

OCCURRENCE OF FOSSIL *MIOTRAGOCERUS* CF. *PUNJABICUS* (PILGRIM)  
MAMMALIA : ARTIODACTYLA : BOVIDAE FROM THE PLEISTOCENE  
DEPOSITS OF SUSUNIA, BANKURA, WEST BENGAL, INDIA.

By

S. BANERJEE, K. D. SAHA & S. K. ROY.

*Zoological Survey of India, Calcutta.*

ABSTRACT

The fossil fragment of the left mandible with one premolar and three molar teeth collected from Aduri, Susunia, Bankura, West Bengal is described in the paper as *Miotragocerus* cf. *punjabicus* (Pilgrim). This is a new record of *Miotragocerus* from the Pleistocene deposits Susunia, India.

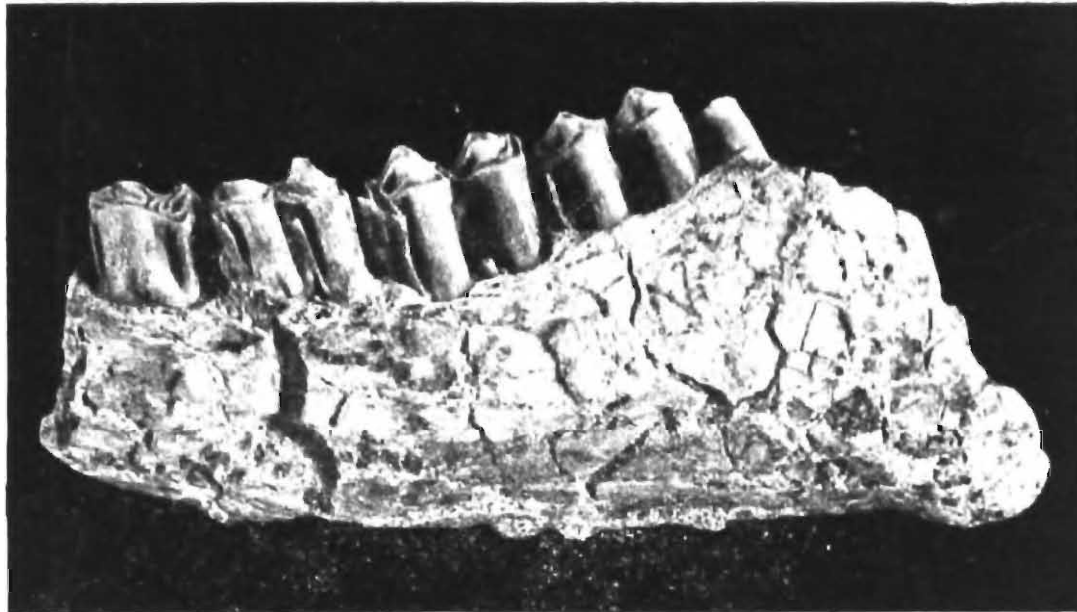
INTRODUCTION

Amongst the fossil remains from Susunia hill, Bankura, West Bengal deposited in the Zoological Survey of India by the Archaeological Department, Govt. of West Bengal, we came across a partially broken mandible with molars and premolar. On examining the material it appeared to be mandible of *Miotragocerus* cf. *punjabicus* (Pilgrim). As far as we could ascertain from literatures (Pilgrim, 1910, 1937 and 1939) and (Thomas, 1979), the species cf *Miotragocerus* are reported in India from Dhok Pathan and Nagri formation of Siwalik hills. Our discovery of mandibular remains of *Miotragocerus* from pleistocene, therefore, constitutes the new record from Indian pleistocene deposits of Susunia.

The material under report was collected by the State Archaeological Department, Govt, of West Bengal during the field session 1969 from a dry bank of Gandheswari river bed at Aduri, Susunia, Bankura, West Bengal, when Geological Survey of India in collaboration with the State Archaeology Department undertook a programme of exploration and excavation of Palaeozoological sites in West Bengal.

