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Direct and Indirect Evidence of Wildlife Presence in Corbett National Park Ramnagar Uttarakhand, India

Shalini * and Bhawna Pant

P.N.G Govt P.G. College Ramnagar Nainital, Uttarakhand, India.

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Abstract

Corbett National Park is a dense forest gifted by nature with huge flora and fauna. But it is difficult to see all the animals of its fauna together because most of the animals are nocturnal and live in the core area of Corbett Park. Hence some large mammals like Tigers, Elephants, Jackals, wild boar, herbivores species, some birds and some reptiles etc. are directly visible in Corbett. Sometimes animal is not found directly but its body parts like bones, antlers, teeth, nails, feathers or other evidence like fecal matter, dropping, footprints, eggs, feathers, skin hairs, nest, holes, pits, scent, blood spots/ meat, scarring marks on trees (claw/nails), peeled bark, bitten grass, bite marks on green leaves and dropped fruits etc. are found which show the presence of particular animal species. These evidence are helpful in field visits to study the animal life, its behaviour, its population, its feeding preference, its territory and its movement etc. All these evidences attract the Tourists, researchers, wildlife lovers, birdwatchers, nature conservators and local communities towards the forest and helpful in research studies and in conservation projects also make the forest journey more adventurous.

Keywords: Pugmarks; Fecal matter; Vocal sounds; Direct observation; Corbett National Park; Presence; Evidence

1. Introduction

Corbett National Park Uttarakhand covers an area of about 520.82 sq. km (latitude 29°13'-29°35'N and longitude 78°33'-79°46'E), spread across the districts of Nainital, Almora, and Pauri Garhwal [1]. The Himalayan and peninsular flora and fauna both are found in the Reserve on account of their location in the foothills [2]. The Jim Corbett National Park is famous for the presence and abundance of Tiger (*Panthera tigris*) and also various mammals like Cheetal in abundance and Sambar deer and large groups of elephants, with many types of bird species and reptiles species [3]. There is some evidence of the presence of a diversity of animals (big mammals, herbivores, reptiles, birds etc.) which had been seen directly or indirectly in Corbett Park. The indirect evidence like scat, digging marks, pug marks, and scarring marks on trees etc. very useful in the annual data of wildlife found in Jaldapara National Park [4]. The experience forest people identify the footprints of several tigers in a forest [5].

The presence of wild animals and their behaviour is also identified with a density of scat, dung, and marking droppings [6]. Wildlife monitoring is commonly performed by visual or acoustic, camera traps and passive acoustic sensors methods by human beings [7]. Sometimes photographic evidence is useful in capturing endangered species in forest areas [8].

* Corresponding author: Shalini

2. Material and methods

2.1. Study area

The Bijrani and Jhirna tourism zones of Corbett National Park were selected for this study. The total area of Bijrani zone is 117.77 sq. km. with latitude 29.4613°N and longitude 79.1478°E. The total area of Jhirna zone is 56.99 sq. km. with latitude 29.26°N and longitude 78.56°E [9]. There are certain points (padaw) at a distance of every 8-9 kilometers in Bijrani zone, from which direct observation were done. These points are Aandabda, Semalchaur, Bijrani, Malani, Jamnagwar, Gaujpani, Pathharpani, Sadildam then Kalagarh dam. Similarly in Jhirna zone, there are also some points named Dhela, Kharagate, Kothiro, Jhirna, Dhara Gate, and Kalagarh.

2.2. Methodology

The direct observation method in the field survey (in forest) is used for this study. The field visits were conducted by a gypsy safari in Corbett Park in 2019 (12 months). The observations were done with the help of binocular in different vegetative sites like grassland, dense shrub areas, Sal-forest, water side sandy areas [9]. In this study, some direct and indirect evidence of wild animals are commonly seen during field visits. This evidence is collected by clicking photos and recording videos with the help of binocular (Pantax s10×50 S-series S P WP), mobile phone and Nikon digital camera (D3400 with lens mega pixel-24.2MP, LCD screen-7.5cm) [10].

