

First record of White-bellied flying squirrel *Petaurista albiventer* (Gray, 1834) (Mammalia: Rodentia: Sciuridae) in Katarniaghat Wildlife Sanctuary, India

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Abstract

We report the first record of the White-bellied flying squirrel *Petaurista albiventer* (Gray, 1834) within the Katarniaghat Wildlife Sanctuary, which is part of the Terai Arc Landscape in India. This marks a new geographical distribution for *P. albiventer* within the Indian state of Uttar Pradesh. This study contributes to the understanding of the geographical distribution, habitat ecology and taxonomy of the genus *Petaurista* (Link, 1795), shedding light on its presence in various ecologically significant regions and emphasizing the importance of preserving its habitat and promoting further research.

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While mammals are one of the most extensively explored taxonomic groups, there is a notable deficiency in the study of the ecological aspects of nocturnal arboreal mammals (Krishna et al., 2019). Order Rodentia stands as the largest singular group of mammals comprising approximately 2,277 species categorized into 481 genera across 33 families (Singh and Dharaiya, 2021). Belonging to the order Rodentia and the family Sciuridae, flying squirrels encompass a global representation of 44 species distributed across 15 genera (Krishna et al., 2016). Flying squirrels nest in tree cavities, tree roots, downed logs and under rocks for diurnal refuge, shelter from predators and adverse weather conditions, reproduction and hoarding food (Krishna et al., 2019). For foraging and escaping predators, flying squirrels glide between trees with the help of patagia, parachute-like membranes covered with fur that are connected to either side of their limbs (Mondal, 2020). Flying squirrels of the genus

Petaurista Link, 1795 have an additional flap of skin called the uropatagium that also connects the heel and tail (Menon, 2023). The distribution of flying squirrels spans from northern coniferous forests to tropical lowlands, with the majority of these species occurring in the Southeast Asian regions (Singh and Dharaiya, 2023).

The White-bellied flying squirrel *Petaurista albiventer* (Gray, 1834) which was first recorded as *Pteromys albiventer* in its type locality Nepal is distributed across northern Pakistan, extending eastward through India and Nepal into southwestern China (Li and Feng, 2017). The species was until recently classified as a subspecies, *P. petaurista albiventer*, or was synonymized with *P. petaurista* Pallas, 1766 (Corbet and Hill, 1992; Thorington et al., 2012). Using molecular and morphological data, Oshida et al. (2004) and Yu et al. (2006) delimited *P. albiventer* from *P. petaurista* and recognized the former as a distinct and valid species within the *Petaurista* genus.

