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Research article

Population density of cheer pheasant (*Catreus wallichii*) in Lower Kali Gandaki Valley of Annapurna Conservation Area, Nepal

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Abstract

The cheer pheasant (*Catreus wallichii*), a globally vulnerable galliform, has experienced long-term decline due to habitat loss, hunting, and anthropogenic pressures in Nepal. In Nepal, the species is confined to fragmented scrub and grassland habitats, for example, the Lower Kali Gandaki Valley of the Annapurna Conservation Area (ACA) with previous reported declining population. To establish the current population status, we conducted a call count survey at seven listening posts in Lower Kali Gandaki Valley of Annapurna Conservation Area, Nepal between late April and early May 2025. We recorded 18 pairs of cheer pheasant in the study area, with an average density of 9.18 pairs/km^2. Site-specific results revealed clear variation across locations ranging from 17.86 pairs/km^2 at Pangpu Kharka to none at Sekung Kharka. When compared with earlier studies, the current population appears to have rebounded to its highest level in two decades. Overall, our findings highlight both the pheasant's capacity for recovery and its continued vulnerability to human and environmental pressure. This study suggests the need for a detailed study on interaction and resources use practices by locals and livestock in the habitat of the cheer pheasant. Effective conservation action requires a focus in habitat management outside protected areas through community-based initiatives, regular monitoring, and control of land uses crucial to survival and success of grasslands.

Keywords: Call-count survey; Galliformes; Himalayas; Population estimation; Threatened species

1 | Introduction

The cheer pheasant (*Catreus wallichii*), a distinctive member of the Phasianidae family, placed under the order Galliformes, is a large, long-tailed gamebird endemic to the western Himalayas (Delacour 1977). Its range is limited to a narrow stretch of the Himalayas, extending from Nepal to northern Pakistan, including Azad Jammu and Kashmir (AJ and K), and the Indian states of Uttar Pradesh and Himachal Pradesh. In Nepal, the cheer pheasant has been recorded in several protected areas. These include the Dhorpatan Hunting Reserve, the Lower Kali Gandaki Valley of the Annapurna Conservation Area, Rara National Park, and the Api Nampa Conservation Area. Records have also been confirmed across the districts of Darchula, Baitadi, Dadeldhura, Bajura, Achham, Doti, Humla, Mugu, Jumla, Dolpa, Jajarkot, Rukum, Pyuthan, Arghakhanchi, Gulmi, Baglung, Mustang, Myagdi, and Parbat (Inskipp et al. 2016; Bhusal et al. 2020; Khanal et al. 2020; Basnet et al. 2023).

Cheer pheasant (Fig. 1) primarily inhabits steep, rocky terrain, dominated by scrub and sparse grassland, and a scattered matrix of trees at 1445 to 3050 m from sea level (Garson et al. 1992). Cheer occupied sites are found on sunny south-facing aspects characterized by a mosaic of low shrub cover that is regularly browsed and cut, and tall grass cover, also subjected to harvesting before winter and burning thereafter (Garson et al. 1992; Kaul 1989; Kalsi 2001). The species has also been recorded in regenerating coniferous and broadleaved forests, and juniper and rhododendron-covered grassy slopes (Subedi et al. 2005). Cheer's habitat preference is associated with human settlements that practice traditional grass cutting and timely burning (Garson et al. 1992). Cheer pheasant diet includes both vegetative and non-vegetative food items such as roots and tubers, seeds, berries, insects and grubs (Ali & Ripley 1987).

The breeding biology of the cheer pheasant is closely linked to its grassland habitat. The breeding season generally extends from April to June, coinciding with increased vocal activity. Males establish territories and produce loud, distinctive "cheer" calls during early

Figure 1. Cheer pheasants in their habitat at Pudar Kharkha (photo by Manshanta Ghimire).

morning and evening hours to attract females and defend territories (Garson et al. 1992). The species is monogamous, and pairs often occupy traditional territories over successive years. Nests are typically constructed on the ground, concealed under shrubs or tall grasses and consist of shallow depression lined with dry vegetation. The clutch size usually ranges from 6–9 eggs, with an incubation period of about 26–28 days (Ali & Ripley 1987; Garson et al. 1992). Both parents are involved in brood care, and the chicks are precocial, leaving the nest shortly after hatching.

