Article

Decline of White-throated Bushchat Saxicola insignis
Gray J.E. & J.R. Gray, 1847 (Aves: Passeriformes: Muscicapidae)
In Nepal: Implications on its Global Status

Hem Sagar Baral, Tek Raj Bhatt, Bed Kumar Dhakal, Dhiraj Chaudhary, Hemanta Kumar Yadav, Laxman Prasad Poudyal, Hathan Chaudhary, Pradeep Raj Joshi, Carol Inskipp & Rajan Amin

26 March 2021 | Vol. 13 | No. 3 | Pages: 17847–17855
DOI: 10.11609/jott.6077.13.3.17847-17855

For Focus, Scope, Aims, Policies, and Guidelines visit https://threatenedtaxa.org/index.php/JoTT/about/editorialPolicies#custom-0
For Article Submission Guidelines, visit https://threatenedtaxa.org/index.php/JoTT/about/submissions#onlineSubmissions
For Policies against Scientific Misconduct, visit https://threatenedtaxa.org/index.php/JoTT/about/editorialPolicies#custom-2
For reprints, contact <ravi@threatenedtaxa.org>

The opinions expressed by the authors do not reflect the views of the Journal of Threatened Taxa, Wildlife Information Liaison Development Society, Zoo Outreach Organization, or any of the partners. The journal, the publisher, the host, and the partners are not responsible for the accuracy of the political boundaries shown in the maps by the authors.
Decline of White-throated Bushchat Saxicola insignis Gray J.E. & J.R. Gray, 1847 (Aves: Passeriformes: Muscicapidae) in Nepal: implications on its global status

Hem Sagar Baral, Tek Raj Bhatt, Bed Kumar Dhakal, Dhiraj Chaudhary, Hemanta Kumar Yadav, Laxman Prasad Poudyal, Hathan Chaudhary, Pradeep Raj Joshi, Carol Inskipp & Rajan Amin

Abstract: The White-throated Bushchat, also known as Hodgson’s Bushchat, is a long-distance migratory and specialist grassland bird categorized as Vulnerable on the IUCN Red List. In Nepal, White-throated Bushchat winters in the lowlands, and has been primarily recorded in large Phantas (=open plains of grassland). We present the population status of the species in Shukla Phanta, the largest continuous lowland grassland in Nepal that is known to hold the largest wintering population of White-throated Bushchat in the Indian subcontinent. Our 2013–2014, 2016–2017, and 2017–2018 winter surveys for White-throated Bushchat followed the same method used in the 1997–1998 and 2007 surveys in Shukla Phanta for comparable assessment of the status of the species. Our study provided overwhelming evidence that the species has undergone a steep decline over the last two decades (probability of 92% for a decline greater than 5% per year). Shukla Phanta is dominated by the species’ preferred habitat of Imperata cylindrica, Narenga porphyrocoma, and Saccharum bengalensis. Grassland patches managed through controlled burning leaving enough reeds for perches, grazed at medium level of intensity by wildlife and within close distance to water were found to support higher numbers of White-throated Bushchat. Given the observed steep decline in the largest known wintering population of the species and similar declines observed in the wintering populations in India, its status warrants uplisting to Critically Endangered, and we recommend an urgent review of its global status.

Keywords: Abundance, Hodgson’s Bushchat, IUCN Red List, lowland grassland, Shukla Phanta, status, winter visitor.
INTRODUCTION

White-throated Bushchat *Saxicola insignis* J.E. & G.R. Gray, 1847 is a grassland specialist and one of the poorly known *Saxicola* species; Jerdon’s Bushchat *Saxicola jerdoni* is the other little known species that is recorded in Nepal (Urquhart 2002; Clement & Rose 2015). *Saxicola insignis* is listed under the Vulnerable category in the IUCN Red List due to its declining population throughout its restricted range (BirdLife International 2018). The global population is estimated to be between 3,500 and 15,000 individuals based on assessment of recent records and surveys carried out by BirdLife International (2019); however, more recent information indicates the global population to be significantly lower.

