



Protected areas and Conservation of Wildlife: An Overview from Uttarakhand

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Abstract: Uttarakhand is known for its rich biodiversity and wildlife. Habitat loss and fragmentation, and climate change are critical threats to Himalayan ecosystem. In wake of this numerous forest declared as protected areas for prohibiting the human activities. In Uttarakhand, the space of these protected areas provides conservation to sustainable economic and cultural heritage. In Uttarakhand, total 6 National Parks, and 7 wildlife sanctuaries, 1 Biosphere and, 4 conservation reserves are present. These protected areas are centered on preserving entire ecosystems and natural processes across the landscape in Uttarakhand. This paper will investigate the significance and conservation efforts in these protected areas and gain insights into their contributions in protecting wildlife.

Keyword: Biodiversity, Conservation, National Park, Sanctuary, Uttarakhand

Introduction: Uttarakhand, situated in the Indian Himalayas, is among the most ecologically diverse states in India. It is nestled in the Himalayas and is known as the abode of the gods due to its pleasant natural resources and breathtaking beauty. Biodiversity is a magnificent asset that offers a variety of ecological, hydrological, cultural, and economic benefits. The unique geography and climate contribute to its rich biodiversity. The state has different geographical regions, from the Terai region in the plains, the Bhabhars, the Shivaliks range, the Lower Himalaya, and the Greater Himalayas. Uttarakhand Himalaya provides a suitable habitat for many rare and endangered species of fauna (Prashad et al., 2021)

Wildlife distribution patterns are predominantly governed by the forest composition, climatic conditions, elevation, geography, and human settlements. In Uttarakhand, out of 1303 birds of

India, approximately 50 percent birds are located (Mohan and Sondhi 2014). It is home to many migratory and endangered birds. At the same time, increasing human activities like habitat destruction and fragmentation, urbanization, and climate change are significant threats to biodiversity in Uttarakhand. Protected areas play a vital role in wildlife conservation through their well-established network (Fernando, 2023). These include national parks, wildlife sanctuaries, and conservation reserves, which safeguard a wide diversity of flora and fauna, which includes many endangered species also. Protected areas are vital for wildlife because they maintain crucial habitats, allow species movement, and migration. These protected areas are centered on preserving entire ecosystems and natural processes across the landscape. This paper will assess the role of protected areas in the conservation of wildlife and biodiversity with special reference to Uttarakhand. This paper will explore the significance and conservation efforts in these protected areas and gain insights into their contributions in preserving ecosystems and promoting ecological balance.

Methodology: The data were collected based on Secondary data, which was retrieved from various research papers, various search engine i.e. Google, Research gate, Google Scholar, and various governmental official websites.

Protected Area Network and Wildlife of Uttarakhand: According to the National Wildlife Database Center, a total of 1014 Protected areas, which includes 106 National Parks and 573 Wildlife Sanctuaries are present in India. Apart from these National Parks and Sanctuaries, 115 Conservation Reserves and 220 Community Reserves are also Present (WII, 2025) and these areas protect around 1,75,169 km² of geographical region that is almost 5.32% (Sujithra et al., 2021) of the country. In Uttarakhand, total 7 Wildlife Sanctuaries, 6 National Parks, 4 Conservation Reserves, and 1 Biosphere Reserve are present (Table 1, 2).

National Parks: Jim Corbett National Park is the initial national park (1936) in India and habitat to numerous wildlife species i.e. Elephant (*Elephas maximus indicus*), Bengal tiger (*Panthera tigris tigris*), Jungle cat (*Felis chaus*), Indian Leopard (*Panthera pardus fusca*), Barking deer (*Muntiacus muntjak*), Goral (*Naemorhedus goral*), Sambar deer (*Rusa unicolor*), etc. in Uttarakhand. The high-altitude Valley of Flowers National Park is famous for its astounding alpine meadows and endemic flowers. The Valley of Flowers and the Nanda Devi National Park together

form the central area of the Nanda Devi Biosphere Reserve. Many endangered mammalian species such as the Snow Leopard (*Panthera unica*), Himalayan Black Bear (*Ursus thibetanus laniger*), Musk Deer (*Moschus chrysogaster*), Himalayan Tahr (*Hemitragus jemlahicus*) etc, are present in the Valley of Flower and Nanda Devi National Park. Rajaji Tiger Reserve has the largest population of elephants and tigers and other animals, including Leopard, Jungle Cat, Sambhar, Himalayan black bear, Goral, Striped hyena, Sloth bear, Jackal, and Wild boar. There are around 315 bird species documented in Rajaji National Park.

