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# Journal of Threatened Taxa

Building evidence for conservation globally

[www.threatenedtaxa.org](http://www.threatenedtaxa.org)

ISSN 0974-7907 (Online) | ISSN 0974-7893 (Print)

## NOTE

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Sankarshan Rastogi, Ram Kumar Raj & Brideshe Kumar Chauhan

26 October 2020 | Vol. 12 | No. 14 | Pages: 17024–17027

DOI: 10.11609/jott.6489.12.14.17024-17027



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## A rare camera trap record of the Hispid Hare *Caprolagus hispidus* from Dudhwa Tiger Reserve, Terai Arc Landscape, India

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Lagomorpha encompasses small and medium-sized mammals including pikas and rabbits which belong to Ochotonidae and Leporidae families, respectively. These mammals have been known to inhabit all continents except Antarctica (Chapman & Flux 2008). In India, members of this group are found in a variety of landscapes ranging from high elevation regions of Ladakh and Arunachal Pradesh to tall grassland habitats of the Himalayan foothills (Aryal & Yadav 2019; Dahal et al. 2020; Maheswaran 2020). One among these, the Hispid Hare *Caprolagus hispidus* (Pearson, 1839) is a member of the Leporidae family, and is characterized by its small ears, long fore legs and very short hind legs. The dark brown hair on the dorsal side and a very short tail help distinguish them from other lagomorphs (Aryal & Yadav 2019). This threatened and elusive lagomorph was historically known to be found along the entire Terai starting from Uttarakhand in India to southern

Bangladesh in Dhaka (Blanford 1888; Dawson 1971). Its current distribution, however, is restricted to the tall floodplain grasslands of northern India, southern Nepal, and Bhutan (Nidup 2018) within an elevational range of 100–250 m (Aryal & Yadav 2019).

These floodplain grasslands of the Terai region are the primary habitats of the Hispid Hare, which are different from the typical dry and scrub grasslands found across the subcontinent. They are predominantly alluvial grasslands comprising tall grasses like *Saccharum spontaneum*, *Desmostachya bipinnata*, *Narenga porphyrocoma*, and *Themeda arundinacea* among others. These dynamic and highly productive grasslands, maintained by annual flooding of rivers and controlled annual dry season burning (Lehmkuhl 1994; Peet et al. 1999; Singh & Prasad 2013), serve as critical habitats for many faunal species, including the Hispid Hare (Maheswaran 2013; Aryal & Yadav 2019).

**Editor:** Honnavalli N. Kumara, Salim Ali Centre for Ornithology and Natural History, Coimbatore, India.

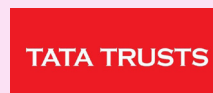
**Date of publication:** 26 October 2020 (online & print)

**Citation:** Rastogi, S., R.K. Raj & B.K. Chauhan (2020). A rare camera trap record of the Hispid Hare *Caprolagus hispidus* from Dudhwa Tiger Reserve, Terai Arc Landscape, India. *Journal of Threatened Taxa* 12(14): 17024–17027. <https://doi.org/10.11609/jott.6489.12.14.17024-17027>

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**Funding:** National Centre for Biological Sciences-Tata Institute of Fundamental Research; The Tata Trusts; World Wide fund for Nature-India.

**Competing interests:** The authors declare no competing interests.



**Acknowledgements:** The research was carried out in Dudhwa Tiger Reserve (Palia Kalan, Uttar Pradesh) with permit number 1421/23-2-12 (G) dated 25 November 2019 (reference letter number TIFR/NCBS/MScWL/2019/UP15/dated 27 September 2019), was issued by the PCCF (Wildlife)/ Chief Wildlife Warden, Uttar Pradesh. We would like to thank the Forest and Wildlife Department, Lucknow, Uttar Pradesh for the timely grant of the research permits. We extend our sincere thanks to the field director, deputy director and the entire forest staff of the Dudhwa Tiger Reserve for their constant support. This research is based on the Master's thesis of Sankarshan Rastogi under Tata Institute of Fundamental Research (TIFR, India), which was supported by National Centre for Biological Sciences (NCBS–TIFR), The Tata Trusts and WWF-India (Terai Arc Landscape Programme). We would like to thank Dr. Mahesh Sankaran, Dr. Pranav Chanchani and Dr. Rekha Warrier for their help in the conceptualization of the study. We also acknowledge the support from Dr. Mudit Gupta (landscape coordinator, WWF-India), Mr. Ashish Bista and others for their help through the project. We would also like to thank the reviewers for their valuable comments.

Dudhwa Tiger Reserve is one of the only three tiger reserves in the state of Uttar Pradesh, India, which lies close to the international border with Nepal. It comprises three protected areas: Dudhwa National Park, Kishanpur Wildlife Sanctuary and Katarniaghat Wildlife Sanctuary. These three protected areas, which were once contiguous, currently comprise an area of around 2,200 km<sup>2</sup>, inclusive of both core and buffer areas (Singh & Prasad 2013).

