

## Effect of tourist safari in activity and behaviour of Chital (*Axis axis*) and Sambar deer (*Cervus unicolor*) in Jim Corbett National Park, Ramnagar, Uttarakhand.

## Efecto del safari turístico en la actividad y comportamiento de los ciervos venado manchado (*Axis axis*) y vendado sambar (*Cervus unicolor*) en el Parque Nacional Jim Corbett, Ramnagar, Uttarakhand.

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### ABSTRACT

Tourism in a National Park is a best gift for nature lovers as they see the great and diverse vegetation, dense forest, river side area, seasonal rivers, natural sot, small hills areas, large chour (grassland) and most adventurous is to see the wild animals in their natural habitat, their different activities and behaviour. This motivates tourist for wild animal's conservation. Jim Corbett National Park is the oldest National Park famous for its diverse flora and presence of wild mammals, big carnivores, and herbivores like spotted deer (*Axis axis*) and Sambar deer (*Cervus unicolor*). Tourism gives a big revenue every year to the Government of Uttrakhand unlike gypsy safari that affects the Park animals for eight hours by 480 people every day by vehicle sound, tourist noises, camera and mobiles sound in capturing photos and making videos. It affects the alertness of deer's, sometimes they want food items from tourists or show fear from tourists. So it may cause many changes in their behaviour and it becomes a serious problem for their population.

Keyword: ecotourism, carnivores, polygamous, offspring's.

## RESUMEN

El turismo en un Parque Nacional es el mejor regalo para los amantes de la naturaleza, ya que ven la gran y diversa vegetación, el denso bosque, el área del lado del río, los ríos estacionales, el bosque natural, las áreas de pequeñas colinas, el gran chour (pastizal) y lo más aventurero es ver el animales salvajes en su hábitat natural, sus diferentes actividades y comportamientos. Esto motiva al turista por la conservación de los animales salvajes. El Parque Nacional Jim Corbett es el Parque Nacional más antiguo famoso por su diversa flora y la presencia de mamíferos salvajes, grandes carnívoros y herbívoros como el venado manchado (*Axis axis*) y el venado Sambar (*Cervus unicolor*). El turismo genera grandes ingresos cada año para el Gobierno. de Utrakhand a diferencia del safari gitano que afecta a los animales del parque durante ocho horas por 480 personas todos los días por el sonido de los vehículos, los ruidos de los turistas, el sonido de la cámara y los móviles en la captura de fotos y la realización de videos. Afecta el estado de alerta de los ciervos, a veces quieren alimentos de los turistas o muestran miedo de los turistas. Por lo que puede provocar muchos cambios en su comportamiento y se convierte en un problema grave para su población.

Palabra clave: ecoturismo, carnívoros, poligámicos, hijos.

## INTRODUCTION

Jim Corbett National Park a best destination for wildlife lovers, as a major part of Corbett tiger reserve (1288.32 sq. km). Its area is 520.82 sq. km. in Corbett tiger reserve which include the core area and buffer area (reserve forest). (Khati, S. Anand 2008). Jim Corbett National Park is famous for the presence and abundance of Tiger (*Panthera tigris*). and also various mammals like Chital in abundance and Sambar deer and large groups of elephants, couple with many types of birds species and reptiles. It has a diverse vegetation with mixed forest and various shrubs and grasses also. Jim Corbett National Park is divided into five ecotourism zones namely, Bijrani, Jhirna, Dhela, Dhikala, Durgadevi, and Corbett landscape (Sitabani which joined with Pawalgarh conservation). The five entry gates of Jim Corbett Park are Aamdanda gate, Dhela gate, Dhangarhi gate, Lohachour gate Durgadevi respectively and Vatanvasa gate for Sonanadi range in Kalagarh. The total number of tourist and revenue each year in Jim Corbett National Park were as; in 2013-2014 tourist 211,675, revenue 7.48 crore, in 2014-2015, tourist 245,883, revenue 8.30 crore, in 2015-2016 tourist 283,308, revenue 8.90 crore, in 2016-2017 tourist 291,038, revenue 9.68 crore, in 2017-2018 tourist 284,807 revenue 8.75 crore, in 2018-2019 tourist 283,281, revenue 8.65crore. Source: Varma Raju Hindustan news paper (02-dec-2016 & 21-oct-2017).(Table

2 and 3)

Chital (*Axis axis*) is found in abundance in Jim Corbett National Park. A beautiful deer with rufus colour coated body and white patches spread on it. A blackish dorsal line runs down to their backs. Antlers with three branches present only in male members. Chital is a polygamous animal found in large herds and they are grazer who depends on grasses and they are mostly found in grassland areas connected with road side. Sambar (*Cervus unicolor*), a large deer species found in Corbett, have blackish and brownish heavier body. Its appearance is like a small cow and its figure resembles that of Barasingha (*Cervus duaucei*). The difference is that Sambar have two branched antlers present in males. Sambar is a monogamous animal found in pair only not in herds. Sambar is a browser that feeds on browse food like leaves from woody plants, bark of shrubs, bamboo, flowers and seeds.

