

**Final Technical Report**

**Long term Monitoring of  
Outstanding Universal Values (OUVs) of  
Great Himalayan National Park Conservation Area**

*Submitted to*

**Himachal Pradesh Forest Department**

*by*

**WII-Category 2 Centre for  
World Natural Heritage Management and Training for  
Asia and the Pacific Region at  
Wildlife Institute of India**



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**Wildlife Institute of India Category 2 Centre  
World Natural Heritage Management and  
Training for Asia and the Pacific Region  
Under the auspices of UNESCO**

**August, 2023**

## Executive Summary

*The Himachal Pradesh Forest Department and WII-Category 2 Centre for Natural World Heritage Management and Training for the Asia and Pacific Region at the Wildlife Institute of India (WII) collaborated through a formal Memorandum of Agreement (MoA) to undertake a significant initiative. The purpose of this partnership was to conduct a comprehensive study titled "Long-term Monitoring of Outstanding Universal Values of Great Himalayan National Park Conservation Area."*

*The primary objectives of the project were to comprehensively monitor the Outstanding Universal Values (OUVs) of the Great Himalayan National Park Conservation Area (GHNPCA). The MoA was established in March 2020 to carry out the proposed project activities. However, the outbreak of the Covid-19 pandemic in 2020 significantly disrupted the project's execution, prompting the Himachal Pradesh Forest Department to extend the project timeline by one year.*

*Amid the challenges posed by the pandemic, WII-C2C made significant progress within the extended timeline. Several key activities were accomplished during this period. These include conducting training programs for frontline staff and capacity-building initiatives for the local community. In collaboration with the frontline staff, selected faunal species distribution maps within GHNPCA were prepared. Moreover, a specialized training program tailored to the needs of the frontline staff was conducted at WII-C2C headquarter, Dehradun. This training covered data collection and analysis techniques, as well as the utilization of drone technology for fieldwork.*

*As per the stipulations of the MoA, a Final Technical Report is submitted which provides a comprehensive overview of all the activities undertaken throughout the project's course. This report serves as a documentation of the successful completion of various aspects, including training, data collection, and analysis.*

*In conclusion, the collaboration between the Himachal Pradesh Forest Department and WII-C2C, facilitated by the MoA, achieved significant objectives despite the Covid-19 challenges. The study on long-term monitoring of GHNPCA's Outstanding Universal Values was successful due to the support of HP Forest Department and administration of Great Himalayan National Park, Conservation Area, Shamshi Kullu (HP). The Final Technical Report stands as a testament to the accomplished activities, contributing to the holistic conservation and sustainable management of the Great Himalayan National Park Conservation Area.*



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# Background

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The Himachal Pradesh Forest Department and WII- Category 2 Centre for Natural World Heritage Management and Training for the Asia and Pacific Region at Wildlife Institute of India, Dehradun, together they established a formal Memorandum of Agreement (MoA) to embark on a significant endeavor. The core objective of this collaboration was to conduct a study titled "Long-term Monitoring of Outstanding Universal Values of Great Himalayan National Park Conservation Area.

Within the framework of this MoA, a comprehensive report has been prepared to outline the groundwork and key elements of the study. This final report serves as a foundational document, mandated by the terms of the MoA. The report begins by providing the background information of Great Himalayan National Park Conservation Area. This context helps set the stage for understanding the significance and rationale behind the study. Furthermore, the report explains the activities conducted during the study.

In essence, the final report summarizes the foundational aspects of the collaborative effort between the Himachal Pradesh Forest Department, the WII Category 2 Centre at the Wildlife Institute of India. It sets the method for the comprehensive study focused on monitoring the Outstanding Universal Values of the Great Himalayan National Park Conservation Area and ensures that the project was well-structured, well-executed, and capable of yielding meaningful insights into conservation efforts in the region.

## **Great Himalayan National Park Conservation Area:**

Great Himalayan National Park Conservation Area (GHNPCA) inscribed as Natural World Heritage in the year 2014 under criteria X. The Great Himalayan National Park (GHNP) occupies a strategic location at the confluence of the east-west axis (Western and North-west Himalaya) and the north-south axis (temperate and cold-desert region). This positioning fosters a remarkable diversity of species and their habitats (Rawat & Wangchuk 2000; Palni and Rawal 2012; Goraya et al. 2012). The park's distinctiveness arises from its substantial representation of both oriental and palaearctic elements, an exceptional characteristic resulting from its unique biogeographic composition. This distinctiveness is further magnified by the integrity of its habitats, characterized by their contiguity and relatively undisturbed state. Such a combination of attributes is unparalleled worldwide.



A distinguished statistic is that 58% of the angiosperm species documented within the park's boundaries are exclusive to the Western Himalayas, making their occurrence in other locations unlikely. Additionally, the park harbors natural populations of 11 out of the 14 conifer species found in Himachal Pradesh. A prominent feature of GHNP is the significant expanse of ancient Himalayan Fir (*Abies pindrow*) forests and their associated communities, boasting the highest proportion of plant species native to the Indian Himalayan Region (Thakur Shalu Devi, 2012). Of particular importance is GHNP's role as a refuge for *Morus serrata*, a tree species confined to the Indo-Pakistan subcontinent and now existing as one of the last remaining wild populations.

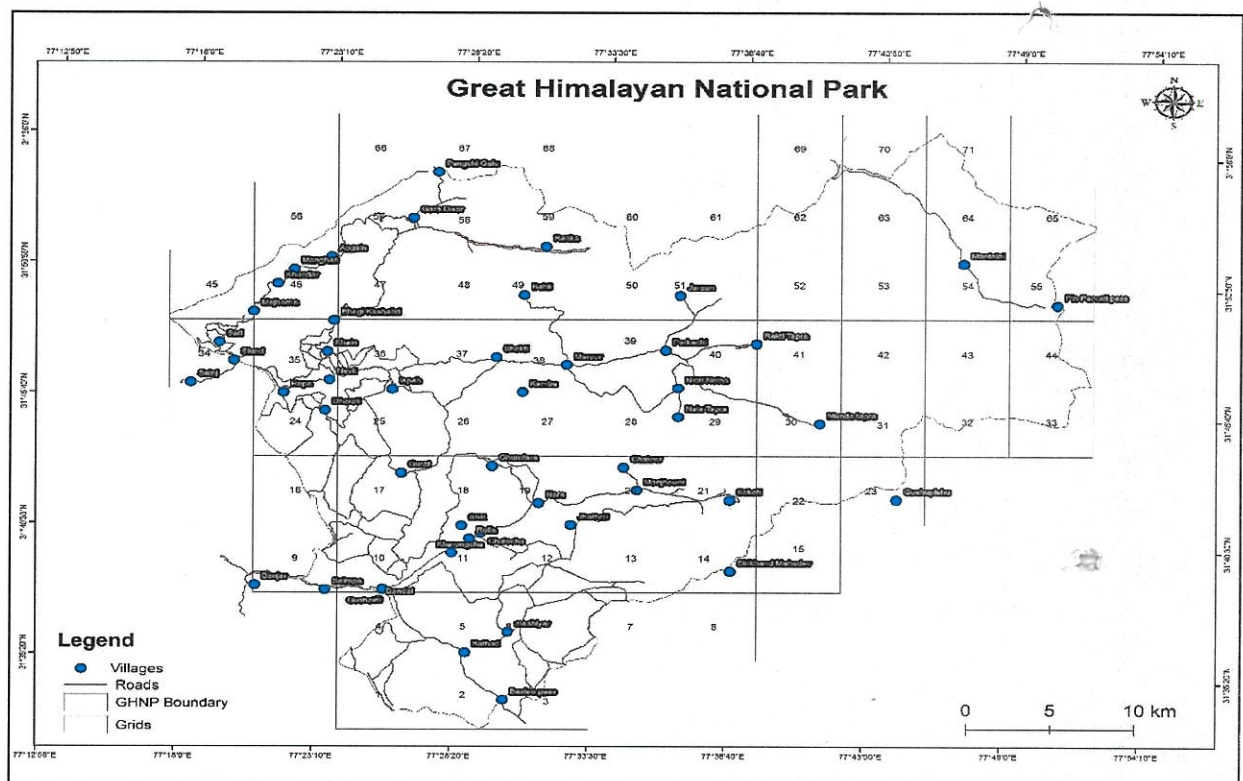
The park serves as the habitat for several bird species exclusive to the Western and Northwestern Himalayas, with no presence in the Central Himalayas. Instances include the Western Crowned Leaf-Warbler *Phylloscopus occipitalis*, Orange Bullfinch *Pyrrhula aurantiaca*, and Western Tragopan *Tragopan melanocephalus*. These species coexist with representative Central and Eastern Himalayan counterparts, like the Little Pied Flycatcher *Ficedula westermanni*, Crimson Sunbird *Aethopyga siparaja*, and Chestnut-headed Tesia *Tesia castaneocoronata* (Gaston et al. 1994).

