

Hemis National Park, Ladakh, Location, Flora & Fauna, Challenges

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Hemis National Park is a high altitude protected area located in the Leh district of Ladakh, around 50 km from Leh city. It is the largest National Park in India and the only one situated north of the Himalayas. It was established in 1981. The park lies in the Trans Himalayan region and represents the cold desert ecosystem of central Ladakh. It is globally famous for its high density of snow leopards. Hemis is part of the Karakoram West Tibetan Plateau alpine steppe and holds international biodiversity significance.

Hemis National Park

Hemis National Park was initially created to protect the Rumbak and Markha catchments covering nearly 600 sq km in 1981, later expanded to 3,350 sq km in 1988 and finally to around 4,400 sq km in 1990. It stretches across the Zaskar Range and is bounded in the north by the Indus River. Its altitude ranges roughly between 3,000 meters to above 6,000 meters, with Ganda La pass located at about 4,980 meters. The park area comprises core and buffer zones and forms part of the Palearctic biogeographic realm.

Hemis National Park Features

Hemis National Park represents the Trans Himalayan cold desert ecosystem with high altitude valleys, gorges, alpine meadows and steppe landscapes.

- **Geographical Location and Boundaries:** The park lies entirely in the Zaskar region of Ladakh. It is bounded by the Indus River in the north, extends southwards to Padum, eastwards along the Nimmu-Padum-Darcha road and westwards from Karu to Tetha along National Highway routes.
- **Largest Protected Area Status:** With an area of about 4,400 sq km or 4,10,000 hectares, it is the largest National Park in South Asia and the second largest contiguous protected landscape after the Nanda Devi Biosphere Reserve complex.
- **Altitudinal and Terrain Variation:** The landscape includes deep gorges, limestone cliffs, scree slopes, alluvial fans and wide high altitude plateaus above 4,000 meters. Some valleys are up to 1 km wide, while others are narrow with steep rocky walls.
- **River Systems:** Major river catchments inside the park include Markha, Rumbak, Shang, Sumdah and parts of the **Zaskar River** system. All these drain northwards into the Indus River, forming narrow valleys and alluvial fans.
- **Core and Buffer Zones:** The protected area includes a core zone of about 1,25,000 hectares and a buffer zone of around 2,85,000 hectares. There are no permanent settlements in the core area, ensuring minimal disturbance.
- **Human Settlements:** Around 1,600 residents live in nearly 23 settlements inside the park boundaries, mainly in valleys such as Rumbak and Markha. Less than 1% of the total area is cultivated, mostly for barley and peas.
- **Climate:** The park lies in the rain shadow region of the Himalayas. Rainfall is very low, winters are extremely cold with heavy snowfall after November and summers are short and mildly warm. There is no distinct monsoon season.
- **Tourism:** Popular trekking routes such as Markha Valley trek and Spituk to Stok via Ganda La pass pass through the park. Peaks like Stok Kangri at 6,153 metres and Kang Yatse at 6,496 metres attract mountaineers.
- **Cultural Heritage:** Hemis Gompa, a 400 year old monastery located near the park, lends its name. The annual Hemis Festival attracts visitors and connects cultural heritage with conservation landscapes.

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Hemis National Park Biodiversity

Hemis National Park supports rare cold desert species including snow leopards, Tibetan wolf, juniper scrub and alpine medicinal plants.

Fauna

- **Snow Leopard:** The park hosts about 75 to 120 snow leopards, with some estimates suggesting nearly 200 individuals including breeding populations. It is considered one of the highest density habitats globally, especially in the Rumbak and Chang Chu catchments.

