

[Short communication](#)

# Photographic evidence of the Himalayan marmot *Marmota himalayana* (Hodgson, 1841) from Tsum Valley, Manaslu Conservation Area, Nepal

Basu Dev Poudel<sup>1\*</sup>  | Sujan Shrestha<sup>2</sup> | Rabindra Bhattarai<sup>3</sup>  | Shikhar Rai<sup>4</sup> | Dipendra Adhikari<sup>#</sup>

<sup>1</sup>Environmental Services Nepal, Kathmandu, Nepal

<sup>2</sup>Conservation Development Foundation, Kathmandu, Nepal

<sup>3</sup>Janajyoti Secondary School, Nawalpur, Nepal

<sup>4</sup>University of Calgary, Department of Geography, Canada

<sup>#</sup>*Dipendra Adhikari is deceased. The authors dedicate this paper in memory of the Late Dipendra Adhikari who died on 25 December 2023.*

\* **Correspondence:** basudev.poudel99@gmail.com

**Suggested citation:** Poudel B.D., Shrestha S., Bhattarai R., Rai S. and Adhikari D. 2024. Photographic evidence of the Himalayan marmot *Marmota himalayana* (Hodgson, 1841) from Tsum Valley, Manaslu Conservation Area, Nepal. *Nepalese Journal of Zoology*, 8(1):92–95.  
<https://doi.org/10.3126/njzv8i1.67116>

**Article history:**

**Received:** 14 April 2024

**Revised:** 24 May 2024

**Accepted:** 26 May 2024

**Publisher's note:** The statements, opinions and data contained in the publication are solely those of the individual author(s) and do not necessarily reflect those of the editorial board and the publisher of the NJZ.



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## Abstract

The Himalayan marmot (*Marmota himalayana*) remains one of Nepal's lesser-known rodent species. The article discusses first photographic evidence of Himalayan marmot within the alpine grasslands of Tsum Valley, Manaslu Conservation Area, Nepal. Himalayan brown bear (*Ursus arctos*) pugmarks were also observed close to the marmot's burrow sites. The Himalayan brown bear seems to be one of the potential natural predators of the marmots in the area.

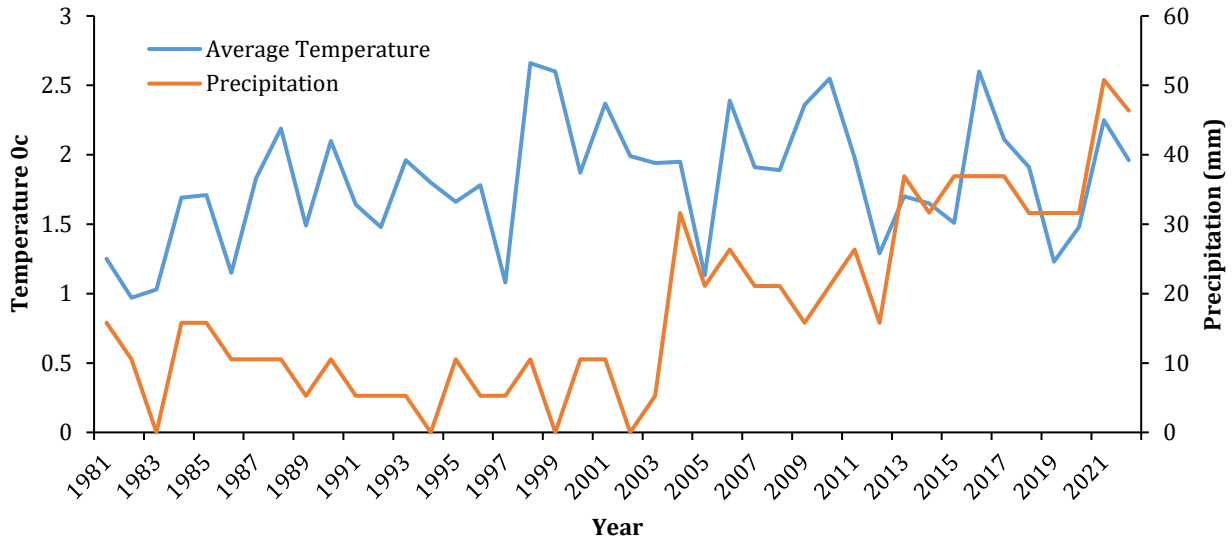
**Keywords:** Alpine grassland; Photograph; Rodentia; Tsum Valley

