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Western Iowa Proboscians

DUANE C. ANDERSON and PATRICIA M. WILLIAMS¹

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The present paper is a survey of Pleistocene mammoth and mastodon remains from western Iowa. Included are locality data and references to the literature for over 350 specimens from 32 of 41 counties surveyed. Mammoths are found to be more numerous

than mastodons, reversing the pattern observed in the woodland areas adjoining the present-day Prairie Peninsula. The first radiocarbon date for the mastodon in Iowa ($13,520 \pm 135$ B.P.) is reported from Harrison County. None of the localities surveyed have provided any evidence of early man.

INDEX DESCRIPTORS: Iowa Geology, Vertebrate Paleontology, Proboscidea.

For a century the bones and teeth of Pleistocene proboscians have been recovered from scattered localities in western Iowa. Early syntheses were written by Calvin (1909, 1911), Shimek (1910a, b) and Hay (1914, 1924). More recently, numerous discoveries have been made, but the data are widely scattered in newspaper reports, professional papers, museum records and private collections.

The purpose of this paper is twofold. First, to provide an updated compendium useful in further research, and second, to stimulate public interest and thereby encourage the preservation of material and related data in the future. New information presented in this report is based primarily on the vertebrate collection and associated documentation on file at the Sanford Museum and Planetarium, Cherokee, Iowa. W. D. Frankforter began assembling this collection in 1951 through interviews, salvage operations and field trips. Paleontological collecting has become a tradition at the Museum over the past 23 years. A significant amount of material has also been made available by Holmes A. Semken, Department of Geology, The University of Iowa. The University not only has an active paleontological program at present, it has custody of much of the early material collected in Iowa.

MATERIALS AND METHODS

Initially, all specimens in the Sanford Museum collection were sorted and examined. Press records relating to circumstances of discovery, provenience, stratigraphy and associated animals were compiled. A search of the literature was conducted and a questionnaire was sent to 14 institutions in an effort to locate as much material as possible. Subsequently, the data for over 350 specimens from 32 counties formed the compendium.

RESULTS

Three species of mammoth have been previously identified in western Iowa (*Mammuthus primigenius*, *M. columbi* and *M. imperator*). Dechert (1968) provides a good summary of the taxonomy, geologic range and habitats of these elephants.

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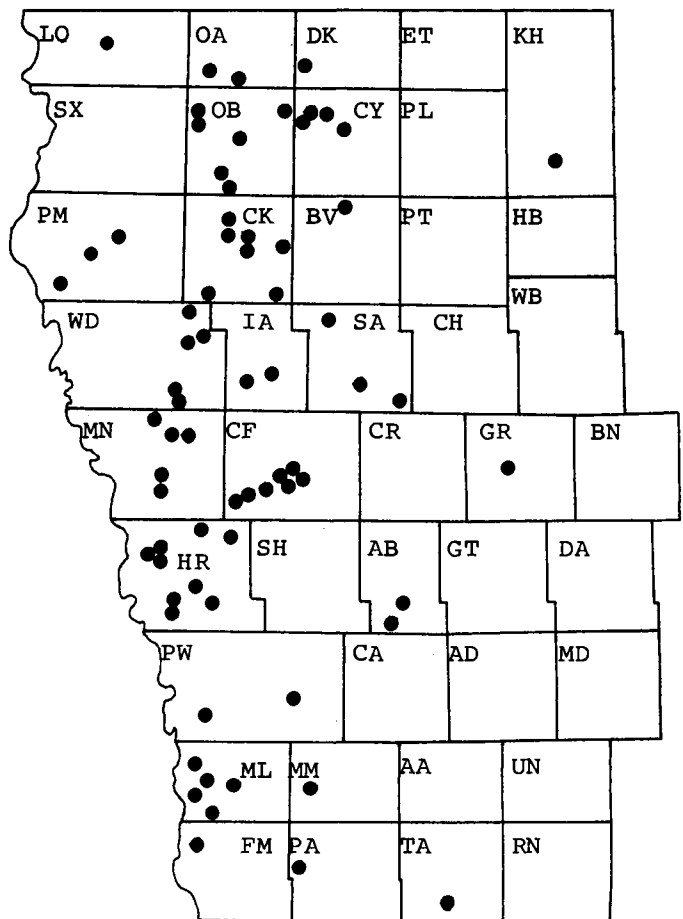


Figure 1. Mammoth localities in western Iowa.

No attempt has been made here to differentiate among the various species of mammoths because of inadequate comparative material, the fragmentary nature of many of the available post-cranial elements and taxonomic difficulties based on ridge plate formulae in tooth identification.

In the 41 western Iowa counties surveyed, 70 mammoth localities were recorded in 23 counties (Figure 1). Mammoths were found to be more numerous and more widely distributed than mastodons (Figure 2). This reverses the trends observed in Missouri (Mehl, 1962:51-53) and Michi-

gan (Skeels, 1962:110, 121) where mastodons are in the majority. This distributional pattern is to be expected in view of the grazing habits of the mammoths. They found the environment in the area of the present-day Prairie Peninsula to be a more suitable habitat than did the browsing mastodons.

