

Short Communication

New locality record of crab-eating mongoose *Herpestes urva* (Hodgson, 1836) from Parbat District of Nepal

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Abstract

Crab-eating mongoose *Herpestes urva* is one of the least studied small mammal species of Nepal with very few confirmed locality records. This paper presents the new location of crab-eating mongoose from agricultural land adjacent to the *Schima-Castanopsis*-dominated forest habitat of Parbat District in Gandaki Province, Nepal. Three individuals of crab-eating mongoose were sighted and photographed at an altitude of 1,515 m on swampy agricultural land at the edge of a fragmented forest patch of *Schima-Castanopsis*-dominated forest in Arthar Village of Kushma Municipality.

Keywords: Kushma Municipality; Mongoose; Opportunistic record; Range; Small mammals

1 | Introduction

Crab-eating mongoose (C-eM) *Herpestes urva* (Hodgson, 1836) is a small mammal species characterized by a white stripe on its neck that runs from its cheeks to the chest (De & Chakraborty 1995). It is one of the four mongoose species found in Nepal (Sharma & Lamichhane 2017). It is found in Bangladesh, Bhutan, Cambodia, China, Hong Kong, India, Lao People's Democratic Republic, Malaysia (Peninsular Malaysia), Myanmar, Nepal, Taiwan, Thailand, and Viet Nam (Choudhury et al. 2015). In Nepal, it has been reported from tropical and subtropical evergreen or deciduous

forests and agricultural land, often near water sources (Jnawali et al. 2011).

The C-eM has been nationally assessed as Vulnerable in *The Status of Nepal Mammals: The National Red List Series* (Jnawali et al 2011) and as 'Least Concerned' in the IUCN Red List of Threatened Species (Choudhury et al 2015). Research on mammals in Nepal is mainly focused on charismatic species like *Panthera tigris*, and *Rhinoceros unicornis*, while small mammal species like mongoose receive the least attention from concerned agencies, a situation typical in South and South-east Asia (Sharma & Lamichhane 2017). The limitation of confirmed presence records of species in-country is due to the lack of intensive species-focused research within its distribution range as most of the distribution range falls outside the protected area system (Jnawali et al. 2013). This paper provides the new locality record of the C-eM from Kuma Municipality of Parbat District, Nepal.

