



NANDA DEVI NATIONAL PARK & VALLEY OF FLOWERS NATIONAL PARK

A WORLD HERITAGE SITE NATURAL

PREFACE

Nanda Devi National Park & Valley of Flowers National Park

Garhwal, Uttarakhand
India

A World Heritage Site
Natural



United Nations
Educational, Scientific and
Cultural Organization



World
Heritage
Convention

PREFACE

UNESCO defines the movement to preserve the cultural and natural heritage sites as “our legacy from the past, what we live with today, and what we pass on to future generations. Our cultural and natural heritage are both irreplaceable sources of life and inspiration. What makes the concept of World Heritage exceptional is its universal application. World Heritage sites belong to all the people of the world, irrespective of the territory on which they are located.”

The above thoughts shared by UNESCO are today emerging as one of the key guiding principles world over in preserving natural places like Nanda Devi and Valley of Flowers. Due to the protected status these places have been able to withstand the onslaught of deforestation combined with unplanned development. But the new threat of Climate Change may undo a lot of good work done over the years.

This book has been prepared to help the reader appreciate the unique outstanding universal value of this pristine landscape. The number of plants and animals given may be more than have been mentioned. This is primarily due to access to the park is very limited and survey which are done deep in the reserve are only done once in 10 years. The information given is based on those surveys. The current survey due in 2013 could not be completed due to Floods and disasters in the region and may be conducted in 2015.

The park has a deep cultural, social and economic significance for the communities living around it. They have preserved it for



centuries and we wish their good work carries on for future generations to appreciate.

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**NANDA DEVI NATIONAL PARK
&
VALLEY OF FLOWERS NATIONAL PARK**

INTRODUCTION



Nanda Devi is omnipresent in Western Himalayas, physically and metaphysically. In fact, Nanda Devi mountain peak is considered the physical manifestation of the Goddess Nanda Devi. Thus, she is in the prayers of her worshipers as an all powerful yet merciful goddess and also in the stories of the mountaineers, who consider her peerless in beauty. The naturalists, botanists and geologists find her bountiful and yet intriguing. When in 1988, the Nanda Devi National Park, which is part of the larger Nanda Devi Biosphere Reserve (NDBR), was given the status of UNESCO World Heritage Site, it was another diamond in Nanda Devi's bejeweled crown. Then in 2005, the Valley of Flowers (long enjoying world-wide fame

as a botanist's and nature's paradise), which is also part of the NDBR, got its share of limelight by inclusion in the UNESCO world heritage list, Nanda Devi's fame became even more radiant.

The Nanda Devi NP and Valley of Flowers NP, together hold immense environmental, economic and social value for the humankind. Despite all this fame and religious value, Nanda Devi National Park, spread on an area of 624.62 square kilometres, remains dauntingly unapproachable. The reasons for this are natural and administrative, both. Still it continues to attract people from multitudinous backgrounds.

The Valley of Flowers National Park, which is a treasure trove of 87.5 kilometres, holding more than three hundred varieties of flowers and herbs in their pristine setting, is easily accessible.

The NDBR is a larger area spread over 5860.69 square kilometers and holds the two world heritage sites of Nanda Devi National Park and Valley of Flowers National Park. NDBR was established by Government of India in January 18, 1988, under the UNSECO's 'Man and Biosphere Reserve Project' and with the agreement of State Government of the erstwhile state of Uttar Pradesh. The NDBR has a designated core zone of 712.12 square kilometres (made up of Nanda Devi NP and Valley of Flowers NP) and a buffer zone of 5148.57 square kilometres.

Since 1983, the Nanda Devi NP has been closed for all human activities. An assessment of the status of flora and fauna, called 'scientific and ecological expedition of Nanda Devi NP' is made every decade, with the first being done in 1993, by a mixed team of scientists, environmentalists and forest officers, supported by men from Indian paramilitary. The second such expedition termed as the 'Biodiversity monitoring expedition to Nanda Devi' took place a decade later in 2003. The aim was to assess and evaluate the status of flora, fauna, condition of animal habitats, in fact the overall changes in flora and fauna over a period of two decades. The expedition also conducted base line surveys for ecology and geology. That is the time since when the NP's access was closed to humans.

Nanda Devi NP continues to enjoy the status of being one of the least disturbed and most protected areas in Himalayas.

GEOGRAPHIC LOCATION



The Nanda Devi Peak region is very special in its geographical location. It lies within the bio geographical transition zone between the Western Himalayas and the Eastern Himalayas. Located in the Garhwal region of Indian highland State of Uttarakhand, Nanda Devi region is blessed with unique flora, fauna and geology.

The area is bounded by sort of castle walls where outposts are a number of plus 6300 metre high peaks, which seem to guard this circle. This natural defence of Nanda Devi peak, is made up of high ridges with peaks such as Dunagiri (7066m), Kalanka (6931m), Rishi Parvat (6992m), Nanda Devi East (7434m) and

Nanda Khat (6631m). At the west of the Nanda Devi group are the peaks of Badrinath-Kedarnath group.

