Journal of Wildlife and Ecology. (2017). 1(1): 17-24

Research Paper **Open Access**

First record of Small Indian Civet (*Viverricula indica*) from Azad Jammu and Kashmir Himalaya, Pakistan

Muhammad Altaf[1*]

1. Department of Zoology, Women University of Azad Jammu and Kashmir, Bagh-Pakistan

***Corresponding Author:** altaf_mughal450@yahoo.com

Peer Reviewed

Citation: Altaf, M. 2017. First record of Small Indian Civet (*Viverricula indica*) from Azad Jammu and Kashmir Himalaya, Pakistan. Journal of Wildlife and Ecology. 1: 17-24.

Received: 21, 02, 2017
Accepted: 25, 02, 2017
Published: 01, 03, 2017

Competing interests: The author has declared that no competing interests exist.

Funding: Author has no source of funding for this work.

ABSTRACT

Introduction: Small Indian civet is look like a cat; mature males weight is from 2.5kg to 3.4kg. This is distributed in wide range landscapes and distributed from forest to deforested areas. It is hunted for skins, perineal gland, food and medicine.

Materials and Methods: The Small Indian civet data were collected from October 2016 to February 2017; the study areas were Bagh and Poonch. Linear count survey (LCS) method was applied. Both, direct and indirect observation methods (DIOM) were used. Small Indian civet picture (10 x 15cm) was used for the questionnaire.

Results: During the survey recorded that two dead bodies of small Indian civet were recorded from the Poonch which is killed by local people. While two dead bodies in road accidents are recorded as; one near the Arja, district Bagh and other near Hari Ghel from district Bagh.

Conclusion: During the study noted that it is need to collect more data about mammalian diversity, density, distribution and status. It is fact that the data are limited for mammalian species in the study area. It is also need to analysis trade and cultural use of this species in Himalayan region of Azad Jammu and Kashmir, Pakistan.

Key word: Road accident, Hari Ghel, Poonch, LCS, DIOM.

INTRODUCTION

Small Indian civet (*Viverricula indica*) is to some extent look like a cat, having long fore-legs and clear round ear. *V. indica* is smaller in size as compared to *Felis sylvestris ornata*. Mature males weight is from 2.5kg to 3.4kg. The head plus body measured 56cm length and approximate 45.7cm height at the shoulder. *V. indica* is a beautiful mammal and gives bright look. The nose is reddish-brown and muzzle's hairs are white. Each civet has plenteous and powerful vibrissae around of muzzle, and these vibrissae are black plus white color. The ears rounded in outline and are broad, with their interior edge approximately meeting in the interior of crown. The interior sides of ears are whit alongwith a bursa on outer edge. When examined from front part broad and round ears and clear chest pattern are mainly remarkable. The chest hairs grow outer sides from an innate parting down middle, having breast cleft look. There is noticeable area of black hair under internal place of both eyes. The body colors different from greyish-white to sandy-buff and very much dotted with black color in horizontal lines. The dots are lesser in the area of back where these dots lean to combine into constant lines, but turn out to be larger on the under flanks. All legs are very dark brown or black and often there are minute dots of white color fur around single or multiple of foots. Claws are well developed and non-retractile. The abdomen fur color is dark grey and tends to be slightly sparse and thin. Therefore, it is not greatly valued by trade of fur. Tail of *V. indica* is long and bushy however tends to tapper to tip, with hairs laterally dense especially in the initial area. Tail is rich orange color at dorsal side and buff-white on its lower side of tail and it is clearly marked with upto ten concentric black color rings. The breast and throat are greyish-white alongwith two black color semi-circular chain. The scent gland is located in perineal area. Six tits are present ventrally (Roberts, 1997).

V. indica is distributed in wide range landscape i.e. bush land, deciduous forest, grassland, marshes, riverine habitats, (Holden and Neang, 2009), peat soil (Willcox *et al.*, 2014), mangrove, evergreen, semi-evergreen, deciduous forest, shrubs (Feeroz *et al.*, 2011; Feeroz *et al.*, 2012; Rahman and McCarthy, 2014), villages (Choudhury, 2013; Duckworth *et al.*, 2015) and especially in fragmented and disturbed environment (Mudappa *et al.*, 2007); it is common in different landscapes entirely deforested landscapes (Suen, 2002; Pei *et al.*, 2010).

V. indica is used, for different purposes e.g. hunted for skins in China (LAU *et al.*, 2010), captured for perineal gland secretion, known as civet musk (raw material for perfume) and medicine (Balakrishnan and Sreedevi, 2007; Chutipong *et al.*, 2014). This species is high traded civet in Indonesia and Java (Nijman *et al.*, 2014; Rode-Margono *et al.*, 2014). In the Bangladesh, local people kill *V. indica* with poison (Rahman and McCarthy, 2014). The requirement for *V. indica* meat in food markets of Viet Name and Chine has increased speedily since the 1980s and remains high (Bell *et al.*, 2004). This animal is killed with poison and dogs (LAU *et al.*, 2010). The objective of the study was to describe the distribution of small Indian civet from different parts of the Himalayan region of Azad Jammu and Kashmir, Pakistan.

MATERIALS AND METHODS

Study area: The data were collected during October 2016 to February 2017 from Bagh and Poonch and districts.

