



The Kyle Mammoth: A Late Pleistocene Columbian mammoth from southern Saskatchewan, Canada



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ABSTRACT

Mammoth remains, best referred to the Columbian mammoth (*Mammuthus columbi*), were uncovered during roadwork near Kyle, Saskatchewan in 1964. Excavation yielded bones that gave a radiocarbon age of $12,200 \pm 200$ BP (radiocarbon years before present – taken as 1950) suggesting that Columbian mammoths had followed continental glacial ice as it had retreated northward from the South Saskatchewan River valley toward the close of the last glaciation. The Kyle Mammoth evidently died a natural death, perhaps becoming mired in sticky pond deposits. Bones recovered consist of several parts of the skeleton – notably a lower jaw with RM₅ and RM₆, several vertebrae, a scapula, a femur, parts of a left radius and ulna, and foot bones. Although the bones were scattered they represent the most complete mammoth from the Canadian Prairies (Alberta, Saskatchewan, Manitoba). Paleoenvironmental evidence suggests that the area was partly forested perhaps by a mixed-deciduous forest transition. Maximum summer temperatures could have approached 28 °C.

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1. Introduction

It is a pleasure to recognize the contributions to the study of mammoths by my friend and colleague Larry Agenbroad. I got to know of his work at the Hot Springs Mammoth Site about 1978, shortly after I had the opportunity to study remains of the Kyle Mammoth at the Saskatchewan Museum of Natural History (now the Royal Saskatchewan Museum) in Regina in November 1977. We had a continuing correspondence about Canadian mammoths, and I soon realized that he viewed this group in the broadest perspective [e.g. Agenbroad (1984), Agenbroad and Barton (1991)]. Also, he kindly permitted me to measure rare bones of the Hot Springs mammoth skeletons while they were in place on public display.

Because of previous work on the Babine Lake Mammoth (*Mammuthus* cf. *M. columbi*) from British Columbia (Fig. 1; Harington et al., 1974), I realized that Columbian mammoths likely had spread relatively far north (55°N) in Western Canada. So it was not unusual to find the species at 50°51'N in Saskatchewan, although the prevailing view based on woolly mammoth remains from the Edmonton area of Alberta was that the Columbian mammoth was not common (but see Harington et al., 1974, Table 4)

on the Canadian Prairies in the Late Pleistocene.

My measurements of the teeth of the Kyle Mammoth led me to conclude that it belonged to a Columbian rather than a woolly mammoth (Table 1). The most authoritative work “Origins and Evolution of the Elephantidae” (Maglio, 1973) showed that these measurements are closest to the M₅ and M₆ of “*Mammuthus armeniacus* (Falconer) 1857” (Maglio, 1973, Table 31) – a synonym for the Trogontherian mammoth (*Mammuthus trogontherii*) and transitional between *Mammuthus meridionalis* and *Mammuthus primigenius* (Maglio, 1973, p. 60), which would have its North American equivalent in the Columbian mammoth (Maglio, 1973, p. 62).

Limitations of the present account result from: (1) the poor preservation of many of the bones; (2) the fact that many of the bones cannot be specifically located on the original excavation diagram (Fig. 2); (3) a lack of specific catalogue numbers for most of the bones, forcing me to designate many bones with block alphabetical designations; and (4) a lapse of time between my initial research and preparation of this manuscript, when photographs of the bones and samples of the matrix (to help establish the paleoenvironment) were lost. Sketches help to overcome the missing photographs, and paleoenvironmental evidence based on a study of ostracodes and a shell (see Paleoenvironment section below) help to remedy that problem.

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Fig. 1. Map showing locations of: 1. Kyle Mammoth, Saskatchewan. 2. Lindsay Mammoth (*Mammuthus columbi*), eastern Montana. 3. Columbian mammoth (*Mammuthus cf. M. columbi*), Babine Lake, British Columbia.

Despite these limitations, the purpose of this paper is to describe and identify the Kyle Mammoth, describe its geographical (Fig. 1) and geological setting, discuss the radiocarbon and individual age of the skeleton, provide measurements and sketches of the best specimens present, and include a rough diagram of the distribution of the bones (Fig. 2), as well as photographs of the excavation in October 1964 (Fig. 3a, b, c, d).

2. The find, its geographic and stratigraphic setting

Information regarding the setting is mainly derived from Kehoe (1964). On the morning of October 19, T. Kehoe and a group from the Saskatchewan Museum of Natural History (now RSM) in Regina travelled to Kyle to excavate what turned out to be the most complete mammoth skeleton (about 70 associated specimens) from the province and the Prairies (Alberta, Saskatchewan, Manitoba). An estimated 20,000 people visited the site during excavation along with newspaper, radio and television reporters.

The site is about 60 km NNW of Swift Current, and was in the south road ditch in NE¼ S5, T21, R16, W3 (50°51'N, 108°07'W). The matrix enclosing the bone was oxidized, clayey, contorted fossiliferous sand lying regionally below 6 inches (15.2 cm) of soil and 4 feet (1.3 m) of massive lacustrine clay (Fig. 3a). Since the mammoth

remains occurred in a rigorous environment experiencing wetting and drying, freezing and thawing, as well as leaching and staining, they were generally fragile and poorly preserved (letter of E.A. Christiansen to E.J. McCallum of November 2, 1964).

At first there was not much to see. On top of a knoll beside the municipal road a small area was roped off (Fig. 3b, c, d). Inside the rope a few workers carefully removed dust from crumbling bones, stopping to apply a mixture of shellac and alcohol every few minutes. Then the bones were wrapped in layers of burlap soaked in plaster of Paris. The plaster bundles were left in a shed to harden and finally trucked to the museum in Regina. A few bones escaped this treatment.

The principal value of the Kyle Mammoth lies in the scientifically controlled excavation which allowed removal of bones for radiocarbon dating, potentially yielding a reliable age for the presence of mammoths in the area. The original excavators had hoped that the Kyle Mammoth would provide evidence of having been killed by human hunters. However the mammoth evidently died of natural causes, its body becoming mired in a pond left by melting glacial ice. Drying of the pond, followed by erosion and then the gathering of glacial runoff into a lake, shifted some of the bones, resulting in many of them being covered by a protective layer of lake-deposited clay. During the last few thousand years, the disappearance of the

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