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Mini review

## Is Flow of Tourist Destroying Health of Forest and Alpine Meadows of Higher Himalayan Region: A Case of Chopta Forest of Uttarakhand, India?

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### Mini Review

The Himalaya has been a perennial source of attraction, curiosity and challenge to human intellect throughout the ages. The diversity, copiousness as well as uniqueness of the plant components in various habitats retained sound and aesthetic environment. However, in the recent time excessive interference of human beings in the name of tourism, exploitation of vegetation, unplanned land use, natural disasters and several developmental processes, accelerated deterioration of biodiversity and harmonious ecosystem of the Himalaya. The Uttarakhand Himalaya is well known for tourism activities and last five-six years the residents of the nearby areas are taking this activity as livelihood option in large scale. The regular visit and staying in forest as well as alpine meadows (Bugiyals) of the region is affecting the health of the forest cover. As observed since last few years the regeneration of forest trees as well as herbaceous plants in Chopta forest of Kedarnath wildlife sanctuary is clearly deteriorating. The formation of new seedlings and their establishment is also very low while some new vegetation is heavily affected by excessive interference by human beings, grazing and movements of domestic animals, i.e., cow, buffalo, goat, sheep's and horses. Chopta (2700 m asl) is a small region of meadows and evergreen forest (Figure 1-3) which is a part of Kedarnath wildlife sanctuary located in Uttarakhand state, India. It is a base for trekking to Tungnath, third temple of Panch Kedar, which lies 3.5 kilometres away from the road head. Chopta is an unspoiled natural destination lying in the lap of the Uttarakhand Himalayas and offers views of the imposing Himalayan range including Trishul, Nanda Devi and Chaukhamba. It is surrounded by forests of oaks and rhododendron and rich in flora and fauna include rare species of birds and musk deer. These forests are not only intricately associated with the hydrological balance but also form the life support system for the local inhabitants [1].

Chopta region supports temperate to sub-alpine and alpine vegetation. The herbaceous flora of this region is represented by a spectacular array of multi-coloured flowers, such as, *Potentilla atrosanguinea*, *Geranium wallichianum*, *Primula denticulata*, *Epilobium royleanum*, *Ranunculus hirtellus*, *Impatiens sulcata*, *Bistorta affinis*, *Fritillaria roylei* and *Satyrion nepalense*, medicinal plants such as *Aconitum heterophyllum* (Ateesh), *Dactylorhiza hatagirea* (Hatajari), *Nardostachys grandiflora* (Jatamansi), *Picrorhiza kurrooa* (Kutki), *Podophyllum hexandrum* (Bankakri), *Angelica glauca* (Choru), common grasses such as *Danthonia cachemyriana*, *Agrostis pilosula* and *Trisetum spicatum*, and *Kobresia royleana*, *Carex nubigena* are the major sedges in the region. Among the ferns *Dryopteris barbigera* and *Athyrium* spp. are dominant in the alpine region. The region has also high abundance of wild mammals and birds and generally Himalayan musk deer (*Moschus chrysogaster*), Himalayan tahr (*Hemitragus jemhalicus*), Serow (*Nemorhedus sumatraensis*), Himalayan goral (*Nemorhedus goral*), Sambar (*Cervus unicolor*), Barking deer (*Muntiacus muntjak*) and wild pig (*Sus scrofa*) found in the region. The Himalayan sub species of common langur (*Semnopithecus himalayanus*) is common in the region. The Himalayan mouse hare or Pika (*Ochotona roylei*) is very common, mainly on the bouldery areas of the region. Pheasant's viz., *monal* (*Lophophorus impejanus*), *kalij* (*Lophura leucomelana*) and *koklas* (*Pucrasia macrolopa*) and many species of the birds also found in the region. This scenario and diversity of the region attracted the tourist for visiting this place throughout the year since long back. Now days the government is promoting the tourism in Uttarakhand as income generating activity and therefore, many unemployed youth of the region adopting the tourism activity as self-employment. Under this tourism activity peoples particularly youth of the region capturing the vacant land or meadows land within forest areas without bearing any fare cost for laying down the tents or huts for tourist accommodation (Figure 4-7).

The Youth of the region is also feeling this activity is very easy because less cost and not much labour involved. The promotion of this tourism activity clearly or heavily affecting the regeneration of the vegetation of the region due to excessive interference and movements of human beings throughout the year which is simultaneously creating the pollution. The huge flow of the tourist in the region is creating dump of garbage which is not decomposing due to cold climate of the region (Figure 8, 9).

The carcinogenic effect of this accumulated garbage is also affecting the soil health and soil fauna of the region. As observed, the visit of the tourist throughout the year in this areas also promoting changing weather conditions (irregular snow fall, rain and raising temperature) in the region. Because in past, the region have been totally covered by snow and closed for a period of minimum five-six month for huge human interference. Now with the help of machine the snow have been removed from the area for tourist activity and which is affecting the winter vegetation of the region. The regular human interference, snow of the region is also melting fast and creating the scarcity of water in summer. If timely there is no action taken on promotion of this activity, the forest cover of the region will be declined rapidly and create the weather problem in Himalayan region. Ultimately, changing weather condition affects the Himalayan ecosystem in general and livelihood of the region particularly. Besides the promoting this tourism activity throughout the year in large scale, there are lot of options i.e. vegetable production, dairy, medicinal plants cultivation, traditional crop production, fish production, and poultry for livelihood in Himalayan region and therefore, the governments need to promote these activities as income and employment generating option among youth of the region. The promotion of these activities will help in income generation of unemployed youth as well as reduce of flow of tourist in higher Himalayan region throughout the year. This will also help in regeneration of forest trees, herbaceous vegetation, and conservation of fauna, forest areas and alpine meadows for next generation.



Figure 1: A view of Higher Himalayan Region, Chopta (2700 m sl), Uttarakhand.



Figure 5: Forest area captured for tourist accommodation.



Figure 2: A view of Higher Himalayan Region, Chopta (2700 m sl), Uttarakhand.



Figure 6: Forest area captured for tourist accommodation.

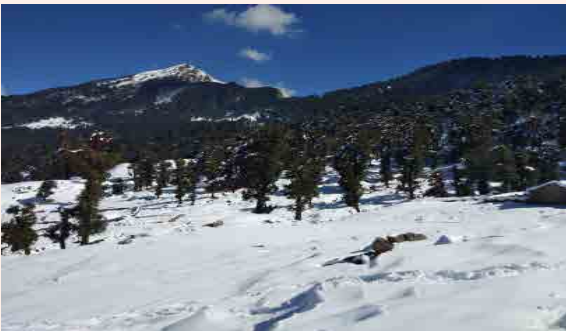


Figure 3: A view of Higher Himalayan Region, Chopta (2700 m sl), Uttarakhand.



Figure 7: Forest area captured for tourist accommodation.



Figure 4: Forest area captured for tourist accommodation.



Figure 8: Garbage Accumulated By Tourist In Forest And Alpine Areas.



Figure 9: Garbage Accumulated By Tourist In Forest And Alpine Areas.

### References

1. Singh JS, Singh SP (1992) Forests of Himalaya: Structure, Functioning and impact of man. Gyanodaya Prakashan, Nainital, India Ppp. 294.