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## LATE PLEISTOCENE SAIGA ANTELOPE *SAIGA TATARICA* ON MENDIP

by

A. P. CURRANT

### ABSTRACT

Late Pleistocene remains of saiga antelope *Saiga tatarica* (Linnaeus, 1766) have now been identified from four Mendip bone caves: Gough's Cave, Soldier's Hole, Sun Hole and Wolf Den. Only one other record of this species is known in Britain outside the Mendip area. The very specific environmental preferences of living saigas permit inferences to be made about prevailing conditions during their incursion(s) to SW England.

### INTRODUCTION

The saiga antelope is an exotic and unfamiliar element of the British Pleistocene mammal fauna. Until the early 1980s there was only one confirmed record from the British Isles, a well-preserved frontlet with both horn cores from the Thames gravels at Orleans Road, Twickenham, London (B.M.(N.H.) Palaeont. Dept. M 4448) described and figured by Smith Woodward (1890) and again by Reynolds (1939).

### THE MATERIAL

Colcutt, Currant & Hawkes (1981) reported and figured a single saiga tooth from new excavations in Sun Hole, Cheddar Gorge, ST 46735408, and the author recently reported the existence of two further specimens, a left third upper molar B.M.(N.H.) Pal. Dept. M 50022 (FIG. 1) and a right calcaneum B.M.(N.H.) Pal. Dept. M 49886, in collections from R. F. Parry's 1927-1931 excavations in the entrance to nearby Gough's Cave, ST 46705391 (Currant, 1986). Given a sudden flush of saigas in the Cheddar area it seemed appropriate to extend the search to other Mendip sites.

Two sites have yielded additional material. Close to the previous Cheddar finds, two specimens have been found in collections representing the 1927-1939 excavations in Soldier's Hole, ST 46875400, a first phalange in Cheddar Caves Museum and a small fragment of proximal left metacarpal in Manchester Museum (LL 7623) marked 'layer 8'. A well-worn left first upper premolar, previously identified as that of a goat, from the 1944-5 Sidcot School excavations in Wolf Den, Wavering Down, ST 39555634 was noticed in one of the display cases at Wells Museum (FIG. 2). This tooth is currently the most westerly record of the saiga in Eurasia.

While the individual specimens reported here tell us little about the anatomy of Lateglacial saigas, they serve to highlight a danger which became all too apparent when collections were being searched in connection with this work. Saiga bones, particularly fragmentary ones, look very like those of sheep, goat or roe deer. Many of the Mendip bone caves contain quantities of recent animal remains in addition to their more famous fossil material. In the past, the most notably in the case of material from Gough's Cave, large quantities of 'recent' and 'fragmentary' material have been disposed of as being of no interest. It is likely that more than a few specimens of *Saiga tatarica* have been lost in this way.

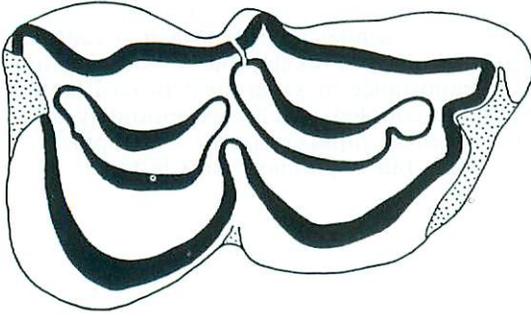


FIG. 1—THE OCCLUSAL SURFACE OF A LEFT THIRD UPPER MOLAR OF *SAIGA TATARICA* FROM LATEGLACIAL DEPOSITS IN THE ENTRANCE OF GOUGH'S CAVE, CHEDDAR. B.M.(N.H.) PALAEOLOGY DEPT., M50022. THE SCALE LINE IS 1 CM LONG

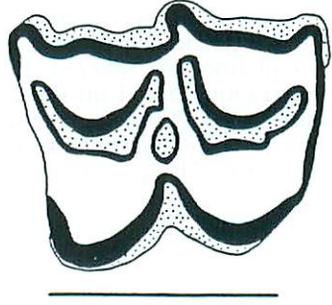


FIG. 2—THE OCCLUSAL SURFACE OF A LEFT FIRST UPPER MOLAR OF *SAIGA TATARICA* FROM DEPOSITS IN WOLF DEN, WAVERING DOWN. THIS IS CURRENTLY THE MOST WESTERLY RECORD OF SAIGA IN EURASIA. WELLS MUSEUM COLLECTION. THE SCALE LINE IS 1 CM LONG

### THE LIVING SAIGA

The saiga antelope is not an antelope in the true sense. Both *Saiga tatarica* and its closest living relative the chiru *Pantholops hodgsoni*, now restricted to the high mountains of the Tibetan Plateau, have been variously assigned within the great family of bovids, most authors placing them with the Caprinae (goats) following Simpson (1945). Bannikov (1961) in his monograph on the living saigas argued for separation, giving them subfamily status as the Saiginae, intermediate between the Caprinae and the Antilopinae, on the basis of a number of specialized morphological characters. Whatever their status, saigas are remarkable bovids with anatomical adaptations suggesting a prolonged independent history.