Dudhwa Tiger Reserve is part of the larger Terai Arc Landscape, a global ecoregion of high conservation significance (Olson & Dinerstein 2002). It forms a part of the Terai-Bhabar system, which are the floodplains of the river Ganga and its tributaries that extend from the state of Uttarakhand in the north-west to Assam in the north-east (Dinerstein 1979; Johnsingh et al. 2004). The reserve is interspersed by a mosaic of floodplain grasslands, riverine forests and wetlands (Kumar et al. 2002) and dominated by Sal trees *Shorea robusta*. The park is home to a variety of threatened fauna including One-horned Rhinoceros *Rhinoceros unicornis*, Asiatic Elephant *Elephas maximus*, Bengal Tiger *Panthera tigris*, Gharial *Gavialis gangeticus*, Swamp Deer *Rucervus duvaucelii duvaucelii*, Hog Deer *Axis porcinus*, Bengal Florican *Houbaropsis bengalensis*, and Hispid Hare.

Photographic records of Hispid Hare are extremely limited. They have been documented from the grasslands of Chitwan National Park in Nepal Terai, where the species was rediscovered after nearly three decades (Khadka et al. 2017). Though the lagomorph has been studied to some extent in the lowland regions of Nepal (Aryal 2010; Aryal et al. 2012), there have been only two ecological assessments of the species in the Indian Terai from the grasslands of Jaldapara National Park and Manas Tiger Reserve (Maheswaran 2013; Nath & Machary 2015). Although some anecdotal evidence exists for their presence in Dudhwa National Park, there are possibly only two published photographic records (Jha & Chauhan 2018; Maheswaran 2020) from the reserve.

Here, we present photographic evidence of this lagomorph from the tall grasslands of Dudhwa Tiger Reserve. These photographs were obtained using automated motion-triggered digital camera traps (Cuddeback C1, [www.cuddeback.com](http://www.cuddeback.com)) installed in different grasslands of the park as part of a research project on ungulates. We intensively sampled multiple one hectare patches in different grasslands in the park for animal signs and vegetation characteristics. In order to reduce false positives and confirm animal presence from sign surveys, we also installed a camera trap inside

our sampling plots for a duration ranging between 20 and 30 days. In total, our survey effort was 1,261 camera trap nights between December 2019 and April 2020 across all our sampling plots.

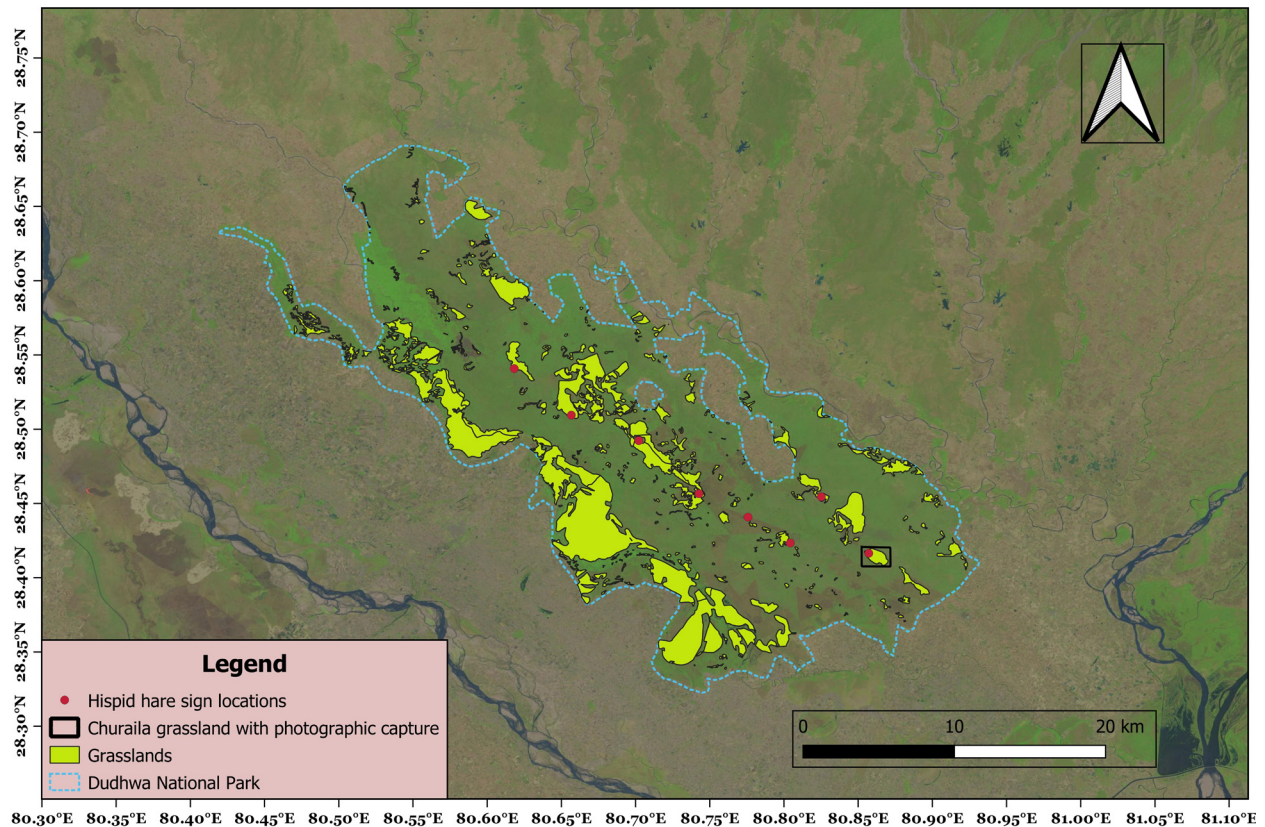
During our field work in different grasslands of Dudhwa National Park and Kishanpur Wildlife Sanctuary, we encountered indirect signs of Hispid Hares, i.e., pellets and grazing signs, in eight different tall grassland patches only in Dudhwa National Park (Image 1).