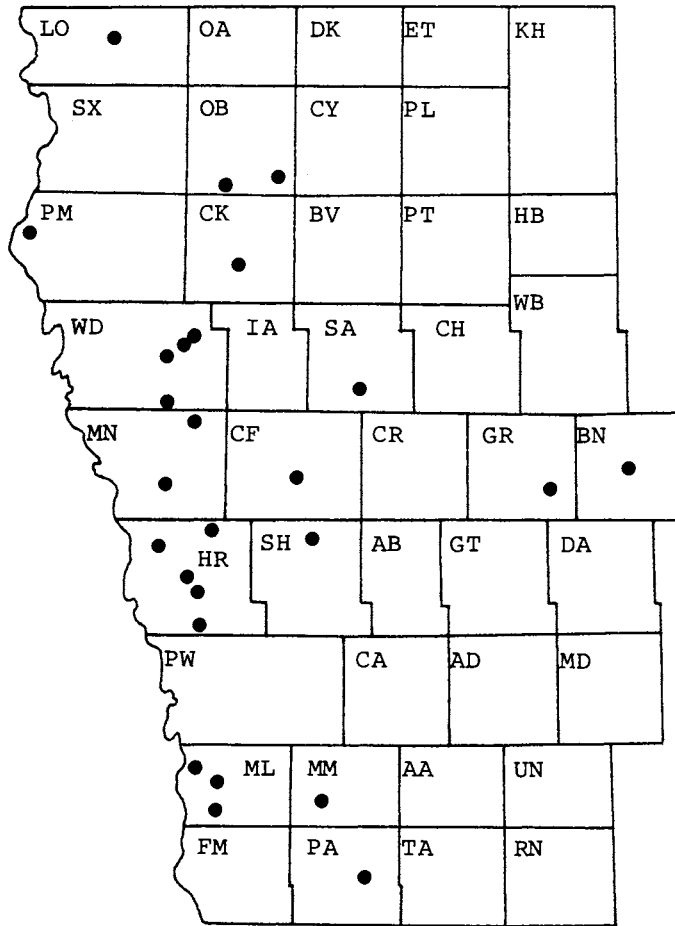


Figure 2. Mastodon localities in western Iowa.

Aside from one specimen of the pre-Kansan form *Stegomastodon*, recovered from Plymouth County (Hay, 1914: 388-9), all mastodons included here belong to *Mammot americanum*, the common American mastodon, or to the lesser-known *M. progenium*. As the only obvious difference appears to be the presence of permanent tusks in the lower jaw of the latter, it has only been recognized in two localities in Harrison County (SUI 2, 292). Dechert discusses this form in detail (1968:36-41). Twenty-six mastodon localities are included in this report, representing 15 of the 41 counties surveyed. Spruce wood associated with mastodon remains in Harrison County at 13HR401 has recently been radiocarbon dated at $13,520 \pm 135$ B.P. (WIS 712), providing the first radiocarbon determination for the mastodon in Iowa.

There are instances where bones cannot be readily identified as mammoth or mastodon because they are fragmentary or unavailable for study. Bones from 56 localities fall into

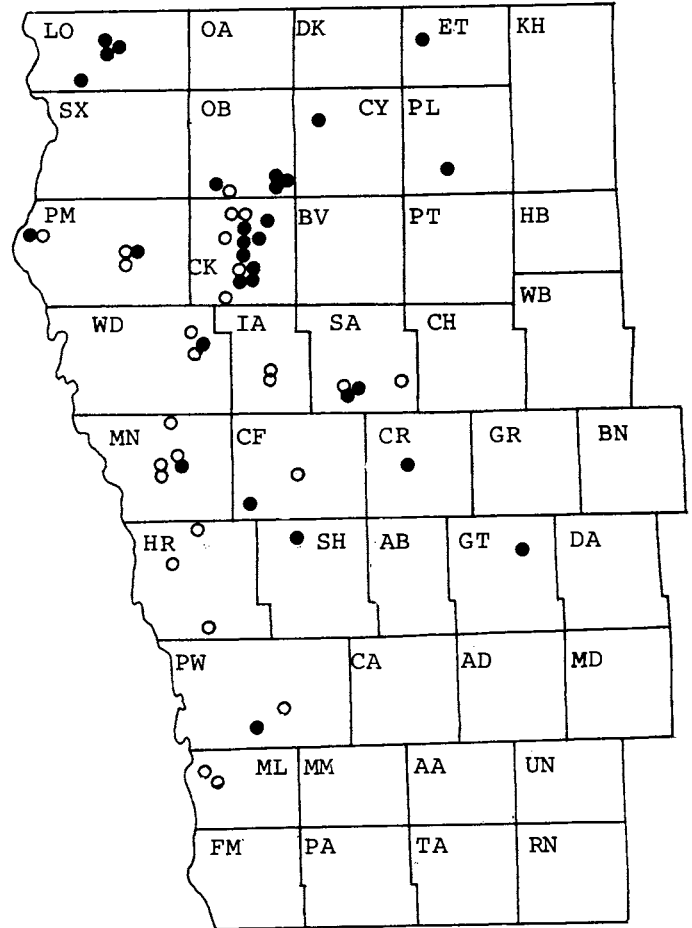


Figure 3. Localities of taxonomically unassignable proboscidian remains. Solid circles: sites not recorded in Figures 1 and 2. Open circles: sites shown on Figures 1 and/or 2 where additional unidentified proboscidian remains occur.

this category (Figure 3). They are treated below under the heading "Proboscidian." Thirty of these localities do not appear on either the mammoth or mastodon lists. Since exact locality data are available for much of this material, they have the potential of adding to the distribution of one group or the other. No identifications of mammoth or mastodon have been made solely on the basis of isolated tusks since only large mammoths are distinguishable. Although no evidence of ancient man has been found to date in connection with proboscidian remains in Iowa, the possibility exists and should not be overlooked by future investigators.

