

Nature Watch

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The Quintessential Antelope – Life of the Blackbuck

R K Menon



R K Menon is a keen observer of animal behaviour. Fuelled by his deep interest in ethology, he studied blackbuck intensively for three years in the late seventies in Guindy National Park and Point Calimere, and followed it with years of continued observation. A founding member of the Madras Naturalist's Society, he has encouraged, guided, and helped a number of students and naturalists gain a footing in the field of animal behaviour research and conservation.

Although Africa has more species of antelope than India, the Indian blackbuck is the quintessential antelope. With its black-and-white coat and magnificent spirally twisted horns, the male blackbuck stands out in any collection of animals. The species boasts of a long and manifold cultural association with people. Yet, in many areas, blackbuck populations have declined. Today it is an endangered species that survives mostly in sanctuaries.

The Sun God rides in a chariot drawn by two prancing horses, but the chariot of the Moon God, Chandra, is drawn by a pair of antelopes, the blackbuck, *Antelope cervicapra*. This is possibly due to the white ring around the eye of the animal, which suggests the moon in the night sky. Indians have venerated this antelope from ancient times. To Lord Shiva, this buck was a sign of good omen and blackbuck horns joined together at the base, their sharp ends shod in iron, became the weapon of religious fakirs. In *Kim*, Rudyard Kipling describes such a fakir with a staff of blackbuck horns. The blackbuck has been known to Europeans since the time Alexander the Great invaded India around 326 BC and was presumably part of the animal trade. The animal has received protection in many areas of India due to its sacred associations.

In the days of Mughal emperor Jehangir, blackbuck fights were part of the entertainment in the Mughal court and the populace was given to betting on the fights. This appears strange at first, as the buck seems a docile and timid animal. Nevertheless, since the holding and defending of territories is an integral part of the life of male blackbuck, they will fight very seriously.

The Mughals also used to hunt blackbuck using the spectacular

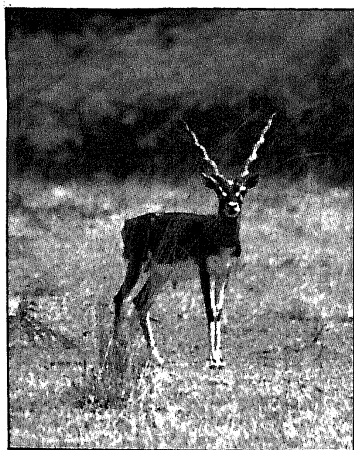


Figure 1. The blackbuck is a species of open habitats like grasslands and semi-desert—here, a male stands in its territory in an open meadow.

Photograph: T R Shankar Raman

Figure 2. A young albino male that had moved into a wooded area temporarily in search of forage during the dry season.

Photograph: T R Shankar Raman



method of coursing with tamed hunting cats such as cheetahs (*Acinonyx jubatus*) and caracals (*Felis caracal*). The cheetah was usually blindfolded and taken in a cart and slipped off the leash when the buck was sighted. After a terrific chase, if the cheetah brought the buck down, it was rewarded with a bowl of the kill's blood. Both Jehangir and Akbar kept cheetahs for hunting blackbuck. The cheetah that killed the most was accorded a higher rank and taken around royally in a cart preceded by drum beats. It is reported that in a thirteen day hunt Jehangir once killed as many as 426 bucks.

Among the indigenous people of India today, there are those who hunt them for food as well as those who protect them for their sacred associations. The Bishnois of Rajasthan will even use force to safeguard them. No matter in which direction one looks in Indian tradition, the blackbuck was and is a part of India's cultural heritage.

Of Horns and Habitat

The blackbuck is an antelope and not a deer, although it is sometimes mistaken for one. Unlike the antlers of deer, the horns of blackbuck are not deciduous, that is, they do not fall off once a year to grow again – they are permanent. It is a small antelope, with pronounced sexual dimorphism. The adult male, standing about two and a half feet tall and weighing about forty kilograms, is larger and more strikingly coloured than the female (*Figure 1*). While the male is dark brown or almost black on its upper parts, starkly contrasting with the white around the eyes and on its underside, the female is light fawn above and white below. Albino blackbuck, rarely seen, are white with pink-tinged eyes and horns, which may occasionally show malformations (*Figure 2*).

