

## UTTARANCHAL

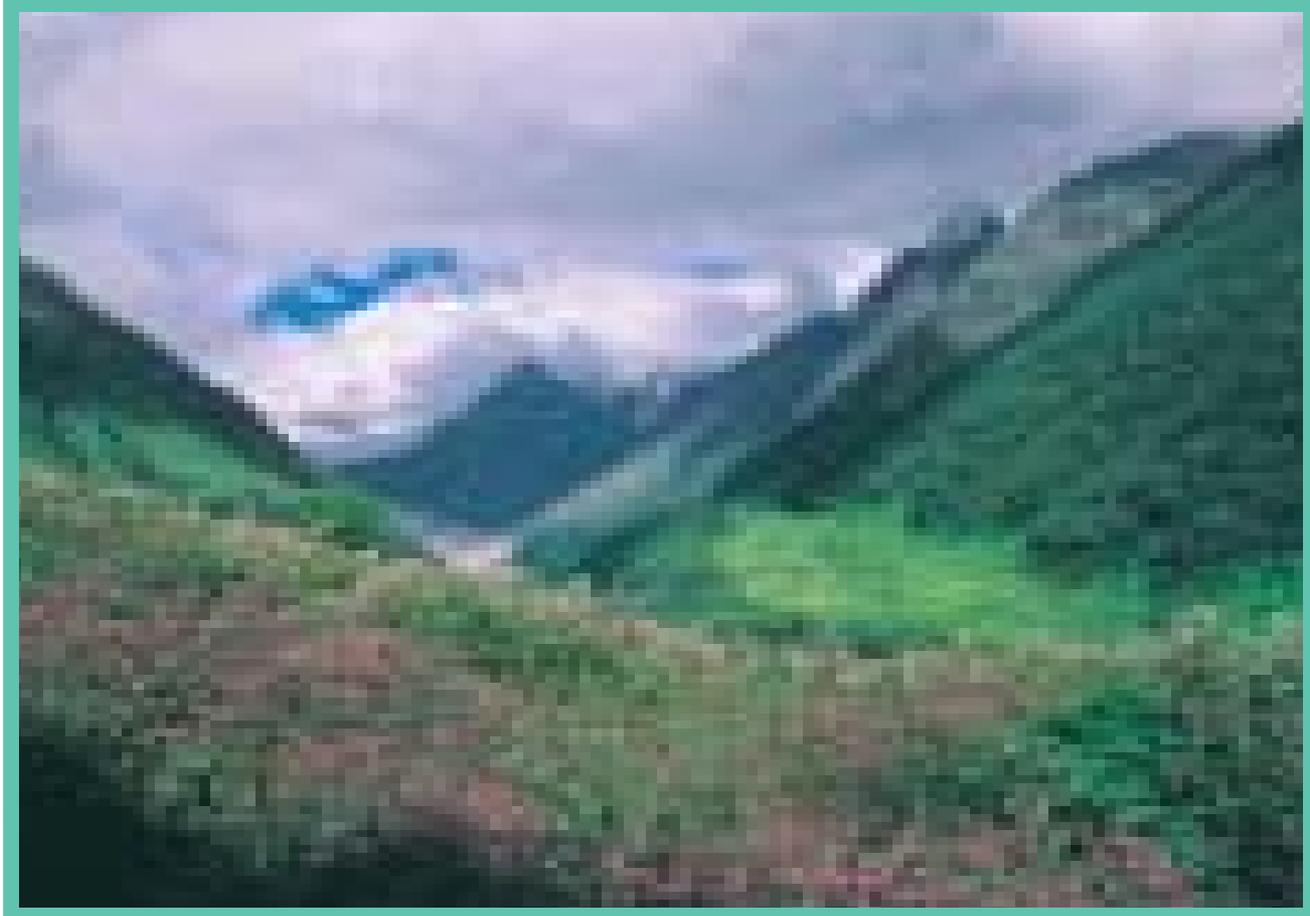


Photo: Hira Punjabi

Valley of Flowers is famous among botanists and trekkers alike.

Uttarakhand, a newly created state, consists mainly of hilly areas which were earlier a part of Uttar Pradesh. Uttarakhand is bounded by Uttar Pradesh on the south, Nepal on the east, Himachal Pradesh on the west and China on the northeast. From the hilly districts of Uttarakhand two major Indian rivers originate, Ganga and Yamuna. Uttarakhand has an area of 53,483 sq. km (1.6% of the India's geographical area).

Uttarakhand has an interesting history as it finds mention in the Hindu scriptures as *Kedarkhand*, *Manaskhand* and *Himavant*. It is often called the Land of Gods (*Dev Bhoomi*) because of its various holy places and shrines. The present Uttarakhand was a part of Uttar Pradesh, but after a long agitation for a separate Hill State by the people, it was separated from Uttar Pradesh to preserve the cultural, tribal and linguistic identities of the people belonging to these regions. Uttarakhand became the 27th State of the Indian Union on November 9, 2000 with Dehradun as its capital.

As per the 2001 Census, the total human population of Uttarakhand is 8.48 million (0.8% of the country's population). The urban population is 25.6% and 74.4% is rural. The average population density is 159 persons per sq. km (2001 Census). The tribes constitute 3.0% of the State's population.

### Vegetation

Uttarakhand ranks sixth amongst the States in terms of percentage of recorded forest area (Ministry of Environment and Forest 2001). As per the Ministry of Environment and Forest report 2001, the total forest area of the State is 34,662,00 ha, of which reserve forest is 23,827,00 ha (68.7%), protected forest 10,673,00 ha (30.8%) and unclassified forest is 162,00 ha (0.5%). The Forest Survey of India also analysed that the dense forest is 19,023,00 ha (35.6%), open forest 4,915,00 ha (9.2%) while non-forest is 55.2% (Ministry of Environment and Forest 2001). The Nainital district has the highest forest cover (73.11%) followed by Champawat and Garhwal and then other districts (Ministry of Environment and Forest 2001).

The main forest types of the State are Tropical Moist Deciduous, Tropical Dry Deciduous, Subtropical Pine, Himalayan Moist Temperate, Himalayan Dry Temperate, and Sub-alpine and Alpine Forests (Ministry of Environment and Forest 1999).

**IBAs AND PROTECTED AREAS**

Uttarakhand has six national parks, which are Corbett, Gangotri, Govind, Nanda Devi, Rajaji and Valley of Flowers. All these national parks are identified as IBAs. They constitute an area of 4,92,073 ha. The State also has six wildlife sanctuaries: Askot (IBA), Binsar (IBA), Govind, Kedarnath (IBA), Mussoorie and Sonanadi (IBA). Four of them have been identified as IBAs and together they cover an area of 1,90,377 ha.

The State has 14 IBA sites, including three non-protected areas such as Asan Barrage, New Forest Campus, and Upper Pindar Catchment. Gangotri National Park is an unexplored areas for birds but researchers assume that Gangotri must be very rich in avifaunal diversity (Rashid Raza *pers. comm.* 2003). Presently, Gangotri has been kept in the optional or data deficient list till further surveys are conducted.

**Number of IBAs and IBA criteria**

A1= Threatened species; A2 = Restricted Range species; A3= Biome species; A4=Congregatory species

**IBAs of Uttarakhand**

IBA site codes	IBA site names	IBA criteria
IN-UT-01	Asan Barrage	A1, A4i
IN-UT-02	Askot Wildlife Sanctuary and Goriganga Basin	A1, A2
IN-UT-03	Binog Sanctuary – Bhadrachal-Jharipani	A1, A2
IN-UT-04	Binsar Wildlife Sanctuary	A3
IN-UT-05	Corbett Tiger Reserve	A1
IN-UT-06	Govind National Park and Wildlife Sanctuary, Sandra, Kotinad and Singtur ranges (Tons forest division)	A1, A2
IN-UT-07	Kedarnath Musk Deer Sanctuary & surrounding Reserve Forests	A1, A2, A3
IN-UT-08	Nanda Devi Biosphere Reserve	A1, A2
IN-UT-09	New Forest Campus	A3
IN-UT-10	Rajaji National Park	A1
IN-UT-11	Sonanadi Wildlife Sanctuary	A1
IN-UT-12	Upper Pindar Catchment in East Almora Forest Division	A1, A2, A3
IN-UT-13	Valley of Flowers National Park	A1
IN-UT-14	Gangotri National Park	-Data Deficient-

**AVIFAUNA**

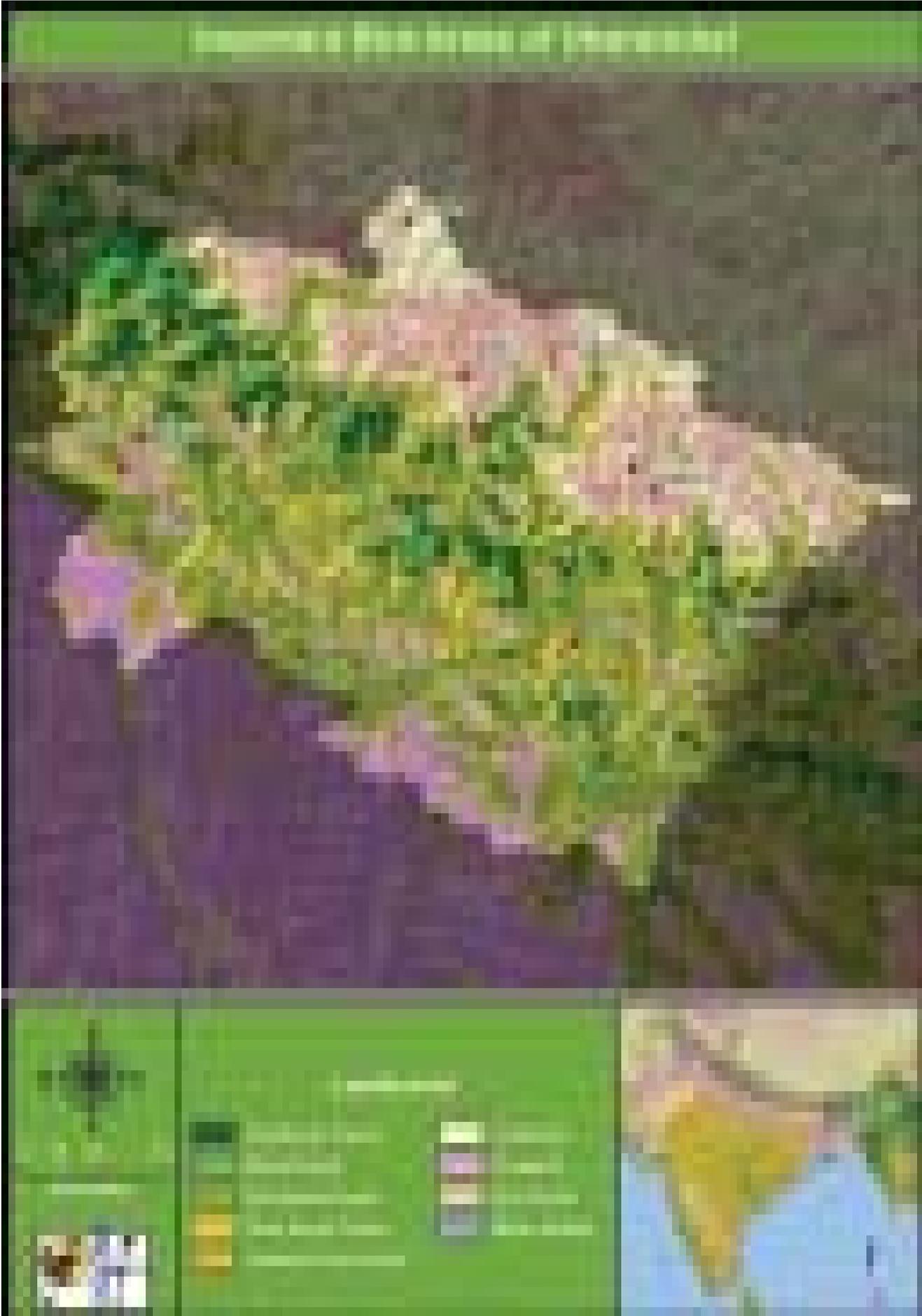
In Uttarakhand, 623 species of birds have been recorded (Mohan and Sinha, 2003 unpublished). Out of these, the Oriental White-backed and Slender-billed vultures are in the Critically Endangered category of BirdLife International, 13 species are Vulnerable, 15 species are Near Threatened, while the Cheer Pheasant and the Western Tragopan are the two restricted range species of the State.

**THREATENED BIRDS FOR WHICH UTTARANCHAL IS VERY IMPORTANT**

**Slender-billed Vulture *Gyps tenuirostris* Critically Endangered**

This Vulture has been upgraded to Critically Endangered status because it has suffered an extremely rapid population decline, particularly across the Indian subcontinent (BirdLife International 2001) due to pain-killers Diclofenac given to livestock (Oaks *et al.* 2004). The species has been recorded from Corbett National Park (BirdLife International 2001); New Forest (Mohan 1996), Nainital (Kazmierczak and Singh 1998); Pithoragarh (J. A. Khan *pers. comm.* 2003) and Rajaji National Park (Pandey *et al.* 1994).

IN-UTT



## Important Bird Areas in India - Uttarakhand

### List of threatened birds with IBA site codes

Critically Endangered		
Oriental White-backed Vulture	<i>Gyps bengalensis</i>	IN-UT-01, 05, 10, 11
Slender-billed Vulture	<i>Gyps tenuirostris</i>	IN-UT-01, 05, 10, 11
Himalayan Quail	<i>Ophrysia superciliosa</i>	IN-UT-03
Vulnerable		
Spot-billed Pelican	<i>Pelecanus philippensis</i>	IN-UT-05
Lesser Adjutant	<i>Leptoptilos javanicus</i>	IN-UT-05
Marbled Teal	<i>Marmaronetta angustirostris</i>	IN-UT-01
Baer's Pochard	<i>Aythya baeri</i>	IN-UT-01
Pallas' Fish-Eagle	<i>Haliaeetus leucoryphus</i>	IN-UT-01, 05, 10
Greater Spotted Eagle	<i>Aquila clanga</i>	IN-UT-01, 05, 10
Eastern Imperial Eagle	<i>Aquila heliaca</i>	IN-UT-05
Western Tragopan	<i>Tragopan melanocephalus</i>	IN-UT-06
Cheer Pheasant	<i>Catreus wallichii</i>	IN-UT-02, 03, 06, 07, 08, 12, 14
Sarus Crane	<i>Grus antigone</i>	IN-UT-05
Sociable Lapwing	<i>Vanellus gregarius</i>	IN-UT-05
Wood Snipe	<i>Gallinago nemoricola</i>	IN-UT-05
Hodgson's Prinia	<i>Prinia cinereocapilla</i>	IN-UT-05
Near Threatened		
Darter	<i>Anhinga melanogaster</i>	IN-UT-01, 05, 10
Painted Stork	<i>Mycteria leucocephala</i>	IN-UT-01, 05, 10
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>	IN-UT-01, 05, 10
Oriental White Ibis	<i>Threskiornis melanocephalus</i>	IN-UT-01, 05
Ferruginous Pochard	<i>Aythya nyroca</i>	IN-UT-01, 05, 10
White-tailed Eagle	<i>Haliaeetus albicilla</i>	IN-UT-05
Lesser Grey-headed Fish-Eagle	<i>Ichthyophaga humilis</i>	IN-UT-05, 10
Greater Grey-headed Fish-Eagle	<i>Ichthyophaga ichthyaetus</i>	IN-UT-05
Cinereous Vulture	<i>Aegypius monachus</i>	IN-UT-05, 10
Red-headed Vulture	<i>Sarcogyps calvus</i>	IN-UT-05, 10
Pallid Harrier	<i>Circus macrourus</i>	IN-UT-05
Satyr Tragopan	<i>Tragopan satyra</i>	IN-UT-02
Black-bellied Tern	<i>Sterna acuticauda</i>	IN-UT-05, 10
Great Pied Hornbill	<i>Buceros bicornis</i>	IN-UT-05, 10
Yellow-rumped Honeyguide	<i>Indicator xanthonotus</i>	IN-UT-13

#### **Pallas's Fish-Eagle** *Haliaeetus leucoryphus* **Vulnerable**

This species was once very common and widespread in Uttarakhand, but is now more scarce and local. It has been recorded from Asan Barrage, (Singh 2000, Gandhi and Singh 1995a, 1995b); Rajaji National Park (Pandey *et al.* 1994, Singh 2000) and Corbett National Park (BirdLife International 2001).

#### **Cheer Pheasant** *Catreus wallichii* **Vulnerable**

This pheasant's small population is naturally fragmented because it lives in small patches of successional grassland. Human population pressure, hunting and changing patterns of land use leading to its decline, qualify it as Vulnerable. In Uttarakhand it has been reported from Kedarnath Sanctuary (Sathyakumar *et al.* 1992); Banog, (Kaul *et al.* 1998); Nanda Devi Biosphere Reserve (BirdLife International 2001) and Binsar Wildlife Sanctuary (Ilyas 1998).

#### **Himalayan Quail** *Ophrysia superciliosa* **Critically Endangered**

The threat status of this enigmatic quail is extremely difficult to judge due to the paucity of information. If not extinct, its population is likely to be very small, and therefore it has been given the Critically Endangered status. The Himalayan Quail has been considered something of a mystery for many years. Despite calls for action and the resultant surveys, the species remains as enigmatic as it was at the beginning of the twentieth century (BirdLife International 2001). It was reported from Mussoorie in 1836, 5 km to the northwest between Badraj and Banog, 1,850 m (proposed IBA site) from where two males shot out of a covey of 8–10 individuals (Blyth 1867), and at Jharipani, 5 km to the south, c.1,650 m, 1867–1868 (Hume and Marshall 1879–1881) and the last confirmed record was from the eastern slopes of Sher-ka-danda. Recently, World Pheasant Association (WPA), an IBCN partners, launched a rediscovery programme for this species.

#### **RESTRICTED RANGE SPECIES**

Parts of Uttarakhand falls in the Endemic Bird Areas of Western Himalayan (EBA 128), where 11 restricted range species have been reported of which only seven are confirmed from this State but more are likely to be found. These species breeds in temperate forest including coniferous, broadleaf and mixed broadleaf-coniferous, and some of them range into adjacent montane grassland and sub-alpine forest (Statterfield *et al.* 1998). The key threats to the region are moderate habitat loss (e.g. due to timber extraction).

