



# First Record Of Occupancy Of Caracal (*Caracal caracal*) In Ramgarh Visdhari Tiger Reserve, Bundi, Rajasthan, India

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**Abstract:** The Caracal (*Caracal caracal*), a medium-sized felid, is a cryptic and elusive species with a patchy distribution throughout India. regardless of its recognized presence in elements of Rajasthan, scientific documentation of its incidence in Ramgarh Tiger Reserve, Bundi district, has remained absent. This observes ambitions to assess the occupancy of Caracal within the reserve using camera trapping, indirect proof, and local ecological knowledge.

**Keywords:** Caracal, Felidae, Occupancy, Camera Trapping, Ramgarh Visdhari Tiger Reserve

## Introduction

The Caracal (*Caracal caracal*) is one of the most widespread species among small wild cats, distributed throughout 20 million km<sup>2</sup> consisting of 42 African and 18 Asian countries (Avgan *et al.*, 2016). The oldest report of the Caracal within the Indian subcontinent is a fossil from the Indus Valley Civilization carbon-dated to 3000-2000 BCE (Ghosh, 1982). The Caracal is known to occupy drier habitats like desert, dry deciduous and scrub forest (Kitchener, 1991; Corbett & Hill, 1992; Nowell & Jackson, 1996). However, the information on conservation status of its Asian population is highly outdated (Moqanaki *et al.*, 2016).

The Caracal's iconic huge black ears with long tufts of the hair on the tints are emphasized in its name, which originates inside the Turkish word 'Karakulak', which means 'Black Ear' (Buffon, 1761). A Sanskrit literature mentions of a small wild cat named "Dirgha-karan" or 'long-eared' preying on a bird's chicks (Capeller, 1891; Arnold, 1893). This cat could be a Caracal. "Sas-Karan" a name in Sanskrit which means 'rabbit-like ears' was proposed by Vira *et al.* (1953).

Based on the molecular structure there are 8 sub-species of Caracal globally. The Asiatic caracal (*Caracal caracal schmitzi*) is patchily distributed across the arid and semi-arid areas of the Indian subcontinent, Middle-east and South Asia (Wilson and Reeder, 2005; Hassan-Beigi, 2015). Historical documentation of Caracal is spread across northwestern and central India to the states of Jharkhand and Odisha in the east. This region includes four biogeographic zones i.e., Gangetic plain, Semi-arid, Desert and Deccan Peninsula (Rodgers *et al.*, 2002). Areas with high-moderate type of dense forest, highly rugged terrains, high range of precipitation and temperature and intermediate-low arid regions are climatically suitable for Caracal (Jangid *et al.*, 2022).

In India there are a total of 89 historical reports of Caracal between 1616-2000, from the states of, Rajasthan, Maharashtra, Uttar Pradesh, Madhya Pradesh, Delhi, Odisha, Gujarat, Haryana, Andhra Pradesh, Chhattisgarh, Punjab, Telangana and Jharkhand (Rose *et al.*, 1908). The authentic records of Caracal from 2001 to 2020 in India are from Rajasthan, Madhya Pradesh and Gujarat. In Rajasthan between 2001-2020, the Caracal was reported in 10 districts, viz, Sawai Madhopur, Udaipur, Bharatpur, Chittorgarh, Dholpur, Pratapgarh, Pali, Karauli, Rajsamand and Alwar (Khandal *et al.*, 2020).

## Study Area

Ramgarh Visdhari Tiger Reserve (RVTR) lies within the southeastern a part of Rajasthan in **Bundi district** with illustration of each Vindhyan and Aaravalli elements. It is in continuation with the buffer area of Ranthambore Tiger Reserve in the North-eastern side and Mukundra Hills Tiger Reserve in the southern aspect. Mez, a tributary of Chambal River passes through the tiger reserve. The terrain is generally rugged and hilly. The area is restricted to biogeographic classification 4A that is the 'Semi-arid' quarter of India. The topography varies from mild slopes to steep rocky cliffs from flat-of hills of Vindhyas to the conical hillocks and sharp ridges of the Aravallis. Valleys with true depth of soil and moisture support mixed wooded area of good growth and composition.

The Ramgarh Visdhari Tiger Reserve is divided into 5 Ranges; Ramgarh, Jaitpura, Indragarh, Bhopatpura, Keshorai Patan and Itawa.

