

Perhaps people were the main predators of cave and American lions (or vice versa!). Many lion remains have been preserved in sediments of late Paleolithic Eurasian camp sites. And bones of American lions among refuse in an archaeological site at Jaguar Cave, Idaho, suggest that Paleo-Indians may have hunted or eaten them about 10,300 years ago. Further, regarding evidence from European Paleolithic sites, three items are worth considering. A 32,000 year-old carving of a man from Hohlenstein Cave, Germany with an ivory lion mask that fits perfectly over the human head, suggests a ritualistic attempt to capture the animal's power. A small cave lion head from Dolni Vestonice, Czechoslovakia, shows two stab holes (implying ritual killing?) made in the wet clay of the model before it was fired. Another hint that cave lions were hunted by people is apparent in a group of three lions engraved on the wall of Lascaux Cave, France. Two have arrows or spears marked on their flanks; two have crosses (as if checked off or "killed"); and one is spraying "blood" from its mouth (another sign of motion pictures?).

Obviously, American lions had their problems for two specimens from the Yukon show severe damage (large swellings of bone indicate healing after impact) to the front of the lower jaws. It is not difficult to imagine them being kicked when attacking horses or other large hoofed prey. An individual from Natural Trap Cave in Wyoming showed extensive osteoarthritic swellings in the knee region.

American and cave lions became extinct about 10,000 years ago, perhaps mainly because of the earlier extinction of some of their large herbivorous prey, and their rather specialized hunting and feeding habits.

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March, 1996

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The Beringian Research Notes series presents vignettes of life in the Yukon during the last Ice Age.

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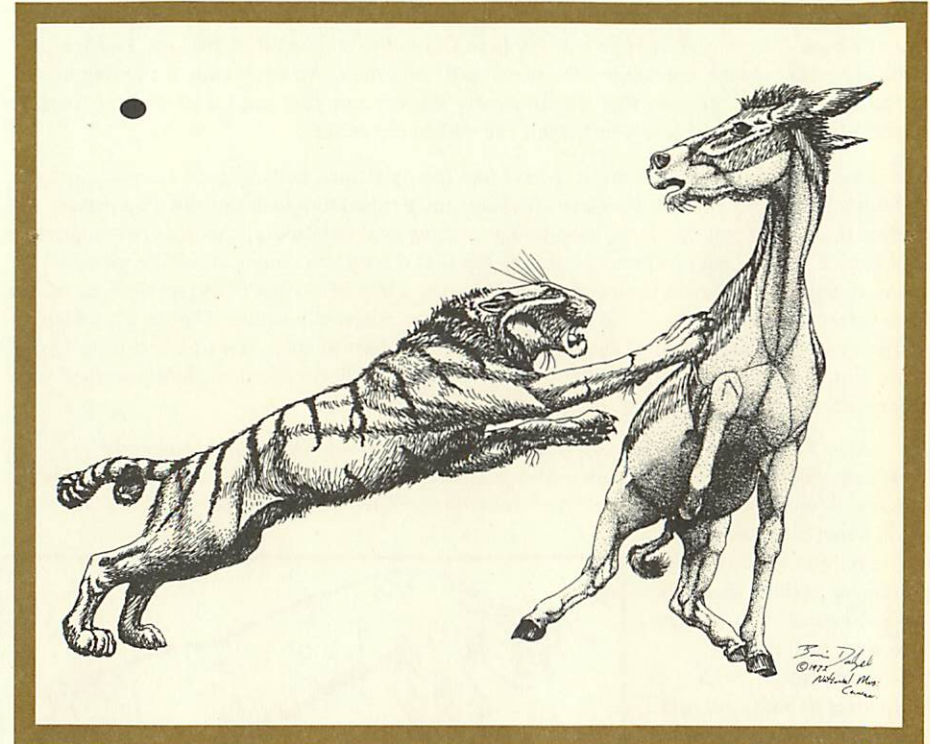
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Beringian Research Notes

