



The Journal of Threatened Taxa (JoTT) is dedicated to building evidence for conservation globally by publishing peer-reviewed articles online every month at a reasonably rapid rate at www.threatenedtaxa.org. All articles published in JoTT are registered under [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/) unless otherwise mentioned. JoTT allows unrestricted use, reproduction, and distribution of articles in any medium by providing adequate credit to the author(s) and the source of publication.

Journal of Threatened Taxa

Building evidence for conservation globally

www.threatenedtaxa.org

ISSN 0974-7907 (Online) | ISSN 0974-7893 (Print)

SHORT COMMUNICATION

THE FIRST PHOTOGRAPHIC RECORD OF THE RED PANDA *AILURUS FULGENS* (CUVIER, 1825) FROM LAMJUNG DISTRICT OUTSIDE ANNAPURNA CONSERVATION AREA, NEPAL

Ganesh Ghimire, Malcolm Pearch, Badri Baral, Bishnu Thapa & Rishi Baral

26 September 2019 | Vol. 11 | No. 12 | Pages: 14576–14581

DOI: 10.11609/jott.4828.11.12.14576-14581



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.

Partner



صندوق محمد بن زايد
للمحافظة على
الكائنات الحية

The Mohamed bin Zayed
SPECIES CONSERVATION FUND

Member



Publisher & Host





ISSN 0974-7907 (Online)
ISSN 0974-7893 (Print)

PLATINUM
OPEN ACCESS



THE FIRST PHOTOGRAPHIC RECORD OF THE RED PANDA *AILURUS FULGENS* (CUVIER, 1825) FROM LAMJUNG DISTRICT OUTSIDE ANNAPURNA CONSERVATION AREA, NEPAL

Ganesh Ghimire¹ , Malcolm Pearch² , Badri Baral³ , Bishnu Thapa⁴  & Rishi Baral⁵ 

^{1,4,5} Tribhuvan University, Central Department of Zoology, Kirtipur 44618, Kathmandu, Nepal.

² Harrison Institute, Centre for Systematics and Biodiversity Research, Bowerwood House, 15 St. Botolph's Road, Sevenoaks, Kent TN13 3AQ, United Kingdom.

³ Nepal Environmental Research Institute, Tarakeshwar 9, Kathmandu, Nepal.

⁵ National Trust for Nature Conservation, Annapurna Conservation Area Project, P.O. Box 183, Hariyo Kharka, Pokhara, Nepal.

¹ ganesh061nep@gmail.com, ² harrisoninst@btinternet.com, ³ badribaral@neri.com.np, ⁴ chhetry.bishnu366@gmail.com, ⁵ right.rishi1@gmail.com (corresponding author)

Abstract: In May and June, 2018, a series of field surveys was undertaken to determine the presence of the Red Panda *Ailurus fulgens* in Marsyangdi Rural Municipality in Lamjung District, western Nepal. A single, adult, Red Panda was photographed and recorded on video at Nafada Khola while scratch marks and distinctive scats provided evidence of Red Panda activity at eleven further localities at elevations between 3,150 and 3,650 m. Threats to the habitat of *A. fulgens* within the study area are discussed.

Keywords: *Ailurus fulgens*, Red Panda, distribution, Lamjung District, Nepal.

The Red Panda *Ailurus fulgens* is classified as Endangered by IUCN and is confined to the temperate forests in the foothills of the Himalaya. Its range extends from Kalikot District in western Nepal (Dangol 2014), eastwards through northeastern India, Bhutan, and

northern Myanmar to Sichuan Province in south-central China (Glatston et al. 2015). Throughout its range, its preferred bamboo habitat is increasingly under threat from human activity, adding further pressure to its highly disjunct distribution.

Despite having extensive tracts of bamboo forest between 2,500 and 4,000 m, which is the species' preferred habitat, Nepal is considered currently to support only 1.9% of the total global population of Red Pandas (Bista & Paudel 2014).

In Nepal, *A. fulgens* has been reported from the following districts: Taplejung, Panchthar, Sankhuwasabha, Solukhumbu, Ramechhap, Dolakha, Sindhupalchowk, Rolpa, Rukum, and Mugu (Jnawali et al. 2012), Ilam (Williams 2004), Jajarkot (Baral 2014), Kalikot

DOI: <https://doi.org/10.11609/jott.4828.11.12.14576-14581> | ZooBank: urn:lsid:zoobank.org:pub:960F4820-5302-40CD-9333-5586B142AB98

Editor: Angela R. Glatston, Red Panda Network, Eugene, USA.

