© Copyright, Princeton University Press. No part of this book may be distributed, posted, or reproduced in any form by digital or mechanical means without prior written permission of the publisher.

INTRODUCTION

Marsh Monsters of Big Bone Lick

We are indebted to the Indian for finding and collecting the first fossil bones that received scientific study.
—Edward M. Kindle, 1935

Indians certainly found and occasionally collected fossil bones . . . but these discoveries are no real part of paleontological history.
—George Gaylord Simpson, 1943

Ohio River, Summer 1739

TOWARD dusk, the Indian hunting party returned with game to feed the army of French Canadians and Indians camped along the Ohio River in what is now Kentucky. But tonight the hunters' canoes are laden with more than fresh venison. Curious soldiers gather to watch the Indians unload a strange cargo—an enormous, fossilized femur nearly as tall as a man, several huge teeth, and great ivory tusks darkened by time.

The expedition of 442 men (123 French soldiers and 319 Native American warriors) from Quebec was commanded by Charles Le Moyne, Baron de Longueuil. Traveling by waterway, the fleet of war canoes left Montreal in July 1739, paddling down the St. Lawrence River, Lakes Ontario and Erie, and the Allegheny and Ohio rivers, heading for the Mississippi River (see map 1 on page 35). Their destination was the French port of New Orleans. It was the height of the great colonial wars for empire, as the English and

For general queries, contact webmaster@press.princeton.edu

© Copyright, Princeton University Press. No part of this book may be distributed, posted, or reproduced in any form by digital or mechanical means without prior written permission of the publisher.

French and their Indian allies battled for control of North America (the French and Indian Wars, 1689–1763). In 1739, Longueuil's mission was to help repel the pro-English Chickasaw Indians who were besieging New Orleans and blockading the Mississippi.

Longueuil's expedition was a military failure. The Chickasaws defeated the French and Indian armies, and the French ultimately surrendered to the English in 1763. But the big bones collected by the unnamed Indian hunters in Longueuil's army made scientific history.

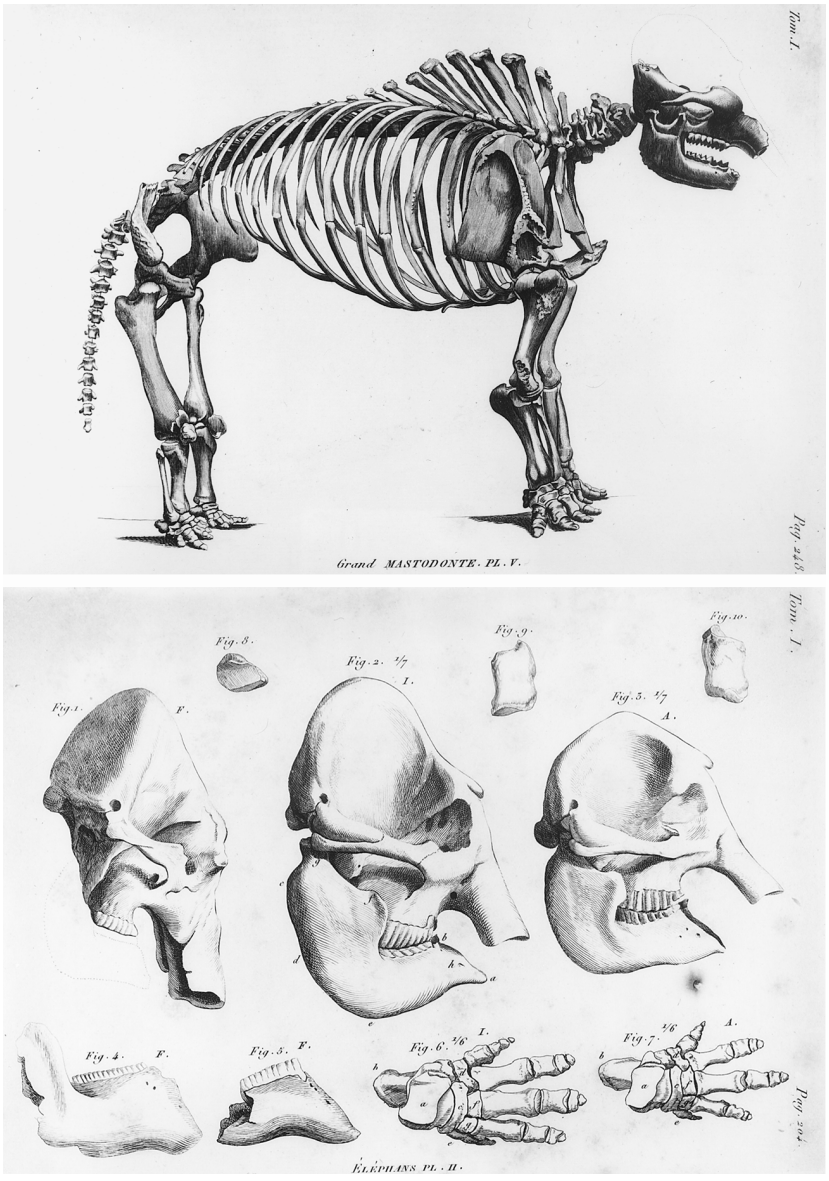
After the perilous river journey down the Mississippi, the fossils arrived unscathed in New Orleans. From there, they sailed with Longueuil to France. Reaching Paris in late 1740, the fossils were placed in Louis XV's cabinet of curiosities, under the direction of the famous naturalist Count Buffon. A few years later, those bones and teeth from the Ohio River became the first American fossils ever studied by scientists.

