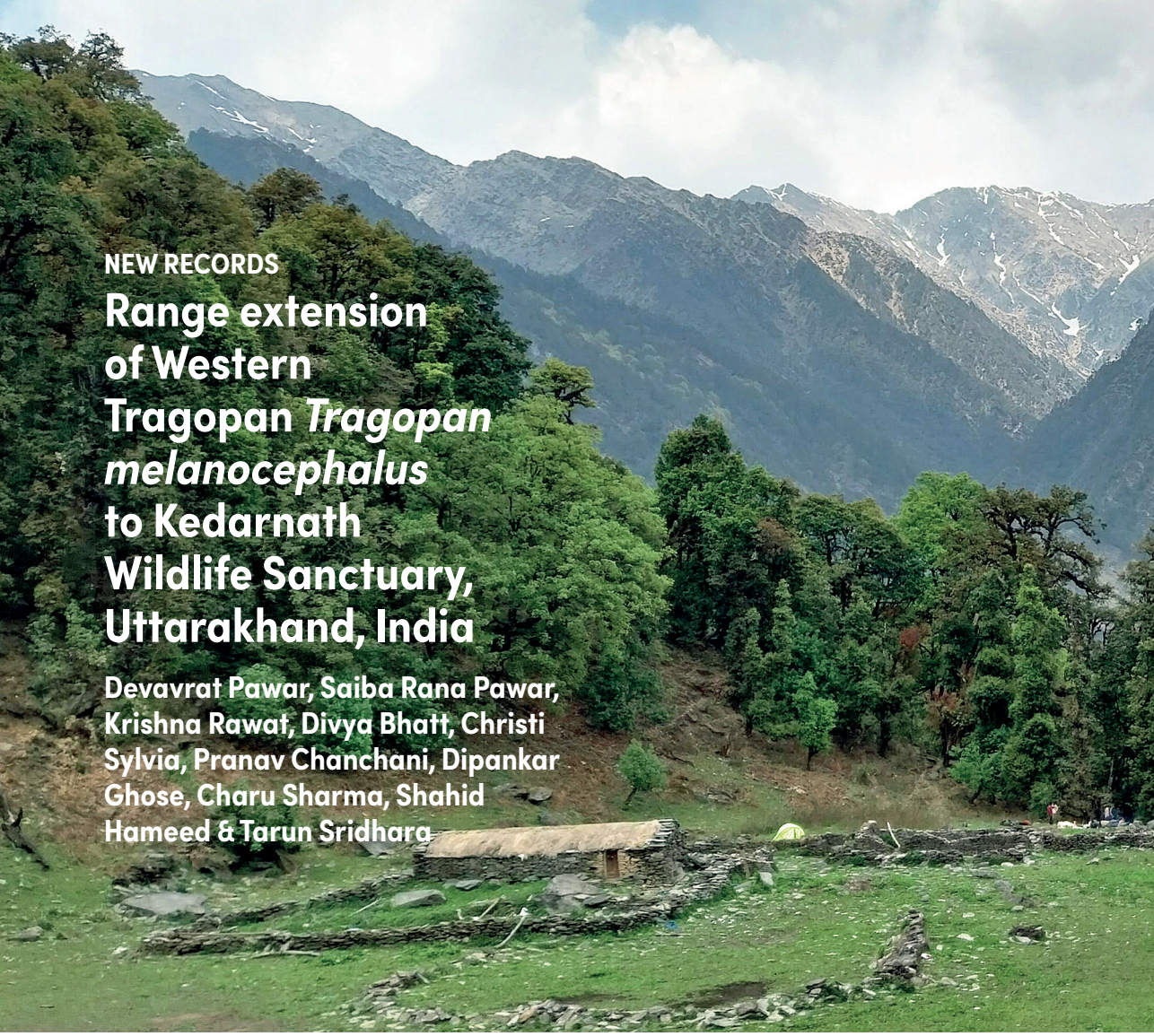


NEW RECORDS

Range extension of Western Tragopan *Tragopan melanocephalus* to Kedarnath Wildlife Sanctuary, Uttarakhand, India

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Plate 1. Montane forest habitat in Kedarnath Wildlife Sanctuary, Uttarakhand, India.

Western Tragopan *Tragopan melanocephalus* is a large, globally Vulnerable pheasant, restricted to the Western Himalaya, that has a small, fragmented population that is threatened by ongoing habitat loss and hunting pressure (Ahmad *et al*. 2017, BirdLife International 2025). Its core range lies from north-eastern Pakistan to Jammu and Kashmir, and Himachal Pradesh (both in India), with suitable habitat predicted to extend east into the Garhwal Himalaya of Uttarakhand, also in India (Ahmad *et al*. 2017, Singh *et al*. 2020, Jameel *et al*. 2023). However, recent documented records from Uttarakhand remain scarce, and photographic evidence is particularly limited (Prasad 1993, Ahmad *et al*. 2017).

