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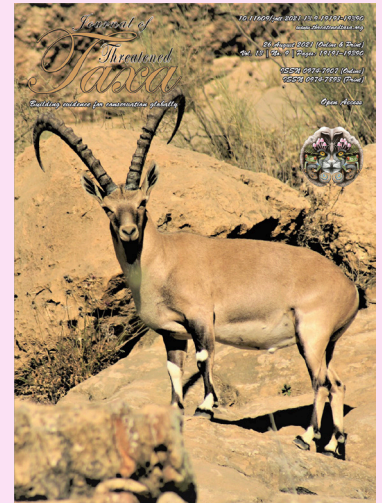
### NOTE

#### LIFE NEAR A CITY: ACTIVITY PATTERN OF GOLDEN JACKAL *CANIS AUREUS* LINNAEUS, 1758 (MAMMALIA: CARNIVORA: CANIDAE) IN A HABITAT ADJOINING BHUBANESWAR, INDIA

Subrat Debata

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## Life near a city: activity pattern of Golden Jackal *Canis aureus* Linnaeus, 1758 (Mammalia: Carnivora: Canidae) in a habitat adjoining Bhubaneswar, India

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Activity patterns of a species are shaped by its biological requirements (Wrangham & Rubenstein 1986), and are often influenced by its foraging behaviour, prey behaviour, predator pressure, physiological traits, vegetation cover, and climatic condition (Seidensticker 1976; Servin et al. 1991; Ilemine & Gürkan 2010; Kachamakova & Zlatanova 2014). Nature and intensity of various anthropogenic activities also greatly impact behaviour and activity patterns of wild animals (Barrueto et al. 2014; Thorsen 2016). In fact, the influence of human disturbances compels wild animals to be more nocturnal (Gaynor et al. 2018).

Golden Jackals are the commonly occurring wild canids in India and inhabit a wide range of habitats from forest to grasslands, mangroves, urban as well as semi urban areas (Menon 2014). Although the species is more generalist in habitat and diet preference, and tolerates human presence, its population has significantly declined in the recent past in many parts of the distributional range including India (Jhala & Moehlman 2004; Giannatos et al. 2005). Studies on the behavioural aspects focused on activity patterns of Golden Jackal are limited in India (Majumder et al. 2011; Gupta et al. 2016; Ojha et al. 2017; Mukherjee et al. 2018). Here, using camera trap photo capture rate I report the activity

patterns of Golden Jackal from a protected habitat surrounded by densely human populated urban area in Odisha, eastern India.

The study was conducted in Bharatpur and Jagannathprasad forest sector of Chandaka-Dampara Wildlife Sanctuary in Odisha (Figure 1). The area lies between 20.286–20.360 °N & 85.756–85.810 °E covering an area of 19.27km<sup>2</sup> along the eastern side of the sanctuary adjoining Bhubaneswar, the capital city of Odisha. Vegetation of the area is composed of mixed dry deciduous forest and bamboo brakes and major portion of it is covered with shrubby vegetation. As the area adjoins the city, it experiences severe anthropogenic pressure from the growth and development of the city. I deployed nine camera traps (Cuddeback, USA) for four months from January to April 2019 as part of a study on monitoring the mammalian fauna in the study area. I first divided the area into 1 km<sup>2</sup> grids and deployed one camera in each grid for 25 to 30 days. Cameras were installed along motorable roads and foot paths by strapping them on trees approximately 50 cm above ground and set operational 24 hours/day. Cameras were programmed to take two consecutive photos registering date, time, and temperature for each exposure with 30 seconds delay for the next exposure. I rated each photo