Endemic Bird Area 128: Western Himalayas

Western Tragopan	<i>Tragopan melanocephalus</i>	IN-UT-06
Cheer Pheasant	<i>Catreus wallichii</i>	IN-UT-02, 03, 06, 07, 08, 12, 14
White-throated Tit	<i>Aegithalos niveogularis</i>	IN-UT-02, 06, 07, 08
Himalayan quail	<i>Ophrysia superciliosa</i>	IN-UT-03

BIOMES

Uttaranchal has four biomes, Biome 5: Eurasian High Montane (Alpine and Tibetan), 18 species have been recorded; Biome 7: Sino-Himalayan Temperate Forest, 57 species have been recorded from this biome; Biome 8: Sino-Himalayan Subtropical Forests 27 species have been recorded and Biome 11: Indo-Malayan Tropical Dry Zone, 33 species have been recorded by Mohan and Sinha 2003 (unpublished). The list is too long to be mentioned here.

THREATS AND CONSERVATION ISSUES

The IBA sites face several problems such as poaching of birds, deforestation, tourism, and encroachments. For example, in Asan Barrage, several factors are contributing to the deterioration of ecological conditions. The rapid spread of *Typha*, *Ipomea* and *Eichhornia crassipes* is a serious problem, since eradication of these weeds is not undertaken regularly. The problem of soil erosion in the catchment areas of both Asan and Yamuna rivers is acute, and the reservoir silts up rapidly. Already large parts of the wetland are silted up and are being subjected to the spread of terrestrial weeds such as *Lantana*. Heavy traffic between Dehra Dun and Paonta Sahib through the Asan Barrage causes a lot of disturbance to migratory waterfowl. The district administration and the Irrigation Department have agreed to divert the traffic through Timli-Paonta via Herbertpur. Some poaching takes place, away from the main reservoir. Posting some forest guards, at least during winter months could easily stop this.

In the Askot Wildlife Sanctuary, a large proportion of the land is privately owned, and the revenue department has made the Sanctuary a difficult area to protect administratively and legally. Askot suffers high anthropogenic pressure from the 109 villages in its vicinity, with a population of about 58,967, most of whom are dependent on fuel, fodder and other resources from the Sanctuary. Grazing is also affecting the Sanctuary, especially in the alpine areas and there is competition between the wild herbivores and domestic livestock. Approximately 84,000 livestock graze in the Sanctuary throughout the year. Resin is tapped from trees in the lower altitudes. Poaching of musk deer and other wildlife occurs in the higher altitudes, and there is illegal crossborder trade of medicinal plants, bear bile and musk. A series of dams are proposed on the Gori-Ganga by the National Hydro-Power Corporation. While construction in the adjacent Darma (Ast Dhaili) basin is nearing completion, it is proposed to start work in the Gori-Ganga soon. Denotification of part of the Askot Wildlife Sanctuary to accommodate the dams is a possibility. Currently, the Uttaranchal Forest Department is engaged in the process of rationalizing the boundaries of the Askot Wildlife Sanctuary, as it contains large chunks of private and community land (Rashid Raza *pers. comm.* 2003).

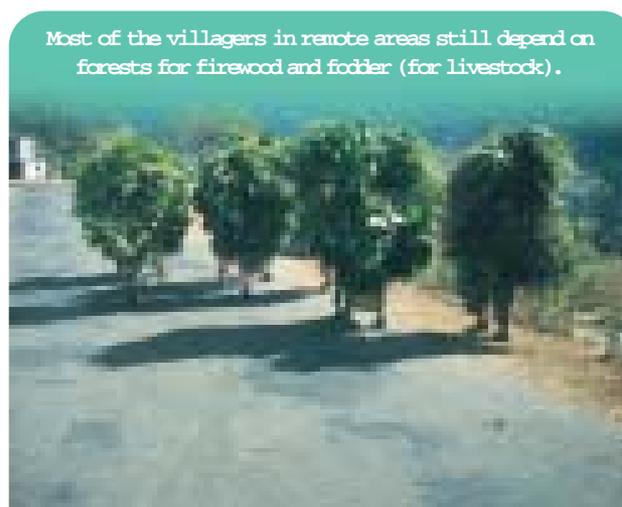


Photo: Jayant Kulkarni

Collection of medicinal plants from the Binsar Wildlife Sanctuary is one of the main threats to biodiversity. The villagers use 50 plant species in Binsar as medicine (Ilyas 1998).

Although the Corbett Tiger Reserve is famous for mammalian fauna, it is a very important site for birds too. This famous Park also faces many long term problems. The main ones are the irreversible change in habitat due to construction of a reservoir across the Ramganga river, and movement of elephants and tigers across the Ramganga river, south of the reservoir, from Corbett National Park to Kalagarh Reserve Forest (Sonanadi Wildlife Sanctuary). Occasionally, tigers and elephant bulls come down from the Reserve along the *Sukha sot*, which is to the right (east) of the Kalagarh-Saddle Dam road, to the Ramganga river and cross over to Kalagarh. The Kalagarh project and township was built on 90 sq. km of forest land, and according to an agreement between the Irrigation and Forest Departments, 3.5 sq. km of this area should have been vacated and returned to the Forest Department soon after the completion of the construction of the reservoir. After much persuasion, 3.1 sq. km were returned by the Irrigation Department. The remaining area (0.4 sq. km) has colonies with about 4000-5000 encroachers. Now, the Forest Department, supported by NGOs, has filed cases against 724 individuals, to evict them and their families, and the case is in the court of the Sub-Divisional Magistrate, Kotdwar. The encroachers in the Kalagarh colony should be evicted, which will be possible only when the Government of India, the Government of Uttaranchal and NGOs interested in the conservation of Corbett TR, work together. The *Sukha sot* area needs total protection from disturbances such as wood cutting arising from the Bikhawala village with about 1200 people.

The foremost problem for the Rajaji National Park is related to the people living inside it. One major community, namely *Gujjar* lives inside the Park in scattered *dheras* (settlements). The resettlement of the *Gujjars* has been a major issue related to the Rajaji NP for nearly two decades, with the matter being taken to the Supreme Court. Despite clear directives from the Court, their resettlement has not been completed.

The Kedarnath Wildlife Sanctuary does not require any habitat improvement through human intervention. The best habitat improvement would be achieved by the regulation of grazing. The *Gujjars* who have recently made inroads into the area must be diverted to other grazing areas because grazing livestock can lead to permanent degradation of this fragile habitat. The Hindu temples in the Sanctuary are of great cultural value. They attract thousands of pilgrims every year who exert tremendous pressure on the fragile resources of this IBA.



## Important Bird Areas in India – Uttarakhand

Upper Pindari is a very important birding area which is not yet properly explored for birds. This area needs to be declared a Wildlife Sanctuary, both on account of its rich biodiversity and the low biotic pressure in the area. The uppermost village in the Valley is Khati (c. 2200 m), situated at the confluence of Pindar and Sunderdhunga Gad. The trek to the Pindari glacier is one of the most popular treks in Uttarakhand. The Forest Department and the Kumaon Mandal Vikas Nigam need to work together to organize the trekking activity so that it is ecologically acceptable. The area has great potential to become a centre for conservation education in the Himalayas.

IN-NT

### Threats to IBAs

A=Agriculture intensification/expansion; B=Dams/Dykes; C=Disturbance to Birds; D=Firewood Collection;  
E=Industrialisation/Urbanisation; F=Unsustainable exploitation; G=Others; H=Natural Events

There is also considerable potential for extending the Govind Wildlife Sanctuary eastward, which would enhance its conservation values, especially if its management is integrated with that of the adjacent Chitkul-Raksham Sanctuary in Himachal Pradesh; Kulni and Balcha reserve forests could also be included. Prasad (1993) has advocated the declaration of a 35,000 ha Western Tragopan Sanctuary in the upper catchment area of the Pabar and the Rupin rivers. This proposed sanctuary, along with the existing protected area and the adjoining Chitkul-Raksham Sanctuary has the potential to be declared as one large conservation unit (S. Sathyakumar *pers. comm.* 2003).

Highest priority should be given to issue final notification of the Binog Mountain Quail Wildlife Sanctuary so that there is no ambiguity about its protected status. As the area is very close to Mussorie, a major tourist centre, an interpretation centre should be developed, with the major focus on the Critically Endangered Himalayan Quail, and Himalayan fauna. It could become a good place for disseminating conservation education. There should be intensive efforts to rediscover the Himalayan Quail. Experts could try a poster campaign along with the involvement of a large number of local people. Habitat management in the Sanctuary should also be guided by the habitat requirements of this bird.

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UT-01

## ASAN BARRAGE



<b>IBA Site Code</b>	: IN-UT-01
<b>State</b>	: Uttaranchal
<b>District</b>	: Dehra Dun
<b>Coordinates</b>	: 30° 25' 60" N, 77° 42' 00" E
<b>Ownership</b>	: State (Irrigation Department)
<b>Area</b>	: 250 ha
<b>Altitude</b>	: 400 m
<b>Rainfall</b>	: 2,500 mm
<b>Temperature</b>	: 14 °C to 38 °C
<b>Biogeographic Zone</b>	: Gangetic Plain
<b>Habitats</b>	: Freshwater Reservoir

**IBA CRITERIA:** A1 (Threatened Species), A4i (≥1% biogeographic population)

**PROTECTION STATUS:** Not officially protected

### GENERAL DESCRIPTION

The Asan Barrage, near village Dhalipur 38 km from Dehra Dun, is located at the confluence of the Yamuna hydel canal (from Dak Pathar which was built in the mid 1970s) and river Asan (a small rainfed tributary of the Yamuna). It is under the control of the Irrigation Department and has an area of 250 ha. When the water level is low, it provides good habitat for waterfowl.

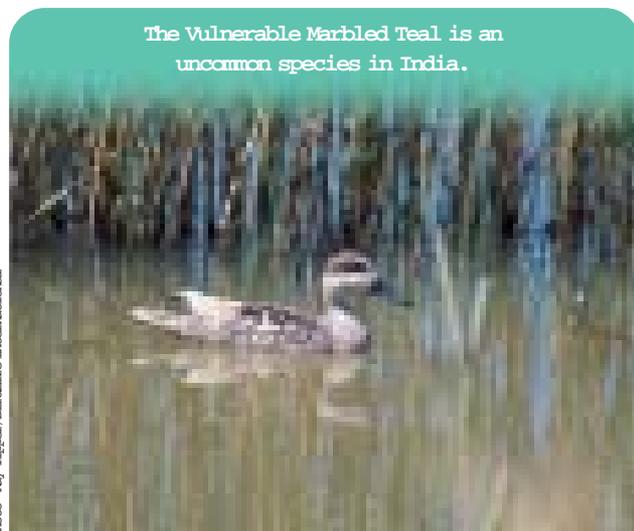
The dominant aquatic vegetation comprises of *Potamogeton pectinatus*, *Typha elephantina* and *Ceratophyllum demersum*. The southern side of the barrage is surrounded by agricultural fields. Further south, there is mixed forest typical of the Siwalik hills, consisting chiefly of *Shorea robusta*, *Anogeissus latifolia*, *Lannea coromandelica*, *Dalbergia sissoo* and *Bombax ceiba*. Some parts of the reservoir are covered by weeds *Eichhornia crassipes* and *Ipomea fistulosa* (Kumar and Porwal 1998).

### AVIFAUNA

This IBA has a 30-year old nesting site of the Vulnerable Pallas's Fishing Eagle *Haliaeetus leucoryphus*. During winter, it is not unusual to count up to 5,000 waterfowl, with high species diversity, as Asan Barrage has both shallow and deep water and the River Yamuna flows close by. Brahminy Duck *Tadorna ferruginea*,

Mallard *Anas platyrhynchos*, Red-crested Pochard *Rhodonessa rufina*, Common Pochard *Aythya ferina*, Tufted Pochard *A. fuligula*, Wigeon *Anas penelope*, Northern Shoveller *A. clypeata* and Common Teal *A. crecca* are commonly seen. It is one of the best sites for large congregations of Brahminy Ducks (Kumar and Porwal 1998) and other birds (Gandhi and Singh 1995a, b and Singh 2000). On 12 February, 2003, more than 2,000 were seen (Arun P. Singh *pers. comm.* 2003). The 1% threshold for this species is 500 (Wetlands International 2002) so the population in this IBA exceeds the threshold four times, thus this site also qualifies A4i criteria.

Raptors recorded in this IBA include the Osprey *Pandion haliaetus*, Marsh Harrier *Circus aeruginosus*, Steppe Eagle *Aquila nipalensis*, Oriental Honey Buzzard *Pernis ptilorhynchus* and Changeable Hawk Eagle *Spizaetus cirrhatus*. Being located towards the northwest and serving as a halt for Trans-Himalayan migratory birds, the Asan Barrage receives waterfowl migrants which are rare elsewhere. These include the Black-necked Grebe *Podiceps nigricollis* and Great Crested Grebe *P. cristatus*. Other rare records include Common Shelduck *Tadorna tadorna*, Black-necked Stork *Ephippiorhynchus asiaticus*, and Black-bellied Tern *Sterna acuticauda*. Altogether, more than 150 species have been recorded in this IBA, including many globally threatened and Near Threatened ones.



The Vulnerable Marbled Teal is an uncommon species in India.

Photo: Ray Tigger/BirdLife International

#### Critically Endangered

Oriental White-backed Vulture	<i>Gyps bengalensis</i>
Slender-billed Vulture	<i>Gyps tenuirostris</i>

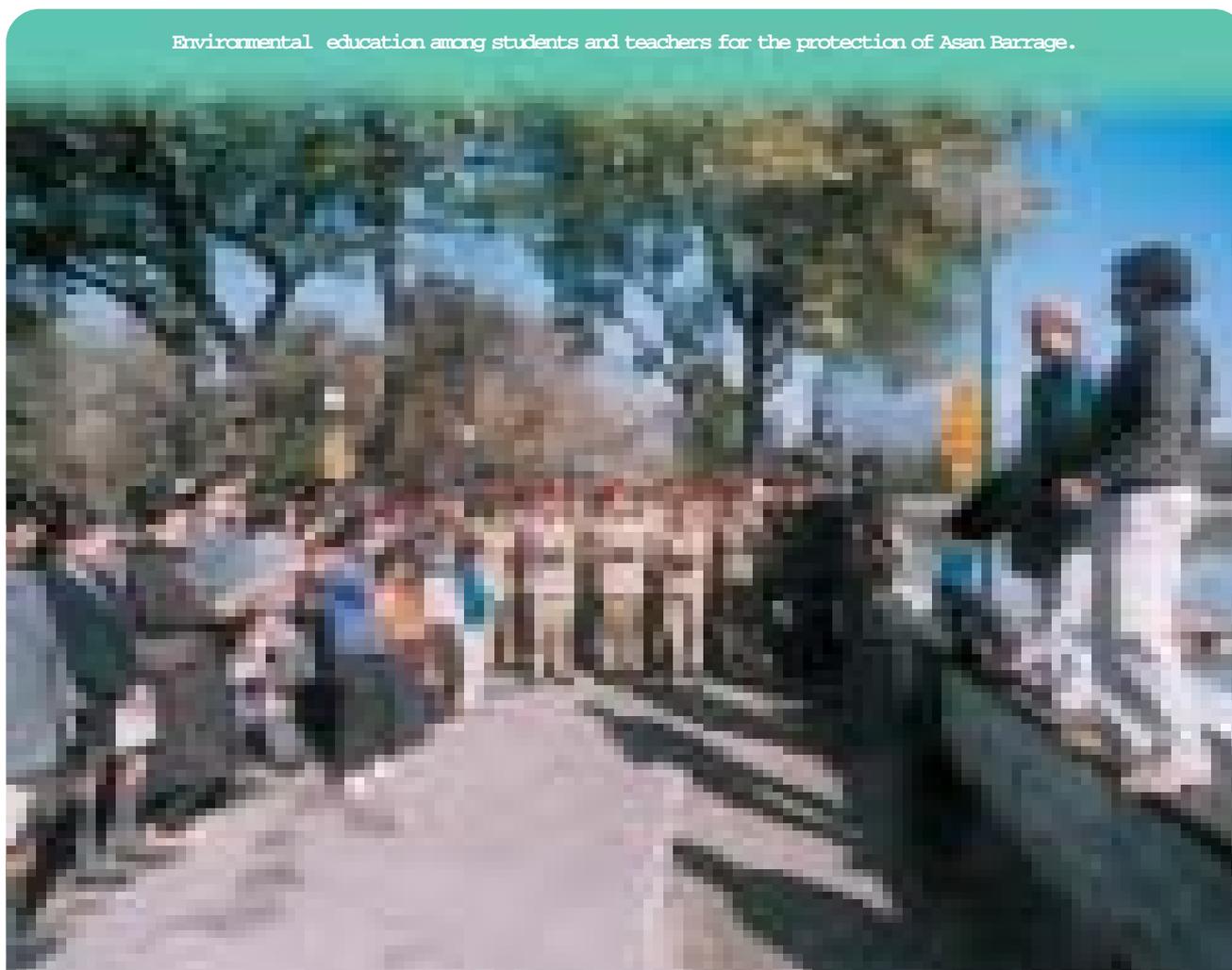
#### Vulnerable

Marbled Teal	<i>Marmaronetta angustirostris</i>
Baer's Pochard	<i>Aythya baeri</i>
Pallas' Fish-Eagle	<i>Haliaeetus leucoryphus</i>
Greater Spotted Eagle	<i>Aquila clanga</i>

#### Near Threatened

Darter	<i>Anhinga melanogaster</i>
Painted Stork	<i>Mycteria leucocephala</i>
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>
Oriental White Ibis	<i>Threskiornis melanocephalus</i>
Ferruginous Pochard	<i>Aythya nyroca</i>

Environmental education among students and teachers for the protection of Asan Barrage.



UT-01

Photo: Satpal Gandhi

#### OTHER KEY FAUNA

Except for Common Otter *Lutra lutra*, there is no mammal of conservation concern. The Fishing Cat *Prionailurus viverrina* could be present but there are no confirmed record.