Date of publication: 26 September 2019 (online & print)

Manuscript details: #4828 | Received 15 January 2019 | Final received 22 June 2019 | Finally accepted 31 August 2019

Citation: Ghimire, G., M. Pearch, B. Baral, B. Thapa & R. Baral (2019). The first photographic record of the Red Panda *Ailurus fulgens* (Cuvier, 1825) from Lamjung District outside Annapurna Conservation Area, Nepal. *Journal of Threatened Taxa* 11(12): 14576–14581. <https://doi.org/10.11609/jott.4828.11.12.14576-14581>

Copyright: © Ghimire et al. 2019. Creative Commons Attribution 4.0 International License. JOTT allows unrestricted use, reproduction, and distribution of this article in any medium by adequate credit to the author(s) and the source of publication.

Funding: Small Grant from The Rufford Foundation, UK.

Competing interests: The authors declare no competing interests.

Acknowledgements: We are pleased to acknowledge the Department of National Parks & Wildlife Conservation, and the National Trust for Nature Conservation (Annapurna Conservation Area Project) for providing useful information and for granting permission to undertake this research. We extend our thanks to Ganesh Tripathi and to the local guides, Maita Bahadur Gurung and Balaram Gurung, for their help during the field survey. We are grateful to Basanti Kumpakha and Dipak Raj Basnet for their kind assistance with GIS mapping. This research was funded by a Small Grant from The Rufford Foundation, U.K., for which the lead author would like to express his sincere appreciation.



(Dangol 2014), Khotang (Mali 2014), Bhojpur, Dolpa, and Lamjung (MoFSC 2016), and Rasuwa, Nuwakot, Myagdi, Baglung, and Dhading (Bista et al. 2017). *Ailurus fulgens* was reported to occur in Manang District (Paudel 2009) but its presence there has not been confirmed (Bista et al. 2017).

The protected areas in Nepal in which the species is known to occur include Kangchenjunga Conservation Area (Mahato & Karki 2005; Yonzon 1996), Manaslu Conservation Area (Yonzon et al. 1997), Makalu Barun National Park (Jackson 1990), Sagarmatha National Park (Mahato 2004), Langtang National Park (Yonzon 1989; Yonzon & Hunter 1991; Yonzon et al. 1991; Fox et al. 1996), Annapurna Conservation Area (Shrestha & Ale 2001), Dhorpatan Hunting Reserve (Sharma & Kandel 2007), and Rara National Park (Sharma 2008).

Until the present study, *Ailurus fulgens* was known to occur in Lamjung District only within Annapurna Conservation Area (MoFSC 2016) although scats consistent with those of *A. fulgens* were identified also in the District at Ghermu (28.378°N & 84.411°E) (MoFSC 2016). The purpose of the current field surveys was to determine the presence and population status of *A. fulgens* in Lamjung District outside protected areas.

MATERIALS AND METHODS

Study area

Lamjung District is located in Gandaki Province in western Nepal. The total population of the district is 1,67,724 with 42,079 households (CBS 2011). The district is located between 28.055–28.510°N and 84.189–84.189°E (Fig. 1). It has an elevation range of