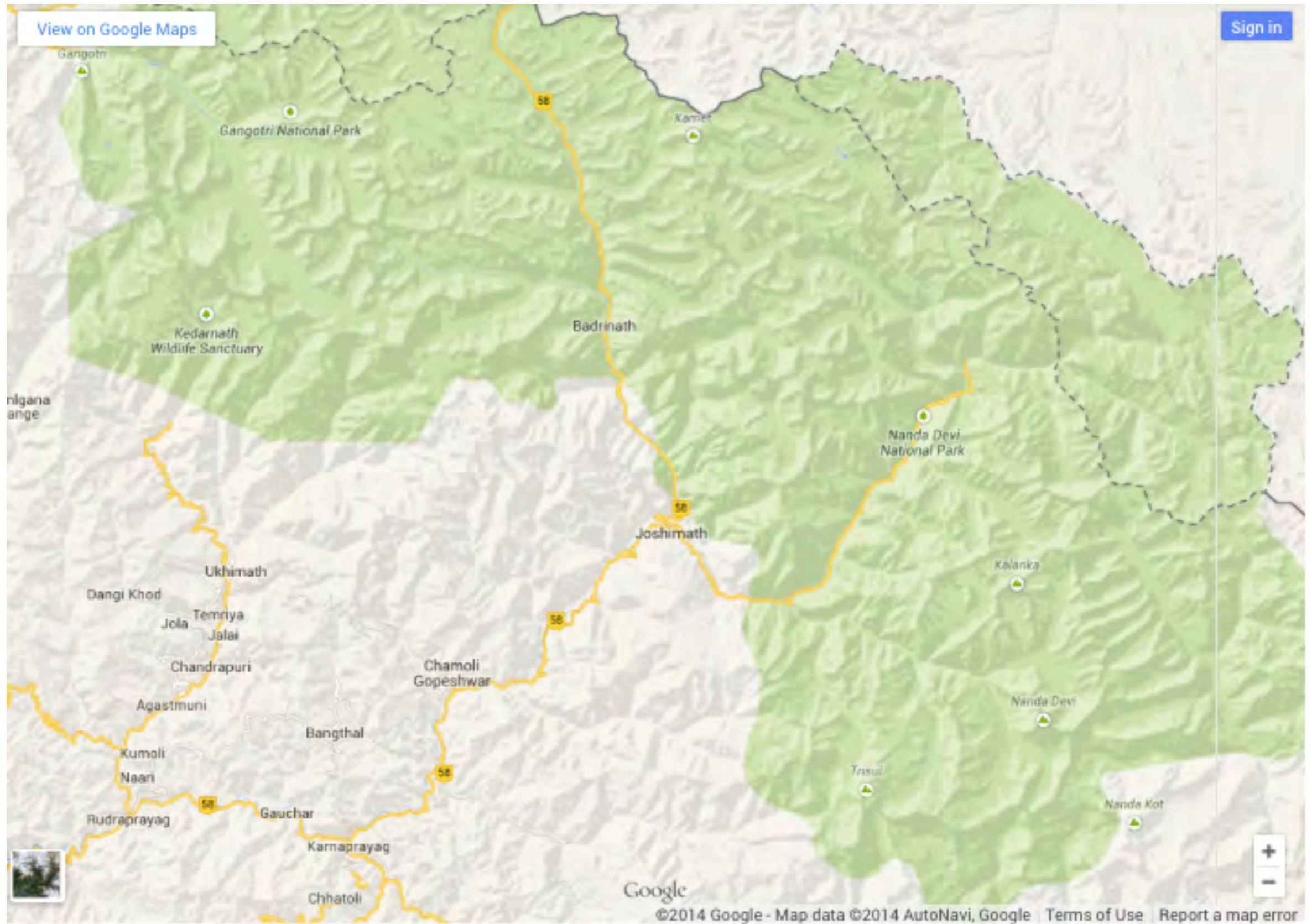
In the middle of this almost un-surmountable circle stands the 7817 metre high peak of Nanda Devi. It is this geographic features enabled human inaccessibility which gives Nanda Devi area its distinct identity. This whole area is drained by the Rishi Ganga river, which while passing through the Nanda Devi NP, goes through some of the steepest river gorges in the world. In fact, the first successful mountaineering expedition to Nanda Devi peak used the Rishi Ganga river gorge as the access point to the peak.

Valley of Flowers

British mountaineer, Frank Smythe is credited for the discovery of the Valley of Flowers. He is believed to have stumbled upon it while returning from an expedition from Mount Kamet. After seeing the U shaped 'hanging valley,' Smythe wrote "In all my mountain wanderings, I have never seen a more beautiful valley where the human spirit may find repose." The Valley of Flowers, with its buffer zone, is located in the Chamoli District of the Indian state of Uttarkhand.