White-throated Bushchat breeds locally in alpine or subalpine rocky meadows and scrub in the mountains of Mongolia and adjacent parts of Russia, and migrates southward across the Himalayan mountain range to winter in the Gangetic plain of the Indian subcontinent (Ali & Ripley 1987; Gombobaatar et al. 2011; BirdLife International 2018). It has been recorded on passage in northern and western China, including Tibet. The species’ wintering range is restricted west from Haryana (Ambala), east through Uttar Pradesh, Uttarakhand and Bihar to northern West Bengal and Assam (Manas) through the Nepal Terai and Jalpaiguri duars (Ali & Ripley 1987; BirdLife International 2018). As a long-distance migratory bird facing threats, the species has been listed in Appendix II of Convention on Migratory Species (CMS 2018).

In Nepal, White-throated Bushchat has been recorded in six localities: Chitwan (winter visitor and passage migrant), Kathmandu Valley (passage migrant), Koshi (Koshi Tappu and Koshi Barrage, winter visitor and passage migrant), Lumbini Farmscape (winter visitor and passage migrant), Banke National Park (winter visitor) and Shukla Phanta (winter visitor and passage migrant) (Fig. 1) (Inskipp et al. 2016). In 1998 the wintering population in Nepal was estimated to be 110 individuals (Baral 1998). Shukla Phanta in the far southwestern Nepal has been reported to support the largest wintering population of the species in the region (Baral 1998; Yadav 2007; Thakuri 2012). There have been very few observations of the species in the other localities in Nepal (Inskipp et al. 2016). Given its restricted wintering habitats, continuing habitat loss and observed declining population since 2007 it has been classified as Endangered in the Nepal bird Red Data Book (Inskipp et al. 2016, 2017). The species has also been recommended to the Government of Nepal to be listed as a protected species under the National Parks and Wildlife Conservation Act (Baral 1998; Inskipp et al. 2016).

Habitat loss and degradation, due to overgrazing, cutting and burning of grassland, is the major threat to the White-throated Bushchat in Nepal (Baral 1998; Yadav 2007; Thakuri 2012). Most of the suitable grassland habitats for the species are now confined to protected areas, and outside protected areas very little lowland grasslands remain in Nepal (Baral 2001).

This study was undertaken to update the status of the species in its major grassland sites in the Nepal Terai, and assess its implication on the species’ global status. It formed part of a wider species monitoring project in Shuklaphanta National Park.

MATERIALS AND METHODS

Study area

Shukla Phanta with an area of 34km² is the largest lowland grassland area in Nepal, located within Shuklaphanta National Park (ShNP 2017, Fig. 2, Image 1). The grassland consists primarily of *Saccharum bengalensis*, *S. spontaneum*, *Imperata cylindrica*, *Narenga porphyrocoma*, and *Desmostachya bipinata*. The grassland also harbors a number of threatened species including the globally Critically Endangered Bengal Florican *Houbaropsis bengalensis*; the Endangered Bengal Tiger *Panthera tigris*, Hog Deer *Axis porcinus*, & Hispid Hare *Caprolagus hispidus*; and the Vulnerable Jerdon’s Babbler *Chrysomma altirostre*, Swamp Francolin *Francolinus gularis*, Greater One-horned Rhinoceros *Rhinoceros unicornis*, & Swamp Deer *Rucervus duvaucelli*. Shuklaphanta National Park has...
Figure 1. White-throated Bushchat distribution in Nepal based on pre and post 1990 sighting records (Source Inskipp et al. 2016).

Figure 2. Location of Shukla Phanta grassland within Shuklaphanta National Park in the far southwestern corner of Nepal. The surveyed area is also shown.
a sub-tropical monsoonal climate with three distinct seasons, monsoon (July–October), cool-dry (November–February) and hot-dry (March–June).

Field methods

Systematic surveys for the White-throated Bushchat (Image 2) were conducted over three winters in Shukla Phanta: winter of 2013–2014, 2016–2017, and 2017–2018. The line transect survey method was the same as that used in the previous 1997–1998 and 2007 surveys. Other smaller grasslands in Shuklaphanta National Park (Singhpur, Radhapur, Sundari Phanta) were also searched for the species as part of the reconnaissance at the beginning of each survey. Field ornithologists were consulted to verify the information collected on bird sightings, their numbers and for their perceptions on the status of the species (T.R. Giri & D.R. Joshi pers. comm. 2014).