In 1762, Louis Daubenton read his scientific paper on the Ohio fossils to the French Royal Academy (scientific drawings of the fossils had been made six years earlier). Crediting the anonymous Indians ("les Sauvages") with the finds, Daubenton sketched the circumstances of their discovery and established for the first time a comparative procedure for identifying vertebrate fossils. The method was far from perfect. Daubenton concluded that the remains belonged to two separate living species. The femur and tusks he recognized as elephantine, but he thought the molars must belong to a species of carnivorous hippopotamus (the reasons for this mistake are discussed below). He imagined that both animals were to be found alive in the swamps of America. As more fossils from the New World were studied and compared over the next century, however, it eventually became clear to scientists that the Indian hunters had actually found the remains of a single species: the extinct American mastodon, *Mammut americanum* (fig. 1).[1]

The discovery in 1739 that led to Daubenton's paper is hailed in the annals of scientific history as the birth of American paleontology. In 1821, the great French naturalist Georges Cuvier credited the Indian hunters in Longueuil's army with discovering the first specimens of the "mammouth d'Amérique" to be studied in Eu-

For general queries, contact webmaster@press.princeton.edu

© Copyright, Princeton University Press. No part of this book may be distributed, posted, or reproduced in any form by digital or mechanical means without prior written permission of the publisher.



1. Cuvier's *mastodonte* skeleton, above; mammoth/elephant skulls below. Mastodons and mammoths are often confused, especially since Cuvier named the American mastodon *Mammut americanum*, while *Mammuthus* refers to the mammoth genus. Both are ancestors of elephants and survived till the end of the Pleistocene, but mastodons have pointed molars, while mammoths and living elephants have flat "grinders." Engravings from Cuvier, *Recherches sur les ossemens fossiles* (Paris, 1821–24).

For general queries, contact webmaster@press.princeton.edu

© Copyright, Princeton University Press. No part of this book may be distributed, posted, or reproduced in any form by digital or mechanical means without prior written permission of the publisher.

rope. From the beginning, Daubenton, Cuvier, and other French scientists included "les Sauvages" as partners in the discovery. And partners they were. Even though their approach to understanding giant bones was quite different from the comparative method inaugurated by Daubenton and the paleontological theories later established by Cuvier and other scientists, the Native Americans knew where to find large vertebrate fossils of animals that no longer lived. They collected specimens for their own uses, and they had their own ideas about the bones' meaning—at a time when European scientists were struggling to understand the petrified remains of large, unknown creatures.

The 1739 episode at what came to be called Big Bone Lick has often been recounted from the point of view of the European scientists, but never from the perspective of the Indian fossil finders. In his authoritative history of American paleontology (1942), George Gaylord Simpson wrote that "although Indians were probably involved in the real discovery" of Big Bone Lick, "they cannot fairly be called the discoverers." Just as "Columbus discovered America in 1492," he asserted, "Longueuil discovered American fossil vertebrates in 1739." According to Simpson, "Longueuil's claim as the true discoverer of North American fossil vertebrates depends more on the results than its absolute priority."

To sidestep what he acknowledged was the Indians' absolute priority, Simpson argued at length that full credit should go to Longueuil alone, "the star . . . of the paleontological drama." Rejecting Daubenton's clear statement that the Indian hunters were the only ones actually to observe the fossils in situ, and that they were solely responsible for their collection, Simpson insisted—on no evidence—that Longueuil himself surely observed the fossil site, too. Simpson claimed that the marsh must have been less than an hour's "walk" from camp, and that Longueuil personally ordered that the remains be gathered up. Simpson was a fine paleontologist, but his eagerness to put the European "star" at center stage led him to construct a historical fantasy. He even stated that the French defeated the Chickasaws, when in fact the Chickasaws were victorious.[2]

For general queries, contact webmaster@press.princeton.edu

© Copyright, Princeton University Press. No part of this book may be distributed, posted, or reproduced in any form by digital or mechanical means without prior written permission of the publisher.