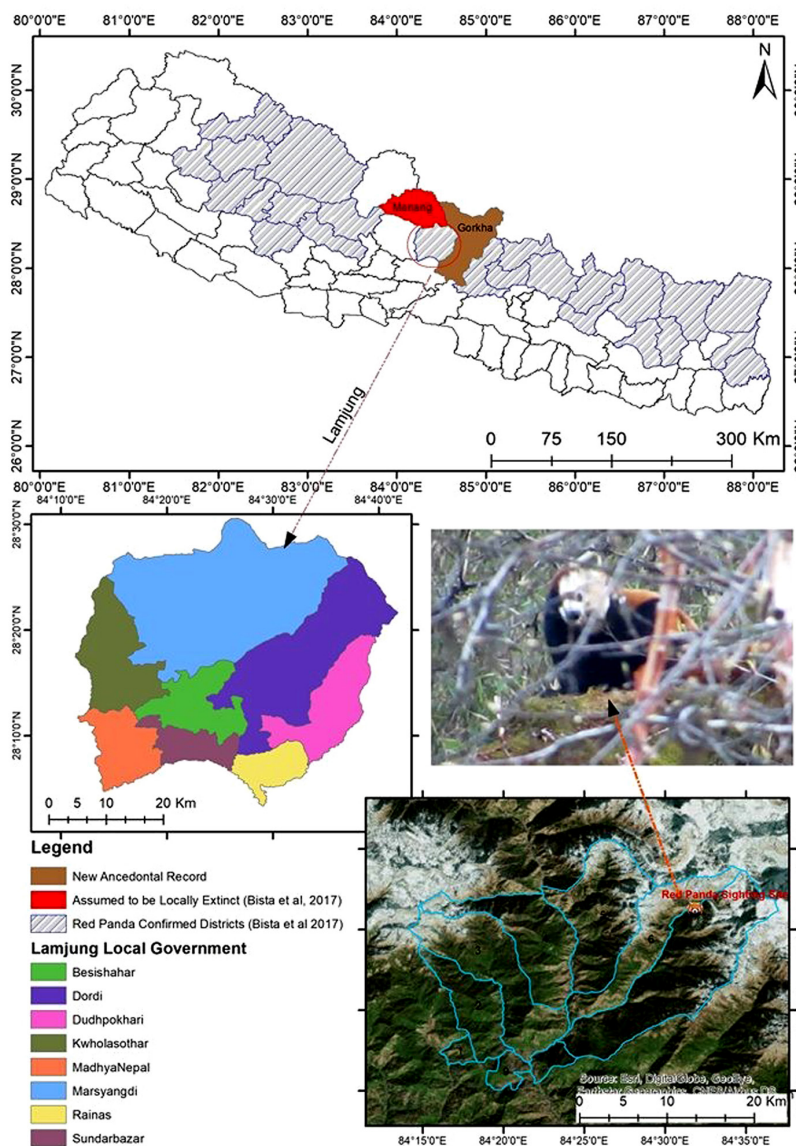


Figure 1. Study area in Marsyangdi Rural Municipality, Lamjung District, Nepal

385–8,162m and covers an area of 1,692km² (DDC 2011). The climate is dictated by elevation and topography, which results in a mosaic of different geographical zones, from subtropical conditions in southern areas to an alpine zone in the north. Average annual rainfall is 2,448mm. (www.meteomean.com), more than 80% of which occurs during the monsoon season (June to September) (DDC 2011). Average air temperature ranges from a minimum of 15.50°C to a maximum of 27.17°C (DDC 2011).

Marsyangdi Rural Municipality is the largest of the rural municipalities in Lamjung District and covers an area of 597.25km² with a total population of 18,759 (CBS 2011). The Municipality is located between 28.251–28.510°N and 84.238–84.619°E. Marsyangdi Rural Municipality is characterised by subtropical, temperate, subalpine, alpine, and nival vegetation. Common plant species include *Abies spectabilis*, *Betula utilis*, *Drepanostachyum falcatum*, *Juniperus* spp., *Quercus lanata*, *Q. semecarpifolia*, *Rhododendron anthopogon*, *R. arboreum*, *R. barbatum*, and *Tsuga dumosa*.

Marsyangdi Rural Municipality has nine wards, of which wards 5, 6, and 7 (Ghermu, Bahundanda, and Bhulbhule VDCs) lie outside Annapurna Conservation Area (ACA) with the remainder of the wards being managed as part of the ACA.

Seasonal transhumance (the movement of cattle and herders between lower valleys in winter and higher pastures in summer) is commonplace within the study area.

METHODS

As a part of a Rufford Small Grant project, a team comprising six members surveyed areas near Ghermu, Bahundanda, and Bhulbhule (Wards 5, 6, and 7 of Marsyangdi Rural Municipality) in May and June, 2018.

An area of 15.54km² of potential Red Panda habitat were searched and 12 line transect surveys were done. Length of transects varied between 780m and 1500m depending upon the terrain. Red Panda signs like scat, scratch marks were searched for 12 search-effort hours in the potential habitats. Relative abundance of signs per unit hour and unit kilometer was estimated.

A Canon Powershot SX 50 camera was used to photograph the single, adult *A. fulgens* together with arboreal scratch marks, and scats. A video of the Red Panda was recorded using the same camera. Coordinates of localities were ascertained using a hand-held Garmin eTrex10 GPS.

