



Short Communication

Status of the Himalayan Griffon (*Gyps himalayensis*) in Poonch River Mahasheer National Park, Azad Jammu and Kashmir, Pakistan

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ABSTRACT

Himalayan griffon (*Gyps himalayensis*) is one of the three Gyps species of vulture found in the state of Azad Jammu and Kashmir (AJ&K), Pakistan. The Himalayan griffon is a year-round resident in the mountainous areas of the Himalayas, Karakoram, and Hindu Kush ranges. This study presents the first population assessment of wintering Himalayan griffon in Poonch River Mahasheer National Park (PRMNP), AJ&K, Pakistan. Using a 20 km road transect survey, individuals were recorded during peak activity periods. The total number of individuals was calculated by combining observations across six colony sites, and GPS coordinates were used to map their spatial distribution within the park. Overall, 113 individuals were recorded with a mean group size of 19 vultures. These findings provide the first wintering population baseline for the Himalayan griffon in PRMNP and highlight the park's importance for seasonal vulture conservation in northern Pakistan.

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EUR: Data curation, software, visualization, writing original draft.

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Key words

Himalayan griffon, *Gyps himalayensis*, Road transect, Population, Conservation, Pakistan

The Himalayan griffon (*Gyps himalayensis*) occurs naturally in the Indo-Malayan and Palearctic regions. It is among the largest Old-World vultures, surpassed only by the Eurasian black vulture (*Aegypius monachus*). It is distinguished by pale buffy-brown and cream plumage, a featherless white head, strong broad wings, and a short tail. Adults develop whiter body plumage with contrasting black flight feathers as they mature (Bird Life International, 2021; Operation Migration Team, 2021). The Himalayan griffon is a magnificent raptor that almost wholly feeds on carrion by searching for dead animals and scavenging at garbage dumps and slaughterhouses (Bhusal *et al.*, 2021; Waseem, 2022). Usually, they feed

upon fresh carrion, but may choose to eat rotten, when there is a scarcity of it (Wang *et al.*, 2021).

The distribution range of the Himalayan griffon extends across the mountains of South and Central Asia, encompassing the Himalayas in northern Pakistan, Kashmir, Nepal, India, Bhutan, Tibet, Afghanistan, Russia, and China (Ferguson-Lees and Christie, 2001; Praveen *et al.*, 2014). Himalayan griffon has a vast distribution range, with an approximate area of 1,000,000–10,000,000 km² (Siddique and Khan, 2016). The species is more abundant in the northwestern Himalayas, generally living at elevations above 3000–4000 feet and opting for the Himalayan and Trans-Himalayan regions as breeding grounds. Juveniles prefer the Himalayan foothills for the winter season. However, there is variation in elevation preferences as they sometimes descend south to Kutch in Gujarat while ascending to the highest alpine slopes in northern Khyber Pakhtunkhwa, Azad Jammu and Kashmir (AJ&K), Gilgit, Hunza, and Baltistan regions in the summer season (Roberts, 1991; Awan *et al.*, 2004).

The populations of Gyps vultures experienced a gradual decline throughout the 20th century globally. The global population of the Himalayan griffon has been

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predicted to undergo a moderately rapid decline in the next three generations, with a current suggested population size of 100,000–499,999 individuals. The species has been uplisted as near threatened by the IUCN Red List in 2014 (Bird Life International, 2021). The main cause of this population decline is the veterinary use of diclofenac (Swan *et al.*, 2006). Furthermore, not only diclofenac but also other non-steroidal anti-inflammatory drugs (NSAIDs) are lethal to the population of vultures (Gilbert *et al.*, 2004; Cuthbert *et al.*, 2006; Acharya *et al.*, 2009). Some of the other threats faced by these vultures include habitat loss, poisoning, and a shortage of food resources, while the ultimate driving force for the decrease in their population is food (Armstrong, 1993). Due to these various reasons, the IUCN Red List assessment report (Bird Life International, 2021) has suggested population surveys across the species' range to assess the population trend as part of the conservation action plan for this species.