#### LAND USE

- q Irrigation

#### CONSERVATION ISSUES

- q Spread of weeds
- q Non-sustainable tourism
- q Draining of water at wrong time
- q Poaching

Several factors at present are contributing to the deterioration of ecological conditions in the Asan reservoir. The rapid spread of *Typha*, *Ipomea* and *Eichhornia crassipes* is a serious problem, since attempts to eradicate these invasive species are not undertaken regularly. The problem of soil erosion in the catchment areas of both Asan and Yamuna rivers is acute. Thus large parts of the wetland are silted up and becoming subjected to spread of terrestrial weeds such as *Lantana*. The water management regime of the irrigation department is unfavourable to the avifauna. The barrage is sometimes drained in the winter for repair and maintenance when it is full of waterfowl, forcing them to abandon the wetland. This desilting should be done after March 15. The Garhwal Mandal Vikas Nigam (GMVN) Ltd. promotes the site for water sports, which causes disturbance to the waterfowl.

Heavy traffic between Dehra Dun and Paonta Sahib through the Asan Barrage cause much disturbance to migratory waterfowl. The district administration and the Irrigation Department have agreed to divert the traffic through Timli-Paonta via Herbertpur. Some poaching takes place, away from the main reservoir. Posting forest guards, at least during the key winter months, could easily stop this.

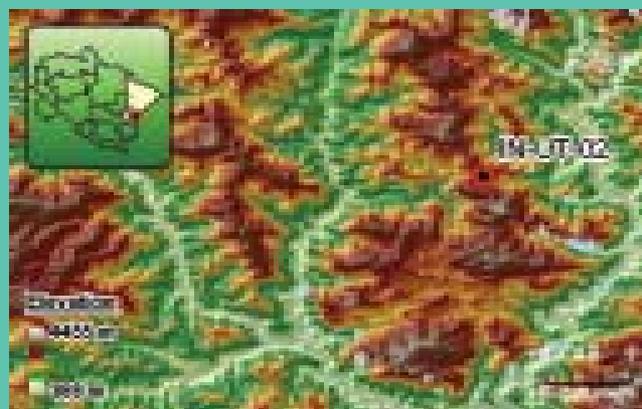
#### KEY CONTRIBUTORS

Arun P. Kumar, Dhananjai Mohan and S. S. Gandhi

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## ASKOT WILDLIFE SANCTUARY AND GORIGANGA BASIN



<b>IBA Site Code</b>	: IN-UT-02
<b>State</b>	: Uttarakhand
<b>District</b>	: Pithoragarh
<b>Coordinates</b>	: 29° 40' 46" N, 80° 16' 28" E
<b>Ownership</b>	: State
<b>Area</b>	: 2,09,993 ha
<b>Altitude</b>	: 700 - 7,000 m
<b>Rainfall</b>	: 150 - 3,000 mm
<b>Temperature</b>	: 2 °C to 30 °C
<b>Biogeographic Zone</b>	: Himalaya
<b>Habitats</b>	: Montane Wet Temperate Forest, Alpine Moist Scrub, Sub-Alpine Forest, Sub-tropical Forest

**IBA CRITERIA:** A1 (Threatened Species), A2 (Endemic Bird Area 128: Western Himalayas)

**PROTECTION STATUS:** Wildlife Sanctuary, established in July 1986

### GENERAL DESCRIPTION

Askot Wildlife Sanctuary (WLS) in Pithoragarh district lies at the junction of the Western and Central Himalayas and covers three biomes: Eurasian High Montane (Alpine and Tibetan) (Biome-5), Sino-Himalayan Subtropical Forests (Biome-8) and Sino-Himalayan Temperate Forests (Biome-7). It has an area of c. 59,993 ha, with agricultural land comprising approximately 8,500 ha, 28,943 ha under reserve forests and 22,550 ha comprising forests under the revenue authorities. The Askot WLS has two ranges: Askot and Dharchula. About 15,000 ha of the area in Dharchula range along the international border is under the control of the Indo-Tibetan Border Police and Indian Army. Thus, less than 50% of the total area is under the control of the Forest Department. The Sanctuary was notified in July 1986, and covers three major watersheds: Kali, East Dhauri and Goriganga.

A large part of the Gori valley (total area 224,000 ha), about 143,900 ha or 64.24% of the entire basin, is constituted of village common, land that is administered by village forest councils or *Van Panchayats*. Another 8% is under reserved forests, which include portions of such valuable protected areas as the Nandadevi National Park (62,500 ha), the core zone of the Nandadevi Biosphere Reserve, a World Heritage Site, and the Askot Wildlife Sanctuary. About 34,700 ha in the Gori basin, that is classified as Civil *Benaap*, falls under the Askot WLS. In all, these village commons, reserve forests and civil and *Soyam* land under the Sanctuary area, make almost 88% of the Goriganga basin as protected areas, both by village communities, as well as the State.

In about a hundred kilometers from its confluence with river Kali to its source at Milam glacier, the river passes through the Dry Alpine meadows with Trans-Himalayan characteristics to sub-tropical Sal forests. Thus exceptional diversity of flora and fauna are encountered in the basin in a short geographical distance.

Two of the important areas surrounding Askot WLS are the Kalamuni ridge, and the Athansi, Golpha and Madkani blocks of North Pithoragarh.

Athansi, Madkani and Golpha reserved forest blocks of Pithoragarh Forest Division have an area of 1,832 ha, 1,287 ha and 1,365 ha respectively. These are situated north of Munsyari in Pithoragarh on the slopes of the Panchachuli massif, which rises to c. 7000 m. The Athansi block is located close to the catchment of Ralam Gad

(a left bank tributary of Goriganga) while Madkani and Golpha are located east of Athansi block. The three areas are linked by the intermediate alpine zone, which has the administrative status of civil forests.

The three forest blocks mentioned above have a range of vegetation communities from Ban Oak (*Quercus leucotrichophora*) forest to alpine vegetation. The Golpha block has a rare vegetation community: the Himalayan Hemlock (*Tsuga dumosa*) forests. This community is also found in the Askot Sanctuary.

The sub-alpine forests of Athansi block have been rated as the second ranking area, and those in the Madkani block as the fourth ranking area in the timber line zone of Uttarakhand hills on the basis of botanical criteria like richness, representativeness, naturalness, uniqueness and endemism (Dhar *et al.* 1997).

The area has special conservation value, being the eastern most protected area in the Western Himalayas in India and, it represents the western limits of many eastern floral communities such as *Tsuga* and *Macaranga*.

Kalamuni ridge in Pithoragarh Forest Division is a large area of moist temperate and alpine forests. It is known to harbour the Satyr Tragopan *Tragopan satyra*, White-throated Tit *Aegithalos niveogularis* and abundant populations of Himalayan Monal *Lophophorus impejanus*. The forests of Kalamuni ridge are rich in floral and faunal elements. Khulia area has large patches of Birch-Rhododendron forests, due to which the area was proposed as a sanctuary.

Due to the great altitudinal variation and representation of nearly all major West Himalayan forest types, from Sal forests to alpine (sometimes on a single slope, e.g. Chiplakot ridge) there is an abundant representation of Himalayan avifaunal and other faunal elements. This, combined with high contiguity of forest cover, makes Askot one of the most important birds areas of India.

### AVIFAUNA

A consolidated list of the observations of Sultana and Khan (2000), Foundation for Ecological Security (2002) and Rashid Raza of the Wildlife Institute of India (*pers. comm.* 2003), gives a total of 227 (212 breeding, forest dependent) bird species in 30 families and 118 genera, representing more than 45% of the breeding bird diversity of the Western Himalaya and nearly 55% of breeding

bird species of the Kumaon Himalaya. This is a remarkable representation of Himalayan avifaunal diversity. The lower altitude areas are still under-explored, and, the list would be much longer once areas below 1500 m are properly surveyed.

This assemblage represents 2 out of 11 West Himalayan restricted range species (Stattersfield *et al.* 1998), including globally threatened Cheer pheasant *Catreus wallichii*. Overall, this IBA site has 17 species that are rare or uncommon in the Himalayas.

The site has 81 biome species belonging to Biome-5, Biome-7 and Biome-8. These species represent 71% of all biome restricted species recorded in Kumaon.

Vulnerable	
Cheer Pheasant	<i>Catreus wallichii</i>
Near Threatened	
Satyr Tragopan	<i>Tragopan satyra</i>
Endemic Bird Areas 128: Western Himalayas	
Cheer Pheasant	<i>Catreus wallichii</i>
White-throated Tit	<i>Aegithalos niveogularis</i>

**OTHER KEY FAUNA**

The Sanctuary harbours the typical fauna of Himalayan forests as well as alpine pastures. Some of the rare and endangered species found in the Sanctuary are Musk Deer *Moschus chrysogaster*, Snow Leopard *Uncia uncia*, Himalayan Tahr *Hemitragus jemlahicus*, Bharal or Blue Sheep *Pseudois nayaur*, Goral *Nemorhaedus goral*, Serow *Nemorhaedus sumatraensis*, Asiatic Black Bear *Ursus thibetanus* and Brown Bear *Ursus arctos*.

**LAND USE**

- q Nature conservation and research
- q Forest *panchayats* and grazing lands

**THREATS AND CONSERVATION ISSUES**

- q Livestock grazing
- q Poaching of birds (killing, trapping)
- q Unsustainable exploitation of forest products
- q Illegal wildlife trade
- q Goriganga Hydro-Electric Project

A large proportion of the land is privately owned, and the revenue department has made the Sanctuary a difficult area to protect administratively and legally. Askot suffers high anthropogenic pressure from the 109 villages in its vicinity, with a population of about 58,967, most of whom are dependent on the Sanctuary for fuel, fodder and other resources.

Grazing also affects the Sanctuary, especially in the alpine areas. Approximately 84,000 heads of livestock graze in the Sanctuary throughout the year.

Resin is tapped from trees at lower altitudes. Poaching of musk deer and other wildlife occurs at higher altitudes, and there is illegal crossborder trade of medicinal plants, bear bile and musk.

According to Rashid Raza, a series of dams are proposed on the Goriganga by NHPC (National Hydropower Corporation). While the construction in the adjacent Darma basin is nearing completion, it is proposed to start work in the Goriganga basin soon. Denotification of parts of the Askot WLS to accommodate the dams is a possibility. Currently, the Uttarakhand Forest Department is engaged in the process of rationalizing the boundaries of Askot WLS, as it contains large blocks of private and community land (Rashid Raza *pers. comm.* 2003).

Research initiatives in Askot have begun only recently, with the GB Pant Institute of Himalayan Environment and Development initiating studies from 1995 onwards. There are also records from the Panchuli multidimensional expedition in 1998. In 2002, the Wildlife Institute of India initiated a study on plant and bird diversity and rarity patterns along the elevation gradient.

The Foundation for Ecological Security (an NGO based in Munsiary) is involved in detailed documentation of the biodiversity values in the area. The NGO is also involved in grass roots level conservation initiatives and community afforestation programmes.

**KEY CONTRIBUTORS**

Rashid H. Raza, Dhananjai Mohan, S. Sathyakumar and G. S. Rawat

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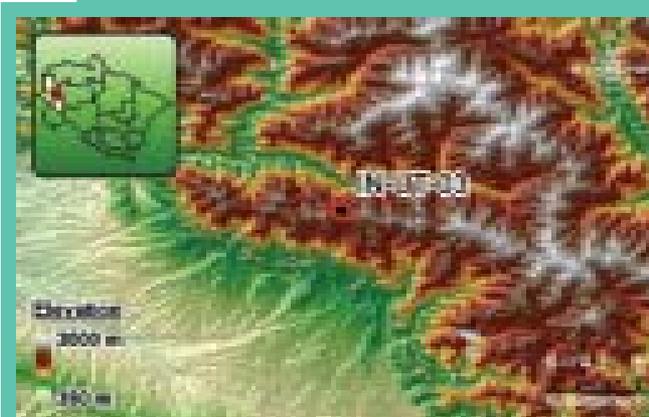
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## BINOG SANCTUARY-BHADRAJ-JHARIPANI



<b>IBA Site Code</b>	: IN-UT-03
<b>State</b>	: Uttarakhand
<b>District</b>	: Dehra Dun
<b>Coordinates</b>	: 30° 27' 52" N, 78° 04' 17" E
<b>Ownership</b>	: State
<b>Area</b>	: 1,082 ha (338 ha Sanctuary Area)
<b>Altitude</b>	: 1,800 – 2,200 m
<b>Rainfall</b>	: 1,500 mm
<b>Temperature</b>	: 0 °C to 25 °C
<b>Biogeographic Zone</b>	: Himalaya
<b>Habitats</b>	: Himalayan Moist Temperate Forest, Sub-alpine Forest

**IBA CRITERIA:** A1 (Threatened Species), A2 (Endemic Bird Area 128: Western Himalayas)

**PROTECTION STATUS:** Wildlife Sanctuary, established in September 1993

### GENERAL DESCRIPTION

This IBA is located west and south of Mussoorie, a popular hill station of north India. Binog Sanctuary was notified in 1993 and included areas west of Mussoorie up to Bhadraj, the last peak in the Mussoorie range. Initially covering 1,082 ha, the sanctuary was called Mussoorie Sanctuary. Later, a large area was excluded and only the Binog block (338 ha) remained which was renamed as Binog Mountain Quail Sanctuary. Ten years later, the final notification remains to be issued. Jharipani is a sub-tropical area between Mussoorie and Dehra Dun, and a specimen of Himalayan or Mountain Quail *Ophrysia superciliosa* has been obtained here in the past.

The Sanctuary was created to preserve a small patch of oak forest very close to Mussoorie, which is considered as Himalayan Quail habitat. The bird is still classified as Critically Endangered (probably not extinct), as the possibility of its existence in the area cannot be ruled out (BirdLife International 2001).

The main forest of the area is Himalayan Moist Temperate (Ban Oak) type. The lower parts are covered with sub-tropical pine forests. Substantial areas have grass and scrub cover.

The Sanctuary forms much of the catchment area of Kempty falls, a major tourist attraction of Mussoorie, and its forests play a crucial role in maintaining a good water flow in the lean summer months (Goyal 1999). The State owned area is covered with forests. There are a few large private estates having large tract of forests adjoining the Binog sanctuary and these are equally good bird habitats.

### AVIFAUNA

Detailed studies on the bird life of this IBA have not been done. The common birds of temperate Ban Oak forests can be seen. The area is best known for the occurrence of Himalayan Quail in the past (Ali and Ripley 1987, Grimmett *et al.* 1999, BirdLife International 2001, Shafique and Javed 1999). All attempts to locate it in recent times have been unsuccessful (Rahul Kaul *pers. comm.* 2003). Cheer Pheasant *Catreus wallichii* and Kaleej *Lophophorus leucomelanos* are found in this area (S. Sathyakumar *pers. comm.* 2003).

#### Critically Endangered

Himalayan Quail *Ophrysia superciliosa*

#### Vulnerable

Cheer Pheasant *Catreus wallichii*

#### Endemic Bird Area 128: Western Himalayas

Cheer Pheasant *Catreus wallichii*

Himalayan Quail *Ophrysia superciliosa*

### OTHER KEY FAUNA

Goral *Nemorhaedus goral*, Barking Deer *Muntiacus muntjak* and Leopard *Panthera pardus* are still found, despite many years of hunting. Serow *Nemorhaedus sumatraensis* was shot many decades ago, west of Binog (Dang 1968).

### LAND USE

- ☐ Nature conservation and research
- ☐ Tourism and recreation

### THREATS AND CONSERVATION ISSUES

- ☐ Tourism
- ☐ Grazing
- ☐ Road building

The highest priority is the final notification of the Wildlife Sanctuary so there is no ambiguity in its protected status. As the area is very close to Mussoorie, a major tourist spot, an interpretation centre should be considered, with a major focus on the Himalayan Quail and other Himalayan fauna. Himalayan Quail is likely to be present in these areas, where it was reported 100 years back, though it is considered to be extinct. This interpretation centre could become a good place for disseminating conservation education.

There should be intensive efforts to rediscover the Himalayan Quail. This could include a poster campaign with the involvement of local people. Habitat management in the Sanctuary should also be guided by the habitat requirements of this species.

Specimens of Himalayan Quail *Ophrysia superciliosa* were collected from this IBA.



UT-03

Courtesy: ENHS

The forests in the area are fragmented and there are villages in the vicinity, which depend on them. However, the pressures are not severe and inaccessibility because of lack of all season roads helps in reducing disturbance.

With the increase of tourism pressure in Mussoorie, more and more people have a tendency to look for quieter places in the vicinity. As a result some sites such as Clouds End on the edge of the Sanctuary are beginning to attract tourists, which if not controlled would adversely affect the habitat. A proposed road through the area may also damage adjacent forests.

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Dhananjai Mohan, S. Sathyakumar and Rahul Kaul

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## BINSAR WILDLIFE SANCTUARY



<b>IBA Site Code</b>	: IN-UT-04
<b>State</b>	: Uttarakhand
<b>District</b>	: Almora
<b>Coordinates</b>	: 29° 40' 00" N, 79° 45' 00" E
<b>Ownership</b>	: State
<b>Area</b>	: 4,559 ha
<b>Altitude</b>	: 900 - 2,450 m
<b>Rainfall</b>	: 1,000 mm
<b>Temperature</b>	: - 2 °C to 25 °C
<b>Biogeographic Zone</b>	: Himalaya
<b>Habitats</b>	: Himalayan Moist Temperate Forest, Sub-tropical Pine Forest

**IBA CRITERIA:** A3 (Biome-7: Sino-Himalayan Temperate Forest) ;  
**PROTECTION STATUS:** Wildlife Sanctuary, established in May 1988

### GENERAL DESCRIPTION

Binsar Wildlife Sanctuary (WLS) is situated about 30 km from Almora district. It covers an area of about 45 sq. km and has a core area of 4 sq. km. There are 32 villages in and around Binsar, which are dependent on forest resources. Also, there are five privately owned estates, of which three are on the periphery of the core zone.

Binsar WLS represents the characteristic floral elements of moist temperate forest, with oak forests surrounded by Chir pine and agricultural land (Ilyas 1998). The oak forest is more diverse than the pine. A total of 40 species of trees, 32 species of shrubs and ferns, 50 species of herbs and 19 species of grasses were identified by Ilyas (1998).

