

BREEDING BEHAVIOUR OF BROW-ANTLERED  
DEER OF MANIPUR

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(With 6 Plates)

INTRODUCTION

The Brow-antlered deer, *Cervus eldi eldi* McClelland, 1842 which the Manipuris call as Sangai, is restricted in its distribution to Keibul Lamjao National Park in Manipur. In the past and during the Manipur Durbar this deer was strictly protected and was found in many parts of this tiny state. Very little has been done so far for the conservation of this beautiful deer with the result that its population has decreased considerably and now it is considered as one of the rarest and most threatened among the other deer of India.

In 1951 this Manipur sub-species of Brow-antlered deer was regarded as extinct but in subsequent search it was relocated about 50 km south of Imphal in Keibul Lamjao area, the part of which was declared as National Park in 1977.

The breeding behaviour of Sangai has not been thoroughly studied. Sankhala and Desai (1970) made a preliminary studies on the breeding behaviour of this deer at Delhi Zoo. This paper deals in brief the ecology of the habitat and the breeding behaviour of this deer at Keibul.

*Ecology of the Keibul Lamjao National Park :*

Imphal valley due to its elevation enjoys a good climate. The period from November to February is characterised by low temperature and heavy dew at night. Frost is common on winter nights. From December to February the fog at Keibul Lamjao National Park is usually very heavy in morning and it clears off long after the sun rise. In April and May the temperature rises rapidly though the temperature comes down often by thunder-storms and rains. The period from June to September is characterised by heavy rain. From December to February the humidity is very high. The monsoon generally breaks about the middle of June and continue untill about the middle of October. The heaviest rainfall is in the months of July and August.

Almost the entire area of the Park which is situated at the southern part of the Loktak lake is a floating swamp. The dead and decaying

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PLATE III



Fig. 1. Part of the Keibul Lamjao National Park showing the depth of the underneath water of the mat.

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PLATE IV



Fig. 2. Buck and the doe after formation of a breeding pair.

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PLATE V



Fig. 3. Buck testing the state of readiness of the doe.

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PLATE VI



Fig. 4. Buck with a "Flehmen" posture.

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PLATE VII



**Fig. 5.** Buck with submissive as well as aggressive posture.

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PLATE VIII



Fig. 6. Mounting by the buck.

vegetation forms a floating mat on which grows the reeds, grasses and other plants (Pl. III). This mat varies in thickness from place to place. During the dry months of summer the level of water recedes and the mat settles down at places. On the onset of monsoon the park is flooded and it takes some time for the submerged mat to float again. There are three small hills in the park and when the park is under water the deer take shelter on these hills and they return to the mat when it starts to float again. Water hyacinth has invaded some parts of the periphery of the park and if it is not checked this may invade the other parts of the park.

The park is surrounded by villages and the cultivated fields have extended right up to its boundary. Before the area was declared as National Park the grazing inside and around the park by village cattle was very heavy. There was no check of the villagers for entering in the park for fishing and for collection of wild vegetables and reeds prior to 1977.

Description of the ecology and the Brow-antlered deer of the Keibu Lamjao National Park have been dealt with in an earlier paper (Mukherjee, 1978).

#### *Breeding Behaviour*

The breeding behaviour of Sangais which were kept in an enclosure at Keibul, close to the National Park and by the side of the forest office, has been studied in the year 1975. One buck, two does and two fawns were kept in the enclosure which contained enough grass and shrub and a small tank which holds the rain water. One doe which was older than the other was procured from the Park some years back and gave birth to a fawn which was about a year and four months old. The deer were given concentrated food and the green grass, collected from the park every day. The water of the tank was used by the deer for drinking.

The Sangais under captive condition are breeding in many Zoological Gardens. However, the details of their breeding behaviour has not been known. Delhi and Ahmedabad Zoos recorded the mating of these deer in the months of March and April. In Delhi Zoo adult bucks shed their antlers in late June and the new set begin to grow within a few days of shedding. The antlers were cleared off the velvet by late November (Sankhala and Desai, 1970). The bucks shed their antlers yearly and it takes about five months for the hard antlers to develop from the day of shedding. Studies of the other species of deer revealed that they lost their hard antlers after the rut and the growth



of the new set is completed before the beginning of the next rutting season. The buck in the enclosure and all the bucks that were observed in the Keibul Lamjao National Park from December to February were in hard antlers.

The buck of the enclosure started to chase the older doe from the afternoon of 23rd January, 1975. Since then the buck remained constantly with the doe, following her and occasionally chasing her (Pl. IV). In the beginning when the buck chased the doe, she trots ahead. The buck mostly remained close and behind the doe, rarely staying parallel to her and also remained close to her when she was resting. The buck and the doe were less interested in food. The buck chased the doe with extending neck and with quick steps. The rutting behaviour of the buck was more apparent by occasional bellowing calls. The buck emitted this call usually at the time of chasing the doe and throws his tongue in and out. Occasional thrashing of the bushes and chasing out the other approaching members to the doe by the rutting buck were the common features that were recorded during this period. The buck occasionally poked and sniffed the vulva of the doe with his muzzle which stimulates the doe to urinate (Pl. V). Buck then held his nose in the stream of urine and licked it or sniffed the ground where the doe urinate. He then raised his head with an upcurled lip and presented the gesture which is known as flehmen (Pl. VI). This behaviour helps the buck to determine the state of receptivity of the doe. The frequency of the chasing, bellowing, flehmen and thrashing of the bushes by the buck increased on the 24th and 25th January, 1975. On these two days the buck occasionally lowered his neck and held parallel to the ground in some what "S" shaped with the eyes fixed on the doe, a behaviour of submissive nature, and the head is slightly raised with antlers directing back and the ears held laterally parallel, a behaviour of aggressive nature (Pl. VII). The doe was not scared by this submissive and aggressive posture of the buck. The buck occasionally stamped his fore foot on the ground. No mounting was observed upto the forenoon of 25th January, 1975.

The buck started to mount the doe from the after noon of 25th January, 1975 (Pl. VIII). The fully receptive doe at this stage made no attempt to move away when the buck chased her and remained stand still with her back humped and tail held horizontally when the buck mounted her. She occasionally stepped ahead causing the mounted buck to fall on the ground. In the initial stage two mountings in every minute by the buck were recorded. At this stage of breeding frequent licking of the various body parts of the doe by the buck was observed. In one copulation the buck thrust so strongly that it

throws the doe about two feet from the mounting buck and the buck fell down. He remained on the ground for about ten minutes when he finally got up and chased away one of the fawn which was trying to mount the doe. He then returned and sniffed the ground where he fell down and thrashed the bushes for about two minutes. Though the buck remained with the doe the next day also and chasing her and bellowing occasionally but no mounting was observed. The sex drive of the buck declined sharply.

The doe died a natural death before fawning. The last fawn delivered by this doe was in October, 1973. Based on the average gestation period of 240.4 days as recorded by Sankhala and Desai (1970) this doe was likely to deliver the fawn by the end of September, 1975.

This study indicates that at Keibul the fawning takes places once in every two years and the rut starts with the approach of the dry period when the water level of the park starts to recede as the settling of the Phumdi may helps the deer to breed. Further it shows that the rut at Keibul starts early than at Delhi or Ahmedabad.

#### ACKNOWLEDGEMENTS

My thanks are due to Dr. B. K. Tikader, Director, Zoological Survey of India, Calcutta, for providing facilities and to the forest department of Manipur for their co-operation in the field.

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