



## **Ecological Assemblage and Behavioural Patterns by Black Buck in Semi -Arid Areas of Thar**

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### **ABSTRACT**

*Blackbuck 'Kala hiran' is mostly occurs in semi arid areas in Rajasthan state. Community participation of Vishnoi's well known community in Marwar region. Present study conducted for a period of 6 months January 2020 to June 2020 to study behavioural ecology of blackbuck in Luni basin areas of Jodhpur. During study period different types of behaviour in Blackbuck like grooming behaviour, reproduction behaviour, resting behaviour, feeding behaviour etc. Male, Female and fawns were also observed separately in the region. With the increasing human interreption and agricultural practices this animal are well dominated in this study area.*

**Keywords:** Behaviour, Blackbuck, Grooming, LuniBesin.

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### **INTRODUCTION**

Blackbuck (*Antelope cervicapra*) is graceful gazelle-like animals belong to 'Bovidae' family. It is small gracious Indian antelope found in a wide range of habitats from arid grassland and scrubland to marshy coastal plain and open woodlands [1]. The Blackbuck is native of India and Nepal and earlier found across almost the whole of the Indian subcontinent grasslands. Blackbuck can't live without water so they are found where surface water is easily available throughout the year. In winter Blackbuck easily observed feeding food. But in summer may migrate to long distances for a search of food and water. The viewing capacity and running speed blackbuck is very fast to escape from its enemies. Blackbuck mainly active during the day and they live in a small herd of 20 to 30, herd usually consist of a male or one female and child [2]. This species exhibits a high degree of sexual dimorphism the male is larger than female, is strikingly coloured in Blackbuck and white and sports a magnificent per of spiralling horns. The Blackbuck of a male is replaced by an inconspicuous brown in the female. Blackbuck is included in the schedule-1 of wildlife protection Act, 1972 and is designated as vulnerable as per Databook. In India, this species is widely spread in Rajasthan, Gujarat, Madhya Pradesh, Tamilnadu and other areas throughout peninsular India. Their number reduced drastically between 1982 and 1993, from about 25000 to less as 10000 in the whole country [3]. They are mostly found in herds away from the human population, as they are bit shy, but sometimes they can also raid the crop of a particular region (mostly in the night and early morning).

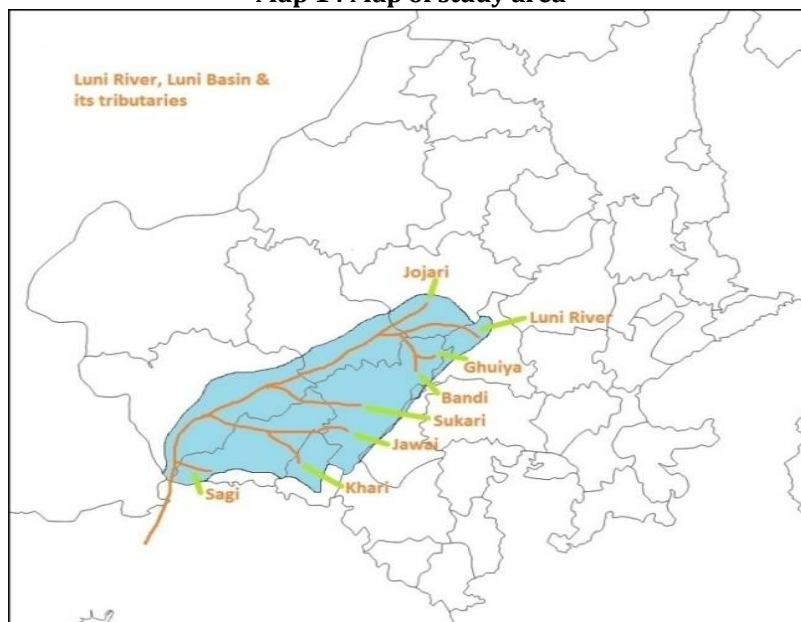
### **STUDY AREA**

Luni River Basin is located in southwestern Rajasthan between latitude 23<sup>0</sup>4' and 27<sup>0</sup> 5' and longitudes 71<sup>0</sup> 4' and 74<sup>0</sup> 42'. The Luni river basin comprises Pali, Jalor, Sirohi, Western part of Ajmer, south part of Nagour, South Eastern part of Barmer, Eastern part of Jodhpur [4]. My study in this paper is Ecobehavior study of blackbuck in Luni river basin, Jodhpur selected village Roodkali, Kakani, Saracha. In these villages, the population density of blackbuck is very high. There are about 1000 to 1200 Blackbuck herd are recorded. Mostly Vishnoi community live in these villages.

