

1963

A Preliminary Report on the Itasca Bison Site

Creighton T. Shay

University of Minnesota, Minneapolis

Follow this and additional works at: <https://digitalcommons.morris.umn.edu/jmas>



Part of the [Archaeological Anthropology Commons](#), and the [Paleontology Commons](#)

Recommended Citation

Shay, C. T. (1963). A Preliminary Report on the Itasca Bison Site. *Journal of the Minnesota Academy of Science*, Vol. 31 No. 1, 24-27.

Retrieved from <https://digitalcommons.morris.umn.edu/jmas/vol31/iss1/6>

This Article is brought to you for free and open access by the Journals at University of Minnesota Morris Digital Well. It has been accepted for inclusion in Journal of the Minnesota Academy of Science by an authorized editor of University of Minnesota Morris Digital Well. For more information, please contact skulann@morris.umn.edu.

A Preliminary Report on the Itasca Bison Site

CREIGHTON T. SHAY¹

University of Minnesota, Minneapolis

In the summer of 1937 excavations conducted by the University of Minnesota Anthropology Department in Itasca State Park yielded extinct bison and other animal remains along with several stone artifacts. A preliminary notice was published in *Science* shortly after excavation was completed (Jenks, 1937). The bones were extracted from a marl layer underlying a peat bog near the south end of the west arm of Lake Itasca. The deposit was discovered during construction of a road bridge over Nicollet Creek adjacent to the site. Material in the following report was assembled from unpublished field notes and records on file in the Anthropology Laboratory, University of Minnesota. Plans are now underway for excavation of undisturbed portions of this important site to recover further material and samples for radiocarbon dating.

The site, which has been called the Itasca bison site (21 CE1), is located in Itasca State Park in southern Clearwater County, northwestern Minnesota. It is within the NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec 32 T 143 N R 35 W. The Itasca area exhibits a typical irregular morainic topography dissected by north-south oriented valleys and containing many lakes and bog-filled depressions. The moraine, termed the Itasca moraine, was formed during the retreating phase of the Wadena ice lobe of the late Wisconsin glaciation (Wright, 1962). Lake Itasca itself is in parts of two northward converging valleys which accounts for its inverted "Y" shape. South of the west arm of the lake is a complex system of small narrow valleys separated by ridges (Fig. 1). Nicollet Creek, a small stream less than 2 miles long, flows in one of these valleys northward to empty into the west arm. The creek meanders within the present valley floor which has been partially filled with bog deposits. The site is situated about one-fifth of a mile from the lake where the valley is about 100 yards wide. Immediately to the west is a steep sided ridge about 50 ft. in height which runs parallel to the valley for about 400 yards.

While Itasca Park lies within the Coniferous forest zone of Minnesota there is a variety of both deciduous and coniferous forest types within the park. The park lies 25-30 miles east of the present prairie border and in between there is a transition zone of deciduous and coniferous forest (Buell and Cantlon, 1951). On the upland around the bison site there are stands of white spruce with balsam fir, Norway pine, and elm, maple, basswood and ash. The site itself supports a bog vegetation of black spruce, sedges and other species.

¹ The writer wishes to express his appreciation to Prof. Elden Johnson for his guidance and helpful criticism of the manuscript.

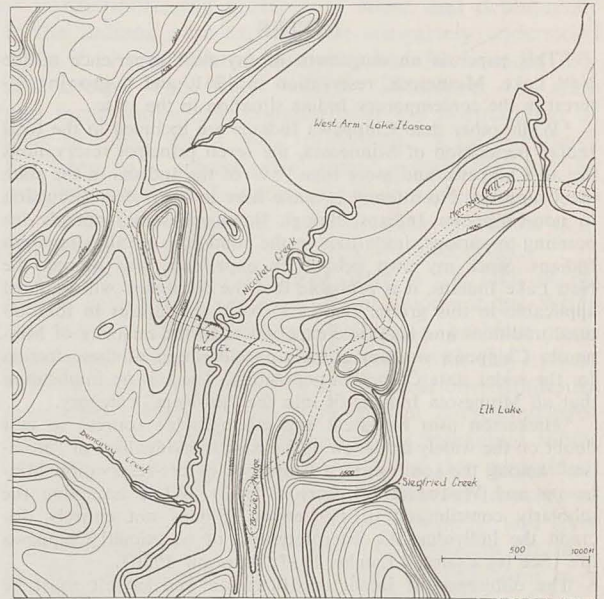


FIGURE 1. Topographic map of site area in Itasca Park showing area excavated.