### AVIFAUNA

About 166 species of birds have been recorded to date from this IBA site (Ilyas 1998). Out of the 112 listed in Biome-7 (BirdLife International, undated), 23 have been identified in Binsar WLS. There are some species of Biome-5 and Biome-8 also, but these are not listed in the table below. This is one of the sites in India that were selected only on the basis of biome-restricted assemblages in Western Himalayas EBA-128. Only White-throated Tit *Aegithalos niveogularis* has been recorded by Ilyas (1998) but more restricted range species are likely to occur (Khan *et. al* 2000).

White-capped Water Redstart *Chaimarrornis leucocephalus* breeds in this IBA.

Photo: Ketil Krause/Peter Lobo



### Biome-7: Sino-Himalayan Temperate Forest

Common Hill-Partridge	<i>Arborophila torqueola</i>
Koklas Pheasant	<i>Pucrasia macrolopha</i>
Himalayan Pied Woodpecker	<i>Dendrocopos himalayensis</i>
Nepal House-Martin	<i>Delichon nipalensis</i>
Rufous-breasted Accentor	<i>Prunella strophiatea</i>
Greater Long-billed Thrush	<i>Zoothera monticola</i>
White-throated Laughingthrush	<i>Garrulax albogularis</i>
Striated Laughingthrush	<i>Garrulax striatus</i>
Streaked Laughingthrush	<i>Garrulax lineatus</i>
Orange-barred Leaf-Warbler	<i>Phylloscopus pulcher</i>
Grey-faced Leaf-Warbler	<i>Phylloscopus maculipennis</i>
Large-billed Leaf-Warbler	<i>Phylloscopus magnirostris</i>
Rusty-tailed Flycatcher	<i>Muscicapa ruficauda</i>
Fire-capped Tit	<i>Cephalopyrus flammiceps</i>
Simla Crested Tit	<i>Parus rufonuchalis</i>
Spot-winged Crested Tit	<i>Parus melanolophus</i>
Green-backed Tit	<i>Parus monticolus</i>
White-tailed Nuthatch	<i>Sitta himalayensis</i>
Bar-tailed Treecreeper	<i>Certhia himalayana</i>
Yellow-breasted Greenfinch	<i>Carduelis spinoides</i>
Pink-browed Rosefinch	<i>Carpodacus rodochrous</i>
Vinaceous Rosefinch	<i>Carpodacus vinaceus</i>
Brown Bullfinch	<i>Pyrrhula nipalensis</i>

### OTHER KEY FAUNA

Leopard *Panthera pardus* is the major predator of herbivores such as Barking Deer *Muntiacus muntjak*, Goral *Nemorhaedus goral*, and Wild Boar *Sus scrofa*. Golden Jackal *Canis aureus*, Himalayan Yellow-throated Marten *Martes flavigula*, Kashmir Flying Squirrel *Hylopetes fimbriatus* and Black-naped Hare *Lepus nigricollis* are also found. Rhesus macaque *Macaca mulatta* and Langur *Semnopithecus entellus* are the non-human primates of Binsar.

Two species of butterflies, Great Satyr *Aulocera padama*, (Satyridae) and the Mixed Punch *Dodona ouida*, (Erycinidae), both of which feed on grasses, have been recorded. These have not been reported from any other region of Kumaon Himalayas.

Binsar has very rich birdlife, including 23 Bisme-7 species.



UT-04

Photo: M. Zafar-ul-Islam

#### LAND USE

- q Nature conservation

#### THREATS AND CONSERVATION ISSUES

- q Firewood collection
- q Poaching
- q Tourism and recreation

Some 32 villages under the administrative purview of Bageshwar and Almora subdivisions, are located in and around Binsar WLS and are directly or indirectly dependent on the natural resources of Binsar Wildlife Sanctuary. They were the target villages under the Government 'Eco-Development project' launched by the State Forest Department in 1992. In order to minimize dependence on fuel wood gathered from the Sanctuary, the Forest Department distributed solar powered generators, pressure cookers and smokeless *chulhas* (= stoves) to poor villagers, but the plan failed as maintenance costs were too high.

Collection of medicinal plants from this IBA is one of the threats to biodiversity. The villagers use 50 plant species as medicine (Ilyas

1998). Neither is it desirable nor possible to ban this collection, so it is better to coordinate it in such a way that it is sustainable for both the sanctuary and for the villagers.

As the Sanctuary is situated very close to an important tourism circuit, an Interpretation Centre should be developed. This site is ideal for disseminating conservation education.

#### KEY CONTRIBUTOR

Orus Ilyas

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## CORBETT TIGER RESERVE



<b>IBA Site Code</b>	: IN-UT-05
<b>State</b>	: Uttaranchal
<b>District</b>	: Pauri Garhwal and Nainital
<b>Coordinates</b>	: 29° 35' 23" N, 78° 54' 57" E
<b>Ownership</b>	: State
<b>Area</b>	: 1,31,854 ha
<b>Altitude</b>	: 400 - 1,210 m
<b>Rainfall</b>	: 1,400 mm
<b>Temperature</b>	: 2 °C to 47 °C
<b>Biogeographic Zone</b>	: Himalaya
<b>Habitats</b>	: Sub-alpine Forest, Tropical Dry Deciduous Forest, Tropical Moist Deciduous Forest, Tropical Grassland, Reservoir

**IBA CRITERIA:** A1 (Threatened Species)

**PROTECTION STATUS:** Tiger Reserve, established in 1973

### GENERAL DESCRIPTION

The Corbett Tiger Reserve is situated in the hilly districts of Pauri Garhwal and Nainital in the northern state of Uttaranchal. It is one of the nine Tiger Reserves created at the launch of Project Tiger in 1973. This Reserve includes Corbett National Park (NP), which was the first Park to be established in India. It was declared in 1936 as Hailey NP with an area of 32,375 ha to which 19,707 ha were added later as Ramganga NP, and finally named as Corbett NP in 1957, in the memory of the legendary hunter turned conservationist Jim Corbett. In 1991, 79,772 ha was added as a buffer area to the Tiger Reserve (Jain 2001). Now the total area of Corbett Tiger Reserve is 1,31,854 ha (Jain 2001). This is one of the most famous Tiger Reserves in India and is extremely popular with tourists for its history, scenery and the wildlife. Sonanadi Wildlife Sanctuary, a part of Corbett Tiger Reserve, is considered as a separate IBA for administrative reasons.

The area in the Himalayan foothills wherein the Reserve is situated is known as the South Patlidun, and ranges from 400 m to 1210 m. Corbett includes the foothills of Outer Himalayas in the north and the Shivaliks in the south. The Outer Himalayas form the northern boundary of the Reserve and Kanda, the highest point, with its magnificent panoramic view of the Reserve, is located here. The Ramganga valley, the largest in the Reserve, with its long axis from east to west, lies between the Outer Himalayas and the Shivaliks. Through Ramganga valley, three thickly forested ridge systems run roughly parallel to one another. Small offshoots of these ridges run north to south and the small valleys formed in between are known as *sots*. Many smaller valleys run from the Shivaliks towards the south and the prominent one is Paterpani *sot*.

Different types of vegetation are found all along the varied topography, which comprises hilly and riverine areas, temporary marshy depressions, plateaux and ravines. Up to 110 species of trees, 51 species of shrubs and over 33 species of bamboo and grass are found here. The Reserve is known for its almost pure stands of Sal *Shorea robusta* in the lower hilly ridges and flat valleys.

The *chaurs*, or savanna grasslands, are covered with a variety of tall grasses such as *Themeda arundinacea*, *Vetiveria zizanioides*, *Cymbopogon jwarancusa* and *Desmostachya bipinnata*. Encroachment on these grasslands, which are vital for species such as Hog deer *Axis porcinus*, by *Cannabis sativa* is a cause for

concern. Controlled burning is carried out during winter to prevent woodland encroachment and promote growth of fresh grass.

### AVIFAUNA

Corbett has many attractions for bird watchers. Over 580 species of birds are reported (Grewal and Sahgal, 1995; other communications). Of the total 69 species of diurnal raptors reported from the Indian subcontinent, 51 are found in Corbett (Naoroji 1999) and of the 26 species of woodpeckers 15 are reported from Corbett (Grewal and Sahgal, undated).

#### Critically Endangered

Oriental White-backed Vulture	<i>Gyps bengalensis</i>
Slender-billed Vulture	<i>Gyps tenuirostris</i>

#### Vulnerable

Spot-billed Pelican	<i>Pelecanus philippensis</i>
Lesser Adjutant	<i>Leptoptilos javanicus</i>
Pallas's Fish-Eagle	<i>Haliaeetus leucorhynchus</i>
Greater Spotted Eagle	<i>Aquila clanga</i>
Eastern Imperial Eagle	<i>Aquila heliaca</i>
Sarus Crane	<i>Grus antigone</i>
Sociable Lapwing	<i>Vanellus gregarius</i>
Wood Snipe	<i>Gallinago nemoricola</i>
Hodgson's Prinia	<i>Prinia cinereocapilla</i>

#### Near Threatened

Darter	<i>Anhinga melanogaster</i>
Painted Stork	<i>Mycteria leucocephala</i>
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>
Oriental White Ibis	<i>Threskiornis melanocephalus</i>
Ferruginous Pochard	<i>Aythya nyroca</i>
White-tailed Eagle	<i>Haliaeetus albicilla</i>
Lesser Grey-headed Fish-Eagle	<i>Ichthyophaga humilis</i>
Greater Grey-headed Fish-Eagle	<i>Ichthyophaga ichthyaetus</i>
Cinereous Vulture	<i>Aegypius monachus</i>
Red-headed Vulture	<i>Sarcogyps calvus</i>
Pallid Harrier	<i>Circus macrourus</i>
Black-bellied Tern	<i>Sterna acuticauda</i>
Great Pied Hornbill	<i>Buceros bicornis</i>

Although Corbett does not have many restricted range species, it has 15 species of Biome-8 (Sino-Himalayan Subtropical Forest). Species from Biome-5 (Eurasian High Montane - Alpine and Tibetan) and Biome-7 (Sino-Himalayan Temperate Forest) are also found here. Among the interesting species is Ibisbill *Ibidorhyncha struthersii*, a bird of cold streams and shingle beds of the Himalayas. Brown dippers *Cinclus pallasii* is also frequent seen in winter. Thirteen Near Threatened species are also found in this IBA.

#### OTHER KEY FAUNA

Approximately fifty species of mammals are found in the area. Among the larger mammals, Tiger *Panthera tigris*, Leopard *P. pardus*, Asian Elephant *Elephas maximus*, Sambar *Cervus unicolor*, Cheetal *Axis axis*, Hog Deer *Axis porcinus*, Barking Deer or Indian Muntjak *Muntiacus muntjak*, Wild Boar *Sus scrofa*, Goral *Nemorhaedus goral*, and Golden Jackal *Canis aureus* are noteworthy. Serow *Nemorhaedus sumatraensis* are occasionally seen in Kanda ridge. Interestingly, in winter the Asiatic Black Bear *Ursus thibetanus* visits the northern part of the Reserve and Sloth Bears *Melursus ursinus* are resident in the southern portion of the Reserve. Among the reptiles, the two largest Indian species, namely Gharial *Gavialis gangeticus* and Marsh Crocodile *Crocodylus palustris* are found in the Reserve. In addition to numerous amphibians and lizards, the largest of the poisonous snakes, the King Cobra *Ophiophagus hannah* and Python *Python molurus* are frequently seen. Some of the best game fish of India, such as Golden Mahseer *Tor putitora* and Indian Trout *Barilius bola* abound in the waters of Ram Ganga streams which flow through the Reserve.

#### LAND USE

- Nature conservation and research
- Tourism and recreation

#### THREATS AND CONSERVATION ISSUES

- Livestock grazing on fringes
- Poaching and wildlife trade
- Invasive species
- Forest fires
- Man-animal conflict
- Tourism
- Disturbance from Kalagarh township

Recurrent forest fires are a common feature of the Corbett Tiger Reserve. During summer, the forest floor is covered with highly combustible, dry leaf litter largely contributed by sal leaves. The slightest ignition initiates widespread forest fires which are difficult to control. Fire lines are kept clear of debris to serve as fire breaks. Fire ecology studies to assess the impact of fire on wildlife populations are required to be done in this IBA.

On an experimental basis, *Lantana camara* has been successfully eradicated in Sarpduli Range by uprooting *Lantana* and planting of *Arundo donax*, a tall grass species. This management should be extended to many other sites in the National Park.

An eco-development programme has been initiated along the forest boundary to involve local villagers in biodiversity conservation and to reduce man-animal conflicts. The Hindi edition of *Corbett*

*Newsletter* is distributed to keep the villagers informed of policy decisions and the management programme. *Ex gratia* relief is offered to villagers for accidental human deaths by wild animals, livestock kills and damage to crops by wild elephants. Eco-development committees are being formed in villages to enable communities to plan and implement programmes for conservation of resources and alternative forms of livelihood. It is desirable that the wildlife resorts along the Kosi river, which prosper because they are close to Corbett Tiger Reserve, should significantly contribute to the Reserve by supporting programmes such as control of poaching and weed eradication.

The construction of a reservoir on the Ramganga river, and the building of the Kalagarh township on the southwestern boundary of Corbett Tiger Reserve in the early 1970s, have curtailed the movement of elephants and tigers across the Ramganga river, south of the reservoir, from Corbett NP to Kalagarh FD (Sona Nadi WLS). Occasionally, tigers and bull elephants come down from the Reserve along the *Sukha sot*, which is to the east of Kalagarh-Saddle Dam road, to the Ramganga river and cross over to Kalagarh FD. The Kalagarh project and township was built on 9,000 ha of forest land, and according to an agreement between the Irrigation and Forest Departments, 350 ha of this area should have been vacated and returned to the Forest Department soon after the completion of the reservoir. After much persuasion, 310 ha were returned by the Irrigation Department. The remaining area (40 ha) has colonies of about 4000-5000 people. The Forest Department, supported by NGOs, has now filed cases against 724 individuals, to evict them and their families, and the case is in the court of Sub-Divisional Magistrate, Kotdwar. The encroachers in the Kalagarh colony should be evicted, which will be possible only when the Government of India, the Government of Uttarakhand and NGOs interested in the conservation of Corbett Tiger Reserve, work together. The *Sukha sot* area also needs total protection from disturbances such as wood cutting by the inhabitants of Bikkhawal village (population about 1200).

The National Park forms the core area of the Corbett Tiger Reserve (1,28,600 ha) which also includes the Sona Nadi Wildlife Sanctuary (30,200 ha) to the west of the Reserve. There are recommendations from conservationists to enlarge the Reserve to about 2,00,000 ha which could be called Greater Corbett Tiger Reserve and which will encompass the areas between Khoh river (near Kotdwar) and Boar river (near Kaladhungi). If this expansion is undertaken, this protected area will become the most compact and vital area in the foothills of Himalayas for the conservation of several endangered species of birds and mammals.

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A. J. T. Johnsingh and Rishad Naoroji

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**GOVIND NATIONAL PARK AND WILDLIFE SANCTUARY,  
SANDRA, KOTIGAD AND SINGTUR RANGES**



<b>IBA Site Code</b>	: IN-UT-06
<b>State</b>	: Uttarakhand
<b>District</b>	: Uttarkashi
<b>Coordinates</b>	: 31° 09' 44" N, 78° 19' 46" E
<b>Ownership</b>	: State
<b>Area</b>	: 95,308 ha
<b>Altitude</b>	: 1,290 – 6,387 m
<b>Rainfall</b>	: 1,500 mm
<b>Temperature</b>	: 0 °C to 25 °C
<b>Biogeographic Zone</b>	: Himalaya
<b>Habitats</b>	: Himalayan Moist Temperate Forest, Sub-tropical Pine Forest, Alpine Moist Pasture

**IBA CRITERIA:** A1 (Threatened Species), A2 (Endemic Bird Area 128: Western Himalayas)

**PROTECTION STATUS:** National Park, established in February 1990

**GENERAL DESCRIPTION**

Govind National Park (47,208) lies in Uttarkashi district, about 225 km north of Dehra Dun, the state capital, and comprises the whole of Supin Range in the Tons Forest Division. It is bound to the north by the interstate boundary with Himachal Pradesh, to the east by a chain of mountain peaks and to the south by the Tons-Yamuna watershed. Two major rivers Rupin and Supin flow through the Sanctuary, and meet at Naitwar to form the Tons river.

Govind Wildlife Sanctuary (GWS) and National Park is an area of lush forests, breathtaking scenery and high faunal diversity. The National Park (47,208 ha) and Sanctuary (48,100 ha) together spread over an area of 95,308 ha, form the upper catchment of the Tons river that is the most important tributary of the Yamuna in its upper reaches. The adjacent Kulni and Balcha Reserve Forests have good temperate vegetation and are notable for Deodar *Cedrus deodara*. These Reserve Forests have suitable habitat for the Vulnerable Western Tragopan *Tragopan melanocephalus* (Prasad 1993).

Sandra, Kotigad and Singtur ranges are contiguous with the Govind Wildlife Sanctuary (GWS). Kotigad and Sandra ranges are located to the west of the GWS, north of the Tons river. Kotigad meets the protected area at a high altitude ridge called the Changshil Dhar, which also demarcates the interstate border of Uttarakhand and Himachal Pradesh. Sandra range lies between the Kotigad range and the Tons, with its eastern boundary touching the GWS. The Taramandal and Cheenwa blocks of Kotigad range and the Kulni and Balcha blocks of Sandra range are of special value for biodiversity conservation, as they bear temperate mixed, subalpine and alpine vegetation. The rest of these ranges are covered primarily with sub-tropical Chir Pine forests. Singtur range borders the GWS on the west and south of the Tons river. The forests of this range, which have great importance for biodiversity conservation, are the upper temperate forests of Kedarkanta, an important peak on the southwestern boundary of the GWS.

The Taramandal block of Kotigad range is supposed to have a small population of Blue Sheep or Bharal *Pseudois nayaur* (Samant 1995), which could be its southernmost population with respect to the Himalayan axis.