GHNP stands as a prime example of the fauna and flora characteristic of the Western Himalayas. Nevertheless, its most exceptional ecological worth lies in the impeccably conserved low-altitude broadleaf and mixed forests, particularly within the Tirthan Valley. Unlike other parts of the western Himalayas, where these forests face intense pressures from agricultural expansion, tourism, hydroelectric projects, and other developments, GHNP remains a stronghold. Indeed, a comprehensive biodiversity assessment of Himachal Pradesh (Gaston et al. 1981) designated the GHNP area as the premier surviving instance of low-altitude temperate Himalayan forests within the state. This designation arguably holds even greater truth today, three decades after its inception, considering the increased intensity of hydro developments and land-use conversions elsewhere in Himachal Pradesh (Garson and Gaston 1984).

The Great Himalayan National Park (GHNP) houses the most effectively safeguarded populations of the Western Tragopan, a species classified as "Vulnerable" by the IUCN (Vulnerable C2a(i)). Within the park's confines, it supports a population of 400 individuals, amounting to 10% of the global population. Remarkably, this occurs within a mere 1% of the species' global distribution area, which spans 21,600 km<sup>2</sup> (Birdlife International 2003; Ramesh 2003). Similarly, recent research underscores GHNP's role as the most secure habitat for the snow leopard, an "Endangered" species according to

IUCN categorization (C1 ver 3.1), particularly in the context of climate change and impending vulnerability (Forrest et al. 2012). This position is reinforced by the park's minimal human impact, a crucial advantage when contrasted with analogous elevations and ecological zones in other regions.

The park's geographical configuration contributes to its efficacy as a protective haven. Its habitats are enveloped by safeguarded areas, ensuring continuity and the long-term viability of species. Snow leopards, brown bears, Himalayan black bears (classified as "Vulnerable" by IUCN), Himalayan Tahr (classified as "Near Threatened" by IUCN), Himalayan musk deer (classified as "Endangered" by IUCN), blue sheep, Western tragopan, and Cheer pheasant (IUCN Vulnerable C2a(i)) all find year-round habitats and a secure future within GHNP.





## Project Activities Proposed in MoA

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- I. Development of Long-term Monitoring Plan
- II. Establishment of Central Data Collection at Shamshi
- III. Training of Selected Frontline Staff to Collect OUV related data from the field
- IV. Capacity building training programmes for target audiences, i.e., local community, and frontline staff of GHNP/CA will be organised by UNESCO C2C-WII in the field
- V. UNESCO C2C-WII will designate a "Nodal Officer" to coordinate the activities under the MoA.
- VI. Progress Report and Final Technical report will be submitted by UNESCO C2C-WII to Wildlife Wing- HPFD.

### Project Objective/Activity - I

#### (1) Development of Long-term Monitoring Plan

Long-term monitoring of flora and fauna involves the systematic observation and analysis of plant and animal species within a specific ecosystem over extended periods of time. This practice is essential for understanding the dynamics, trends, and changes that occur within ecosystems, providing crucial insights into ecological health, adaptation, and responses to various environmental factors. Here's a detailed explanation of the concept:

**Purpose and Importance:** Long-term monitoring serves several critical purposes in ecological research and conservation. By observing flora and fauna over extended periods, scientists can identify patterns and trends that might not be apparent in short-term studies. This allows for a deeper understanding of how species populations, distributions, and interactions change over time. These changes might be due to natural processes, climate fluctuations, human activities, or a combination of factors. Understanding how plants and animals respond to changes in their environment, such as climate change or habitat loss, is vital for predicting future impacts and planning conservation strategies. Long-term data guides conservation efforts by providing evidence-based insights into the effectiveness of management practices, helping prioritize species and habitats for protection, and aiding in making informed policy decisions. Long-term data serves as a valuable baseline for assessing the impacts of disturbances like pollution, invasive species, and habitat degradation. It enables researchers to differentiate between natural fluctuations and human-induced changes. Long-term monitoring of flora and fauna provides a window into the dynamic nature of ecosystems and helps us make informed decisions about conservation, management, and sustainable resource use.

## Bird species selected for the development of long- term monitoring:

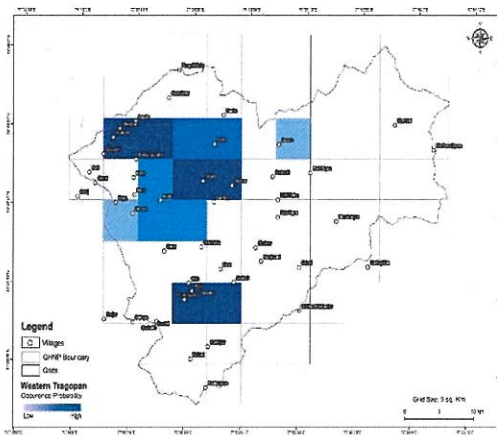
### (1) Western Tragopan (*Tragopan melanocephalus*)

This is a big pheasant with a short tail. The male bird looks dark, covered in white spots. Look for its orange patch on the chest, red back of the neck, red face with a black crown and ears, and a blue throat. The female is more brownish-gray, with lighter colors underneath, and it has thin white lines on it. These birds live in quiet forests on mountains and like places with thick bushes on the ground. They eat on the ground but sleep in trees. They make a short, nasal wailing sound.



Figure 1 Vinay Kumar

**Distribution in GHNPCA:** On the basis of discussion with the frontline staff of GHNPCA who were posted and involved earlier monitoring exercise population distribution map was prepared.



Range Map © <https://ebird.org>

**Monitoring Protocol:** Spotting the elusive western tragopan in its habitat is a tough task due to its shyness. Suggested methods are Presence/absence mapping and encounter rates. Breeding season calls should be counted, and camera traps helps in presence and abundance estimation. Calls can be played back for responses. Using camera traps helps monitor this elusive species efficiently.



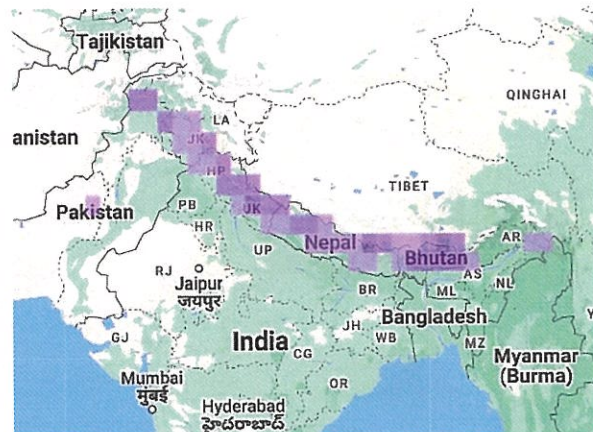
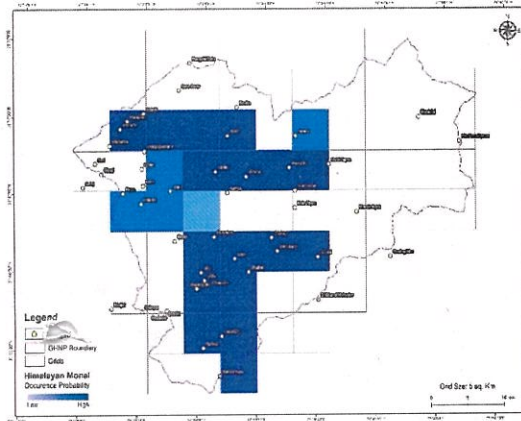
## (2) Himalayan Monal (*Lophophorus impejanus*)

The male bird has many colors like a rainbow – a green crest on its head, a red neck, green shoulders, blue back, orange tail, and black belly. When it wants to show off or gets scared, it flashes a bright white spot on its back. The female bird doesn't have such bright colors. She has a light blue spot around her eye, a white throat, and a body with streaks of brown. These birds live in the Himalayan forests, especially where there are lots of rhododendron plants and bamboo.



Figure 2 © Arnab Pal

**Distribution in GHNPCA:** On the basis of discussion with the frontline staff of GHNPCA who were posted and involved earlier monitoring exercise population distribution map was prepared.



Range Map © <https://ebird.org>

### Monitoring Protocol:

The Himalayan Monal inhabits the Himalayan Forest region between 2100 and 4500 m elevation. It favors steep southward slopes and large rocks for roosting, providing protection from predators. While adapted for cold conditions, chicks require warmth. In winter, they descend to around 6,561 ft for survival. Suggested methods for monitoring are call count and encounter rate.