A total of 11 trained individuals, which included technical national park staff, non-profit field workers, and freelance field ornithologists participated in the surveys. Prior to each survey, participants were familiarized with the identification of White-throated Bushchat in the field, and determining its sex based on morphological characteristics (Grimmett et al. 2000). Participants were also provided with a guidebook to help with bird species identification. Two of the participants had also taken part in the previous 1997–1998 survey.

The study was conducted in a portion of the larger Shukla Phanta grasslands where the species had been recorded in the past and the area also covered in the previous surveys. The 11.7 km² survey area was divided into four blocks (Fig. 3). Surveys were carried out along 15.3 km of motorable trails (Table 1) between 06.00–09.00 h when the species is most active. Each survey was carried out for a total of 16 days over a 3-month period. Three observers scanned grassland and other habitats for White-throated Bushchat using Opticron 8 x 42 binoculars and telescopes (Nikon FIELDSCOPE ED50 and Swarovski ATS 60 HD), from an open-back jeep travelling at 10 km per hour. On sighting the species, the vehicle was stopped and data recorded on a data form. The recorded data included the GPS location, date and time, number of birds, their sex (except for immatures), and their activities (feeding, perching). The grassland condition was recorded as uncut and unburned, uncut and burned, and cut and burned. Dominant grass species were recorded, based on visual observation, along with grazing intensity (low, medium, high). Distance to the nearest water body and grass sward height were also recorded. Double counting was minimized by surveying all blocks at the same time and double-checking records.
Data analysis

Observations of White-throated Bushchat were tabulated in Microsoft-Excel. Species maximum count for each survey period were compared with the 1997–1998 survey results and the percentage of White-throated Bushchat sightings in the three grassland conditions, in the three grassland grazed intensities, and distance to water bodies were calculated.

We assessed population trend by regressing natural log of counts against survey years (1997–1998, 2005–2006, 2013–2014, 2016–2017, 2017–2018) (Baral 1998; Yadav 2007). The slope of the regression provides an estimate of the instantaneous growth rate ($r$) (Caughley 1977). A significant positive slope implies an increasing population and a negative slope implies population decline, while a slope of zero implies a stationary population (Caughley 1977). To provide further insight we used Bayesian analysis (Crome et al. 1996). We assumed a flat prior and treated the scaled likelihood curve as the posterior probability. On this basis, we calculated the probability of no decline (trend > 0), a small decline (-0.05 < trend < 0) and a steep decline (trend < -0.05) by calculating the area under the respective parts of the curve.

RESULTS

A total of 63 White-throated Bushchat sightings was recorded over a total of 16 days in the three surveyed seasons. In the 2013–2014 wintering season, a maximum of seven individuals was recorded on the 20 and 25 March, while a minimum of two individuals was recorded on 22 April. In 2016–2017 season, a maximum of six individuals was recorded on the 14 January, and a minimum of two individuals on 12 January. Similarly, in 2017–2018 season, a maximum of six individuals was recorded on 18 March, and a minimum of one individual on 19 and 20 March (Table 2). Male White-throated Bushchat (n=37) were observed more frequently than females (n=26). No birds were recorded in the smaller grassland patches during the reconnaissance surveys.

The species was only observed in grassland habitat dominated by *Imperata cylindrica*, *Saccharum spontaneum* or *Narenga porphyrocoma* with a sward height greater than 30cm. More than two-thirds of the Shukla Phanta grasslands are covered with dense stands of taller *Narenga porphyrocoma* and *Saccharum bengalensis* either single species or mixed, and in the

| Survey block | Area (km$^2$) | Total number of days surveyed | Total length of motorable trails surveyed (km) |
|--------------|--------------|-------------------------------|---------------------------------------------|
| A            | 3.12         | 16                            | 5.05                                        |
| B            | 2.89         | 16                            | 3.67                                        |
| C            | 2.15         | 16                            | 3.32                                        |
| D            | 3.52         | 16                            | 3.26                                        |
southeastern corner *Phragmites karka* monostand forming the largest contiguous *Phragmites* marshland of Nepal. Even during the fire season, most of these wetter patches of grasslands remain unburnt or only partially burnt. Previous surveys have already established that these *Phragmites* marshland habitats are not used by White-throated Bushchats.

