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SHORT COMMUNICATION

FIRST PHOTOGRAPHIC RECORD OF JUNGLE CAT *FELIS CHAUS* SCHREBER, 1777 (MAMMALIA: CARNIVORA: FELIDAE) IN HARIPUR DISTRICT, PAKISTAN

Afzal Anjum, Angie Appel & Muhammad Kabir

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First photographic record of Jungle Cat *Felis chaus* Schreber, 1777 (Mammalia: Carnivora: Felidae) in Haripur District, Pakistan

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Abstract: The Jungle Cat *Felis chaus* was recorded in Pakistan's Haripur District during a camera trapping survey in March to April 2019. This is the first photographic evidence of its presence outside a protected area in northern Pakistan.

Keywords: camera trapping, Khyber Pakhtunkhwa Province, small wild cat.

Little is known about the status and conservation needs of the Jungle Cat *Felis chaus* in Pakistan (Sheikh & Molur 2004). Roberts (1977) considered it “the most widely distributed and adaptable smaller cat” in the country that is “well able to hold its own in areas of human settlement”. It is thought to favour riverine thickets and irrigated plantations (Roberts 1977). In 1979 and 1980, about 169,000 Jungle Cat skins were imported to the United States, most of which originated in Pakistan and India (McMahan 1986). In the Indian subcontinent, it is threatened by habitat loss due to industrialisation and urbanisation of scrubland and low intensity agricultural areas (Gray et al. 2016). In Pakistan, its natural habitat was assessed in 2004 to be declining by <10% within 10 years due to changes in land use (Sheikh & Molur 2004). Since this assessment, a few

authors announced its presence in several protected areas in the country (Ali et al. 2003; Nawaz 2008; Khan & Siddiqui 2009; Laghari 2011a, Rais et al. 2011; Khan et al. 2012, 2015; Begum et al. 2013). They only referred to sightings and indirect observations without providing photographic evidence. To date, a comprehensive view of the cat's contemporary distribution in Pakistan is lacking.

Here we report the first photographic record of the Jungle Cat in northern Pakistan, obtained during a brief camera trapping survey in a human-dominated area.

STUDY AREA

This survey was conducted in the frame of a program to document the wildlife in a rural landscape in Haripur District. This district is located in Pakistan's Khyber Pakhtunkhwa Province north of Islamabad and known in particular for production of *Citrus* and other fruits (Shah et al. 2010; Ali et al. 2013). Legumes and cereals such as Maize *Zea mays*, Wheat *Triticum aestivum* and Barley *Hordeum vulgare* are also cultivated (Fazal et al. 2010). Native wild flora includes *Dalbergia*, *Morus* and *Acacia* (Fazal et al. 2010).

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Competing interests: The authors declare no competing interests.

Author contribution: A. Anjum conducted fieldwork; A. Appel & M. Kabir wrote the article.

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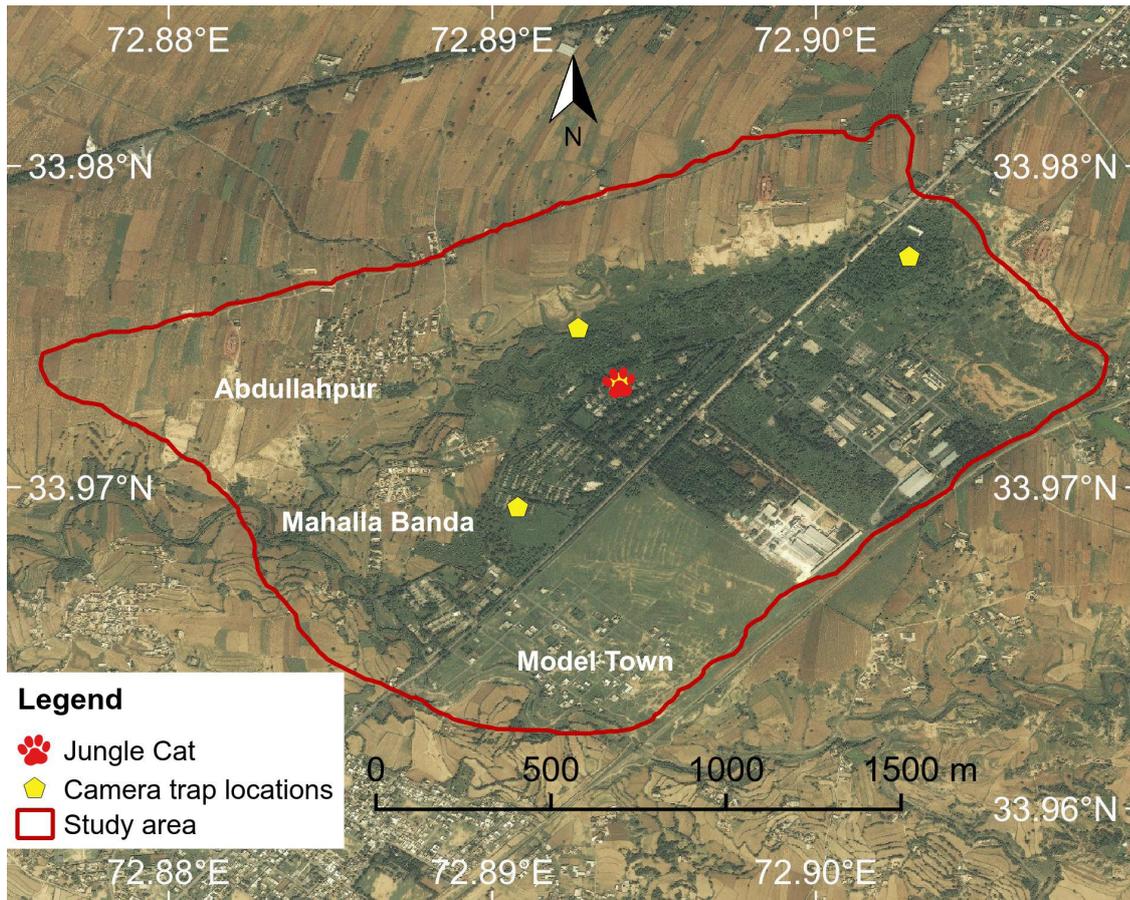