These villages are small and cover a large area of agricultural land and some area is protected for animals and plants. There are some water sources like pond, river and wetland. Roodakli village 40km from Jodhpur in this village Jambeswer pond and Roodakli River water source. This area has a rich biodiversity. Blackbuck is easily observed in this area. Also Kakani 22 km from Jodhpur and this large area also conserving biodiversity and availability of water is seen here throughout of the year as Luni river, a pond is a water source of this region. Gudhabhakri is 20 km from Jodhpur.

This village's habitat is agricultural, scrubbed, and rocky area. Saracha village is 25 km from Jodhpur plane and rocky habitat, water available in the pond. Because of industrialization in these areas, the biodiversity of the regions is getting affected adversely but a large number of rohida (*Tecomella undulata*) is present. Shrubs like *Prosopis juliflora*, *Capparis deciduas*, *Ziziphus ummularia*, *Acacia senegal*, *Prosopis cineraria*, *Salva dorasp*, *Calotropis procera* etc. widely spread in all these sites (Map 1).

**Map 1 : Map of study area**



## **MATERIAL AND METHODS**

The study was conducted for a period of 6 months January 2020 to June 2020 following method are used to study behavioural ecology of blackbuck.

1. Selection of study according to the distribution of blackbuck with a good population.
2. Observations and direct sighting.
3. Observation and Behaviour done by Altman (1974) method.
4. Continuous and regular observations.
5. The behaviour of blackbuck recorded with the help of binocular, camera trapping, and direct observation morning 5.00am to evening 7.00 pm.
6. Different type of activities observed in study area like grazing, walking, resting, standing, and grooming.
7. Local people interview.

## **RESULT AND DISCUSSION**

### **BEHAVIOUR STUDY OF BLACKBUCK**

The social unit in blackbuck is (1) Solitary male.(territorial) (2) All male or bachelor group composed of two or more juvenile, sub-adult or adult male.(3) Female in a group composed of a female of all age - classes, fawns, and juvenile and sub-adult female. (4) Mixed group.[5].

### **Grooming Behaviour in Blackbuck**

Binocular observation grooming behaviour found in Blackbuck this behaviour help them in relief from itching and body clean also. In study area 6 month observation this behaviour during the resting period and active time. 30 members of blackbucks were observed in different areas. Around 2 km roadside, in Roodkali Village Blackbucks, were observed in resting condition grooming. Another study area, kakani a large number of Blackbuck grooming in resting condition.In Saracha study area less number of Blackbucks observed in this behaviour. A total number of resting condition grooming of Blackbuck was 20. Active condition observation morning 7.00 am to evening 5.00pm like grazing, aggressive, standing, playing etc. Observations showed that a large number of Blackbuck grooming with the active condition in different condition. 10 members were grooming inactive condition.

### Behavioural relation of Blackbuck ear and tail position

Three types of tail and ear position were observed by our that is upward, downward and horizontal. Ear remain upward and tail downward in normal behaviour and fear condition ear remains downward and tail upward. The horizontal position of ear and tail refer to excitement or fear of lower intensity, after which ear and tail take downward and upward position respectively at higher intensity and excitement. we recorded a Blackbuck tail and ear position to know the relationship between body position and behavioural expression. Out of 70 observation, it was observed that the position of tail is downward and ear is upward in maximum activities of Blackbuck, (30time) like grazing, standing, and sitting. Downward ear and the upward tail position was observed (28 times) and includes behaviour like an alarming head-up display and approaching female. Both horizontal or downwards position of ear and downward or upward position of a tail was observed only (12time)and include fighting, chasing, galloping (Table 1).