Resembling a short-haired sheep in its general body form, the saiga is of rather lighter build and has longer, more gracile legs, standing about 70 cm at the withers (FIG. 3). All the most noticeable features of the saiga are concentrated in the head. The eyes are large and protruding, and the muzzle is developed into a large sac-like structure terminating in two small downward pointing nostrils. The adaptive significance of the muzzle has provoked debate amongst Soviet workers, but Bannikov (1961), ever the pragmatist, points out the great advantage in having an enlarged mucous-lined filter on your breathing apparatus if you are a short animal which habitually runs in herds of several thousands across some of the dustiest landscapes in the world. Males bear two vertical, slightly twisted horns up to 38 cm long which have prominent annular ridging developed along much of their length. The articulations of the legs are specialized for forward movement; saigas find it relatively difficult to turn sharp angles when moving at speed, proceeding with their unusual rolling gait (both left legs—both right legs) in more or less straight lines for many miles.

Today, the saiga antelope is abundant throughout the drier steppe regions of the southern central part of the Soviet Union. They are plains animals, avoiding broken or uneven ground wherever possible other than for shelter

during the severest weather. They have a great capacity for surviving exigency at the species level. During the 1920s, continual overhunting had reduced populations so severely that extinction seemed likely, but a conservation programme based on the economic importance of saiga meat proved highly successful. The great fecundity of saigas, coupled with the exceptionally early onset of female sexual maturity, ensured rapid recovery of population numbers. The populations remain wild, but a planned crop is taken each year.

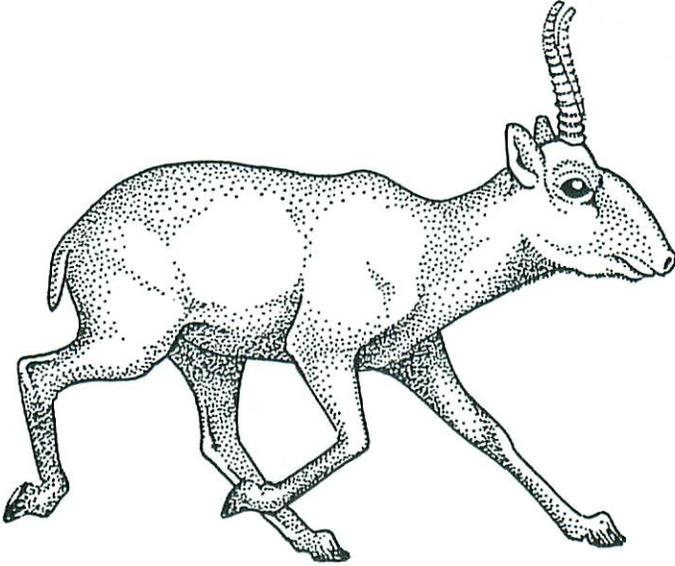


FIG. 3—THE SAIGA ANTELOPE *SAIGA TATARICA*

Dietary preferences vary with seasonal availability, but a wide range of Gramineae (grasses), *Kochia* (summer cypress), *Salsola* (Russian thistle or saltwort), *Ephedra*, *Artemisia* (wormwoods), and various ephemerals and forbs are notably important elements of the saiga's food.

Saigas mate in winter. Individual males gather harems of up to 40 females, though 10 to 15 is usual, often fighting to death or total exhaustion in so doing. Exhausted individuals often fall prey to wolves, the main predator of the saiga other than man. The lot of the male saiga is not a happy one: while the sex ratio at birth is 1:1, they have a relatively high rate of infant mortality, and because of their strong odour they are easily tracked by wolves, so by the time they are adult the ratio approaches 1:4.