The valley has high mountain meadows, is framed by 6000 m plus, all year round snow covered peaks, with their glistening glaciers. One can see the NilgriParvat (6407m), GauriParvat (6590m), Rataban (5400m), SaptaSringa (5025m) and KuntKhal (5855m) all around while standing among flower beds at the floor of the valley. In the Valley of Flowers NP, 529 hectares are under forests, 1863 hectares constitute alpine pastures and a significant 6,358 hectares is estimated to be under permanent snow. The river Pushpawati finds its origin in the Tipra glacier in the valley itself and makes its progress through the park, before joining river Bhyundar and finally meeting Alaknanda at Gobindghat.

The valley holds in its treasure trove 300 plus species of plants and flowers, some of which are endemic and grow in small restricted areas only.



Please click if you are online to access the google map.

FAUNA IN THE NATIONAL PARKS



A. The reign of snow leopard - If Nanda Devi is the spiritual master of the Nanda Devi National Park, the regal and elusive, snow leopard (*Uncia uncia*), is the reigning emperor of the Nanda Devi NP. Previously classified in the genus *Panthera*, it has now been placed in its own genus *Uncia*. It reigns supreme in the high mountains of Central Asia and is found up to the height ranging from 2000m (winters) to 5,550m (summers). Snow leopard, is by far the most exotic and rarest wild animal to live in this part of the earth. The regional folklore abounds with many a tales attributed to the shadowy, ghostly and mysterious presence of snow leopard. The forest rangers have their own share of anecdotes about the

feline that has chosen the upper reaches of Himalayas as its abode. These folklore and stories often attribute supernatural powers to the snow leopard. Few have seen it and in fact, its numbers are not known with any degree of certainty but everybody who has anything to do with the NDNP is convinced of its presence here. The forest rangers have installed trap cameras to get the prized glimpse of the snow leopard. These efforts seldom succeed.

Though, both the 1993 and 2003 state sponsored surveys to the Nanda Devi NP confirmed the presence of snow leopard in the

National Park, the exact number of them living here could not be fathomed. The snow leopard is smaller than the leopard of the plains (*PantheraPardus*). It has a thick and beautifully spotted coat of soft grey, paling to pure white on the under belly. Another special feature is its very long and thick tail which helps it in improved body balance while negotiating steep rocky terrain. Barely reaching a length of 2 m, it is smaller than the leopard of the plains.

As it remains elusive, much still remains unknown about the behaviour and life of snow leopard. Its favorite food are the Bharal and Ibex and due to its immense muscle strength, it can kill a prey up to three times its size. It has also been in conflict with the local human habitats and is known to kill cattle.



Video of a Leopard from a trap camera after snowing.

Snow leopard's elusive presence has still not been enough to keep it off the poacher radar. Today it is one of the most critically endangered members of the cat families in the world. The steady destruction of its natural habitat, ill effects of pollution and global warming, have also contributed in a major way in the reduction of their numbers. In such a scenario, the importance of Nanda Devi NP, as a home for the wild snow leopard, is paramount.

B. Other Animals - Most of the animals that populated the high reaches of the Western Himalayas are by nature timid and shy. The difficult terrain, where they live in and their shy nature, makes them difficult to spot. But if you can take up the challenge of some tough climbing and have the virtue of patience, then you are likely to



Video of a Leopard from a trap camera.

be rewarded by the magical sight of these exclusive and elusive animals inhabiting this remote part of the earth.

Sambar (census unicolor) is a large deer which lives in big numbers in the region up to the height of 3000 metres. Its numbers today are much reduced. The hill sambar is called 'Jarau' by the locals and is even larger.

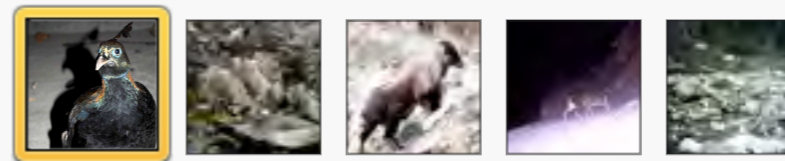
Bharal (Pseudois nayaur), the blue mountain sheep is somewhat like a mix of sheep and a goat in its structure and habits. No wonder the animal experts find it a very interesting animal. Bharals are short legged and broad backed animals which have adapted well to this tough geography. They can be spotted in herds of 6 to 30 dexterously negotiating the steep slopes and rocky ledges while grazing.

The Himalayan Tahr

(Hemitragus jemlahicus) is a mountain goat that is even more of an expert in negotiating difficult terrains. They can be found up to the height of 3000- 3500 meters. With a heavy body covered with



An injured Monal at the base hospital for treatment.



rich mass of coarse flowing hair, strong limbs and a finely-formed head, Tahr is an impressive sight.