The objectives of the present study are: 1) Positive and negative effects of tourism on behaviour of Chital and Sambar deer. 2) Average time of humans' interference for both study species of deer's.

#### MATERIALS AND METHODS

Study area: Two ranges from Jim Corbett National Park namely Bijrani range (117.77sq.km.) and Jhirna range (56.99sq.km.) were selected for this study. Direct observation method was used for the whole study and field visits in these ranges was done by gypsy (from 2017 to 2019). The study conducted one visit in every month of summer season and in winter season. The observation made for four hours in a day as the gypsy timing in park. During the field visit by gypsy other tourist such as bird watchers, wildlife lovers, students were also meet. In every range there is a tourist zone other than core zone, for tourist activity and it is open for tourist, bird watchers and wildlife lovers. Both study areas comprises with dense forest and mainly consists of Sal (*Shorea robusta*), Rohini (*Mallotus philippensis*), Haldu (*Adena cordifolia*), Amaltas (*Cassia officinalis*), Kattha (*Acacia catechu*), Bahad (*Diacferousbaherika*), Ficus (*Ficus rumfi*), Kuri (*Lantana camara*) shrubs, Ber (*Ziziphus jujube*) shrubs etc.

#### RESULTS AND DISCUSSION

The tourist entry and activity timing in the Jim Corbett National Park. Bijrani zone open for tourist visit from mid October to June every year. And Jhirna zone open for tourist throughout the year. The total 30 gypsy are permitted for entry in both study zones. The safari timing in two session, morning session from 5:30am - 9:30 am and afternoon session

from 2:00 pm to 6:00 pm. (Table 1). The number of tourists in Corbett in 2018-2019 was 283281. The government received a total revenue of 8.75 crores from 2017-2018. And the government received a total revenue of 8.65 crores from 2018 to 2019. A total of 283281 tourists visited the study area till 2018-2019 (Table 2). And the total tourist and tourist-animal interaction time for one day of gypsy in Corbett park is 480 and 8 hours respectively (Table 3).

Table 1: Total tourist visited in study area (Jim Corbett national park during study period 2017-2019).

Year	Total (Indian+ Foreigner)	Total Revenue (for Government)
2017-2018	284807	8.75 crore
2018-2019	283281	8.65 crore

Effects of tourist activity on deer's behaviour and activity: Tourism is the main source of income for Uttarakhand Government and its local population. Tourism affects the forest ecosystem positively and negatively. It promotes the ecosystem by focusing on wildlife conservation and vegetation. The Corbett tourism helps in the conservation of Sambar deer and Chital deer. In Corbett safari in one day tourist and animal interaction timing is eight hours, this affects mainly in feeding, breeding activities, and also behaviour of Chital's and Sambar. Tourists come too close to deer's for viewing and taking photographs/ selfies and video recordings by their mobiles also. By camera sound it affects their (Chital and Sambar) alertness and cannot continue their routine feeding and other activities. This reduces their grazing time/browsing time. As the safari timing is in early morning and evening which is also the best time for grazing and browsing by deers. The environment atmosphere of a natural forest must be quite but the sound of gypsy, and tourist noises in excitements disturb the deers. Tourism also affects the breeding of deer species as they loss concentration in the presence of tourists and sometimes it disrupts the bonding between hinds and babies (offspring). The Chital are scare of tourists as they consider them as predators.

Table 2: Total tourist in study period 2018-2019

Year	Total tourist Bijrani zone	Total tourist Jhirna zone	Total tourist other three zones	Total
2018- 2019	57061	37000	189220	283281

Table 3. Total safari visitors and tourist - animals interaction timing in Jim Corbett national park (Source: Corbett park online website information section).

Zone	Total months	No. Of gypsy permitted per day (morning +evening)	Person in one gypsy (with driver and nature guide)	Total person in both two session (1 day)
Bijrani zone	From mid October to June (8months)	30 + 30	6+1+1=8	480
Jhirna zone	Throughout the year (12months)	30 + 30	6+1+1=8	480
Zone	Total months	Morning session timing (5:30am- 9:30am)	Afternoon session timing (2:00pm- 6:00pm)	Total timing of tourist-animals interaction
Bijrani zone	From mid October to June (8months)	4 hours	4 hours	8 hours
Jhirna zone	Throughout the year (12months)	4 hours	4 hours	8 hours

As conclusion, this study says that tourism by safari visits affect the feeding, breeding, movement and alertness of these species of deers. As the interaction of humans-Chitals, Sambar eight hours for every day. In these hours the deers loss their concentration and alertness from feeding and routine activity, which affect their activities and breeding also. This problem might become serious in future if action is not taken and it can affect conservation status of these species.

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