Wildlife Sanctuary: Askot Wildlife Sanctuary is located in the Western part of the Kumaon Himalayas. Kedarnath Wildlife Sanctuary and Askot Wildlife Sanctuary are dedicated to the protection of the Musk deer (*Moschus chrysogaster*). The Govind Wildlife Sanctuary was the protection of an endangered Snow leopard (*Panthera unica*). Nandhaur wildlife sanctuary is situated in the Terai Arc Landscape of the Kumaon forest landscape. Nandhaur is the youngest wildlife sanctuary of Uttarakhand and home to approximately 31 mammal species, 235 bird species, and 277 plant species.

Table 1: Overview of Protected areas in Uttarakhand (National Park and Wildlife Sanctuary)

S.No.	National Park	District	Fauna
1	Corbett National Park	Nainital	Tiger, Leopard, Elephant
2	Nanda Devi National Park	Chamoli	Snow Leopard, Musk deer, Blue sheep
3	Valley of Flowers National Park	Chamoli	Asiatic black bear, Brown bear, Snow leopard, and Blue sheep
4	Rajaji National Park	Dehradun, Pauri, Haridwar	Tiger
5	Gangotri National Park	Uttarkashi	Pheasants Black bear, Musk deer, Himalayan Tahr, Snow leopard
6	Govind National Park	Uttarkashi	Snow leopard
S.No.	Wildlife Sanctuary	District	Fauna
1	Govind Wildlife Sanctuary	Uttarkashi	Snow leopard
2	Askot Wildlife Sanctuary	Pithoragarh	Musk deer
3	Kedarnath Wildlife Sanctuary	Rudraprayag and Chamoli	Musk deer
4	Binsar Wildlife sanctuary	Almora and Bageshwar	Black bear, Goral
5	Sonanadi Wildlife sanctuary	Pauri	Asian Elephant
6	Mussoorie Wildlife Sanctuary	Dehradun	Leopard

(Source: National Wildlife Database Center, India)

Table 2: Overview of Protected areas in Uttarakhand (Conservation Reserve and Biosphere reserve)

S.No.	Conservation Reserve	District	Fauna
1	Jhilmil Jheel Conservation Reserve	Haridwar	Swamp deer
2	Aasan Wetland Conservation Reserve	Dehradun	Water birds and winter ground for migratory bird
3	Pawalgarh Conservation Reserve	Nainital	Tigers, Leopards, Elephants, Sloth bears
4	Nainadevi Himalayan Bird Conservation Reserve	Nainital	Pheasants (Cheer Pheasant)
S.No.	Biosphere Reserve	District	Fauna
1	Nanda Devi Biosphere Reserve	Chamoli	Snow leopard, Musk deer

(Source: National Wildlife Database Center, 2025, India)

Conservation Reserve and Biosphere Reserve: Conservation Reserves are adjoining areas of National Parks and Sanctuaries, which are link from one Protected Area to another Protected area. Conservation Reserves are declared to protect landscapes, flora and fauna and their habitat. Jilmil Jheel Conservation Reserve is a low-lying wetland. This area is the only habitat of the Swamp deer (*Rucervus duvaucelii*) in Uttarakhand. The swamp deer is vulnerable and the flagship species of this reserve. Nainadevi Himalayan Bird Conservation Reserve is known for its rich avian diversity, including pheasants and partridges. Cheer Pheasant (*Catreus wallichii*) is the flagship species of this landscape.

Asan Conservation Reserve is home to many endangered species and an important wintering ground for migratory birds. It is the first Ramsar site in Uttarakhand. The reserve hosts around 330 species of birds, embracing critically endangered) Baer's pochard (*Aythya baeri*), and white-rumped vulture (*Gyps bengalensis*). Nanda Devi Biosphere Reserve comes under the Man and Biosphere program of UNESCO.