Young males have a pelage colour like the females, but can be distinguished by the presence of horns. The horns appear as small spikes on the head in the yearling buck, but begin to develop spirals in the second year. Unlike deer antlers that grow

from the tip, the horns grow from the base (see [1] for more details). A well-formed pair of horns on a mature blackbuck male may reach two feet in length and have a nearly equal spread between the tips.

The blackbuck is endemic to the Indian subcontinent. Small populations are known from parts of Nepal and Pakistan, but the bulk of its range of distribution falls within India. The animal was once seen throughout India except in Malabar and Deltaic Bengal. Today they are restricted to Central Peninsular India, the eastern seaboard, and parts of North Western India.

Like many African antelopes, the blackbuck is essentially a species of open habitats such as grasslands, savannahs, and semi-desert (*Figure 1*). Forests and hills are not for it. In fact, in Tamil, the blackbuck is called *veli maan*, which means antelope of the open areas. Open country, offering high visibility to detect predators and flat terrain to escape from them at top speed when attacked, is the ideal habitat for blackbuck. It is well adapted to this semi-desert habitat and can tolerate relative extremes of heat and drought.

Turf Battles

Blackbuck are territorial animals. A territorial animal like the blackbuck male holds a piece of meadow or land that he defends against invasion of conspecific males. The male in its white and black coat stands prominently on its territory, which he has fought for and taken from an earlier holder or, in some cases, colonised by himself. The ownership of the territory may pass on from one individual to another each year or a single, strong male may be able to retain it for several years.

Fights between males for territory possession can be violent. The two males clash head on to lock horns and push mightily against each other. This is where the corkscrew shape of the horns comes into use. The spirals of the horns lock into one another so that they do not slip, much as the antler of deer like chital lock during battle. Where the males are almost evenly

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matched, a fight may continue over a few days. After the first bout, the contestants withdraw for a short while, only to clash again. The contestants engage, break off, and re-engage in this turf battle until the issue is settled. When the loser flees, it is usually chased only for a few yards, and then it may be seen somewhere else where it is more comfortable.

Ticket to Reproduction

Blackbuck fights over territory take place in the territory concerned. The winner then stands in the territory waiting for the females to come, for, in blackbuck, territory is the ticket to reproductive success. When the females do arrive, the male tries to herd them and keep them within his patch of land. This it does by what is called the 'head-up' or 'nose-up' display. The male raises its tail upright to show the white underside, raises his nose till the horns are almost flat along its back, turns its ears downward and backward and moves with mincing steps, all the while forcing the females deeper inside his territory. It may also grunt during this behaviour. The females may move inward in response to the 'head-up' display and begin to graze there, but if they are not so inclined, they simply walk across into an adjoining territory. The male has no recourse other than to do the 'head-up' display in front of the wandering female. It appears strange that once a female or herd of females crosses over into another territory, the pursuing male will stop short at the end of his territory and not take one step more. In most cases, the neighbouring male will come forward to escort the female into its own territory.

Figure 3. Blackbuck mark their territories through urination and defecation leaving physical and olfactory signboards.

Photograph: T R Shankar Raman



To the human eye, the exact demarcation line between two adjoining territories is not always visible. In some cases, hedges or some physical landmarks may be used. When there is a mosaic of territories in a large open field or meadow, there are no demarcation lines visible to the human eye. The male itself creates physical and olfactory landmarks in its territory. The male marks the territory with defecation at specific points (often creating large dung piles) and urination (*Figure 3*). It also rubs

glandular secretions from the infra-orbital glands, located just below the eye, on grass stalks and other vegetation. These visual and olfactory signboards are common in the centre and edges of territories.

