



Fig. 1: Map of Bhutan

shouted, and I could see one goral a few metres from the previous day's site. It was on the cliff that was covered by

sparse vegetation. It then slowly moved behind scrub. The elevation where the Goral was seen was 110 m above the mean sea level. Sighting record of Goral at such an elevation was never reported and I even did not expect. I had observed Serow at 100 m in the Himalayan foothills only in winter, and in south of the Brahmaputra, sporadically round the year, but the sighting of Goral was interesting. From the range, it seems to be a Himalayan Goral *N. goral*, but it was rufous-brown indicating that it was of form *hodgsoni* Pocock.

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7. DISCOVERY OF LEAF DEER *MUNTIACUS PUTAOENSIS* RABINOWITZ *ET AL.* IN NAGALAND WITH A NEW NORTHERLY RECORD FROM ARUNACHAL PRADESH¹

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Muntjacs Muntiacus sp. are common and widely spread across India as well as elsewhere in Asia; however, it seems to be an interesting group, with a number of recent discoveries of new species from southeast Asia (Schaller and Vrba 1996; Rabinowitz *et al.* 1999). One such new species was described from northern Myanmar in 1999 and was named *Muntiacus putaoensis* (Rabinowitz *et al.* 1999). This is a small deer and has been named as 'Leaf Deer' because local hunters called it so in their dialect. Their area of occurrence was in extreme northern Myanmar, around Putao. This discovery indicated the Leaf Deer's possible presence

in India, especially in eastern Arunachal Pradesh. In north-east India, the Indian Muntjac *M. muntjak* is the most abundant of all deer species occupying a wide variety of habitats and altitudinal ranges.

In 1993-1994, while surveying eastern areas of Arunachal Pradesh, in Lohit and Changlang districts, I came across reports of a small deer resembling a muntjac from the Lohit and Changlang districts, both from areas bordering Myanmar. At that time *Muntiacus putaoensis* was not described, and since there was no good collection of muntjac species in Indian museums, comparison was difficult. Though



Fig. 1: Map showing inferred area of distribution of the Leaf Deer

I did not follow up by further surveys, I was intrigued by the stories of the small deer.

In 1997, Rabinowitz and Khaing (1998) found small sized muntjacs in adjacent areas of northern Myanmar and later described it as *Muntiacus putaoensis* (Rabinowitz *et al.* 1999). In August 2001, I visited the collections at the Wildlife Conservation Society and American Museum of Natural History to examine the skulls of the Leaf Deer obtained from northern Myanmar by Rabinowitz and confirmed that the specimens from Lohit and Changlang were that of the Leaf Deer (undescribed at that time) (Choudhury 2003). Later, Datta *et al.* (2003) found evidence from elsewhere in Changlang district.

Tuensang and Kiphire districts of Nagaland (25° 35'-26° 24' N, 94° 35'-95° 12' E) are hilly and mountainous. The main range runs along the India-Myanmar boundary and is the highest in mainland Asia south of Himalaya-Mishmi Hills. The highest point is Mt. Saramati, 3,842 m above msl, which is also the highest peak in mainland Asia – south of the Himalaya. Elevation ranges from 1,000 m. The main vegetation

type ranges from subtropical broadleaf and temperate broadleaf forests to subalpine scrub atop Saramati. Small areas of subtropical and temperate conifers are also found. Dibrang Valley and Upper Dibrang Valley districts of Arunachal Pradesh (28° 0'-29° 27' N, 95° 15'-96° 36' E) are also hilly and mountainous being part of Mishmi Hills.