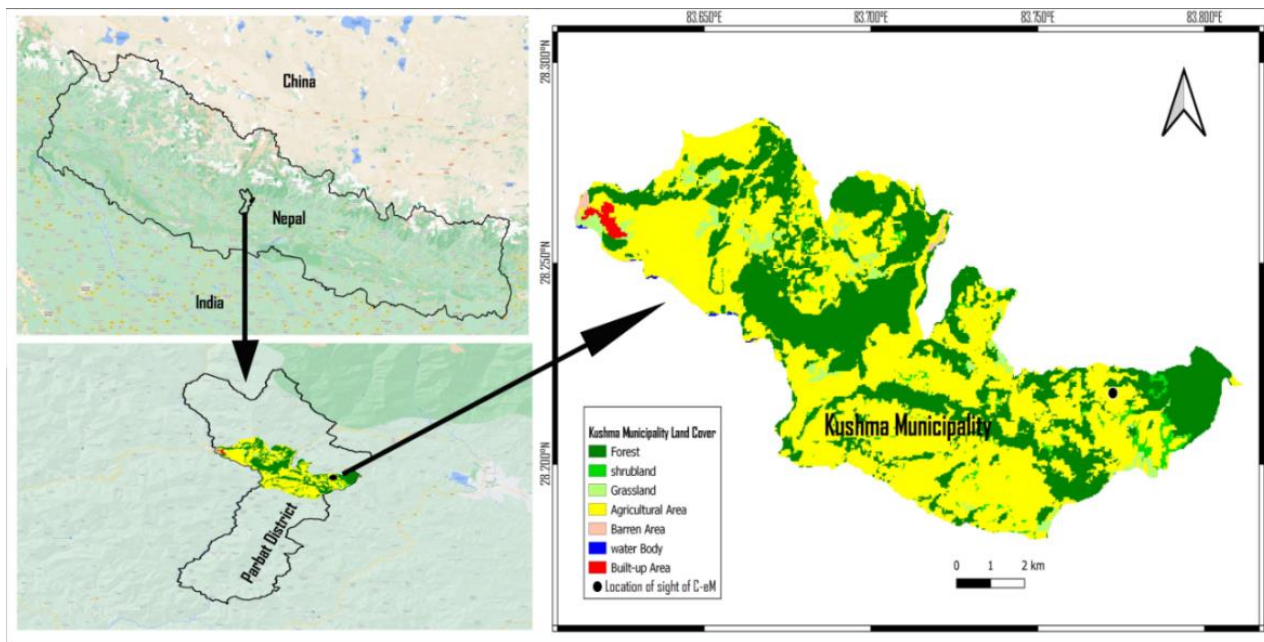


Figure 1. Land use map of the study area showing the land use and land cover

2 | Materials and methods

2.1 | Study area

Parbat is one of the mid-hill districts of Gandaki Province situated in the western part of Nepal. It is located between 27.27222°N to 28.24167°N and 83.22778°E to 83.27222°E (Malla et al. 2015) (Fig. 1). It extends through an altitudinal range of 520 m to 3,300 m and the average annual rainfall is 1950 mm (Malla et al. 2014). Parbat has sub-tropical, temperate, and sub-alpine monsoon types of climates (Malla et al. 2014).

2.2 | Data collection

Following the information provided by local people, an opportunistic survey was conducted in the agricultural land and forest area of Arthar Besi area of Arthar Village of Kusma Municipality in April of 2020. A total area of 34.28 sq. km was initially surveyed for fifteen days in ward numbers 11, 12, 13, and 14 of the Kusma Municipality to identify the area of probable species occurrence. The opportunistic observation of C-eM including its habitat parameters was recorded. Likewise, five Key informant interviews, twelve

informal interviews and visual inspection were conducted for threats assessment.

3 | Results

Three individuals of C-eMs (two adults and one juvenile) were spotted and photographed at Arthar Village of Kusma Municipality, Parbat District (28.2177°N, 83.77252°E) at an altitude of 1,515 m on 13 April 2020 at 17:00 hr (Fig. 2) during the survey.

Those individuals were spotted foraging on swampy agricultural land at the edge of a fragmented forest patch of *Schima-Castanopsis*-dominated forest. No



Figure 2. Crab-eating mongoose in the agricultural field of Arthar Village in Kusma Municipality, Parbat District (Photo by: Arjun Bhusal)

remarkable signage of C-eM occurrence was observed. The C-eM were recorded on NW facing slope with an inclination of about 23°. A perennial stream run near the C-eM sighted area. The distance from C-eM sighted location to the settlement was approximately 230 m. The area was frequently used by villagers for livestock grazing, farming and fishing, firewood, and fodder collection. Also, a pedestrian trail goes through the study area so anthropogenic pressure is high in the area. Stream and fringe areas were highly infested with invasive plant *Ageratina adenophora*.

The killing of C-eM by feral dogs, illegal hunting for bushmeat and electrocution, and poisoning in water bodies for fishing have been reported by local communities as prime threats to C-eM in the region.