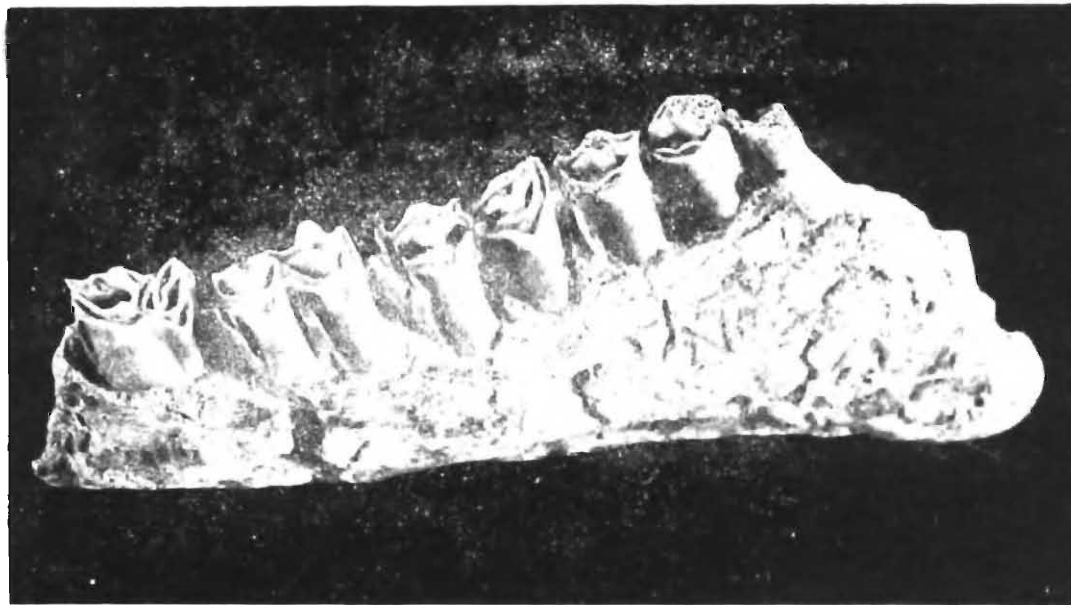
*Systematic Account*

Phylum : CHORDATA  
Class : MAMMALIA  
Order : ARTIODACTYLA  
Family : BOVIDAE  
Subfamily : BOVINAE  
Genus : MIOTRAGOCERUS  
*Miotragocerus* cf. *punjabicus* (Pilgrim)



A

5CM



B

Figs. A-B. A. Lateral view of the left mandible of *Miotragocerus cf. punjabicus* (pilgrim) from Susunia hill, Bankura, West Bengal showing the 3rd, 2nd, 1st, molars and 4th premolar teeth.

B. Vertical view of the left mandible of *Miotragocerus cf. punjabicus* (pilgrim) from Susunia hill, Bankura, West Bengal showing the cusps of the 3rd, 2nd, 1st molar and 4th premolar teeth.

## MATERIAL

(Plate IV)

Fragment of left ramus of mandible with 1st., 2nd., 3rd. molars and 4th. premolar teeth: Z.S.I. Reg. No. VP 16, Aduri, Susunia, Bankura, West Bengal, 29th. Sept. 1969.

## DESCRIPTION

The mandibular ramus includes part of angular and dentary. Three molars and premolars are implanted in the alveoli of the mandible. Teeth are hypsodont. In 4th premolar the inner valley is open and large posteriorly directed flange is present on the metaconid. 1st and 2nd molar teeth are composed of two half cylinders forming the crescentic ridges on the grinding surface and the 3rd molar has an additional half cylinder. The medial interstyler ribs are present in the molars, very large goat-folds, (transverse folds) are also found on the mesial ends of the molars. The crescentic ridges are formed by vertical descending folds. The basal pillars is strongly present in the 1st molar, feeble in the 2nd molar and completely absent in the 3rd molar. Crescentic islands are much compressed, unlike teeth of *Bos* and *Bubalus*, there is complete absence of cement. The mandible was compared with the mandible of recent *Boselephas tragocamelus* Pallas and fossil *Miotragocerus punjabicus*, it is found to be more akin to *Miotragocerus punjabicus* (Pilgrim) present in the Geological gallery of the Indian Museum, Calcutta.

The mandible is partially fossilised and the organic material has been replaced partially by inorganic substances with the impregnation of quartzite material and silica.

## DISCUSSION

The measurements in the table show that 3rd molar tally lineary with the authenticated identified teeth of *Miotragocerus punjabicus* (G. S. I. No. B 563), the 2nd and 1st molars are also identical with the same. The 4th premolar is also indential in measurement with the G. S. I. specimen of *Miotragocerus punjabicus* (G. S. I. No. B 564). The width of the mandibular ramus under 3rd molar is 1 mm. larger than the G. S. I. specimen (G. S. I. No. B 564), which is insignificant.

The Susunia material agrees with *Motrragocerus punjabicus* in measurements and morphological characters. The 4th premolar of *Miotragocerus punjabicus* (G.S.I. B 563, 564) has an open inner valley and a large posteriorly directed flange in the metaconid. The medial interstyler ribs, the large "Goat folds" or transverse folds on the molar are present in the *Miotragocerus punjabicus* of the G.S.I. specimens are also present in the Susunia specimen. Considering all the above characters and the measurements, it confirms that the mandible having 1st, 2nd, 3rd molars and 4th premolar from Sununia is the fossil ramus of *Miotragocerus cf. punjabicus* (Pilgrim).

The known fossil remains of *Miotragocerus* in India has been recorded by Pilgrim, *Tragocerus punjabicus* (Pilgrim, 1910), *Tragocerus browni* (Pilgrim, 1937) and their locality and geological distribution is from Dhok Pathan and Nagri formation (Thomas, 1979) Siwalik hills.

The present material was collected from the dry bank of a stream Gandheswari at Aduri. The area as a whole belongs to pleistocene deposits from where a number

TABLE

Measurements of mandibles of Indian species of *Miotragocerus*, *Tragoprotax*, *Boselaphns tragocamelus* and fossil specimen from Susunia hill, Bankura, West Bengal along with the molars & premolar (in mm.)