Simpson's scenario has become entrenched in paleontological and popular history. A recent example appears in the chapter on the discovery of Big Bone Lick in Paul Semonin's comprehensive study of mastodon fossils in colonial America, *American Monster* (2000). Semonin elaborates on Simpson's imaginary version, writing that "Longueuil's Indian guides led the French soldiers several miles up a buffalo path from the Ohio River to the large muddy pond" where they saw "a multitude of enormous bones."[3]

In April 2001, I visited Big Bone Lick State Park in Kentucky. The heaps of mastodon and other large skeletons that used to loom out of the brackish backwaters along the Ohio River here are long gone, though the occasional big bone sometimes comes to light. The official museum texts state that the original discovery of the fossils was made "by a French soldier . . . Longueil [*sic*] . . . and his troops. They discovered a marshy area scattered with large bones and teeth they believed came from an elephant. They gathered . . . a tusk, a femur, and molars" that were later sent to France. There is no hint that Indian hunters actually discovered the fossils and brought them back to Longueuil in camp. Indeed, the illustrated markers at the site depict a group of French soldiers in tricornered hats standing next to the big bones. Here, too, at the "Birthplace of Vertebrate Paleontology," Simpson's ahistorical vision—Baron de Longueuil strolling along a path to view the site of the Native fossil find—holds sway.[4]

Clearly it was the Indians' decision to collect extraordinary bones that day in 1739 that initiated paleontological inquiries by Europeans in the New World. For me, learning of the hunters' action opened up an unexplored world of early Native American encounters with fossils. How much of their story could I recover? Could I identify the unknown Indians who made the discovery? Why would hunters looking for game go to the trouble of collecting the heavy bones of bizarre creatures? All I had to go on were two facts: the physical evidence of the fossils themselves and the French historical record that it was "les Sauvages" supplying meat for Longueuil's army who discovered the fossils in 1739. By working with these facts and filling in their context, I think we can recon-

For general queries, contact webmaster@press.princeton.edu

© Copyright, Princeton University Press. No part of this book may be distributed, posted, or reproduced in any form by digital or mechanical means without prior written permission of the publisher.

struct a plausible story to counter Simpson's fabricated version of this historic milestone.[5]

My first step was to try to determine the tribal affiliation of the fossil hunters. Although the French sources credited the Indians with the discovery of the fossils in 1739, they did not name the tribe, and no modern historian has ever attempted to identify the Indians. Historical and cultural detective work allows us to figure out who they were. The Natives in Longueuil's army came from New France, eastern Canada, home of Algonquian and Iroquoian cultures. In the seventeenth century, French Jesuits had established missions among the Algonquian-speaking Abenakis and the Iroquoian-speaking Iroquois and Hurons (Wyandots) of New France. Longueuil's father, a founder of Montreal, had come to New France in 1641 as an interpreter for the Hurons and Iroquois. As early as 1681–82, a group of Abenakis had accompanied the French explorer La Salle on his historic voyage down the Mississippi to the Gulf of Mexico. By 1700, many Abenaki and Iroquois Indians spoke French and had some European education, and some were literate in French and Latin. But by that time, the Iroquois had become very hostile toward the French missionaries and their converts, the "praying Indians." Meanwhile, Abenaki men regularly joined the French military campaigns, and, as historian Richard White points out, the Chickasaw Wars increased the French need for Algonquian warriors.[6]

In 1739, Longueuil recruited Indian men for his army in southern Quebec, with the help of the Jesuit missionaries. At that time and place, the Christianized Abenakis were the most powerful and loyal allies of the French, while the pagan Iroquois and Hurons were their enemies (and in the Ohio Valley, the Shawnees and Delawares leaned toward the English and opposed the French). Since the 319 Indians in Longueuil's army were persuaded to enlist by the Jesuit priests, we can safely assume that they were almost all Abenakis, with perhaps a few "praying" Iroquois living at the missions. In all likelihood, then, the hunters who found the fossils on the Ohio River were Abenaki.[7]

To fill in cultural details about these men, I talked with Gerard Tsonakwa, an Abenaki historian-storyteller. Tsonakwa also happens

For general queries, contact webmaster@press.princeton.edu

© Copyright, Princeton University Press. No part of this book may be distributed, posted, or reproduced in any form by digital or mechanical means without prior written permission of the publisher.