Hispid Hare pellets are distinctive given their tablet-like, dorsoventrally flattened, shape (Image 2). In addition, we observed signs of grazing by Hispid Hares at the base of the stem of tall grasses like *Themeda arundinacea*, *Narenga porphyrocoma*, and *Sclerostachya fusca* which has been confirmed by dietary studies from Nepal Terai (Aryal et al. 2012; Maheswaran 2013).

The photograph, however, (Image 3,4) came from a 1.2 km<sup>2</sup> grassland patch called Churaila 'phanta' (Nepali: grassland) (80.86°E & 28.41°N) (Image 1). This grassland dominated by *Desmostachya bipinnata* and *Narenga porphyrocoma* grasses, lies in the Laudaria beat of Belraiyaan range of Dudhwa National Park. In total, we got 10 photographs of hares from the Churaila grassland on two different days. To our knowledge, these are among the few confirmed camera trap captures of the species from the tall grasslands of Dudhwa National Park.

Grasslands in the park have traditionally been managed through the use of annual controlled burns. Such grassland fires date back over a century to the early 1920s, when British forest officers started this as a management practice to keep tall grasses in check (Singh & Prasad 2013). Burning also removes moribund plant material and fosters regrowth of tender grasses which is widely known to benefit large-bodied grassland dwelling herbivores such as the One-horned Rhinoceros, Hog Deer, and Swamp Deer, among others. The extent to which such controlled fires impact smaller-bodied species like the Hispid Hare, Swamp Francolin *Francolinus gularis* and the Bengal Florican remains unclear (Kumar et al. 2002; Jha et al. 2018). There is an urgent need for future studies that investigate these impacts in greater detail. The forest department in Dudhwa Tiger Reserve is currently evaluating grassland management practices in the reserve and has set up management plots with different interventions including cutting, harrowing and burning in different combinations, and control plots with no interference. These initiatives will provide us with key insights into optimal grassland management strategies both in the reserve as well as the broader Terai Arc Landscape, not just for large ungulates but





**Image 1.** Grassland map of Dudhwa National park; not all grasslands harbour Hispid Hare populations since the signs of the lagomorph were found in patches marked with red in the map above.



**Image 2.** Hispid hare pellets were the most common signs detected in the tall grasslands.

also for smaller bodied species such as the Hispid Hare. Further, there is also a need to better understand the impacts of reduced inundation and frequent fires over the years on the tougher and drier grasses like *Narenga porphyrocoma* and *Desmostachya bipinnata* which dominate these grasslands presently (Kumar et al. 2002; Sankarshan Rastogi pers. obs. January, 2020).

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**Image 3.** Hispid Hare *Caprolagus hispidus* camera trap capture in Churaila grassland of Dudhwa National Park; the shorter fore legs are one of the characteristics of these lagomorphs. © WWF-India.



**Image 4.** Hispid Hare photographic capture six days later at the same location. © WWF-India.

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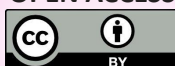
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ISSN 0974-7907 (Online) | ISSN 0974-7893 (Print)

October 2020 | Vol. 12 | No. 14 | Pages: 16927–17062

Date of Publication: 26 October 2020 (Online & Print)

DOI: 10.11609/jott.2020.12.14.16927-17062

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