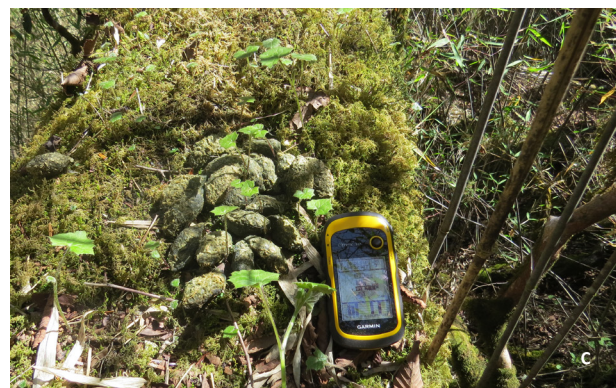


Figure 2. A—*Ailurus fulgens* photographed at Nafada Khola, Bhulbhule VDC, Lamjung District | B—Distinctive Red Panda scratch marks on a tree trunk at Nafada Khola | C—Fresh Red Panda scats on a tree limb at Nafada Khola | D—Red Panda habitat at Nafada Khola showing an understorey of Slender bamboo *Drepanostachyum falcatum*. © Ganesh Ghimire.

RESULTS

New locality record

One adult *Ailurus fulgens* was sighted in the forested area of Nafada Khola (28.438°N & 84.530°E), Marsyangdi Rural Municipality Ward Number 7 (Bhulbhule) on 28 May 2018 at 07.00h. (Fig. 1, Image 1A).

A total of 11 scat groups were observed in 12 line transects of length ranging between 780m and 1500m. Relative abundance of Red Panda scats was 1.44 scat groups per 1,000m walk and 0.92 scats groups per hour search effort in 15.54km².

Scratch marks consistent with those of *A. fulgens* were observed on a tree trunk approximately 50m east of the site (Fig. 1, Image 1B).

Scats consistent with those of *A. fulgens* were observed between 3,150m and 3,650m at 11 localities within 200m of the live observation site (Fig. 1, Image 2C). The principal threats to the preferred habitat of the Red Panda within the study area were identified as overgrazing by cattle, man-made forest fires, and the collection of tender shoots and mature stalks of bamboo by local people.

DISCUSSION

This paper provides the first photographic evidence of Red Panda in Lamjung, which was once reported as one of the potential areas for Red Panda (Jnawali et al. 2012). Different researchers have considered the panda sign encounter rate as the basis for abundance analysis. Williams (2004) found 5.1 Red Panda sign/km and 235 pellets per day in the altitudinal range of 2,800–3,000 m in eastern Nepal, Ilam. Pradhan et al. (2001) suggested rate of pellet groups and Red Panda to be 28.83 ± 32.16 and $2.98 \pm 2.1/100$ hours walk respectively in Singhalila National Park, Darjeeling. In the study area, the scat group encounter rate was found to be 1.44 scat groups per 1,000m walk and 0.92 scats groups per hour search effort on an average which is lower than those encountered by Williams (2004). So, the study area may have lower relative density than Ilam and similar to Jumla. This relative abundance in small spatial scale over short period of study, however, may mislead the results hence an intensive study over a period of time is highly recommended for better understanding of numbers of Red Pandas in this isolated habitat and to meet Red Panda Conservation Action Plan (2019-2023)'s aim of protecting and managing the Red Panda population in Nepal through a holistic approach of conservation including research, monitoring, awareness building, habitat improvement, and threat management (DNPWC and DFSC 2018).

The adult Red Panda, which was observed from a distance of approximately 100m, was seen grooming itself and resting on a moss covered, horizontal limb of a mature Himalayan Birch *Betula utilis* (Image 1A). The tree was growing on a north-west facing slope with a gradient of 39° (cp. Wei et al. 1999). The immediate area was dominated by Himalayan Birch, Eastern Himalayan Fir *Abies spectabilis*, and *Rhododendron* spp. with an understorey of Slender Bamboo (*Drepanostachyum falcatum*). This floral matrix compares favourably with Red Panda habitat reported by Yonzon (1989). The nearest water source, the Nafada River, was at a distance of 100m.

Scratch marks considered to have been made by *A. fulgens* were observed on the trunk of a tree 50m east of the live observation site (Image 1B). Red Panda fur was found at the site.

Red Panda scats are spindle-shaped, soft, moist, and green in colour (Image 1C). They are highly diagnostic and are reliable indicators of Red Panda activity. Scats consistent with those of *A. fulgens* were observed at 11 localities within an area of 15.54km², each locality lying within 200m of the live observation site (Fig. 1). The localities were situated between 3,150 and 3,650 m. The fresh scats were found on the limbs of trees and on the ground over a two month period (May–June 2018). The size of Red Panda scats can be helpful in determining whether they are those of a mature or immature individual (Yonzon 1989). The size of scats ranged from 35.5mm to 40.3mm in length and 15.2mm to 20.7mm in width. Owing to the limited duration of the field survey, it was not possible to determine the abundance of Red Pandas in the study area but the variation in scat size would seem to indicate the presence of at least one mature and one immature individual and, accordingly, the possibility of a reproductive population.