## MATERIAL AND METHODS

### Questionnaire Surveys

To assess local knowledge and historical presence of the Caracal, structured questionnaire surveys were conducted in remote villages within the reserve. Interviews were carried out with local communities, including farmers, livestock herders, and forest-dependent populations. Respondents were shown images of the Caracal and other sympatric carnivores to minimize misidentification. The surveys focused on recent sightings, conflict incidents, and local perceptions of the species.

### Sign Survey

Field surveys were conducted across selected areas within the reserve to detect indirect evidence of Caracal presence. Searches were conducted for tracks, scat, and other signs along forest trails, dry riverbeds, and agricultural-forest ecotones.

### Camera Trapping

Camera trapping was done using Cuddeback Blue series X-Change TM 1279 models; to validate occupancy outside the protected area, camera traps were strategically placed in farmlands adjacent to the forest. Camera trap locations were selected based on reported sightings from the questionnaire surveys and sign survey findings. Cameras were deployed at locations with minimal human disturbance and potential movement corridors, including scrubland patches and rocky outcrops near agricultural fields.

### Direct/Visual Observations

Targeted visual observations were conducted at key waterholes and potential Caracal habitats within the reserve and surrounding areas. These observations focused on dawn and dusk periods when Caracals are more active.

## RESULTS

### Questionnaire Survey

During the questionnaire survey, a total of 61 respondents from villages around Ramgarh Visdhari Tiger Reserve were interviewed, of which only five individuals reported having seen a Caracal (*Caracal caracal*) in the forested areas of Ramgarh Visdhari Tiger Reserve. The respondents identified the species after being shown a reference photograph (Table no. 1).

### Direct Sighting

A direct sighting of a Caracal (*Caracal caracal*) was recorded on **27<sup>th</sup> February 2025** in the Jaitpura Range of Ramgarh Visdhari Tiger Reserve. It was located immediately outside the boundary of Ramgarh Visdhari Tiger Reserve. The observation occurred in the evening during fieldwork transit around 6:00 pm. The individual was spotted sitting in grass, exhibiting a brief period of vigilance before fleeing. A successful photographic record was obtained during this brief encounter, confirming the species' presence in the area (Image 1). The sighting location was characterized by a mix of dry grassland and scrub habitat, indicative of potential Caracal-preferred microhabitats.



Image 1: A Caracal (*Caracal caracal*) sitting in tall grass in Jaitpura Range, RVTR, Bundi District. © Suhotra Rajput.

Table 1. Local Villagers Reporting Caracal Sightings in Ramgarh Tiger Reserve

Respondent Name	Age (Years)	Village	Caracal Sighting Location	Year of Sighting
Raghuvveer	22	Gulkheri	Forest area near the village	2022
Bhavani Shankar	40	Gulkheri	Forest area near the village	2021
Phorulal	52	Janwra ki Jhupdi	Within the forest	2018
Bherulal	65	Gudda	Deep forest area	2019
Gulibai	80	Gudda	Deep forest area	2009

## Discussion

The presence of Caracal (*Caracal caracal*) in Ramgarh Visdhari Tiger Reserve and its surrounding landscape represents a significant addition to the known distribution of the species in Rajasthan. While Caracals have been previously reported from other parts of the state, their occurrence in Bundi district had remained undocumented. This sighting represents the **first authentic record** of Caracal from both Ramgarh Tiger Reserve and Bundi district, filling a significant gap in the known distribution of the species in Rajasthan. This evidence highlights the potential presence of a previously undocumented population in the region and suggests movement between the protected area and surrounding landscapes. The sighting in Jaitpura Range, characterized by a mosaic of grasslands, scrub, and farmlands, aligns with the species' habitat preferences. The presence of agricultural land adjacent to forested areas suggests that Caracals may be utilizing human-modified landscapes. This raises important ecological and conservation concerns, as habitat fragmentation, retaliatory killings, and prey depletion could pose threats to the species' long-term persistence.

The integration of local ecological knowledge was particularly useful in identifying potential Caracal habitats outside the protected area. Such an approach highlights the need for more extensive surveys to determine Caracal occupancy trends and movement corridors in the region.

Further research is necessary to assess population size, genetic connectivity with other known populations, and potential conservation threats in Ramgarh Tiger Reserve and Bundi district.

This study underscores the importance of continuous monitoring and scientific documentation of lesser-known carnivores in India. The confirmed presence of Caracal in Ramgarh Tiger Reserve and its adjoining landscapes expands our understanding of its distribution and provides critical baseline data for future conservation planning.

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