Methodology: Linear count survey (LCS) method was applied for the assessment of new records of Small Indian Civet (*V. indica*) in the study area. Both, direct (i.e. physical count) and indirect (i.e. group questionnaire Survey) observation methods (DIOM) were used (Altaf *et al.*, 2014). Small Indian civet picture (10 x 15 cm) was used in the questionnaire for correct identification.

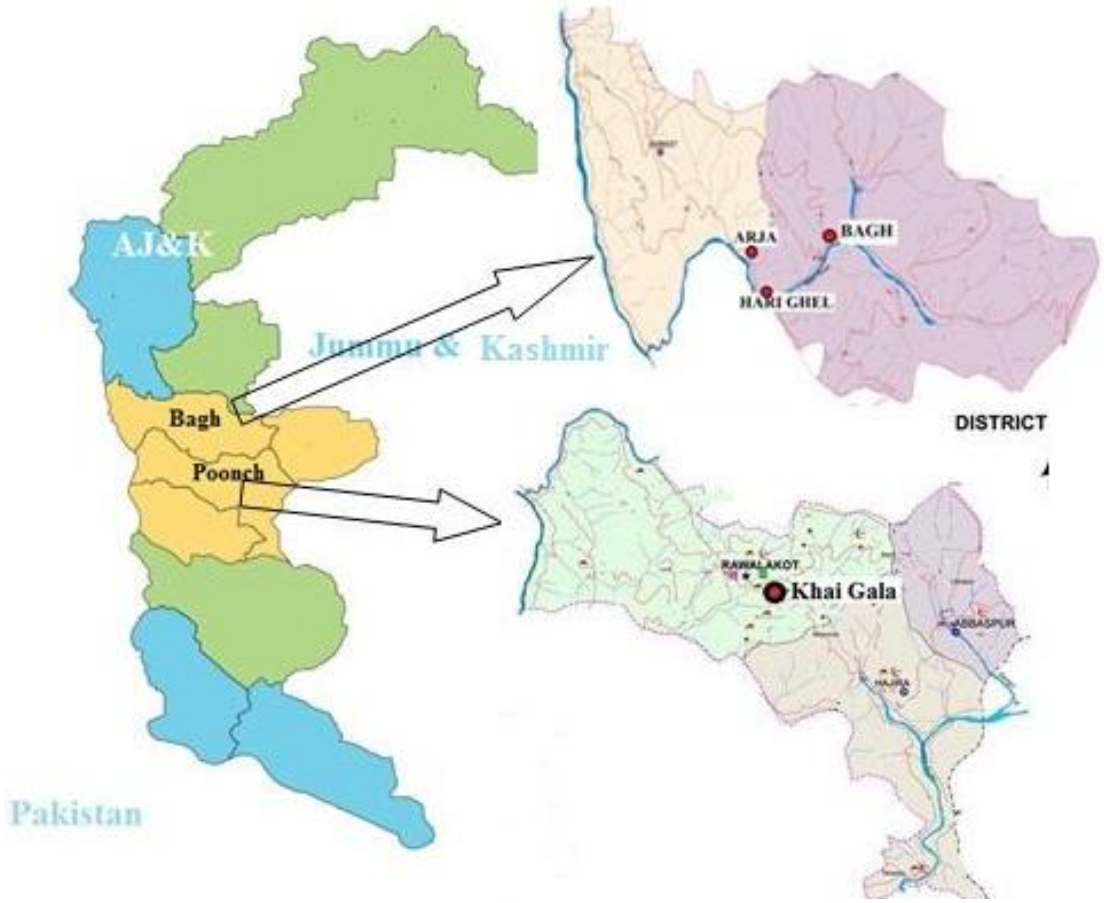

Figure 1: Map of the selected sites of district Bagh.

Table 1: Coordinates of the selected sites of district Bagh.

Study area	Coordinates		Elevation
Arja, Bagh	33°58'20.22"N	73°49'41.80"E	2725 ft
Hari ghel, Bagh	33°56'18.11"N	73°41'25.50"E	2817 ft
Bagh	33°58'38.27"N	73°45'02.71"E	3339 ft
Khai Gala, Poonch	33°50'21.76"N	73°49'56.30"E	5703 ft

RESULTS AND DISCUSSION

During the research noted that two dead bodies of *V. indica* are recorded from the Poonch which is killed by local people (October 2016). Two dead bodies are recorded near the Arja (in January 2017) killed in road accidents, district Bagh and Hari Ghel (in February 2017) district Bagh, AJ & K (Figure 1, 2 and Table 1, 2). During the driving at night one individual is seen along the road side near Hari Ghel (February, 2017). Charoo *et al.* (2010) recorded the small Indian civet from the Himalayan region of Jammu and Kashmir, India by using the camera trapping.

Table 2: Population of small Indian civet recorded from the study areas.

STUDY AREA	Indirect Observation	Direct Observation	Total
Bagh	2	1	3
Poonch	2	0	2

Figure 2: The dead bodies of the small Indian civet killed by local people (A, B) and by accident (C).

Conclusion: During the research noted that it is need to collect more data about mammalian diversity, density, distribution and status; limited data are present in literature for mammalian species in Pakistan. It is also need to analysis trade and cultural use of this species in Himalayan region of Azad Jammu and Kashmir, Pakistan.

Acknowledgements: The all author is highly thankful for help of local community and special thanks to Fahim Rahim who provided the pictures and data regarding study.

Availability of data: I have included all data in the manuscript that collected during the field survey.

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