After the mating period, which usually coincides with the first major snowfalls of the winter, the harems disperse and the animals begin to move in search of snow-free areas, their direction of movement often dictated by prevailing wind direction. Small groups running in the same direction often build up into massive herds of many tens of thousands. The young are born in spring, at which time there is a tendency towards segregation of the sexes into distinct groups. Throughout the rest of the year, the animals form mixed sex groups, sometimes amalgamating into large herds when larger scale population movements are triggered. There is no consistent pattern of migrations, movements being dictated almost totally by availability of food

in the summer, which is often limited by drought, and by snow cover and strong winds in the winter.

Historical accounts and archaeological finds indicated considerable natural variations in the saiga's range. Modern studies, principally by A. G. Bannikov and his research team, have shown that this range modification is often on a season to season basis. It would appear that the saiga has unusually well developed behavioural flexibility to exploit short term benefits and negate the worst effects of short term hardships brought about by local or regional changes in climate and vegetation (Bannikov, 1961).

### THE EUROPEAN FOSSIL RECORD

There are many Late Pleistocene records of *Saiga tatarica* in the central and northern latitudes of Europe (FIG. 4), with notable concentrations in southern Poland, Czechoslovakia, Germany and Austria (Kahlke, 1975). Of direct significance here, there are also records from the north-west European seaboard in Denmark (Degerbøl, 1932), Belgium (e.g. Hasse, 1930) and France (e.g. Lartet & Christy, 1875; Gaudry, 1880). At times of lowered sea level, such as during the Devensian cold stage (Last Glaciation), Britain was a peninsula of the Eurasian/American landmass, there being no major physical barrier to the spread of saiga into the British region other than those dictated by prevailing environmental conditions.

All observers of the saiga in the wild agree that this animal really does prefer the steppe environment with its dry vegetation to the open woodland/scrubland environments available immediately north of its normal range, although it will extend into this vegetation zone during periods of exceptionally severe summer drought. Large scale movements of saiga into the Central European area during the Last Glaciation must represent a genuine expansion of the true steppe environment into that area. Finds of significant concentrations of saiga in the Dordogne, France, as reported by Delpech (1975) show that this steppe belt must have extended almost to the Atlantic coast during prolonged periods. Such a situation would require a strong continental climatic influence with a predominantly easterly airflow. The tendency of saigas to follow prevailing winds during times of storm could explain isolated western records.

The timing of the incursions of *Saiga tatarica* into the northern and western parts of Europe is of great interest. Well-dated finds are scarce at present. The French record suggests two phases of Lateglacial saiga occupation, the first dated at around 14,500 to 14,000 years before present and a later phase at around 12,500 years b.p. (Delpech, 1975). In the German Democratic Republic, Feustel (1980) has recorded a Lateglacial vertebrate assemblage including saiga dated at between 12,550 and 12,350 years b.p. from Teufelsbrücke (Devil's Bridge) near Saalfeld, apparently supporting the later two episodes noted in France.

The Mendip records cannot be taken collectively as they could well represent more than one incursion of saiga into the British region. We have the fine series of dates recently obtained for the Lateglacial human occupation of Gough's Cave bracketing the period 12,500 to 12,000 years b.p., including a direct accelerator date of  $12,380 \pm 160$  yrs (OxA 463) on a saiga calcaneum. This again supports the later part of Delpech's model. Dates are now being sought for other British saiga material, in the first instance on one of the specimens from Soldier's Hole. Currently, we have little reliable information on the composition of the British vertebrate fauna in the period corresponding to Delpech's earlier phase.

