

BRIEF NOTE

A RADIOCARBON-DATED MAMMOTH SITE, MARION COUNTY, OHIO¹

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On November 2, 1976, workers at the City of Marion landfill noted several large bones near the bottom of a trench excavated for routine burial of refuse. R. P. Wright, Ohio State University, Marion, was contacted, and Dominic Sansotta, Safety Director for the City of Marion, graciously suspended landfill activities while Wright and students from OSU-Marion salvaged skeletal elements of a mammoth.

Donn Davids and M. C. Hansen identified the skeletal elements as those of a mammoth (*Mammuthus*). The bones were removed to the Ohio Historical Center, Columbus, OH, for cleaning and preservation and were then transferred back to OSU-Marion for temporary display. The permanent repository (Cat. No. OHS 8734) is the Ohio Historical Society,

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Columbus, OH. Samples of wood associated with the bones also were collected from the trench for radiocarbon dating. This wood yielded a date of 10,340 ± 125 radiocarbon years B.P.

The mammoth site is located in the SW¹/₄ NW¹/₄ SW¹/₄ of sec. 19, Marion Township, Marion County, OH (Marion West 7¹/₂ minute quadrangle), 40°35'30" N. latitude, 83°11'10" W. longitude. The area has low relief and is dotted with shallow depressions that are remnants of early postglacial intermorainal lakes that were situated between the Wisconsin-age Wabash Moraine to the north and St. Johns Moraine to the south.

The stratigraphy at the mammoth site and in trenches excavated during later landfill operations several hundred meters south of the site indicates the former presence of an early postglacial lake. The stratigraphic sequence at the mammoth site is:

Unit	Description	Unit Thickness (cm)	Cumulative Thickness (cm)
4	Clay, moderate-yellowish-brown (10YR5/4) mottled in lower third; vertically oriented root casts abundant; upper surface disturbed by landfill activities	200	356
3	Silty sand, olive-gray (5Y4/1), fine-grained, poorly sorted, quartzose; contains mammoth (<i>Mammuthus</i>) bones, fragmented mollusc shells, ostracods, oogonia of <i>Chara</i> , and abundant logs, twigs, and cones of spruce (<i>Picea</i>). (OGS Mama-1 = 10,340 ± 125 B.P.)	76	156
2	Gravel, quartzose, well-rounded; bed lenticular and of variable thickness	20	80
1	Sandy clay, dark-gray (N4); interbedded with thin lenticular beds of fragmented mollusc shell debris. Base not seen.	60	60

A second trench located approximately 250 m SSE of the mammoth site reveals a stratigraphic sequence consisting of a basal dark-gray sandy clay overlain by more than 1 m of light-gray marl containing well-preserved shells of molluscs (table 1). The marl is overlain by at least 2 m of yellowish-brown clay identical with and equivalent to the uppermost unit (unit 4) at the mammoth site. It is probable that the marl unit exposed in this second trench is stratigraphically equivalent to the silty sand (unit 3) from which the mammoth was obtained. The relatively pure thick marl in the second trench suggests deeper water toward the central portion of this postglacial lake (Terlecky 1974). The comparative coarseness of the silty sand (unit 3) from which the mammoth was obtained, as well as the underlying gravel and the abundance of fragmented wood and shell debris in the silty sand, suggests that these units in trench no. 1 represent a nearshore deposit. Assuming therefore that trench no. 1 was nearshore and that trench no. 2 was near the central portion of the lake, a diameter of at least 500 m can be postulated for this lake at the time of marl deposition and burial of the mammoth.

TABLE 1
Molluscs extracted from a 4 kg sample of marl at Marion city landfill.

Species	% of fauna
Gastropoda:	
<i>Ammicola</i> sp.	1.0
<i>Fossaria dalli</i>	3.0
<i>Helisoma</i> sp.	9.0
<i>Physa</i> sp.	1.0
<i>Stagnicola</i> sp.	2.0
<i>Valvata sincera</i>	30.0
<i>Valvata tricarinata</i>	17.0
Bivalvia:	
<i>Sphaerium</i> cf. <i>S. transversum</i>	37.0

Skeletal elements of the mammoth recovered are: a nearly complete left femur, lacking only the distal portion; partial left humerus; one tibial fragment; three rib fragments; cervical vertebrae 3, 4, and 5, and the axis; one thoracic vertebral spine; 9 tusk fragments; 14 unidentified small fragments. Reference of these remains to mammoth (*Mammuthus*), in the absence of teeth or cranial elements,

is based primarily on the triangular shape of the vertebral foramina (neural arches) in the cervical vertebrae and on characteristics of the femur (Olsen 1972).

The greatest length of the femur (117 cm) suggests that the Marion mammoth was a relatively large individual, but incomplete fusion of the femoral head with the anatomic neck of the femur indicates that the animal had not yet reached maturity.

The incomplete nature of the skeleton is probably due to several factors: pre-burial breakage, disarticulation, and scattering of the skeletal elements, suggested by nonrecent broken edges on some bone fragments. This interpretation is compatible with a nearshore environment of deposition suggested by the textural composition of the sediments. Additional factors that contributed to the incompleteness of the skeleton are destruction and removal of skeletal elements during trenching and backfilling operations at the landfill site and difficulties in locating skeletal elements in the bottom of the trench because of standing water and muddy conditions at the time of the brief salvage operation.

A sample (Ohio Geological Survey sample OGS Mama-1; Dicarb sample no. 799) of spruce wood (*Picea*) (identified by G. W. Burns, Ohio Wesleyan University, Delaware, OH) was collected from the unit (3) containing mammoth bones and submitted to Dicarb Corp., Chagrin Falls, OH, for radiocarbon dating. A radiocarbon date of $10,340 \pm 125$ radiocarbon years B.P. was reported. This is the first radiocarbon date in Ohio from a sample contemporaneously associated with mammoth remains. Previous radiocarbon analysis of an Ohio mammoth site (Whitaker mammoth, Stark County), on peat overlying the mammoth, yielded dates of $5,490 \pm 235$ and $5,560 \pm 245$ years B.P., dates which clearly postdate deposition of the Whitaker mammoth remains (Ogden and Hay 1967). The date from the Marion site is in agreement with a date ($10,600 \pm 200$ radiocarbon years B.P.) of wood associated with mammoth remains at Big Bone Lick, Kentucky. Both dates are probably close to the terminal date for *Mammuthus* in east-central North America

(Martin 1967, p. 88). We have no reason to question the age derived from the spruce wood sample (OGS Mama-1) at the Marion mammoth site and are confident that the mammoth skeletal elements are contemporaneous with the wood-bearing horizon (unit 3).

No pollen analyses were performed on sediments from the Marion mammoth site, but the abundance of spruce logs, twigs, and cones at the mammoth horizon suggests that spruce pollen would probably be dominant. The radiocarbon date from the Marion site predates the change from spruce-fir to oak-elm in Ohio, about 9,800 radiocarbon years B.P. (Ogden 1966).

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