Several threats to Red Panda habitat were identified within the survey area. Principal amongst these were grazing by livestock and man-made forest fires. Mahato (2004) mentioned overgrazing pressure between 3,200m and 3,400m in prime Red Panda habitats. We observed similar overgrazing pressure caused by the movement of cattle throughout the study area, particularly during seasonal transhumance. Grazing, trampling of vegetation and soil compaction were noted to damage the understorey and to impact negatively on floral regeneration. These movements during the main season when Red Pandas give birth and raise young (May–August) have been identified as a threat to Red Panda populations (Jnawali et al. 2012). Other threats to habitat integrity included the collection of bamboo and

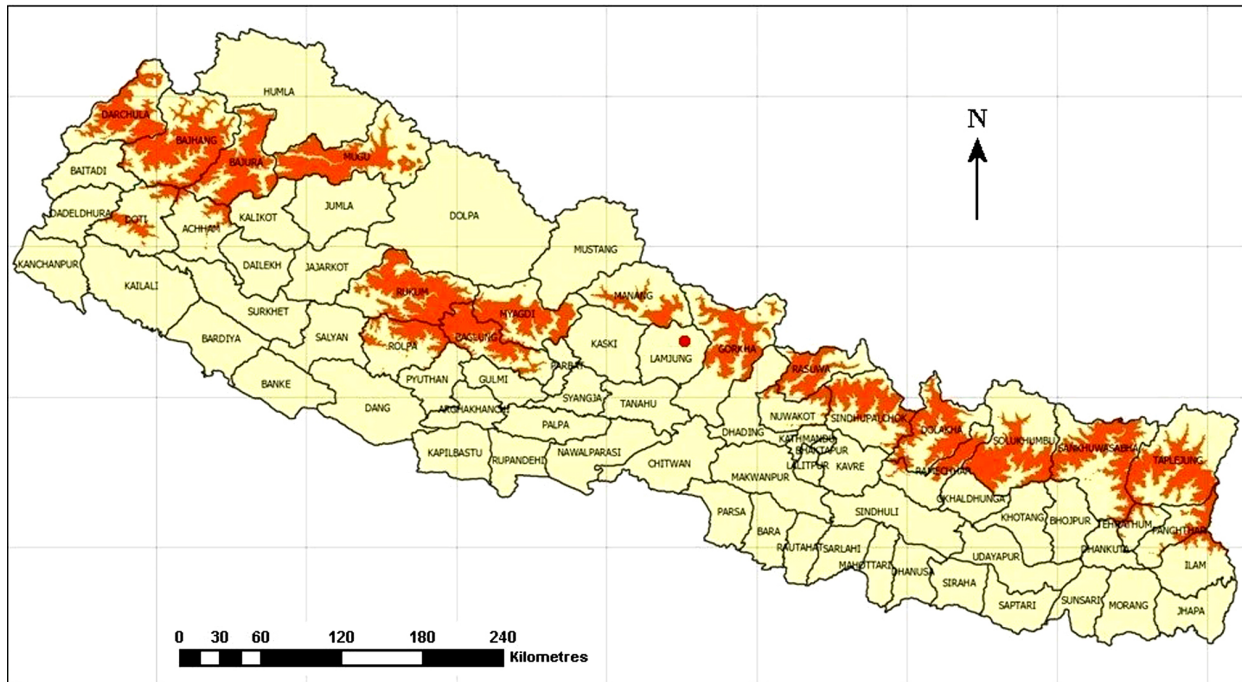


Figure 2. The distribution of *Ailurus fulgens* in Nepal (orange areas) (www.redpandanetwork.org). The new locality record from Nafada Khola in Lamjung District is indicated by the red dot.