3. Results and discussion

3.1. Direct evidence of wild animals

The direct evidence includes seeing the animal (directly), hearing its voice, remaining of the whole body or body parts like skin, hairs, nails, antlers and teeth etc. Some animals are directly visible in Corbett, in which herds of Cheetal, pairs of Sambar, Neelgai, Barking deers, Tiger, Jackal, herds of Elephants, herds of wild boar, Rhesus monkeys, and Langur etc. are common. Along with this, some reptiles like snakes, lizards, Varanus, spotted turtle, birds like Peafowl, Red Jungle fowl, hawk eagle, red wattled lapwing, Asian green bee-eater, cranes, hummingbirds, common crow, Bee-eater birds, Kingfishers, etc. are also directly seen in Corbett Park.

Sometimes the animal is not visible but its sound is heard, these sounds are recognized by an experienced nature guide/ gypsy driver and the presence of that animal is known. Biodiversity Act 2002 is strictly followed in Corbett National Park; hence the collection of fallen body parts of wild animals is prohibited. These fallen parts include bones, skull, teeth (tusker teeth), antlers (deers), nails/claws (Tiger), dead skin (snake), feathers and beaks (birds) etc. which directly show the presence of a particular animal in this forest. The dead body after a predatory attack shows the particular predator by its killing style (predation style).

Table 1 Direct and indirect evidence of wild animal presence in Corbett National Park

Sr. no.	Direct evidence	Indirect evidence
1	Direct seen (During feeding & grazing, drinking and resting under trees etc.).	Footprints (deers, elephant foot prints) / pug mark (tiger).
2	Vocal sounds by animals (calling, alarming, mating, sound of danger) and birds singing.	Bite marks on leaves and grasses with fresh fecal matter, and peeled bark.
3	Body parts (bones, skull, antlers, teeth, nails, hair, eggs, dead skin, Feathers of birds (in different colour), eggs, and beaks of bird.	Claws marking on a tree trunk (scrapping by teeth),
4	Dead body/remaining after predatory attack.	Fecal pellets, dropping, Scent/ urination.
5	Direct sight of animals in camera trap	Nest on trees, digging deep holes in soil (shelter of animals) and snake pits etc.
6	Termite houses	Piece of Meat/Blood spots (after an injury or predator attack).

3.2. Indirect evidence

There is some indirect evidence like fecal matter, footprints, digging, scrapping, claw marking, nest, shelter holes/pits on soil, Blood spots, bite marks on leaves and grasses etc. which indicates the presence of a diversity of animals in Corbett Park. The footprints/pug marks in Tigers are identical (size, and shape for particular Tiger/Tigris), Elephant footprints are useful in measuring its size, deer footprints for group size (population), and other footprints for the presence of a particular animal. According to the perception, the pugmarks are indistinguishable and no two pugmarks were same [11].

The bite marks on the green leaves of trees indicate the presence of a herbivore and its height, the peeled barks indicate the presence of mainly Sambar deer and Elephant, the same cutting of grasses indicates the grazing of a herd of Cheetal deer, bite marks also indicating the most preferred food species of herbivores (like bite marks on Peelu leaves, Curry plant, Vasaca leaves and Jujube etc.). Claw marks and peeled barks on tree trunks indicate the presence of the dominant tiger, its height, and teeth sharpness. The large holes under the roots of old trees (digging) indicate the presence of wild bears (shelter) and some other animals.

Fecal matter for every animal species is identical so fecal matter indicates that particular species like carnivores (tiger, Jackal, wild dogs etc.), herbivores (Deers, Elephants, Rabbit etc.), birds and reptiles, and amphibians. Certain animals rub their body on trees and give their scent to other animals. Some animals urinate in the boundaries of their area, to fix their territory in a forest, this smell of urination indicate their presence to other animal. In the case of the aves group, the different types of nests are found on trees, the specific nest showing the presence of a particular species. The nest is identified by its color, different fibers, dried leaves, and grasses. Some pits are also found in the soil of this forest, which indicates the presence of different varieties of snakes depending its size and depth. Also some large holes under the roots of old trees dug by wild bears (shelter). In some places the blood spots are found after a predator attack, this indicates the presence of a predator.