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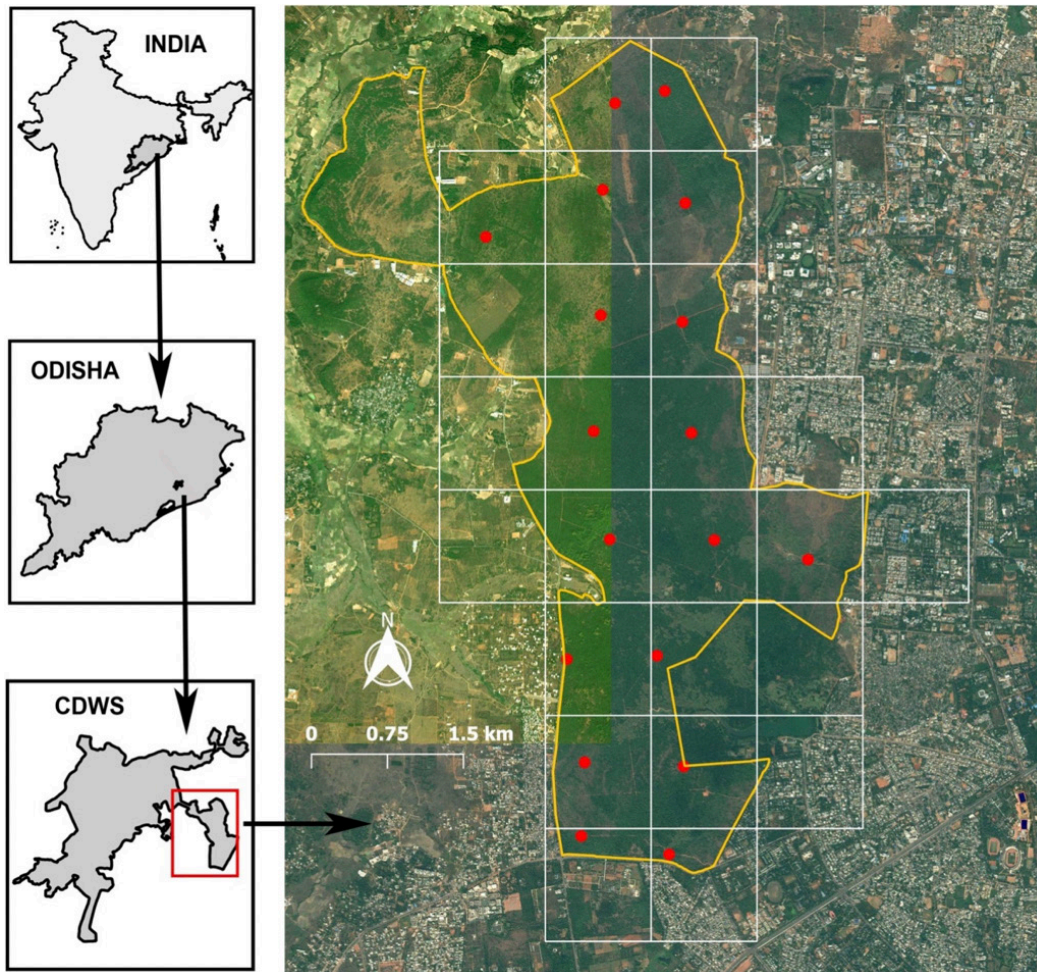


Figure 1. Study area within human dominated habitat and the camera trap locations.

as an independent capture, if the time between two consecutive photographs of the same subject was more than 30 minutes at a particular location (O'Brien et al. 2003).

For all the independent photos of Golden Jackal and human traffic, the times of captures were noted down in 24-hour format. Photographs depicting movement of departmental staffs, tourists, and vehicles were all categorised as human traffic. All the photographs captured in two hours of interval in each category were separated to examine the intensity of percent activity. To know the significant difference in percent activity level of Golden Jackal between day and night, I performed Student's t-test (t) and based on the percent activity level, the studied species behaviour was indicated as nocturnal, diurnal or crepuscular in the study area. The statistical test was carried out in windows based MS excel data analysis tool.