The inhabitation of small patches of successional grassland has led the cheer population to be naturally fragmented (Basnet & Poudyal 2017). Previous research has shown that most known sites are discrete and contain small cheer pheasant populations (<15 birds), making them prone to local extinction (Kaul 1989; Kalsi 2001; Awan et al. 2014). Most of its suitable habitat lies outside of the protected areas throughout its distribution range, given that the species tolerates a limited amount of natural and human-induced disturbances to its habitat, indicating its conservation to be focused outside of protected areas (Kaul et al. 2022). The population of cheer is in a decreasing trend because of snaring and hunting, untimely and uncontrolled forest and grass fires, overgrazing and deforestation (Subedi et al. 2005; Singh et al. 2011; Inskipp et al. 2016). As a result, the global population remains only 2000-2700 individuals (BirdLife International 2022). The continuous decline of the cheer pheasant population and its habitat have made this species threatened throughout its distribution range and listed as Vulnerable under criteria C1+2a (ii) in the IUCN Red List (BirdLife International 2022) and is listed as an endangered species in Nepal (Inskipp et al. 2016). The species has also been assessed as Largely Depleted by the IUCN Green List (Gupta & McGowan 2021), further supporting the fact that the species has been in continuous decline with shrinking habitats. It is scheduled as a protected species among the nine bird species in the National Parks and Wildlife Conservation (NPWC) Act 1973 of Nepal and included in Appendix I by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (DNPWC 2020).

In Nepal, the population of cheer pheasant has been declining at an alarming rate throughout its distribution range, particularly in the Kali Gandaki Valley of the Mustang district as the population estimate was 25–37 individuals only (Subedi 2009). No further studies have been done to estimate the population of cheer in the Kali Gandaki Valley since 2009. Hence, we conducted this study to estimate the current population density of cheer pheasant and compare the population trend with past records in the Lower Kali Gandaki Valley of Annapurna Conservation Area.

2 | Materials and methods

2.1 | Study area

This study was carried out in the Lower Kali Gandaki Valley, located in the Mustang District of the Annapurna Conservation Area (ACA:

Table 1. Details of the listening stations with latitude, longitude and habitat types

Listening stations (elevation)	Latitude and longitude (degree decimal)	Habitat types and species (summary)
Bunga Danda (2451 m)	28.61787, 83.62938	Habitat: Forest, shrubland, grassland. Vegetation: *Pinus*, *Rhododendron*, junipers and bamboos
Sekung Kharka (2763 m)	28.68462, 83.58997	Habitat: Forest, shrub and grassland. Vegetation: *Pinus*, *Rhododendron*, junipers, *Abies*
Tangje (2695m)	28.6968, 83.61948	Habitat: Forest, shrubland, and partially grassland. Vegetation: *Pinus*, *Rhododendron*, junipers.
Sarko Kharka (2476 m)	28.6224, 83.6508	Patchily sparse tree and shrub, grassland, and abandoned cultivated land. Vegetation: *Pinus*, *Taxus*, *Elaeagnus*
Pudar Kharka (2480 m)	28.62343, 83.6575	Patchily sparse tree and shrub, grassland, and abandoned cultivated land. Vegetation: *Pinus*, *Taxus*, *Elaeagnus*
Pangpu Kharka (3223 m)	28.65678, 83.66497	Habitat: forest, shrub and grassland. Vegetation: *Pinus*, *Rhododendron*, junipers, *Abies*
Titi (2879 m)	28.6608, 83.60727	Habitat: grassland, abandoned cultivated land. Vegetation: *Pinus*, *Rhododendron*, junipers.

Figure 2. Habitat of cheer pheasant in the study area *(*photo by Laxman Prasad Poudyal*)*.

Figs. 2 & 3). The study focused on seven distinct and predefined listening stations, namely Bunga Danda, Sekung Kharka, Tangje, Sarko Kharka, Pudar Kharka, Pangpu Kharka and Titi, located within Thasang rural municipality, in an elevational range from 2,400 m to 3,300 m above sea level (Table 1). These sites represent suitable cheer pheasant habitats dominated by steep slopes, grasslands, scrub vegetation and cheer pine forest.

The ACA is Nepal's largest protected area, covering 7,629 km^2 in the western region (NTNC 2017; DNPWC 2017). The Kali Gandaki Valley spans a wide altitudinal range, from subtropical forests to alpine tundra. It is recognized as an important ecological hotspot that supports a rich diversity of wildlife. The valley provides a crucial habitat for several key mammal species, including the globally threatened snow leopard (*Panthera uncia*), leopard (*Panthera*

