

[Short communication](#)

# The highest elevation record of a large Indian civet *Viverra zibetha* and the record of Siberian weasel *Mustela sibirica* in Langtang National Park, Nepal

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## Abstract

Large Indian civet *Viverra zibetha* is generally found below 2,500 m above sea level. However, our documentation of this species at Cholangpati, Langtang National Park at 3,622 m asl, marks the highest elevation ever documented for this species globally. Similarly, our sighting of the Siberian weasel *Mustela sibirica* in the Gosaikunda and Langtang Valley trekking route is the first recorded observation in the Langtang National Park. These discoveries contribute valuable insights into the distribution of these animals, emphasizing the significance of opportunistic sightings.

**Keywords:** Gosaikunda; Highest elevation; Mustelidae; Langtang; Opportunistic record

2013), grasslands and in thick bushes (Jnawali et al. 2011). It is one of the most common camera-trapped species in Kathmandu Valley (Katuwal et al. 2020) and elsewhere in Nepal (Timmins et al. 2016), with a wide distribution recorded up to 2,420 m (Appel et al. 2013). In East Sikkim, India, large Indian civet were captured at 3,080 m in Juniperus-Rhododendron scrub forest with a bamboo understory, claiming the highest elevation record of the species in the world (Khatiwara & Srivastava 2014).

The Siberian weasel, *Mustela sibirica*, is one of Nepal's six known weasel species. The others include the mountain weasel *Mustela altaica*, stoat *Mustela erminea*, yellow-bellied weasel *Mustela kathiah*, stripe-backed weasel *Mustela strigidorsa*, and Steppe polecat *Mustela eversmanii* (Chetri et al. 2014; Amin et al. 2021). However, there remains uncertainty about the presence of the stripe-backed weasel and stoat in Nepal (Mitchell 1975; Abramov et al. 2008; Thapa 2014). Siberian weasel is listed as the "Least Concern" in Nepal due to its wide distribution, large population, and lack of significant threats (Jnawali et al. 2011). However, all other mustelids in Nepal are classified as Data Deficient, making them the least-known group in the country. Siberian weasel inhabits a wide range of habitats, including dense forests, primary and secondary deciduous, coniferous and mixed forests, rhododendron forests, river valleys, and human settlements (Jnawali et al. 2011; Menon 2014). Within Protected Areas (PAs), the species has been documented in the Makalu Barun National Park, Sagarmatha National Park, Gauri Shankar Conservation Area, Manaslu Conservation Area, Annapurna Conservation Area, Dhorpatan Hunting

## 1 | Introduction

Large Indian civet *Viverra zibetha*, is a small carnivore of the family Viverridae. The other members in this family recorded in Nepal include the masked palm civet *Paguma larvata*, the common palm civet *Paradoxurus hermaphroditus*, the small Indian civet *Viverricula indica*, and binturong *Arctictis binturong*. Large Indian civet is categorized as List Concern on the IUCN Red List of Threatened Species due to their wide distribution across various habitats (Timmins et al. 2016). However, the limited studies on this species in Nepal obscure the understanding of its status and distribution in the region. It is a solitary, nocturnal, ground-dwelling animal with a diet consisting of a wide range of animals, including fish, birds, lizards, frogs, insects, scorpions (and other arthropods), and crabs, as well as poultry and rubbish (Lekagul & McNeely 1977; Duckworth 1997; Zaw et al. 2008; Gray et al. 2014). It prefers primary, secondary, degraded forest, scrubland, and plantation areas (Duckworth 1997; Azlan 2003; Jennings & Veron 2011; Choudhury 2013; Chutipong et al. 2014), in the riverine and Sal *Shorea robusta* forests, near human settlements (Ghimirey & Acharya 2014), Oak *Quercus glauca* and bamboo *Himalaya calamus* forest (Appel et al.