4 | Discussion

The C-eM occurrence has been confirmed from Arthar Village of Kusma Municipality in Parbat District of western Nepal. In Nepal, C-eM was recorded for the first time in Gorkha District (Fry 1925). Records of the presence of C-eM in Nepal have been increasing in recent time because of higher coverage of research and the trend of publishing the research findings. It had been recorded from four lowland and one mid-hills protected areas of Nepal i.e., Parsa National Park (at an altitude of 330 m asl) and Chitwan National Park

(Sharma & Lamichhane 2017), Bardia National Park (BaNP/NTNC-BCP 2019a), Banke National Park (BaNP/NTNC-BCP 2019b), Shuklaphanta National Park (Poudyal et al. 2019) and Shivapuri Nagarjun National Park (SNNP 2017). While outside the protected area system, it has been recorded from Bhanu Municipality at 571m asl in Tanahu (Sharma et al 2021), Gorkha District at an altitude of 607m asl and Kaski District at an altitude of 590m asl (Bist et al. 2020; Hari Basnet pers comm. 2020), Dang District at an altitude of 703 m asl (Pandeya & Khanal 2019), Tinjure Milke Jaljale Complex (Rai et al. 2018), Brandabhar Forest of Chitwan District (Sharma & Lamichhane 2017), and three different locations of Sankhuwasava District at 1201m asl, 1264m asl & 1198m asl (Thapa 2013). Likewise, on 12 July 2020 and on 01 February 2021, C-eM was photographed during birding at Bhatighari Community Forest and Murgiya Hariyali Community Forest of Dhanuhsa, respectively. Available records of the species are shown on Fig. 3.

While spatially explicit records of C-eM from Kaski, Tanahu, and Gorkha in similar ecological and altitudinal gradients at a national level have been confirmed, it is unclear whether such desk-based exercises are subsequently used to guide local-level conservation interventions, field research, fund-raising, or scientific and conservation capacity-building initiatives elsewhere in the landscape. The intention of

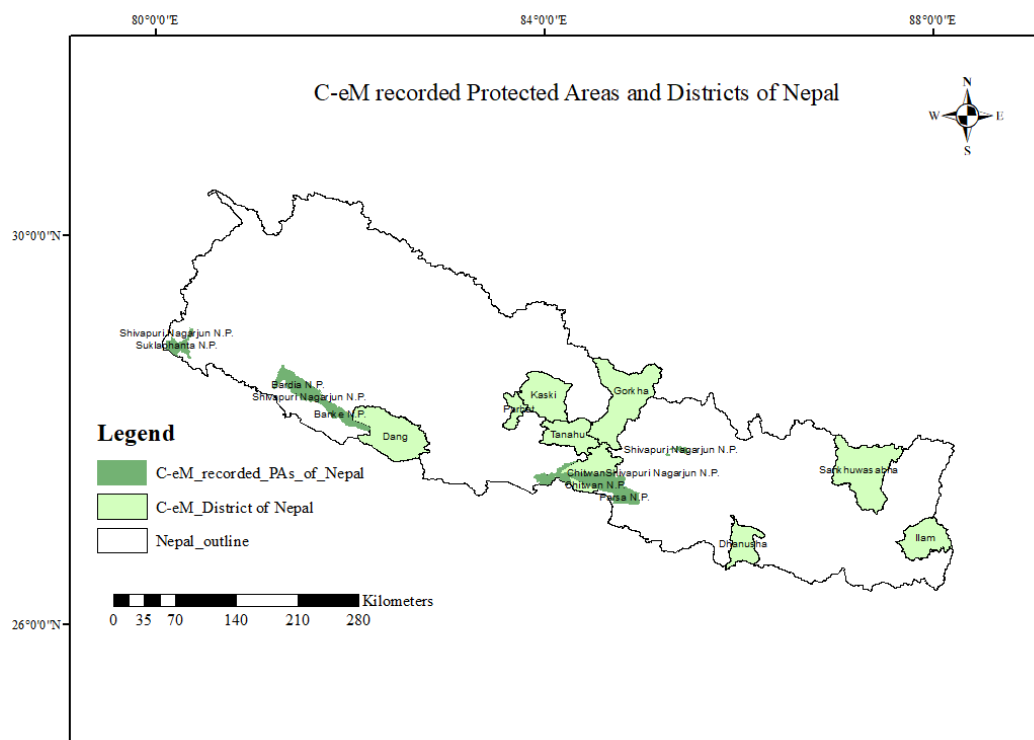


Figure 3. C-eM recorded PAs and Districts of Nepal

this study is for the results to be used as a starting point to stimulate local engagement and in doing so drive local government and citizens to explore contextual scenarios for the crucial research and conservation needs for this under-studied and under-represented species including other small mammals in Parbat. Through the bottom-up approach of local-level planning, there is a greater likelihood of influence on policy and a higher likelihood of successful conservation interventions.

