Wildlife Conservation Society-India and the University of Agricultural Sciences in Bangalore. 126 KBAs are identified in the Western Ghats.

These sites are high priorities for conservation action. KBAs in the Western Ghats will be refined as new and better data become available. Landscape-scale action, through biodiversity conservation corridors, will be necessary for wide ranging species such as the Asian elephant (*Elephas maximus*, EN), tiger (*Panthera tigris*, EN), Asiatic wild dog (*Cuon alpinus*, EN), and greater spotted eagle (*Aquila clanga*,).

NOTES

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