Despite reports from other parts of AJ&K (Siddique and Khan, 2016; Zangi *et al.*, 2019), no study has focused on Poonch River Mahasheer National Park (PRMNP), limiting our understanding of its conservation value. This current study aims to determine the population status and distribution of the Himalayan griffon in PRMNP, where no past study exists on this species. This study provides baseline information essential for the management and conservation of the Himalayan griffon in PRMNP.

Materials and methods

The present study was carried out in the PRMNP (33.555272°N 73.915990°E) and a one-km buffer area of the PRMNP (Fig. 1). The PRMNP is located in northern Pakistan (Ahmad *et al.*, 2021), covering an area of approximately 4500 hectares, at an elevation of about 558 meters (m), and falls in two districts (Kotli and Poonch) of AJ&K. The whole stretch of the Poonch River and its tributaries was declared a conservation area primarily because of its two globally threatened fish species, the endangered Mahaseer (*Tor putitora*) and the critically endangered Kashmir catfish (*Glyptothorax kashmirensis*) (Brown *et al.*, 2018; Kabir *et al.*, 2019). Other protected areas located in the near vicinity of the study area include Pir Lasura and Toli Peer National Parks.

The forest in the study area primarily consists of scrub and pine forest. The dominant plant species found in the area are represented by chir pine (*Pinus roxburghii*), red kamala (*Mallotus philippensis*), shisham (*Dalbergia sissoo*), and hopbush (*Dodonaea viscosa*). The PRMNP and its buffer area provide habitat to several threatened faunal species. The threatened mammalian species found in the area are represented by the common leopard (*Panthera pardus*) and the Indian pangolin (*Manis crassicaudata*).

The threatened bird species in the area are defined by the white-rumped vulture (*Gyps bengalensis*), the Egyptian (*Neophron percnopterus*), the Himalayan griffon vulture, and the steppe eagle (*Aquila nipalensis*) (Hagler Bailly Pakistan, 2014).

Surveys were conducted in the study area from 20–28 December 2018. The surveys were conducted in winter because the Himalayan griffon visits this area only in winter and migrates back to the upper elevations (breeding ground) at the onset of summer. Twenty line transects were walked along the road at different points within the study area. Each transect was one km in length, and the minimum distance between two nearest transects was 2.42 km, while the maximum distance was 3.27 km. These distances were determined from GPS measurements during the present study, based on field accessibility and coverage considerations (see Prakash *et al.*, 2017 for a similar methodological rationale).

The team consisted of one observer and one driver. Observations were made from a vehicle, and the survey method caused minimal disturbance to the vultures (Prakash *et al.*, 2017). The vehicle was driven at a speed of 20–30 km/h within the study area. A binocular (Nikon 8x42 Binocular) was used to scan the surrounding area along the transect and to improve the detection accuracy. Observations at each site were made early in the morning (0800h–1100h) and in the evening (1500–1800 h), coinciding with peak vulture activity. Vultures observed on the ground, on cliffs, or in flight within 500 m on either side of the transect were identified and recorded (Prakash *et al.*, 2017). At each site, the GPS location and elevation were also documented. For data processing, the number of individuals recorded at each colony site (Table I) was counted and summed to obtain the total number of Himalayan griffons observed in the study area during the survey period. The GPS coordinates of each site were then used to plot their locations on a map of PRMNP (Fig. 1) to illustrate the spatial distribution of colonies within the park.

Table I. GPS coordinates of the Himalayan griffon colony locations.

Site	Latitude	Longitude	Location	Elevation (m)	Count
1	33.383869	73.799792	Rajdhani	705	8
2	33.413215	73.78967	Degar	640	29
3	33.422227	73.846087	Downstream of Gulpur	613	17
4	33.460996	73.852501	Gulpur	716	20
5	33.46237	73.885536	Barali	826	23
6	33.483858	73.878025	Aghar Colony	657	16

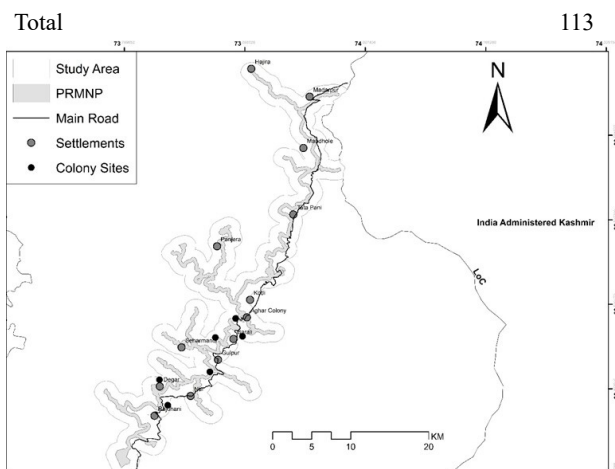


Fig. 1. Map of PRMNP showing the six observed colony locations of Himalayan griffon during winter 2018.