- **Prey Species:** Key prey animals include Bharal or Blue Sheep with density around 1.3 animals per sq km and total population between 2,600 and 5,000. Ladakhi Urial recorded about 226 individuals in the northern part. A small herd of 20 to 22 Tibetan Argali survives near Ganda La.
- **Other Mammals:** Important mammals include Tibetan wolf *Canis lupus chanco*, Eurasian brown bear, red fox, mountain weasel, Himalayan marmot, large eared pika, woolly hare and possibly rare lynx. Around 16 mammal species have been officially recorded.
- **Bird Diversity:** Nearly 73 to 80 bird species are recorded, with about 50 breeding inside the park. Notable birds include golden eagle, lammergeier vulture, Himalayan griffon, Himalayan snowcock, robin accentor, black winged snowfinch and Guldenstadt's redstart.
- **Reptiles and Amphibians:** Three lizard species are present including *Agama himalayana*, *Scincella ladacensis* and *Phrynocephalus theobaldi*. Amphibians are absent due to harsh cold desert conditions.

Flora

- **Biome Representation:** The park represents Biome 5 Eurasian High Montane and Tibetan species. Thick stands of *Hippophae rhamnoides* support wintering passerines such as Great Rosefinch and Black throated Thrush.
- **Vegetation Zones:** Lower valleys contain dry juniper scrub mainly *Juniperus macropoda* and *J. indica* up to 4,250 meters. Riverine forests include *Salix karelinii*, *Myricaria squamosa*, *Populus euphratica* and *Betula utilis*.
- **Alpine and Steppe Plants:** Above 4,500 meters vegetation becomes sparse, with alpine species like *Gentiana*, *Carex*, *Kobresia* and *Veronica*. Steppe vegetation is dominated by *Artemisia*, *Caragana*, *Stachys* and *Ephedra* along lower river courses.
- **Medicinal Plants:** Studies report 15 rare and endangered medicinal species such as *Acantholimon lycopodioides*, *Arnebia euchroma*, *Bergenia stracheyi*, *Ephedra gerardiana* and *Hyoscyamus niger*. Over 314 plant species were documented in Rumbak catchment alone.

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Hemis National Park Challenges

Despite protection, Hemis faces ecological and socio economic pressures.

- **Human Wildlife Conflict:** Snow leopards sometimes kill multiple livestock in single attacks. With pastoral communities rearing goats and sheep, livestock depredation creates economic losses and conflict situations.
- **Grazing Pressure:** Domestic livestock graze in buffer areas and although traditional rights exist, overgrazing reduces pasture quality and affects prey species like bharal.
- **Resource Extraction:** Shrubs such as *Artemisia* and *Caragana* are used for fuel. Animal dung is burned as fuel, limiting its use as fertilizer and impacting soil fertility.
- **Road Construction:** Expansion of roads and transportation corridors poses threats by fragmenting habitat and increasing disturbance in fragile alpine ecosystems.
- **Agricultural Expansion:** Less than 1% of land is cultivated, mainly barley and peas, yet any shift toward expanded farming may disturb natural habitats in valley bottoms.

- **Climate Vulnerability:** Being a cold desert ecosystem with minimal rainfall and heavy snowfall, the region is sensitive to temperature fluctuations and glacier related flooding in summer.

Way Forward

Effective conservation requires balanced strategies integrating ecology and community welfare.

- **Project Snow Leopard:** Initiated in 2004 and formally launched in 2009, this programme promotes landscape level conservation of snow leopards and their prey across the Himalayan biosphere.
- **Predator Proof Measures:** Construction of predator proof livestock pens and designated no grazing zones helps reduce livestock losses and minimise retaliation against carnivores.
- **Community Based Tourism:** Homestay programmes supported by Snow Leopard Conservancy India Trust since 2000 provide alternative income and link conservation benefits with local livelihoods.
- **Eco Development Initiatives:** Projects like Ladakh Eco Tourism and women run Eco Cafes encourage handicrafts and sustainable tourism without increasing ecological pressure.
- **Scientific Monitoring:** The first National Protocol on Snow Leopard Population Assessment launched in 2019 strengthens scientific population monitoring and habitat management.
- **Buffer Zone Management:** Authorities aim to regulate land use in buffer areas while keeping the core zone free from disturbance, ensuring long term protection of alpine ecosystems.

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