The forests in the IBA are dominated by Chir Pine *Pinus roxburghii*, Deodar, Oak *Quercus* spp. and other broadleaf species up to about

2,600 m, above which Blue pine *Pinus wallichiana*, Silver fir *Abies pindrow*, Spruce *Picea smithiana*, Yew *Taxus baccata*, and other species such as oaks *Quercus* sp, Maples *Acer*, Walnut *Juglans regia*, Hazel *Corylus jacquemontii* and Rhododendron *Rhododendron* sp. are predominant (Anon. 1986).

**AVIFAUNA**

Rashid Raza (*pers. comm.* 2003) of the Wildlife Institute of India has identified 102 species of birds based on preliminary investigation. Judging by the altitude and habitat type there could be more than 200 species. Among birds, Cheer Pheasant *Catreus wallichii* and Western Tragopan, globally threatened species are found here (Bland, 1987). The site harbours representative bird species of Sino-Himalayan Temperate Forest (Biome-7) and Eurasian High Montane – Alpine Forest (Biome-5). Detailed studies on the bird life of this important site have not been done.

Sathyakumar (*in press*) conducted surveys for large mammals and galliforms in 1992 in Govind Pashu Vihar and reported six species of galliforms: Kaleej *Lophura leucomelanos*, Himalayan Monal *Lophophorus impejanus*, Koklass Pheasant *Pucrasia macrolopha*, Chukor *Alectoris chukar*, Black Francolin *Francolinus francolinus* and Common Hill Partridge *Arborophila torqueola*. Encounter rates (number/km) for Himalayan Monal ranged from 0.14 to 0.92, for Koklass 0.4 and for Kaleej, 1.6.

Vulnerable	
Western Tragopan	<i>Tragopan melanocephalus</i>
Cheer Pheasant	<i>Catreus wallichii</i>
Endemic Bird Area 128: Western Himalayas	
Western Tragopan	<i>Tragopan melanocephalus</i>
Cheer Pheasant	<i>Catreus wallichii</i>
White-throated Tit	<i>Aegithalos niveogularis</i>

**OTHER KEY FAUNA**

The large mammal fauna is diverse and includes Asiatic Black Bear *Ursus thibetanus*, Brown Bear *U. arctos*, Leopard *Panthera pardus*, Snow Leopard *Uncia uncia*, Musk Deer *Moschus chrysogarter*, Barking Deer or Indian Muntjak *Muntiacus muntjak*, Sambar *Cervus unicolor*, Goral *Nemorhaedus goral*, Serow *N. sumatraensis*, Himalayan Tahr *Hemitragus jemlahicus* and Blue Sheep, as well as Wild Boar *Sus scrofa* (Anon. 1986, Fox *et al.* 1986).



Photo: Hira Puri

Black Francolin *Francolinus francolinus* is commonly seen in this IBA.

#### LAND USE

- q Nature conservation and research
- q Mountaineering Trekking

#### THREATS AND CONSERVATION ISSUES

- q Hunting
- q Grazing
- q Unsustainable collection of minor forest products

There is considerable potential for extending the Sanctuary eastwards, which would enhance its conservation value, especially if its management is integrated with that of the adjacent Chitkul-Raksham Sanctuary in Himachal Pradesh. Kulni and Balcha reserve forests could also be included. Prasad (1993) advocated the declaration of a 35,000 ha Western Tragopan Sanctuary in the upper catchment area of Pabar and Rupin rivers. This proposed sanctuary, along with the existing protected area and the adjoining Rakcham-Chitkul Sanctuary can be declared as one large conservation unit (Sathyakumar *pers. comm.* 2003).

The forests described have very few permanent human habitations. There are no roads in Sandra and Singtur ranges, and just one in Kotigad range (Kotigad-Cheenwa). The villages in the lower Kotigad range have become fairly prosperous owing to apple cultivation, and their dependence on the natural resource base has declined. However, there are summer camps of Gujjars in the upper temperate/sub-alpine zone, though they are also few in number (16 in Kotigad and 4 in Singtur). The alpine pastures of Changshil Dhar are under heavy pressure of grazing from sheep and goats. The interstate boundary is disputed at Changshil Dhar and there is conflict between the two states regarding its utilization by the grazing community.

The Forest Department staff of these areas needs to be sensitized to the biodiversity values of their area. The field staff was largely unaware of the occurrence of Western Tragopan, although there were fairly recent surveys to locate it.

The Deodar forests of Balcha block should be kept free from felling to maintain the growth character of these forests by preserving the giant trees and associated faunal elements.

The high degree of exploitation of natural resources is not compatible with the area's protected status, particularly in view of the pressure due to increase of human population. The Uttarakhand Timber Corporation harvests substantial quantities of timber, mostly deodar, from the lower portions of the Sanctuary. Timber operations were still continuing in 1996 in Kulni and Balcha Reserve forests above Mori (Rashid Raza *pers. obs.*) considered to be Western Tragopan habitat. Minor forest products (including medicinal plants) are collected by up to 1,000 Nepali labourers hired by local contractors; large flocks of sheep and goats are brought in from other parts of Garhwal.

There is substantial hunting pressure in the area, most commonly for Musk Deer, Goral and large birds, and every village has at least one regular hunter. The total number of licensed guns exceeds 150, with probably a similar number of unlicensed firearms (Fox *et al.* 1986). The problem of hunting was apparent in 1996 as well (Rashid Raza *pers. comm.* 2003)

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Dhananjai Mohan, Rashid H. Raza and S. Sathyakumar

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UT-07

## KEDARNATH MUSK DEER SANCTUARY AND RESERVE FORESTS



<b>IBA Site Code</b>	: IN-UT-07
<b>State</b>	: Uttarakhand
<b>District</b>	: Chamoli
<b>Coordinates</b>	: 30° 42' 46" N, 79° 19' 08" E
<b>Ownership</b>	: State
<b>Area</b>	: 98,524 ha (97,524 ha + 1000 ha)
<b>Altitude</b>	: 1,400 - 7,068 m
<b>Rainfall</b>	: 3,090 mm
<b>Temperature</b>	: -10 °C to 25 °C
<b>Biogeographic Zone</b>	: Himalaya
<b>Habitats</b>	: Montane Wet Temperate Forest, Sub-alpine Forest

**IBA CRITERIA:** A1 (Threatened Species), A2 (Endemic Bird Area 128: Western Himalayas), A3 (Biome-7: Sino-Himalayan Temperate Forest; Biome-5: Eurasian High Montane-Alpine and Tibetan; Biome-8: Sino-Himalayan Subtropical Forest)

**PROTECTION STATUS:** Wildlife Sanctuary, established in January 1972

### GENERAL DESCRIPTION

Kedarnath Wildlife Sanctuary lies in Chamoli district of the Garhwal Himalaya. The Sanctuary was created in 1972, and takes its name from the famous Hindu shrine at Kedarnath. It is situated about 300 km northeast of Delhi, covers an area of 97,500 ha, and is one of the largest protected areas in the Indian Himalayas. The entire Sanctuary lies in the southern catchment area of the Alaknanda river, which is one of three major tributaries of the Ganga. The high rainfall in the area has led to lush broadleaf dominated forests in the temperate and subalpine zones. The Sanctuary also has some eastern Himalayan elements. The highly threatened Musk Deer *Moschus chrysogarter*, is still found in the Sanctuary in good numbers. Mountain peaks border the Sanctuary at over 6,000 m above msl in the north, and in the by south the Mandal-Okhimath road to the south. Altitude ranges from 1,400 m (near Phata) to 7,068 m (Chaukhamba peak).

Trishula Reserve Forest adjoins the Sanctuary on the Gopeshwar-Mandal side, and is a well-preserved Temperate Deciduous forest.

The subtropical zone is represented mainly by Chir pine *Pinus roxburghii*, up to 2,000 m. *Euphorbia royleana* occasionally occurs on the dry, southern aspects up to 1,500 m. Within the temperate zone, Ban oak *Quercus incana* (1,500-2,100 m), Moru oak *Q. dilatata* (2,130-2,750 m) and Karsu oak *Q. semecarpifolia* (2,500-3,300 m) forest occur. The flowering plants of Tungnath and Kedarnath are listed by Semwal and Gaur (1981) and Rau (1961).

### AVIFAUNA

Green (1986) reported 132 bird species from Kedarnath WLS. Later, Sathyakumar (1994) added 78 more species to the list, and another 30 species were added by Rashid H. Raza (1996-2000), Ramana Athreya, Vidya Athreya, Dhananjay Mohan and Sanjay Sondhi (Unpublished checklist in Management plan) bringing it to 240 species. Cheer pheasant *Catreus wallichii*, a globally threatened species (BirdLife International 2001), is found in this IBA.

The site falls in the Western Himalayas Endemic Bird Area (Stattersfield *et al.* 1998). Owing to its great altitudinal variation from about 1,000 m to more than 7,000 m, three biomes (Sino-Himalayan Subtropical Forest, Sino-Himalayan Temperate Forest and Eurasian High Montane (Alpine and Tibetan), described by BirdLife International (undated), are found in this IBA.

### Vulnerable

Cheer Pheasant	<i>Catreus wallichii</i>
<b>Endemic Bird Areas 128: Western Himalayas</b>	
Cheer Pheasant	<i>Catreus wallichii</i>
White-throated Tit	<i>Aegithalos niveogularis</i>
<b>Biome-7: Sino-Himalayan Temperate Forest</b>	
Common Hill Partridge	<i>Arborophila torqueola</i>
Koklass Pheasant	<i>Pucrasia macrolopha</i>
Long-tailed Thrush	<i>Zoothera dixonii</i>
Long-billed Thrush	<i>Zoothera monticola</i>
White-collared Blackbird	<i>Turdus albocinctus</i>
Gould's Shortwing	<i>Brachypteryx stellata</i>
Blue-capped Redstart	<i>Phoenicurus caeruleocephalus</i>
White-throated Laughingthrush	<i>Garrulax albogularis</i>
Striated Laughingthrush	<i>Garrulax striatus</i>
Spotted Laughingthrush	<i>Garrulax ocellatus</i>
Variegated Laughingthrush	<i>Garrulax variegates</i>
Greater scaly-breasted Wren-Babbler	<i>Pnoepyga albiventer</i>
Bar-throated Minla	<i>Minla strigula</i>
Stripe-throated Yuhina	<i>Yuhina gularis</i>
Grey-sided Bush-Warbler	<i>Cettia brunnifrons</i>
Grey-faced Leaf-Warbler	<i>Phylloscopus maculipennis</i>
Large-billed Leaf-Warbler	<i>Phylloscopus magnirostris</i>
Grey-cheeked Flycatcher-Warbler	<i>Seicercus poliogenys</i>
Orange-gorgeted Flycatcher	<i>Ficedula strophliata</i>
Ultramarine Flycatcher	<i>Ficedula superciliaris</i>
Rufous-bellied crested Tit	<i>Parus rubidiventris</i>
Brown Crested Tit	<i>Parus dichrous</i>
Green-backed Tit	<i>Parus monticolus</i>
White-tailed Nuthatch	<i>Sitta himalayensis</i>
Fire-tailed Sunbird	<i>Aethopyga ignicauda</i>
Dark-breasted Rose Finch	<i>Carpodacus nipalensis</i>
Pink-browed Rosefinch	<i>Carpodacus rodochrous</i>
White-browed Rosefinch	<i>Carpodacus thura</i>
Scarlet Finch	<i>Haematospiza sipahi</i>
Red-headed Bullfinch	<i>Pyrrhula erythrocephala</i>

**Biome-5: Eurasian High Montane-Alpine and Tibetan**

Snow Partridge	<i>Lerwa lerwa</i>
Himalayan Snowcock	<i>Tetraogallus himalayensis</i>
Snow Pigeon	<i>Columba leuconota</i>
Rosy Pipit	<i>Anthus roseatus</i>
Alpine Accentor	<i>Prunella collaris</i>
Altai Accentor	<i>Prunella himalayana</i>
Grandala	<i>Grandala coelicolor</i>
Wall Creeper	<i>Tichodroma muraria</i>
Hodgson's Mountain-Finch	<i>Leucosticte nemoricola</i>
Red-fronted Rosefinch	<i>Carpodacus puniceus</i>

**Biome-8: Sino-Himalayan Subtropical Forest**

Rufous-throated Hill-Partridge	<i>Arborophila rufogularis</i>
Slatyheaded Parakeet	<i>Psittacula himalayana</i>
Blue-headed Rock-Thrush	<i>Monticola cinclorhynchus</i>
Tickell's Thrush	<i>Turdus unicolor</i>
Grey-winged Blackbird	<i>Turdus boulboul</i>
Rusty-cheeked Scimitar-Babbler	<i>Pomatorhinus erythrogegens</i>
Grey-headed Flycatcher-Warbler	<i>Seicercus xanthoschistos</i>
Red-headed Tit	<i>Aegithalos concinnus</i>
Maroon Oriole	<i>Oriolus traillii</i>
Grey Treepie	<i>Dendrocitta formosae</i>

In Biome-7 (Sino-Himalayan Temperate Forest), out of the 112 species listed for India, 30 are found in this IBA. Similarly, 10 out of 48 species of Biome-5 (Eurasian High Montane Alpine and Tibetan) are reported. This IBA also touches Biome-8 (Sino-Himalayan Subtropical Forest), in which 96 species are listed and 10 recorded here. Thus the site has great value for conservation of bird assemblages of the Western Himalayas, especially of Biome-7.

**OTHER KEY FAUNA**

Over 30 mammalian species, excluding bats, have been recorded (Green 1985, Sathyakumar 1994). Most noteworthy is the record of a Snow Leopard *Uncia uncia* in March 1979 (Green 1982). The ungulates of conservation concern are Himalayan Musk Deer *Moschus chrysogarter*, Indian Muntjak or Barking Deer *Muntiacus muntjak*, Sambar *Cervus unicolor*, Goral *Nemorhaedus goral*, Serow *Nemorhaedus sumatraensis*, Himalayan Tahr *Hemitragus jemlahicus* and Blue Sheep *Pseudois nayaur*.

**LAND USE**

- q Tourism and recreation
- q Nature conservation and research
- q Pilgrim centre

**THREATS AND CONSERVATION ISSUES**

- q Poaching, especially of Musk Deer and Asiatic Black Bear
- q Forest Fires
- q Collection of medicinal plants and other forest produce
- q Grazing
- q Tourism

The Wildlife Sanctuary, established mainly to protect the Musk deer, is also important for the diversity of its flora and fauna, notably its assemblage of ungulate species, unique to the Garhwal Himalaya. It has been proposed to include the adjoining reserve forest in the Sanctuary and to declare a 30,000 ha National Park to include high alpine habitats (Rodgers and Panwar 1988).

The Sanctuary does not require any habitat improvement through human intervention. Habitat improvement would be achieved by the management of grazing. The *Gujjars* who have recently made inroads into the area should be diverted to other grazing areas because livestock will permanently degrade the fragile habitat.

The Hindu temples in the Sanctuary are of great cultural value. They attract thousands of pilgrims every year, who exert tremendous pressure on the fragile resources of this IBA. Negative impacts from tourism are evident in the Mandakini Valley, particularly in the vicinity of Kedarnath Temple, from where a large amount of minor forest and scrub has been removed.

Poaching, particularly of Musk Deer, continues in less accessible areas. Grazing by domestic livestock (goats, sheep and water-buffalo), burning of pastures and collection of forest products and medicinal herbs are all unregulated. Forest fires pose a major threat to the moist forest formations, and in recent years considerable damage has been done by them. Thus, the forest understorey is heavily degraded in places.

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Rashid H. Raza, Dhananjai Mohan and S. Sathyakumar

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## NANDA DEVI NATIONAL PARK



<b>IBA Site Code</b>	: IN-UT-08
<b>State</b>	: Uttarakhand
<b>District</b>	: Chamoli, Bageshwar
<b>Coordinates</b>	: 30° 21' 03" N, 79° 19' 08" E
<b>Ownership</b>	: State
<b>Area</b>	: 62,462 ha
<b>Altitude</b>	: 2,100 – 7,817 m
<b>Rainfall</b>	: Not available
<b>Temperature</b>	: Not available
<b>Biogeographic Zone</b>	: Himalaya
<b>Habitats</b>	: Montane Wet Temperate Forest, Sub-Tropical Pine Forest, Sub-alpine Dry Scrub

**IBA CRITERIA:** A1 (Threatened Species), A2 (Endemic Bird Area 128: Western Himalayas)

**PROTECTION STATUS:** National Park, established in August 1982

### GENERAL DESCRIPTION

The Nanda Devi Biosphere Reserve is situated in the Kumaon and Garhwal regions of Western Himalayas, in the districts of Chamoli, Pithoragarh and Almora. It covers an area of 586,069 ha, with two core zones, the Nanda Devi National Park (62,462 ha) and Valley of Flowers National Park (8800 ha), and an outer buffer zone of 514,857 ha. Here we consider only the Nanda Devi NP as an IBA. The Valley of Flowers NP has been considered as a separate IBA.

The Sanctuary is one of the most spectacular wilderness areas in the Himalayas. Nanda Devi (7,817 m), a natural monument, and India's second highest peak, stands high above the basin of the Rishi Ganga river, which has cut for itself one of the finest gorges in the world. Unlike many other Himalayan areas, it is largely free from human settlement and has remained unspoiled due to its inaccessibility, particularly the forests of the lower Rishi Valley. Nanda Devi National Park meets Criteria (iii) and (iv) of the World Heritage Convention, based on its exceptional natural beauty and populations of rare and threatened mammals (IUCN Technical Evaluation).

Access to Nanda Devi National Park is very difficult, due to a series of high ridges with peaks such as Lata, Jhandidhar, Dunagiri,

Kalanka, Rishiparvat, Nanda Devi East, Nanda Khata and Trishul, which also form the boundary of the core zone. Thus, not only is Nanda Devi protected by law, but its geographic features act as an effective obstacle to human and livestock entry.

### AVIFAUNA

A total of 112 bird species has been recorded from Nanda Devi, 83 within the Biosphere Reserve and 29 around Joshimath and the oak forest at Auli (Sankaran 1995).

Sankaran (1995) found that species richness was highest in temperate forests with 47 species (37%), 24 of which were seen only in this habitat dominated by oak, fir, birch and rhododendron. The species richness of this habitat is likely to be much higher, as this was the least surveyed of all habitat types. Sub-alpine forest ranked next in species richness with 43 species recorded by Sankaran (1995), 18 of which were seen only in this habitat type. Nine species (8%), from a total of 32 recorded, were exclusive to the alpine pastures.