1996

No. 5



Ink sketch by Bonnie Dalzell

American Lion

American lions (*Panthera leo atrox*) were among the largest flesh-eating land animals that lived during the ice age (Quaternary the last two million years) in America. They ranged from Alaska and Yukon as far south as Peru. Because so many well-preserved specimens (over 80 individuals) have been found in tar pits at Rancho La Brea (Los Angeles, California), we have an excellent idea of their body structure. And unique, vivid glimpses of their past, about 40,000 to 10,000 years ago, have been recorded in European caves by our Paleolithic ancestors. Intriguing details in these artistic works suggest that the lions of Eurasia and America differed in some features from the living African lion.

American lions were characterized by their enormous size and relatively long, slender limbs. Males were nearly 25 percent larger than male African lions. According to calculation of body weight based on femoral (thigh bone) size, male American lions would have averaged about 235 kg, females about 175 kg. They were larger than their heavily-built "cousins" the sabretooth cats (*Smilodon*), yet smaller than the rangy short-faced bear (*Arctodus simus*) fellow large carnivores of the period. But in features of the teeth and skeleton, American lions strongly resembled modern ones.

A surprisingly rich array of paintings, engravings and sculptures of the closely related cave lion (*Panthera leo spelaea*) have been found in Eurasia. One of the finest is a carving about 3 cm long of a head from Vogelherd Cave in southern Germany: the ears stick out, and a series of deep cut-marks below them suggest the neck "ruff" of a male. An engraving of running lions (apparently females, because ruffs are not clearly shown) on a rib from La Vache Cave (Ariège, France) shows clearly the lion's tufted tail and whiskered snout.

Two items suggest that these lions may have had faintly striped pelts (Figure 1): a detailed wall engraving from Les Combarelles Cave (France); and a mammoth tusk figurine of a person wearing the striped pelt of a large long-tailed cat from Mal'ta (Russia). Another two depictions from French caves, I suggest, may be among the first recorded attempts at motion pictures! One is an engraved, painted lioness (with the head of a cub below her belly) on the wall of Les Trois Frères showing her head and tail in at least three different positions (Figure 2), which I interpret as head wagging while the tail lashed up and down. A side view of a lion from Grotte Marie with too many front and hind legs suggests walking. Earlier students have ascribed such features to their being "renewed" or corrected by the artist.

The earliest known lion ancestor is a form like *Panthera gombaszoegensis* from early Pleistocene (about 1.5 million years old) deposits at Olduvai Gorge in East Africa. It had both lion- and tiger-like characters. Primitive lions (*Panthera leo fossilis*) dispersed in the Old World about 500,000 years

ago, in harmony with changing climate and the spread of steppe-like terrain, to which lions were well adapted.

"*Panthera youngi*", with similarities to both cave and American lions, appeared in northeastern China (Choukoutien) some 350,000 years ago or less. Probably it links *Panthera leo fossilis* and the "*spelaea*" group (cave lions of Eurasia and America) the other category being the "*leo*" group including the modern lions of southern Asia and Africa.

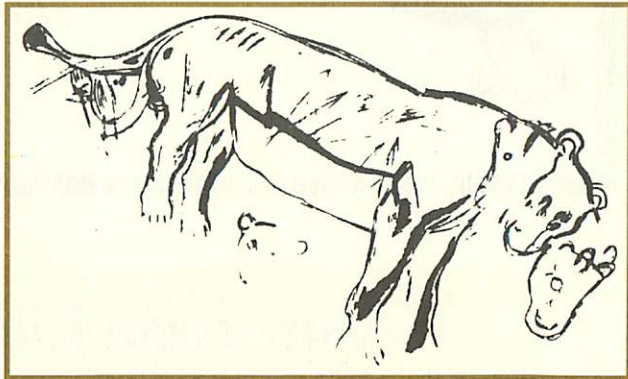


Figure 2: Depiction of lioness from Paleolithic Cave les Trois Frères, France. Positions of head and tail suggest movements.