Excavation work was conducted from July 13 to August 25, 1937, under the direction of A. E. Jenks and L. W. Wilford of the Anthropology Department, University of Minnesota. They were assisted by 5 students and a crew from the National Park Service. One large east-west trench measuring approximately 100 feet by 25 feet with a 30 ft. westward extension was opened on the north side of the road with the base point at the western end of the bridge. A second trench about 60 feet long was located on the slope further west and another on the opposite side of the road (Fig. 1). In all, an area of over 4,000 square feet was excavated to a maximum depth of 9 feet at the center of the channel. Water problems plagued the excavators throughout the work and pumps and dams had to be installed.

Stratigraphy: A generalized profile of the deposit is shown in figure 2. It represents the north face of the long trench and extends from 0 (at the bridge) to 110 feet west. Roman numerals indicate the major layers, the X's mark bone concentrations (rather than individual bones) and the A's refer to artifacts. The location of the trench in relation to the creek is shown above the main profile. The profile was made at the end of the excavation after the peat surface had lowered as much as two feet in places due to water seepage and drying.

Thus the locations shown for the bones and artifacts in strata 3 and 4 are slightly too high because bones were all measured from an arbitrary datum and not the peat surface.

For this discussion the profile is divided into 5 layers beginning at the base of the deposit: blue sand, marl, sandy marl, mixed sand and peat, peat with sand lenses. The upper layers were especially complex so this division is arbitrary. There were no distinct boundaries between the layers. Bones and artifacts were confined to layers 2, 3 and 4.

Layer 1, blue sand. This underlaid the marl deposit in the channel and composed the substratum on the hill slope. It took on its bluish color from fine particles of blue clay contained in it. A blue clay layer below the sand was revealed in the trench on the south side of the road. A layer of gravel and boulders occurred between this layer and the marl; the boulders were concentrated east of the 10 ft. line.

Layer 2, marl. This and layer 3 above contained the majority of bones and artifacts. Many shells and shell fragments were contained in these two layers. The marl layer was 3 ft. thick at the center of the basin at 55 ft. west and it tapered in both directions. The greatest concentration of bones in the layer was from 60 to 80 west.

Layer 3, sandy marl. This formed the transition between the marl below and the peat above. It contained varying proportions of sand and averaged over a foot in thickness extending from 25 W to 108 W where it interdigitated with the blue sand.

Layer 4, mixed sand and peat. This complex stratum consisted of peat with various mixtures of sand becoming progressively sandier toward the west until at about 90 W the layer was almost pure sand with some organic matter. The layer varied in thickness from less than one

foot to over two feet on the slope. A thin gravel lens extended from 22 to 33 W. This layer contained only a few bones and no artifacts.

Layer 5, peat with sand lenses. This was another complex layer with pure peat at the center grading westward into first peat with sand lenses, then sand with peat lenses, and finally peaty humus and yellow sand on the slope at about 90 W. The layer averaged about 2½ feet in thickness.

From the evidence now available we can construct a tentative sequence of events in the development of the deposit: (1) Deposition of the Itasca moraine and the formation of the valley; (2) Deposition of marl, bone and artifacts in fairly shallow and quiet water; (3) Further marl formation along with inwash of sand; (4) Lowering of water level, peat growth and continued inwashing of sand; (5) Further stream action with gravel and sand deposited in the middle of the channel; and (6) Lowering of the water level and resumption of peat development with intermittent periods of slopewash of sand from the upland.

