HIMALAYAN SEROW

Photographic evidence of *Capricornis thar* in Lansdowne Forest Division, Uttarakhand, India

Camera trap image of Himalayan Serow in Kotdwar Range, Lansdowne Forest Division, Uttarakhand (WWF-India camera traps)

IUCN Red List: Near Threatened (Duckworth & MacKinnon 2008)

Mammalia
[Class of Mammals]

Cetartiodactyla
[Order of even-toed ungulates and cetaceans]

Bovidae
[Family of cloven-hoofed ruminants]

Capricornis thar
[Himalayan Serow]

Species described by Hodgson in 1831

Himalayan Serow *Capricornis thar* is a Near Threatened species under IUCN Red List of Threatened Species and listed as a Schedule-I species under the Wildlife (Protection) Act (1972) of India. Though protected, its population is declining due to decrease in its habitat, hunting for its meat and loss of forest cover due to clearing for agriculture and collection of fuelwood (Green 1987a; Duckworth & MacKinnon 2008). Like other mountain ungulates, Himalayan Serow also forms a part of the prey base for carnivores especially leopards. Limited work has been done on the distribution, status and ecology of the Himalayan Serow but, its presence has been recorded in east and southeast Bangladesh; in Himalayas (Bhutan, northwestern & northeastern India including Sikkim

and Nepal), in China (Tibet only), and probably in western Myanmar (Grubb 2005). In India, Himalayan Serow is sparsely distributed throughout the forest covered southern slopes of the Himalaya starting from Jammu and Kashmir in northwest to the hill states of northeastern India (Prater 1965). There are no accurate estimates of the population size of the species available in India, but their density in Kedarnath Wildlife Sanctuary (Uttarakhand) has been estimated at 1.6 Serow/km² (Green 1987a). It is also listed as an Endangered species in Nepal by WWF-Nepal and Department of National Parks and Wildlife Conservation, Nepal (Chapagai and Dhakal, 2002) and thus, its hunting is prohibited throughout Nepal since 1992 (Wegge & Oli 1997). In China, Himalayan Serow is a Class II protected species (Duckworth & MacKinnon 2008), while in Bhutan, it is listed in Schedule I of Bhutan's Forest and Nature Conservation Act, 1995 which provides licensed hunting permits for adult male Himalayan Serow, but not for females or young (Green 1987b). In Bangladesh, the Himalayan Serow is protected under the Wildlife (Preservation) Act, 1973. It is listed under Schedule III, and cannot be hunted, killed or captured (Green 1987b).

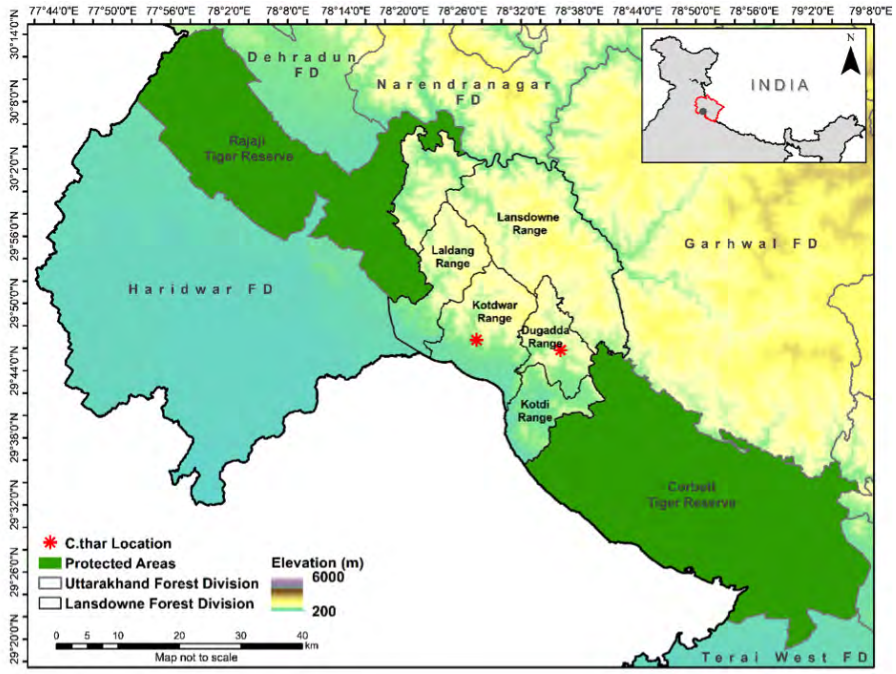
Global Distribution :
Native: Bhutan, India, Bangladesh, China and Nepal (Duckworth & MacKinnon 2008)

Trap image of Himalayan Serow in Dugadda range, Lansdowne Forest Division, Uttarakhand 2018. (WWF-India camera traps)