There was significant correlation between sighting of the birds and distance from the nearest water body ($\chi^2=20.86$, df=2, $p=0$). Nearly half of the sightings (45%; $n=28$) were within 150m from a water source while more than 90% of the sightings ($n=58$) were made within 300m from a water source (Fig. 4).

The highest number of White-throated Bushchat sightings (63%; $n=40$) were in uncut but burned grassland patches followed by uncut and unburned patches (21%; $n=13$), and cut and burned patches (16%; $n=10$) (Fig. 5). In terms of grazing intensity, 57% of White-throated Bushchat sightings ($n=36$) were in medium grazed grassland patches while nearly 30% ($n=19$) were in low grazed patches and remaining 13% ($n=13$) of the sightings were in high grazed patches.

Population trend analysis based on maximum number of 26, 19, 7, 6, and 6 individuals counted during 1997–1998, 2005–2006, 2013–2014, 2016–2017, and 2017–2018 surveys revealed an average 8% (R-squared=0.92, 95% CI=-14.9% to -1%) per year decline (Fig. 6). The Bayesian analysis showed a 92% probability of a steep decline with a probability of only 7% of small decline (Fig. 7).

### Table 2. Maximum and minimum sighting records of White-throated Bushchat in the wintering survey periods of 2013–2014, 2016–2017, and 2017–2018.

| Survey winter period | Number of individuals sighted in a day | Date |
|----------------------|----------------------------------------|------|
| 2013–2014            | 7 (maximum)                            | 20 March 2014 and 25 March 2014 |
|                      | 2 (minimum)                            | 22 April 2014 |
| 2016–2017            | 6 (maximum)                            | 14 January 2017 |
|                      | 2 (minimum)                            | 12 January 2017 |
| 2017–2018            | 6 (maximum)                            | 18 March 2018 |
|                      | 1 (minimum)                            | 19 March 2018 and 20 March 2018 |

---

**Figure 4.** Number of White-throated Bushchats sighted at different distance range from nearest water body.

**Figure 5.** Percentage of White-throated Bushchat sightings within three different grassland management regimes.

**Figure 6.** White-throated Bushchat population trend in Shukla Phanta based on surveys carried out over two decades.
DISCUSSION

Most of the global wintering population of White-throated Bushchat occurs in northern India and southern Nepal (Ali & Ripley 1987) and along Indo-Bhutan landscape, with a single record from Bhutan (BirdLife International 2018). The species’ subtropical riverine grasslands remain the most threatened habitats in the Indian subcontinent (Baral 2001; Grimmett et al. 2011; Rahmani 2012), and also one of the most threatened ecoregions of the world (Olson et al. 2001). The rapid range and population decline of this globally threatened species are of serious concern.

This study has shown that White-throated Bushchat has very specific habitat requirements in its wintering grounds. We observed that the species utilizes uncut and burned grassland more than uncut-unburned and cut-burned grasslands. We did not observe any cut but unburned grassland areas in the study site; almost always if areas are cut then they are burned. This preference for uncut and burned grassland could be due to the presence of a few unburnt reeds and some partially burnt reeds that act as perching posts, and the exposed ground patches that allow the birds to see insect movement (Baral 1998, 2001). Additionally, the clearings enable increased activity of soil arthropods due to higher heat absorption by dark ashes deposited on the ground (Baral 2001). In contrast, the least number of individuals were seen in cut and burned grasslands, possibly due to lack of suitable perches. The study has also shown that medium-grazed grasslands support a higher number of the species, which may be due to the few open patches for the birds to see ground-dwelling insects as well as ample number of standing reeds as perches (Kleijn 2010). Very few bushchats were recorded in grasslands with high grazing intensity, possibly due to absence of suitable perches. Although illegal, livestock grazing is one of the biggest problems in Shuklaphanta National Park, the Shukla Phanta grassland is located in the core of the park and is grazed by wild herbivores only.

The study also found a strong association of species sightings with water holes and wet areas. A high percentage of individuals was recorded in close proximity to water bodies. Water and flooding are associated with the formation of early stage successional grasslands (Baral 2001). In the known wintering grounds of White-throated Bushchat in Nepal, these early stage successional grasslands usually comprise *Sachcharum spontaneum* and *Imperata cylindrica* which provide high quality physical structure of habitat, such as suitable perch height and sufficient open ground. This habitat may also provide the right type of food in ample amount.

