

Confirming Occurrence of Wild Yak (*Bos mutus*) in Nepal's Shey Phoksundo National Park

SHORT REPORT

Wild Yak

Wild yak (*Bos mutus*) is listed as vulnerable in the IUCN Red List, with global population estimated at less than 10,000 mature individuals in the high mountain range in China, India and Nepal. In Bhutan, the species is believed to be extinct, while in Nepal, their occurrence was considered uncertain until they were seen in Limi valley in Humla district in 2013-14 survey.

Globally, hunting for meat is identified as one of the major threats to wild yaks, albeit reported to be declining. Being a rather shy animal, human disturbances including grazing by domestic stocks and infrastructure development in their habitats may also reduce the habitat available for these ungulates. Diseases, inbreeding and conflicts with herders are other threats to wild yaks (Buzzard and Berger, 2016). Climate change may aggravate the risks for wild yaks and their habitats.

In Nepal, with lack of direct evidence, the species was considered 'data deficient' and 'possibly regionally extinct' (Jnawali et al., 2011). However, with increasing wildlife conservation efforts in the high mountain regions of Nepal, there have been reports of wild yak sightings in western Nepal. Two individuals were sighted and photographed in Humla district (Acharya et al., 2015), providing hope for the species recovery. Since then, non-invasive genetic analysis discerns the differences between the samples of wild and domesticated individuals and confirmed the first occurrence of wild yak in northwestern region of Humla district in Nepal (Kusi et al., 2021).

Differences between wild and domestic yaks

Wild yaks differ from domesticated yaks. Key morphological and behavioral features of wild and domesticated yaks are given in Table 1.

Table 1. Morphological variation between wild and domestic yak (Acharya et al., 2015; pers. comms. Sonam Wangdi - Local herder and citizen scientist).

Feature	Wild Yak	Domestic Yak
<i>Morphological</i>		
Pelage	All black with whitish muzzle	Varied colors and patterns
Body hair	Long fringes distinctly visible in ventral region while dorsal region appearing bare, with voluminous tail	Full body of hair with no apparent dorso-ventral differences

Inner ear spots	Pale spots in inner ears	No distinct pale spots
<i>Behavioral</i>		
	Appear to be wary of human presence while they tend to approach domestic free-ranging populations, presumably to mate with females	

Genetic studies have indicated that wild and domestic yaks are closely related and there is a high chance of both interbreeding. Analyses through DNA haplotype has been previously conducted for wild yaks of Humla district which have verified the samples known to be pure breeds and linked towards the Chinese wild population (Kusi et al., 2021).

Confirming Wild Yak’s Occurrence in SPNP

Following anecdotal information of wild yak sightings from local community in Shey Phoksundo NP, DNPWC-SPNP and WWF Nepal engaged two local citizen scientists Mr Sonam Wangdi and Mr Urgyen Gurung to assess the occurrence of this rare species in Upper Dolpa in FY 2024.

In consultation with citizen scientists, local communities and herders, rangelands within three sub-watershed blocks – Pyo, Sheshe and Upper Khung Khola along Nepal side along the Nepal-China border were selected as the study site (Figure 1). These three sub-watershed blocks host high-altitude rangelands at an altitude between 4000 and 5000 m, used by local communities to graze their livestock, as well as used by wildlife inhabiting in that area. The habitat is a trans Himalayan undulating terrains dominated by alpine grasslands and barren rocky mountains.

Opportunistic as well as systematic transect surveys were conducted to assess the occurrence of wild yak in the study site. Prior to the survey Mr Wangdi, and Mr Gurung were oriented on the survey methodology.

Rangelands in each block were surveyed consecutively for 2-3 days every week for over 30 days during June and July in 2024. A total survey effort of approximately 64-80 km of transect was conducted, along with opportunistic consultations with local herders.