On stratigraphic grounds the age of the marl and bone deposit can only be approximated. A pollen sample was extracted from a cavity in one of the bones in the marl layer at a depth of 7 feet and when analyzed revealed a high percentage of pine. This spectrum suggests that at least part of the marl layer was deposited during the early postglacial pine period pollen zone B, which has been dated from about 10,000 to 9,000 years BP in southern Minnesota (Winter, 1962).

It is interesting to note here that another *Bison occidentalis* found in St. Paul showed a pollen spectrum from the skull that appears to be from the early part of the pine period (Rowley, 1957). An accurate determination of the age of the bone-bearing deposit must await further pollen studies and radiocarbon dates. One

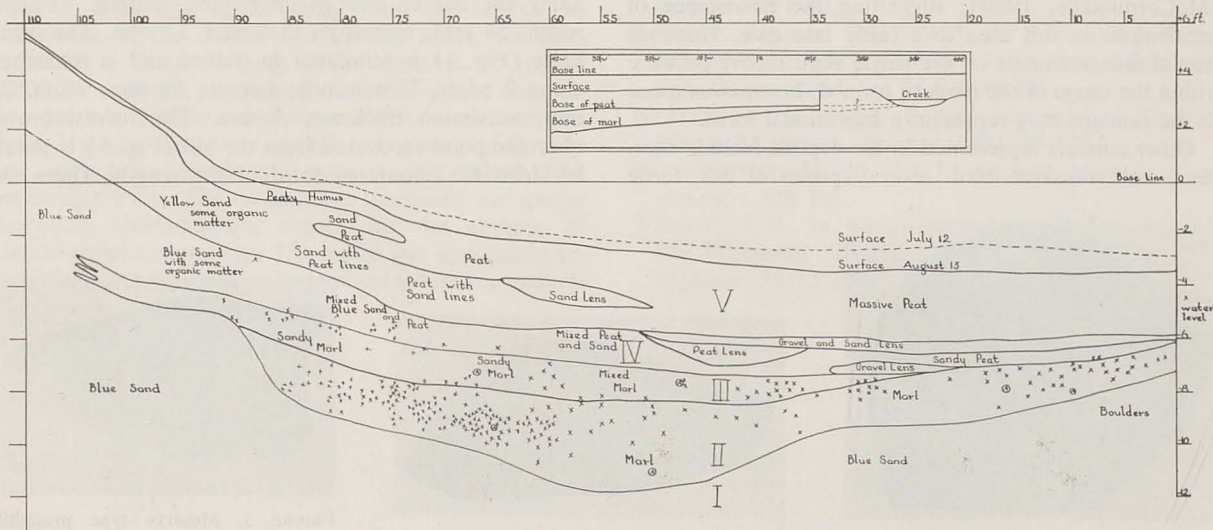


FIGURE 2. Generalized stratigraphic profile of the north face of the long trench extending from 0 to 110 feet west. Material excavated from the trench has been projected on the profile. Roman numerals indicated major layers, X's, bone concentrations, and A's artifact locations.

problem, unsolved at present, is the duration of deposition of the bones and artifacts. Bones occur from the base of the deposit up to layer 4, a thickness of about 5 feet. It cannot be stated at this point whether this indicates continuous deposition of bone over a long period of time or simply later inwash of bones accumulated on the slope. The differential preservation of bones discussed in the section below is also a factor here.

Paleontology: Most of the over 2,000 complete and fragmented bones recovered are those of *Bison occidentalis* identified by Dr. Samuel Eddy, Department of Zoology, University of Minnesota. Bones represented included one complete braincase with horn cores, other skull fragments, long bones, vertebrae, ribs, scapulae and miscellaneous bones and identifiable fragments. There were at least 13 individuals represented, most of them mature. A majority of the bones showed scratches and knife cuts and some of the long bones had been broken, presumably to extract the marrow. Various degrees of weathering were exhibited; some were so well preserved that cartilage was present on several ribs, some were well mineralized. This differential preservation may be due to either various preserving environments within the deposit or to later deposition of some of the bones or a combination of both. Several bones reportedly had been modified for use but these could not be located for study.