Discovery in Nagaland

Although I had a plan to survey the eastern mountains of Nagaland bordering Myanmar for possible Leaf Deer (*M. putaoensis*) and Black muntjacs (*M. crinifrons*), my visit in February 2004 was on an awareness campaign as part of OBC-WildWings Conservation Award. During discussion with local hunters and villagers in the Noklak area (26° 12' N, 95° 00' E) of Tuensang district, at least four hunters reported of a small deer that resembled the commoner Indian muntjac. According to them it lived in higher areas of the mountains that separate India from Myanmar. During winter they even hunted it amidst frost or snow, which indicate that the species prefers higher elevation. I looked around in the Noklak town

Table 1: Skull measurements (cm) of the lone specimen (Male) examined

SKULL	
GSL	15.4 up to canine
CTL	5.4
ZB	7.2
BW	5.5
NW	1.8
IOB	3.8
PW	3.2
MTL	8.7
CL (left)	1.3
ANTLER	
LPL	6.1
RPL	5.8
PC	2.9
PG (base)	4.2
PG (tip)	3.4
PG (gt)	4.5

Skull: GSL = greatest skull length; CTL = length of cheek teeth; ZB = zygomatic breadth; BW = greatest width of braincase; NW = greatest width across nasals; IOB = inter-orbital breadth; PW = palatal width between third molars; MTL = length of maxillary toothrow; CL (left) = canine length

Antler: LPL = left pedicle length; RPL = right pedicle length; PC = pedicle circumference; PG (base) = gap between pedicles at their base; PG (tip) = gap between pedicles at their tip; PG (gt) = greatest gap between pedicles.

as well as village and then a number of other villages such as Pangsha, New Pangsha, Dan, etc. Everywhere, at least the regular hunters were convinced that there is indeed a small muntjac in the higher areas east, north-east and south-east of Noklak. After repeated search in these villages at last I could locate a skull of a male at Pangsha village (26° 14' N, 95° 06' E). The elevation of the village ranges from 1,200 to 1,300 m and the Leaf Deer were reportedly encountered or shot at 1,700 m to above 3,000 m. The measurements of the skull are given in Table 1. The skull was almost complete except for some minor damages that did not allow measurements of condylobasal length, basal length and nasal length. The greatest skull length was also not complete, but up to the canine only. In the skull, the inward bend of pedicles was conspicuous.

Further records from Arunachal Pradesh

In March 2004, I confirmed its occurrence farther north in Dibang Valley (Choudhury 2004; details are being analysed). Two specimens (head with antler) were examined, which were shot from the subtropical forests towards north-east of Mehao Wildlife Sanctuary (outside the sanctuary area). This record has extended the range of the deer farther north (so far northern-most).

These discoveries significantly extended the distribution of the leaf muntjac further south (26° 14' N; from 26° 33' N in

Rabinowitz *et al.* 1999) and west (95° 06' E; from c. 96° 30' E in Datta *et al.* 2003) in Nagaland, and also towards north (28° 20' N; from c. 27° 35' N in Rabinowitz *et al.* 1999) in Arunachal Pradesh. In Nagaland, it certainly occurs farther south covering Saramati and at least up to the gorge of Tizu river that flows into Myanmar. This also indicates that the Leaf Deer has wider distribution across the western mountainous tracts of Myanmar as well as the intervening mountains between Noklak in Nagaland and Pangsu in Arunachal Pradesh (Fig. 1).

Because of habitat contiguity and similarity in terrain, vegetation and climatic conditions, it is likely to occur farther west in Dibang valley in Arunachal Pradesh, as well as a possible area in southeast Tibet (China), where the Lohit river has entered India (Fig. 1). Except Fakim Wildlife Sanctuary (6.4 sq. km), the entire potential range in Nagaland is outside any protected area. A large protected area has already been recommended as 'Saramati-Fakim' covering an area of 500 sq. km that also includes the confirmed habitat of the Leaf Deer near Noklak (Choudhury 2001). Besides early declaration of this protected area, further surveys in Saramati and other mountain ranges on India-Myanmar border falling in Mon, Tuensang, Kiphire and Phek districts in Nagaland and Ukhrul district in Manipur are strongly recommended.