Results and discussion

During the study period, a total of 113 Himalayan griffon individuals were recorded using the road transect method. The location of observed individuals was recorded (Table I). Three species of vultures, i.e., white-rumped vulture, Egyptian vulture, and Himalayan griffon are found in the state of AJ&K. Of the 20 road transects surveyed, the Himalayan griffon was observed at six locations. The mean group size observed per transect was 19 vultures. In Pakistan, the Himalayan griffon breeds in the hilly areas of AJ&K and Khyber Pakhtunkhwa. These vultures are year-round residents in these areas; however make short-distance migration in summer and winter between high and low elevation areas (Roberts, 1991; Grimmer et al., 2008).

In the study area, they are recorded in winter only. The species may gather in the areas of lower elevation during winter in order to scavenge on the available food, while at higher elevations, food supply becomes limited due to snow cover. Predators such as the common leopard, Asiatic jackal (*Canis aureus*), and grey wolf (*Canis lupus*) are also found in the study area. These predators prey on domestic and wild animals (Hagler Bailly Pakistan, 2014), which may in turn provide a food source for the vultures in the form of carcasses (Kumar et al., 2017). In the summer season, they migrate to the hilly and elevated areas such as Neelum Valley (1500-2300 m) and Haveli (2000-2300 m), where they breed (Siddique and Khan, 2016). We observed the largest group at the Baralai area, consisting of 23 individuals, while the smallest group, comprising 8 individuals, was recorded at Rajdhani (Table I). Himalayan griffon is also found in the adjacent areas of Pir Lasura, Hattian, Haveli, and Neelum Valley in AJ&K (Siddique

and Khan, 2016; Zangi et al., 2019). Zangi et al. (2019) reported the Himalayan griffon as the most abundant vulture species in Pir Lasura National Park, having a population size of 128, with a range of 7-20 individuals in a roost. Similarly, Siddique and Khan (2016) recorded 80 individuals in Hattian and Muzaffarabad districts. Despite the population decline recorded for the Himalayan griffon, the species has not received sufficient attention from researchers and conservationists (Siddique and Khan, 2016).

The Himalayan griffon is a near-threatened vulture species. Population declines recorded for other Gyps vultures in the Indian subcontinent, resulting from NSAID drugs, have also been predicted to cause a decline in the population of the Himalayan griffon (Bird Life International, 2021). In other parts of AJ&K, a decline in their population has correlated with a decline in livestock herds (Siddique and Khan, 2016). Since this is the first report on this species from the study area, it is difficult to comment on population growth and changes. However, it provides a baseline for future monitoring of its population.

The study area provides a good homing ground for the Himalayan griffon in the winter season. As a single-season survey, results are preliminary and may not capture inter-annual variability. This initial winter survey confirms PRMNP as an important seasonal habitat for the Himalayan griffon. Long-term monitoring is essential to assess population trends, understand seasonal habitat use, and inform region-specific conservation actions.

Conclusion

This study presents the first baseline assessment of the wintering population of Himalayan griffon in PRMNP, AJ&K, Pakistan. A total of 113 individuals were recorded across six colony sites using road transect surveys, confirming the presence of a seasonally significant population. These findings underscore the importance of PRMNP as a crucial winter habitat for the species, which descends from higher altitudes likely in response to seasonal food availability. Given the species' Near Threatened status and the increasing threats from veterinary drug use, habitat alteration, and food scarcity, these preliminary results emphasize the need for long-term monitoring and conservation action.

DECLARATIONS

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Generative AI and AI-assisted technology statement

No generative AI and AI-assisted tools were used in the preparation of this manuscript.

Statement of conflict of interest

The authors have declared no conflict of interest.

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