A number of abbreviations are used in the county surveys below. SM refers to Sanford Museum (specimens, photographs, prospects file and maps). SUI refers to The University of Iowa, formerly called the State University of Iowa. It should be noted that for a period after 1932 the practice was instituted of using the prefix "15" on all vertebrate paleontological specimens at The University of Iowa (H. A. Semken, personal communication, Feb. 18, 1974). Since catalog cards are present for both systems, numbers used herein are given without the prefix. NWIAS citations refer to the Northwest Iowa Archaeological Society Newsletter. ISMHA specimens are those at the Iowa State Museum of History and Ar-

chives, Des Moines. Few data are available on these items, as the questionnaire was not returned. All county abbreviations and site numbers (i.e., 13CK60, etc.) are derived from the trinomial system developed by the Smithsonian Institution (NWIAS 1:2 pp. 3, 6).

Mammoth

AUDUBON (AB)

1. Scapula. Along Nishnabotna River near Exira. Ref. Audubon Co. Journal, Jan. 3, 1974. Owners: Dennis and Jon Esbeck.
2. Two molars. NW¼, SE¼, Sec. 24, immediately SW of Brayton on floodplain of East Nishnabotna River, Brayton Gravel Pit. SUI 33551, 33552.

BUENA VISTA (BV)

1. Tooth frag. At Sioux Rapids. SUI 428.

CHEROKEE (CK)

1. Five teeth. 13CK54, NW¼, SE¼, Sec. 15, T91N, R40W, Shea Gravel Pit. Ref. NWIAS 6:1 p. 5. SM 162-56-Z, 1-58-Z, SUI 33818.
2. Occipital, 2 teeth. NE¼, Sec. 1, T91N, R39W, Old Larson Pit. Ref. NWIAS 18:1 p. 2. SM photos 597-67-M, 15-70-M.
3. Maxillary frag., 2 teeth, axis, caudal vertebra, ulna frag., heel bone, scapula frag. 13CK60, N½, NE¼, Sec. 24, T93N, R41W, Rohlfesen Gravel Pit. Refs. NWIAS 3:5 p. 3; 10:5 p. 2; 20:5 p. 2; 21:6 p. 1. SM 116-55-Z, 121-55-Z, 54-60-Z, 56-72-Z, 139-73-Z, 140-73-Z, 145-73-Z. SM slide 1526.
4. Tooth. Olson Gravel Pit N of Meriden. SM 16-60-Z.
5. Tooth. NW¼, Sec. 29, T90N, R41W, Boothby Gravel Pit. Ref. NWIAS 19:4 p. 2.
6. Tooth. SW¼, NW¼, Sec. 26, T90N, R39W, Dale Otto farm. Ref. NWIAS 17:6 p. 2. Owner: Dale Otto.
7. Tooth. From S of Cherokee. SM 41-51-Z. Found by Hugh Wolff, Cherokee.
8. Two molars. 3 mi. N of Cherokee at Turner Sand & Gravel. Ref. Hay (1914:429-30). SUI 325, 429.
9. Tooth. N of Cherokee at Cherokee Sand & Gravel. Ref. Carmen (1917:409).

CLAY (CY)

1. Two teeth. 13CY3, NW¼, NW¼, Sec. 24, T97N, R38W, Stolley Construction Co. Gravel Pit. Ref. NWIAS 3:6 p. 5. SM 138-55-Z.
2. Tibia. 13CY5, N½, SW¼, Sec. 30, T97N, R38W, Hartley Ready Mix Gravel Pit. Refs. NWIAS 17:6 p. 1; 20:2 p. 2. SM 4-72-Z.
3. Tooth. From near Spencer. Ref. NWIAS 21:5 p. 1. Found by Harles McKee, Spencer.
4. Tooth. SE¼, SE¼, Sec. 19, T97N, R38W, along District Dredge Ditch of Ocheyedana River. Ref. NWIAS 21:5 p. 1. SM slide 2170.

CRAWFORD (CF)

1. Incomplete skeleton. 13CF1, C, NW¼, Sec. 28, T82N, R41W, Roush Gravel Pit. Ref. NWIAS 3:6 p. 4. SM 15-55-Z. SM slides 457, 458, 459, 460, 461.
2. Incomplete skeleton. 13CF2, C, N½, NE¼, Sec. 16, T83N, R39W, Johannsen Gravel Pit. NWIAS 4:5 p. 3; 4:6 p. 3. SM 150-56-Z. SM photos 408-56-M, 409-56-M, 642-56-M, 643-56-M, 644-56-M, 645-56-M. SM slides 500, 501, 502.
3. Maxillary frag., 3 teeth. NW corner, Sec. 14, T83N, R39W (probably 13CF5). Refs. Calvin (1911:212,

352), Hay (1914:56, 431). SUI 28, 294.