Territorial activities intensify during the reproductive periods or ruts. The blackbuck has two ruts in a year. In southern India, in places such as Point Calimere and Guindy National Park in Tamil Nadu, the first rut is around April, and the second and main rut is later during winter. Therefore, most fawns are seen during the first rut, born after six months gestation. The rutting periods vary depending on climatic conditions over the length and breadth of India.

The most interesting part of the blackbuck's social system is that it almost conforms to that peculiar form of territoriality, leks, though not quite. Many birds and mammals adopt the lek system of territories, the classic case being the Uganda kob, an African antelope. The leks are clusters of males on small territorial patches standing next to one another in the open plains. Each male stands in his little patch and waits for the females to arrive for reproductive activities during season. There may be a mosaic of such leks dotting the area. These are abandoned once the season is over. The patches are so small that the female does not derive any resource from the territory and comes there only to choose its mate for copulation.

In the blackbuck, there is a similar arrangement of territories forming a mosaic of territories. The size of the territory may be relatively large, as in Point Calimere, or small as in Guindy National Park. Unlike in leks, these territories are held throughout the year. The females come and graze and have the choice of territories and males they would like to consort with. There is no sexual activity here, except during the rut. This is the key difference between the lek and the usual blackbuck social system. The lek is mainly for reproductive purposes, while the system of the blackbuck is a combination. During the non-breeding season, the male is content with herding and retaining

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as many females as he can.

Only on long observations will this subtle difference between the lek and the behaviour of blackbuck be noticed.

Nonetheless, in at least one high-density population of blackbuck, such as Velavadar, a lek-type of breeding system has been noticed and studied by Kavita Isvaran, a student of the Wildlife Institute of India. Here, males lek in particular sites during the rut and defend small patches from other males. Females visit the cluster of males at a lek for mating, preferring prime adult males that manage to obtain and defend territories at the centre of the cluster. This suggests that, as has been observed in fallow deer, the nature of the breeding system may vary in different populations of blackbuck, depending on population density.

Where the Owner is the Boss

Territoriality is central to the blackbuck's life. During my study of blackbuck behaviour in Guindy National Park, I could see a number of interesting incidents that gave insights into the role of territory in the life of blackbuck. An incident showing how the male is the boss in its territory happened during my study.

One day, the meadow or field which was my intensive study site was empty around mid-day except for two males, A and B, whose territories were on the field. The other animals had moved into the shade of some trees a little distance away. But B was standing in its territory, perhaps to herd some stray females. The females did not normally care much for its territory, preferring those of higher-ranking males. My behavioural observations had earlier established that A was dominant and higher ranking than B. For no humanly conceivable reason, A suddenly started to walk across the field. As it crossed territories, since the territory owners were not there, it was not accosted, until it reached B's territory. Upon this unwarranted intrusion, B immediately gave a chase. It was amazing to see A, a higher-ranking male, being chased by B. Round and round went the pair, always within B's territory, with B in hot pursuit.

Suddenly, while executing a manoeuvre, A slipped and fell flat on its side. It lay there as B approached with mincing steps and gave an aggressive 'head-up' display. Now, A was perhaps knocked out or winded and did not respond. It could not get up. So B resorted to a stronger aggressive display, the 'head-down' display, where it lowered its horns at A, signifying the blackbuck equivalent of 'get-out'! I was aghast, thinking there is going to be blood in the field. But it quickly dawned on me that I had mistaken the whole scene. What B was doing was not a charge to gore A but a simple behavioural display. No! Nature is not red in tooth and claw! Since A did not get up and as there was perhaps nothing in B's behavioural repertoire to handle such a situation, it just sniffed at A and walked away.

As if it was my lesson learnt for the day, an anthropomorphic interpretation of the scene passed through my mind: don't kick a fallen foe. Such a thought certainly did not pass through the antelope's mind. It was a question of responses to some behavioural patterns, though it may have looked different to a lay watcher.