The occurrence of *Bison occidentalis* in the deposit indicates a reasonable antiquity. *B. occidentalis* has been dated in northwestern Iowa $8,430 \pm 520$ (Agogino and Frankforter, 1960), at the James Allen site in Wyoming, $7,900 \pm 400$ (M-304) (Hester, 1960) and at a locality with no human association on the North Saskatchewan River in Canada, $8,150 \pm 100$ (S-106) (McCallum and Wittenberg, 1962). At the Long Creek site in southeastern Saskatchewan, remains identified as *B. occidentalis* were dated at 293 and 1413 B.C. (McCorquodale, 1960), suggesting the persistence of *occidentalis* in this area to a fairly late date. However cranial measurements on the single skull recovered were within the range of the modern form *B. bison athabascae* so the remains may represent a transitional form.

Other animals represented in the deposit include deer, bear, wolf, muskrat, bird, several species of fish, turtle

and shells. No identifiable human remains were found. Plant remains encountered consisted of charred and uncharred wood and seeds.

Artifacts: The meagre artifact inventory from the deposit was unusually homogeneous. The objects were nearly all flakes, composed of black chert and modified to a greater or lesser degree by unifacial retouching. They were apparently used as cutting and scraping tools for bison butchering. The items include one large core, an irregular fragment from which a flake had been struck, 3 flakes with some retouching probably through use, 1 side scraper of quartzite, 2 end scrapers and 2 knives. A lanceolate-shaped concave base projectile point was found while backfilling the long trench but this could not be located for study. The above artifacts were all found in the main trench scattered throughout the marl layer ranging in depth from 9 to 5 ft. from the surface (see profile, Fig. 2). Several of them were associated with the bone concentration in the western part of the deposit.

Several trenches were dug on the hill west of the site and a projectile point, 3 potsherds and chert chips were recovered.

Some of the above items will be described in more detail. The side scraper is roughly triangular in shape with retouching along one curved edge. Dimensions are: Length, 87 mm; width, 55 mm; maximum thickness, 15 mm. Both end scrapers are plano-convex in cross section. One is roughly rectangular in plan with a steep bevel at one end and retouching along both sides. Dimensions: Length, 87 mm; width, 55 mm; maximum thickness, 15 mm. The other scraper is triangular in plan and has been crudely bifacially flaked on one end. Dimensions: Length, 68 mm; width, 38 mm; maximum thickness, 20 mm. The two knives are more carefully worked. One, broken on one side, is half-circular in outline (Fig. 3) and has been retouched on both sides along the curved edge. Dimensions: Length, 57 mm; width, 54 mm; maximum thickness, 11 mm. The other knife (Fig. 4) is semilunar in outline and is retouched along 2 edges. Dimensions: Length, 68 mm; width, 28 mm; maximum thickness, 5 mm. The reddish-brown quartzite point recovered from the hill (Fig. 5) is parallel sided for about one-third of the length. There are



FIGURE 3. Chert knife. Length, 57 mm; width 54 mm; maximum thickness 11 mm.

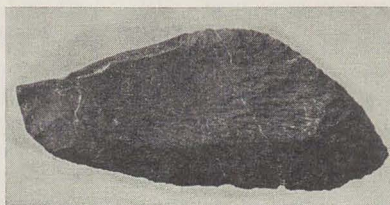


FIGURE 4. Chert knife. Length 68 mm; width 28 mm; maximum thickness, 5 mm.



FIGURE 5. Meserve type projectile point of reddish-brown quartzite; recovered from the upland blade length 54 mm.

slight indentations on either side halfway from the base forming small inconspicuous ears at the base. The sides taper from the shoulder to a rounded tip. Both sides have been ground almost up to the shoulder and basal grinding and thinning are present giving the point a lenticular shape in cross section. Dimensions: Blade length, 54 mm; maximum width (at the shoulder), 31 mm; maximum thickness, 8 mm; basal indentation, 3 mm. This point resembles the Meserve type in general description although the blade edges are not unifacially beveled. Dalton points are similar but their edges are definitely serrated and they possess a deeper indentation at the base. Until further points are recovered, it is probably best to refer to this point as falling within the Meserve/Dalton type. Meserve points were found associated with *Bison occidentalis* at the Meserve site in Nebraska (Wormington, 1957).