Figure 1 Significant mammals found in Corbett National Park (Direct evidence): A. Tiger, B. Elephant, C. Sambar deer, D. Cheetal deer, E. Barking deer, F. Hog deer



Figure 2 Direct evidence of wildlife: A. Langur, B. Peafowl, C. Spotted turtle, D. Antler, E. Remaining of a Cheetal body

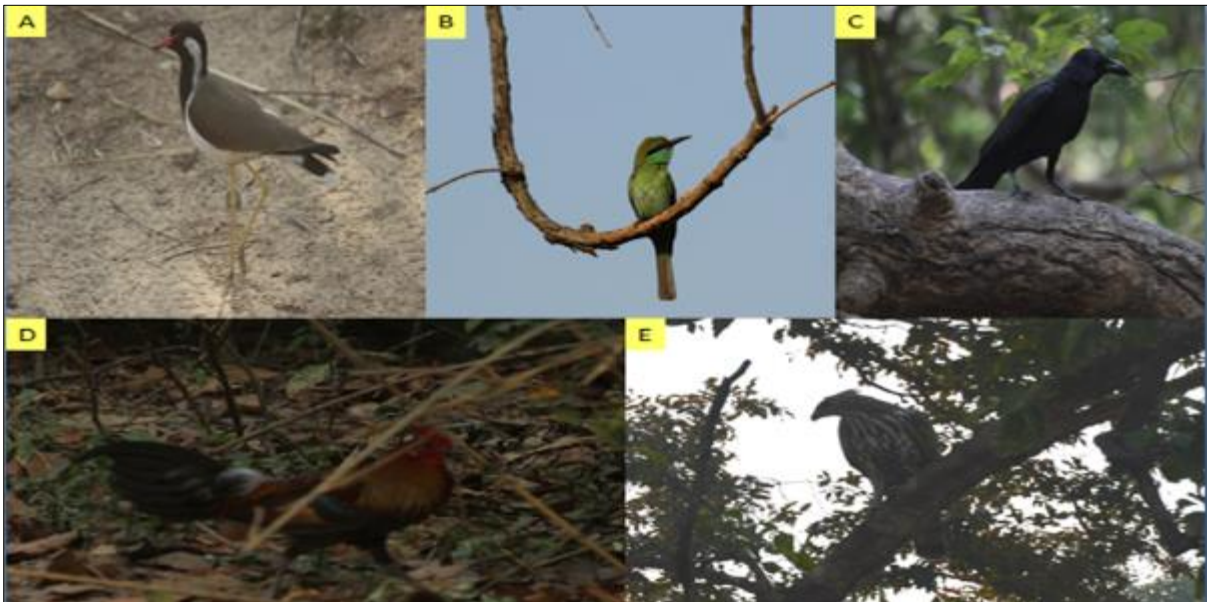


Figure 3 Birds species commonly found in Corbett National Park, A. Red wattled Lapwing, B. Asian Green bee eater, C. common crow, D. Red jungle fowl, E. Hawk eagle