Only 20 species (8 exclusively) were recorded in degraded forest and agricultural land. This indicates that the majority of species found in this Park are specialists requiring primary forest cover (Sankaran 1995).

Almost all species of avifauna in the Himalaya show altitudinal migration, ascending to subalpine and alpine areas in summer to breed, and descending to temperate and tropical areas in the winter.

Three species of pheasants are reported from this Park: Cheer Pheasant *Catreus wallichii*, Himalayan Monal *Lophophorus impejanus* and Koklass Pheasant *Pucrasia macrolopha*. While the former is globally threatened, and considered Vulnerable by BirdLife International (2001), the latter two are still common in the Western Himalayas. Other Galliformes include Snow Partridge *Lerwa lerwa* and Himalayan Snowcock *Tetraogallus himalayensis* (Sankaran 1995). Sankaran (1995) did not find Cheer Pheasant during his survey of the higher reaches of Nanda Devi, but it is reported from slopes near Reni village.

Nanda Devi NP lies in the Western Himalayas Endemic Bird Area 128 (Stattersfield *et al.* 1998). In this EBA, a suit of 11 species has been listed, of which only two species could be found here. However, as Sankaran (1995) has pointed out, further studies are required to provide a comprehensive bird list for this interesting



Himalayan Snowcock is found in high altitude rocky slopes and alpine meadows.

Photo: Otto Pflister

A total of 112 bird species has been recorded from Nanda Devi.

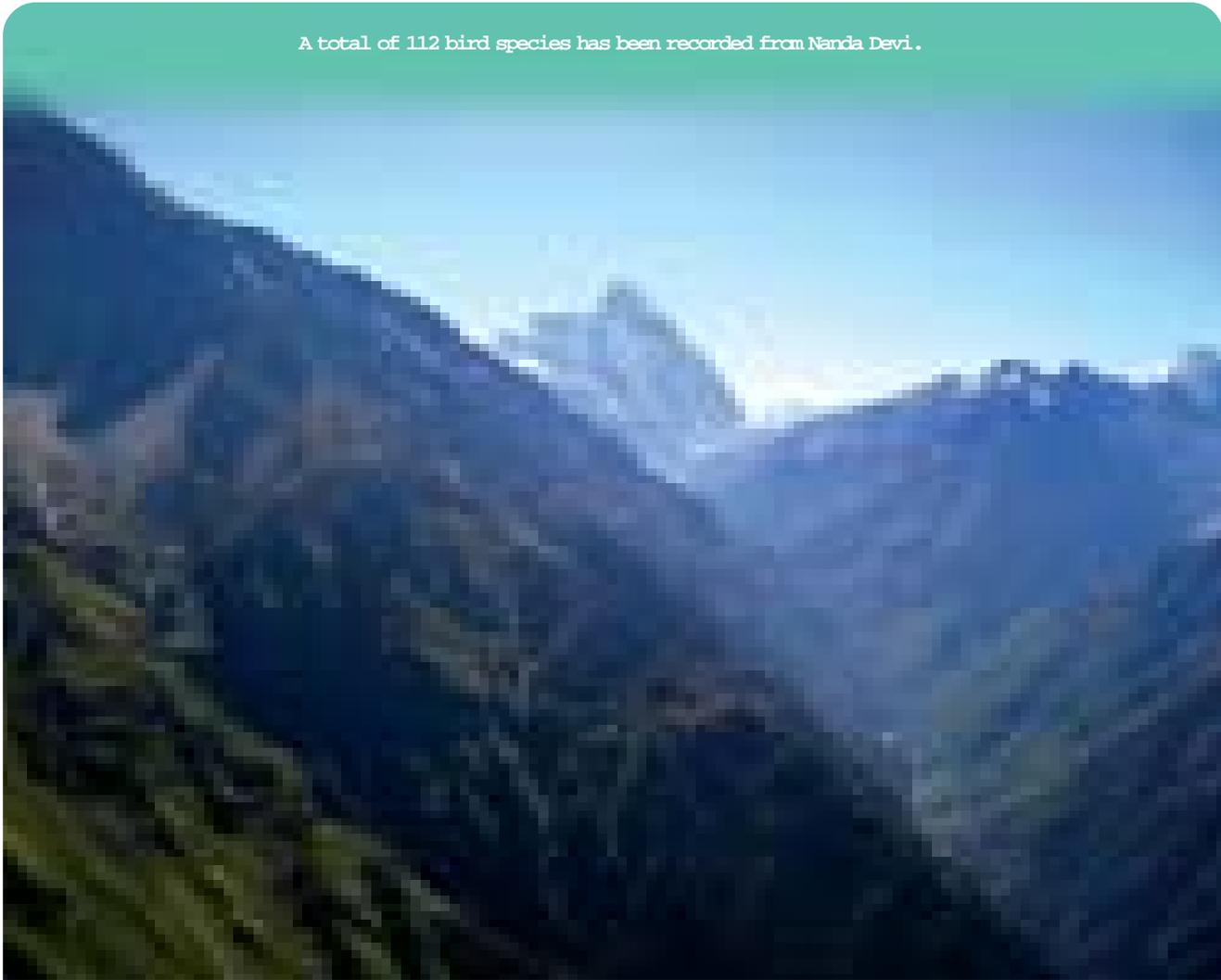


Photo: S. Sathyakumar

site. This site has been designated an IBA on the basis of A1 and A2 criteria, but it could qualify under A3 (biome-restricted assemblage) also.

Vulnerable	
Cheer Pheasant	<i>Catreus wallichii</i>
Endemic Bird Areas 128: Western Himalayas	
Cheer Pheasant	<i>Catreus wallichii</i>
White-throated Tit	<i>Aegithalos niveogularis</i>

#### OTHER KEY FAUNA

The most important mammal is the Snow Leopard *Uncia uncia*, which occurs in the alpine and subalpine zones. Its main natural prey is Blue Sheep *Pseudois nayaur*, Musk Deer *Moschus chrysogarter* and Himalayan Tahr *Hemitragus jemlahicus*. Tak and Kumar (1987) and Sathyakumar (1993) have described general wildlife, especially mammals.

#### LAND USE

- q Nature conservation and research
- q Tourism and recreation
- q Grazing

#### THREATS AND CONSERVATION ISSUES

- q Poaching, especially of Musk Deer and Snow Leopard
- q Mountaineering expeditions

The lower temperate and tropical forests are perhaps the most vulnerable habitats in the Himalayas as they are inhabited and most deforestation is taking place here (Dhananjai Mohan *pers. comm.* 2001).

In the Himalayas, biotic pressures such as livestock grazing play a significant role in virtually all temperate, subalpine and alpine areas during the summer, with deleterious effects on wildlife, particularly because optimal areas for livestock grazing are also prime habitats of the Himalayan Monal and Cheer Pheasant.

#### KEY CONTRIBUTORS

Dhananjay Mohan, Rashid S. Raza and S. Sathyakumar

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## NEW FOREST CAMPUS



<b>IBA Site Code</b>	: IN-UT-09
<b>State</b>	: Uttarakhand
<b>District</b>	: Dehra Dun
<b>Coordinates</b>	: 30° 20' 30" N, 78° 00" 00"E
<b>Ownership</b>	: State
<b>Area</b>	: 450 ha
<b>Altitude</b>	: 670 msl
<b>Rainfall</b>	: 2,000 mm
<b>Temperature</b>	: -1 °C to 43 °C
<b>Biogeographic Zone</b>	: Himalaya
<b>Habitats</b>	: Tropical Moist Deciduous, Tropical Secondary Scrub

**IBA CRITERIA:** A3 (Biome-5: Eurasian High Montane-Alpine and Tibetan;  
Biome-7: Himalayan Temperate Forest; Biome-8: Sino-Himalayan Subtropical Forest;  
Biome-11 Indo-Malayan Dry Zone)

**PROTECTION STATUS:** Not officially protected

### GENERAL DESCRIPTION

New Forest Campus is situated in the Dehra Dun district of Uttarakhand. The Campus houses the internationally renowned Forest Research Institute and is one of the most beautiful campuses of India.

The Campus is a mosaic of land uses, varying from densely inhabited housing colonies to Mixed Moist Deciduous natural forests. The northern boundary of the Campus is the valley of the seasonal River Tons, which descends from the Himalayas. The river, which is a mere trickle in winter, has dry scrub jungle on its banks. The slopes leading to the valley are covered with Mixed Moist Deciduous forest. The Campus is dominated by a very large building, some 75 years old, surrounded by sprawling lawns. There are extensive old plantations of Chir Pine *Pinus roxburghii*, Teak *Tectona grandis* and many species of bamboo. Some mixed plantations, a large, fairly open arboretum experimental gardens and a botanical garden also occupy a sizeable area. The inhabited area has widely spaced bungalows, surrounded by a lot of vegetation and crowded housing colonies.

A number of habitats have been identified in the campus: Tons river, irrigation canal, paddy fields, Tons valley forest (Moist Deciduous), Champion block forest (Moist deciduous and plantations), Tons valley scrub jungle, experimental gardens, botanical gardens, arboretum, bungalows, lawns and fields, the large main building and housing colonies.

### AVIFAUNA

Such a variety of habitats, as well as the presence of both Himalayan and sub-continental avifauna, result in a very high diversity of birds in New Forest. A total of 261 species belonging to 43 families has been recorded. Of these, 111 are migratory, 120 residents and 30 are considered vagrants.

New Forest has a long history of birdwatching, e.g. Osmaston (1935) and Wright (1949, 1957). There are extensive notes on the avifauna of the Campus. The most important contributions were made by George (Birds of New Forest: 1957, 1962), who listed 220 birds in the Campus, with details of their habitat use and migration, studied over a decade. Mohan (1993) has been studying the birds of New Forest since 1983, adding another 41 species to the list. Hooded Pitta *Pitta sordida*, which has only been recorded once from the West Himalayan foothills, has been reported from

the Campus (Mohan and Chellam 1990). Ten species of woodpeckers and 18 species of flycatchers are known from this IBA.

#### Biome-5: Eurasian High Montane (Alpine and Tibetan)

Tickell's Warbler	<i>Phylloscopus affinis</i>
Olivaceous Leaf warbler	<i>Phylloscopus griseolus</i>
Wallcreeper	<i>Tichodroma muraria</i>

#### Biome-7: Himalayan Temperate Forest

Himalayan Rubythroat	<i>Luscinia pectoralis</i>
Indian Blue Robin	<i>Luscinia brunnea</i>
Blue-capped Redstart	<i>Phoenicurus caeruleocephalus</i>
Striated Laughingthrush	<i>Garrulax striatus</i>
Scaly-breasted Wren-Babbler	<i>Pnoepyga albiventer</i>
Chestnut-headed Tesia	<i>Tesia castaneocoronata</i>
Western Crowned Warbler	<i>Phylloscopus occipitalis</i>
Orange-gorgeted Flycatcher.	<i>Ficedula strophitata</i>
Ultramarine Flycatcher	<i>Ficedula superciliaris</i>
Slaty-blue Flycatcher	<i>Ficedula tricolor</i>
Rufous-bellied Niltava	<i>Niltava sundara</i>
Spot-winged crested Tit	<i>Parus melanolophus</i>
Green-backed Tit	<i>Parus monticolus</i>
Yellow-breasted Greenfinch	<i>Carduelis spinoides</i>

#### Biome-8: Sino-Himalayan Subtropical Forest

Blue-throated Barbet	<i>Megalaima asiatica</i>
Black-winged Cuckoo-Shrike	<i>Coracina melaschistos</i>
Rosy Minivet	<i>Pericrocotus roseus</i>
Himalayan Bulbul	<i>Pycnonotus leucogenys</i>
Black Bulbul	<i>Hypsipetes leucocephalus</i>
Blue-headed Rock-Thrush	<i>Monticola cinclorhynchus</i>
Tickell's Thrush	<i>Turdus unicolor</i>
Grey-winged Blackbird	<i>Turdus boulboul</i>
Rufous-chinned Laughingthrush	<i>Garrulax rufogularis</i>
Rusty-cheeked Scimitar-Babbler	<i>Pomatorhinus erythrogyne</i>
Black-chinned Babbler	<i>Stachyris pyrrhops</i>
Grey-headed Flycatcher-Warbler	<i>Seicercus xanthoschistos</i>
Small Niltava	<i>Niltava macgrigoriae</i>
Maroon Oriole	<i>Oriolus traillii</i>
Grey Treepie	<i>Dendrocitta formosae</i>

**Biome-11: Indo-Malayan Dry Zone**

Red-headed Vulture	<i>Sarcogyps calvus</i>
White-eyed Buzzard	<i>Butastur teesa</i>
Yellow-wattled Lapwing	<i>Vanellus malabaricus</i>
Yellow-legged Green-Pigeon	<i>Treron phoenicoptera</i>
Plum-headed Parakeet	<i>Psittacula cyanocephala</i>
Indian Grey Hornbill	<i>Ocyrceros birostris</i>
Brown-headed Barbet	<i>Megalaima zeylanica</i>
Lineated Barbet	<i>Megalaima lineata</i>
Lesser Golden-backed Woodpecker	<i>Dinopium benghalense</i>
Ashy-crowned Sparrow-Lark	<i>Eremopterix grisea</i>
Black-headed Cuckoo-Shrike	<i>Coracina melanoptera</i>
Common Woodshrike	<i>Tephrodornis pondicerianus</i>
Small Minivet	<i>Pericrocotus cinnamomeus</i>
Indian Robin	<i>Saxicoloides fulicata</i>
Jungle Babbler	<i>Turdoides striatus</i>
Ashy Prinia	<i>Prinia socialis</i>
White-browed Fantail- Flycatcher	<i>Rhipidura aureola</i>
Brahminy Starling	<i>Sturnus pagodarum</i>
Bank Myna	<i>Acridotheres ginginianus</i>
White-bellied Drongo	<i>Dicrurus caerulescens</i>

Based on the classification of BirdLife International (undated), the New Forest Campus lies within Sino-Himalayan Subtropical Forest (Biome-8). Ninety-five bird species represent Biome-8 and 15 of them occur in New Forest Campus. As this site is in the foothills of the Himalayas, many migratory birds from other biomes are also seen. For instance, Tickell's Leaf Warbler *Phylloscopus affinis*, Sulphur-bellied Warbler *Phylloscopus griseolus* and Wallcreeper *Tichodroma muraria*, the birds listed in Biome-5 (Eurasian High Montane - Alpine and Tibetan) by BirdLife International (undated), occur here in winter only. Similarly, 14 species of Biome-7 (Sino-Himalayan Temperate Forest) have been identified from this IBA, most of them winter migrants.

However, the greatest overlap is seen with Biome-11 (Indo-Malayan Tropical Dry Zone). BirdLife International (undated) has listed 59 species in this biome, of which 22 occur in New Forest Campus. This is to be expected, for though this site occurs in the Doon Valley and is surrounded by the Shivalik Hills, it is close to the large Tropical Dry Zone of peninsular India. Therefore, many species of the latter biome move to the Doon Valley as summer or winter migrants. Some summer migrants breed as well.

Studies on Indian birds suggest that there could be many other such areas which would qualify for IBA criteria, if we knew their bird life in detail as we now know the birds of this Campus.

**OTHER KEY FAUNA**

There are not many wild mammals, except an occasional Leopard *Panthera pardus*. Golden Jackal *Canis aureus* and Jungle Cat *Felis*

A total of 261 bird species has been recorded from New Forest Campus.



Photo: M. Zafar-Ul-Is-lan

*chaus* are two other predators.

**LAND USE**

- ☐ Human habitation
- ☐ Nature conservation and research
- ☐ Educational and Training Institute
- ☐ Forestry

**THREATS AND CONSERVATION ISSUES**

There are no major conservation issues in this man-altered habitat. New buildings have come up, at the same time, appropriate plantation has been done in the Campus.

**KEY CONTRIBUTOR**

Dhananjay Mohan

**KEY REFERENCES**

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## RAJAJI NATIONAL PARK



<b>IBA Site Code</b>	: IN-UT-10
<b>State</b>	: Uttaranchal
<b>District</b>	: Dehra Dun, Haridwar and Pauri Garhwal
<b>Coordinates</b>	: 30° 03' 23" N, 78° 03' 53" E
<b>Ownership</b>	: State
<b>Area</b>	: 82,000 ha
<b>Altitude</b>	: 302 - 1,000 m
<b>Rainfall</b>	: 1,200 - 1,500 mm
<b>Temperature</b>	: 13 °C to 39 °C
<b>Biogeographic Zone</b>	: Himalaya
<b>Habitats</b>	: Tropical Dry Deciduous Forest, Sub-tropical Pine Forest and Tropical Moist Deciduous Forest

**IBA CRITERIA:** A1 (Threatened Species)

**PROTECTION STATUS:** National Park, established in August 1983

### GENERAL DESCRIPTION

Rajaji National Park is situated in the Shivalik hills and outer Himalayas of Uttaranchal state in India. Its 82,000 ha are spread over the districts of Dehra Dun, Haridwar and Pauri Garhwal. The tract is mainly hilly, traversed by a number of alternating steep ridges and valleys. The River Ganga bisects the Park. Rajaji NP was set up to protect the habitat of the Asian elephant *Elephas maximus* and Tiger *Panthera tigris*. Three wildlife sanctuaries - Rajaji, Chilla and Motichur, and the surrounding reserve forests, were merged to create this Park.

The Park area to the west of the River Ganga belongs to the Shivalik range and has a prominent northwest to southeast ridge running through it (Pandey *et al.* 1995). The area north of this ridge slopes gently into the Dehra Dun Valley and is covered with dense Sal *Shorea robusta* forests. Champion and Seth (1968) classified it as Moist Shivalik Sal Forest. The area south of the ridge has a jagged topography with a number of steep ridges which emerge from the main Shivalik ridge and have narrow valleys between them, which in monsoon turn into swift rivers. The dry river beds are locally called *Rau*. The ridges are grassy, with occasional trees. On the south of the main ridge there is Dry Shivalik Sal Forest, with *Anogeissus latifolia* on the slopes, associated with Sal in some places. Some areas of the Park are under plantations of *Tectona grandis*, *Ailanthus excelsa*, and *Haplophragma adenophyllum*. The Park has one of the finest examples of the *bhabar* forest zone in India i.e. the belt between the Himalaya and the *terai*.