One of the most endangered and famous residents of these highlands is the **Musk Deer (Moschus Moschiferous)** found at the height between 2750m to 3,700 m. Greatly valued for the aromatic gland (locally called as Kasturi) located under the navel of the male deer, the musk deer, holds a prime place in many regional folklore and Hindu religious literature. Locally called as the Kastura, it has been and still is a major target of poachers for its aromatic kasturi gland, which is considered a potent aphrodisiac. The local people, living on the edge of the park, also traditionally use the canine teeth of the musk deer as ornaments. The Nanda Devi



Video of a Musk Deer from a trap camera.

NP Park and Valley of Flowers NP, are some of the last refuges of this endangered species of deer. The 1983 survey party to the Nanda Devi Park sighted musk deer on 28 occasions.

Asiatic black bear, brown bear, red fox, marten and weasel are some other mammals present and spotted in the park. These animals have been spotted in the LataKharak, Dharansi, Dibrugeta, Deodi and Betartoli regions of the park.

In addition 27 species of butterflies are also found in the Nanda Devi NP.

Birds

Himalayan Monal pheasant (*Lophophorus impejanus*) - With its variegated rainbow colours, Monal, a species of pheasant family, holds prime position in the avian presence in the two parks and the region. That is the reason the Monal enjoys the status of being the state bird of the State of Uttarakhand and of being the national bird of Nepal. Thankfully, the Monal remains the most common Galliform in the Nanda Devi National Park and the Nanda Devi Valley of Flower National Park.

Monals are sighted mostly in temperate, sub-alpine and alpine regions of Latakharak, Dibrugeta, Deodi and Betartoli. The 1993 government sponsored survey and the following 2003 survey found good numbers of Monal in the Nanda Devi NP. The 2003 survey made as many as 42 sightings of this beautiful bird, in groups of up to 6 individuals. The lowest altitude, at which the bird was seen was at BretlaKharak (2800m).

Other birds

Nanda Devi NP and the NDBR are considered important bird areas by Birdlife International and the Bombay Natural History Society. The region sees a great variety of bird population. That is why it is considered an endemic bird area of the Western Himalayas. A total of 112 bird species have been recorded from NDBR. Almost all these species of birds in the Himalayas show altitudinal migration, ascending to alpine and sub-alpine areas in summers to breed and descending to temperate and tropical areas in winters.

Your arrival to this hill region of India is most likely to be announced by the red billed blue magpie. These birds with their long tails are commonly seen near human habitation in the hills. But other birds of the region, such as tragopan, blood pheasant and kaleej pheasant, like their mammal counterparts, are more difficult to be seen. Within the Nanda Devi NP, three species of pheasants have been reported, that is, cheer pheasant (*Catreus wallichi*), Himalayan monal and the koklass pheasant (*Pucrasia macrolopha*). The cheer pheasant is globally threatened according to Birdlife International but is reported from the slopes near Reni village at the mouth of the Nanda Devi NP. Other Galliforms, present in the park include snow partridge (*Lerwa*) and Himalayan snow cock (*Tetraogallus himalayensis*).

FLORA IN THE NATIONAL PARKS



According to the biodiversity monitoring expedition of 2003, a total of 568 plant species have been identified in the NP. They include 314 genera and 110 families of Angiosperms (480 species, 274 genera and 85 families), Gymnosperms (10 species, 7 genera and 4 families) and Pteridophytes (78 species, 33 genera and 21 families) have been recorded in Nanda Devi NP. A total of 57 plant communities have been delineated in Nanda Devi NP out of which 2 are forest communities, 6 alpine scrub and 49 herbaceous communities. Seven species of plants listed in Red Data Book of Indian plants have been recorded in Nanda Devi NP. Going by the

IUCN criteria, 37 species have been categorized as 'critically endangered', 14 as 'vulnerable' and 2 as 'near threatened'.

The National Park and its vicinity is the home of trees such as Deodar, which is also known as the great Himalayan Cedar. The Deodar, translates in local language as the "tree of the gods". It is the strongest of the Indian Coniferous trees and its timber carries an unusual fragrance. Banj (oak) is another well known tree variety in the region. Its timber is very strong and the tree is believed to hold more quantity of ground water than any other tree. The local community is very protective about this tree.

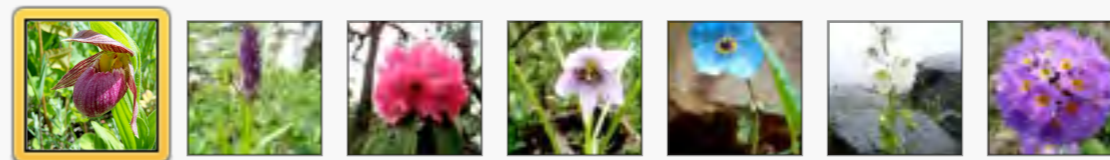
It is no surprise then that this region saw the birth of the chipko movement, a movement to save the trees. It was led by local heroes such as Gaura Devi of Reni Village, located at the mouth of the Nanda Devi National Park. The village had and still has a rich presence of Oaks in its vicinity. Chandi Prasad Bhatt is another name that became famous for working to save trees. Bhatt got the Magsaysay award for his efforts in 1982.