M=Molar	Specimen from Susunia.	<i>B. tragocamelus</i> Pallas	<i>T. cf. islami</i> G.S.I No. 577 B. 820	<i>Miotragocerus punjabicus</i> G.S.I. No. B 563	<i>Miotragocerus punjabicus</i> G.S.I.No. B 564	<i>Miotragocerus cf. browmi</i> ANM-29884.	<i>Tragoprotax</i> sp G .S.I. No. B558
M <sub>3</sub>	Length	30.5	33.5	21.5 25.0	30.0	26.0	25.0
	Width	10.7	13.3	12.0 12.0	13.5	13.5	11.0
M <sub>2</sub>	Length	21.8	24.0	18.5 20.0	21.0	20.5	18.5
	Width	12.2	13.5	12.5 14.0	13.0	14.0	11.5
M <sub>1</sub>	Length	18.5	18.5	17.0 17.0	19.0	17.5	16.5
	Width	12.6	12.6	11.5 11.0	12.5	12.0	11.0
P <sub>4</sub>	Length	16.0	16.8	15.0 16.0	—	17.5	14.0
	Width	10.0	10.0	9.5 9.5	—	10.0	8.0
Width of ramus under M <sub>3</sub>		21.7	48.5	17.5 19.5	18.0	20.5	17.0

N. B. The measurements of *Miotragocerus punjabicus* (= *Tragocerus punjabicus*) Pilgrim.

of fossil vertebrates are known, *Bos namadicus* Falc. (Banerjee and Saha, 1976), *Giraffa* cf. *camelopardalis* Brisson (Banerjee and Ghosh, 1977) and *Panthera pardus* Linn. (Saha, Banerjee and Talukdar, 1984). In this context Sastry (1966) and Sastry et al. (1976) have ascertained that the beds yielded these fossils seems to have been deposited during the pleistocene period.

Till date *Miotragocerus punjabicus* have been reported from Siwalik hills only. The specimen described above is akin to *Miotragocerus punjabicus* from Siwalik hills and it is reported here as a new record of fossil species from Susunia, as well as from the Eastern sector of India.

#### ACKNOWLEDGEMENTS

Authors are thankful to Dr. B. K. Tikader, former Director, Z.S.I. for giving facilities for the work. Dr. P.C. Dasgupta, Ex-Director, Deptt. of Archaeology, Govt. of West Bengal for providing the material. Thanks are also due to Shri Manoj Sengupta, Artist for the preparation of the plate and Photography Section of Z.S.I. for the photographs.

#### REFERENCES

- BANERJEE, S. and SAHA, U. 1976. On the occurrence of *Bos namadicus* Falconer, from the prehistoric site of Susunia, District Bankura, West Bengal. *Curr. Sci.*, Bangalore, **45** (5) : 186-187.
- BANERJEE, S. and GHOSH, M. 1977. ON THE OCCURRENCE of Giraffe, *Giraffa* cf. *camelopardalis* Brisson from the Prehistoric site of Susunia, Bankura District, West Bengal. *Sci. & Cult.*, Calcutta, **43** (8) : 368-370.
- GENTRY, A. W. 1971. The earliest goats and other antelopes from the Samos *Hipparion* fauna, *Bull. Brit. Mus. (Nat. Hist.)* **20** : 231-296.
- KRETZOI, M. 1968. New generic names for homonyms. *Vert. hung.*, **10** : 163-165.
- PILGRIM, G. E. 1910. Notice of new Mammalian genera and species from the Tertiaries of India. *Rec. Geol. Surv. India*, Calcutta.
- PILGRIM, G. E. 1937. Siwalik Antilops and oxen in the American Museum of Natural history. *Bull. Am. Mus. nat. Hist.* New York, **73** : 729-874.
- PILGRIM, G. E. 1939. Fossil Bovidae of India. *Palaeont. indica.*, Calcutta, NS **26** (1) : 240.
- SAHA, K. D. BANERJEE, S. and TALUKDER, B. 1984. Occurrence of fossil *Panthera pardus* Linn. from the Pleistocene deposits of Susunia, Bankura, West Bengal. *Bull. zool. Surv. India*, Calcutta, **6** (1 & 3) : 257-259.
- SASTRY, M. V. A. 1966. Pleistocene vertebrates from Susunia, Bankura District, West Bengal, *Ind. Min.* **20** (2) : 195-197.
- SASTRY, M. V. A., DASSHARMA, D. C. and BISWAS, S. 1976. Quaternary Geology of Bankura District, West Bengal. *Rec. Geol. Surv. India*, Calcutta, **107** (2) : 176-185.
- THOMAS, H. 1979. *Miotragocerus cyrenaicus* sp. nov. (Bovidae, Artiodactyla, Mammalia) du Miocene superieur de Sahabi (Libye) et ses rapports avec les autres *Miotragocerus geobios*, **12** : 267-281.