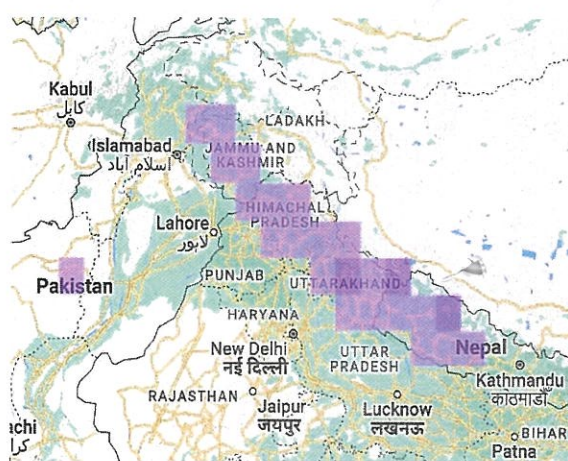
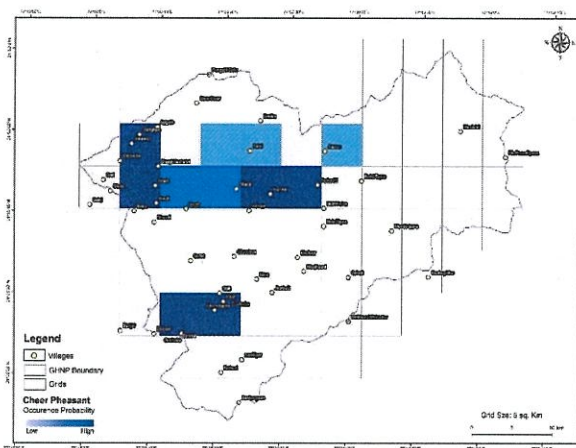
### (3) Cheer Pheasant (*Catreus wallichii*)

This is a big, light-colored pheasant with a long tail, messy feathers on its head, and red skin around its eye. The male bird looks pale gray, with lines all over its body, thick black stripes on its tail, a rusty lower back, and a dark belly. The female is more brown and has white lines on its body, white stripes on its tail, a rusty belly, and black spots on its chest. These birds are shy and often seen in small groups on steep, grassy hills in the Himalayas. They make a lot of noise, usually with a bunch of thin and scratchy sounds. Cheer pheasants are not easy to see because there are only a few of them. But one can hear them calling in the evening. It is recorded near Gati Pat in Jiwanal Valley and near the villages in Tirthan Valley.



Figure 3 Quique Marcelo

**Distribution in GHNPCA:** On the basis of discussion with the frontline staff of GHNPCA who were posted and involved earlier monitoring exercise population distribution map was prepared.



Range Map © <https://ebird.org>

**Monitoring Protocol:** The cheer pheasant is found in the highlands and scrublands of the Himalayas, typically at elevations above 1,800m and up to 3,000m. Both male and female have long tails, pointed tails, red faces, and small crests. They live in small groups within the GHNPCA, favoring steep, grassy slopes with scattered trees. Cheer pheasants are challenging to spot due to their small numbers, yet their distinctive calls are often heard at dusk. Call count and encounter rate are suggested methods for monitoring population.



#### (4) Koklass Pheasant (*Pucrasia macrolopha*)

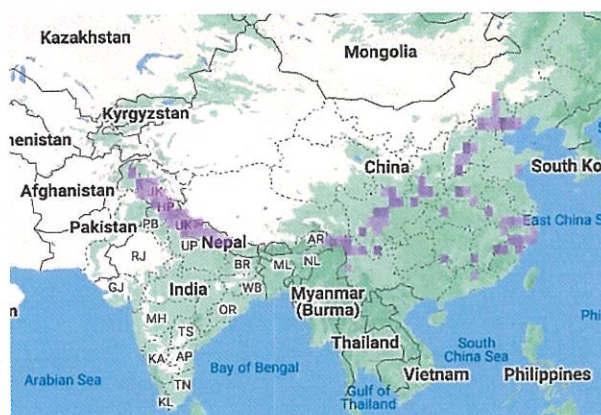
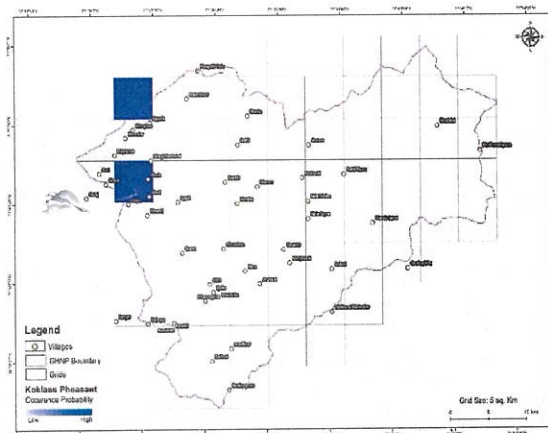
This pheasant is similar to a partridge, but it's big and shy. It lives in forests up in the mountains. The male has a shiny silver body, a maroon stripe on its chest, a white patch on its neck, and a dark greenish-black head with a long crest. This crest looks like a surprised rabbit when it stands up. The females are brown with streaks and a lighter version of the male's white patch and chest stripe. One can tell the female by her short crest, light-colored eyebrow, and white throat with a dark border.

The koklass pheasant usually hides under bushes, so it's not easy to see it directly. But it can be recognize by its loud calls in the early morning during the fall and when it's mating. It lives in pairs or small families all year round. It makes its nests on the ground and sleeps at night in trees or under big rocks



Figure 4 Nikhil Verma

**Distribution in GHNPCA:** On the basis of discussion with the frontline staff of GHNPCA who were posted and involved earlier monitoring exercise population distribution map was prepared.



Range Map © <https://ebird.org>

**Monitoring Protocol:** Koklass pheasants have a secretive nature and tend to stay hidden in dense forests, making them tricky to spot directly. However, during their breeding season, male pheasants make distinctive and loud calls in the early morning. By counting these calls, we can get an estimate of how many pheasants are present in a particular area. This method gives us important information about their population. It also helps us understand where they like to live and how they behave during their mating time. This knowledge is really helpful for taking care of these birds and their habitat.



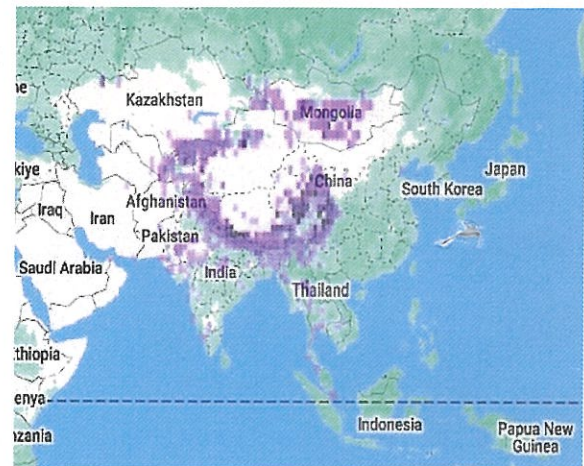
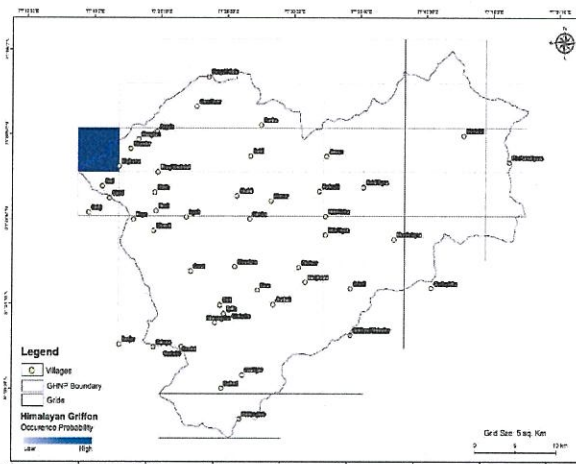
## (5) Himalayan Griffon (*Gyps himalayensis*)

This majestic bird of prey lives in open areas like plains, valleys, and mountains. It's a big scavenger that's quite common in most of its habitat. The adult bird is sandy brown and has a head without feathers that's light in color. When it flies, you can see black feathers at the tips of its wings, and it looks like it has a small head and squared wings. Often found alone or in small groups, but it can come together in big flocks when there's a dead animal to eat. It's a remarkable predator, adapting well to diverse landscapes. Its presence is especially prominent during the sacred practice of Tibetan sky burials, where it plays a crucial ecological role in recycling nutrients from the deceased. It is found in an altitude of 600-5000m in Himachal Pradesh.



Figure 5 Alex Bayly

**Distribution in GHNPCA:** On the basis of discussion with the frontline staff of GHNPCA who were posted and involved earlier monitoring exercise population distribution map was prepared.



Range Map © <https://ebird.org>

**Monitoring Protocol:** The Griffon vulture (*Gyps fulvus*) is a common year-round resident in the Great Himalayan National Park. It can be regularly seen in both subalpine and alpine zones, showcasing its adaptability to varying altitudes. Ranging from 600 to 5000 meters above sea level, the vulture's presence across such altitudes underscores its ability to thrive in diverse habitats. This distribution is likely driven by access to suitable food sources and nesting sites. The park plays a crucial role in providing a conducive environment for these vultures, contributing to the preservation of their population and the broader ecosystem.