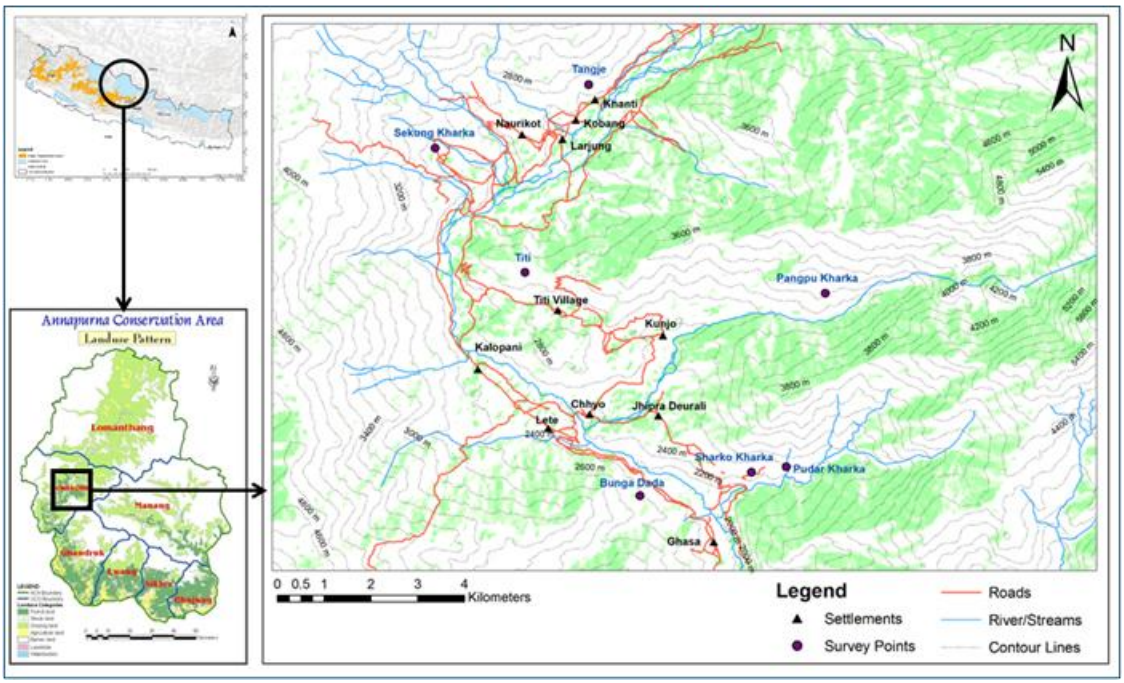

Figure 3. Map showing the study area along with the survey point locations and the major settlement area.

pardus), Kashmir musk deer (*Moschus cupreus*), and Asiatic black bear (*Ursus thibetanus*). It also supports the globally Near Threatened Himalayan goral (*Naemorhedus goral*) and Himalayan thar (*Hemitragus jemlahicus*) (Baral et al. 2019). Beyond mammals, the Kali Gandaki Valley serves as an important migration corridor for many trans-Himalayan bird species, such as the demoiselle crane (*Anthropoides virgo*) (Gyawali 2018). The area is also home to several notable resident birds, including all six Himalayan pheasant species recorded from the Ghasa region of Mustang. These pheasants include the cheer pheasant (*Catreus wallichii*), along with the Danphe (*Lophophorus impejanus*), satyr tragopan (*Tragopan satyra*), blood pheasant (*Ithaginis cruentus*), koklass pheasant (*Pucrasia macrolopha*), and kalij pheasant (*Lophura leucomelanos*). Other important bird species recorded in the area include the bearded vulture (*Gypaetus barbatus*) and the Himalayan griffon (*Gyps himalayensis*), both listed as globally near threatened and nationally threatened. The fulvous parrotbill (*Suthora fulvifrons*), a nationally threatened species, is also found here (KMTNC 1997; Inskipp & Inskipp 2003; DNPWC 2017).

The study area is known for its dry climate, rock terrain, and limited vegetation cover. Despite these harsh conditions, the mix of shrublands, grasslands, and scattered trees creates a favourable habitat for the cheer pheasant (Inskipp & Inskipp 2003). These habitats are shaped by traditional land-use as seasonal grazing, grass cutting, and burning. Such activities help maintain the early-successional vegetation that the species depends on (Garson et al. 1992; Kaul 1989).

The valley is home mainly to the Thakali people, along with Gurung, Magar and Tibetan communities. These groups add to the area's cultural richness, reflected in their architecture, festivals, and daily livelihoods. The Thakali are particularly known for their adaptive farming systems, trans-Himalayan trade, and strong sense of hospitality linked with the growing tourism industry.

Together, the ecological diversity and vibrant culture make the Lower Kali Gandaki Valley special. It is not only a biodiversity hotspot but also an example of people-centered conservation. Local institutions, supported by the Annapurna Conservation Area Project, are deeply involved in resource management, conservation awareness, and eco-tourism. Cultural and religious values further encourage the protection of nature. This connection between tradition and science offers a promising model for the conservation of species such as cheer pheasant.

2.2 | Bird survey

2.2.1 | Survey design

We conducted standardized dawn call-count surveys at seven previously selected listening points (Bunga Danda, Sekung Kharka, Tangje, Sarko Kharka, Pudar Kharka, Pangpu Kharka and Titi) of the Thasang Rural Municipality, Mustang district, in the Lower Kali Gandaki Valley (elevational range 2,400–3,300 m a.s.l.). Surveys took place in the species' peak calling period during the breeding season (late April–early May 2025) to maximize detection probability (Gaston 1980). All stations were surveyed as fixed plots with a detection circle of 300 m (area ≈ 0.28 km^2) around the point of listening.