Here we provide the first documented records of Western Tragopan from Kedarnath Wildlife Sanctuary, Uttarakhand; these were obtained during camera-trap surveys targeted to assess mammalian diversity. The locality lies at the eastern limit of the species' modelled distribution and represents the easternmost confirmed occurrence of Western Tragopan globally (Singh *et al*. 2020, Jameel *et al*. 2023, eBird 2026, Joshi *et al*. 2026). This record updates the known range of the species, confirms its presence in Kedarnath Wildlife Sanctuary and underscores the conservation importance of high-elevation montane forests in this part of the Western Himalaya, as well as the need for focused surveys for this species in the region.



STUDY CONTEXT

The photographic record was obtained as part of a study in Uttarakhand that was conducted by the World Wide Fund for Nature-India (WWF-India) in partnership with the Nature Conservation Foundation (NCF-India) and the Uttarakhand Forest Department. The objective of the present study was to generate information on the presence of cryptic Himalayan fauna, using a combination of camera trapping and environmental DNA (eDNA) sampling from rivers, streams and lakes. Kedarnath Wildlife Sanctuary is part of the wider study area. The records of Western Tragopan were gained opportunistically during the multi-species sampling study rather than through a survey specifically targeting Galliformes.

STUDY AREA AND METHODS

The Sanctuary, also known as Kedarnath Musk Deer Sanctuary, is in the Rudraprayag district of the Garhwal region in the Western Himalayan state of Uttarakhand (Figure 1). The sanctuary spans a steep elevational gradient and is dominated by temperate and subalpine forests, alpine scrub and high-altitude grasslands, which collectively support diverse bird and mammal communities (Sathyakumar 1994, Bisht *et al*. 2013, Global Tiger Forum 2019). Our Western Tragopan records come from the forests surrounding Toshi, which is the last village situated on a spur above the Mandakini valley at the western end of the Sanctuary. The upper temperate valleys of the Sanctuary support dense broad-leaved forests (Plate 1) that provide key cover and forage for

birds and ungulates (Green 1986, Sathyakumar 1994, Rai *et al*. 2017).

Camera traps were deployed from 26 April to 16 December 2025 along wildlife trails, ridgelines and forest paths used by medium- and large-bodied mammals, at 210 unique locations across the Sanctuary. Western Tragopan was recorded by a motion-triggered camera (Zeiss Secacam 7 classic, wireless trail camera) at two locations (Figure 1): a narrow, wooded ridge at 3,310 m, overlooking an animal trail that spanned the ridge (location 1), and on an open ridge, at 3,584 m, on an animal trail (location 2). The habitat at location 1 is closed-canopy temperate montane forest dominated by Kharsu Oak *Quercus semecarpifolia* and Bell Rhododendron *Rhododendron campanulatum*, with an understorey composed largely of ferns and the tussock-forming grass *Chrysopogon fulvus*. This habitat is consistent with previous studies, which have also shown that Western Tragopan favours temperate and subalpine wooded forest with dense undergrowth (e.g., Arora *et al*. 2021). In contrast, location 2 comprises an open ridge, covered with shrubs and grasses.

In addition to camera trapping, eDNA samples were collected from rivers and streams to characterise the vertebrate assemblage more broadly, although those results are still being analysed and are not discussed further here.

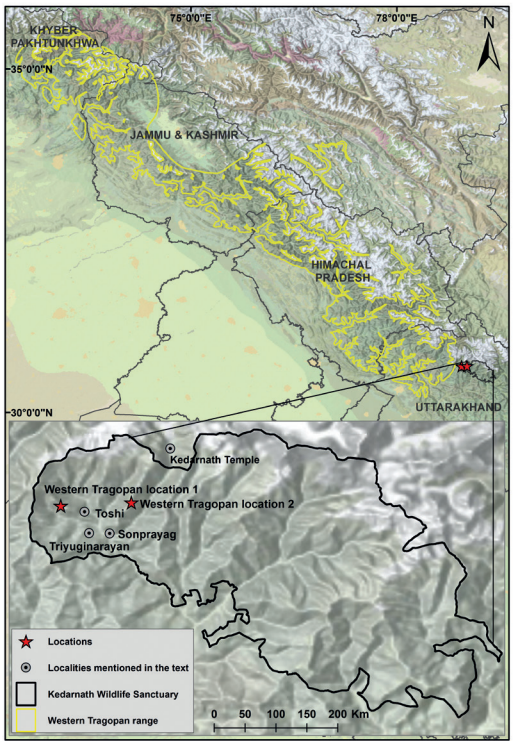


Figure 1. Map showing (above) the current range of Western Tragopan *Tragopan melanocephalus* (yellow lines) and (below) Kedarnath Wildlife Sanctuary, Uttarakhand, India. The red stars indicate the two locations where Western Tragopan were recorded by camera traps.