Figure 1. A satellite view of the study area in Haripur District, Pakistan.

The 3.5km² large study area encompasses three villages and an industrial estate (Figure 1). The agricultural fields surrounding residential areas are interspersed with grazing ground for small livestock, patches of natural bushland and small orchards (Image 1). Elevation ranges from 493m to 513m.

December and January are the coldest months in the area (Fazal et al. 2010), with temperatures dropping to 3°C and 4°C and a precipitation of 48mm and 74mm per month, respectively (Weather Atlas 2019). June and July are the hottest months (Fazal et al. 2010), with temperatures of 39°C and 37°C, respectively, and a maximum rainfall of 246mm (Weather Atlas 2019).

MATERIAL AND METHODS

Two Bushnell Trophy HD camera traps (model Essential 119736 with infrared flash) were deployed with a distance of 500–900 m between locations. They were mounted at four locations at a height of 40–50 cm above ground. They were set to be active for 24hr and to take three consecutive photographs at an interval of one second. A scent lure for attracting furbearers (Kaatz



Image 1. Orchard around a camera trap location within the study area. This location is surrounded by residential buildings.

Bros. Beaver Lure) was spread on stones and on wood in front of the camera traps.

Sunset and sunrise times were obtained using the database of the Astronomical Applications Department of the United States Naval Observatory (2019).

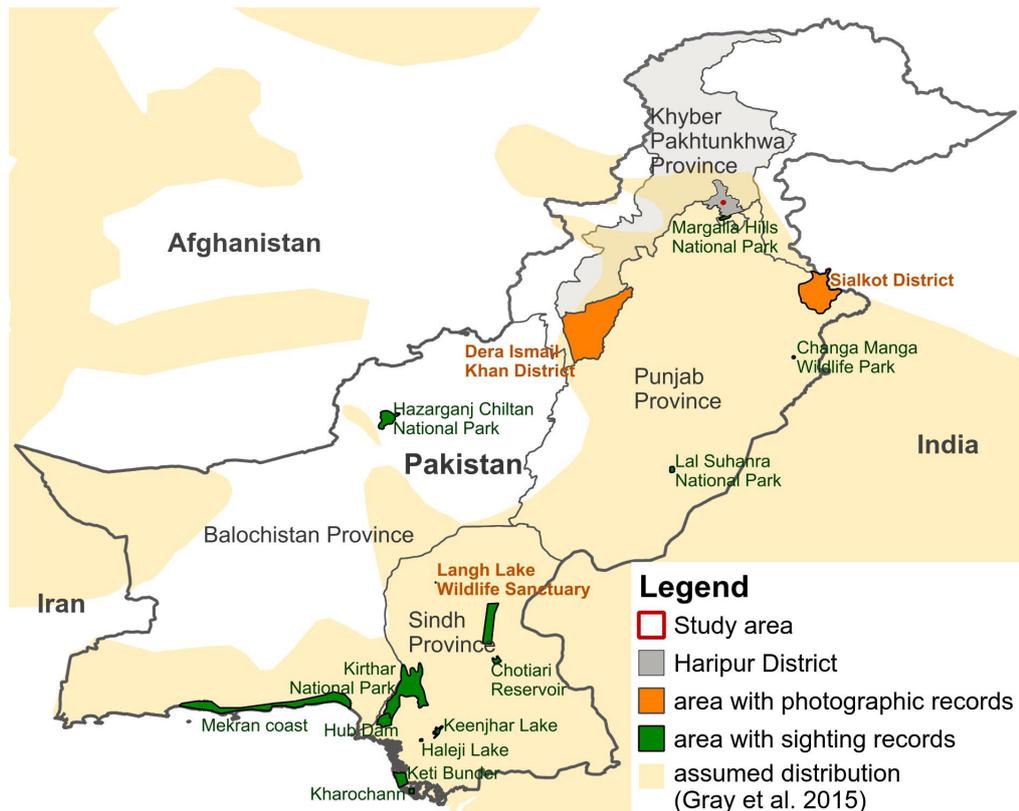


Figure 2. The Jungle Cat in Pakistan: areas with records and assumed distribution in the 21st century.