to be an amateur paleontologist, so he was intrigued by the idea that his ancestors may have been involved in the famous discovery. He confirmed that a great many Abenaki warriors in Quebec joined French military expeditions at that time. By consulting historical records, and drawing on Tsonakwa's knowledge, I set about reconstructing the circumstances of the discovery along the Ohio.[8]

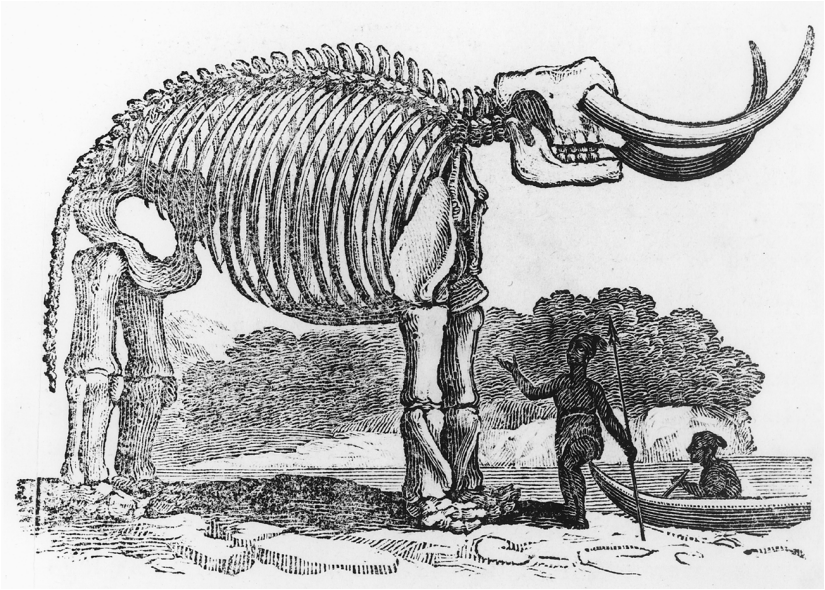
A large war canoe of that era carried ten men. With supplies and the traveling armory, Tsonakwa estimated that Longueuil's fleet probably consisted of more than a hundred large birch-bark canoes. "To avoid scaring away game and attracting the attention of hostile enemies—or water monsters," said Tsonakwa, "Abenaki war parties followed a strict protocol on the water. Silence was the rule—no splashing, no shouting or cursing, and nothing was thrown overboard."

How many Indians would have been in the deer-hunting party that found the skeletons? Tsonakwa estimated that meat for the army of nearly 450 men could have been provided by a small hunting group of about six Indians. But contrary to Simpson's notion, it seems unlikely that the hunters simply walked "less than an hour away" from the camp. To carry back enough dressed venison, the men probably set off in three canoes, going a good distance away from the noisy encampment. Armed with flintlock muskets and bows and arrows, they would then beach their canoes and stalk deer on foot, paying special attention to salt licks, which attracted game. After gutting the carcasses, they would drag the venison back to the canoes.

According to early French maps indicating the "place where elephant bones were found" in 1739, the Indians went hunting on the southern side of the lower Ohio River. They were in the vicinity of the rapids some miles east of modern-day Louisville, Kentucky, and not far from Big Bone Lick, which would later become the most famous fossil site on the Ohio River. The impressive bones of Pleistocene mastodons and other very large mammals, extinct for about ten thousand years, were abundant in the salty, sulfurous back-channel bogs. The deer hunters from Quebec came upon the skeletons of three immense creatures at the edge of a swamp reeking of sulfur (fig. 2).[9]

For general queries, contact webmaster@press.princeton.edu

© Copyright, Princeton University Press. No part of this book may be distributed, posted, or reproduced in any form by digital or mechanical means without prior written permission of the publisher.



2. This wood engraving of 1804 shows two Indians in a canoe, discovering a fossil mastodon skeleton along a river. Engraving by Alexander Anderson, for Thomas Bewick's *A General History of Quadrupeds* (1804). Photo: Graphic Arts Collection, Department of Rare Books and Special Collections, Princeton University Library.