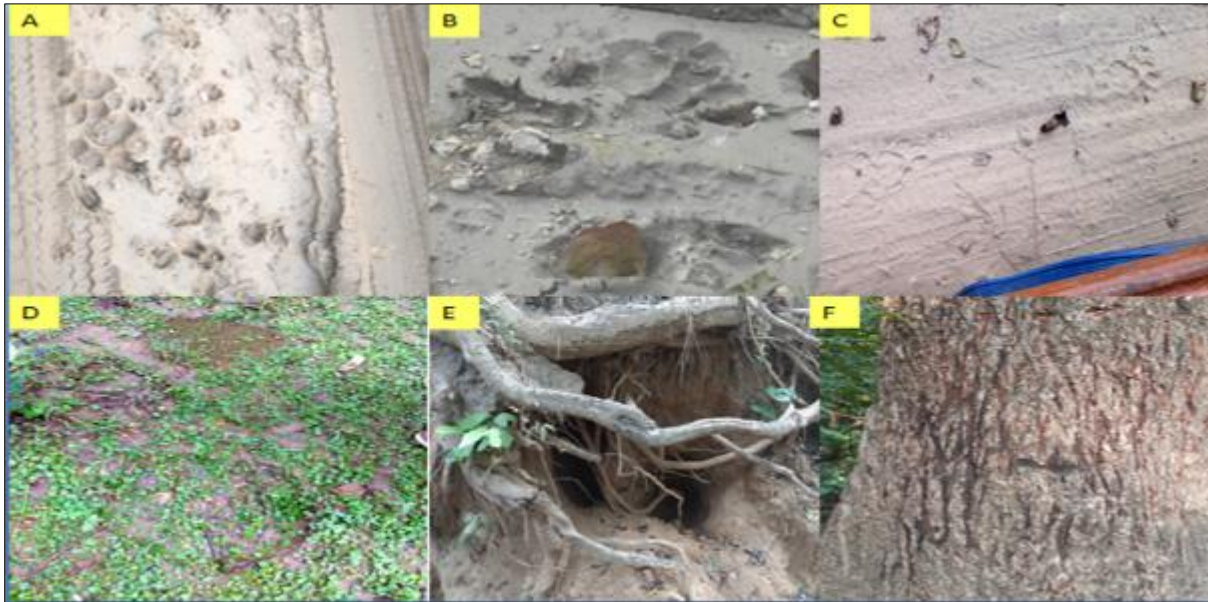


Figure 4 Indirect evidence of large mammals in Corbett National Park: A-C. Footprints of a Tiger, D. Footprints of Elephant, E. Hole under the root of a large tree by Bear, F. Claws Marks of Tiger on a tree trunk

