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A Study of Reproductive Behaviour of Indian Black Buck (Antilope cervicapra) Linn. with Reference to Courtship, Breeding, Fawning and Colouration

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ABSTRACT

These species exhibits a high degree of sexual dimorphism; the male is larger than the female, is strikingly coloured in black and white, and sports a magnificent pair of spiralling horns. The black of the male is replaced by an inconspicuous brown in the female. The aggressive behaviour is commonly seen throughout the year. The reproductive behaviour of black buck was recorded during the present study. The mating was primarily observed in the months of March and October. The young ones yellowish fawn in colour. After about three years it begins to turn black. A buck has a brown black coat. The colour usually fades a little during summer but after the rains the velvety texture acquires sheen.

Key words: Reproductive Behaviour**,** *Antilope cervicapra*, Courtship, Colouration.

INTRODUCTION

The black buck (*Antilope cervicapra*), commonly called as Kala Hiran or Krishna Mrig in Hindi is a small gracious Indian antelope found all over India. The black buck is native to the Indian subcontinent. Essentially a species of open plains, it is found in a wide range of habitats from arid grasslands and scrublands to marshy coastal plains and open woodlands (Ranjitsinh, 1989). This species exhibits a high degree of sexual dimorphism; the male is larger than the female, is strikingly coloured in black and white, and sports a magnificent pair of spiralling horns. The black of the male is replaced by an inconspicuous brown in the female. To date, most accounts of the reproductive behaviour of black buck have been descriptive and the dynamics of its social and mating systems are largely unknown.

Black buck are primarily grazers (Mungall, 1978; Jhala, 1997) and herds are characteristically loose and unstable associations that can range from less than ten individuals to several hundred. The mating system of blackbuck appears to be exible. The basic pattern is territorial defence by males (Mungall, 1978; Schaller, 1967; Prasad, 1989), and in most places this resembles the resource defence territories described in many African antelopes (Gosling, 1986). Based on year-round censuses of fawns and male territorial activity blackbuck are thought to breed through the year (Schaller, 1967; Ranjitsinh, 1989). However, two peaks in rutting have been observed, one from August to October and the other in March and April. The present study has been conducted to study the basic reproductive behaviour of. with reference to courtship, breeding, fawning and colouration in Indian Black Buck (*Antilope cervicapra*) at M.C. Zoological Park, Chhatbir (Pb).

Methodology

The behaviour of black buck was recorded with regard to the following activities: direction of activity, activity range diameter, company of them with young female, young male or with any herd, number of hours passed during day time (from 5:00 am. to 7:00 p.m.) in different activities like grazing, walking, lying and standing, sexual activities like woeing of females by males.

During the study period, the animals were observed resting postures and activities of body during rest were observed and recorded. Aggressive behaviour of males, aggressive postures and cause of aggression was recorded. The courtship behaviour was observed during the breeding period. During breeding period frequency of visits were increased to watch and record the behaviour and postures of the animals. The pre--courtship, courtship and post-courtship activities were observed keenly. Various facts observed during the study period were taken down in the form of notes. To arrive at the final essence the accumulative observations were inferred.

The number of fawns delivered during the study period was recorded. Litter size was calculated. Time and date of copulation and date of delivery was noted to calculate gestation period. The colour of adult male and female, the differences were observed. The change in colour of fawn from October 2006 to September 2007 was recorded on monthly basis.

RESULTS AND DISCUSSION

The aggressive behaviour is commonly seen throughout the year. It was observed that the strongest individual dominated other members of the group. There were seen several encounters among males at different times. All these encounters occurred for specific reasons. During the months of October and March i.e. during breeding period encounters occurred for females. During the summer month (June and July) encounters happened when any animal of other group always male, entered the territory of territorial male. During winter months as for walking as a leader or dominating the herd as larger herds was formed so the males rut or fight and spawn year round although they rarely hurt each other.

Aggressive behaviour was noticed during various situations. Sometimes dominance was exhibited by stronger individual over other members of the group. During the breeding period counters among male individuals were probably due to females. Cause of encounters may be interception by one male in the cohering activity of the other male. During winter large herds come into existence as LS clear from the table 5.2, so one hard consists of large number of males. So that that position, the cause of aggression among them came to be the issue of leading the hard and dominating other members of the herd. During summer, size of herd remained thin. So number of herds got increased and in each herd mating male had marked its territory. When any other male had to enter his territory, the male attached the intruder. The cause of acquiring aggressive posture III case of aggression is to frighten the opposite individual. The folding of ears, raising the neck forward and upward and to raise the tail all are postures to show its aggressiveness and to impress the opposite individual. On occasions, submissive behaviour shown by one male III responses to other may be to show superiority of the other over him. It probably may be to avoid collision by the animal on receiving end.

Aggressive postures seen during all the encounters explained above were the same throughout the year. During aggressiveness the buck raised anterior part of his mouth so high that horns laid almost alongside the neck, the ears were rolled back, the white insiders of ears were clearly visible. The tail was raised and curved up and white patch on rump was conspicuous. The male buck approached his opponent in furious manner. The opposed buck usually was seen frightened as a result of threat put by the first one.

But during the breeding period it was seen that other bucks also attain the same posture. In fighting both bucks collided head to head, they entangled their horns. But it was occurred during the breeding period only. After entangling their horns, one buck which was stronger pushed another backwards up to 4-5 feet but if both were equally strong they pushed each other alternatively.

In summer months (June and July) it was observed that when a buck try to enter into the territory of territorial buck, the territorial buck show the aggressiveness, thus the buck who entered the territory show submissive behaviour. On that time the buck attain peculiar posture in which he trusted his head forward and downward He wagged his tail. Then he run away from the buck and started grazing later on.