**Table 1: The details observation on ear and tail position of Blackbuck given in table.**

S.NO	Ear position	Tail position	Type of behaviour	Number of observation
1	Upward	Downward	Standing	6
2.	Upward	Downward	Moving	4
3.	Horizontal	Downward	Standing	2
4.	Upward	Downward	Grazing	6
5.	Upward	Downward	Standing	3
6.	Downward	Upward	Standing	9
7.	Upward	Downward	Grazing	5
8.	Horizontal	Downward	Sitting	7
9.	Upward	Downward	Sitting	2
10.	Downward	Upward	Standing	7
11.	Horizontal	Upward	Standing	5
12.	Downward	Upward	Standing	8
13.	Upward	Downward	Moving	2
14.	Horizontal	Downward	Moving	3
15.	Upward	Downward	Moving	2
16.	Downward	Upward	Fitting	10

### Reproduction Behaviour

During observation most of the time animals in resting posture, feeding and sometimes male Blackbuck behaviour was aggressive. Courtship behaviour is seen during breeding. The pre-courtship and post-courtship activities were observed keenly. Various facts and figures observed during the study period were taken down in the form of notes. During the study period, the number of fawns delivered was recorded. Litter size was small and the number was calculated gestation period. The difference in the colour of adult male and female were observed. The change in colour of fawn from October 2019 to July 2020 recorded every month.

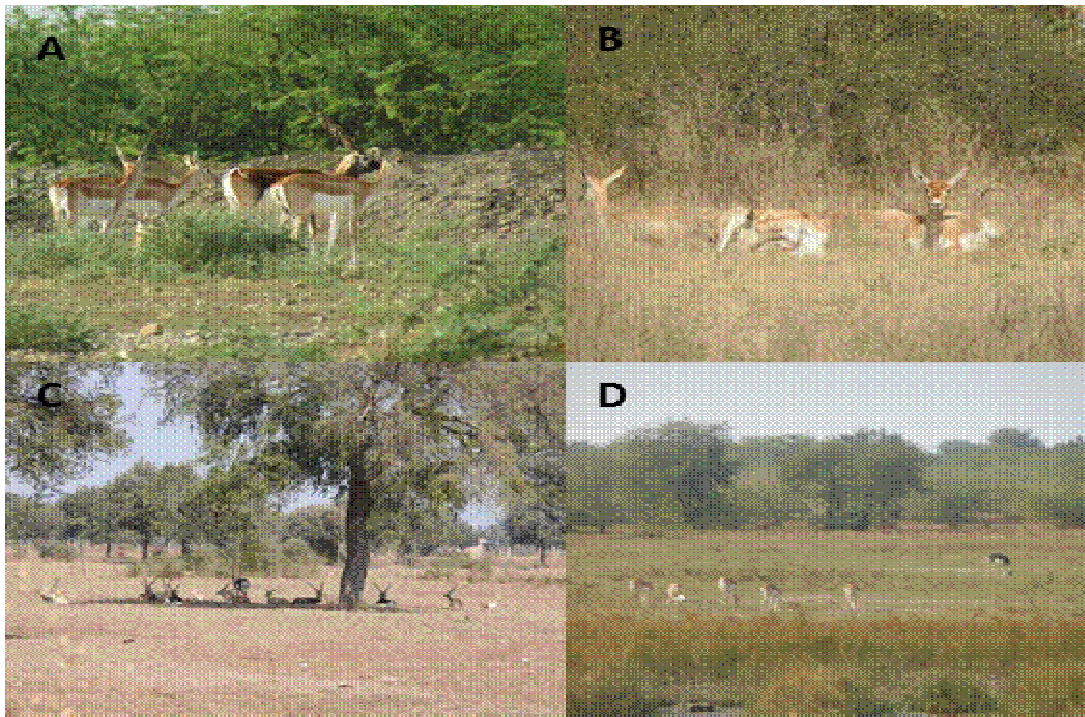
### Resting Behaviour

Study area Gudhabhakri, Roodkali, Kakani, sarecha, there are many numbers of Blackbucks dependent on this habitat. Inearly morning and noon, most of the time Blackbuck was resting under the tree. In Gudhabhakri Blackbuck was less in population but Chinkara was observed in this region. In Roodkali village 6 male Blackbuck observed around 1.00 pm resting under the khejdi tree and 2 km far from village 12 male Blackbuck resting under a tree. In Kakani study area I observed 18 Blackbuck resting in morning 9.00 am, i.e. 12 of female and 6 male. In Sarecha study area observed 2 Blackbucks were resting at the road side.