Nanda Devi NP, harbours different types of forests, such as birch, silver fir and mixed-silver fir forest, as well as scrub communities of *Rhododendron campanulatum*, *R. anthopogon*, *R. lepidotum*, *juniperus* and *cassiope*.

Bhoj (silver birch), chir and rhododendron. The birch forests are found at their maximum density near the Dharansi slope (380 trees per hectare) followed by Deodi region. The silver fir forests are seen in Dibrugeta, Dharansi and Deodi regions. Many primeval spruce forests also abound in the area.



Medicinal Orchid *Cypripedium cordigerum*



Primrose, gentian, poppy and buttercup can be seen on steep rocky slopes. Edelweiss are aplenty and golden kingcups abound near snow fed streams. Yellow daffodil (*Nomocharisoxipetla*) and blue poppy are rarer but also the most beautiful. Yellow daffodils, found in abundance in the Valley of Flowers NP, grow on the well-drained meadows and sun-warmed hill sides. The Blue Poppy (*Moconopsisaculeata*) though, is known as the queen of Himalayan flowers, and also as hemkamal or the snow lotus. A favourite of Frank Smythe, it prospers at an altitude of 4000m in rugged rocky terrain, with its silky blue petals seemingly emitting a radiance of their own.

Valley of Flowers

Valley of Flowers is home to more than 500 species of flowers and plants out of which 31 are rare and endangered, including 13 medicinal plants.

There are three main vegetation zones in the park, that is, temperate, sub-alpine and alpine. The sub-alpine forest (3000m to 3300 m) has *Betula utilis*, *rhododendron campanulatum*, *abies pindraw*, *Praunus cornuta* and *Acer caesium*. The alpine zone starts at 3500m and has an abundance of herbaceous vegetation with some small scrubs.

About 82 birds have been identified in the Valley of Flowers. Black throated tit, grey hooded warbler and black faced fly catcher warbler, some of the representative of the biome, are seen here. Pipits, rosefinch and spotted bush warbler are known to breed here. All the mammals seen at the Nanda Devi National Park,

except for the snow leopard, are seen here, including musk deer, Asiatic black bear, Himalayntahr, the serow, the bharal, and the mouse hare.

Brahmakamal

The blooms of Brahmkamal at the Valley of Flower NP are famous for the spectacular sight they make. Brahmkamal (Bethlehem Lily) which translates to 'lotus of Brahma' (Brahma, being one of the Indian Gods forming the Holy Trinity), is the most celebrated blossom in the valley of flowers. It is a yellow cabbage sized flower, which grows on steep rocky slopes. Brahmkamal is the favourite offering to the Goddess Nanda Devi by the locals who revere her.

RELIGIOUS AND SOCIAL SIGNIFICANCE



The Nanda Devi Raj Jat, is one of the most high profile and important religious and social festivals in the region. It is a living proof of the importance of Nanda Devi Peak, which is the physical manifestation of the Goddess Nanda Devi, that is ingrained in the religious and cultural make up of the local community. The Nanda Devi temples are located in several villages and towns of the districts of Chamoli, Pithoragarh and Almora, and many of these places are covered in the Yatra.

The Nanda Devi RajJatYatra takes place every 12 years, starting from Nauti Village, with Lata Village located at the edge of the

Nada Devi National Park, being its second spot. The yatra goes through 280 kilometres of beautiful mountain territory. In its route the Yatra covers villages and religious locations situated at varying altitudes. In 2014, this once in 12 year RajJatYatra started from the Lata Village, and went through a series of villages such as Badagaon (1890m), Semkuda (3650m), Ramni (1982m), GairoliPatal (3790 m), BedeniBugyal (3950m) and Roopkund (a high mountain lake at 4790 m) and Hemkundlake (5200m).

Economic Value

People associated with the Nanda Devi NP and Valley of Flowers NP, Union government and State government, forest officials, area economic development committees, environmentalists, plants and animals experts, have for a long time been involved in a debate over the question of human presence in the two National Parks. In the last few years the opinion seems to be shifting towards opening up the two National Parks in a controlled manner for tourists and researchers. The aim is to help the local economy and community through tourism and make the locals an interested party in the protection of the National Parks. The opinion is that this approach would prove an effective way to stop the menace of poaching of fauna and flora and in fact, would help protect the National Parks better. Even the local forest rangers admit that it is near impossible to protect the Nanda Devi National Park for all times, without active cooperation and participation of the local community.