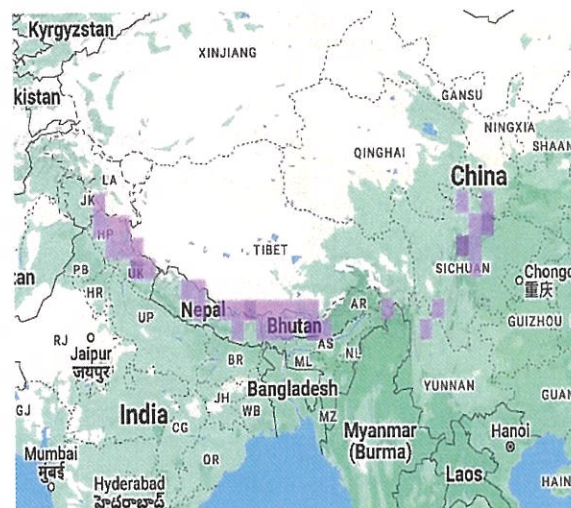
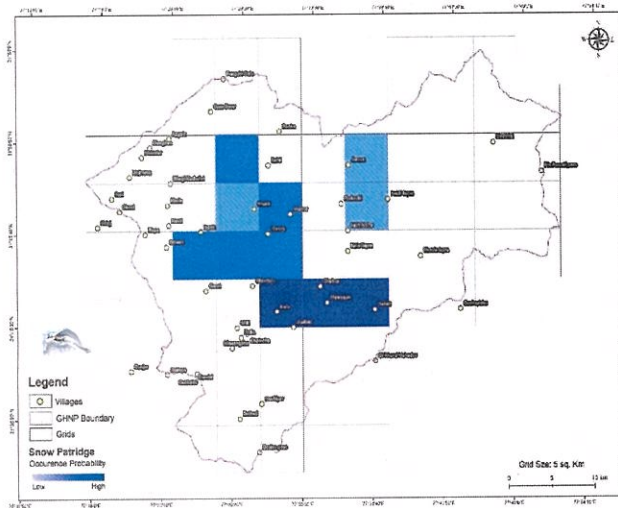
## (6) Snow Partridge (*Lerwa lerwa*)

This bird lives on rocky hills, mountain ridges, and high meadows where there are no trees. Grown-up ones have a gray and white speckled pattern on top, with lots of reddish streaks on their white tummies. They have a red beak and deep red legs. They usually search for food in small groups, even in very open places like cliffs and rocky edges. When they sing, many birds in the group might sing together. Their song is high-pitched and sounds slippery and squeaky, kind of like wet shoes on a tiled floor. The male's song is louder and goes up in pitch, while the female's is softer and goes down.



Figure 6 Saurabh Sawant

**Distribution in GHNPCA:** On the basis of discussion with the frontline staff of GHNPCA who were posted and involved earlier monitoring exercise population distribution map was prepared.



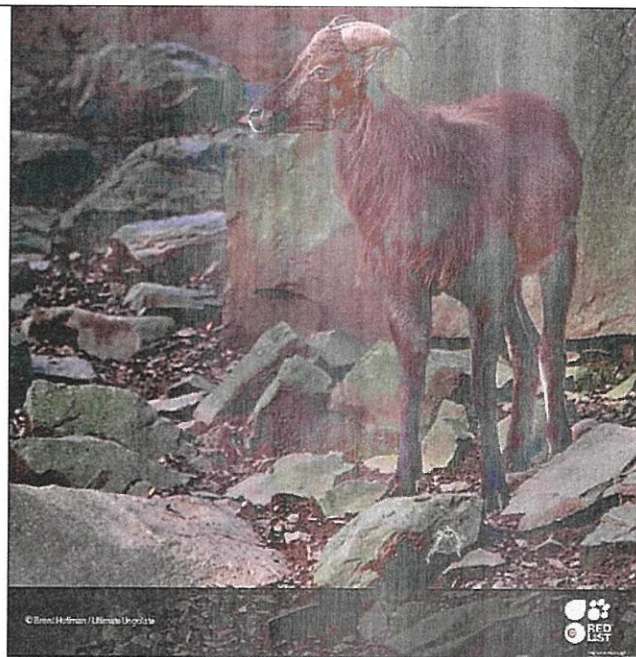
Range Map © <https://ebird.org>

**Monitoring Protocol:** Snow partridge groups thrive among rocky terrains beyond alpine meadows. Engaging in trail walks across alpine meadows and rocky habitats aids in assessing relative abundance, quantified through encounter rates. Additionally, implementing camera traps within alpine areas offers the potential to derive indices like photo-capture rates, enhancing abundance estimates. These monitoring approaches provide valuable insights into the distribution and population dynamics of this avian species crucial for conservation planning. Understanding their habitat preferences and behavior contributes to effective management strategies.



### (3) Himalayan Tahr (*Hemitragus jemlahicus*)

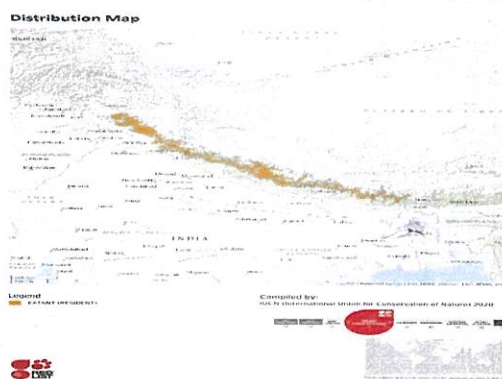
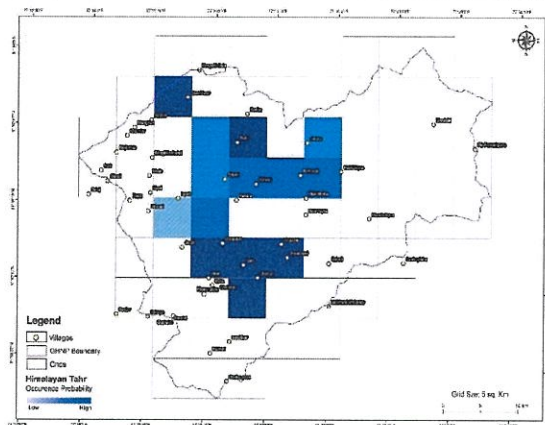
The Himalayan Tahr presents distinct sexual dimorphism in its appearance. While the males exhibit a deep copper-brown coloration resembling that of a mountain goat, the females and young males possess a lighter brown coat. One of the striking features of the male Tahr is its coarse and tangled mane, which extends over its neck and chest. Both genders of Tahr are characterized by relatively short horns that are closely spaced, laterally compressed, and adorned with wrinkles, featuring a pronounced sharp keel along the front edge. These herbivores are active during the daytime and tend to form groups of varying sizes, a pattern influenced by factors such as the ruggedness of their habitat, the availability of food, and the presence of predators. Their diet mainly consists of grass, herbs, and a selection of fruits, contributing to their adaptation to the Himalayan environment.



*Hemitragus jemlahicus*

© Brent Huffman / UltimateUngulate

**Distribution in GHNPCA:** On the basis of discussion with the frontline staff of GHNPCA who were posted and involved earlier monitoring exercise population distribution map was prepared



Range Map

**Monitoring Protocol:** In the Great Himalayan National Park, places like Gumtharao, Nara, Pari, Kamba, Patl, and Upper Jiwa are important for Himalayan Tahr. For monitoring of Tahr, Forest frontline staff can record presence of an individual Tahr. They can do this when they're out patrolling. This helps find out if there are changes in where the animals are and how many there are in different seasons and years. Because the Tahr likes to be in open areas on steep slopes or in the mountains where there's not much hiding, it's important to use scanning method to keep track of them.



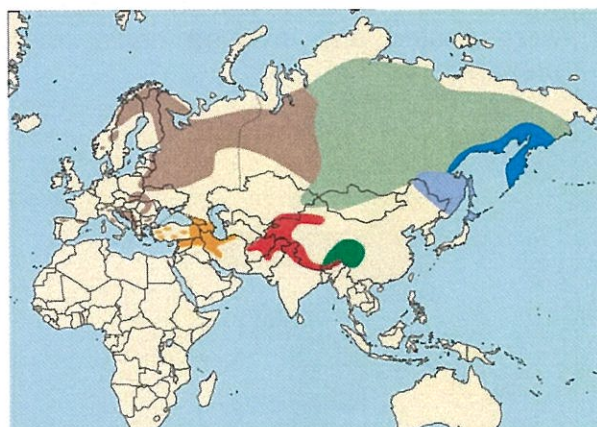
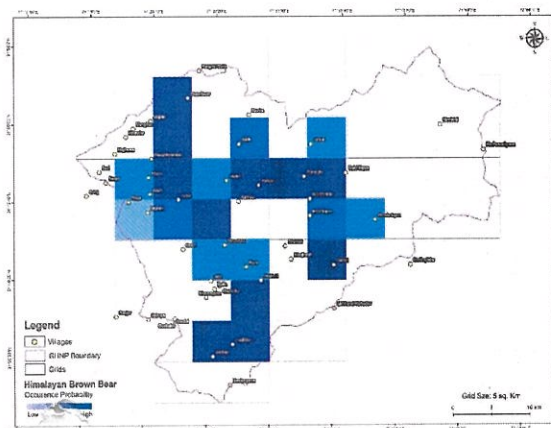
#### (4) Himalayan Brown Bear (*Ursus arctos*)

The Himalayan brown bear is the largest meat-eater that lives on land around the world. Its fur is thick and reddish-brown, and it doesn't have any special marks on its chest. This color stays the same, even when some adult bears get a new coat in the summer. The fur is shorter in warm months and longer in cold months. Unlike some bears that like to climb trees, the Himalayan brown bear prefers to stay on the ground. This helps it survive in the highlands above the trees. During the winter, it takes a long nap called hibernation to save energy until it's warmer outside.



© GHNPCHA

**Distribution in GHNPCHA:** On the basis of discussion with the frontline staff of GHNPCHA who were posted and involved earlier monitoring exercise population distribution map was prepared.