From about 300,000 to 10,000 years ago, cave lions (*Panthera leo spelaea*) lived in steppe-like and parkland regions in the north and semi-desert areas in the south of Eurasia. Evidently they were not adapted to dense forests or deep snow. Fossils have been found as far west as England and as far east as the Alazeya River in Siberia some 1,600 km west of the nearest known specimens of the American lion (Kaolak River, northern Alaska). That distance is of little

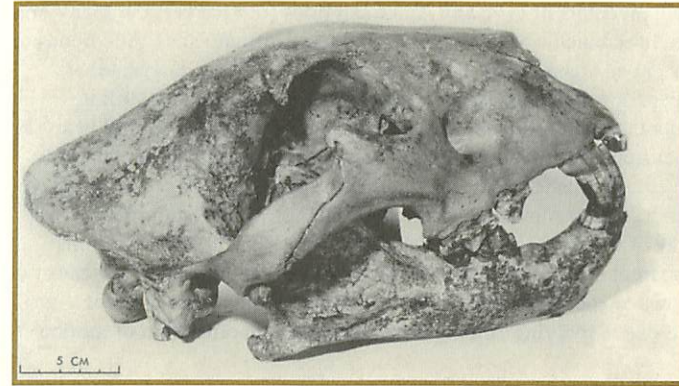


Figure 3: Right side view of american lion skull from Hunker Creek near Dawson City, Yukon.

significance considering the wide-ranging habits of those lions, their adaptability to cool climate and the fact that they were able to pursue bison, horse and mammoth herds spreading across the grassy Bering Isthmus which existed during late Pleistocene glaciations.

Therefore, the cave lion stock that gave rise to American lions probably

entered Alaska from Siberia during the second-last (Illinoian) glaciation. Lions had penetrated the North American plains by late Illinoian or early last (Sangamonian) interglacial time. As ice of the last (Wisconsinan) glaciation (about 80,000 to 10,000 years ago) spread, American lions were isolated in unglaciated parts of the northwest (Eastern Beringia) and south. Toward the end of the last glaciation, lions ranged southeast to Florida and as far south as Mexico and Peru. Perhaps rather dense forests prevented their entering eastern Canada and the northeastern United States.

In Canada, most American lion remains have been found in Yukon deposits of last glacial age. The best of the fossils is a virtually complete skull from the Dawson City area. Other Yukon fossils are from Old Crow Basin and Bluefish Caves (north of the Arctic Circle), Sixtymile, Dublin Gulch and Big Creek. Lions seem to have been more common and widespread in the Yukon than other large predators of the time, such as the short-faced bear and the scimitar cat (*Homotherium serum* a relative of the sabretooth). Other Canadian fossils are from Edmonton, Bindloss and Medicine Hat in Alberta.

Presumably American lions were gregarious and hunted in groups like African lions. However, it has been argued that they more commonly hunted in pairs or alone. This has been based on the fact that first lower molar teeth of American lions from Rancho La Brea can be separated into male and female and that nearly equal numbers of both sexes are distributed through the sample from relatively very young to very old individuals unlike the African lion (*Panthera leo leo*). They may have sheltered in caves, rock fissures or canyons, lining their dens with grass or dried leaves like Amur tigers large cats that have adapted likewise to cold climates. Winter shelter would have been less of a problem farther south.

According to their anatomical structure, American lions were at least as fleet as African lions, which are able to reach speeds of 48 km per hour in bursts when hunting. They may have been best adapted to feeding on bison. In fact, the frozen carcass of a steppe bison ("Blue Babe") found near Fairbanks, Alaska in 1979 showed signs of having been killed by lions in early winter some 36,000 years ago. Probably they also hunted small horses (Figure 1) and rarely young mammoths. A fragment of a baton from Laugerie Basse, France, is inscribed with two horses on one side and two cave lions on the other a common juxtaposition suggesting a predator-prey relationship.