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Activity Pattern of Blackbuck Antilope Cervicapra (Linn) in the Sorsan Grassland

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Abstract: Sorsan grassland is suitable site for conservation of blackbuck and chinkara. It is hunting prohibited area with sufficient protection. Sorsan grassland provides adequate food and water for wildlife throughout year. Due to conservation efforts across country now blackbucks have been placed in least concern (LC) category in Red Data Book published by IUCN. The present activity pattern suggest that blackbuck spend maximum time in foraging, followed by resting and standing and minimum time in lying during day time. The blackbucks are most active during morning and evening hours of day.
Keywords: Foraging, Resting, Scanning, Standing, Walking

I. INTRODUCTION

The Indian Blackbuck Antilope cervicapra (Linn. 1758) belongs to family Bovidae and is the only species within the genus Antilope [1]. The Blackbuck (Antilope cervicapra) is native to India and Nepal and earlier occurred across almost the whole of the Indian subcontinent grasslands. Their distribution decreased during the 20th century and they are now non-existent in Pakistan and Bangladesh [2]. The generic name of Antilope cervicapra is derived from the Latin word antalopus ("horned animal"). The specific name cervicapra is composed of the Latin words cervus ("deer") and capra ("she-goat") [3]. The general name "blackbuck" is a reference to the dark brown to black colour of the dorsal (upper) part of the coat of the male [4]. Alternative names for the blackbuck are Indian antelope, kadiyal, kala hiran, krishna mrig and krishnasaar (in Hindi); krishna jinka (in Telugu); and iralai maan (in Tamil) [5, 6].

Over last hundred years the range and numbers of blackbucks have declined. More recent report suggest that, numbers is marginally increasing and the population can be reasonably described as secure due to increase in protected areas and better conservation policies in some places. Blackbuck is listed in Red Data Book of International Union for Conservation of Nature and Natural Resources as least concern [7] and in Convention of International Trade for Endangered Species of Wild Flora and Fauna is categorized in Appendix III. In India, hunting and poaching of blackbuck is prohibited under Schedule I of the Wildlife Protection Act of 1972 [8]. The blackbucks prefer open grassland, dry thorn scrubland and agricultural margins as their habitat. The daily water requirement restricts its distribution, to the areas where water is available throughout a year [9, 10]. The present study has been accomplished to evaluate the major activity pattern of blackbuck in Sorsan grassland of Baran district of Rajasthan, India.

II. STUDY AREA

Sorsan grassland is known for conservation of blackbuck. It is located in Anta tehsil of Baran district of Rajasthan (Figure 1). The protected area spreads between Amalsara and Sorsan village. It stretches over 35 square kilometers between right main canal of the Chambal and the Parvan River. State government in 1984 has banned poaching or hunting of animals in Sorsan region under wild life act 1972. It is 50 km east of Kota (25.0^0 -25.8^0 N, 76.12- 76.18^0 E) having scrubby vegetation and numerous small water bodies, which harbor amazing varieties of birds as well as animals. For present investigation four sites namely Amalsara A, Amalsara B, Sorsan A and Sorsan B have been selected (Figure 1). .

III. MATERIAL AND METHODS

During present investigation direct visual observation was done and an appropriate route was determined in open grassland. Herds of blackbuck were followed and approached with the minimum disturbance to the blackbucks. For data recording, the activities of each animal were observed for 5 minutes in an interval of 10 minutes continuously for 4 hours in each day of observation. The daily observation schedule was divided into three shifts: morning shift 06:00 am - 10:00 am; Noon shift 10:00 am -2:00 pm and evening shift 2:00 pm-6:00 pm. Observation hours were equally distributed between morning, noon and evening. Activity of both male and female were sampled repeatedly in different hours of the day using focal animal sampling method, and at the same time social organization and mean group size of blackbuck were counted by scan sampling method [11].
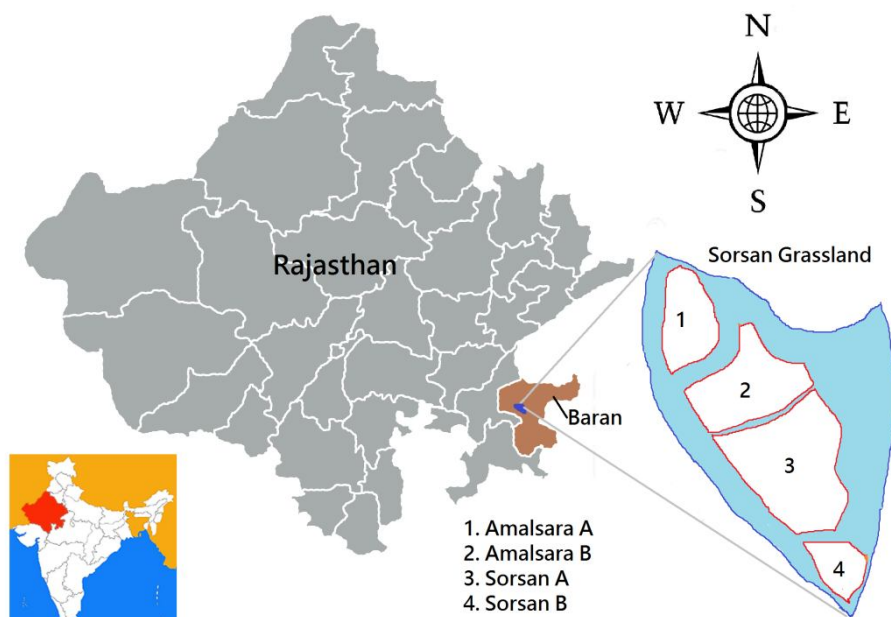
Fig. 1 Map of Sorsan grassland showing selected study sites.