Reserve, Shey Phoksundo National Park, Rara National Park, and Api Nampa Conservation Area, (Jnawali et al. 2011; Ghimirey & Acharya 2012; Katuwal et al. 2013; Ghimirey et al. 2014; Yadav et al. 2018; Basnet et al. 2022; Chetri et al. 2024). Outside PAs, sightings have been reported in Humla and Mugu districts (Ghimirey et al. 2014; Yadav et al. 2018). This article reports the world's highest elevation record of a large Indian civet and the first recorded sighting of a Siberian weasel in Langtang National Park, Nepal.

## 2 | Materials and methods

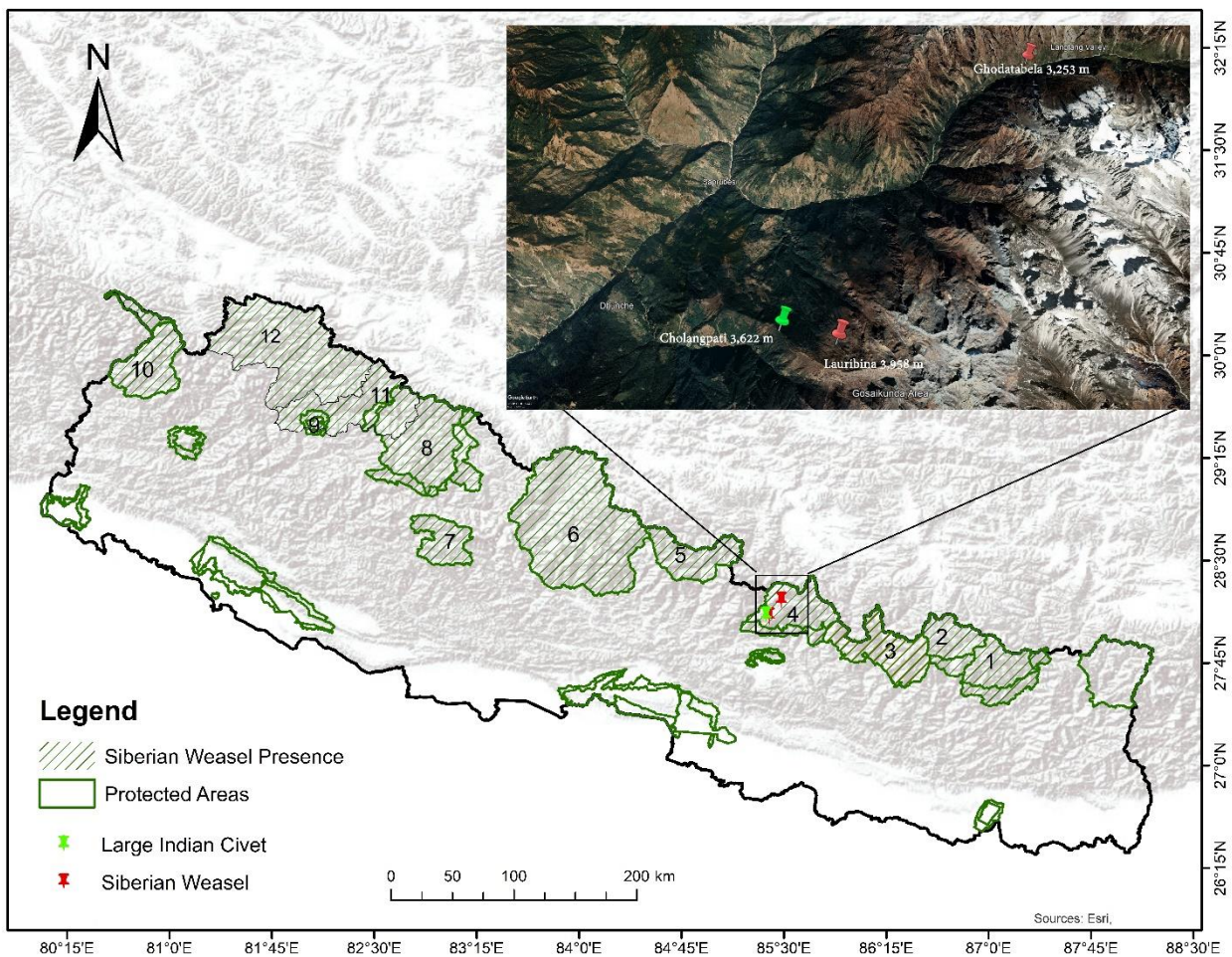
### 2.1 | Study area

This study was conducted in the Gosaikunda and Langtang Valley trekking route in Langtang National Park (LNP, Fig. 1). LNP is the first protected area in Nepal, with 2130 km<sup>2</sup>, including a buffer zone (Baniya et al. 2021). Gosaikunda and Associated Lakes Ramsar site, one of the world's highest-