2.2.2 | Call-count protocol

We surveyed each station on three consecutive mornings. The first observers began to arrive around dawn and conducted a 45-minute listening session between 04:45 and 05:30 h. During each session, observers documented: (1) the number of distinct cheer pheasant calls heard, (2) the estimated bearing and distance of each calling bird from the station (where possible), and (3) any visual contacts. For density estimation we used the highest number of different calls (conservatively recorded as the minimum number of pairs) heard on the three mornings at a given station. This is a standard pheasant survey technique previously employed in the Himalayas (Gaston & Singh 1980; Acharya 2004, Acharya et al. 2006; Subedi 2009; Singh et al. 2011).

2.2.3 | Population density estimation

The population density of cheer pheasant in the study area was estimated using the simple formula:

$$Density\ (\delta) = \frac{N}{A}$$

Where, 'N' refers to the minimum number of cheer pheasant recorded at each station and 'A' refers to the area of the survey plot (0.28 km^2). For each station, we therefore computed:

$$\delta_{station} = \frac{N_{station}}{0.28km^2}$$

The mean population density for the study area was calculated as the arithmetic mean of the seven station densities:

$$\bar{\delta} = \frac{1}{7}\sum_{i=1}^{7} \delta_{station,i}$$

We reported site-level densities (pairs per km^2) and the overall mean density for the sampled potential habitat.

2.2.4 | Breeding population estimation

To estimate the breeding population, we followed the approach suggested by Young et al. (1987), in which the number of calling sites recorded before sunrise is multiplied by a correction factor of 0.75. This adjustment accounts for the proportion of calling males that represent actual breeding pairs, thereby providing a reliable estimate of the breeding population within the study area.

The estimation formula is:

$$BPE = \sum \bar{x} \times 0.75$$

Where,

$\sum \bar{x}$ = mean number of cheer pheasants detected across the survey stations in the study area,

0.75 = correction factor (Young et al. 1987),

BPE = estimated breeding pairs.

2.3 | Population density comparison with past studies

Through published and unpublished reports and papers, we found three studies Acharya (2004), Acharya et al. (2006) and Subedi (2009), done previously for population density estimation in the same survey station using the same method. Thus, we used the data from these studies to compare the current population trend and density in the study area and to get an overall population dynamic of over two decades.

2.4 | Rationale and assumptions

Use of the maximum number of distinct calls across replicate mornings gives a conservative minimum estimate of the population and reduces bias caused by temporary non-vocality on one morning (Gaston 1980). A constant 300 m listening radius is the accepted practice in pheasant call-count surveys and closely approximates the effective listening area for far-distant loud pheasant calls in open scrub/grassland mosaics (Gaston & Singh 1980; Garson et al. 1992). We assumed that (i) most calling birds calling within the 300 m radius were heard, (ii) a bout of calling represents one territorial pair (and therefore counts were treated as pairs), and (iii) replicate counts and taking the max value reduce underestimation owing to missed detections.

3 | Results

3.1 | Population density

A total of 18 pairs of cheer pheasants were recorded during the call count survey (Table 2). Pangpu Kharka reported the highest number of individuals, with five detections, indicating a density of 17.86 pairs per km². This was followed by Pudar Kharka, where four individuals were heard, resulting in a density of 14.29 pairs per km². Sarko Kharka and Titi each yielded three individuals, with an estimated density of 10.71 pairs per km² at both sites. In contrast, Tangje recorded a very low count of just one individual, corresponding to a density of 3.57 pairs per km², while no cheer pheasants were detected at Sekung Kharka (Fig. 4). Overall, the estimated mean cheer pheasant density in the potential habitats of the Lower Kali Gandaki Valley was 9.18 pairs per km².

3.2 | Breeding population

A total of 18 cheer pheasants were recorded at seven call stations during three consecutive mornings of surveys (Table 1). Applying the correction factor of 0.75 (Young et al. 1987), the estimated breeding population in the study area was 13.5 (≈14) breeding pairs. This corresponds to an average density of 9.18 individuals per km² across the study area.

3.3 | Cheer pheasant population comparison with earlier studies

Population data from Acharya (2004), Acharya et al. (2006), Subedi (2009), and the current study (2025; Table 3) shows that the number of cheer pheasants has fluctuated significantly over the past two decades. In 2004, 17 pairs were recorded, declining to 11 pairs in 2006, and reaching a low of 6 pairs in 2009. The current study recorded a staggering total of 18 pairs, indicating significant growth.

Table 2. Number of call stations with call count at three consecutive mornings in 2025.