This report on the habitat of C-eM corroborates favorably with its marshy agricultural habitats as described by Bist et al. (2020) in Gorkha and Kaski, by Thapa (2013) in Sankhuwasava District and Choudhury et al. (2015). However, the vegetation type in adjoining forests dominated by *Schima-Castanopsis* completely contradicts with those sub-tropical deciduous, *Sal* (*Shroea robusta*) dominated forests in Gorkha (Bist et al. 2020), Chitwan National Park (Rayamajhi et al. 2019), Dang (Pandeya & Khanal 2019) and Parsa National Park (Sharma & Lamichhane 2017) indicating its wider range. Despite the fact that there is a historical record of this species from the neighboring Kaski District (Bist et al. 2020), yet continued occurrence in this range has not been documented. So, this record suggests that either species has previously been overlooked in this area or they could have been erratic individuals. However, it would be impractical to conclude anything about its habitats based on opportunistic sightings of individuals, on a small spatial scale over a short period of time.

There are shreds of evidence of poaching of C-eM for fur in Nepal (Rai et al. 2018; Jnawali et al. 2011). However, local people revealed that they occasionally hunt C-eM to consume as bushmeat. Furthermore, there was a report on the accidental killing of one individual of C-eM in the study area by feral dogs in 2020. Local people revealed that people illegally poison ponds/streams and use electric current for fishing. These activities are likely to decrease the prey base of species, ultimately contributing to the decline of species. The record of species along with information on habitat and threats will assist conservation organizations, researchers, and decision-makers to prepare conservation plans and programs.

Knowledge about biodiversity remains inadequate because most species living on the earth were still not formally described (the Linnean shortfall) and because geographical distributions of most species are poorly understood and usually contain many gaps (the Wallacean shortfall) (Lomolino 2004; Whittaker et al.

2005). The first refers to the fact that most species living on Earth were still not formally described, whereas the second is defined by the fact that, for the majority of taxa, geographical distributions are also poorly understood and contain many gaps. As pointed out by Whittaker et al. (2005), these two shortfalls are scale-dependent, both on evolutionary and ecological dimensions. This scale dependence is important because most practical decisions about how to conserve biodiversity are taken at regional and even local scales; hence record of C-eM in Parbat is defensible even if it is from the same ecological and altitudinal range as in Gorkha, Kaski, and Tanahu.

Intensive research activities focusing on small carnivores are often neglected in Nepal (Baral et al. 2019). Among small carnivores, scientific studies on mongooses are very limited, and very little specific information is known about the C-eM in Nepal (Sharma & Lamichhane 2017). Although the history of C-eM records back in 1925 by Fry (Jnawali et al. 2011), consolidation of data on C-eM presence as a precautionary measure, weighted by the inferred is defensible that allows us to make general predictions of broad-scale diversity gradients, we are far from a predictive theory capable of predicting species diversity based on complex environmental and historical factors acting at different scales in time and space (Hawkins, 2004).

Hence, this study would enhance the understanding of C-eM distribution and conservation status emphasizing that more intensive research is needed to improve understanding of the species' characteristics, habitats, occupancy, population size, and ecology in Nepal.

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Authors' contributions

Bhusal, A., Baral, B. and Bist, B. S. designed the research, analyzed and wrote the manuscript, and Bhusal, A., Chhetri, S., Pangani, M., and Poudel, S., collected data; Baral, B. and Pradhan A. worked with GIS Map. All authors contributed critically to the drafts and gave final approval for publication.

Conflicts of interest

Authors declare no conflict of interest.

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