**Range Map**

©<http://www.bearconservation.org.uk/east-siberian-brown-bear/>

**Monitoring Protocol:** Himalayan brown bears (*Ursus arctos*) reported in the alpine meadows of Tirth, Della, Kamba, Rakti, Upper Jiwa, and Parvati regions, and their droppings frequently discovered there. To keep an eye on these bears, forest staff can apply the Encounter Rate method. This method depends on directly seeing the bears or finding indirect clues like groups of pellets and other signs, measured as a rate per kilometer or hour. Monitoring the presence or absence of bears, using Line Transect, and employing Camera Traps are other effective ways of keeping track of them.



## (5) Himalayan/Asiatic Black Bear (*Ursus thibetanus*)

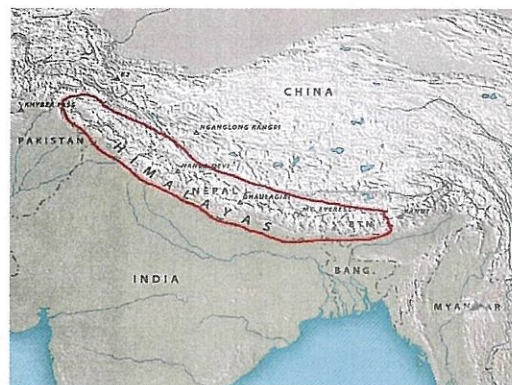
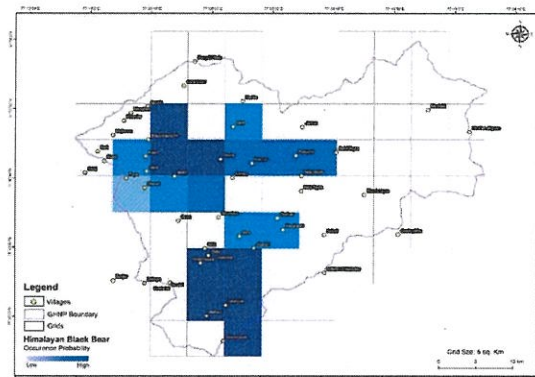
The Himalayan region is home to a big bear that lives in forests. It's sometimes called the Asiatic black bear or Moon bear because it has a creamy or white mark shaped like a crescent on its glossy black chest. Its black fur is shorter than that of another Indian black bear, the Sloth bear. The bear's face is shorter and tan-brown, with the brown color stopping below its eyes. The crescent chest mark goes all the way to its armpits, and its chin is white. The bear has longer hairs on its neck, maybe to protect itself from predators like tigers. It has noticeable powder-puff ears and a very short tail. Its feet are big with black pads, and it leaves the largest footprints among Indian bears. Its claws are curved and dark black, longer on the front paws than the back ones but not as long as those of the Brown and Sloth bears.



*Ursus thibetanus*

© Dave Garshelis

**Distribution in GHNPCA:** On the basis of discussion with the frontline staff of GHNPCA who were posted and involved earlier monitoring exercise population distribution map was prepared.



Range Map

©<http://www.bearconservation.org.uk/east-siberian-brown-bear/>

**Monitoring Protocol:** The Asiatic black bear (*Selenarctos thibetanus*) has been seen quite infrequently, usually at elevations between 1440 and 3660 meters in GHNPCA. However, signs like droppings, footprints, and marks from feeding have been found from the edges of villages to the high alpine areas. In many parts of Asia, estimates about bear populations have been made using the knowledge of experts, talking to locals, and observing signs. These methods are chosen because they're not expensive and are quite straightforward to use. Monitoring the presence or absence of bears, using Line Transect, and employing Camera Traps are other effective ways of keeping track of them.



## (6) Goral (*Naemorhedus goral*)

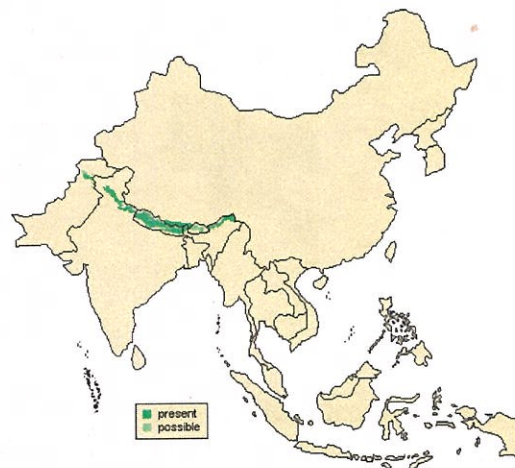
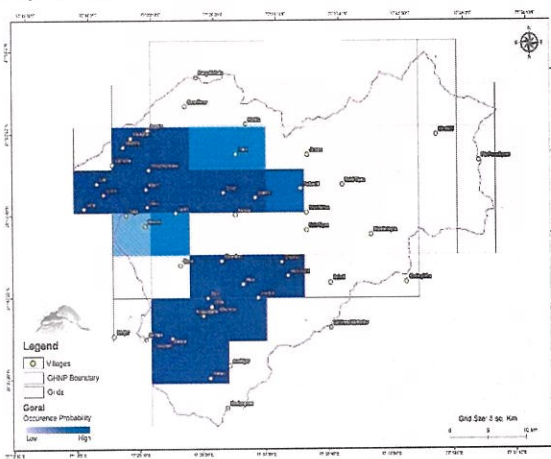
The Goral is a small animal that looks like a goat. In winter, its fur is shaggy and brownish-grey, while in summer, it becomes sleeker and greyish-brown. It has white patches on its throat and muzzle, short horns that point backward, and a dark stripe down its back. Its legs are brown with white spots above black hooves. These Himalayan gorals are medium-sized plant-eaters, the smallest among similar animals, about 1 meter long and desk-tall. They're strong and chubby, which helps them move around the uneven Himalayan land. Both males and females have short, sharp horns and are mostly grey or brown with a darker stripe on their backs and a lighter patch on their throats. Male gorals have a mane on their necks and chests. Unlike their close relatives, they don't have a special gland near their eyes.



*Naemorhedus goral*

© Brent Huffman / UltimateUngulate

**Distribution in GHNPCA:** On the basis of discussion with the frontline staff of GHNPCA who were posted and invloved earlier monitoring exercise population distribution map was prepared.



**Range Map** Compiled from Shackleton, 1997

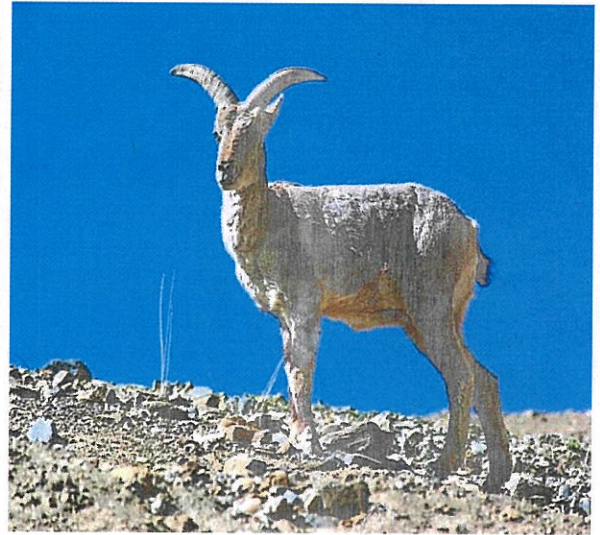
© [https://www.ultimateungulate.com/Artiodactyla/Moschus\\_chrysogaster.html](https://www.ultimateungulate.com/Artiodactyla/Moschus_chrysogaster.html)

**Monitoring Protocol:** The goral (*Nemorhaedus goral*) stands out as the most commonly spotted mammal in the area, adapting to a wide range of habitats from temperate to subalpine forests. Previous reports suggest that monitoring gorals can be effectively conducted using encounter rate methods such as direct sightings and scanning techniques. Among these approaches, the winter season, notably February, emerges as the optimal time for goral observation, yielding valuable insights into their behavior and population trends.



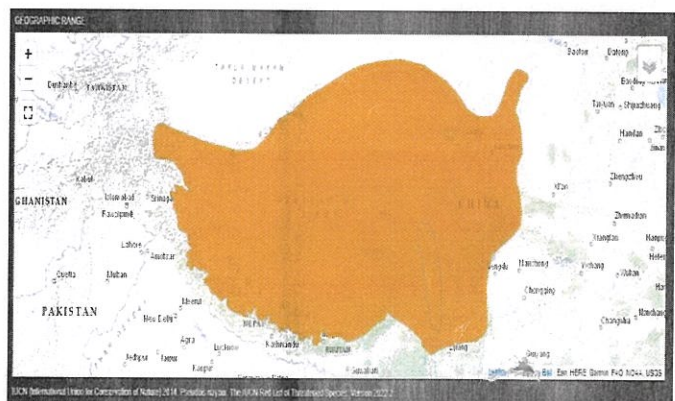
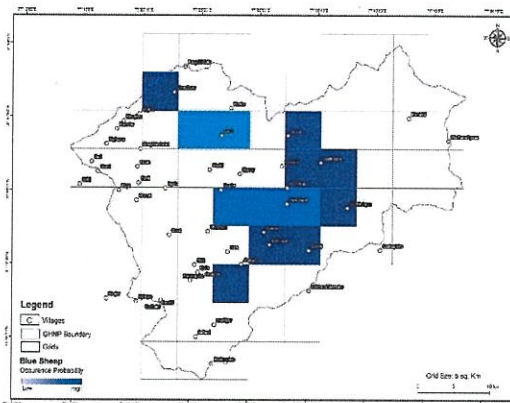
## (7) Blue Sheep (*Pseudois nayaur*)

The adult male Bharal, or Blue Sheep, features a slate blue coat that becomes more distinct in winter and shifts to reddish-brown in summer, especially in females and young, aiding camouflage. Adult rams in both areas possess distinctive dark markings on their necks. The noteworthy aspect of male Bharal is their unique curved horns that form a crescent shape. In contrast, smaller females have shorter, dull-colored horns that diverge outward. These Blue Sheep primarily inhabit open grassy slopes at elevations of 2,500 to 5,500 meters, near cliffs for safety, while avoiding forests. Their diet consists of lichens, herbaceous plants, and mosses. Female Blue Sheep give birth to one offspring at a time. They are active during the day and often found in sizable social groups.