Station name	Elevation (m)	Day 1	Day 2	Day 3	Minimum population	Area (km²)	Density (per km²)
Bunga Dada	2432	2	1	1	2	0.28	7.14
Sekung Kharka	2480	0	0	0	0	0.28	0
Tangje	2525	0	0	1	1	0.28	3.57
Sarko Kharka	3230	3	3	1	3	0.28	10.71
Pudar Kharka	2877	4	4	4	4	0.28	14.29
Pangpu Kharka	2724	5	3	5	5	0.28	17.86
Titi	2671	0	1	3	3	0.28	10.71
Total					18	1.96	Mean = 9.18

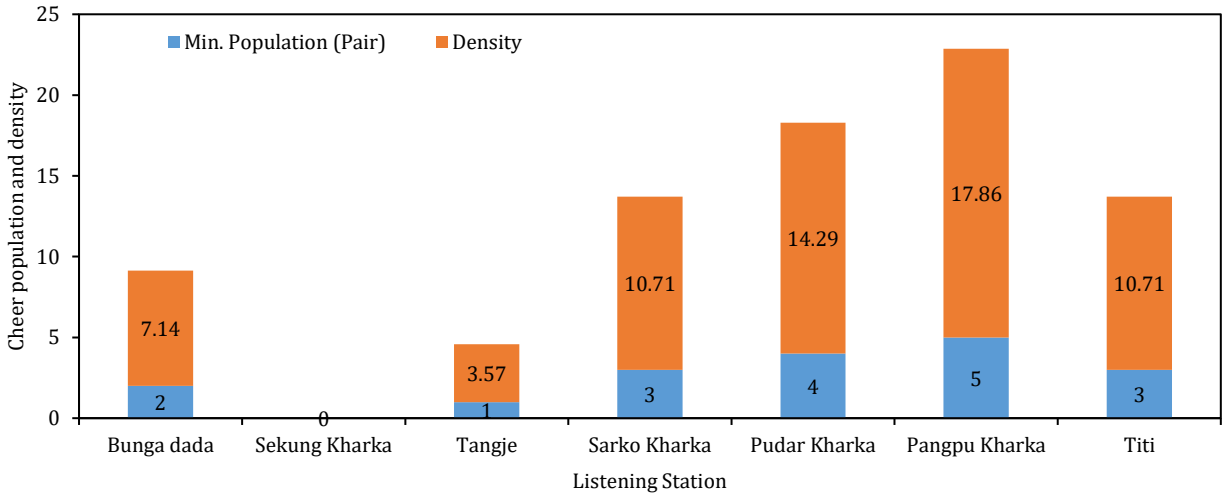

Figure 4. Population/density of cheer pheasant in 2025 across survey stations.

Table 3. Minimum *p*opulation of cheer pheasant recorded from 2004 to 2025

Station name	Minimum population (pair)			
	2004	2006	2009	2025
Bunga Danda	1	1	1	2
Sekung Kharka	1	1	1	0
Tangje	4	3	1	1
Sarko Kharka	7	3	0	3
Pudar Kharka	4	2	1	4
Pangpu Kharka	0	0	1	5
Titi	0	1	1	3
Total	17	11	6	18

Site-specific data revealed varied trends in cheer pheasant populations from 2004 to 2025 (Fig. 5). Bunga Danda maintained a stable population of 1–2 pairs across all years. Conversely, Sekung Kharka experienced a concerning decline, dropping from 1 pair to none by 2025, indicating possible local extirpation. Tangje also decreased from 4 pairs in 2004 to 1 pair in 2009 and 2025. Sarko Kharka was unpredictable, fluctuating from 7 pairs in 2004 to zero in 2009, then partially recovering to 3 pairs in 2025. The overall population recovery in 2025 was mainly driven by positive trends in Pangpu Kharka and Pudar Kharka. Pangpu Kharka dramatically increased from none in 2004 and 2006 to 5 pairs in 2025, becoming the site with the most detections. Pudar Kharka recovered to its 2004 level of 4 pairs. Similarly, Titi rebounded from 0–1 pair to 3 pairs in 2025.