### AVIFAUNA

A total of 312 bird species has been recorded. Of these, 151 are residents, 87 migrants, and 49 are altitudinal migrants, 7 are local migrants, while the status of the remaining 18 is unknown. For some species, Rajaji forms the western edge of their range, e.g. Great Pied Hornbill *Buceros bicornis* and Golden-fronted Leafbird *Chloropsis aurifrons* (Pandey *et al.* 1995). The Common Green Magpie *Cissa chinensis*, a denizen of Broadleaf Evergreen and Moist Deciduous forest, has been reported from the forest adjoining Rajaji NP, which links it with Corbett NP.

Rajaji NP is extremely rich in forest birds. For example, it has 11 species of woodpeckers, 5 species of barbets and 3 species of hornbills, including the Near Threatened Great Pied Hornbill.

Under the Western Himalayas Endemic Bird Area, Stattersfield *et al.* (1998) have listed Brooks's Leaf-warbler *Phylloscopus subviridis* and Tytler's Leaf-warbler *P. tytleri* as restricted range species. Both species are winter migrants to the Park (Pandey *et al.* 1995).

According to BirdLife Internationals (undated) classification of biomes, Rajaji NP occurs in Sino-Himalayan Subtropical Forest (Biome-8). However, it has more species of Biome-7 (Sino-Himalayan Temperate Forest) than Biome-8, especially in winter when the birds move down into these forests. A total of 112 species has been identified in Biome-7, and Rajaji NP has 12 of them, all recorded in winter.

There is a barrage on the River Ganga near Haridwar city. The backwaters of the reservoir, as well as a small stretch of the River Ganga, lie in the Rajaji NP. These water bodies attract a lot of resident and migratory waterbirds in winter. Thirteen species of birds have been identified at the reservoir, including Darter *Anhinga melanogaster*, Painted Stork *Mycteria leucocephala*, Black-necked Stork *Ephippiorhynchus asiaticus*, Ferruginous Pochard *Aythya nyroca* and Black-bellied Tern *Sterna acuticauda*, birds considered as Near Threatened by BirdLife International (2001).

#### Critically Endangered

Oriental White-backed Vulture	<i>Gyps bengalensis</i>
Slender-billed Vulture	<i>Gyps tenuirostris</i>

#### Vulnerable

Pallas's Fish-Eagle	<i>Haliaeetus leucoryphus</i>
Greater Spotted Eagle	<i>Aquila clanga</i>

#### Near Threatened

Darter	<i>Anhinga melanogaster</i>
Painted Stork	<i>Mycteria leucocephala</i>
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>
Ferruginous Pochard	<i>Aythya nyroca</i>
Lesser Grey-headed Fish-Eagle	<i>Ichthyophaga humilis</i>
Cinereous Vulture	<i>Aegypius monachus</i>
Red-headed Vulture	<i>Sarcogyps calvus</i>
Black-bellied Tern	<i>Sterna acuticauda</i>
Great Pied Hornbill	<i>Buceros bicornis</i>

#### OTHER KEY FAUNA

The area is highly important as the western limit of the Asian Elephant *Elephas maximus* and the Tiger *Panthera tigris*. Some other large mammals in Rajaji NP include Leopard *Panthera pardus*, Spotted deer *Axis axis*, Sambar *Cervus unicolor*, Nilgai *Boselaphus tragocamelus* and Goral *Nemorhaedus goral*. This Park is a good place to see Goral (Johnsingh 2001). The forests east of River Ganga are occasionally visited by Sloth Bear *Melursus ursinus* and Asiatic Black Bear *Ursus thibetanus* in winter.

#### LAND USE

- ☐ Nature conservation and research
- ☐ Tourism and recreation
- ☐ Human habitation
- ☐ Cultivation

#### THREATS AND CONSERVATION ISSUES

- ☐ Fragmentation due to roads and canals
- ☐ Poaching, particularly along its southern boundary.
- ☐ Illicit felling on the periphery
- ☐ Invasive species such as Lantana

A major community, the *Gujjar*, lives inside the Park in scattered *deras* (settlements). The resettlement of *Gujjars* has been a major issue related to Rajaji NP for nearly two decades, with the matter being taken to the Supreme Court. Despite clear directives from the Court, their resettlement has not been completed.

Rajaji does not have a natural buffer around much of its boundary. The areas adjoining the Park have high densities of human settlements that depend on the forest resources of the Park. There are also human-animal conflicts. The villages surrounding the Park require large-scale eco-development programmes. For Rajaji NP buffer zone, the creation of areas that are free from human habitation and constitute ideal habitat for Asian Elephant and Tiger, has been suggested (Johnsingh *pers. comm.* 2003, A. S. Negi *pers. comm.* 2003).

Another major issue is the fragmentation of the Park by canals, roads, railway lines, army ammunition dump and three settlements

of people displaced by the Tehri Dam. Fortunately the people of Khand Gaon III, which is in the Chilla-Motichur corridor, have agreed to move and the army has agreed to shift the ammunition dump which is also in the corridor area. The Forest Department has identified land for them. But the decisions are far from being implemented in the field. These are sensitive socio-political issues, which need careful and timely attention.

Rajaji NP has serious problems pertaining to weed infestation and introduction of exotics. Vast areas in the southern flat terrain as well as riverine areas of Motichur are infested with *Lantana*. Decline in habitat quality increases the problem of crop raiding by elephants (Williams *et al.* 2001). Weed problem needs urgent attention.

#### KEY CONTRIBUTORS

A. J. T. Johnsingh and S. P. Goyal

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The greatest irreversible threat to this IBA is fragmentation, caused by roads, canals and hydro-electric projects.



Photo: G. S. Rawat

## SONANADI WILDLIFE SANCTUARY



<b>IBA Site Code</b>	: IN-UT-11
<b>State</b>	: Uttaranchal
<b>District</b>	: Garhwal, Bijnor
<b>Coordinates</b>	: 29° 37' 33" N, 78° 41' 05" E
<b>Ownership</b>	: State
<b>Area</b>	: 30,118 ha
<b>Altitude</b>	: Not available
<b>Rainfall</b>	: >1,500 mm
<b>Temperature</b>	: 13 °C to 40 °C
<b>Biogeographic Zone</b>	: Gangetic Plain
<b>Habitats</b>	: Tropical Dry Deciduous Forest, Sub-tropical Pine Forest, Tropical Moist Deciduous Forest

**IBA CRITERIA:** A1 (Threatened Species), Data Deficient

**PROTECTION STATUS:** Wildlife Sanctuary, established in January 1987

### GENERAL DESCRIPTION

The Sonanadi Wildlife Sanctuary (WLS) is located in the Kotdwar *tehsil* of Pauri Garhwal district of Uttaranchal. It is named after the Sonanadi (river of gold). Deposits of gold have been reported along this river, hence the name. This Sanctuary spans an area of 30,118 ha of prime forest across the Ramganga river, adjoining the famous Corbett National Park.

The Shiwalik-Terai is one of the most threatened ecosystems of the country and receives considerable conservation attention. Sonanadi WLS forms a critical part of the habitat of the northwest population of the Asian Elephant *Elephas maximus*. There are three major sub-populations in Corbett-Rajaji NP. Sonanadi is significant in that it constitutes a forest corridor between the Corbett and the Rajaji populations to facilitate their movements.

Sonanadi WLS, Corbett NP and its buffer areas together comprise the Corbett Tiger Reserve, which holds the second largest population of Tiger *Panthera tigris* in the world (A. J. T. Johnsingh *pers. comm.* 2002).

The greater part of the Sanctuary is covered with Sal *Shorea robusta* forests. *Anogeissus latifolia* can be seen on the slopes, associated with Sal in some places. In earlier days, many parts of the original forest were cleared to raise plantations of *Tectona grandis*, *Ailanthus excelsa* and *Haplophragma adenophyllum*.

### AVIFAUNA

Although no work has been carried out on the bird communities of Sonanadi WLS, its bird life is assumed to be rich as it adjoins Corbett where about 560 bird species have been reported (Grewal and Sahgal 1995). However, Sonanadi does not have as great a habitat diversity as Corbett. As there is no available checklist for Sonanadi WLS, it is classified here as Data Deficient. Two critically endangered species of vultures are found here but they are widespread, especially the Oriental White-backed Vulture *Gyps bengalensis*. Very few IBAs have been selected on the basis of only these two species of vultures.

#### Critically Endangered

Oriental White-backed vulture	<i>Gyps bengalensis</i>
Slender-billed vulture	<i>Gyps tenuirostris</i>

### OTHER KEY FAUNA

Sonanadi has almost all the larger mammals that are found in Corbett and Rajaji National Parks, such as the Asian Elephant *Elephas maximus*, Tiger *Panthera tigris*, Leopard *P. pardus*, Sambar *Cervus unicolor*, Cheetal *Axis axis*, Barking Deer *Muntiacus muntjak*, Nilgai *Boselaphus tragocamelus*, Wild Boar *Sus scrofa* and Sloth bear *Melursus ursinus*. Golden Jackal *Canis aureus* and Striped Hyena *Hyaena hyaena* are the smaller carnivores. No data are available on reptiles and amphibians.

### LAND USE

- ☐ Human habitation
- ☐ Nature conservation and research
- ☐ Tourism and recreation

### THREATS AND CONSERVATION ISSUES

- ☐ Livestock grazing
- ☐ Disturbance to birds (poaching, killing, trapping)
- ☐ Unsustainable exploitation of forest products

Although there are no villages within the Sanctuary area, the buffer and periphery of the Wildlife Sanctuary harbour 200 villages and 46 settlements. There are *Gujjar deras* (settlements) in many parts of the Sanctuary, that cause considerable disturbance.

Poaching is a constant threat to species such as the Tiger, Leopard and Asian Elephant. Transmission of diseases from domestic to wild animals is another threat. Inoculation of livestock within a 5-km zone of influence is a major management challenge. Poisoning and dynamiting of rivers for fish, shooting and trapping of animals and birds, cattle grazing, and non-timber forest produce (NTFP) collection are the major areas of concern for management. As the Sanctuary is not demarcated into different zones, there is unrestricted use of rich habitats for grazing, tourism and other unregulated anthropogenic activities.

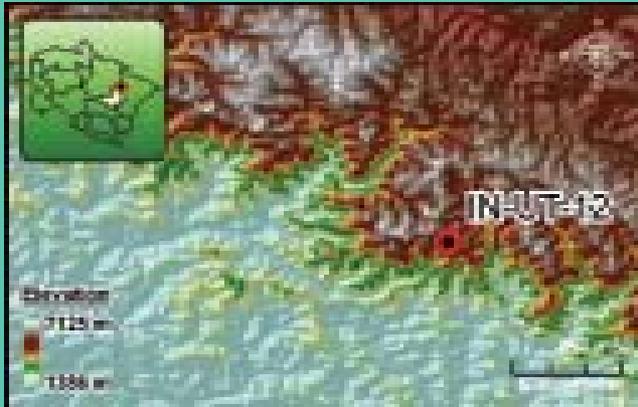
### KEY CONTRIBUTOR

IBA team

### KEY REFERENCE

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UPPER PINDAR CATCHMENT AREA



IBA Site Code	: IN-UT-12
State	: Uttarakhand
District	: Almora
Coordinates	: 30° 15' 08" N, 80° 03' 01" E
Ownership	: State
Area	: 20,000 ha
Altitude	: Not available
Rainfall	: c. 1,000-2,000 mm
Temperature	: Not available
Biogeographic Zone	: Himalaya
Habitats	: Himalayan Wet Temperate Forest, Sub-tropical Pine Forest, Alpine Moist Pasture

**IBA CRITERIA:** A1 (Threatened Species), A2 (Endemic Bird Area 128: Western Himalayas), A3 (Biome 7: Sino-Himalayan Temperate Forest, Biome 8: Sino-Himalayan Subtropical Forest)

**PROTECTION STATUS:** Not officially protected

**GENERAL DESCRIPTION**

The Upper Pindar Valley lies in Bageshwar district of the Kumaon region in Uttarakhand. The Pindar Valley and two of its upper level tributaries, namely Sunderdhunga Gad and Kaphni Gad, constitute a variety of diverse temperate to alpine vegetation communities. The Reserved Forests of Dhakuri block and Sunderdhunga block (3,087 ha) constitute the forested part of this c. 20,000 ha unit IBA. The remaining alpine and snow covered areas have the status of civil forests. The area lies in the Kapkote range of East Almora Forest division. The forests of Khati Van Panchayat (village council), which are contiguous with the aforementioned forest, provide ecological continuity and form important buffers.

The Pindari area is top ranking in the timber line zone of Uttarakhand hills, on the basis of botanical richness, uniqueness and endemism (Dhar *et al.* 1999). A high degree of diversity has been recorded in the composition of forest communities. A number of species are considered sensitive species, due to their small population and narrow distribution range, or on account of the threats to them (Samant *et al.* 1993). The Pindari is the only non-protected area which was placed "on priority amongst the areas included in the conservation proposals for Uttarakhand (Rodgers *et al.* 2000). The area is contiguous with the Nanda Devi National Park (an IBA), the dividing line being a very high, permanently snowbound ridge. Much of the area (northwards of Khati village) is included in the buffer area of Nanda Devi Biosphere Reserve, although the Reserve management has no presence here.

**AVIFAUNA**

The area has large and viable populations of five pheasants: Himalayan Monal *Lophophorus impejanus*, Satyr Tragopan *Tragopan satyra*, Koklass Pheasant *Pucrasia macrolopha*, Cheer Pheasant *Catreus wallichii* and Kaleej Pheasant *Lophura leucomelanos* (R. Raza *pers. comm.* 2003). The Himalayan Snowcock *Tetraogallus himalayensis* is also found here (Rodgers and Panwar 1988). In the Endemic Bird Area of Western Himalayas, very few IBAs have five species of pheasant.

Detailed inventory of birds is not available, however, Sultana and Khan (2000) have recorded a total of 185 bird species from Almora

district, which include 151 resident, 26 resident/migratory, and 8 migratory species. In detailed surveys of two Oak forests in this IBA, they recorded 120 bird species, of which 28 were birds of Sino-Himalayan Temperate Forest (Biome-7), 9 belonged to Sino-Himalayan Subtropical Forest (Biome-8) and 4 to Eurasian High Montane (Biome-5) (Sultana and Khan 2000, R. Raza *pers. comm.* 2003).

This site comes under the Western Himalayas Endemic Bird Area (EBA) (Stattersfield *et al.* 1998) where 11 bird species have been listed as restricted range (BirdLife International, undated). Cheer Pheasant was recorded by Sultana and Khan (2000). Considering the altitudinal range and vegetation types of this IBA, there are probably more restricted range species present.

BirdLife International (undated) has identified 112 species of Sino-Himalayan Temperate Forest (Biome-7), of which 28 are found here. Many of these species are breeding residents and probably found in significant numbers, as the forest habitat is largely intact.

The Kumaon Himalayas, of which Upper Pindar Catchment is a part, have been explored relatively poorly as far as bird communities are concerned. Nevertheless, there are about 55 published accounts of birds from this region. Sultana and Khan (2000) compared their data of Ranikhet area (adjoining Almora district) with that of Briggs (1931) and found many changes. Out of 83 birds recorded in 1931 and 114 birds in 1995, there were 68 common species, 15 species are exclusive to 1931 and 46 species were recorded only in 1995. This shows the extent of change taking place, mainly due to biotic pressures and probably also climate change. More work is required in the Kumaon Himalaya, especially in Nainital and Almora districts, for a comprehensive comparison of status of several bird species (Sultana and Khan 2000). The existing information shows that this region is extremely important for many Western Himalayan endemics.

Vulnerable	
Cheer Pheasant	<i>Catreus wallichii</i>
Endemic Bird Area 128: Western Himalayas	
Cheer Pheasant	<i>Catreus wallichii</i>

#### OTHER KEY FAUNA

The area is said to have the largest herds of Himalayan Tahr *Hemitragus jemlahicus* in India, as well as Bharal *Pseudois nayaur*, Musk Deer *Moschus chrysogarter*, Serow *Nemorhaedus sumatraensis* and Goral *N. goral*. Snow Leopards *Uncia uncia* are probably present (Rodgers and Panwar 1988).

#### LAND USE

- q Forestry
- q Catchment area of waterbodies

#### THREATS AND CONSERVATION ISSUES

- q Poaching of Musk Deer for the musk pod
- q Garbage left by trekkers.
- q Tourism

The Pindari area should be declared as a Wildlife Sanctuary, both on account of its rich biodiversity and the low biotic pressure in the area. The uppermost village in the Valley is Khati (c. 2200 m), situated at the confluence of Pindar and Sunderdhunga Gad.

The trek to Pindari glacier is one of the most popular in Uttarakhand state. The Forest Department and the Kumaon Mandal Vikas Nigam should work together to manage trekking so that it is ecologically sensitive. The area has great potential to become a centre for conservation education in the Himalayas.

The Upper Pindar Valley has a relatively difficult approach, as the only way to reach it is by trekking, involving a tough climb to Dhakuri Pass (c. 3000 m). This difficult climb discourages the forest staff from visiting this area regularly. Moreover, most of the area has broadleaf forests that are not very important commercially. Therefore, forestry was never practiced in the upper reaches of the Valley. This perhaps explains the absence of forest rest houses in the Valley, which is not so in the rest of Kumaon.

The nearby reserved forests of the Namik forest block, 4413.5 ha in extent, which are situated in the upper catchment area of the

snow-fed Ramganga river and the associated alpine areas are similar to the Pindari area in biodiversity value. All these could be considered for inclusion in the proposed Pindari Wildlife Sanctuary if the two are properly connected.