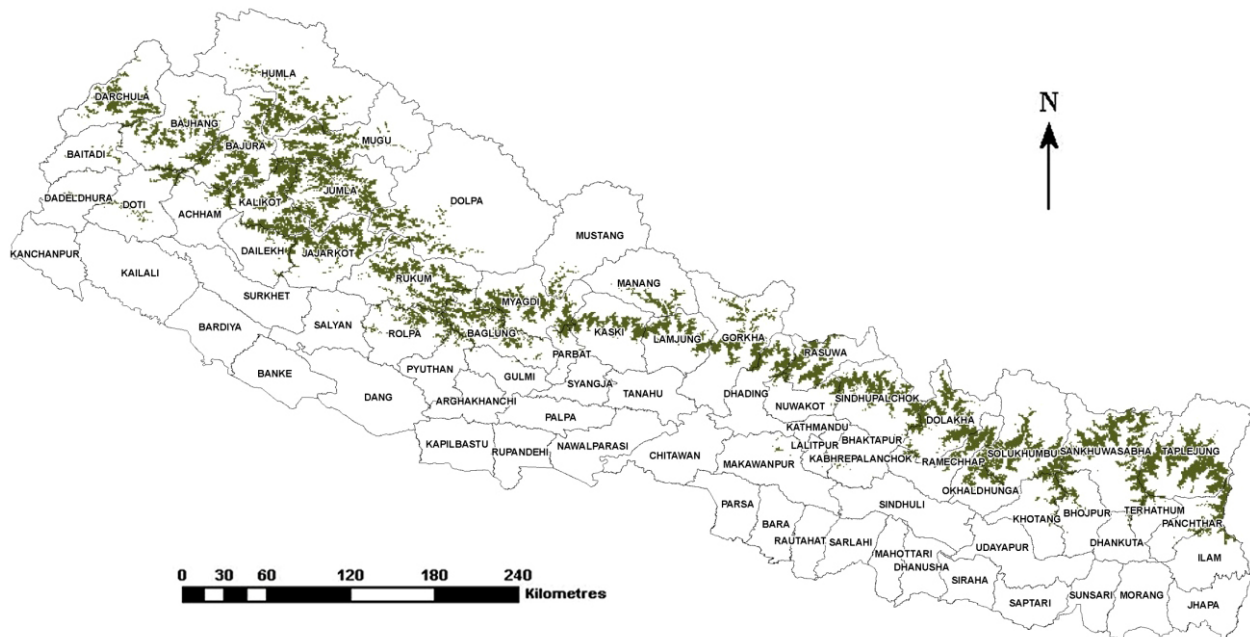


Figure 3. The extent of the preferred habitat of *Ailurus fulgens* in Nepal (dark green areas) (MoFSC 2016).

plants. Tender shoots of bamboo are utilised in cooking while the stalks are used as winter cattle fodder, in the construction of walls and roofs of buildings, to stabilise soil in the fields, for basket weaving, and for producing utilitarian bamboo products such as ‘nanglo’ (a flat,

round, woven tray used for sifting grain) and ‘mandro’ (a mat for sun-drying cereals). Plants that are collected include *Paris polyphylla* (Himalayan Paris), *Berberis asiatica* (Asiatic Barberry), and *Daphne* spp. (Lokhta).

The current distribution of *A. fulgens* in Nepal is

shown in Fig. 2 while Fig. 3 indicates the extent of the Red Panda's preferred habitat throughout the country. Although resident in a broad area of the Nepalese Himalaya, it is clear from a comparison of the two figures that the distribution of *A. fulgens* is markedly disjunct with a notable hiatus between eastern and western subpopulations. It is recommended that further field research be undertaken in Nepal, particularly in Kaski District, which adjoins Lamjung District to the west and from which there are no records of *A. fulgens* despite the presence of suitable Red Panda habitat. Efforts to create corridors between isolated groups to maintain genetically viable populations, as suggested by Bista et al. (2017), should be encouraged.