The mating was primarily observed in the months of March and October. The courtship behaviour as was seen is described under the following three categories:-

1. Woeing of female by male.
2. The courtship activity.
3. The post courtship activity

Woeing of Female by Male & courtship activity

During peak of courtship period, male chased the female Sometimes he followed her for quite long time. When a buck approached the female or female herd he moved in a specific type of March (Mating March). The doe runs forward and male followed it in circular and spiral fashion. It was seen that at that time buck always kept doe away from the members of the herd. Sometime the male buck was seen smelling wive and valve of the female. It was seen that the buck follows the doe in nose lifted form. Sometimes the female was receptive, so the male got positive response. In that case he moved forward towards the female. The female responded positively by thumping her hind legs on the ground and by waiving her tail. Now the buck followed the female every time. After catching hold of the doe, the buck was pushing his hand on the back of the female. But the buck was seen shifting the valva of the female prior to this. Sometime after doing these activities it was seen that buck mounted on the female. So copulation occurred at this stage. An ejaculation can be identified by the characteristic sharp arch of the lower back which nearly throws the male off balance. The buck took 5-6 hours in courting the female and finally mounting her copulation terminated courtship. It was observed that sometime male after mounting one female, resting for a while started woeing another female and courting her. It was seen that when one male followed the female, another female followed him on same occasions. It was observed that after mounting buck was waiving his tail. Stretching his body to full length and then moving to another side of doe. Sometime it was seen that buck after mounting moved towards another doe which was mounted. The doe after mounting remained standing in that position for sometime and then started grazing.

During pursuit activity male followed female and kept her in his territory, because it is easier for him to pursue her in his territory and at that place he is most powerful among the group and chances of disturbance by the other males are very less. It was observed that if doe urinates, the buck will smell the urine. This activity is called 'flehmen'. This is in accordance with Schaller (1967), Mungall (1978) and Prasad (1981). In courtship activity it was observed that buck exhibited nose-lifted form of display, nose up display and circulating movements and mounting. In nose lifted form buck may try to attract female towards him, this is called mating March (Mungall, 1978). Buck exhibits nose up display only when he finds the doe respective. Circling movements are exhibited probably to roam all around the doe so that to have himself near to her. There were two annual mating peaks from March to April and from August to October. This is also in accordance to Ranjitsinh (1989). During mounting the buck pushes the doe with his chest to facilitate her and to easily mount. Two types of mounting were observed: one is non-copulatory mount and another is copulatory mount. The copulatory mounts are steeper than non-copulatory mounts. Male typically mount a female several times before ejaculation. During copulatory mount position of body of the buck, movements of feet are exhibited in perfection to complete the mounting. An ejaculation can be identified by characters tic sharpness of the lower back which nearly throws the male off balance. Copulation terminates courtship. After copulation doe stood rear a while and then started grazing. But buck sometimes attacked to other buck. That may be due to excitement of the copulation

Breeding potential

During the study period there were a total of three fawns which were delivered one each in the months of October, November and February. The litter size seems to be one only as each of the

female delivered a single fawn. The most probable conception occurred during the month of September and /or early October.

Of three fawns during study period, two were females and one was male. One female fawn was died just after delivery. During the study period, there were a total of three fawns were delivered. The mother of three fawns was different. It is clear from our studies that litter size is one. This in accordance with the findings of Crandall (1964), Munhall (1978) and Prasad (1981). The conception occurred during last week of September, early October and deliveries were in the months of last week of February and March, so gestation period is probably 5 months and 5 days or more than it.

Fawns and fawning

Female black buck Antelope carry their fawns for about five months and they generally have two fawns per year that one born approximately six months apart. The female joins the mothers with the nest of the group at about two weeks of age. Up until that time it lies in the grass between nursing. Young fawns were seen playing and lying most of the time it was observed that fawns were too much feared of man. They ran 30-50 meters away after seeing humans. Fawns remained active most of the time of the day. The fawns were observed playing and lying most of the time the day. Fawns were more active probably due to lesser feeding helms and there was no restriction on them of interfering the territory of any other buck. Fawn leaves the dam and bed soon after it is nursed, urinated and defecated. The doe has no influences on fawn's activities (Mungall, 1978).

Colour Change

The colour of black buck in male and female differs strikingly. The adult buck has dark hairs at nasal bones, ventral neck and lower shoulder. The sides streaks are also of dark colour but in younger ones the side streak are of light colour. The colour of the back is fully black. The outside of legs are also black. It was noted that chest, abdomen, rump and inside of legs ears and tails are white. The colour of female i.e. doe is pale yellow or ground yellow at all those places where the male has black colour. At other parts, it is white. There were deliveries of fawns in October, November and February. Those fawns were observed for the colour transformation period spread over 10 months. The new born fawn was of very light yellow colour. From late October 2006 to September 2007, the fawn only turned somewhat dark yellow. This colour is very near/similar to that of adult females. Around August 2007 there was observed a dark patch at the herd and neck of the fawn which was male. Thus fawn was evidently the male one. There was also observed that colour on shoulders and alongside streaks changed gradually. Fawn, whose colour change was observed, was male. The male's change to a dark ground colour was gradual. First the naire on his ventral neck and lower shoulder darkens, after that dark colour deepens on shoulders and along side streaks. The young ones yellowish fawn in colour. After about three years it begins to turn black. A buck has a brown black coat. The colour usually fades a little during summer but after the rains the velvety texture acquires sheen (Isvaran, 1995, 2003, 2005 & 2007; Isvaran and Jhala, 2000).

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