Gaura Devi is famous for giving birth to the Chipko Andolan (tree hugging protests) of Himalayas.



For centuries the local population has been venturing into the Nanda Devi region, that is, much before the National Park came into existence. The people of the villagers located on the fringes of the park such as Reni, Lata and Malari, have been using products of the forest in the area. Today's youth in these villages talks about their elders telling them stories about the forests and animals of the region. These elders had been hunting, collecting herbs and wood from the forest. They were also involved in the world famous Chipko movement, aimed at saving trees of the region. Now that this local community has been totally cut off from the Nanda Devi National Parks, there is some deep rooted resentment.

But a wind of change is already sweeping in. Plans are already afoot to allow tourists inside the park in a controlled manner. New sections of the Nanda Devi NP have been opened for the tourists. Like Dibrugeta in the Nanda Devi NP, which is a good three days trek from the entrance of the park from Lata village side.

English Transcript



Poorni Devi

English Transcript



Mahendra Singh Rana

VISIT TO THE NATIONAL PARKS



With less of administrative restrictions and relatively easy accessibility, Valley of Flowers NP has been attracting a bigger number of domestic and foreign visitors. In the year 2013-14, a total of 484 people visited the Valley of Flowers (447 Indians and 37 foreigners). This low number was a direct result of the flash floods that the region saw a year before. In 2012-13, the number of total visitors were 8799, with 7053 Indians and 486 foreigners. These numbers have been showing a steady rise since 2003-04, when the total number of tourists were 4493 (297 foreigners). The year 2012-2013 saw these numbers reach a high of 6855 (527

foreigners). With the state agencies having taken up way, in the coming years these numbers are expected to increase.

In comparison to the Valley of Flowers NP, the total number of visitors to the Nanda Devi NP, never crossed the 200 mark since 2004-2005 (118 Indians and 18 foreigners). In fact, the numbers show a steady decline in the number of tourists visiting the park, with the number going down to 26 individuals in the year 2013-14. The numbers went much lower in the next year due to the effects of flash floods in the region.

The NDBR, which includes popular treks to Pindari and Milam glaciers, sees much more tourists movement, with 1276 Indians and 264 foreign visitors in 2003-2004. In the years 2012-13, this number was the highest with 2239 domestic tourists and 340 international tourists visiting NDBR areas, before the flash floods brought down the numbers in the next two years.

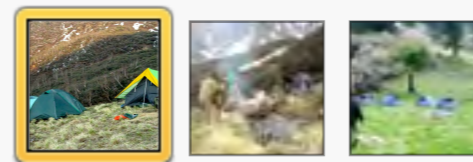
Seeing the impressive tourist potential of these natural wonders, the government is taking up a pro-tourists position, without compromising the status of natural environment. The buzzword is eco- tourism.

The visit to the Nanda Devi NP is restricted and can be undertaken only after requisite permissions/permits from the forest department, which is the guardian of this World Heritage Site.

The permission to visit the park is granted by the Chief Wildlife Warden, Uttarakhand. But walk-in reservations and permits can be issued by the



A summer camp of visitors inside park.



Divisional Forest Officer (DFO), Nanda Devi National Park, Forest Division, with its office in Joshimath. The park remains open for visitors from May 1st to October 31st, a period of six months.

The entry to the park is through Latakhark, which is a four hour trek from Lata Village. The tourists have to stay in tents while in the park. Though Latakhark has four tin cabins, which, though used by forest guards, can also be used by tourists. The tourists can take plastic inside the park, but it has to be brought back. A checking of the material being taken inside the park by the tourist is done at the Lata Village forest department check points.

A total of 20 guides, all locals from Joshimath and villages around the park, are registered with the forest department.

Today tourists are allowed till the high pass of Debrugeeta. The first stop after Latakhark, is at the meadow of Dharansi. Dharansi was opened to the general public in 2003. The tourists group are allowed one night each stay at Latakhark, Dharansi and Debrugeeta.

The tourists are only allowed in groups which has a maximum limit of five individuals. Visitors above the age of 14 only are allowed inside the park. As of now not more than two groups are permitted in one day and not more than four groups would be permitted in one week. One registered guide with the forest department is essential with every group. A maximum of two porters and one guide is allowed with each group. Visitors are entertained by the forest department only on the basis of advance booking for which applications could be sent six months to one week in advance.

The Latakhark-Dharansi pass appears to be a long trek with many ascents and descents, yet undertaking the tough journey is rewarded in full measure once the Nanda Devi peak comes in view after crossing the pass.

The Valley of Flowers NP is reached through 13 kilometres of beautiful trek from Govindghat, located on the Joshimath- Badrinath Route. The trek ends at Ghangaria, which is a one street village just one kilometre shy of the famous Valley of Flowers. There are places to stay at Ghangaria in the form of a few budget hotels. This is the only place one gets to spend a night as only day trips are allowed to the Valley of Flowers. The valley starts just after one kilometre of easy trek from the Ghangaria village after which the valley continues for another 5 kilometres.

