

LATE PLEISTOCENE RECORDS OF CARIBOU AND ELK FROM GEORGIA AND ALABAMA

Robert A. Martin and Joel M. Sneed
Department of Biology, Berry College, Mt. Berry, GA 30149 and
4300 Manner St., Smyrna, GA 30050

ABSTRACT

Late Pleistocene caribou and elk are reported from three cave faunas in Alabama and Georgia. The material from Bartow County, Georgia represents the most southern records of these species in the United States.

INTRODUCTION

Considerable attention has been given to the zoogeography of late Pleistocene mammals, as the distribution of extant species outside of their current ranges can theoretically provide important information regarding past climatic and vegetational conditions (1-23). In this paper we report the occurrence of caribou (*Rangifer tarandus*) and elk (*Cervus elephas*) from two sites in northern Georgia and one in northern Alabama. The remains from Bartow County represent the southern-most Pleistocene records of caribou and elk in the United States.

Abbreviations are as follows: BC = Berry College, L = left, R = right, P = premolar, M = molar, Superscript numbers = upper, subscript = lower dentitions.

SYSTEMATIC PALEONTOLOGY

Order Artiodactyla

Family Cervidae

Rangifer tarandus - caribou

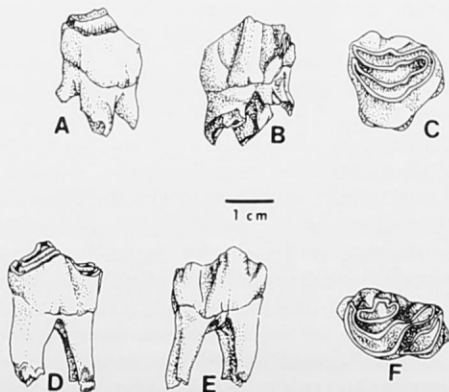


Figure 1- Teeth of the caribou, *Rangifer tarandus*, from Yarbrough Cave. Anterolingual (A), labial (B) and occlusal (C) views of BC 283, RP⁴ and lingual (D), labial (E) and occlusal views of BC 279, LP₄.

Locality: Yarbrough Cave, Bartow County, Georgia. $34^{\circ} 23'12''$ N, $84^{\circ} 54'34''$ W; elevation 277 m.

Material: Yarbrough Cave; (Measurements in mm are provided for each specimen. Greatest anteroposterior length is followed by greatest width) BC 279 LP₄ (18.7 × 12.7), BC 280 L ?P⁴ (16.6 × 15.2), BC 281 L M¹ (20.8 × 17.6), BC 282 LP₃ (15.0 × 11.2), BC 283 R ?P⁴ (16.2 × 16.6), BC 284 L ?P³ (16.4 × 15.5), BC 285 RP⁴ (16.5 × 16.5). The three teeth with question marks are unworn and probably unerupted.

Comments: Excavations at Yarbrough Cave continue as of this writing. Caribou remains have been recovered from a stratum associated with two radiocarbon dates: $14,315 \pm 755$ and $18,610 \pm 960$ years B.P. Extinct mammals associated with caribou include *Mylohyus* cf. *M. nasutus*, *Platygonus* cf. *P. compressus*, *Megalonyx* sp. and *Dasypus bellus*.

Caribou remains are known from early Pleistocene through Recent time (24) and, previous to this report, were recorded only as far south as Tennessee, where they were recovered from three caves (25). *Rangifer tarandus* is now a characteristic animal of taiga and tundra environments, and its presence in southern states is a climatic signal of considerable significance.

Cervus elephas - elk

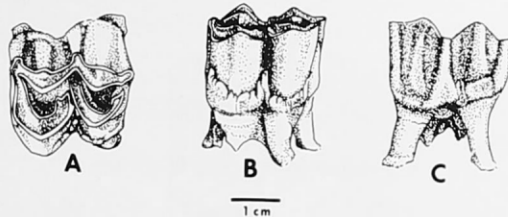


Figure 2- Left first upper molar of an elk, *Cervus elephas*, from AJ Cave. Occlusal (A), lingual (B) and labial (C) views of BC 286.

Locality: 1) Kingston Saltpeter Cave, Bartow County, Georgia. $34^{\circ} 12'18''$ N, $84^{\circ} 54'55''$ W; elevation 240 m.