4. Molar. Denison. Ref. Clement (1932:69-70). SUI 553.
5. Tooth. 13CF6, N½, SW¼, Sec. 1, T82N, R40W, Arion Gravel Pit. SM 83-61-Z.
6. Tooth, humerus frag. Near 13CF3 (SW corner, Sec. 15, T83N, R39W) at pits operated by Comstock Sand & Gravel. Ref. NWIAS 9:4 p. 3.
7. Mandible. SE¼, SE¼, Sec. 13, T82N, R41W. Ref. SM map.

DICKINSON (DK)

1. Tooth. NE¼, NE¼, Sec. 7, T98N, R38W. Owner: Wm. Vetter, Lake Park.

FREMONT (FM)

1. Heel, 2 teeth. 13FM3, SW¼, NW¼, Sec. 23, T70N, R43W, Fremont Co. Quarry. Refs. Jenkins (1972:37-38); NWIAS 5:5 p. 4; 9:3 p. 3. SM 12-67-Z. In loess overlying quarry.

GREENE (GR)

1. Mandible with molar. Sec. 14, T83N, R31W. Eroded from bank on a tributary of Raccoon River. SUI 32773.

HARRISON (HR)

1. Three teeth. 13HR1, N line, NW¼, NW¼, Sec. 3, T81N, R42W, Kenneth Shaeffer farm. SM 172-56-Z, 64-57-Z, 40-58-Z.
2. Three teeth. Iowa State Highway Commission Gravel Pit at Dunlap. SUI 578, 579.
3. Tooth. Dunlap. Ref. Clement (1932:70). SUI 497.
4. Phalynx frag. Old Pottery Gulch, Missouri Valley. Clement (1932:78). SUI 543.
5. Tooth, mandible, tibia, 8 vertebrae, pubis, radius, long bone epiphysis. NE¼, Sec. 24, T78N, R43W, Cox Pit. Refs. Calvin (1909:351); Hay (1914:426-7, 435-6); Dechert (1968:28-30, 35). SUI 1, 5, 14, 16, 18, 24, 30, 58, 65, 87, 138, 194, 253, 256, 269, 323, 341.
6. Humerus, femur, 5 teeth. NE¼, Sec. 23, T81N, R44W, Pisgah Gravel Pit (Old Peyton Pit). Ref. Calvin (1909:351); Hay (1914:57, 425-7, 436); Dechert (1968:30). SUI 4, 6, 7, 32765, 32766, 32767, 32768.
7. Tooth. NE¼, Sec. 23, T81N, R44W, Kress Pit. Ref. Hay (1914:57). SUI 330.
8. Tooth. Near Logan, Peckenpaugh Sand Pit. Ref. Hay (1914:436). SUI 167.
9. Tooth. McWilliams Pit S of Pisgah. SUI 581.
10. Tooth. Epperson farm 1 mi. N of Missouri Valley. Ref. Clement (1932:69). SUI 499.

IDA (IA)

1. Tooth. Near Ida Grove. Ref. NWIAS 10:6 pp. 2-3. SM photos 56-67-M, 57-67-M, 58-67-M, 59-67-M.
2. Vertebra. From near Battle Creek. Found by Bob Curren. Ref. NWIAS 5:2 p. 4.
3. Tooth. Near Ida Grove. SUI 566.
4. Tooth. Ida Grove. Ref. Clement (1932:73). SUI 517.

KOSSUTH (KH)

1. Scapula. 6 mi. from Algona in Gravel Pit. ISMHA (exhibit).

LYON (LO)

1. Molar. N½, SW¼, Sec. 33, T100N, R45W, in gravel pit. Owner: Roscoe Pettengill, Rock Rapids.

MADISON (MD)

1. Molar. Along creek. SUI 33547.

MILLS (ML)

1. Vertebra. Sec. 24, T71N, R43W, along Chabeneau Creek. Ref. NWIAS 5:6 p. 2. SM 60-57-Z.

2. "Bone." Near Glenwood. Ref. NWIAS 4:5 p. 4.
3. *Three teeth*, partial tusk, 2 long bones. In Malvern at intersection of RR with 1st Ave. and Railway St. Refs. Udden (1903:170); Hay (1914:441).
4. Two teeth. At Henton Station (Sec. 31, T73N, R44W). Refs. Calvin (1911:212); Hay (1914:441-2). SUI 300, 301.
5. Tusks, teeth, jaws, humerus, other bones. Between Glenwood and Pacific Junction near Keg Creek. Refs. Todd (1880:14); Hay (1914:77-8, 441).

MONONA (MN)

1. Tooth. 13MN1, NW $\frac{1}{4}$, SE $\frac{1}{4}$, Sec. 28, T84N, R44W, Leff Gravel Pit. Ref. NWIAS 3:1 p. 4.
2. Six+ teeth, phalynx, navicular, foot bone, cervical vertebra, ilium. 13MN2, SE corner, Sec. 4, T83N, R44W, Turin Gravel Pit (Old Elliot Pit). Refs. Calvin (1911:212); Hay (1914:442); Dechert (1968:29-30, 35); Frankforter (1971); NWIAS 18:3 p. 2. SM 8-70-Z, 68-73-Z, 149-73-Z, 116-74-Z, SUI 8, 193, 195, 235, 245.
3. Two teeth. 13MN5, SE $\frac{1}{4}$, SE $\frac{1}{4}$, Sec. 3, T85N, R44W, Nickolisen Gravel Pit. Ref. NWIAS 6:5 p. 6. SM 42-58-Z, 51-71-Z.
4. Tooth. E side, Sec. 17, T85N, R42W, Griffin Well. Ref. Hay (1914:442).
5. Tibia, tooth. Found in ravine 2 mi. NW of Mapleton on HWY 141 and 1 mi. E near bridge. SM Prospects File.