Composition of grass species and consequently physical structure of the habitat is an important factor in the occurrence and abundance of White-throated Bushchat in its wintering range (Baral 1998, 2001). The Terai lowland grassland ecosystem is very fragile and responds to even small-scale manipulations or modifications (Baral 2001). There have been significant changes in the composition of the grasslands in lowland Nepal over the last two decades. Many shorter grassland species habitats have been either lost through development outside protected areas or through succession in protected areas. Shorter grass species such as *Imperata cylindrica* and *Saccharum spontaneum* that make up the suitable habitat for the White-throated Bushchat and several other globally
Decline of White-throated Bushchat in Nepal

Decline of White-throated Bushchat in Nepal Baral et al.

Narenga porphyrocoma, Themeda arundinacea, and Saccharum bengalensis (Baral 2001). Although the underlying mechanism of the habitat change is yet to be fully understood, it is likely that in addition to existing practices of grassland burning, grass collection and grazing, changes in herbivore populations in protected area and altered climate events due to global warming have contributed to the rate of succession.

White-throated Bushchat has also been recorded from outside the protected areas in lowland Nepal. These are mostly of single isolated birds, however, and it is unlikely that a large wintering population occurs outside protected areas in Nepal. Recent records from India also indicate population decline in known wintering grounds, with only a single or few birds recorded (BirdLife International 2018). The species has been observed in several new localities in India, which might be primarily because of a larger number of people observing birds in recent years. Unlike more secretive species, White-throated Bushchat is an obvious species, further minimizing the chances of under-recording especially during targeted surveys.

The decline of the wintering population of the species is perhaps also a reflection of a declining breeding population and threats along the migration paths. Habitat loss at breeding sites and environmental conditions along migratory path (including food availability, predation and disturbance) may be contributing to the severe decline of the population within a short span of time (Gombobaatar et al. 2011; BirdLife International 2018). Impact of climate change to this species is unknown, some of its migratory patterns may have been affected by climate change.

Globally, White-throated Bushchat is classified as ‘Vulnerable’ on the IUCN Red List based on its restricted geographical coverage, small and declining population (BirdLife International 2018). This assessment, however, is based on an outdated global population estimate of 2,500–9,999 mature individuals compiled in 2001 by BirdLife International and other limited information available for the species (BirdLife International 2018). Clement & Rose (2015) have suggested that the global population may be well under 1,000 based on the species decline across Nepal and India.

The current observed decline of the largest wintering sub-population of the species meets the Critically Endangered Criterion A2a (≥80% population reduction observed/expected through direct observation in the largest wintering sub-population) and C2a (maximum of 6 individuals observed in the largest wintering sub-population and assuming all other previously known smaller wintering sub-populations to have less than 50 individuals), along with observed declines at other sites and threats reported at breeding sites and along migratory routes. Therefore, we propose an immediate global re-assessment. Earlier literature also recommended up-listing the species global status from Vulnerable to Endangered or Critically Endangered (Baral 1998; Clement & Rose 2015).

REFERENCES

Ali, S. & S.D. Ripley (1987). Compact handbook of the birds of India and Pakistan, Second edition. Oxford University Press, New Delhi, xii+737pp.

Baral, H.S. (1998). White-throated Buschat Saxicola insignis Gray and Gray 1846 in Nepal. Unpublished: Department of National Parks and Wildlife Conservation (HMG, Nepal), Biodiversity Support Program (USA) and Oriental Birds Club (UK).

Baral, H.S. (2001). Community structure and habitat associations of lowland grassland birds in Nepal. PhD Thesis. Institute for Biodiversity and Ecosystem Dynamics, The University of Amsterdam, 4+235pp.

BirdLife International (2018). Saxicola insignis. The IUCN Red List of Threatened Species: e.T22710172A131880644. Downloaded on 17 July 2019. https://doi.org/10.2305/IUCN.UK.2018-2.RLTS.T22710172A131880644.en

BirdLife International (2019). Species factsheet: Saxicola insignis. http://datazone.birdlife.org/species/factsheet/22710172. Accessed on 17 July 2019.

Caughey, G. (1977). Analysis of vertebrate populations. John Wiley and Sons, London, 234pp.