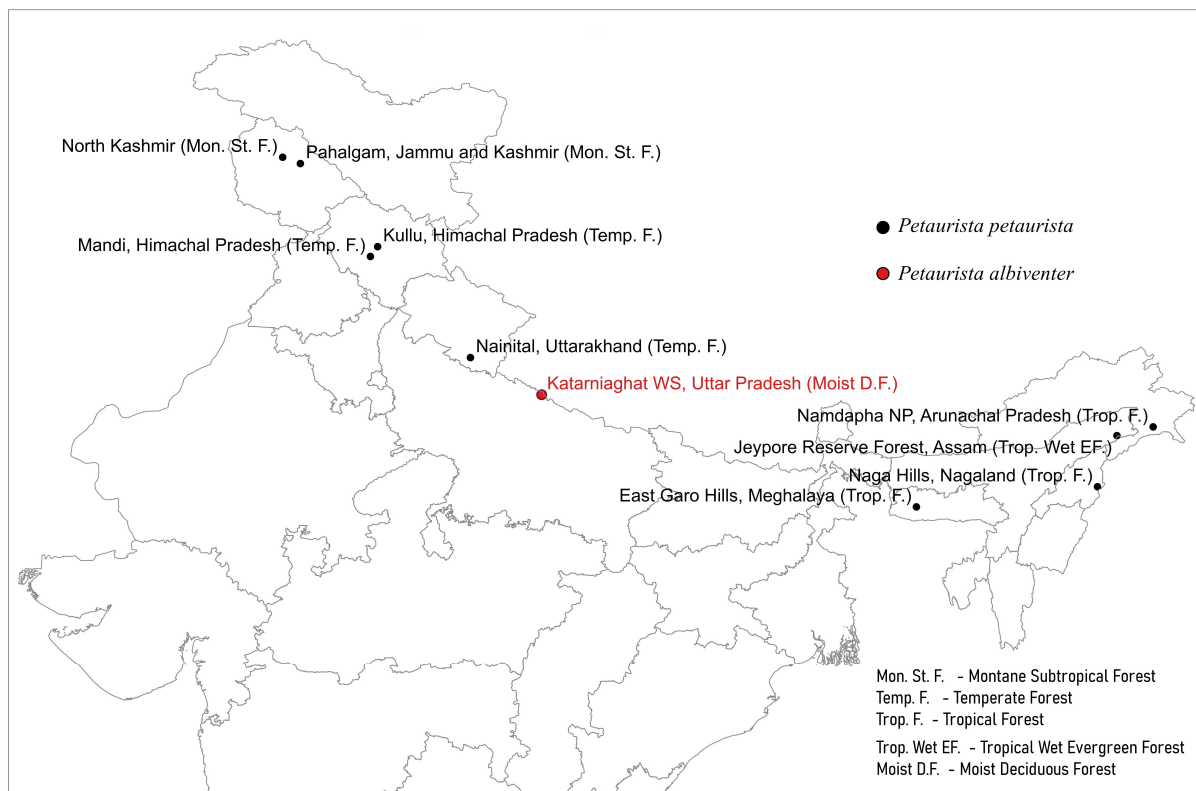


Figure 1: Distribution and habitat records of *P. petaurista* in India (Srinivasulu et al., 2004; Molur et al., 2005; Ray et al., 2012) with new record of *P. albiventer* in Katarniaghat Wildlife Sanctuary. ©Shahbaz Ahmed Khan.

Li and Feng (2017) described the pelage characteristics of *P. albiventer*, which comprise a deep chestnut-red dorsal pelage adorned with creamy-white guard hairs scattered on half of its back and a few on the shoulders and head.

The Terai Arc Landscape is a well-defined eco-climatic zone running parallel to the sub-Himalayan tract in northern India, renowned for its elevated productivity and exceptional biodiversity (Tripathi and Singh, 2009). The Katarniaghat Wildlife Sanctuary (KWS), established in 1975, is part of the Terai Landscape in India. It is located in the Bahraich district of Uttar Pradesh, India, and forms an integral part of the Dudhwa Tiger Reserve. The sanctuary is positioned along the Indo-Nepal international border, situated between latitudes 28° 24' 12"—27° 56' 45" N and longitudes 81° 2' 43"—81° 24' 45" E, covering a total approximate area of 600 km² with elevations ranging from 150 to 200 meters. The forest division is traversed by an approximately 40-kilometer-long road from east to west, parallel to a railway track traversing the forest area. The entire sanctuary is primarily composed of four distinct types of forest communities: sal mixed forest, swamp forest, miscellaneous forest and grassland, along with artificial teak plantation (Kumar et al., 2015).

Here, we report the first record of White-bellied flying squirrel *Petaurista albiventer* in Katarniaghat

Wildlife Sanctuary, Uttar Pradesh, India. This squirrel was first sighted on 27 April 2023 at 20:04 in the canopy of a Ceylon oak tree *Schleichera oleosa* beside the Katarniaghat road at the Nishangara range at 28° 16' 50" N, 81° 11' 12" E (Fig. 2). The second and third sightings occurred on 29 May 2023 and 13 June 2023, respectively, at the same location within the confines of the Katarniaghat Wildlife Sanctuary. With the help of successfully captured photographs, we noted chestnut-red upper parts with creamy-white guard hairs scattered across its back, head and shoulders, brownish red patagium and buff underparts with white throat (Fig. 3). We also noticed a thick, long tail, darker at the tip, flesh-colored nostrils and brown eyes with black eye rings. The elongated and slender tail was furry but lacked a bushy appearance, being carried gracefully curved on the animal's back. We cross-referenced our observation with the descriptions provided by Menon (2023) and Li and Feng (2017), validating the identification of the species as *Petaurista albiventer*.

The biggest threats to mammals of the family Sciuridae include poaching for local bushmeat consumption and the procurement of their skins (Sanamxay et al., 2015), use in traditional medicine, cultural and religious practices that involve the sacrifice of these animals (Krishna et al., 2016), as well as being recognized as a significant prey for both small and large carnivores in their natural habitat (Kamalakkanan, 2017).