©GHNPCA

**Distribution in GHNPCA:** On the basis of discussion with the frontline staff of GHNPCA who were posted and involved earlier monitoring exercise population distribution map was prepared.



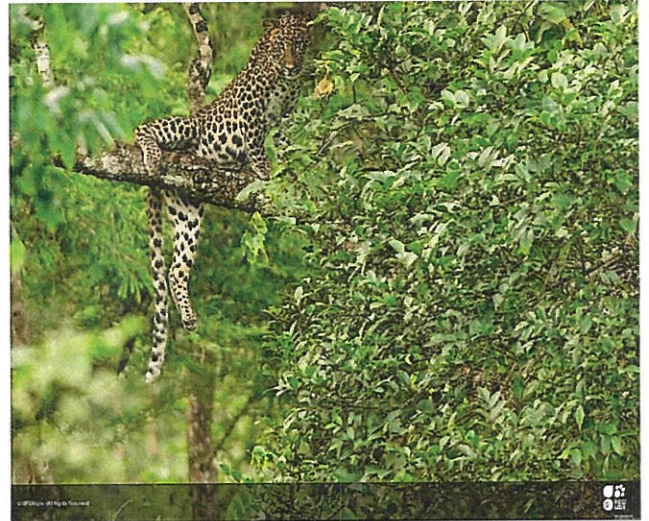
Range Map

**Monitoring Protocol:** The habitat of the Blue Sheep, encompasses temperate and subalpine forests with steep landscapes, characterized by grass cover and slopes with oak and bamboo forests. In the Greater Himalayas, these sheep are found on forested southern slopes, ranging from 1550 to 5300 meters above sea level, with a preference for higher altitudes between 2000 and 4400 meters. Occasional sightings of Blue Sheep have been noted in the alpine meadows of the Tirthan area. For monitoring Blue Sheep, the Scanning method is employed during the period from mid-September to mid-October, with early morning and evening hours being the optimal times to observe these animals.



## (8) Common Leopard (*Panthera pardus*)

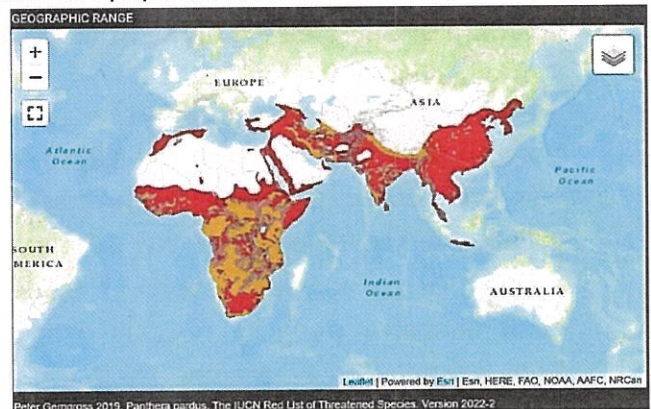
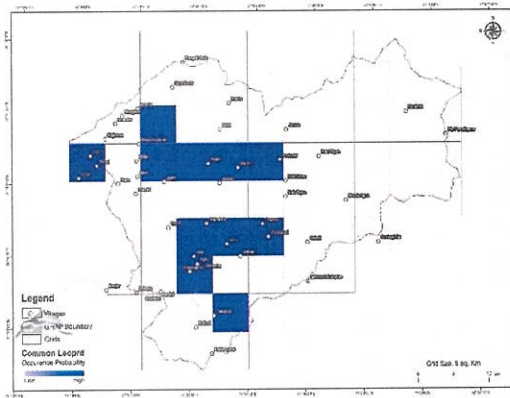
The leopard, a versatile cat in the Indian subcontinent, has a yellow coat with black rosettes. Its coat has pale tawny to yellow, red, or grey colors on the upper body, contrasting with white underparts and spotted patterns. With black rosettes along its sides and solid spots on legs and tail, it usually has four black stripes on its forehead, extending to shorter bands and elongated spots on its shoulders. Emitting a unique "sawing" call, it roams the Indian jungle and Himalayas at night, coexisting with tigers by hunting smaller prey and climbing trees. The relatively small head features a short muzzle, white chin, and black cheek stripes, with deep golden brown to grayish irises and elongated, rounded black-and-white ears. The spotted tail ends with indistinct rings near its buff tip.



*Panthera pardus*

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**Distribution in GHNPCA:** On the basis of discussion with the frontline staff of GHNPCA who were posted and involved earlier monitoring exercise population distribution map was prepared.



Range Map

**Monitoring Protocol:** Common leopards (*Panthera pardus*) have been recorded at altitudes ranging from 1440 to 3660 meters in GHNPCA. However, evidence of their presence, including scats, footprints, and signs of feeding, has been documented across a spectrum of habitats, extending from village perimeters to the alpine zone. Line Transect is the recommended method for systematic monitoring of Common Leopard. February is the best month for this exercise.

## **Project Objective/Activity- II**

### **Establishment of Central Data Collection at Shamshi**

The establishment of a Central Data Collection Centre at the Forest Department Office in Shamshi was intended to train frontline staff for field data collection. However, the project faced significant challenges due to the COVID-19 pandemic. Health and safety concerns, travel restrictions, and lockdowns delayed the gathering of staff for training and subsequent data collection. Additionally, resource constraints and disruptions in regular workflows impacted the proposed activity. The shift to remote work made it difficult to conduct effective training and maintain collaborative learning. Unforeseen delays and uncertainties about the duration of the pandemic further complicated the project's timeline. As a practical solution, analysis and GIS work were conducted remotely at an alternative location, WII-C2C, to ensure ongoing progress. These challenges collectively led to the partial completion of the proposed activity, highlighting the need to prioritize safety and adapt to the unprecedented circumstances posed by the pandemic.

## **Project Objective/Activities- III**

### **Training of Selected Frontline Staff to Collect OUV related data from the field**

As a part of the project proposal, a crucial component involved the training of selected frontline staff from the Great Himalayan National Park Conservation Area (GHNPCA) to effectively collect Outstanding Universal Value (OUV) related data from the field. This initiative aimed to enhance the understanding of the park's unique attributes and to support its conservation efforts. The training was successfully conducted through a comprehensive Capacity Building Program held on two separate occasions: 18-19 February and 23-24 December 2021.

During these training sessions, the frontline staff received specialized instruction and practical guidance on data collection techniques to capture the park's OUV. The training encompassed various aspects, including ecological surveys, habitat assessment, wildlife monitoring, and other relevant field methodologies. By preparing the staff with these skills, the program aimed to ensure accurate and consistent data collection, forming a foundation for informed decision-making and targeted conservation strategies.

As a result of the training program, the engaged frontline staff members played a pivotal role in the data acquisition process. They effectively collected essential information from the field, ranging from biodiversity assessments to environmental conditions, contributing valuable insights into GHNPCA's distinctive attributes. The data collected by the staff



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served as a fundamental resource for subsequent Geographic Information System (GIS) work.

In a notable outcome, the trained staff, utilizing their newfound skills, actively participated in the creation of Species Occupancy Maps. These maps offered a comprehensive visual representation of species distribution and occupancy patterns within the park. Such data-rich visualizations facilitated a deeper understanding of the ecological dynamics and helped identify key areas of conservation concern.

Overall, the training initiative not only empowered the frontline staff with essential field skills but also fostered a collaborative approach to data collection and analysis. By incorporating the firsthand knowledge of these staff members, the park management gained a more holistic perspective on GHNPCA's OUV, contributing to more effective conservation planning and management strategies. This successful endeavor stands as a testament to the importance of targeted capacity building programs in promoting sustainable conservation efforts within protected areas.

#### **Consultation Workshop for Developing Long-term Monitoring of Outstanding Universal Values (OUVs) of Great Himalayan National Park, (GHNPCA), Kullu, (HP)- 18-19 February 2021**

To accomplish the project activities a two days consultation workshop was organized during 18<sup>th</sup> -19<sup>th</sup> February, 2021 at Great Himalayan National Park, Sairopa Kullu (HP). The objective of the consultation workshop was to understand the key attributes representing the OUVs from the Frontline staff of GHNP and develop strategic protocol for baseline information generation and long-term monitoring of important floral and faunal taxa in GHNPCA. About 15 frontline staff including forest guard, foresters, rangers were present in the workshop (list enclosed annexure -II). Sh. Ajit Thakur, Director, GHNPCA and Sh Sachin Sharma, DFO GHNPCA also participated and provided valuable inputs during the workshop.