Clement, P. & C. Rose (2015). Robins and Chats, First edition. Christopher Helm, London, 688pp.

Crome, F.H.J., M.R. Thomas & L.A. Moore (1996). A novel Bayesian approach to assessing impacts of rain forest logging. Ecological Applications 6: 1104–1123.

CMS (2018). Appendices I and II: Convention on the Conservation of Migratory Species of Wild Animals (CMS). https://www.cms.int/sites/default/files/basic_page_documents/cms_cop12_appendices_e_0.pdf. Downloaded on 17 July 2019.

Gombobaatar S., E. Monks, R. Seidler, D. Sumiya, N. Tseveenmyadag, S. Bayarkhuu, J. Baillie, S. Boldbaatar & C. Uganbayar (2011). Regional Red List Series Vol. 7. Birds. Zoological Society of London, National University of Mongolia and Mongolian Ornithological Society, London, 1036pp.

Grimmett, R., C. Inskipp & T. Inskipp (2000). Birds of Nepal. Prakash Books, New Delhi, 288pp.

Grimmett, R., C. Inskipp & T. Inskipp (2011). Birds of Indian Subcontinent. Christopher Helm, London, 528pp.

Inskipp, C., H.S. Baral, S. Phuyal, T.R. Bhatt, M. Khatiwada, T. Inskipp, A. Khattiwoda, S. Gurung, P.B. Sing, L. Murray, L. Poudyal & R. Amin (2016). The Status of Nepal’s Birds: The national red list series. London: Zoological Society of London. https://www.zsl.org/conservation/regions/asia/national-red-lists-of-nepals-birds-and-mammals. Downloaded on 20 December 2019.

Inskipp, C., H.S. Baral, T. Inskipp, A.P. Khatiwada, M.P. Khatiwada, L. Poudyal & R. Amin (2017). Nepal’s National Red List of Birds. Journal of Threatened Taxa 9(1): 9700–9722. https://doi.org/10.11609/jott.2855.9.1.9700-9722

Kleinj, D., H. Schekkerman, W.J. Dimmers, R.J. Van Kats, D. Melman & W.A. Teunissen (2010). Adverse effects of agricultural intensification...
Decline of White-throated Bushchat in Nepal

Baral et al.

Journal of Threatened Taxa | www.threatenedtaxa.org | 26 March 2021 | 13(3): 17847–17855

and climate change on breeding habitat quality of Black-tailed Godwits Limosa limosa in the Netherlands. Ibis 152(3): 475–486. https://doi.org/10.1111/1474-919X.2010.01025.x

Olson, D.M., E. Dinerstein, E.D. Wikramanayake, N.D. Burgess, G.V. und Powell, E.C. Underwood, J.A. D’Amico, I. Itoua, H.E. Strand & J.C. Morrison (2001). Terrestrial ecoregions of the World: a new map of life on Earth — A new global map of terrestrial ecoregions provides an innovative tool for conserving biodiversity, BioScience 51(11): 933–938. https://doi.org/10.1641/0006-3568(2001)051[0933:TEOJTT]2.0.CO;2

Rahmani, A.R. (2012). Threatened Birds of India - Their Conservation Requirements. Oxford University Press, India, 870pp.

ShNP (2017). Grassland Management Guideline for Shuklaphanta National Park 2017. Shuklaphanta National Park, Kanchanpur, Nepal, 17pp.

Thakuri, J. (2012). Study of population, status, distribution and ecology of White-throated bushchat Saxicola insignis in Shuklaphanta Wildlife Reserve, Nepal Unpublished: Mohamed Bin Zayed Species Conservation Fund.

Urquhart, E. (2002). Stonechats: a guide to the Genus Saxicola. Christopher Helm, London, 320pp.

Yadav, B.P. (2007). Status, Distribution and Habitat Preference of White-throated bushchat (Saxicola insignis) in Grassland of Shuklaphanta Wildlife Reserve of Far-western Development Region of Nepal. Oriental Bird Club (OBC), United Kingdom, 53pp. http://himalaya.socanth.cam.ac.uk/collections/inskipp/2005_007.pdf. Downloaded on 17 July 2019.