2) AJ Cave, DeKalb County, Alabama. $34^{\circ} 38'50''$ N, $85^{\circ} 33'50''$ W; elevation 308 m.

Material: 1) Kingston Saltpeter Cave; left radius and partial antler.

2) AJ Cave: BC 286, LM¹ (26.8 × 28.3).

Comments: The elk material from Kingston Saltpeter Cave was discovered by local high school student J. Hogue in 1965. The bones were brought to P. Greear at Shorter College, who later sent them to C. Ray at the National Museum of Natural History, where they were identified as elk (26; P. Greear, pers. comm.). The fossils were returned to Dr. Greear in 1965, but the radius has since been

lost. The antler is in Dr. Greear's personal collection in Rome, Georgia, where we examined it on 24 August, 1988. The Kingston Saltpeter Cave fauna has been radiocarbon dated at $10,300 \pm 130$ years B.P.

The single elk M¹ from AJ Cave is the only vertebrate specimen recovered from that cave. One of us (JS) has been to the cave site, but the entrance hole may require some modification to allow entry for anyone of moderate stature.

Although there are no documented modern records of *Cervus* from Georgia, according to Hall (27) the distribution of elk probably included most of central and eastern North America during historical times, including the northern part of Georgia. The elk is an animal of both boreal and temperate forests and open grasslands. Its presence is consistent with other northern elements of the Kingston Saltpeter Cave fauna (L. Fay, pers. comm.).

DISCUSSION

One of the more curious characteristics of late Pleistocene mammalian faunas from the midwestern and southeastern United States is the association of species typically considered to be temperate or boreal in nature with those from more southern regimes. Some examples are: *Sorex arcticus* and *Cryptotis parva* from Peccary Cave, Arkansas (18), *Cervus elephas*, *Rangifer tarandus*, *Felis onca* and *Dasybus bellus* from Baker Bluff Cave, Tennessee (28), *Dasybus bellus* and *Sorex arcticus* from Crankshaft Pit, Missouri (29), *Martes pennanti* and *Conepatus leuconotus* from the Ladd Quarry, Georgia (30-31), *Microtus pennsylvanicus* and *Neofiber alleni* from Devil's Den, Florida (32), and *Sorex arcticus*, *Phenacomys intermedius*, *Sigmodon hispidus* and *Dasybus bellus* from Cheek-bend Cave, Tennessee (33). These associations have been labeled "disharmonious" (20,34,35) because they are seemingly incompatible and nowhere to be found today. As Graham (22) noted, choice of the word "disharmonious" was unfortunate, and we agree with him that it should be dropped in this context.

Graham (22) later substituted the term "intermingled", but this adjective also probably is not warranted. We know from studies of modern mammals that species ranges are labile, and many forces modify distributions at range peripheries. The fossil record may simply provide another scale of analysis for phenomena that are active today. That is, today's mammalian faunas may be "intermingled" when compared to those 5-10,000 years in the future. It may also be that the concept of "disharmony" was constructed in the first place on the basis of minimal information. Consider the possibility that large size in late Pleistocene animals with southern affinities was an adaptation to colder climates. Perhaps late Pleistocene *Dasybus bellus* and *Felis onca* from the southeastern United States, both considerably larger than their living relatives (36-37) were highly adapted to cold winters. It may also be that the currently restricted distribution of caribou has as much to do with the activities of humans as with climate. If PaleoIndians were responsible, as Martin (38) claims, for the demise of most of the late Pleistocene mammalian megafauna, then the herding behavior of caribou would certainly have made them prime candidates for local extinction throughout much of their range. Further, the physiological tolerance of caribou at the southern end of its range during the late Pleistocene may have allowed the

species to survive during temperate winters and summers. Although the late Pleistocene climate may have been, as first proposed by Hibbard (2) more equable, with cooler summers and warmer winter, factors other than climate may have played important roles in determining the limits of species distributions.

We need more late Pleistocene mammalian faunas from southern states in order to be able to understand these associations. Particularly useful will be faunas from Alabama and Georgia, as northern counties of these states exist now at the boundary between the temperate-boreal fauna that extends down the Appalachian chain and the austroriparian fauna converging from the south (26,39; Lippes *et al.*, 1988).

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