MONTGOMERY (MM)

1. Tooth. In bed of Nishnabotna River near Red Oak. Ref. Hay (1914:442). ISMHA B-264.

O'BRIEN (OB)

1. Mandible, 3 teeth, humerus. 13OB1, SE corner, SW $\frac{1}{4}$, SW $\frac{1}{4}$, Sec. 34, T94N, R41W, Hultman Gravel Pit. SM 18-51-Z, 19-51-Z, 35-51-Z, 36-51-Z, 71-52-Z.
2. Molar. 4 mi. E of Hartley in sand pit. Ref. Clement (1932:72). SUI 406.
3. Two teeth. 13OB5, C, W $\frac{1}{2}$, Sec. 15, T94N, R41W, Rabe Gravel Pit. Ref. NWIAS 18:4 p. 2. SM 37-70-Z, 39-70-Z.
4. Molar. Pringhar. Ref. Clement (1932:72). SUI 519.
5. Tooth. Leland Parker Gravel Pit N of Sheldon. Ref. NWIAS 19:5 p. 3.
6. Tooth. Near Sheldon. Ref. Des Moines Register, Oct. 3, 1954.

OSCEOLA (OA)

1. Tooth. Gravel pit near Ashton. SUI 2190.
2. Molar. Melvin. Ref. Clement (1932:68). SUI 411.

PAGE (PA)

1. Molar. SW $\frac{1}{4}$, Sec. 8, T69N, R39W, Stanley Pit. SUI 37731.

PLYMOUTH (PM)

1. Tooth. SE $\frac{1}{4}$, SW $\frac{1}{4}$, Sec. 36, T91N, R48W. SM 150-73-Z.
2. Tooth. NE $\frac{1}{4}$, Sec. 9, Dalton Pit, Le Mars. Ref. Clement (1932:72-3). SUI 490.
3. Molar. In gravel pit halfway between Merrill and Le Mars on E side of Floyd River. Owner: L. H. DeBoe, Merrill.

POTTAWATTAMIE (PW)

1. Tooth. Near Council Bluffs. Ref. Hay (1914:444). SUI 309.
2. Molar. NE $\frac{1}{4}$, SW $\frac{1}{4}$, Sec. 10, T75N, R40W. Ref. Davis, Eshelman and Prior (1972-3:62-65). SUI 34868.

SAC (SA)

1. Tooth. 13SA1, NE $\frac{1}{4}$, NE $\frac{1}{4}$, Sec. 21, T89N, R37W, Old State Pit. SM 74-52-Z.

2. Scapula. S of Lake View. Ref. Calvin (1911:215); Hay (1914:446). SUI 226.
3. Humerus, femur, tooth. 13SA4, C, N $\frac{1}{2}$, Sec. 2, T86N, R35W, Hosteng Gravel Pit. Ref. NWIAS 17:5 p. 1. SM 5-69-Z.

TAYLOR (TA)

1. Tooth frag. Bedford. SUI 433.

WOODBURY (WD)

1. Thirteen teeth. 13WD4, W $\frac{1}{2}$, Sec. 12, T88N, R43W. Refs. NWIAS 3:6 p. 3; 4:3 p. 4. SM 210-52-Z, 211-52-Z, 212-52-Z, 213-52-Z, 214-52-Z, 215-52-Z, 216-52-Z, 217-52-Z, 218-52-Z, 219-52-Z, 220-52-Z, 55-56-Z.
2. Two teeth. 13WD6, C, N $\frac{1}{2}$, Sec. 14, T88N, R43W, Correctionville Gravel Pit. Ref. NWIAS 6:3 p. 8. SM 41-58-Z.
3. Two teeth. 2 $\frac{1}{4}$ mi. E of Pierson on Pierson Creek. SM 54-54-Z.
4. Two teeth. Gilleas Pit a few mi. S of Correctionville in Little Sioux River valley. Refs. Hay (1914:449); Carmen (1917:410). SUI 355.
5. Tooth. SW $\frac{1}{4}$, Sec. 29, T86N, R43W, on a tributary of Parnell Creek. Owner: L. R. Nixon, Mapleton.
6. Two teeth. NW $\frac{1}{4}$, Sec. 32, T86N, R43W, along bed of Parnell Creek. Owner: Charles A. Brenner, Sheldon.

Mastodon

BOONE (BN)

1. Two mandibles, tooth, atlas, pelvis (?). ISMHA (exhibit).
2. Scapula. At Boone. ISMHA (exhibit).

CHEROKEE (CK)

1. Scapula frag. ISMHA (exhibit).
2. Mandible frag. SE $\frac{1}{4}$, Sec. 10, T91N, R40W, Hallett Pit. Ref. NWIAS 20:4 p. 2. Owner: Lynn Pletcher, Cherokee.