RESULTS

Camera trapping was carried out from 2 March to 28 April 2019, with a total survey effort of 56 camera trap days. A Jungle Cat was recorded at an elevation of 510m; it repeatedly entered a residential area in the night of 14 to 15 March between 23.11h and 01.18h (Image 2).

Other wildlife species recorded by the camera traps comprise Golden Jackal *Canis aureus* and Wild Boar *Sus scrofa*. Red Fox *Vulpes vulpes*, Indian Grey Mongoose *Herpestes edwardsi*, Cape Hare *Lepus capensis*, Indian Crested Porcupine *Hystrix indica*, and Indian Flying Fox *Pteropus giganteus* were sighted.

DISCUSSION

Our record appears to be among the northernmost records of the Jungle Cat in Pakistan (Figure 2). Roberts (1977) considered it to be less common in this part of the country than farther south, based on hunting records available at the time. It is thought to be present in Margalla Hills National Park in Islamabad Capital Territory, and in Punjab Province in Changa Manga Wildlife Park and Lal Suhanra National Park (Sheikh & Molur 2004). In Balochistan Province, it was sighted in Hazarganj Chiltan National Park (Khan & Siddiqui 2009)

and Mekran coastal wetlands (Ali et al. 2003). In Sindh Province, it was sighted in wetlands surrounding the Nara canal (Laghari 2011a), and by local people in the Chotiari Reservoir area, a wetland located in eastern Sindh Province (Rais et al. 2011). Farther south, it was sighted around Keenjar and Haleji Lakes (Khan et al. 2012), in Kirthar National Park (Khan et al. 2013), Hub Dam area (Begum et al. 2013) and in coastal wetlands (Nawaz 2008; Laghari 2011b). Its alleged presence in the Thar Desert based on tracks found in sand (Khan et al. 2015) needs to be authenticated. To date, photographic evidence does not exist from any of the above-mentioned areas.

Our record corroborates the often expressed notion that the Jungle Cat inhabits agricultural lands and frequents human settlements in their vicinities (Roberts 1977; Nowell & Jackson 1996; Sunquist & Sunquist 2002; Baker et al. 2003; Ogurlu et al. 2010). Also in neighbouring Iran, it was frequently sighted outside protected areas close to agricultural lands, poultry farms and fish ponds (Sanei et al. 2016).

Jungle Cats were photographed by day in Dera Ismail Khan District in southern Khyber Pakhtunkhwa Province (Muhammad Ali, pers. comm. December 2018), in Sialkot



Image 2. Jungle Cat recorded in a residential area in the night of 14 to 15 March 2019.



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Image 3. Jungle Cat photographed in Sialkot District.

District in Punjab Province (Image 3), and in Langh Lake Wildlife Sanctuary in Sindh Province (Image 4). Records in India and Iran indicate that it is active both by day and after dark (Mukherjee 1989; Majumder et al. 2011; Kalle et al. 2013; Kumara et al. 2014; Sanei et al. 2016).

The detection of only two other wildlife species may be due to the limitations of this survey, both in time and available equipment. The scent lure used in front of



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Image 4. Jungle Cat photographed in Langh Lake Wildlife Sanctuary.

camera traps might have scared off smaller mammals.

Further effort is needed to obtain a comprehensive view of the Jungle Cat's current distribution and ecology in Pakistan. To widen the knowledge on the species, we suggest to create an online database and encourage wildlife photographers and citizen scientists to share their records. This would facilitate to model its distribution and habitat use.

In Pakistan, camera traps were first used in wildlife research targeting Snow Leopard *Panthera uncia* in May 2006 (McCarthy et al. 2007). Wildlife scientists targeting smaller carnivores mostly relied on sign surveys and binoculars, e.g., Rais et al. (2009), Khan & Siddiqui (2009), Khan et al. (2013, 2015), Begum et

al. (2013), and Zehra et al. (2014). Only in 2011 were camera traps used for documenting the presence of a small wild cat in Pakistan, i.e., Eurasian Lynx *Lynx lynx* in the Hindu Kush mountains (Din et al. 2013). To date, only scanty information is available about other small wild cats in the country (Sheikh & Molur 2004). With this article, we hope to inspire fellow Pakistani wildlife scientists to initiate camera trap surveys as well. Surveys targeting Jungle Cat, Caracal *Caracal caracal*, Fishing Cat *Prionailurus viverrinus*, Leopard Cat *P. bengalensis*, Pallas's Cat *Otocolobus manul*, and Asian Wildcat *Felis lybica ornata* are urgently needed to acquire baseline data on their status and conservation needs in Pakistan.

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