Threats to Wildlife: Protected areas retain space for rich biodiversity and sustainable growth, but plentiful challenges are facing to management of these areas effectively. Poaching and illegal trade of animals are major threats to wildlife all over the world. Previously, the tiger population was declining due to an increase in poaching of tiger bones for Chinese medicine. Illegal trading of Crocodile skin, Elephant tusk are still major threat to world wide. The illegal fishing and poaching, anthropogenic pressures, movement of heavy machineries, and blasting (Whitaker et al., 1979) are major reason for declining Gharial population in Corbett Tiger Reserve (Vashistha et al., 2022).

Human-wildlife conflict is predominantly present in Uttarakhand, especially adjoining areas of the protected areas. Crop damage, Leopard attack, livestock losses, hunting, and forest fire are common complaints of people. Unregulated tourism in fragile ecosystems leads to major threats to wildlife. Valley of flower, Gangotri National Park, and Corbett buffer zones are facing challenges in managing tourists. Corbett National Park is a heaven for wildlife, but due to over-tourism is a big challenge to manage, and it creates stress and anger in wild animals and changes the animal behavior (Bisht and Singh 2016).

Conservation Efforts and Management of Wildlife in Uttarakhand: The Uttarakhand government is facing challenges due to biodiversity loss as a result, several significant measures have been taken and proposed to preserve biodiversity, including the establishment of National Parks, Wildlife Sanctuaries, Medicinal Plant Conservation Areas, herbal grounds, etc. (Pant et al., 2025). The Uttarakhand Government implemented several projects and initiatives to conserve and manage the park's biodiversity. Habitat restoration, community-based conservation, and sustainable eco-tourism development are major initiatives. Many endangered and threatened species are focused on under different projects. The Corbett Tiger Reserve (CTR) facilitates protection for the gharial population under the Crocodile Conservation Project (Vashistha et al., 2022). Kalagarh Reservoir and the Palain River are extensively monitored for the gharial population in the Corbett Tiger Reserve (Vashistha et al., 2022; Corbett National Park, 2025). In Uttarakhand, two major Tiger projects are running in Jim Corbett and Rajaji National Park, and the tiger population has seen a significant increase in their population due to effective monitoring and protection. Under the Project Tiger and Elephant, various corridors have been established in Uttarakhand.

Wildlife corridors are important for the movement of wild animals. Pawalgarh Conservation Reserve acts as a crucial wildlife corridor, connecting the Corbett Park with the Ramnagar Forest Division and protecting the unique flora and fauna of this region. The high-altitude protected areas, i.e., Nanda Devi Biosphere, Gangotri National park, and Govind Wildlife Sanctuary are protecting endangered Snow under the Snow Leopard Conservation plan. Habitat restoration is an important conservation strategy, in this context, Jilmil Conservation Reserve, declared by the government of Uttarakhand in 2005 (WII, n.d.). It is the only habitat of the Swamp Deer (*Rucervus duvauceli*) in Uttarakhand. The Nainadevi Himalayan Bird Conservation Reserve was established 2015, by the

Government of Uttarakhand. For the prevention and control of wildlife offences, Uttarakhand has been established an Anti-poaching unit (Uttarakhand Biodiversity Board n.d.). Valley of Flowers draws global attention for alpine biodiversity, and it has become a model for sustainable ecotourism in the state. Apart from these several societal awareness and sustainable developmental programs, school programs executing by the Uttarakhand forest department, to mitigate the human wildlife conflict.

Conclusion: Protected areas, Jim Corbett, Rajaji National Park, Nanda Devi National Park, Pawalgarh Conservation Reserve, Nainadevi Himalayan Bird Conservation Reserve are famous for a diverse range of flora and fauna, counting rare, threatened, and endangered animals. As global biodiversity declines, protected areas provide a safe shelter to wild animals and plants. These protected areas play a crucial role in protecting wildlife and biodiversity in Uttarakhand from anthropogenic activities. In Uttarakhand, these protected areas also shield deteriorating habitats and breeding grounds in which threatened species can thrive. Sustainable practices and engagement of local communities and government efforts will lead to long-term conservation and management of wildlife and biodiversity.

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