REFERENCES

- Baral, B. (2014).** Baseline study of Red Panda (*Ailurus fulgens fulgens*, Cuvier 1825) in Jajarkot district, Mid-Western Nepal. Master's Thesis. Central Department of Environmental Science, Tribhuvan University, Kathmandu, Nepal, 52pp.
- Bista, D. & R. Paudel (2014).** An overview of the status and conservation initiatives of Red Panda *Ailurus fulgens* (Cuvier, 1825) in Nepal. *The Initiation* 05: 171–181.
- Bista, D., S. Shrestha, P. Sherpa, G.J. Thapa, M. Kokh, S.T. Lama & S.R. Jnawali (2017).** Distribution and habitat use of Red Panda in the Chitwan-Annapurna Landscape of Nepal. *PLoS one* 12(10): e0178797.
- CBS (2011).** National Population and Housing Census 2011. Central Bureau of Statistics. National Planning Commission Secretariat, Kathmandu, Nepal, 262pp.
- Cuvier, F.G. (1825).** Panda. In: Geoffroy Saint-Hilaire, E. & F.G. Cuvier (eds.). *Histoire naturelle des mammifères: avec des figures originales, coloriées, dessinées d'après des animaux vivans.* A. Belin, Paris, 5(50): 3pp.
- Dangol, B. (2014).** Habitat and Distribution of Red Panda: A case from Ranchuli VDC Kalikot District, Nepal. Master's Dissertation. Central Department of Environmental Science, Tribhuvan University, Kathmandu, Nepal, 33pp.
- DDC (District Development Committee, Lamjung) (2011).** District Profile of Lamjung. District Development Committee, Lamjung, Nepal.
- DNPWC and DFSC (2018).** Red Panda Conservation Action Plan for Nepal (2019–2023). Department of National Parks and Wildlife Conservation and Department of Forests and Soil Conservation, Kathmandu, Nepal
- Fox, J., P.B. Yonzon & N. Podger (1996).** Mapping conflicts between biodiversity and human needs in Langtang National Park, Nepal. *Conservation Biology* 10(20): 562–569.
- Glatston, A., F. Wei, Z. Than & A. Sherpa (2015).** *Ailurus fulgens*. (errata version published in 2017). The IUCN Red List of Threatened Species 2015: e.T714A110023718. Downloaded on 19 September 2019. <https://doi.org/10.2305/IUCN.UK.2015-4.RLTS.T714A45195924.en>
- DNPWC and DFSC (2018).** Red Panda Conservation Action Plan for Nepal (2019–2023). Department of National Parks and Wildlife Conservation and Department of Forests and Soil Conservation, Kathmandu, Nepal.
- Jackson, R. (1990).** Threatened wildlife, crop and wildlife depredation and grazing in the Makalu Barun National Park and Conservation Area. Department of National Parks and Wildlife Conservation, Kathmandu, Nepal. 105pp.
- Jnawali, S., K. Leus, S. Molur, A. Glatston & S. Walker (Eds.) (2012).** Red Panda (*Ailurus fulgens*). Population and Habitat Viability Assessment (PHVA) and Species Conservation Strategy (SCS) Workshop Report. National Trust for Nature Conservation, Kathmandu, Nepal, Conservation Breeding Specialist Group and Zoo Outreach Organization, Coimbatore, India. 66pp.
- Mahato, N.K. (2004).** Status of Red Panda (*Ailurus fulgens*) in Kangchenjunga region of Nepal. *Tigerpaper* 31: 7–9.
- Mahato, N.K., & J.B. Karki (2005).** Distribution and habitat assessment of Red Panda (*Ailurus fulgens*) in Kangchenjunga Conservation Area with reference to Riya Samba and Lama Khanak forests. *Nepal Journal of Forestry* 12: 32–40.
- Mali, N. (2014).** Status and Conservation Threats of Red Panda in Chiuridada and Nirmalidada VDCs of Khotang District, Nepal. Master's Dissertation. Central Department of Environmental Sciences, Tribhuvan University, Kathmandu, Nepal. 43pp.
- MoFSC (2016).** National Survey of Red Panda to Assess its Status, Habitat and Distribution in Nepal. Ministry of Forest & Soil Conservation, Kathmandu, Nepal. 16pp. Unpublished report.
- Paudel, K. (2009).** Status and Distribution of Red Panda (*Ailurus fulgens*) in Manang District, Nepal Bachelor's Dissertation, Institute of Forestry, Tribhuvan University, Pokhara Campus, Nepal, 43pp.
- Sharma, H.P. (2008).** Distribution and conservation status of Red Panda (*Ailurus fulgens*) in Rara National Park, Nepal. Final Report. People's Trust for Endangered Species, London, UK.
- Sharma, H.P. & R.N. Kandel. (2007).** Red Panda *Ailurus fulgens* in the Dhorpatan Hunting Reserve of Nepal: An Assessment of Their Conservation Status. People's Trust for Endangered Species, London, UK.
- Shrestha, R. & S.B. Ale (2001).** Species diversity of Modikhola watershed. King Mahendra Trust for Nature Conservation, Annapurna Conservation Area Project, Pokhara, Nepal. 47pp.
- Wei, F., Z. Feng, Z. Wang & J. Hu (1999).** Current distribution, status and conservation of wild Red Pandas *Ailurus fulgens* in China. *Biological conservation* 89(3): 285–291.
- Williams, B.H. (2004).** Red Panda in Eastern Nepal; how do they fit into the biological conservation of the Eastern Himalaya? *Conservation Biology in Asia* 16: 236–250.
- www.meteomean.com** – see: <https://www.meteomean.com/en/climate/lamjung>
- www.redpandanetwork.org** – see: <https://www.redpandanetwork.org/assessing-the-status-habitat-and-distribution-of-red-pandas-in-nepal/>
- Yonzon, P.B. (1989).** Ecology and conservation of the Red Panda in the Nepal-Himalayas. PhD Thesis, University of Maine, Orono, USA. 169pp.
- Yonzon, P.B. (1996).** Status of Wildlife in the Kanchanjunga Region: A Reconnaissance Study Report. Report Series no. 23, WWF Nepal Program, Kathmandu, 18pp.
- Yonzon, P.B. & M.L. Hunter (1991).** Conservation of the Red Panda *Ailurus fulgens*. *Biological conservation* 57(1): 1–11.
- Yonzon, P.B., R. Jones & J. Fox (1991).** Geographic information systems for assessing habitat and estimating population of Red Pandas in Langtang National Park, Nepal. *Ambio* 20: 285–288.
- Yonzon, P.B., P. Yonzon, C. Chaudhary & B. Vaidya (1997).** Status of Red Panda in Himalaya. Resources Himalaya Nepal, Kathmandu, Nepal, 21pp.