Nepali abstract: लोपेदको नेपालमा विख्यात ताल्लुक पशुकुटी र सङ्ग्रामात अनुभव गर्ने र जनाको गर्ने दिशामा नेपालमा जनसंख्या भएको नजारा प्रमाणित गरीएको छ। लोपेदको पशुकुटी ताल्लुक पर्वत र प्रायद्वीपको निक्षेप दिच्छ। नेपालमा विख्यात ताल्लुक पशुकुटी र सङ्ग्रामात अनुभव गर्ने र जनाको गर्ने दिशामा नेपालमा जनसंख्या भएको नजारा प्रमाणित गरीएको छ। यो नजारा नेपालमा विख्यात ताल्लुक पशुकुटी र सङ्ग्रामात अनुभव गर्ने र जनाको गर्ने दिशामा नेपालमा जनसंख्या भएको नजारा प्रमाणित गरीएको छ।

Author details: Hem Sagar Baral studied ecology of grassland birds for his PhD from the University of Amsterdam, and has been actively involved in wildlife conservation for over three decades. He led two national conservation organisations for eight years finally moving to work as the head of Nepal conservation programme for ZSL. Tek Raj Bhatt is a PhD research scholar with interest on conservation of threatened species and large landscape. He has previously worked on several conservation projects including species assessments and monitoring. Bed Kumar Dhakal holds an MSc on natural resource management and has been with the Department of National Parks and Wildlife Conservation as a senior officer for more than two decades. He has studied wildlife of protected areas extensively especially from their management angle. Dhiraj Chaudhary has been working as a bird guide for 10 years. He has worked for various institutions in the past and has participated in the survey work under the aegis of Himalayan Nature. Hemanta Kumar Yadav holds a PhD (Conservation Biology) from the Institute of Natural and Computational Sciences, Massey University, Auckland, New Zealand. He has previously worked for National Trust for Nature Conservation (NTNC), Nepal under different projects and programmes located in protected areas of Nepal. Laxman Prasad Poudyal holds an MSc degree in Natural Resource Management and Rural Development. He has served as the Ecologist at the Department of National Parks and Wildlife Conservation, and currently is the Chief Conservation Officer at Shivapuri Narayangadh National Park, Nepal. HANUMAN CHAUDHARY is Nepal's foremost ornithologist with over 30 years’ field knowledge from Nepal and India, has found many new birds to Nepal, conducted many ornithological surveys in protected areas of Nepal and has published several bird status checklists. He is a founder member of Nepalese Ornithological Union and plays a chief role in identifying difficult birds for students, researchers, and novices to birdwatching. PRADEEP RAJ JOSHI has a Masters’ degree in Environmental Science from Tribhuvan University. Shortly after graduation he joined National Trust for Nature Conservation (NTNC), where he worked mostly on grassland management and SMART in Chitwan National Park. He also worked with Zoological Society of London (ZSL) – Nepal Office and implemented transboundary tiger and habitat conservation projects and grassland management projects in Shuklaphanta National Park. CAROL INSKIPP has studied Nepali birds and their conservation since 1977. Co-authored books including: A guide to the birds of Nepal (1985, 1991); Birds of Nepal field guide (2000, 2016); State of Nepal's Birds (2004, 2010); Important Bird Areas in Nepal (2005); National Red List of Nepal's Birds (2016); Nepal's Forest Birds (2019) and is currently working on Nepal's Wetland Birds. Carol is currently serving as the Patron for Himalayan Nature. RAJAN AMIN is a senior wildlife biologist at the Zoological Society of London with over 25 years of experience in African and Asian grassland, desert, and forest ecosystems and in developing long-term conservation projects for threatened species.

Author contribution: Hem Sagar Baral conceived, led the field work and writing of the paper including for fundraising and coordination. Tek Raj Bhatt supported fundraising, coordination as well as helped write the paper with data analysis. Rajan Amin and Carol Inskipp helped with data analysis and writing of the paper. Bed Kumar Dhakal and Laxman Prasad Poudyal facilitated field work. Dhiraj Kumar Chaudhary, HANJAN CHAUDHARY, HEMANTA KUMAR YADAV and Pradeep Raj Joshi participated in the field work.

Journal of Threatened Taxa | www.threatenedtaxa.org | 26 March 2021 | 13(3): 17847–17855

17855