CRAWFORD (CF)

1. Tooth, tibia, tusk frags. NW corner, Sec. 14, T83N, R39W (probably 13CF5). Ref. Hay (1914:56, 382). SUI 28, 29.

GREENE (GR)

1. Scapula, humerus. From Rippey. Ref. Hay (1914:382-3). ISMHA 4514.
2. Ulna. ISMHA (exhibit).

HARRISON (HR)

1. Mandible. 13HR1, N line, NW $\frac{1}{4}$, NW $\frac{1}{4}$, Sec. 3, T81N, R42W, Kenneth Shaeffer farm. Ref. NWIAS 4:5 p. 3. SM 173-56-Z. SM slides 491, 492.
2. Humerus, ilium, lumbar vertebra, 2 ribs. 13HR402, NE $\frac{1}{4}$, SW $\frac{1}{4}$, Sec. 23, T80N, R43W, Mether-Burkholder Site. Ref. NWIAS 21:3 p. 1. Owners: Verne Burkholder and Bud Mether, Logan, on loan to SM. SM slides 2113, 2114, 2115, 2116. Associated spruce wood radiocarbon dated at 13,520 \pm 135 B.P. (WIS 712).
3. Two molars. SE $\frac{1}{4}$, Sec. 18, T79N, R42W, Schemmer Pit. SUI 32133, 32242.
4. Occipital, 2 lower tusks, 7 teeth, mandible. NE $\frac{1}{4}$, Sec. 24, T78N, R43W, Cox Pit. Refs. Calvin (1909:352; 1911:213); Hay (1914:368-70, 383-4); Dechert (1968:35-6). SUI 12, 15, 25, 28, 89, 90, 155, 247, 288, 292.
5. Lower jaw with teeth, scapula frag. NE $\frac{1}{4}$, Sec. 23, T81N, R44W, Pisgah Gravel Pit (Old Peyton Pit). Refs. Calvin (1909:352); Hay (1914:57, 372-3, 384); Dechert (1968:36). SUI 2, 9.

LYON (LO)

1. Pelvis. Immediately S of Rock Rapids at Holthusen

Gravel Pit. Ref. NWIAS 19:4 p. 2; 19:5 p. 2.

MILLS (ML)

1. Molar frag. NE $\frac{1}{4}$, NW $\frac{1}{4}$, Sec. 24, T71N, R43W. SUI 37730.
2. Limb. At Henton Station (Sec. 31, T73N, R44W). SUI 308.
3. Molar. Bed of Pony Creek, NW of Glenwood. Ref. Clement (1932:75). SUI 436.

MONONA (MN)

1. Three teeth, vertebra, scaphoid. 13MN2, SE corner, Sec. 4, T83N, R44W, Turin Gravel Pit (Old Elliot Pit). Refs. Calvin (1909:355); Shimek (1910b:129); Hay (1914:387); Dechert (1968:36); Frankforter (1971). SM 63-61-Z, 84-74-Z, SUI 166.
2. Tusk, tooth, 8 skull frags., ulna. NW corner, Sec. 6, T85N, R42W, Wilkenson Well. Refs. Shimek (1910a:343); Hay (1914:386-7). SUI 203, 204, 234.

MONTGOMERY (MM)

1. Skull. Red Oak. Ref. Clement (1932:58-61). SUI 565.

O'BRIEN (OB)

1. Vertebra. 13OB1, SE corner, SW $\frac{1}{4}$, SW $\frac{1}{4}$, SE $\frac{1}{4}$, Sec. 34, T94N, R41W, Hultman Gravel Pit. SM 34-51-Z.
2. Lumbar vertebra. Few mi. E of Sutherland. Ref. NWIAS 22:4 p. 2. Owner: O'Brien Co. Historical Museum, Primghar.

PAGE (PA)

1. Teeth. Nodaway River valley near Clarinda. Hay (1914:388).

PLYMOUTH (PM)

1. Tusk frags, cranial frags. NW $\frac{1}{4}$, Sec. 33, T93N, R48W, Jensen Well. Ref. Hay (1914:377-8, 388-9).
2. Tooth. Well, 2 mi. E of Akron. Ref. Shimek (1910b:126); Hay (1914:377, 388-9).

SAC (SA)

1. Metacarpal. Lake View. SUI 469.

SHELBY (SH)

1. Skull. 3 mi. N of Irwin in a branch of Elk Creek Run on Thomas Holloway farm. Ref. NWIAS 3:3 p. 6.

WOODBURY (WD)

1. Three teeth. 13WD4, W $\frac{1}{2}$, Sec. 12, T88N, R43W. SM 221-52-Z, 222-52-Z, 223-52-Z.
2. Tooth. 13WD6, C, N $\frac{1}{2}$, Sec. 14, T88N, R43W, Correctionville Gravel Pit. Ref. NWIAS 8:6 p. 4. SM 59-61-Z. SM photo 1170-60-M.
3. Mandible. SE $\frac{1}{4}$, Sec. 28, T88N, R43W. Ref. NWIAS 4:3 p. 4. SM 83-56-Z.
4. Tooth. SW $\frac{1}{4}$, Sec. 29, T86N, R43W, on tributary of Parnell Creek. Owner: L. R. Nixon, Mapleton.

Proboscidian

CARROLL (CR)

1. Tusk. Carroll Sand & Gravel Pit near Carroll. SM Prospects File. Informant: Glen Dreezen, 1954.
2. Tibia. Near Carroll. Ref. Hay (1914:381). SUI 10.