natural predators, and natural disasters such as landslides (Aryal et al. 2013; Poudel et al. 2016; Shrestha 2016). The snow leopard (*Panthera uncia*), Himalayan brown bear (*Ursus arctos*) and golden eagle (*Aquila chrysaetos*) are known as natural predators of marmots (Aryal et al. 2014; Poudel et al. 2015). The species undergoes hibernation for about 6 months from late autumn to early spring (Nikol'skii and Ulak 2006; Smith et al. 2010). In preparation for hibernation, they dig deep burrows ranging from 2.0 to 3.5 meters in depth, which the colony shares during the hibernation period (Nikol'skii and Ulak 2006; Molur and Shrestha 2008).

The Himalayan marmot is listed as a Least Concern species in the IUCN Red List of Threatened Species due to its extensive distribution, substantial population, presence within and outside the protected areas, and apparent resistance to significant decline (Jnawali et al. 2011; Shrestha 2016). Its habitat occupies elevations above tree lines but below permanent snow boundaries at elevations of 3,500 to 5,200 m., specifically, residing in short grass steppes or alpine grasslands, and deserts with low rainfall (Molur et al. 2005; Jnawali et al. 2011; Shrestha 2016). The global distribution of this species is northeastern Pakistan, northern India, Nepal, Bhutan, and China (Nikol'skii and Ulak 2006; Jnawali et al. 2011; Aryal et al. 2015). The species is present in Annapurna Conservation Area, Sagarmatha National Park, Shey Phoksundo National Park, Kanchenjunga Conservation Areas, and Makalu Barun National Park in Nepal (Jnawali et al. 2011; Shrestha 2016). This article presents Himalayan

## 1 | Introduction

Nepal is home to only one type of marmot, known as the Himalayan marmot, *Marmota himalayana* (Hodgson 1841), belonging to the genus *Marmota* (Vanisova and Nikol'skii 2021). It is a large terrestrial rodent characterized by stout limbs and a short black or brown tail. In addition, it has a distinctive fur coat, Short, coarse, buff-grey fur with some black hair on the back, face dark brown with a buff eye ring (Jnawali et al. 2011). The Himalayan marmot population and ecology are one of the least known in Nepal (Nikol'skii and Ulak 2006; Poudel et al. 2015). They are considered one of the highest elevations living small mammals in the world (Nikol'skii and Ulak 2006). They are diurnal and are mostly active in the morning and late afternoon (Poudel et al. 2015). Threats to the species include exploitation for food and ethnomedicinal purposes, habitat disruption due to human disturbance, overgrazing by livestock, predation by feral dog,



**Figure 1.** Average temperature and precipitation of the study area

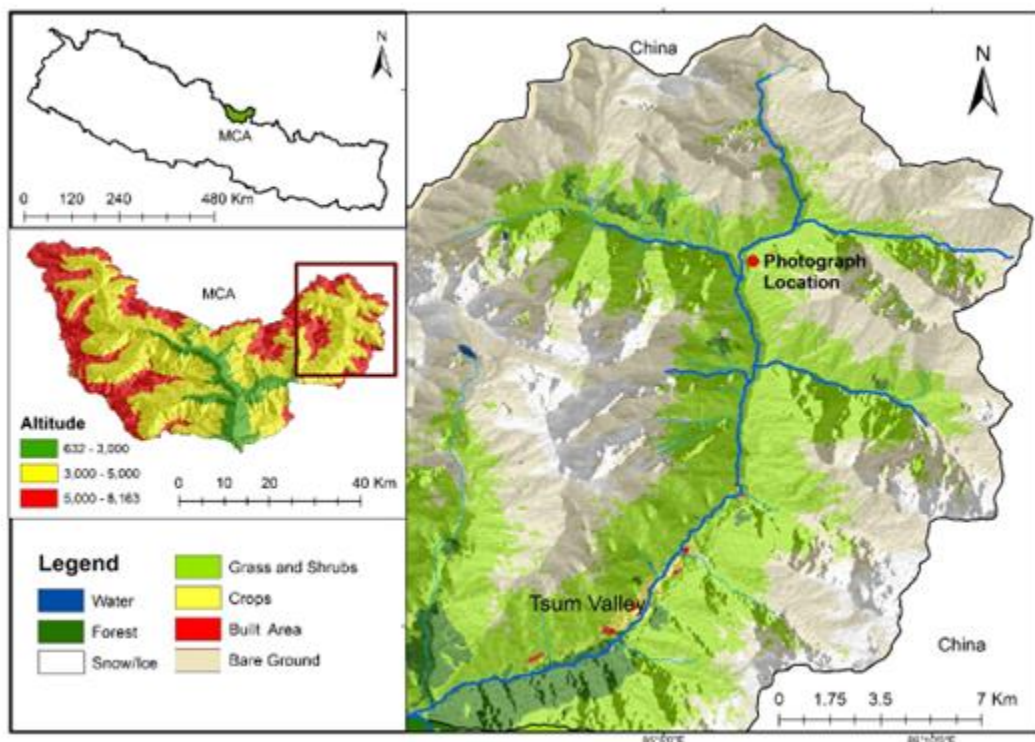
marmot's photographic evidence in the Tsum Valley, within the Manaslu Conservation Area, Nepal.