Himalayan Serow has a large head, thick neck, short limbs, long mule-like ears, and a coarse coat of dark hair (Schaller 1977). It is solitary, although there have been few occasions when as many as seven have been seen together (Prater 1965). Anecdotal information provided by the local villagers to our team during the camera trapping exercise also suggest that they are mainly active during the night and early morning hours. Both sexes are grossly similar in appearance and are about equal size (Schaller 1977; Aryal 2008). The species is oriental in origin (Schaller 1977), and is known to be locally present between 300m and 3,000m elevation in all Himalayan states (Green 1987b), there have been accounts throughout the species range that it inhabits rugged steep hills and rocky places, especially the limestone regions, and also in hill and mountain forest areas (Duckworth & MacKinnon 2008). Aryal (2008) found that the Himalayan Serow prefers gentle to steep slopes, while avoiding the plains to stay away from the predators. They use steeper areas as resting places and

gentler slopes for grazing (Aryal 2008). In the Terai Arc landscape, Himalayan Serow have been recorded at elevations of 413m in Nandhaur Wildlife Sanctuary, Uttarakhand and at 172m in Bihar's Valmiki Tiger Reserve (WWF-India unpublished report).

Lansdowne Forest Division, where the Himalayan Serow was photo-captured, is a biodiverse habitat tract in the Shivalik - Lower Himalayan ecoregion within India's Terai Arc Landscape. This division also serves as a crucial wildlife corridor for tigers, elephants and other animals and facilitates their movement between Corbett Tiger Reserve and Rajaji Tiger Reserve (Johnsingh & Williams 1999; Harihar et al. 2009). The division is located on 29^{0}37'–30^{0}2'N and 78^{0}19'–78^{0}43'E, longitudinally in the south western portion of district Pauri Garhwal (Kukreti & Bhatt 2014). It is one of the first forest divisions in India to be registered (4 September 2015) and approved or accredited (25 May 2017) as Conservation Assured Tiger Standards (CA|TS) site, which is an accreditation scheme that encourages protected areas where tigers are found to meet a set of standards and criteria, created by an international group of experts and protected area managers, that assures effective and long term tiger conservation (http://www.conservationassured.org). The division spans an area of 433km^2 and encompasses five ranges: Kotdi, Dugadda, Lansdowne, Kotdwar, and Laldhang. The terrain is undulating (elevation range 300–1000 m), and has diverse habitats including sal forests, small grasslands (*chaurs*) mixed forests (dominated by *Mallotus philippensis*), and Himalayan forests (characterized by *Pinus roxburghii*) (Kukreti & Bhatt 2014; Jhala et al. 2015). There are steep hills, deep valleys, multiple rocky streams (raus) and some perennial rivers. The hill slopes which are both densely wooded, and have patches of grass provide suitable habitat for Serow and goral (*Naemorhedus goral*) whose habitat include steep slopes, ridges, and gentle slants (Aryal 2008). Major rivers and streams include Kohlu, Saneh, Koh, Sigaddi, Rawasan and Malan all of which feed into the Ganga river. These rivers and other forest streams, provide ample amount of water for the wildlife in the forest, including in the dry season, when water accumulates in small pools



Map of Lansdowne Forest Division showing the 2 locations where the Himalayan Serow was captured on the camera traps. (Saloni Salaria/ WWF-India)

Habitat of Lansdowne Forest Division (Photos by: Dr. Pranav Chanchani (A) & Siddhant Umariya (B, C, & D) /WWF-India)

along drainage features.

The photographic evidence of the Himalayan Serow was recorded during the All India Tiger Estimation (AITE) surveys of the National Tiger Conservation Authority of India and Wildlife Institute of India, jointly implemented in Lansdowne Forest Division by World Wide Fund for Nature (WWF-India) and the Uttarakhand Forest Department. Between May and August 2018, pairs of camera traps were deployed within 191-2 km^2 grids. The Himalayan Serow was only photo-captured at two camera trap-stations. One adult male individual was recorded in Nauri beat of Dugadda range (29^{0}47'08"N & 78^{0}36'53"E) at the elevation 1,011m in June 2018 and other adult male in Malan beat of Kotdwar Range (29^{0}47'51"E & 78^{0}28'15"E) at the elevation of 934m in July 2018. Both records were from moist deciduous hill forests dominated by *Shorea robusta*, *Haldina cordifolia*, *Acacia catechu*, *Lantana camara*, and *Murraya koeingii*.

Previously, Himalayan Serow has never been captured on the camera traps in Lansdowne Forest Division. However, there is one photographic record of the Himalayan Serow from Duggada range clicked by a photographer - Mr Rajiv Bisht in the year 2016. Other anecdotal evidence gathered from the locals living within and around the Lansdowne Forest Division and the forest staff also suggests that this shy animal occurs in the area. Himalayan Serow has also been included in the management plan of Lansdowne Forest

Division. Being an understudied species, the photographic evidence for the continuing presence of the Himalayan Serow's in Lansdowne Forest Division opens up scope for further studies and highlights the need for comprehensive conservation efforts to ensure the persistence of small populations of endangered species and their habitats.

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