CHEROKEE (CK)

1. Four tusks, scapula frag., 2 pelvis frags., 3 long bone frags., ribs. 13CK54, NW $\frac{1}{4}$, SE $\frac{1}{4}$, Sec. 15, T91N, R40W, Shea Gravel Pit. Refs. NWIAS 3:3 p. 5; 3:4 p. 5; 6:5 p. 7; 7:4 p. 6-7. SM 46-51-Z, 69-52-Z, 137-55-Z, 155-55-Z, 2-58-Z, 21-58-Z, SUI 33818.
2. Five long bone frags., 2 ribs, tibia frag., misc. frags. 13CK57, SE $\frac{1}{4}$, SW $\frac{1}{4}$, Sec. 5, T90N, R40W, "On Cap Gadmire's place." SM 35-53-Z, 36-53-Z, 37-53-Z, 38-53-Z, 39-53-Z.

3. Long bone frag., misc. frags., 2 tusks. 13CK61, N $\frac{1}{2}$, NE $\frac{1}{4}$, Sec. 24, T93N, R41W, Rohlfen Gravel Pit. SM 110-55-Z, 81-61-Z, 6-69-Z. Cleghorn, Iowa, Bank has tusks.
4. Two tusks. 13CK60B, N $\frac{1}{2}$, NE $\frac{1}{4}$, Sec. 24, T93N, R41W, Rohlfen "B" Pit. Ref. NWIAS 18:4 p. 2. SM 32-70-Z.
5. Thoracic spine. Olson Gravel Pit N of Meriden. SM 15-60-Z.
6. Tusk, long bone frags. 13CK69, SW $\frac{1}{4}$, SW $\frac{1}{4}$, Sec. 34, T92N, R40W, Hallett Gravel Pit. Refs. NWIAS 6:5 p. 7; 18:4 p. 3. SM 44-58-Z.
7. Two tusk frags. 13CK72, S $\frac{1}{2}$, NE $\frac{1}{4}$, Sec. 28, T91N, R40W, Bugh Gravel Pit. Ref. NWIAS 19:4 p. 2. SM 22-67-Z.
8. Tusk. NW $\frac{1}{4}$, Sec. 29, T90N, R41W, Boothby Gravel Pit. Ref. 19:4 p. 2.
9. Tusk. NW $\frac{1}{4}$, NW $\frac{1}{4}$, Sec. 27, T91N, R40W, along Little Sioux River. SM 98-71-Z. SM photo 299-71-M.
10. Tusk. SE $\frac{1}{4}$, Sec. 34, T92N, R40W, Illinois Central Gravel Pit. Ref. Hay (1914:430).
11. Tusk. N of Cherokee at Cherokee Sand & Gravel. Ref. Carmen (1917:409).
12. Long bone frag. 13CK65, S $\frac{1}{2}$, SW $\frac{1}{4}$, Sec. 23, T92N, R40W, Steele Gravel Pit. Ref. NWIAS 20:4 p. 3. SM 19-72-Z.
13. Long bone frag. C, E edge, SE $\frac{1}{4}$, NE $\frac{1}{4}$, Sec. 1, T92N, R40W. SM 27-54-Z.
14. Phalynx. Sec. 9, T92N, R40W, Gustafson farm. SM 171-58-Z.

CLAY (CY)

1. Tusk frag. Everly. Ref. Clement (1932:76). SUI 402.

CRAWFORD (CF)

1. Tusk. 13CF4, C, E $\frac{1}{2}$, Sec. 27, T82N, R41W, Mauer Gravel Pit. SM 141-59-Z.
2. Humerus. 13CF5, C, NW $\frac{1}{4}$, Sec. 14, T83N, R39W, Hugg Pit. SM 85-61-Z.

DALLAS (DA)

1. Tusk frag. ISMHA (exhibit).

EMMET (ET)

1. Tusk. 13ET407, NW $\frac{1}{4}$, Sec. 2, T99N, R34W, Estherville Sand & Gravel Pit. Ref. Estherville Daily News, Nov. 6, 1973; NWIAS 22:1 p. 1.

GUTHRIE (GT)

1. Tusk frags. Near Yale. SUI 222.

HARRISON (HR)

1. Rib. 13HR1, N line, NW $\frac{1}{4}$, NW $\frac{1}{4}$, Sec. 3, T81N, R42W, Kenneth Shaeffer farm. SM 185-56-Z.
2. Scapula. NE $\frac{1}{4}$, Sec. 24, T78N, R43W, Cox Pit. Ref. Calvin (1909:352); Hay (1914:384).
3. Tusk frag. McWilliams Pit S of Pisgah. SUI 580.

IDA (IA)

1. Tusk. At Ida Grove. ISMHA (exhibit).
2. Tusk frag. From Battle Creek. Owner: Morningside College, Sioux City.

LYON (LO)

1. Tusk. 1 mi. S of Rock Rapids just S of city dump in gravel pit. Ref. Lyon Co. Reporter, Aug. 14, 1967. Owned by Arnold Stettinichs, Rock Rapids.
2. Three vertebrae, humerus. At Rock Rapids. Ref. Hay (1914:439-40). SUI 314, 315, 316, 317.
3. "Bones." In Rock River at Rock Rapids. Ref. Carmen (1917:410).
4. Two tusks. Along Great Northern RR line at Doon. Ref. Hay (1914:386).

MILLS (ML)

1. Tusk and other elements. Near Glenwood. Ref. NWIAS 4:5 p. 3. Found by Donald Davis, Glenwood.
2. Scapula frag. At Henton Station (Sec. 31, T73N, R44 W). SUI 302.