The behavioural states recorded were: foraging, walking, standing and resting (Figure 2). Foraging includes both browsing and grazing. Walking refers to the movement of blackbuck resulting into a change in location which includes running and trotting. Standing includes static at a place which includes scanning, social or matting activity. Animal was considered to be at rest when it was lying on the ground. The percentage times spent in various activities were calculated by dividing it with total study time. A field binoculars and mobile based GPS were used throughout the study for observation of the study animal in the field. Photographs of blackbucks were taken using high resolution camera

Fig. 2 Behavioural activities of blackbuck. a. Foraging, b. Walking, c. Standing, d. Resting

IV. RESULTS

During present investigation total of 240 hours were spent in recording activity pattern in blackbuck for a period of December, 2016 to November, 2017. The observations were made equally across different investigation sites and different seasons. In study area, group size of blackbucks ranges from 4 to 15. The maximum mean group size 7.61 ± 0.15 S.E of blackbuck was found in Sorsan A region. The smallest group size (6.83 ± 0.33 SE) was observed in Amalsara A region. The summary of result on the time budget and schedule of the activities in day time are described below.

TABLE 1: Mean of the time spent (percentage) in basic activities of blackbuck during investigated period.

Activities	% Mean	± SD
Foraging	37.56	2.45
Walking	15.18	3.98
Standing	19.38	2.13
Resting	27.90	2.38

A. Time Activity Budget

The percentage time spent in various activities by blackbuck in study area is represented in table 1. It was observed that, spent maximum time in foraging (37.56 %), followed by resting (27.90 %) and standing (19.38 %) and rest of time (27.90 %) are lying and seem to at rest (Fig. 3). No significant difference found in time spent in basic activities between the male and female individual.
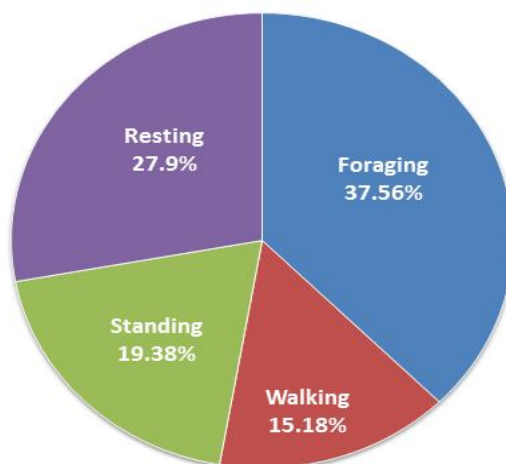

Fig. 3 Different activity pattern of blackbuck in investigated area

TABLE 2: Different activities of Blackbuck between 06:00 AM to 06:00 PM hours in a day during study period

	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM
Foraging	8.33	15.00	33.33	54.33	60.00	61.67	41.67	28.33	15.00	17.67	31.67	51.33	70.00
Walking	10.00	18.33	21.67	15.67	13.33	11.67	20.00	18.33	16.67	16.67	10.00	13.33	11.67
Standing	15.00	26.67	18.33	15.00	16.00	20.00	28.33	25.00	31.67	17.33	15.00	15.33	8.33
Resting	66.67	40.00	26.67	15.00	10.67	6.67	10.00	28.33	36.67	48.33	43.33	20.00	10.00

B. Foraging

Blackbuck feed on annual and ephemeral plants during the monsoon and early winter while leaves, pods, fruit and litter of perennials, shrub and pods and leaves of tree were only feeding options available to them during summer season. They perform grazing, browsing or mixed patterns during foraging. Foraging activity of Blackbuck started at an average of 6:00 am in the morning and observed around sunset during different seasons. The peak periods of foraging during were 9.00 am - 11.00 am and 6.00 pm - 07.00 pm when approximately 50% to 70% of the blackbucks were feeding (Table 2).