The problem now arises concerning the relationship between the material from the upland and the deposit. The point was found at a depth of 1 foot, 4 inches along with a number of chert and slate chips. In another trench three cord-marked body sherds of unknown type were found along with the chips. None of the chips were of the same material as the artifacts in the deposit. The sherds were at a depth of 1 foot, 6 inches. The sand intrusions in the peat and marl layers suggest considerable erosion and redeposition on the hill so that depth need not be an accurate criterion of age. On the basis of typology, an association between the point and the pottery is unlikely but there is also no evidence to indicate that the point is contemporaneous with the marl deposit. Further excavation will help pin down these associations.

Summary and Conclusions: The Itasca bison site in northwestern Minnesota is a bone refuse deposit of early postglacial age. Remains include at least 13 individuals belonging to *B. occidentalis*, deer, bear, wolf, muskrat, bird, fish, turtle, shell, wood and seeds. The occurrence of the extinct *occidentalis* which has been radiocarbon dated at three other localities at around 8,000 BP supports the general dating. Further, one pollen spectrum indicates that some of the bones were deposited during the early postglacial pine period. The few artifacts in the deposit were crudely flaked chert butchering tools. The assemblage contained no special diagnostic characteristics except for the absence of ground stone and pottery. The refuse was apparently accumulated from an area on the upland where the animals

were dispatched and butchered. Excavation on the slope west of the site did not uncover any occupation layer but a Meserve type projectile point possibly associated with the deposit was found. Meserve points were found with *B. occidentalis* at the Meserve site in Nebraska.

There are a number of problems yet to be solved through further excavation of the site. The objectives of planned work include (1) recovery of more artifacts; (2) accurate determination of the age and duration of the deposit through stratigraphic, pollen and radiocarbon studies; (3) location of the presumed habitation site on the upland from which the refuse deposit derived; (4) recovery of stratigraphically controlled floral and faunal assemblages for purposes of environmental reconstruction. This site offers a unique opportunity for investigating a biotic-archeological assemblage in terms of human paleoecology and early human occupation in the upper midwest.

LITERATURE CITED

- AGOGINO, GEORGE AND W. D. FRANKFORTER, 1960. a Paleoindian Bison Kill in Northwestern Iowa. *Am. Antiquity* 25: 414-415.
- BUELL, M. F. AND J. E. CANTLON, 1951. A study of Two Forest Stands in Minnesota With an Interpretation of the Prairie-Forest Margin. *Ecology* 32: 294-316.
- HESTER, J. J. 1960. Late Pleistocene Extinction and Radiocarbon Dating. *Amer. Antiquity* 26: 58-77.
- JENKS, A. E. 1937. A Minnesota Kitchen Midden with Fossil Bison. *Science* 86: 243-244.
- MCCORQUODALE, B. A. 1960. Vertebrate Faunal Remains in The Long Creek Site (compiler Boyd Wettlaufer), *Saskatchewan Museum of Nat. History Anth. Series* No. 2: 87-96.
- MCCALLUM, K. J. AND J. WITTENBERG, 1962. University of Saskatchewan Radiocarbon Dates. III Radiocarbon 4: 71-80.
- ROWLEY, JOANNE. 1957-1958. A Preliminary Pollen Study from a Fossil Bison Site in St. Paul, Minnesota. *Proc. Minn. Acad. Sci.* 25-26: 40-58.
- WINTER, T. C. 1962. Pollen sequence at Kirchner Marsh, Minnesota. *Science*. 138:526-528.
- WORMINGTON, H. M. 1957. *Ancient Man in North America*. 4th Ed.
- WRIGHT, H. E., JR. 1962. Role of the Wadena Lobe in the Wisconsin Glaciation of Minnesota. *Geol. Soc. of Amer.* 73:73-100.