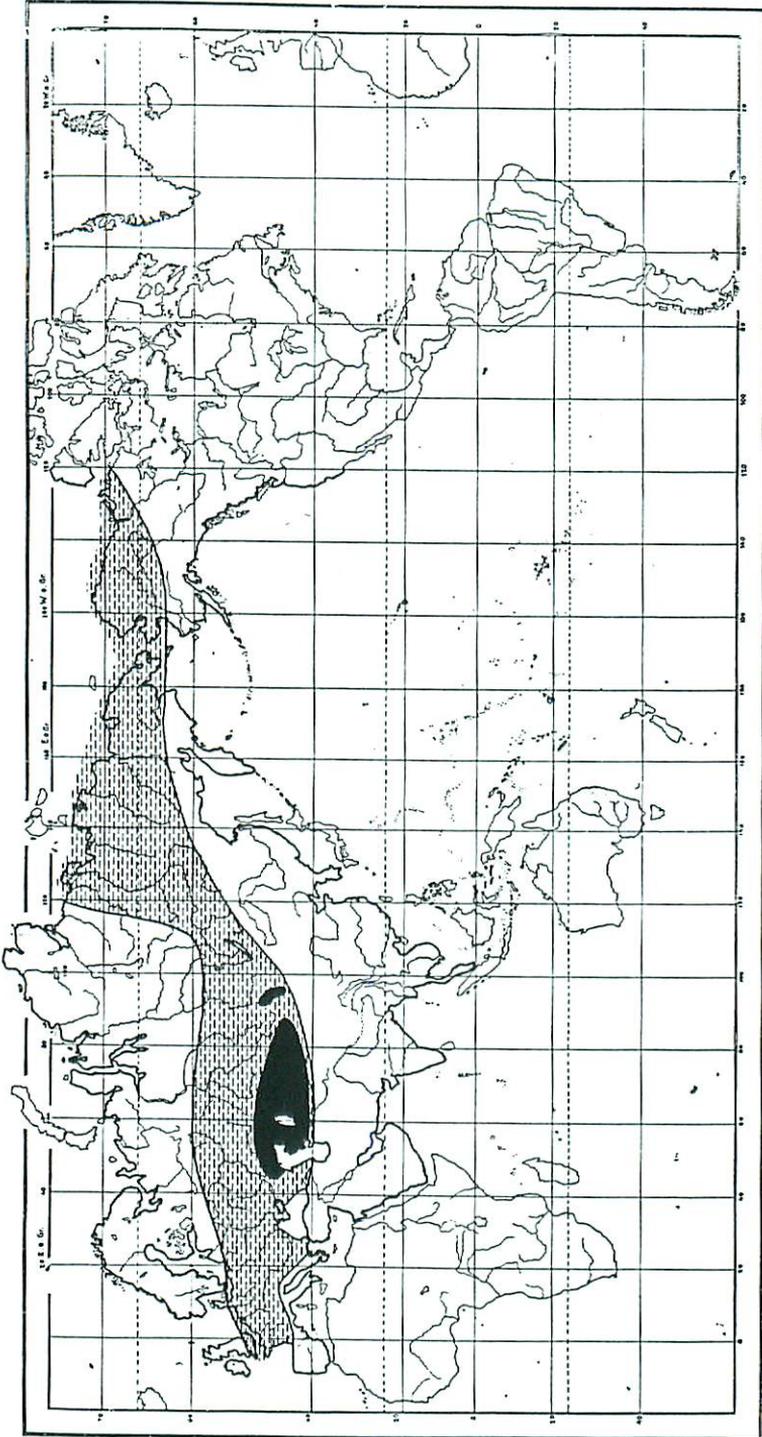


FIG. 4—THE MAXIMUM DISTRIBUTION OF SAIGA TATARICA DURING THE LATE PLEISTOCENE (THE INDIVIDUAL RECORDS ON WHICH THIS MAP IS BASED MAY NOT BE SYNCHRONOUS). THE PRESENT DISTRIBUTION OF THIS SPECIES IS SHOWN IN BLACK

The specific steppe preferences and adaptations of *Saiga tatarica* have already been noted. Steppe indicators (others being *Cricetulus*, the smaller hamsters, and *Lagurus* the steppe lemmings) are very rare throughout the British Pleistocene record, and it appears likely that true steppe environments were of uncommon occurrence here. The 12,500 to 12,000 b.p. episode includes what has often been called the 'Older Dryas', one of the less well defined climatic phases of the later part of the Devensian, now usually subsumed as a minor event within the Lateglacial Interstadial. It is often expressed as a cold, very dry interval, too short to be adequately resolved by existing dating techniques (Lowe & Gray, 1980). It is possible, though by no means demonstrable, that the later incursion of saiga may have been related to this brief episode.

### CONCLUSION

It is hoped that the existence of *Saiga tatarica* will be taken to heart by those examining existing collections of vertebrate material from British Pleistocene sites and those undertaking excavations in the future. Comparative material is not common—use has been made here of a small series of skeletons in the Osteological Collections of the Department of Zoology, British Museum (Natural History). The importance of direct dates on remains of saiga hinges on its precise environmental preferences and its potential use as a biostratigraphic marker given the known rarity of evidence for true steppe environments in the British Pleistocene record.

### ACKNOWLEDGEMENTS

I thank the curators of Wells and Manchester Museums, and the management of Cheddar Caves for permission to borrow specimens in their care; Dr Roger Jacobi, and latterly Ruth Charles, for their assistance in procuring material; and Mandy Holloway for her drawing of a saiga.

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ANDREW P. CURRANT, Department of Palaeontology, British Museum (Natural History), Cromwell Road, London SW7 5BD, U.K.