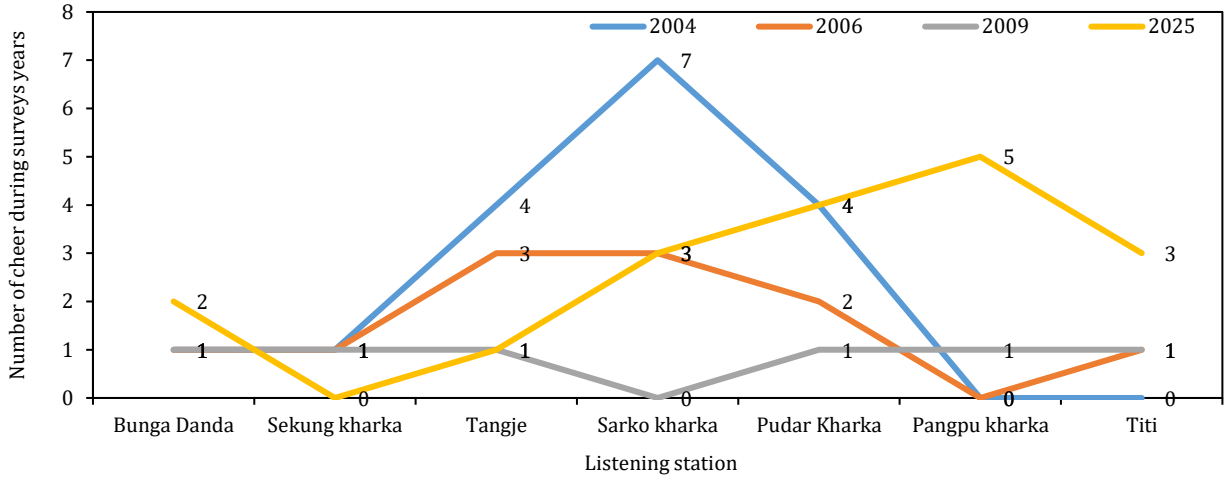

Figure 5. Minimum population of cheer pheasant in each location during each year survey.

3.4 | Spatio-temporal dynamism of breeding pair and population density

Applying the Young et al. correction factor (×0.75) reduces the raw minimum counts to adjusted breeding-pair estimates of ≈13 pairs (8.67 pairs km^{-2}) in 2004, ≈9 pairs (5.61 pairs km^{-2}) in 2006, ≈5 pairs (3.06 pairs km^{-2}) in 2009, and ≈14 pairs (9.18 pairs km^{-2}) in 2025 (Table 4, Fig. 6). These corrected estimates show a clear decline from 2004 to 2009 (with 2009 representing the lowest breeding-pairs), followed by a strong recovery by 2025 to levels slightly above 2004 (Fig. 6).

Table 4. Change in breeding population and population density over time (2004-2025).

Year	Observed population	Breeding population	Population density
2025	18	14	9.18
2009	6	5	3.06
2006	11	9	5.61
2004	17	13	8.67

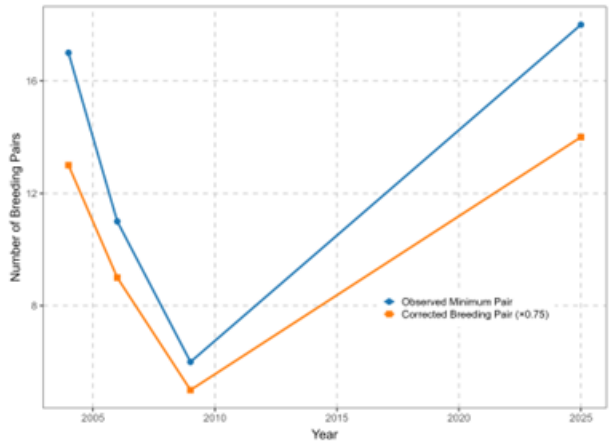

Figure 6. The figure above shows that the cheer pheasant breeding population in the Lower Kali Gandaki Valley experienced a sharp decline from 2004 (13 corrected pairs) to 2009 (4 corrected pairs). However, the population shows signs of recovery in 2025, with an estimated 14 breeding pairs slightly surpassing the 2004 level.

4 | Discussion

Cheer pheasant has been recorded from six stations, except in Sekung kharka where none were recorded, while there has been detection from previous studies. Our study estimated the mean density of 9.18 pairs/km^2 and the minimum population of 18 pairs of cheer pheasant in the Lower Kali Gandaki Valley of the Annapurna Conservation Area in 2025. The finding is significant as it is the highest recorded in the region in the past two decades, surpassing earlier estimates of 17 pairs in 2004 (Acharya 2004), 11 pairs in 2006 (Acharya et al. 2006), and 6 pairs in 2009 (Subedi 2009). The results refer to a progressive recovery following decades of dwindling population, suggesting that local conditions in recent decades may have become more favorable for cheer pheasants.

Cheer populations are inherently fragmented since they rely on limited patches of successional grasslands and scrub habitat (Basnet & Poudyal 2017). Our site-specific findings confirm this trend, with some sites (e.g., Pangpu Kharka and Pudar Kharka) showing good recovery, while others such as Sekung Kharka suggested local extirpation. This spatial heterogeneity in population trends has also been seen in earlier studies, where small, isolated populations had been found to be highly variable, often in response to local land use patterns, grazing, and fire regimes (Kaul 1989; Kalsi 2001; Awan et al. 2014).

The positive population trends at Pangpu Kharka and Pudar Kharka might be due to the persistence of suitable grassland mosaics created by traditional resource use and cattle grazing. Cheer pheasants depend on shrublands repeatedly cut and grazed, and on harvested grasslands, which prevent succession to closed-canopy forest (Kaul 1989; Garson et al. 1992). On the other hand, the loss of cheer from Sekung Kharka suggests that either habitat succession or anthropogenic pressures in the form of grazing, burning, or hunting may have resulted in local decline (Chhetri et al. 2020). This is consistent with earlier observations that premature grass fires, overgrazing, snaring, and hunting continue to be major threats across the range of the species (Subedi et al. 2005; Singh et al. 2011; Inskipp et al. 2016).