**2 | Materials and methods**

The article is based on an opportunistic observation of the Himalayan marmot. They were observed during a vegetation survey focusing on medicinal plants conducted between July to August 2020.

The Tsum Valley, within the Manaslu Conservation Area, experiences an alpine climate, characterized by average annual rainfall below 60 mm. Precipitation mainly occurs in

the form of snow during winter, with rainfall during the monsoon (June– August). Average yearly temperatures range from 1 to 2.5 °C (Fig. 1) (Source: <https://power.larc.nasa.gov/data-access-viewer/>). Alpine meadows, grassland and subalpine forests primarily consisting of species such as *Larix* sp., *Abies spectabilis*, and *Betula utilis* dominate the Tsum Valley (Dhamala et al. 2020). Tsumba people (The Local inhabitants of Tsum) utilize this site for grazing and sheltering their livestock such as mules, horses, yaks, cows, goats, and sheep.



**Figure 2.** Photographed location of the marmots

### 3 | Results

On 05 August 2020, morning, two individuals of *M. himalayana* were photographed, the site is located at 28.6149 N, 85.1062 E, at an altitude of 3748 m., near the confluence of the Shiar River in Tsum Valley (Fig. 2). Both the individuals were grazing, and they were presumed to be mother and her baby (Fig. 3). Probably due to our close presence the mother defecated outside the burrow before entering into it. We have seen five more burrows near the marmots photographed site. In addition, evidence of presence of Himalayan brown bear was noticed due to presence of pugmarks approximately 50 m away from the marmot's burrow location (Fig. 4).



**Figure 3.** The Himalayan marmots presumed to be mother and her young.

### 4 | Discussion

This is the first photographic evidence of the presence of the Himalayan marmot in Tsum Valley, Manaslu Conservation Area. The presence of marmots is often considered an indicator of Himalayan brown bear presence in the region in the central Himalayas (Aryal et al. 2010). The Himalayan marmot serves as an important prey species for threatened natural predators like the Snow leopard and Himalayan brown bear (Aryal et al. 2010; Aryal et al. 2015). The Tsum Valley is known sanctuary for animals, where harming, and killing wild or domestic animals is considered a heinous crime, people in the Tsum Valley adhere to the principles of Buddhism so there is no sign of hunting for meat (Katuwal and Dahal 2013; Gurung 2019). We observed domestic animals yak, cow, mule, horse, sheep, and cowsheds near the site. Marmots perceive pastoral activities as disturbances and feral dogs are one part of the pastoral system that can pose a threat (Poudel et al. 2015). Therefore, the local people should be careful about guarding dogs and maintaining the integrity of the wildlife habitats.

### 5 | Conclusions

The opportunistic sighting and taking photographs of the Himalayan marmot in Tsum Valley, Manaslu Conservation



**Figure 4.** Pugmarks of Himalayan brown bear seen at the site.

Area is the first photographic evidence of the species in the area. Based on our findings, we strongly recommend further ecological study to obtain detailed information on the species in the area.

### Acknowledgements

The authors are thankful to Conservation Foundation Nepal, Kathmandu for invaluable research support and Dr. Bhuwan Kesar Sharma for providing the camera and lens used to capture the images of the species.

### Authors' contributions

B.D.P. and S.S. designed the research, conducted data collection, and drafted the manuscript; R.B and S.R contributed to data collection and manuscript refinement. D.A. assisted in species identification and encouraged manuscript writing. All authors contributed significantly to the drafts and provided final approval for publication.

### Conflicts of interest

The authors declare no conflict of interest.

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