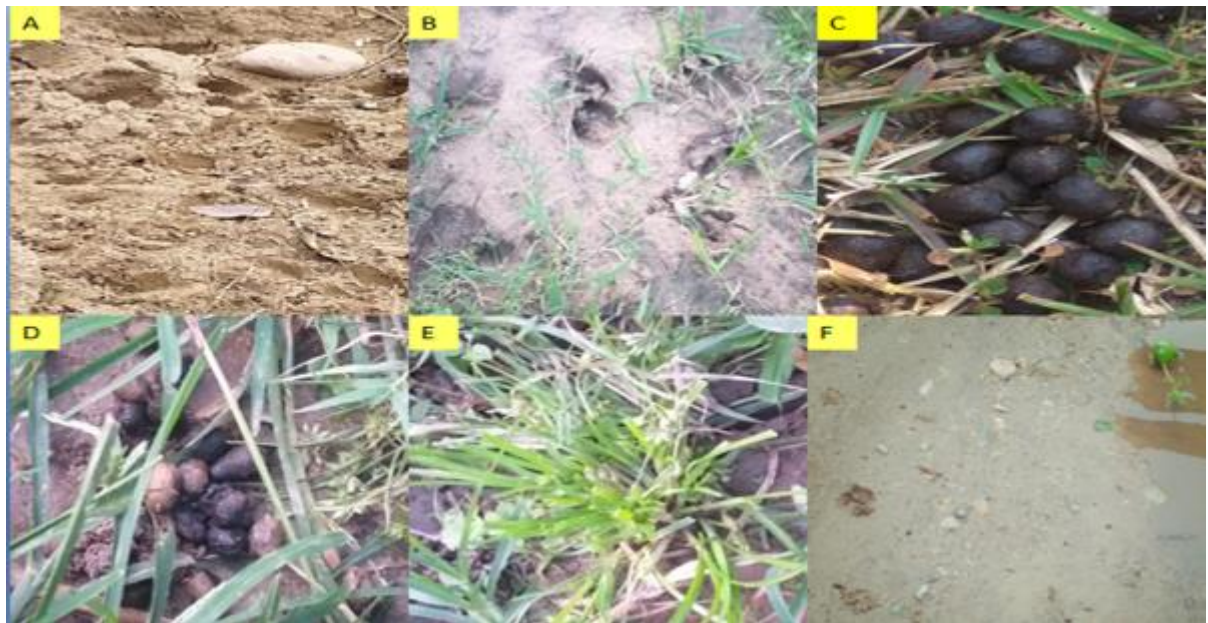


Figure 5 Indirect evidence of Deers: A-B. Footprints of deer, C-D. Fecal pallets of deer, E. a bunch of grass (bitten by deer), F. Footprints of deer with fallen fruit on the ground

4. Conclusion

This study concluded that there are many direct and indirect evidences of wildlife found in Corbett National Park. Many animals are seen directly in this forest or their voices, body parts, and dead bodies are seen. There is some indirect evidence i.e., footprints/pug marks, fecal matter, scrapping marks, claws markings, Nest/hol/pits, blood spots etc. found which also indicates the presence of a particular species in the forest. These evidences are helpful in study of researchers and in conservation projects also.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

References

- [1] Sharma, T., Chen, J.S. & Liu, W.Y. (2019). Investigating Environmental Transgressions at Corbett Tiger Reserve, India. *Sustainability*. 11(20): 5766.
- [2] Khanna, V., Tak, P.C., Bhatia, P.T. (2008). Fauna of Corbett Tiger Reserve: An overview, *Zoological Survey of India. Conservation Area Series*. 35: 1-5.
- [3] Shalini, & Pant, B. (2023a). Effect of tourist safari in activity and behaviour of Chital (*Axis axis*) and Sambar deer (*Cervus unicolor*) in Jim Corbett National Park, Ramnagar, Uttarakhand. *Sustainability, Agri, Food and Environmental Research*. 11(X): 1-6.
- [4] Dey, S., Barai, S., Barman, B.B. (2017). Studies on indirect evidences of presence of wildlife from different National Park of Dooars, West Bengal, India. *World Scientific News*. 71:199-219.
- [5] Dhande, R. & Gulhane, V. (2016). Implementation of identifying Tigers through their Pugmark on Android Phone Application. *International Research Journal of Emerging and Technology*. 3(4):2432-2436.
- [6] Jain, M., Roy, U.S., Mukhopadhyay, S.K. (2011). Indirect evidences of wildlife activities in shoals of Western Ghats, a Biodiversity Hotspots. *Vestnik Zoologii*. 45(2): 153-159.
- [7] Zwerts, J.A., Stephenson, P.J., Maisels, F. et al. (2021). Methods for wildlife monitoring in tropical forests: Comparing human observations, camera traps, and passive acoustic sensors. *Conservation Science and Practice*. 3(12).
- [8] Ganguli, N. (2018). "Photographic evidence of wild dogs, mouse deer" Kambalakonda Wildlife Sanctuary in Visakapatnam is home to several endangered species of fauna. Retrived from <https://www.thehindu.com/news/national/Andhra-pradesh/photographic-evidence-of-wild-dogs-mouse-deer/article23468668>.
- [9] Shalini, & Pant, B. (2023b). Seasonal Food Preference of Cheetal (*Axis axis*) and Sambar deer (*Cervus unicolor*) in Corbett National Park, Uttarakhand. *International Journal for Multidisciplinary Research*. 5(3): 1-10.
- [10] Iqbal, M., Prince, A., Khan, M. A. et al. (2013). Ecology and Population status of Hog deer from Narrowal, Pakistan. *International Research Journal of Biological Sciences*. 2(7):19-24.
- [11] Yadav, N., Mishra, M.K., Saran, V. (2020). Characterization of Pugmark for Animal Species Identification for Forensic Importance. *Journal of Forensic Science & Criminology*. 8(1):1-10.