The 2025 corrected breeding estimate compared with the marked low in 2009, indicating local recolonization or improved habitat conditions at several sites (notably Pangpu and Pudar Kharka). However, because these figures derive from minimum-call counts adjusted by a single correction factor, they remain approximated: detection probability, variation in calling behaviour, and survey effort differences among years can influence estimates.

The recovery of cheer in the Lower Kali Gandaki Valley despite the ongoing threat demonstrates the resilience of the species under suitable habitat management regimes. These patterns of local population recovery have also been reported from parts of Himachal Pradesh, India, where regeneration of habitat and community-driven conservation efforts enabled cheer survival (Awan et al. 2014; Kaul et al. 2022). Therefore, our results suggest that strengthening local-level conservation actions outside protected areas is critical, as much of the species' habitat lies beyond formal reserves (Kaul et al. 2022).

5 | Conclusions

This study provides the first population census of cheer pheasant in the Lower Kali Gandaki Valley since 2009, documenting a strong recovery to 18 pairs with a mean density of 9.18 pairs/km^2. The overall population of the cheer pheasant appears to be recovering. However, site-level observations show local declines and fluctuations. These variations highlight the species' sensitivity to habitat changes and human disturbance.

In Nepal, conservation efforts should focus on community-managed successional grasslands. This can be achieved through controlled grazing, planned burning, and sustainable harvesting. Collaboration with local communities is essential particularly in Lower Kali Gandaki Valley to ensure long-term population stability. Regular monitoring should be carried out to track the population trend. It is also necessary to evaluate whether current conservation actions are effective in maintaining or improving the species status.

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Authors' contributions

L.P.P, B.R.R, and S.B. conceptualized the study, performed field work, analysed data and prepared the manuscript. K.T., K.C., H.C., and M.G., performed fieldwork and revised the manuscript. H.S.B. and J.W. revised the manuscript. All authors finalized the manuscript for submission.

Conflicts of interest

The authors declare no conflict of interest.

References

Acharya (Sharma), R., Thapa, S. and Ghimirey, Y. 2006. Monitoring of the cheer pheasant *Catreus wallichii* in Lower Kaligandaki valley, Mustang, Nepal. Report to King Mahendra Trust for Nature Conservation, Annapurna Conservation Area Project. Unpublished.

Acharya, R. 2004. Survey of the cheer pheasant *Catreus wallichii* (Hardwicke, 1827) in Lower Kali Gandaki valley, Mustang, Nepal (final report). Report to King Mahendra Trust for Nature Conservation, Nepal, World Pheasant Association, UK and School of Environmental Management and Sustainable Development, Nepal.

Ali, S. and Ripley, S.D. 1987. Compact Edition of the Handbook of the Birds of India and Pakistan. Oxford University Press, New Delhi.

Awan, M.N., Ali, H. and Lee, D.C. 2014. Population survey and conservation assessment of the globally threatened cheer pheasant *Catreus wallichi* in Jhelum Valley, Azad Kashmir, Pakistan. Zoological Research, 35(4):338–345. https://doi.org/10.13918/j.issn.2095-8137.2014.4.338

Baral, R., Subedi, A. and Yadav, S.K. (Compilers), 2019. Wild Mammals of the Annapurna Conservation Area. National Trust for Nature Conservation, Annapurna Conservation Area Project, Pokhara, Nepal.

Basnet, H. and Poudyal, L.P. 2017. Review on distribution of cheer pheasant *Catreus wallichii* in Nepal. Danphe, 26:1–5.

Basnet, H., Poudyal, L. P., Shah, G., Thakuri, D.C. and Inskipp, C. 2023. Cheer pheasant *Catreus wallichii* distribution in Far-Western Nepal with notes on threats. Journal of Himalayan Ornithology, 15(2):10–25. https://doi.org/10.2326/osj.22.57

Bhusal, K.P., Pandey, M. and Magar, T.G. 2020. Diversity and status of birds in Argha Important Bird and Biodiversity Area, Western Midhill of Nepal. Danphe, 29(3/4):1–11.

BirdLife International. 2022. Catreus wallichii. The IUCN Red List of Threatened Species 2022: e.T22679312A218835395. https://dx.doi.org/10.2305/IUCN.UK.2022-2.RLTS.T22679312A218835395.en. Accessed on 20 October 2025 .

Chhetri, N.B., Dhami, B., Neupane, B., Sadadev, B.M. and Thapa, N. 2020. Distributional evidence and threats to cheer pheasant (*Catreus wallichii*) in Annapurna Conservation Area, Nepal. Nepalese Journal of Zoology, 4(2):140–146. https://doi.org/10.3126/njz.v4i2.33906

Delacour, J. 1977. The Pheasants of the World (Second Edition). Spur, Liss.