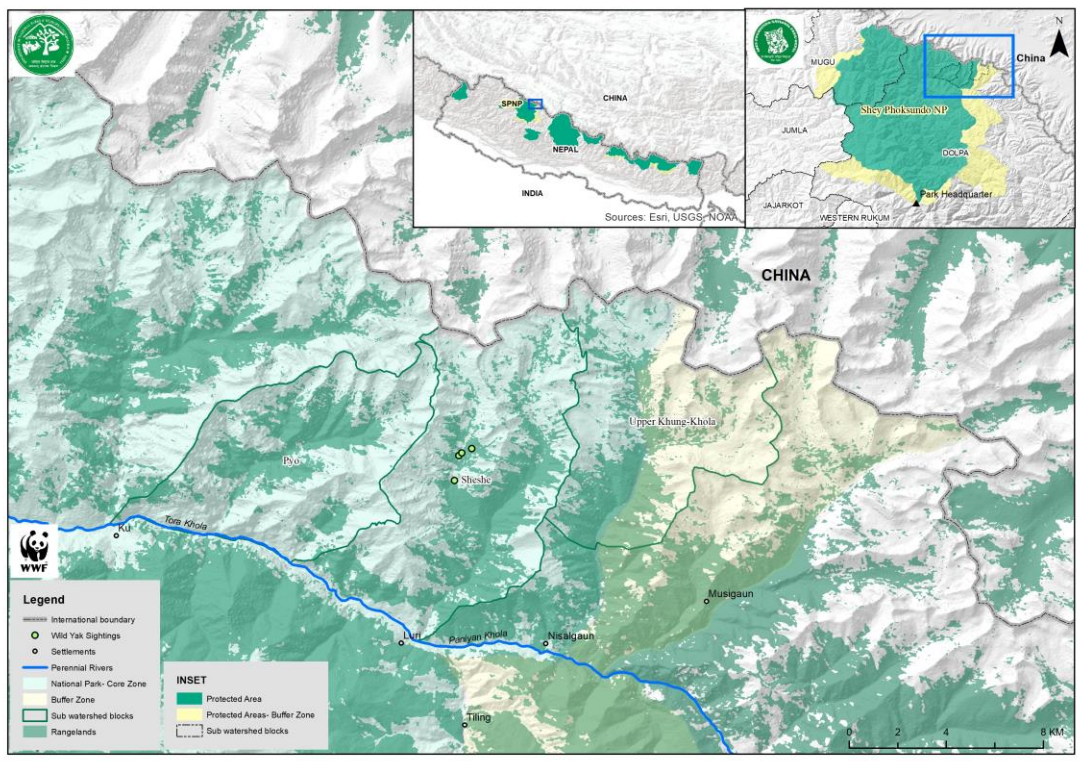


Figure 1.a. Study area map of the three sub-watershed blocks surveyed for wild yak in upper Dolpa, and 1.b. A view of rangeland in Sheshe sub-watershed block where wild yak was photographed.

Locating Wild Yak in Shey Phoksundo National Park

On 23rd of July 2024, a single male wild yak was sighted at an altitude of 4,825 m asl in *Sheshe* sub-watershed block (Figure 2), around noon by Mr Wangdi, who is also a local livestock herder by profession.

Following the sighting, Mr Wangdi followed the individual for three consecutive days till 26th July, 2024, capturing several photographs and recorded other relevant information, such as location, altitude, time (Table 2).

Table 2. Tabular illustration of wild yak sightings during the survey in Saldang, SPNP, June-July 2024.

SN	SPECIES	EVIDENCE	BLOCK	RANGELAND	DATE	TIME	NUMBER	SEX	ELEVATION
1	Wild Yak				7/23/2024	12:01	1	Male	4825
2		Direct Sighting	Sheshe	Long gyok	7/24/2024	10:00 - 16:20			4842
3					7/25/2024	16:29			4623
4					7/26/2024	8:34			4935

* Same individual was captured in all four occasions



(a)

(b)



(c)

Figure 2. Photographs of wild yak captured by Mr Sonam Wangdi: a) grazing with livestock; b) side view of the wild yak; c) front view of the wild yak. Photo credit: Sonam Wangdi-DNPWC/WWF

Validation

The photographs captured from Sheshe sub-watershed block were visually verified in three stages - first with local herders and the citizen scientists who primarily rely on livestock herding for their livelihood; second, among SPNP-WWF team having long working experience in the area following Acharya et al., 2015; and third with the national (pers. comms. Kusi, N) and overseas experts (pers. comms. Schaller, G.B and Berger, J), knowledgeable on topography and wild yak ecology.

Discussion and Way Forward

The male individual photographed in Sheshe sub-watershed block provides cogent evidence to the presence of wild yak in upper Dolpa. Further verification through non-invasive genetics will be useful. Local herders from upper Dolpa region of SPNP also reported that they frequently observe wild yaks visiting from sites like Hongtu, Konglung and Mola Longba of People's Republic of China's Tibetan Autonomous Region to breed with the domestic yaks during the spring-summer season in SPNP's *Sheshe* area. A long-term study combined with non-invasive genetic method in Sheshe and other adjoining areas would help to understand the population status wild yak in SPNP and migratory pattern of this species between SPNP and Tibetan Autonomous Region of People's Republic of China.

References

- Acharya, R., Ghimirey, Y., Werhahn, G., Kusi, N., Adhikary, B., Kunwar, B. 2015. Wild yak *Bos mutus* in Nepal: rediscovery of a flagship species. *Mammalia* 80 (5): 475-480. <https://doi.org/10.1515/mammalia-2015-0066>
- Buzzard, P., Berger, J. 2016. *Bos mutus*. The IUCN Red list of Threatened Species 2016: e T2892A101293528. <https://dx.doi.org/10.2305/IUCN.UK.2016-2.RLTS.T2892A101293528.en>. [Accessed on 16 September 2024]
- Jnawali, S.R., Baral, H.S., Lee, S., Acharya, K.P., Upadhyay, G.P., et al. (compilers) 2011. The Status of Nepal Mammals. The National Red list series, Department of National Parks and Wildlife Conservation, Kathmandu, Nepal.
- Kusi, N., Manandhar, P., Senn, H., Joshi, J., Ghazali, M., et al. 2021. Phylogeographical analysis shows the need to protect the wild yaks' last refuge in Nepal. *Ecology and Evolution* 11 (12): 8310-8318. <https://doi.org/10.1002/ece3.7660>