C. Walking

The peak hours of walking were 8.00 - 9.00 am, 12.00 – 1.00 pm, and 1.00 - 2.00 pm (Table 2 and Figure 4). Present study suggests that walking activity pattern was maximum during the early morning (18-21 %) and afternoon hours (18-20%) in both male and female. This is the time when animals are moving in search of forage or finding suitable place for rest.

D. Standing

The peak hours of walking were 7.00 - 8.00 am, 12.00 – 1.00 pm, and 2.00 - 3.00 pm (Table 2 and Figure 4). During present investigation it was observed that standing/scanning were high during early morning or during afternoon hours (25-30 %).

E. Resting

The peak hours of resting were 6.00-7.00 am, and 2.00-5.00 pm (Figure 4). The animals are at rest at early morning prior to start their daily activity while second peak of rest is observed in afternoon where the animals are lying after sufficient foraging. The other activities included in resting are excretion, comfortable behaviour and ruminating activities. There are no specific pattern were observed on sexual activity.
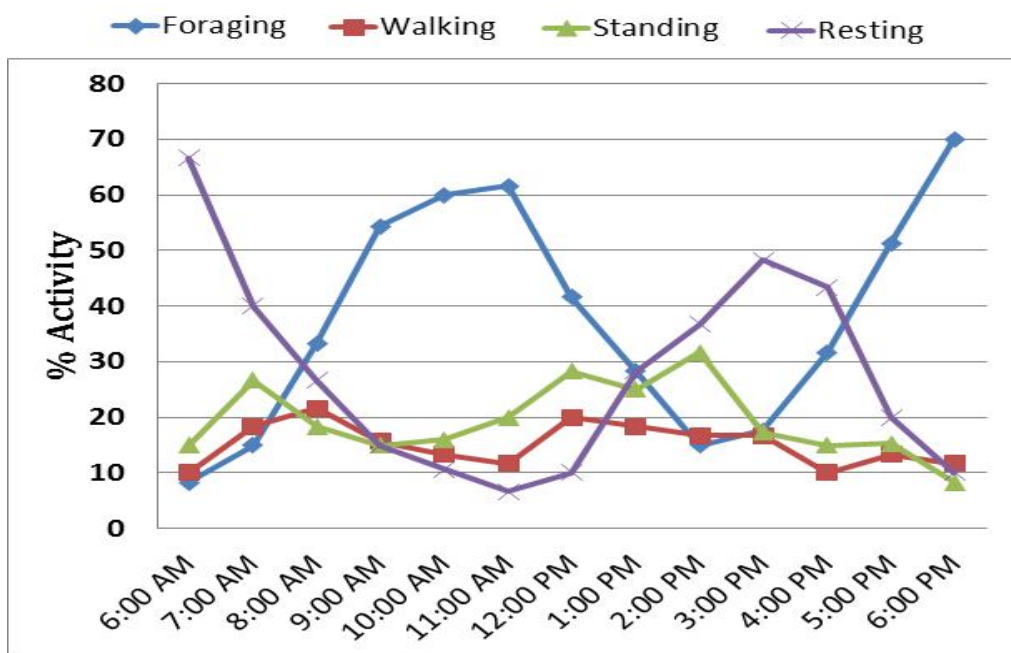

Fig. 4 Different activities (percentage) of blackbuck from dawn to dusk in study area

V. DISCUSSION AND CONCLUSION

The present investigation gives important information about activity pattern in selected sites. Blackbuck performs a number of major activities during the daytime. These activities are foraging, walking for various purposes, standing and resting. Foraging is the dominant activity of blackbuck observed during the present study. The animal spends 37.56% of its total activity in foraging during the daytime. Prasad [12] also found that blackbucks spent a large amount of time in foraging (34%) and Chattopadhyay and Bhattacharya [13] recorded about 38% of time spent in foraging. It was found that, resting varies in blackbuck between sessions with maximum recorded during early morning and in the afternoon, standing almost uniform in all hours, while foraging and, walking and others activities were recorded more in morning and afternoon hours. Similar trends were observed by Jayrani et al. [14] and Vats and Bhardwaj [15].

VI. ACKNOWLEDGMENT

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