DNPWC. 2017. Protected areas of Nepal [in Nepali]. Department of National Parks and Wildlife Conservation. Kathmandu, Nepal. p 97.

DNPWC. 2020. Cheer Pheasant. Department of National Parks and Wildlife Conservation. http://dnpwc.gov.np/en/species-detail/48/, Accessed on 2020/10/22.

Garson, P.J., Young, L. and Kaul, R. 1992. Ecology and conservation of the cheer pheasants *Catreus wallichii*: Studies in the wild and the progress of a reintroduction project. Biological Conservation, 59(1):25–35. https://doi.org/10.1016/0006-3207(92)90710-5

Gaston, A.J. 1980. Census techniques for Himalayan pheasants, including notes on individual species. Journal of World Pheasant Association, 5:40–53.

Gaston, A.J. and Singh, J. 1980. The status of the cheer pheasant, *Catreus wallichii,* in the Chail Wildlife Sanctuary, Himachal Pradesh. Journal of World Pheasant Association, 5:68–73.

Gupta, G. and McGowan, P. 2021. *Catreus wallichii* (Green Status Assessment). The IUCN Red List of Threatened Species 2021: e.T22679312A2267931220252. Accessed on 14 October 2025.

Gyawali, S. 2018. Population estimation, identification of stopover sites and documenting people's perception towards demoiselle crane *Anthropoides virgo* (Linnaeus, 1758) during the autumn migration from Kaligandaki Valley, Nepal (Master's Thesis, Central Department of Zoology, Tribhuavn University).

Inskipp, C. and Inskipp, T. 2003. Bird conservation priorities of the Annapurna Conservation Area. Report submitted to UNEP-WCMC/King Mahendra Trust for Nature Conservation/Annapurna Conservation Area Project, p 72.

Inskipp, C., Baral, H.S., Phuyal, S., Bhatt, T.R., Khatiwada, M., Inskipp, T., Khatiwada, A., Gurung, S., Singh, P.B., Murray, L., Poudyal, L. and Amin, R. 2016. The status of Nepal's birds: The national red list series. Zoological Society of London.

Kalsi, R. S. 1998. Birds of Kalesar Wildlife Sanctuary, Haryana, India. Forktail, 29–32

Kalsi, R.S. 2001. Status and habitat of cheer pheasant in Himachal Pradesh, India—Results of 1997–1998 surveys. Tragopan, 13:18–24.

Kaul, R. 1989. Ecology of cheer pheasant *Catreus wallichii* in Kumaon Himalaya [Unpublished doctoral dissertation]. University of Kashmir, Srinagar, India.

Kaul, R., Kalsi, R.S., Singh, R., Basnet, H. and Awan, M.N. 2022. Cheer pheasant (*Catreus wallichii*) and the conservation paradox: Importance of unprotected areas. Diversity, 14(10):785. https://doi.org/10.3390/d14100785

Khanal, C., Sapkota, M., Bhattarai, P.K. and Bist, B.S. 2020. First record of cheer pheasant *Catreus wallichii* in Pyuthan, western midhills of Nepal. Danphe, 29:14–16.

KMTNC. 1997. Annapurna Conservation Area: Management Plan. Jawalakhel, Lalitpur: King Mahendra Trust for Nature Conservation.

McGowan, P. J. K., & Garson, P. J. (Eds.). 1995. Pheasants. Status survey and conservation action plan 1995-1999. WPA/Birdlife/SSC Pheasant Specialist Group. IUCN, Gland, Switzerland.

NTNC. 2017. Annual report 2017. National Trust for Nature Conservation, Khumaltar, Lalitpur, Nepal. https://ntnc.org.np/sites/default/files/doc_publication/2018-11/NTNC%20Annual%20Report%202017.pdf

Singh, P.B., Subedi, P., Garson, P.J. and Poudyal, L.P. 2011. Status, habitat use and threats of cheer pheasant *Catreus wallichii* in and around Dhorpatan Hunting Reserve, Nepal. International Journal of Galliformes Conservation, 2:22–30.

Subedi, P. 2009. Monitoring of cheer pheasant (*Catreus wallichii*) in Kaligandaki River Valley, Mustang District, Nepal. A research report submitted to National Trust for Nature Conservation/Annapurna Conservation Area Project, Unit Conservation Office, Jomsom, Nepal, p 41.

Subedi, P., Shrestha, S.K., Baral, H.S., Garson, P.J. and Ramesh, K. 2005. Status and distribution of cheer pheasant in Dhorpatan Hunting Reserve, Nepal. Banko Janakari, 15(1):19–24.

Young, L., Garson, P.J. and Kaul, R. 1987. Calling behaviour and social organization in the cheer pheasant: Implications for survey technique. Journal of World Pheasant Association, 12:30–43.