Though the Valley of Flowers throws up its flower blooms throughout the year, and can be, and should be visited throughout the year, the best time to visit the park is considered between August and September. The most flower blooms are during July and August monsoon season, but access to the park during these rainy days is very tough.

THREATS TO THE NATIONAL PARKS



Habitat loss, habitat degradation and poaching are a major threat to the wildlife and forests of the Himalayan Region. The Nanda Devi NP and Valley of Flowers NP, though only totally protected zones from all human activities, still face these threats. In this scenario, the decision of the State government to open a part of the Nanda Devi NP, up to Dibrugeta for community based eco tourism, needs careful planning, execution and monitoring. According to State government records, during a 2001 survey conducted by the state government, evidence of poaching of musk deer has been collected from Dibrugeta. In addition, six snares were also located by the survey party and removed by the forest officials.

The pressures of development as also very much on. The Vishnuprayag Dam in the upper Alaknanda Valley is considered one of the major threats to the delicate ecology of the Valley of Flowers National Park. Grazing by livestock and illegal and over exploitation of rare medicinal herbs is another threat to the NP.

The forest department officials continue to face pressure from poachers and people engaged in illegal exploitation of herbs and medicinal plants with the two National Parks. Cases of illegal cutting of trees also come to light routinely.

In the year 2014, till September, according to the forest department records, 22 individuals were arrested from the two National Parks, who had entered illegally with the intention of poaching and collecting medicinal plants. A couple of such cases have been registered and action taken by the forest department, in every year since 2011. Similarly, the department has been registering and taking action against people involved in cutting of trees within the parks' boundaries.



APPENDIX

LIST OF BIRDS AT THE NATIONAL PARKS

Common Name	Scientific Name
Sparrow-hawk	<i>Accipiter nisus</i>
Himalayan golden Eagle	<i>Aquila chrasaetos</i>
Griffon vulture	<i>Gyps fulvus</i>
Himalayan griffon	<i>Gyps himalayensis</i>
Lammergeier	<i>Gypaetus barbatus</i>
Falcon	<i>Falco sp.</i>
Snow partridge	<i>Lerwa lerwa</i>
Himalayan snowcock	<i>Tetraogallus himalayensis</i>
Himalayan monal pheasant	<i>Lophophorus impejanus</i>
Koklas pheasant	<i>Pucrasia macrolopha</i>
Snow pigeon	<i>Columba leuconota</i>
Blue rock pigeon	<i>Columba livia</i>
Speckled wood-pigeon	<i>Columba hodgsonii</i>
Rufous turtle dove	<i>Streptopelia orientalis</i>
The Cuckoo	<i>Cuculus canorus</i>
Common hawk Cuckoo	<i>Cuculus various</i>
Himalayan swiftlet	<i>Collacalia sp.</i>
Large white-rumped swift	<i>Apus pacificus</i>

Common Name	Scientific Name
Hoopoe	<i>Upupa epops</i>
Great hill barbet	<i>Megalaima virens</i>
Sapsucker	<i>Hypopicus hyperythrus</i>
Ashy drongo	<i>Dicrurus lecophaeus</i>
Common mynah	<i>Acridotheres tristis</i>
Red-billed blue magpie	<i>Cissa erthrorhyncha</i>
Himalayan tree pie	<i>Dendrocitta formosae</i>
Nutcracker	<i>Nucifraga caryocatactes</i>
Yellow-billed chough	<i>Pyrrhocorax graculus</i>
Red-billed chough	<i>Pyrrhocorax pyrrhocorax</i>
House crow	<i>Corvus splendens</i>
Jungle crow	<i>Corvus machrorynchos</i>
White-cheeked bulbul	<i>Pycnonotus leucogenys</i>
Variegated laughing thrush	<i>Garrulax variegates</i>
Streaked laughing thrush	<i>Garrulax lienatus</i>
Black-capped sibia	<i>Heterophasia capistrata</i>
White-browed blue flycatcher	<i>Muscicapa superciliaris</i>
Verditer flycatcher	<i>Muscicapa thalassina</i>

Common Name	Scientific Name
Orange-flanked bush robin	<i>Erithacus cyanurus</i>
Bluefronted redstart	<i>Phoenicurus frontalis</i>
White-capped redstart	<i>Chaimorroornis leucocephalus</i>
Blue whistling thrush	<i>Myophonus caeruleus</i>
Black bird	<i>Turdus merula</i>
Brown dipper	<i>Cinclus pallasii</i>
Alpine accentor	<i>Prunella collaris</i>
Green-backed tit	<i>Parus monticolus</i>
Crested black tit	<i>Parus melanolophus</i>
Vinaceous-breasted pipit	<i>Anthus roseatus</i>
Grey wagtail	<i>Motacilla caspica</i>
House sparrow	<i>Passer domesticus</i>
Common rosefinch	<i>Carpodacus erythrinus</i>
Pink-browed rosefinch	<i>Carpodacus rhodopeplus</i>
Rock bunting	<i>Emberiza cia</i>