Ivory and Monsters

Seeking to understand why the hunters decided to carry away heavy tusks, teeth, and bones, I asked Tsonakwa to imagine his ancestors' reactions. First, he pointed out, even though they were unfamiliar with elephants, Abenakis would have immediately recognized ivory tusks as a precious commodity. The Abenakis prized the ivory teeth of whales that they hunted in the Atlantic, and they also acquired pieces of fossil mammoth ivory through trade with Arctic people. Historical records show that Abenakis and other Natives encountered European explorers and traders in Canada looking for sources of ivory to compete with the Russian trade in Siberian fossil mammoth ivory—these traders routinely asked about ivory "horns" and teeth. Since isolated mastodon fossils and tusks are found in eastern

For general queries, contact webmaster@press.princeton.edu

© Copyright, Princeton University Press. No part of this book may be distributed, posted, or reproduced in any form by digital or mechanical means without prior written permission of the publisher.

Canada, New England, and around the Great Lakes, the Indians in Longueuil's army might also have observed or heard about similar remains closer to home.[10]

Historical evidence indicates that Algonquians, including the Abenakis, were actively collecting and trading fossil ivory at a very early date, and there were stories to explain the remains of huge animals in the Northeast. The Algonquians, for example, referred to the "bones found under the earth" as ancient monsters killed by their culture hero Manabozho. In the seventeenth century, a French missionary in Canada reported a "strange legend" circulating among the Hurons. They told of a monster with a "horn" that could pierce anything, even rock. "Anyone possessing a piece of it was supposed to have very good fortune. The Hurons did not know where the creature was to be found, but [they] said that the Algonquins were in the habit of selling them small pieces of the magic horn." These talismans were probably chunks of fossil ivory, gathered by Abenakis and other Algonquians.

In a similar practice, the Creek Indians of the Southeast fashioned amulets of pieces of "horn" that they sawed off from monsters found lurking in water holes—most likely the tusks of fossilized Columbian mammoths preserved in bogs, like the mastodons of the Northeast. Archaeologists at the paleo-Indian Hiscock Site in western New York (occupied around A.D. 100) have found numerous mastodon fossils and tusks along with tools made from mastodon bone. The mounds built by paleo-Indians in Ohio also contain pieces of fossilized ivory tusks collected more than two thousand years ago.[11]

So Abenaki huntsmen would have taken tusks and teeth back to show Longueuil because they themselves valued ivory and because they knew that the Europeans were eager to obtain such things. Indeed, within a few years of Longueuil's expedition, the competition had became fierce among French and English tusk collectors in the Ohio Valley (dominated at that time by the French and their Indian allies). The dangerous rivalry was vividly described in explorers' journals. For example, Colonel Christopher Gist, of the British Ohio Company, purchased several great molars and tusks from another English trader. The trader told Gist that earlier, in

For general queries, contact webmaster@press.princeton.edu

© Copyright, Princeton University Press. No part of this book may be distributed, posted, or reproduced in any form by digital or mechanical means without prior written permission of the publisher.

1744, he had buried a prize five-foot-long "horn" in a secret cache "lest the French Indians should carry it away." The French-allied Indians were known to acquire ivory for French traders. Gist also met four friendly Shawnee men canoeing upriver who warned him that sixty French Indians were encamped nearby. Gist abandoned his fossil-hunting expedition after he heard the French Indians firing their muskets.[12]

By 1766, only four years after Daubenton's landmark paper made the Ohio fossils so famous in Europe, a "considerable quantity of elephants' teeth from the banks of the Ohio" was already stored in the Tower of London, in the royal cabinet of curiosities. Some of these may have been shipped to England by the Indian trader George Croghan (1720–82), an adventurous Irishman who collected mastodon tusks despite the perils. Croghan, who had arrived in America in 1741, learned Shawnee and Iroquois languages and became an important diplomat and Indian agent for the British. He knew of the bone beds in the 1740s, years before he began deliberately collecting specimens in the 1760s. In his letters, Croghan stated that local Indians guided him to the "extraordinary Bones of Elephants" at the place they called the Great Buffaloes' Lick. And he made the important point that even the "oldest Indians had no traditional Trace" of seeing these beasts alive (the local knowledge of the Shawnees and other tribes in the Ohio Valley and eastern United States is discussed in chapter 1).

In 1765, Croghan, with an escort of Shawnee men, began gathering Ohio fossils intended for the English king's collection and for others, such as Benjamin Franklin in Philadelphia. The Shawnee guides were never named; however, searching old records for possible candidates, I found that a few years earlier, in 1759, Croghan had negotiated with five Shawnee chiefs and sixty-four warriors at Fort Pitt (now Pittsburgh) on the Ohio River some miles above the big bone deposits. He listed the chiefs' names in his notes: they were Misquepalothe, Waconathechea, Othoaway, Weseloutha, and Woppepalathe. There is no way of knowing for sure, but it is quite possible that some of these chiefs or their men joined Croghan's fossil-collecting expeditions.

(continued)

For general queries, contact webmaster@press.princeton.edu