The workshop was inaugurated by Shri Ajit Thakur, Director, GHNPCA. He welcomed WII-C2C team. In his opening remarks he emphasized the importance of Outstanding Universal Values (OUVs) of GHNPCA and discussed importance of proper monitoring of OUVs. He mentioned how previous long-term monitoring done in GHNPCA.

Dr. V.P. Uniyal, Scientist – G, Wildlife Institute of India, in his opening remarks shared about the biodiversity rich, and well managed protected area of GHNP. He later spoke in detail about his experience of the first ever multi-disciplinary research work on baseline information on the Park's biodiversity and ecosystem services, along with status of local communities, carried out by WII in 1994 – 1999, under the World Bank's Part of Forestry Education and Extension Project (FREE-GHNP). Reviewing the present monitoring strategy of key faunal species, he stressed on the need to include long-term monitoring of important floral and invertebrate species in the Park.

Dr. Bhumesh Singh Bhadouria, Technical Officer, WII-C2C, introduced the concepts of World Heritage, its global and local perspectives and its importance. He explained in detail about the Monitoring and Reporting framework for World Heritage Sites, with special reference to Great Himalayan National Park Conservation Area. He also focused on the initiatives of the Wildlife Institute of India in the areas of 'Natural World Heritage'. He congratulated the leadership and frontline staff for being very proactive in conservation and management strategies, which this is demonstrated by the MoEFCC and Management Effectiveness Evaluation Report (2018-19), which placed the Great Himalayan National Park and Tirthan Wildlife Sanctuary in the "Very Good" category, with the highest score.

Ms. Pallabi Chakraborty, World Heritage Assistant, WII-C2C, gave the overview of the Outstanding Universal Value (OUV) of GHNPCA World Heritage Site. She explained that to be deemed of OUV, a property must meet one or more of the listed criteria, must meet the condition of integrity, and must have adequate protection and management system to ensure its safeguarding. She shared that the GHNPCA continues to have its OUV intact (in terms of population of floral and faunal species, habitat, and protection and management) and has been placed in the category of "Good with Some Concerns", which implies that while some concerns exist, with minor additional conservation measures the site's values are likely to be essentially maintained in the long term, by IUCN's World Heritage Outlook Assessment (2020).

### **Consultation with Forest officials**

An interaction session with the forest staff was held on the status and trend of the population of key floral and faunal species found in the Site. This formed the basis of a



more detailed discussion and analysis of the OUV and its long-term monitoring strategy to be developed and implemented. As per the consultation and their understanding from field visits, the Snow Leopard (*Panthera uncia*), Himalayan Musk Deer (*Moschus leucogaster*), Goral (*Naemorhedus goral*) and Himalayan Black Bear (*Ursus thibetanus*) populations are stable with minor increase in Common leopard conflict in eco-sensitive zones. Himalayan Brown Bears hunt livestock only when the locals take them to high altitude for grazing. With high degree of consensus, it was informed that the OUVs (in terms of population, habitat and protection) are essentially intact, and their overall condition is stable or improving. On the other hand, threatened avifauna viz., Western Tragopan (*Tragopan melanocephalus*), Snow Partridge (*Lewrallia*), Cheer Pheasant (*Catreus wallichii*), and Himalayan Monal (*Lophophorus impejanus*) status was reported to be good since habitat is intact and very low level of disturbance occur in the core zone of GHNP. However, Snow Partridge population was not assessed in previous years, since the terrain is difficult and there is shortage of man power in the forest department to carry out survey in larger area. Henceforth, it is highly recommended to focus study on the status and habitat association of this species. Since, this species can be one of the good examples to carry forward work on the impact of climate change in the upper Himalayas. Subsequently, gridded occupancy maps were created for the key species on the basis of AOK (area of knowledge) of the forest front-line staff (see Annexure- 1). These maps can help in prioritizing sites for the long-term monitoring for the species of interest. However, the forest officials have very limited knowledge on the occurrence of species in the eastern part of GHNP.

There was a consensus that faunal species have spread to additional areas in GHNP over the last 30 years. *Taxus baccata* distribution is also spreading since logging and other human disturbance has decreased leading to better forest cover. Red Jungle Fowl (*Gallus gallus*) has reached the higher elevation areas of the Park indicating large expansion. Subsequently, it was also reported that the plant species like *Rhododendron campanulatum* (Semru), *Rhododendron arboreum* (Buransh), *Quercus semecarpifolia* (Oak, Kharshu), *Quercus leucotrichophora* (Oak, Banjha) were stable and particular increase Oak species has been observed in the eco-sensitive zones due to successful plantation programmes. Invasion of *Parthenium* sp. inside the eco-zone is a matter of concern.

#### **Orientation Programme: Long Term Monitoring of OUVs of Great Himalayan National Park Conservation Area. Date 22-23 December, 2021**

On the basis of the outcomes of the previous workshop organised during 18-19 February, 2021, a two days training programme for the frontline staff of GHNP

organised on 22-23 December, 2021 at GHNPCA Kullu. The workshop was intended to provide specific training for identification and data collection of selected faunal species.

The workshop was inaugurated by Sh. Meera Sharma, Director, Great Himalayan National Park Conservation Area. In the Inaugural speech, she emphasised the importance of GHNPCA and its Outstanding Universal Values (OUVs) and need of training programme which can build capacity of the frontline staff. She urged participants to learn field techniques whereby data from the field may be collected systematically.

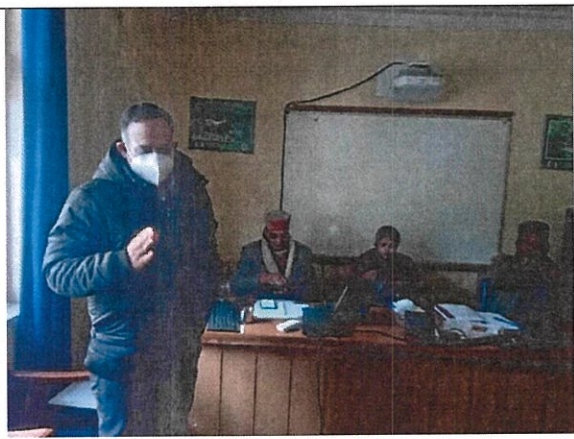
Dr VP Uniyal, Scientist G provided the background of the project and shared his previous experience of long term monitoring project conducted and report submitted in the year 1999. He discussed the importance of GHNPCA and its OUVs. Dr Uniyal provided input on the selected flora and fauna of GHNPCA which required continuous monitoring.

Sh Nishant Mandhotra, Divisional Forest Officer, GHNPCA also provided his valuable inputs during the workshop. He urged participants to learn and use data collection technique in their daily routine work.

Dr Bhumes Singh Bhadouria, Technical officer, WII-C2C provided brief overview of the workshop. He mentioned overall project objectives and workshop objective. Before starting the workshop he provided recap of the previous workshop which was organized in the month of February, 2021.

Dr Anukul Nath, Assistant Technical Officer, WII-C2C conducted a detailed discussion with the forest front-line staff about monitoring methods for OUVs (specifically for selected mammals and birds) in the Great Himalayan National Park. A detailed session dedicated to data collection procedure, sampling technique in mountain ecosystem was discussed. ✓ Sampling technique – sign survey, point count, scanning method, line transect, double observer sampling, camera trap technique, call counts for pheasant was discussed and on field practice sessions were carried out. Besides, a detailed planning was done at beat level to maximize sampling effort. Next day he conducted field training and explained data collection on the ground and clarified basic questions during the data collection process. At the end, He explained in detail to analyse data collected from the field.







Values (OUVs) of GHNPCA. With the new skills acquired, the trained staff can contribute to a more informed understanding of the park's ecological dynamics, aiding in the effective conservation and management of its unique attributes.







भारतीय वन्यजीव संस्थान  
Wildlife Institute of India



GREAT HIMALAYAN NATIONAL PARK  
ग्रेट हिमालयन नैशनल पार्क



Training Programme for the Frontline Staff of Great Himalayan National Park Conservation Area Under Long Term Monitoring of OUVs Project

Date 10-12 August, 2022

Venue: WII-Category 2 Centre Dehradun

S. No.	Name	Designation	Contact Details	Signature
1.	Kavinder Kumar	Senior Forest Guard	98172-13432	Kavinder
2.	Usha Devi	Senior Forest Guard	7018093107	Usha
3.	KHILA DEVI	Forest Guard	8278841845	Khila
4.	GOVIND SINGH	Eco-Tourism Facilitator	70180-94494	Govind
5.	MUNISH RANGRA	ACF GHNHP	9857757676	Munish
6.	GEHRU RAM	Forest Guard	98165-15601	Gehru
7.	Vijender Kumar	Forest Guard	9857304407	Vijender
8.	VIRENDER SINGH	Forest Guard	85807-25509	Virender
9.	Bintu	Forest Guard	98051-51859	Bintu
10.	Om Prakash	Fgd. GHNHP	94599-94688	Om Prakash
11.	Purvender Singh	Fgd	9805505001	Purvender

## **Project Objective/Activities- IV**

**Capacity building training programmes for target audiences, i.e., local community, and frontline staff of GHNPCA will be organised by UNESCO C2C-WII in the field**

The capacity-building training program held as part of the project had a specific objective: to engage and educate the local community and frontline staff of the Great Himalayan National Park Conservation Area (GHNPCA) through collaborative efforts by UNESCO C2C-WII in the field. This training initiative sought to foster a deeper understanding of GHNPCA's status as a World Heritage Site and to empower the local community with knowledge about its Outstanding Universal Value (OUV). The capacity-building workshop for the local community took place on March 27-28, 2023, and actively involved around 27 participants, including members of a ladies' self-help group.