### Feeding behaviour

The feeding activity is change according to season. During winter they take rest under the sun from around to 8.00-9.00 am and then they are feeding. During the study, it had been observed that Blackbuck feed on selective food varieties available in a particular area like some grass and crops are seen. Plant, grasses, crops, tree and other shrubs also feed by Blackbuck in a different season. we observed blackbuck in different seasons, there feeding depend on the availability of food according to the season. In my six months of study in field observation in the winter season, food availability is high so they feed near his habitat. Blackbuck herd also raid rabi crop in the night or early morning because there is no human activity. 20 times observation in study site crop that is a raid by Blackbuck. Some grasses like *Cynodon dactylon*, *Cyperus rotundus*, *Celosia argentea*, *Solanum virginianum*, *Leptadenia*. are favourable food item

for them available in this period [6]. Most of the time Blackbuck depends on grasses. It was observed that around 75 times that they feed on grasses where water availability is high.



**Figure 1 (A)- Mixed group of blackbuck, (B) Resting condition in grooming (C). Resting behaviour of Blackbuck study site, (D). Showing Feeding behaviour.**

In Summer from mid-march to mid-April study period this region was not dry there, some group saw feeding on the tree and some grasses but from mid-April to mid-June Blackbuck faces many difficulties for getting food and water. During this time they move place to place in search of food and water. In summer in 35 observations we found that mostly Blackbuck depends on herb and tree when grasses are less in the ground. Due to the scarcity of forage, they also move into village fringes in search of food item like *Prosopis juliflora*, *Acacia senegal*, *Calotropis procera*, *Capparis decidua*, *Salvadora sp.*, *Lycium barbarum*, etc (Table 2).

Blackbuck is native of India. Earlier it was found throughout in the Indian Subcontinent. For the time being now Blackbuck is disappeared from numerous areas, this is due to habitat destruction for anthropogenic development and also due to killing. Now the population of Blackbuck is increasing in protected areas like Rajasthan, Gujrat and Haryana [7].

Vishnoi community is known for the conservation of plant and animal, so during study, we choose the area and villages that are rich in Vishnoi community where we can easily observe wildlife and their behaviour and activities. At our study site, In some areas like Roodkali and kakani villages have a rich diversity of Blackbuck but In Gudhabhakri less population of Blackbuck was observed because of the habitat of Gudhabhakri that is rocky and carnivore animals present there but one can observe the State animal Chinkara in this region. In Sarecha village there is less number of Blackbuck were observed because of industrial development in this area, polluted water, forest destruction. The human population is also one of the major reasons behind less number of Blackbuck.

**Table:2. This table shows feeding vegetation types in different study area.**

S.No.	Grasses	Herbs	Tree	Crops
1	<i>Cynodon dactylon</i>	<i>Capparideciduas</i>	<i>Acacia Senegal</i>	<i>Pennisetum glaucum</i>
2	<i>Cyperus rodendes</i>	<i>Calotropic procera</i>	<i>Prosopis cineraria</i>	<i>Cicer arietium</i>
3	<i>Celosia argentia</i>	<i>Ziziphusnum malaria</i>	<i>Prosopisjuliflora</i>	<i>Vigna radiate</i>
4	<i>Leptidinia</i>	<i>Salvadora spp.</i>	<i>Lyciumbarbarm</i>	<i>Triticum aestivum</i>
5	<i>Argemone mexicana</i>	<i>Helianthus annuus</i>	<i>Aceciatortilis</i>	<i>Sesamum indicum</i>
6	<i>Desmanthus</i>	<i>Ocimum tenuiflorom</i>	<i>Tecomella undulate</i>	
7	<i>Solanum virginianum</i>		<i>Azadirachta indica</i>	

### Ecological Role

Blackbuck has important ecological roles in the grassland ecosystem. It has genetic medicinal (horn and skin to cure liver and heart diseases). Scientific, aesthetic and recreational value. In Hinduism and Buddhism, the horn and skin of Blackbuck are used in rituals like Bratabandha and medication by saints.

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