In the Red

It is unfortunate that a fascinating species like the blackbuck, despite its cultural associations with people, is today endangered. The species has been placed in Schedule I of the Indian Wildlife Protection Act and receives protection in a number of sanctuaries. Nevertheless, the present-day blackbuck population is only a remnant of the teeming herds that used to exist. The blackbuck was once the most common and conspicuous animal in the plains of India. The largest herds noted at the beginning of the century were of the order of 8,000 to 10,000 head seen around the cattle farm at Hissar. Parts of the Deccan and north-western India were noted for the abundance of the blackbuck.

The Wildlife Preservation Society of India estimated that there were nearly 80,000 blackbuck surviving in 1947. Three decades

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later, the numbers had dwindled to possibly a tenth of that number. The largest concentrations of blackbuck today are found in sanctuaries such as Velavadar in Gujarat, Karera in Madhya Pradesh, Rannibennur in Andhra Pradesh, and Point Calimere in Tamil Nadu. Nepal once had a good number of blackbuck, but a survey in 1966 by Spillett and Tamang found only 20 animals. In Pakistan, the situation is even worse.

How did such an abundantly found animal become endangered? A number of factors are involved. Habitat destruction and conversion of its preferred habitat for agriculture is one major cause of blackbuck decline. Ironically, in some areas of Tamil Nadu and Andhra Pradesh, 'protection' of open grassland, scrub, or semi-desert habitats for the blackbuck has also led to its decline. This is because protection led to growth of vegetation turning open areas into denser habitats that were unsuitable for the blackbuck.

Guindy National Park is a classic example of how simply protecting an area without understanding a species' needs can be counter-productive. This park had over 300 blackbuck a little over two decades ago. Today this population is down to less than a hundred. This drastic decline of blackbuck was partly due to the growth of vegetation and exotic plants in many open areas that were earlier territorial ground of blackbuck (*Figure 4*). In dense vegetation, blackbuck do not form territories. Without territories breeding will go down. Fragmentation or the island effect is also impinged on the blackbuck. Being located within the metropolitan city of Madras, Guindy National Park is after all an island surrounded not by water, but by roads, houses, and traffic. The animals are hemmed in, especially so now that a wall has been built around the park making it more insular. There was a time when I have seen 60 to 80 blackbuck in the meadow or polo grounds of the park. It is mostly empty now. The park also has a deer population of nearly 500 chital. The proliferation of chital may perhaps be

Figure 4. A blackbuck male in hot pursuit of a female.
Photograph: Rangachari



another reason for the decline of this endemic species, the chital being a generalist feeder, while the antelope is a specialist grazer. Being smaller and more delicate than the chital, the blackbuck cannot compete against the larger and more prolific chital and is now at the brink of extinction in Guindy. Along with proper scientific monitoring, active management to maintain open areas, control exotic plants, and reduce the impact of chital on blackbuck is now required to save the blackbuck in this park.

Hunting is another major force bringing down blackbuck populations. Sport hunting by the British started the downward trend. Hunters brought down thousands of blackbuck, sometimes shooting at large herds and killing indiscriminately just for 'fun'. Opening of railroads led to the opening up of large tracts of land, which facilitated the decimation of large herds seen in erstwhile interior areas.

Snares were also used to capture and hunt blackbuck. An unusual practice used earlier was to attach snares to the horns of tame bucks and send them out to fight and entangle the wild ones. This method was sometimes used for the other antelope of the Indian semi-deserts, the chinkara (see *Box 1*). Another rare method described by the famous naturalist and photographer, M Krishnan, was a sharp iron hook pushed into a ripe *bel* (*Zizyphus* sp.) fruit through the stalk. Many of these fruits were left lying about to capture unwary blackbuck that came to eat the fruit. An added refinement was the fixing of a piece of wood on a string to the fruit. In an attempt to dislodge the hook, the hooves of the foreleg get stuck, entangling the animal further.