THE RECORDS

At location 1, a camera trap recorded a pair of Western Tragopan on the trail on 17 June 2025 (Plate 2). In the first capture sequence, at 10:24 an adult male Western Tragopan was photographed walking across the field of view, showing the distinctive dark grey-black plumage heavily spotted with white, deep crimson on the neck and flanks, and bare blue and red facial skin. Just under a minute later, a second sequence from the same camera trap recorded a female Western Tragopan, identified by her typical finely vermiculated, brownish-grey upperparts and bold spotting. At location 2, a camera trap recorded a male Western Tragopan on the trail at 06:26 on 27 June 2025 (Plate 3). No other camera traps in the grid recorded the species during this survey, although several were placed at similar elevations and forest types across the Sanctuary.

Additionally, DP and SRP reported regularly hearing Western Tragopan vocalisations in Toshi forest during the survey, particularly around dawn and dusk in June 2025, while deploying camera traps in the area. Delivered repeatedly from forested slopes above and below the ridge, the calls comprised the characteristic loud, far-carrying, whistling vocalisations described for the species (Grimmett *et al*. 2011) and were consistent with those used in standard call-count surveys (Ahmad *et al*. 2017). Although no formal call-count protocol was used, the combination of repeated vocal detections and camera-trap images indicates that a small, localised population likely occupies this section of the forest.

The camera-trap grid at and around location 1 also recorded a diverse assemblage of medium- and large-sized mammals, including Common Leopard *Panthera pardus fusca*, Leopard Cat *Prionailurus bengalensis*, Asiatic Black Bear *Ursus thibetanus*, Sambar *Rusa unicolor*, Himalayan Serow *Capricornis sumatraensis thar*, Yellow-throated Marten *Martes* flavigula, Himalayan Tahr *Hemitragus jemlahicus* and Himalayan Musk Deer *Moschus leucogaster*. Our survey team also observed a sizable herd of Himalayan Tahr on adjacent slopes. The camera trap at location 2 also recorded



Plate 2. Male (left) and female (right) Western Tragopan *Tragopan melanocephalus* photo-captured just under one minute apart in Toshi forest area, Kedarnath Wildlife Sanctuary, 17 June 2025.

Common Leopard, Red Fox *Vulpes vulpes*, Yellow-throated Marten *Martes flavigula*, Himalayan Serow, Himalayan Tahr, Wild Boar *Sus scrofa*, Nepal Sacred Langur *Semnopithecus schistaceus*, Himalayan Monal *Lophophorus impejanus* and Koklass Pheasant *Pucrasia macrolopha*. This assemblage is consistent with the ungulate and carnivore community previously reported from the Kedarnath landscape (Global Tiger Forum 2019).



Plate 3. Male Western Tragopan photo-captured on the easternmost ridgeline of Toshi forest area, Kedarnath Wildlife Sanctuary, 27 June 2025.

RANGE AND CONSERVATION SIGNIFICANCE

Western Tragopan is known to occur from north-eastern Khyber Pakhtunkhwa in Pakistan eastwards through Jammu and Kashmir, and Himachal Pradesh, with limited evidence from what was formerly Uttar Pradesh in the Garhwal Himalaya (Prasad 1993, Ahmad *et al*. 2017, Shah *et al*. 2022, BirdLife International 2025). Recent habitat-suitability modelling studies suggest that climatically suitable areas and potential habitat patches extend into Uttarakhand, but these analyses also emphasise that occupancy by this species is highly patchy and sensitive to human disturbance (Singh *et al*. 2020, Jameel e*t al*. 2023).