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8. STATUS OF HOG DEER *AXIS PORCINUS* ZIMMERMANN IN LAKHIMPUR AND DHEMAJI DISTRICTS OF ASSAM¹

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The Hog Deer *Axis porcinus* Zimmermann was widely distributed in the plains of north-eastern India, especially in valleys of the Brahmaputra and Barak rivers, and Manipur. Over the years, the grasslands in the plains gave way to settlements and paddy cultivation, and the species was confined mainly to some of the protected areas only. However, in two districts of eastern Assam, Lakhimpur and Dhemaji, the Hog Deer is still found in scattered pockets outside the protected areas due to relatively low pressure of human population (Choudhury 1997). I report their relative status in 1989-1991 (I was posted at Dhakuakhana as SDO-civil), 1994-95 (I was posted at Lakhimpur as Project Director of rural development) and 2002 (short field trip) in these two districts.

In 1989-91, in Lakhimpur district (Fig. 1), the species was present in the Pabho Reserve Forest (RF), Borchapori, Kadam RF, chapories of the Subansiri river near Chowldhowaghat and many localities in Dhakuakhana subdivision (Choudhury 1991) (Matmota, Tekeliphuta, Lutachur, Basudeo, Andharu, Bordoibam-Bilmukh and Gohain chapori, Sampora near Ghilamora, Borkolia and stray animals elsewhere). Stray animals were also observed in Dulung, Kakoi and Ranga RFs, especially along the rivers. However, in all these pockets the number of the Deer was low, never exceeding 40-50. In Dhemaji district, however, large populations existed in Kobo chapori (> 200), Bordoloni (>100), Poba RF, Jamjing RF (>50), Sengajan RF, Jiadhah RF, Subansiri RF, chapories near Sonarighat, Semen chapori, other chapories on the Brahmaputra river, and stray animals elsewhere. The total estimated population in Lakhimpur and Dhemaji was 250-300 and 550-650 respectively.

In 1994-95, in both Lakhimpur and Dhemaji districts,

the species was present in all the sites of 1989-91, but in slightly lesser numbers.

In 2002, significant changes were noticed in Lakhimpur district, the species was virtually absent from Pabho RF, with stray animals reported. In Borchapori and Kadam RF, the changed course of the Subansiri river had eroded the habitat to almost half. It was a case of 'river capture' where the small Ghagar river about 50 m wide was captured by the big Subansiri river about 500 m wide. The chapories of the Subansiri river near Chowldhowaghat and many localities in Dhakuakhana subdivision (Matmota, Tekeliphuta, Lutachur, Basudeo, Andharu, Borkolia and stray animals elsewhere), however, continued to hold small numbers of the Deer. The number in

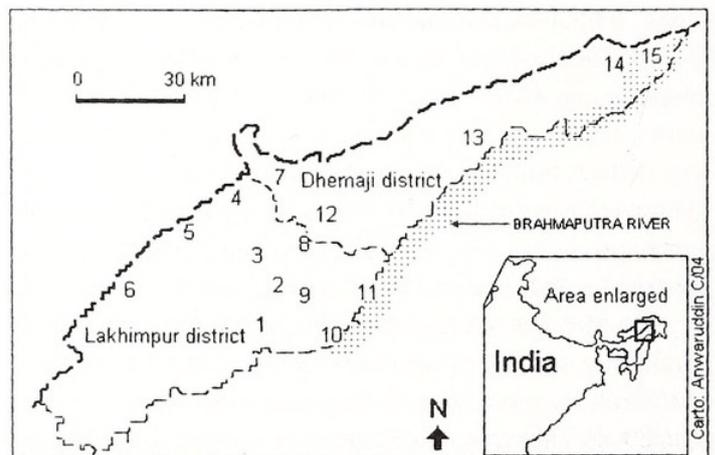


Fig. 1: Map showing some of the places mentioned in the text.

1. Pabho RF; 2. Borchapori; 3. Kadam RF; 4. Dulung RF;
5. Kakoi RF; 6. Ranga RF; 7. Subansiri RF;
8. Bordoibam-Bilmukh and Gohain chapori; 9. Basudeo;
10. Tekeliphuta; 11. Matmota; 12. Bordoloni;
13. Jamjing and Sengajan RFs; 14. Poba RF; 15. Kobo chapori



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