including important pilgrimages in June (*Ganga Dasara*) and August (*Janaipurnima*) every year (Basnet et al. 2021).

### 2.2 | Field survey

Three different field surveys were conducted in the Gosaikunda area between June 2019 and December 2023, totaling 160 man-working days, to explore the status and distribution of globally threatened wood snipe *Gallinago nemoricola* using call counts and sweep surveys. We conducted 72 call counts survey around dawn (04:30 AM–06:00 AM; 60% of surveys) and dusk (06:15 PM–07:45 PM; 40%). Additionally, sweep surveys were conducted for 1.5–4 hours after dawn and before dusk call surveys were conducted by five observers walking in a line through suitable habitats, maintaining a 10-m distance for each observer. Aside from Wood Snipe surveys, we recorded other birds and mammals' opportunistic encounters in the field. The field scanning was done with Asika 8×42 binoculars and a photograph was taken using Nikon P1000 with occurrence data recorded using Garmin eTrex 30 GPS.



**Figure 1.** The Google Earth location map of the Siberian weasel and large Indian civet in Langtang National Park (Inset) along with Siberian weasel distribution in Nepal represented by the shaded marking. The distribution occurs in 1. Makalu Barun National Park (NP), 2. Sagarmatha National Park, 3. Gauri Shankar Conservation Area, 4. Langtang NP, 5. Manaslu Conservation Area (CA), 6. Annapurna CA, 7. Dhorpatan Hunting Reserve, 8. Shey Phoksundo NP, 9. Rara NP, 10. Api Nampa CA, 11. Mugu District, and 12. Humla District.

altitude freshwater lake systems, is located between 4,054–4,620 m asl (Mool et al. 2002). This area is a popular trek destination that receives visitors from April to October,

## 3 | Results



### 3.1 | Large Indian civet

On December 23 2023 at 05:44 PM, a large Indian civet was observed beside Hotel Tibet Mountain View in Cholangpati (28.0998°E 85.3710°N, 3,622 m asl; Fig. 1). The area has two hotels surrounded by the pine forest while an undergrowth bamboo forest with pine and rhododendron is found on the lower slope of Cholangpati. In two minutes of video footage taken by the co-authors, the civet was observed comfortably consuming leftover food from the hotel, scattered in the kitchen garden, and remained undisturbed even when illuminated with a flashlight.

### 3.2 | Siberian weasel

On July 31 2019 at 06:57 AM, a Siberian weasel was observed at the upper slope of the Brana area (28.0947°E, 85.3936°N, 3,958 m asl), 2 km northeast of Lauribina, in route to Gosaikunda and Associated Lake, a Ramsar site. Above the tree line, the area is mainly comprised of dwarf rhododendron scrub interspersed with rocky slopes, talus, and alpine pastures. The weasel was entering the fallen boulders and rocks in the pastureland, probably looking for the pikas.

On 4 November 2022 at 04:51 PM, a Siberian weasel was observed (28.210°E, 85.4816°N, 3,253 m asl) about 800 meters north of Ghodatabela area (Fig. 3). The area was shrubby, with dried grasses along the stone wall on the side of the trekking trail route to Langtang Valley. The weasel was beside a stone fence on the side of the trail, near a restaurant and an abandoned field with a stone fence. The weasel gazed for a minute, occasionally moving in response to ambient



**Figure 2.** Large Indian civet exploring the rubbish on December 23 2023 at 05:44 PM, snapped photos from video footage (Photo by: Kanchha Tamang).

sounds. The species was undisturbed and calm, even though the co-author was just 2 meters away.