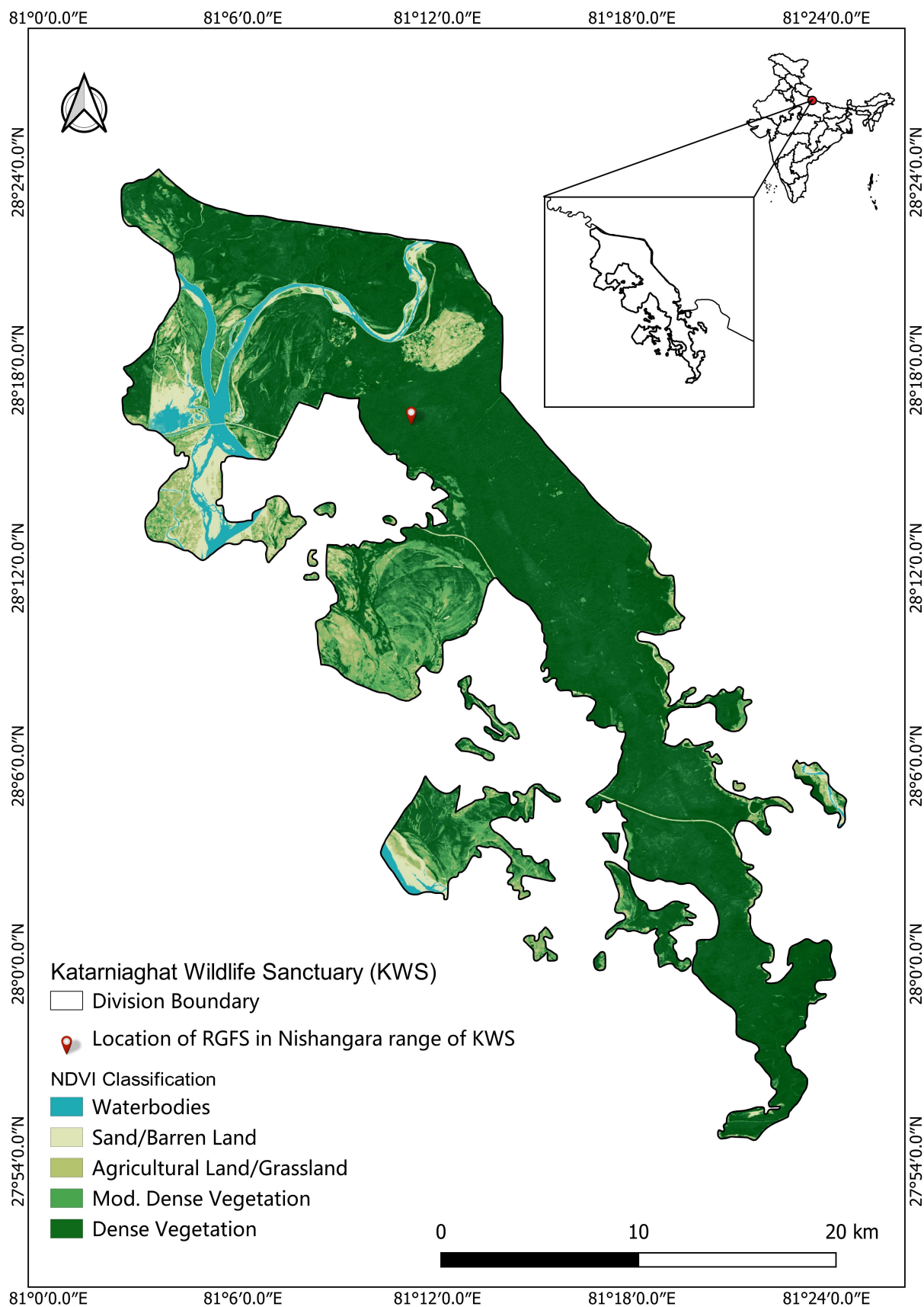


Figure 2: *Petaurista albiventer* sighting location on divisional boundary normalized difference vegetation index (NDVI) map of Katarniaghat Wildlife Sanctuary. © Shahbaz Ahmed Khan



Figure 3: White-bellied flying squirrel *Petaurista albiventer* on Ceylon oak tree *Schleichera oleosa* in Katarniaghat Wildlife Sanctuary. (A) 27 April 2023, (B) 29 May 2023, (C) 29 May 2023, (D) 13 June 2023.

The global status of *Petaurista albiventer* has yet to be evaluated on the IUCN's Red List of Threatened Species. In India, flying squirrels of genus *Petaurista* have been listed in Schedule-I of the Wild life (Protection) Act, 1972 (Menon, 2023). There has been no documented record of *P. albiventer* in the confines of the Katarniaghat Wildlife Sanctuary or across the entire Uttar Pradesh state. The photographic evidence presented herein confirms the species' existence within the sanctuary's premises and encourages further research within the Terai Landscape to safeguard the diverse mammalian species residing in the region.

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Author contributions

The first sighting of the squirrel was recorded by S. M. K., A. J., S. P. B. and E. S. The second and the third sighting records were confirmed by S. A. K., S. P. B. and E. S. Field data collection including photographs was conducted by S. M. K., S. A. K., A. J., S. P. B. and E. S. The manuscript was drafted, investigated and revised by S. A. K. under the supervision of A. K. N.

Conflict of interest

The authors declare that there are no conflicting issues related to this short communication.

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