PLATINUM
OPEN ACCESS



The Journal of Threatened Taxa (JoTT) is dedicated to building evidence for conservation globally by publishing peer-reviewed articles online every month at a reasonably rapid rate at www.threatenedtaxa.org. All articles published in JoTT are registered under [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/) unless otherwise mentioned. JoTT allows unrestricted use, reproduction, and distribution of articles in any medium by providing adequate credit to the author(s) and the source of publication.

ISSN 0974-7907 (Online) | ISSN 0974-7893 (Print)

September 2019 | Vol. 11 | No. 12 | Pages: 14471–14630

Date of Publication: 26 September 2019 (Online & Print)

DOI: 10.11609/jott.2019.11.12.14471-14630

www.threatenedtaxa.org

Article

Ornithophony in the soundscape of Anaikatty Hills, Coimbatore, Tamil Nadu, India

– Chandrasekaran Divyapriya & Padmanabhan Pramod, Pp. 14471–14483

Communications

A case study on the public knowledge and awareness of the Philippine Pangolin *Manis culionensis* (Mammalia: Pholidota: Manidae)

– Frances Mae Tenorio & Joselito Baril, Pp. 14484–14489

Winter food habits of the Common Palm Civet *Paradoxurus hermaphroditus* (Mammalia: Carnivora: Viverridae) in Patna Bird Sanctuary, India

– Khursid Alam Khan, Jamal Ahmad Khan, Khursheed Ahmad & Narendra Mohan, Pp. 14490–14495

Report of five interesting avian species from Durgapur ecoregion, West Bengal, India by citizen science effort

– Sagar Adhurya & Shantanu Bhandary, Pp. 14496–14502

Brief insight into the behavior, activity, and interspecific interactions of urban *Trimeresurus (Cryptelytrops) albolabris* (Reptilia: Squamata: Viperidae) vipers in Bangkok, Thailand

– Curt Hrad Barnes & Tyler Keith Knierim, Pp. 14503–14510

The distributional pattern of benthic macroinvertebrates in a spring-fed foothill tributary of the Ganga River, western Himalaya, India

– Vijay Prakash Semwal & Asheesh Shivam Mishra, Pp. 14511–14517

Seasonal vegetation shift and wetland dynamics in vulnerable granitic rocky outcrops of Palghat Gap of southern Western Ghats, Kerala, India

– Pathiyil Arabhi & Maya Chandrasekharan Nair, Pp. 14518–14526

A comprehensive checklist of endemic flora of Meghalaya, India

– Aabid Hussain Mir, Krishna Upadhaya, Dilip Kumar Roy, Chaya Deori & Bikarma Singh, Pp. 14527–14561

Shola tree regeneration is lower under *Lantana camara* L. thickets in the upper Nilgiris plateau, India

– Muneer Ul Islam Najar, Jean-Philippe Puyravaud & Priya Davidar, Pp. 14562–14568

Overcoming the pollination barrier through artificial pollination in the Wild Nutmeg *Knema attenuata* (Myristicaceae), an endemic tree of the Western Ghats, India

– Murugan Govindakurup Govind, Koranapallil Bahuleyan Rameshkumar & Mathew Dan, Pp. 14569–14575

Short Communications

The first photographic record of the Red Panda *Ailurus fulgens* (Cuvier, 1825) from Lamjung District outside Annapurna Conservation Area, Nepal

– Ganesh Ghimire, Malcolm Pearch, Badri Baral, Bishnu Thapa & Rishi Baral, Pp. 14576–14581

Partner



صندوق محمد بن زايد
للمحافظة على
الحيوانات النادرة
The Mohamed bin Zayed
SPECIES CONSERVATION FUND

Member



Publisher & Host