**Figure 3.** Siberian weasel wandering from stone fencing on November 4, 2022, at 04:51 PM and dark chocolate coloration on the snout, uniform body, and clear black tip, are identifiable characteristics of the species (Photo by: Bhumika Thapa).

## 4 | Discussion

In Nepal, Siberian weasels are distributed between 2,100-4,300 m asl (Yadav et al. 2021) from east to west in all mountain PAs except Kanchenjunga Conservation Area, Langtang National Park, and Khaptad National Park (Fig. 1). Our observation of a Siberian weasel in Langtang National Park opens the possibility of its distribution across all the mountain PAs of Nepal. Although sightings of weasels (*Mustela* sp.) in the Gosaikunda area have been previously described by Koju (2014) and Kawamichi (1968), these studies did not specify the occurrence of the Siberian Weasel, though it is highly probable that the weasel species mentioned in these papers could be the Siberian Weasel. However, there might also be the possibility of other weasel species occurring in the region, highlighting the need of focused studies. In this case, our observation of the Siberian Weasel represents the first confirmed record for Langtang National Park. Furthermore, despite the LNP being a popular trek destination that receives thousands of trekkers, few trekkers might probably have had similar recordings or observations, but as non-specialists, they were not aware of the scientific significance of their information. Opportunistic surveys are not given much importance, even within the conservation groups, these small carnivores are often neglected in favor of the flagship species in Nepal (Katuwal et

al. 2018; Basnet & Rai 2020). Our documentation of the Siberian weasel using a normal mobile phone shows the potential for non-specialists to contribute to scientific knowledge. This highlights the importance of citizen science projects and the need for more people to be aware of the biodiversity present in the region. We recommend that the concerned authorities, such as Langtang National Park and the Department of National Parks and Wildlife Reserve should install information boards in trekking areas including details about less-known species like the Siberian Weasel. This will help increase interest and knowledge about these species. We also encourage all relevant authorities to provide a basic introduction to the wildlife at the park entrance, encouraging the public to contribute valuable information to support scientific research. Additionally, observations from non-specialists can provide valuable information to the park, so an online portal should be created to collect wildlife photos and basic information about species and their locations. It is noteworthy that five out of six weasel species are data deficient in Nepal (Jnawali et al. 2011). Therefore, with awareness and communication, valuable information on the distribution and behavior of such neglected species should be shared to help in updating the status of the species. Weasel species are carnivore species and, in both observations, weasels were seen in the stony areas suggesting it might look for pikas or other small mammals as observed by Koju (2014), Kawamichi (1968) and Basnet et al. (2021).

A large Indian civet recorded at Cholangpati, LNP represents the highest elevation record of the species in the world. The species was recorded 542 m above the previously considered highest elevation (3,080 m asl) for the species (Katiwara & Srivastava 2014). In Nepal, the previous highest documented presence of large Indian civet was published by Appel et al. (2013). They recorded the civet from the Hugu Kori area of Annapurna Conservation Area at 2,420 m asl. Generally, food and weather are the primary extrinsic drivers of altitudinal migration (Hsiung et al. 2018), and generally species in high

altitudes migrate to lower elevations. However, our record of species during the winter at the highest elevation of the species indicates a large Indian civet ability to thrive in extreme environmental conditions. Cholangpati area has two hotels that are open on a rotational basis (only one hotel operates) during winter due to decreased visitors. Additionally, the nearby settlement area is Chandanbari, situated at 3,300 m asl and 3 kilometers away, which implies that the civet may be independently dwelling in the forest. Nonetheless, a comprehensive investigation using camera traps is recommended for a deeper understanding of the species in this area.

## 5 | Conclusions

Our opportunistic sightings of the large Indian civet and Siberian weasel provide valuable information about the extended distribution of these species and highlight the need for further research and conservation efforts in the Himalayan region.

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## Authors' contributions

All the authors collected the data. Basnet, H. wrote the manuscript and Thapa B., and Tamang, K. provided suggestions and feedback.

## Conflicts of interest

The authors declare no conflict of interest.

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