During the training, a primary focus was to sensitize the local community about the significance of the Great Himalayan National Park as a designated World Heritage Site. The participants were provided with comprehensive information about the park's unique attributes that contribute to its global importance. This knowledge was coupled with an explanation of the concept of Outstanding Universal Value, detailing how the park's exceptional features hold value not only locally but also on a global scale.

Crucially, the training program shed light on the reciprocal relationship between the World Heritage Site designation and the socioeconomic well-being of the local community. The participants were educated about the positive impacts that the World Heritage status could have on their livelihoods and the region's economy. By understanding the value of preserving the park's exceptional features, the local community could appreciate the potential for sustainable tourism, cultural preservation, and improved quality of life.

Furthermore, the training emphasized the pivotal role that the local community plays in the management and conservation of the World Heritage Site. Participants were provided insights into their responsibilities and contributions to safeguarding the park's integrity, ecological balance, and cultural heritage. The active involvement of the local community was highlighted as a key element in maintaining the park's Outstanding Universal Value and ensuring its sustainability for future generations.

Overall, the capacity-building training program served to empower the local community with valuable knowledge about their integral role in the management and preservation of the Great Himalayan National Park as a World Heritage Site. By enhancing their understanding of the park's significance, the local community can actively engage in its



conservation efforts, promote responsible tourism, and contribute to the broader goals of sustainable development. This collaborative approach aligns with the principles of the World Heritage Convention, where local communities are recognized as essential partners in the protection and management of exceptional natural and cultural sites.





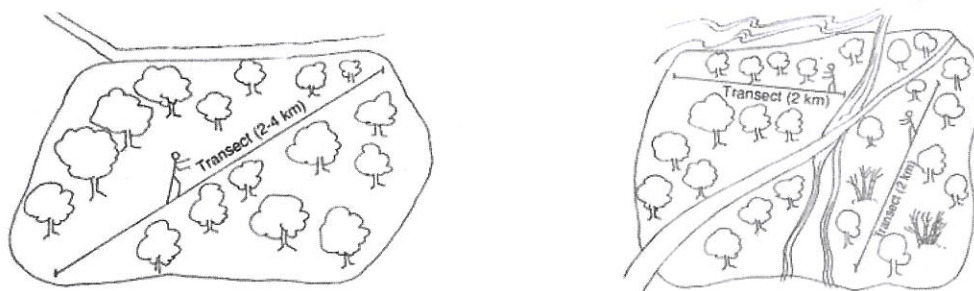
### Encounter Rate Method:

This protocol outlines a simple method for quantifying ungulate/mammals abundance in an area based on visual encounters while walking along fixed line transects. The following procedure needs to be followed for data collection:

- A beat would be considered as the unit for sampling.
- After considering the shape, size, vegetation, and terrain type of the beat, a transect line of a minimum of 2km and not exceeding 4 km will be marked for sampling.
- The transect line should traverse similar habitat (broad vegetation types) as far as possible. If the beat is composed of 2 or 3 distinct vegetation types then 2 separate line transects should be marked for sampling as shown in Figure b.

**Figure Marking transects in a beat.**

(a) Line transects in a beat with similar habitat (b) Line transect in a beat with 2 habitat types.



- As shown in Figure b, the line transect within a beat may be broken up in 2 or more segments so that each segment has a minimum length of 2km and traverses similar habitat.
- Care should be taken that a line transect is not located near a busy road nor should it run parallel to a river or other features of the landscape which may bias sighting of ungulates.
- For each transect the beginning and end point coordinates (Latitude and Longitude) should be recorded by a global positioning system (GPS) receiver
- The broad forest type and terrain type that the transect traverses needs to be recorded.
- Each transect should be walked by 1-2 persons during the early morning hours (6:30 am to 8:30 am). Preferably one of the persons walking should be a good field person who is able to spot wildlife.
- A record should be kept of all herbivores (and other listed wildlife) seen during the walk in the prescribed format (see data sheet). For each animal sighting the following needs to be recorded: 1) sighting no, 2) time of the sighting, 3) species , 4) group size – number of animals of the same species in the group sighted, it is



important to try to count the number of animals in the group as accurately as possible. Animals are considered to belong to two different groups if the closest animals from the two groups are separated by a distance of over 30m, and 5) forest and terrain type where the animals were seen.

- If possible the number of young (fawns/calves less than 1 year of age) seen in the group should also be recorded.
- A broad habitat category (vegetation and terrain type) needs to be recorded for each sighting eg. 12 Bharal (10 adults and 2 young) were seen at 6:40 am, in mixed teak forest, gently undulating terrain.
- Each line transect needs to be walked at least on three different mornings for estimating ungulate encounter rates during the country wide monitoring done every four years.
- For intensive monitoring of source populations (Tiger Reserves and Protected Areas) the line transects should be walked a minimum of eight times in summer and in winter

**DATA SHEET - Encounter Rate on Line Transects**

Observer Name: ..... Start time: .....  
 Date: ..... End time: .....  
 ID no. of line transect: ..... Total length: ..... km Forest  
 division: .....  
 Range : ..... Beat: .....  
 Transect forest type: ..... Transect terrain type : .....  
 Weather condition: Cloudy/Clear sky/Rain  
 Beginning GPS Lat: ..... N; Long: ..... E  
 End GPS Lat : ..... N; Long: ..... E S

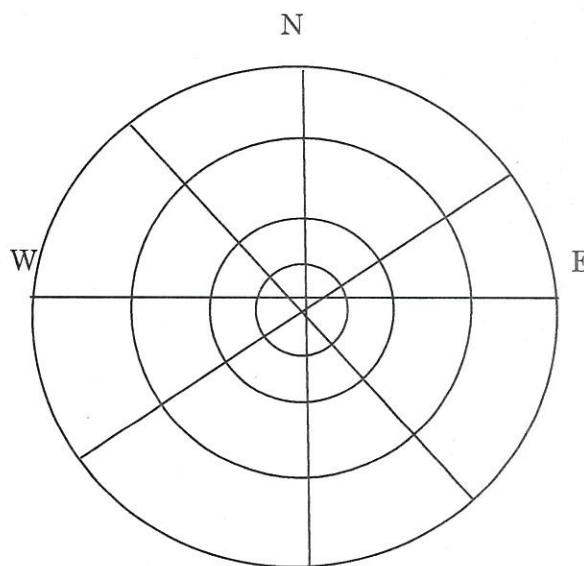
Sighting No	Time	Species	Total Nos. (Adults & Young)	Young	Forest Type	Remarks	Remarks

Species selected for monitoring

\* Sampling for Ungulate/Mammals Encounter Rates: Adopted from "Field guide Monitoring Tigers, Co-Predators, Prey and their Habitats", National Tiger conservation Authority, New Delhi, & Wildlife Institute of India , Dehradun Technical Publication- 2009

## Appendix-II

### DATA SHEET – Call Count Census



Bird Species	Calling Time1	Calling Time2	Calling Time3	Calling Time4	Min Calling Time	Max Calling Time
1						
2						

Date:..... Observer Name: .....

Location:..... Site/Point No: .....

Starting Time:..... End Time: .....

Starting Time Temperature:..... End Time Temperature:.....

Time of Sunrise:..... Air Velocity:.....

Weather: Cloudy/Rainy/Windy

Time of First Call:.....

Time of Last Call:.....

Altitude:.....



Appendix-III

Scanning Method:

The Scanning Method is a wildlife monitoring technique that involves carefully observing animals in their habitats using binoculars and/or spotting scopes from an advantageous position. This method provides a systematic way to count and gather information about the fauna present in a specific area.

During the survey, the observer chooses a vantage point that offers a good view of the target habitat. They then scan the area thoroughly, focusing on locating and identifying animals. The results of this method are typically expressed as the number of animals observed per hour of scanning. By estimating the area covered during scanning, it becomes possible to calculate the true density of animals in that habitat.

Besides the total count of animals, this technique allows for additional data collection. Information about group size, the composition of groups (like the presence of young or adults), and the ratio of males to females can also be recorded. These details provide a more comprehensive understanding of the animal community within the habitat.

However, the success of the Scanning Method can be influenced by external factors. Weather conditions, such as rain or fog, and visibility play significant roles in the accuracy of observations. As a result, the technique is generally less effective during the monsoon period when weather conditions are unfavorable.

The Scanning Method offers a structured approach to gather important information about animal populations and their behavior. It provides valuable insights into animal density and characteristics, helping researchers and conservationists make informed decisions about habitat management and wildlife preservation.

Scanning Method of Monitoring of Fauna - Data Sheet	
Location:.....	Date: .....
Observer: .....	Time: .....
Habitat Type:.....	Weather:.....
Vantage Point:.....	Visibility:.....
Scan Area (m <sup>2</sup> ): .....	Animals Seen:.....
Scanning Duration (hours):.....	
Composition (Male/Female):.....	

\*\*\*