Sight records of Western Tragopan in Uttarakhand certainly exist (e.g., Prasad 1993, Joshi *et al*. 2026). A camera-trap survey conducted earlier in the Bhagirathi basin, Uttarakhand, and published recently, also documented the species in the state (Joshi *et al*. 2026). However, to our knowledge, our camera-trap record from Kedarnath Wildlife Sanctuary represents the easternmost documented record of the species in India, and possibly globally. The Toshi region lies very near the eastern limit of the species' modelled distribution in the Western Himalaya (Singh *et al*. 2020, Jameel *et al*. 2023). The combination of photographic and aural records suggests a resident local population rather than vagrant individuals, thereby refining the known extent of occurrence of this Vulnerable species (BirdLife International 2025). Nationally, Western Tragopan is a High Priority species with a very restricted distribution, although there are insufficient data to assess both its long-term and current annual population trends (SoIB 2023).

Given that global population estimates for Western Tragopan are low (e.g., 3,200–9,500 mature individuals per BirdLife International 2025) and considered to be declining under the combined effects of habitat degradation, hunting and climate change (Ahmad *et al*. 2017, Singh *et al*. 2020, Jameel *et al*. 2023), documenting such previously unconfirmed populations at range limits assumes considerable conservation importance. Our record provides empirical support for earlier modelling studies that identified parts of the Garhwal Himalaya as suitable for the species but lacked field confirmation (Singh *et al*. 2020, Jameel *et al*. 2023). With this find, the Kedarnath region is now home to six species of galliformes: Kalij

Pheasant *Lophura leucomelanos*, Cheer Pheasant *Catreus wallichii* (Vulnerable), Koklass Pheasant, Himalayan Snowcock *Tetraogallus himalayensis*, Himalayan Monal (Green 1986, Sathyakumar *et al*. 1992) and now Western Tragopan.

IMPLICATIONS FOR MANAGEMENT AND FUTURE WORK

Kedarnath Wildlife Sanctuary (WLS) is already recognised as an important refuge for high-altitude mammals, including Himalayan Musk Deer, Himalayan Tahr and, recently, (Bengal) Tiger *Panthera tigris* (Global Tiger Forum 2019, Pawar *et al*. 2020). The presence of Western Tragopan adds further conservation value to its upper temperate and subalpine forests, and strengthens the argument for prioritising these habitats in management planning. Three major management and research priorities emerge from this finding, as set out below.

Targeted surveys of Western Tragopan

There is a clear need to conduct dedicated and intensive surveys to assess the distribution and population status of Western Tragopan in the Kedarnath and adjoining Forest Divisions. This should combine systematic call counts in spring, transect monitoring and focused camera-trapping in Kharsu Oak–Bell Rhododendron belts between c.2,800 m and c.3,600 m altitude (Ahmad *et al*. 2017, Singh *et al*. 2020). Such work would permit occupancy and relative abundance to be estimated, help identify key breeding areas, and clarify the continuity (or isolation) of populations along the Garhwal region in the Western Himalaya of India.

Integrating Galliformes into high-altitude landscape planning

Our record illustrates how a camera-trapping exercise focused on mammals can simultaneously generate critical information on threatened Galliformes and other taxa. The camera-trap photographs from this study are currently being analysed, but preliminary data show several captures of high-altitude pheasants, especially Himalayan Monal. Future landscape-level planning in the Kedarnath and broader Western Himalayan region should explicitly incorporate Western Tragopan and other high-altitude pheasants as focal species alongside mammalian carnivores and large herbivores.

Managing disturbance around villages, pilgrimage sites and trekking routes

Western Tragopans are sensitive to understorey integrity, and they depend largely on a dense and undisturbed layer of bamboo and shrubs (Nazir *et al*. 2025). A decline in tragopan numbers is often an early sign of overgrazing by nomadic livestock or excessive harvesting of minor forest produce, both of which thin out the protective ground cover. The presence of Western Tragopan also confirms the existence of mature, multi-layered forest structures, which still exist in Kedarnath WLS. Therefore, measures need to be reinforced to ensure that grazing and non-timber forest product (NTFP) collection pressures are regulated so that they do not disturb Western Tragopan habitats.

Toshi valley and village are situated at the western end of Kedarnath WLS and are accessed most commonly along a road that was under construction during our June 2025 fieldwork (and remains so). This road connects Toshi to Triyuginarayan. The latter village and nearby Sonprayag are frequented by tourists as pilgrimage sites, Sonprayag being known internationally as the starting point of the Kedarnath temple pilgrimage. Once the road to Toshi is completed, the Toshi valley and forests will be exposed to the substantial tourist traffic visiting this region. The increase in footfall, and associated infrastructure and traffic, may increase disturbance in adjacent forests. Careful demarcation of camping sites and trekking routes, regulation of new linear infrastructure, and maintenance of undisturbed forest corridors along key ridges would benefit Western Tragopan as well as other disturbance-sensitive montane fauna.

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