During the study, a total of 552 independent photos of Golden Jackals (Image 1) and 1,055 independent

photos of human traffic were obtained from 771 trap nights. Based on the photographs, Golden Jackals were found to be mostly nocturnal and crepuscular and showed two major peaks in activity; the first peak during late evening after sunset and the second peak during early morning till sunrise (Figure 2). Overall, the percent activity was significantly higher during night than day ( $t=5.45$ ,  $df=10$ ,  $p < 0.01$ ; Figure 2). Although Golden Jackals were active throughout the day, they showed reduced activity during day time when human traffic was much higher (Figure 2).

Golden Jackals are mostly crepuscular and nocturnal, although their activity has been reported throughout the day (Majumder et al. 2011; Katuwal & Dahal 2013; Gupta et al. 2016; Ojha et al. 2017). In the present study similar kind of activity pattern of Golden Jackal was observed and there could be several factors for this. First it could be due to the temporal activity of prey species. In India, some studies have reported that rodents, which contribute a major portion of Golden Jackal's



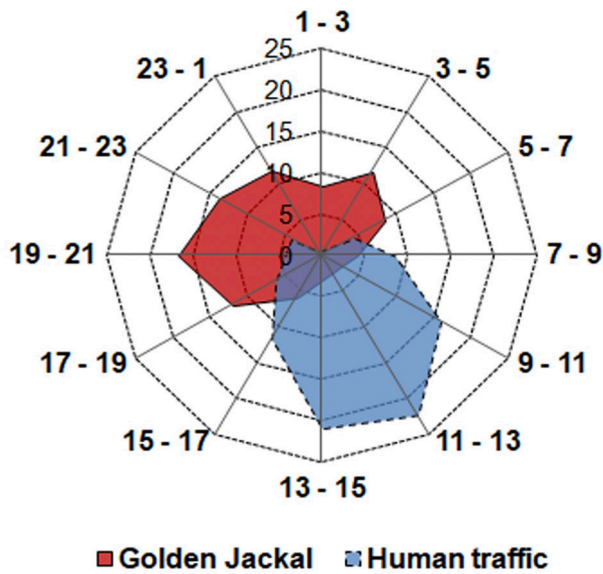


Figure 2. Activity pattern of Golden Jackal and human traffic in Bharatpur and Jagannathprasad forest sector, Chandaka-Dampara Wildlife Sanctuary, Odisha, eastern India during 2019.

diet, are nocturnal (Mukherjee et al. 2004; Majumder et al. 2011). Second, Golden Jackals might have reduced their activity during the day to avoid the intense heat. Daytime resting behaviour of Golden Jackal is common and reported earlier by Jaeger et al. (2007), Rotem et

al. (2011), Georgiev et al. (2015), Jenks et al. (2015), and Ojha et al. (2017). Additionally human traffic might be a factor in the present study area affecting diurnal activity of the Golden Jackal. Studies have reported that when the species occurs near human habitation, it is more nocturnal, and in relatively less anthropogenic areas, it is largely diurnal (Sheldon 1992; Fox 2009). As the present study area is surrounded by densely populated human habitations, it receives maximum protection interventions throughout the day and night patrolling activities. Besides that, an ecotourism activity with facilities of trekking and wildlife safari has been implemented in the area very recently. All the above mentioned factors might have caused reduced diurnal activity of Golden Jackal. Golden Jackals are adapted to urbanisation and benefit from easily available food resources. However, in some parts of their range, they have either disappeared or their numbers are declining due to increasing anthropogenic pressure (Jhala & Moehlman 2004). Although the present study was for a limited time period, it helped to understand the activity of the species adjoining an anthropogenic habitat. Further, long-term studies may aid to understand the change in activity pattern of the species in response to various anthropogenic activities.



Image 1. Cameratrap image of Golden Jackal from Bharatpur and Jagannathprasad forest sector, Chandaka-Dampara Wildlife Sanctuary, Odisha, eastern India during 2019.

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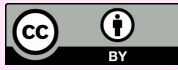






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