Besides habitat changes and hunting, development activities and urbanisation also took their toll. For instance, the construction of the Tungabhadra dam led to the eventual local extinction of blackbuck. Today, little wildlife survives outside sanctuaries and even there, they are not completely safe. Poaching for their succulent meat goes on.

A better understanding of the needs of blackbuck and the forces

Suggested Reading

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- [9] G Schaller, *The deer and the tiger*, University of Chicago Press, Chicago, 1967.
- [10] F R Walther, E C Mungall, and G A Grau, *Gazelles and their relatives: A Study in territorial behaviour*, Noyes Publications, New Jersey, 1983.

Box 1. Antelopes of India

Antelopes belong to the family Bovidae of mammals along with goats, sheep, and cattle. They have a more graceful and delicate build and the horns are hard almost throughout, lacking the air spaces found in other bovid horns. Six species of antelope are found in India. These are categorised in two subfamilies [2].



Figure 5. Two nilgai bulls fight it out in Sariska Tiger Reserve.

Photograph: T R Shankar Raman

the horns are keeled in front. Females lack horns. The nilgai or blue bull, *Boselaphus tragocamelus*, is found mainly in north and central India. The males are dark grey in colour and are territorial, fighting by swinging and beating their necks against each other (Figure 5). The females are sandy brown (Figure 6). Although it causes much damage to crops, people protect it as they believe it to be closely related to the cow and hence sacred. The four horned antelope, *Tetracerus quadricornis*, is another dainty and small species, remarkable for having two pairs of horns, the front pair being shorter. Found in deciduous forests over most of Peninsular India, it likes undulating terrain and leads a largely solitary life

Subfamily Antilopinae: Besides the blackbuck, three other species belong to this subfamily: the chinkara or Indian gazelle *Gazella gazella*, a lithe, graceful, sand coloured animal, in which both males and females have horns. It is found in dry desert country in central and north-west India. The Tibetan gazelle, *Procapra picticaudata*, is a species of cold desert antelope found in Ladakh. Another species of the trans-Himalaya is the Tibetan antelope or Chiru, *Panthalops hodgsoni*. It has a peculiar swollen snout and long slender horns. The females lack horns. This species is highly endangered today because of poaching for its valuable fur known as *shahtoosh*.

Subfamily Bovinae: The two species belonging to this subfamily lack the true ringed horns of antelopes; instead,



Figure 6. A female nilgai with an albino calf.

Photograph: T R Shankar Raman

that impinge on their survival is needed. For their conservation, one needs both a deeper concern for the fate of blackbuck as well as a thorough understanding of their behaviour and ecological needs through research.



Photo 1. The male blackbuck resting on its territory is a conspicuous animal.

Photo 2. Two black-buck males fight for territory while another approaches alertly.

Photographs: R Selvakumar

Studying the Blackbuck

The blackbuck is an exciting and ideal species for many ecological and behavioural studies. Interesting moments like territorial disputes or observations of rare events such as copulations add spice to the study of blackbuck. Studying blackbuck is, however, not interesting work all the time. Much of it is the dull, drab, matter-of-fact routine of recording behaviour day after day, often from dawn to dusk.

The blackbuck is fairly extensively studied today, but in 1977 when I began my research, it was considered *terra incognita*. Elizabeth Cary Mungall, of Texas A and M University has done much research to remove the clouds that obscured this animal's behaviour. Her work was mostly in the United States of America, where there are large numbers of blackbuck on ranches, although she has surveyed many blackbuck areas in India too. Many Indians, notably M K Ranjitsinh, Y V Jhala and Kavita Isvaran, have also studied the ecology and behaviour of blackbuck. But there are many fascinating aspects of the blackbuck's life that require further research. The intricate nature of territoriality, factors influencing mate choice and reproductive success, the role of habitat changes and fragmentation on population declines – these and many other facets of its biology await deeper exploration. Such research will improve our understanding of the species and aid in its conservation in the ever-changing landscapes of India.

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