LIST OF FAUNA AT THE NATIONAL PARKS

Common Name	Scientific Name
Snow leopard	<i>Uncia uncia</i>
Common leopard	<i>Panthera pardus</i>
Red fox	<i>Vulpes vulpes</i>
Asiatic black bear	<i>Ursus thibetanus</i>
Himalayan Yellow-throated Marten	<i>Martes flavigula</i>
Yellow-bellied Weasel	<i>Mustela kathiah</i>
Himalayan Mouse hare	<i>Ochotona roylei</i>
Goral	<i>Nemorhaedus goral</i>
Serow	<i>Nemorhaedus sumatraensis</i>
Himalayan tahr	<i>Hemitragus jemlahicus</i>
Blue Sheep or Bharal	<i>Psuedois nayaur</i>
Himalayan Musk deer	<i>Moschus chrysogaster</i>

LIST OF TREES AT THE NATIONAL PARKS

Name of Species	Associate Species
<i>Aconitum balfourii</i>	<i>Carex nubigena, Carex setosa, Rhodiola heterodonta, Circaea alpina, Viola biflora, Fragaria nubicola, Nardostachys grandiflora</i>
<i>Aconitum heterophyllum</i>	<i>Selinum elatum, Selinum vaginatum, Dactylorhiza hatagirea, Potentilla atrosanguinea</i>
<i>Aconitum violaceum</i>	<i>Carex nubigena, Carex setosa, Polygonum affine, Saussurea obvallata, Saxifraga pulvinaria</i>
<i>Allium stracheyi</i>	<i>Carex setosa, Danthonia cachemyriana, Aster diplostephoides</i>
<i>Angelica glauca</i>	<i>Allium wallichii, Podophyllum hexandrum, Polygonum polystachyum, Selinum elatum, Rheum australe</i>
<i>Arnebia benthamii</i>	<i>Danthonia cachemyriana, Dactylis glomerata, Dactylorhiza hatagirea, Iris kumaonensis</i>
<i>Bergenia stracheyi</i>	<i>Danthonia cachemyriana, Polygonum affine, Polygonum rumicifolium</i>
<i>Dactylorhiza hatagirea</i>	<i>Danthonia cachemyriana</i>
<i>Fritilaria roylei</i>	<i>Danthonia cachemyriana</i>

Name of Species	Associate Species
<i>Jurinella macrocephala</i>	<i>Danthonia cachemyriana, Polygonum affine, Rhodiola heterodonta, Senecio alatus, Thalictrum alpinum, Viola biflora</i>
<i>Malaxis muscifera</i>	<i>Picrorhiza kurrooa, Viola biflora, Sibbaldia cuneata, Dactylis glomerata, Androsace sarmentosa</i>
<i>Meconopsis aculeata</i>	<i>Carex setosa, Trachydium roylei, Saxifraga pulvinaria, Polygonum affine</i>
<i>Nardostachys grandiflora</i>	<i>Carex setosa, Gaultheria trichophylla, Poa alpina, Picrorhiza kurrooa, Saxifraga pulvinaria</i>
<i>Picrorhiza kurrooa</i>	<i>Carex setosa, Gaultheria trichophylla, Epilobium latifolium, Polygonum affine, Sibbaldia cuneata, Bupleurum candollii</i>
<i>Podophyllum hexandrum</i>	<i>Circaea alpina, Aconitum balfourii, Fragaria nubicola, Hackelia uncinata, Viola biflora</i>
<i>Polygonatum verticillatum</i>	<i>Festuca rubra, Carex setosa, Allium wallichii, Danthonia cachemyriana, Bupleurum candollii</i>
<i>Rheum australe</i>	<i>Carex setosa, Dactylis glomerata, Trachydium roylei, Saxifraga pulvinaria</i>
<i>Rheum speciforme</i>	<i>Saxifraga pulvinaria, Saussurea obvallata, Sibbaldia purpurea</i>

Name of Species	Associate Species
<i>Rheum webbianum</i>	<i>Carex setosa, Polygonum polystachyum, Impatiens racemosa, Hackelia uncinata, Potentilla atrosanguinea</i>

SECTION 11

ACKNOWLEDGEMENTS

We are grateful to UNESCO for giving us an opportunity to work on this interesting subject. Dr. Ram Boojh gave us the leadership and guidance through out the project execution and helped us in bring it out in it's current form.

We are also grateful to the Forest Department of Utrakhand Government for giving us information and content for the book.

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