#### KEY CONTRIBUTORS

Dhananjai Mohan, Rashid Raza, Jamal A. Khan, Aisha Sultana and Shah Hussain

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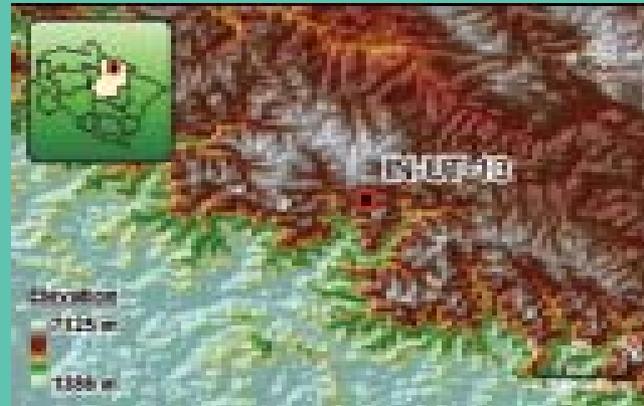
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Himalayan Monal *Lophophorus impejanus* has viable population in this IBA.



Photo: Tim Lossy/BirdLife International

## VALLEY OF FLOWERS NATIONAL PARK



<b>IBA Site Code</b>	: IN-UT-13
<b>State</b>	: Uttarakhand
<b>District</b>	: Chamoli
<b>Coordinates</b>	: 30° 45' 56" N, 79° 39' 35" E
<b>Ownership</b>	: State
<b>Area</b>	: 8,750 ha
<b>Altitude</b>	: 3,200–6,590 m
<b>Rainfall</b>	: Not available
<b>Temperature</b>	: -7 °C to 17 °C
<b>Biogeographic Zone</b>	: Himalaya
<b>Habitats</b>	: Sub-alpine Forest, Alpine Moist Scrub, Alpine Moist Pasture

**IBA CRITERIA:** A1 (Threatened Species)

**PROTECTION STATUS:** National Park, established in 1982

### GENERAL DESCRIPTION

The Valley of Flowers National Park, its buffer zone, and Khiron Valley are located in the Chamoli district of Garhwal Himalaya. The river Pushpawati originates from Tipra glacier in the valley, flows through the Park, joins River Bhyundar and drains into the Alaknanda at Gobindghat, forming a major tributary of the River Ganga. The Park is surrounded by the snow-clad summits of Nilgiri Parvat (6,407m), Gauri Parvat (6,590 m), Rataban (5,400 m), Sapta Sringa (5,025 m), and Kunt Khal (5,855 m). The altitude ranges from 3,200 m to 6,590 m.

A British mountaineer Frank Smythe is credited with having discovered this valley. The upper Bhyundar Valley became internationally known following its exploration by Smythe, first as a member of the successful Kamet Expedition in 1931 (Smythe 1932) and later in 1937, when he made an extensive herbarium collection. Over-awed by the profusion of wild flowers he named it Valley of Flowers. He recorded that the flora was as rich as or probably richer than any valley in Sikkim, with many plants of restricted distribution (Smythe 1938).

As the Valley received tremendous attention from tourists and plant explorers from all over the world, the Government of Uttar Pradesh notified its 8,750 ha area as a National Park in 1982 for the conservation of its rich biodiversity. Forests constitute 529 ha, alpine pastures 1,863 ha and 6,358 ha is estimated to be under permanent snow (Kala 1998).

There are three main vegetation zones in the Park and its surroundings, namely temperate, sub-alpine and alpine. The temperate zone (2,400-3,000 m) is characterized by broadleaf and coniferous forests. Sub-alpine forest (3,000-3,300m) is dominated by *Betula utilis*, *Rhododendron campanulatum*, *Abies pindrow*, *Acer caesium* and *Prunus cornuta*. The alpine zone begins at the treeline (3,500 m) and is dominated by herbaceous vegetation with some small shrubs.

Over 500 vascular plants are recorded from this IBA of which 31 are rare and endangered, including 13 medicinal plants (Kala 1998).

### AVIFAUNA

D. N. Mohan and Manoj V. Nair (*pers. comm.* 2003) have identified 82 bird species from this site. Except for the Yellow-rumped Honeyguide *Indicator xanthonotus*, which is Near Threatened

according to BirdLife International (2001), no other bird of conservation concern is found at the site. It must be added here that detailed studies on the bird life of this floral paradise have not been conducted. This site is one of the only two completely protected alpine grassland and scrub habitats in India, the other being Nanda Devi NP.

Although the Valley of Flowers is better known for its alpine pastures, at lower elevations it has Sino-Himalayan Temperate Forest, where many representative birds of Biome-7 are found. BirdLife International (undated) has listed 112 species under Biome-7, of which 29 have been recorded here (D. N. Mohan and Manoj V. Nair *pers. comm.* 2003). The Black-throated Tit *Aegithalos concinnus*, Grey-hooded Warbler *Seicercus xanthoschistos* and Black-faced Flycatcher-warbler *Abroscopus schisticeps* belonging to Biome-8 (Sino-Himalayan Subtropical Forest) also occur here.

Although most of the Sanctuary falls in Biome-5 (Eurasian High Montane- Alpine and Tibetan) where BirdLife International (undated) has recorded 48 bird species, only seven were noted by D. N. Mohan and Manoj V. Nair (*pers. comm.* 2003). Surveys in the alpine zone may reveal good breeding populations of pipits and rosefinches, and such species as Spotted Bush-warbler *Bradypterus thoracicus* typical of alpine breeding bird communities in Garhwal Himalayas. The alpine habitats are under-explored and are likely to be excellent alpine bird habitats in view of their strict protection from grazing.

The site has been designated as an IBA due to its well protected high altitude alpine and temperate forests.

#### Near Threatened

Yellow-rumped Honeyguide *Indicator xanthonotus*

### OTHER KEY FAUNA

The resident fauna of the Park includes Himalayan Musk Deer *Moschus chrysogaster*, Serow *Nemorhaedus sumatraensis*, Himalayan Tahr *Hemitragus jemlahicus*, Asiatic Black Bear *Ursus thibetanus*, Bharal *Pseudois nayaur*, Mouse Hare *Ochotona roylei*, Red Fox *Vulpes vulpes* and Himalayan Weasel *Mustela sibirica*.

### LAND USE

☐ Nature conservation and research

Hemkund Lake and shrine, in the Valley of Flowers, are popular tourists and pilgrim spots.

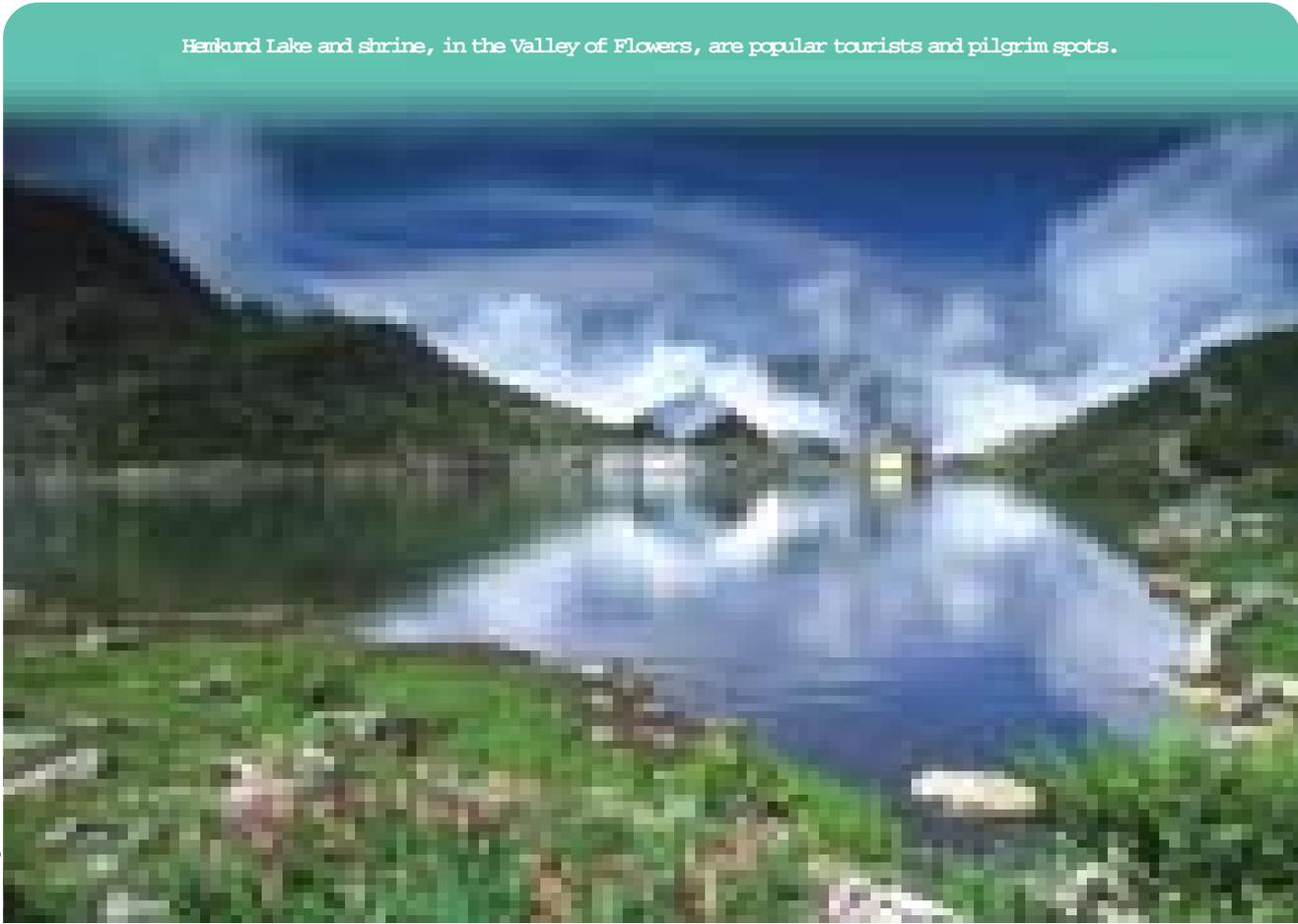


Photo: Nayan Khanolkar

#### THREATS AND CONSERVATION ISSUES

- q Vishnuprayag Dam Project
- q Resulting road construction and anthropogenic factors.

The Vishnuprayag Dam in the upper Alaknanda Valley is the most serious threat to the Park. In order to boost its generating capacity, it is proposed to divert water from the Pushpavati River via a 7.5 km long tunnel. The construction of the tunnel as well as a motorable road to the shrine at Hemkund Saheb would not only have geographical impact on the Bhyundar Valley, but also change its biodiversity values forever.

#### KEY CONTRIBUTORS

D. N. Mohan, Manoj V. Nair and Rashid Raza

#### KEY REFERENCES

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## GANGOTRI NATIONAL PARK



IBA Site Code	: IN-UT-14
State	: Uttarakhand
District	: Uttarkashi
Coordinates	: 31° 18' 34" N, 79° 05' 49" E
Ownership	: State
Area	: 2,39,000 ha
Altitude	: 1,800 - 7,000 m
Rainfall	: Not available
Temperature	: Not available
Biogeographic Zone	: Himalaya
Habitats	: Moist and Dry Himalayan Temperate Forests, Sub-Alpine forest, Alpine scrub and pastures.

**IBA CRITERIA:** A1 (Threatened Species), A2 (Endemic Bird Area 130: Western Himalayas)

**PROTECTION STATUS:** National Park, established in September 1989

### GENERAL DESCRIPTION

The Gangotri National Park (GNP) lies in the upper catchments of River Bhagirathi and derives its name from the famous Gangotri Temple, one of the four highly revered Hindu *Dhams*. The Park is located at a distance of about 100 km from the district headquarters Uttarkashi. It covers a wide altitudinal gradient from about 1,800 m to 7,000 m (Satopanth peak) and is one of the largest protected areas of Uttarakhand. The varied topography and large altitudinal range in GNP provide a diversity of habitats for various floral and faunal assemblages. A major portion of GNP is rugged and snow-covered. The Gangotri glacier lies at the centre of the Park and gives rise to River Bhagirathi, called Ganga beyond Deoprayag. Concerns have been raised that this glacier is fast receding due to various reasons.

The Park has a relatively good forest cover and the vegetation types vary from Himalayan Moist Temperate Forests to the Alpine scrub and pastures. As elsewhere in the Himalayas, the Himalayan Moist Temperate Forests are dominated mostly by species of oaks or conifers. Ban Oak *Quercus leucotrichophora* dominates the lower altitude areas (1,800 m to 2,200 m) and is usually associated with *Rhododendron arboreum*, *Ilex diphyrena* and *Lyonia ovalifolia*. Moru Oak *Quercus floribunda* with its associates namely *Aesculus indica* and species of *Acer*, dominates the middle altitudes (2,200 to 2,500 m). Kharsu Oak *Quercus semecarpifolia*, sometimes in almost pure stands (which are rare in case of Moru Oak), dominates the higher altitude regions (> 2,500 m). At some places, especially along water channels and mesic areas, *Aesculus indica*, *Acer* spp., *Pyrus lantana* and *Juglans regia* gain dominance over oaks. While at lower altitudes (< 2,200 m), along river valleys and landslide areas, Alder *Alnus nepalensis* forests, which are seral in nature, dominate the vegetation. In steep rocky areas around 2600 m with poor soil, the vegetation chiefly consists of *Cupressus torulosa*, often associated with *Cedrus deodara* and *Pinus wallichiana*. The Himalayan Dry Temperate Forests are represented by Deodar *Cedrus deodara* dominated stands around 2,500 m.

These forests have been heavily exploited in the past for timber and railway sleepers. Needle-leaf Forests dominated by *Abies pindrow* with *Picea smithiana* are frequent between 2,600 m to 3,000 m. Stands of Blue Pine *Pinus wallichiana* are also present in the area and can occasionally be found up to 3,400 m.

The Sub-Alpine zones, usually above 3,000 m are dominated by *Quercus semecarpifolia*, *Abies pindrow* and *Taxus baccata* with

other broadleaf species. The *krumholtz* zone (stunted forest) above 3,300 m above msl dominated by *Rhododendron campanulatum* and *Betula utilis* along with *Sorbus foliolosa* are quite distinct in the areas where anthropogenic pressures in the past had been less. This zone represents the tree limit and gives

Blue Poppy *Meconopsis aculeata* is common in the sub-alpine regions of this IBA.



Photo: Nayan Khanchikar

UT-14

Koklass Pheasant *Pucrasia macrolopha* is one of the resident pheasants of the Himalayas.



Photo: MPA India

way to the beautiful alpine pastures or meadows, locally called *bugyal*. These meadows are a storehouse of many rare and threatened medicinal plants. Important ones are *Aconitum heterophyllum*, *Dactylorhiza hatagirea*, *Picrorhiza kurrooa* and *Jurinea dolomiaea*.

This rich floral value of the Park has resulted in the naming of many places based on them such as *Chirbasa* (area mainly dominated by *Pinus wallichiana*, locally called *chir*) and *Bhojbasa* (area mainly dominated by *Betula utilis*, locally called *bhoj*). The Park provides refuge to sensitive Sub-Alpine and Alpine vegetation, which are degrading in many parts of the Himalayas due to overuse by man.

The Park, apart from representing the west Himalayan ecosystem also has some peculiarities. The boundary in the north and northeast forms the international boundary with China. This portion therefore, also represents the Trans-Himalayan ecosystem and species such as *Thylacospermum* sp., and *Lamium rhomboideum* characteristic of cold arid regions are found here. Similarly, though pure patches of *Taxus baccata* (locally called *thuner*) are rare, the area above Sukki village harbours a pure stand of *thuner*.

The GNP also forms a corridor between Govind National Park and the Kedarnath Wildlife Sanctuary. Taken together, these three protected areas form a very large contiguous conservation unit.

#### AVIFAUNA

Little information is available on the birds of the Park though presence of galliformes such as Common Hill Partridge *Arborophila torquata*, Kaleej Pheasant *Lophura leucomelanos*, Koklass Pheasant *Pucrasia macrolopha*, Monal Pheasant, and Himalayan Snowcock *Tetraogallus himalayensis* are known. Presence of Cheer Pheasant *Catreus wallichii* in the Chir Pine *Pinus roxburghii* forests adjacent to the GNP has been reported by local people and Nepali labourers, which needs to be confirmed. Judging by the altitudinal range, diversity of forests and large area, this IBA is likely to hold a very good representation of West Himalayan avifauna.

Vulnerable	
Cheer Pheasant	<i>Catreus wallichii</i>
Endemic Bird Area 128: Western Himalayas	
Cheer Pheasant	<i>Catreus wallichii</i>

#### OTHER KEY FAUNA

The Park is home to diverse Himalayan fauna. Some of the threatened ones include Himalayan Musk Deer *Moschus chrysogaster*, Blue Sheep *Pseudois nayaur*, Goral *Naemorhedus goral*, Sambar *Cervus unicolor*, Serow *Capricornis sumatraensis* and Himalayan Tahr *Hemitragus jemlahicus*. The major carnivores inhabiting the area include the Snow Leopard *Uncia uncia* and the Leopard *Panthera pardus*. Dominant small carnivores include the Red Fox *Vulpes vulpes*, Himalayan Yellow-throated Marten *Martes flavigula* and Himalayan Weasel *Mustela sibirica*. Asiatic Black Bear *Ursus thibetanus* and Wild Boar *Sus scrofa* are also common. Pika or the mouse hare *Ochotona roylei* is quite common in the sub-alpine and alpine zones.

#### LAND USE

- ☐ Nature conservation and research

#### THREATS AND CONSERVATION ISSUES

- ☐ Livestock grazing
- ☐ Collection of medicinal plants
- ☐ Tourism
- ☐ Disturbance to birds (poaching, killing, trapping)

The conservation issues related to this IBA are not different from the other protected areas of the Himalayas. Poaching of wildlife and illegal extraction of medicinal plants occur in the interior and less visited areas. Though religious sentiments attached to the Gangotri shrine and frequent traffic during summer curbs illegal activities, certain species are vulnerable to poaching during winters.

Grazing by domestic livestock and migratory graziers has led to the degradation of sensitive sub-alpine forests and meadows in some areas. Increased, unmanaged and concentrated tourism has also taken its toll.

What impact(s) will the Tehri Dam (constructed at Tehri, in the lower catchments of River Bhagirathi) have on this IBA (that is located in the upper catchments of River Bhagirathi) is not known.

#### KEY CONTRIBUTORS

Sanjay Uniyal and Gopal S. Rawat

#### KEY REFERENCES

None