MONONA (MN)

1. Vertebra, tusk. 13MN1, NW¼, SE¼, Sec. 28, T84N, R44W, Leff Gravel Pit. Refs. NWIAS 4:6 p. 3. SM 24-53-Z.
2. Two mandible frags., 6 vertebrae, scapula, pelvis frag., 4 ribs. 13MN2, SE corner, Sec. 4, T83N, R44W, Turin Gravel Pit (Old Elliot Pit). SM 16-55-Z, 24-55-Z, 25-55-Z, 54-55-Z, 55-55-Z, 76-55-Z, 90-56-Z, 96-59-Z, 74-61-Z, 75-61-Z, 36-73-Z, 134-73-Z, 138-73-Z, 56-74-Z, 80-74-Z, 143-74-Z.
3. Femur. 13MN5, SE¼, SE¼, Sec. 3, T85N, R44W, Nickolisen Gravel Pit. SM slides 2107, 2108.
4. Scapula. Near Maple River opposite Castana. Refs. Shimek (1910b:131); Hay (1914:387). SUI 91.
5. Tusk. At Castana. Ref. Hay (1914:387). ISMHA 5537.
6. Tusk frag. ISMHA (exhibit).

O'BRIEN (OB)

1. Three long bone frags., vertebra, femur frag., rib. 13OB1, SE corner, SW¼, SW¼, SE¼, Sec. 34, T94N, R41W, Hultman Gravel Pit. SM 25-51-Z, 31-51-Z, 115-54-Z, 116-54-Z, 117-54-Z.
2. Two tusks. E edge, SE¼, SE¼, Sec. 17, T94N, R41W, along Mill Creek. SM 23-53-Z, 1-54-Z. SM slides 196, 197.
3. Two tusks. 13OB403, NW¼, SW¼, Sec. 2, T94N, R39W, Weldon Martin Gravel Pit. SM 152-73-Z, 153-73-Z. SM slides 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178.
4. Tusk frag. NE¼, Sec. 3, T94N, R39W. Ref. NWIAS 22:4 p. 2. Owner: Jim Hass, Peterson.
5. Long bone. Along Waterman Creek. Ref. NWIAS 7:5 p. 2.
6. Ulna. Found in gravel pit near 13OB4 (W¼, W¼, NW¼, Sec. 11, T94N, R39W). Ref. NWIAS 9:5 p. 5.
7. Fragments. C, S¼, NW¼, Sec. 11, T94N, R39W. SM 46-54-Z.

PALO ALTO (PL)

1. Tibia, tusk. NW¼, Sec. 33, T95N, R33W. Ref. NWIAS 4:5 p. 3. SM 300-56-Z.

PLYMOUTH (PM)

1. Tusk. Near Akron. NWIAS 19:6 p. 2. SM 2-72-Z. SM photo 291-71-M.
2. Tusk. 1 mi. NE of Le Mars, Grimes Pit. Ref. Hay (1914:389).
3. Pelvis. At Le Mars. Refs. Calvin (1911:215); Hay (1914:389). SUI 259.
4. Tusks, teeth, pelvic girdle. NE¼, Sec. 9, T92N, R45W, two gravel pits. Ref. Carmen (1917:394-5, 409).
5. Tusk. Akron. Smithsonian Collection.

POTTAWATTAMIE (PW)

1. "Bones." Sec. 34, T75N, R41W. Refs. Udden (1901:260); Hay (1914:444).
2. Tusk and frags. NE¼, SW¼, Sec. 10, T75N, R40W. Ref. Davis, Eshelman and Prior (1972-3:62-65). SUI 34869.

SAC (SA)

1. Tusk. 13SA2, NW¼, NW¼, Sec. 9, T86N, R36W, Wetzstein Gravel Pit. Ref. NWIAS 3:3 p. 6.
2. Vertebra, rib, tusk frags. 13SA3, C, Sec. 7, T86N, R36W, Hallett Gravel Pit. Ref. NWIAS 6:3 p. 8. SM 236-58-Z,

237-58-Z, 238-58-Z. SM photos 542-58-M, 543-58-M, 544-58-M.

3. Tusk. 13SA4, C, N¼, Sec. 2, T86N, R35W, Hosteng Gravel Pit. Ref. NWIAS 17:5 p. 1.
4. Tusk. SW edge of Lake View. Ref. NWIAS 2:3 p. 4. Found by Clyde Zielman, Lake View.

SHELBY (SH)

1. Tusk frag. At Defiance. Smithsonian Collection.

WOODBURY (WD)

1. Tusk. 13WD4, W¼, Sec. 12, T88N, R43W. SM 209-52-Z.
2. Tusk. 13WD6, C, N¼, Sec. 14, T88N, R43W, Correctionville Gravel Pit. Refs. NWIAS 4:6 p. 2.
3. Tusk, teeth. Paul Fleming Pit, 2 mi. N of Correctionville at mouth of Pierson Creek. Refs. Carmen (1917:410); NWIAS 3:6 p. 4.

DISCUSSION

The present survey is offered in the hope that it will stimulate further paleontological research on one hand, and raise the level of awareness and interest of the layman on the other. Proboscidian bones are obvious and easily recognized. If they can be recovered by gravel pit operators, construction workers and individual collectors who know the value of properly reporting their finds, they may provide a key to localities where specimens of smaller and less conspicuous animals may be recovered. In Iowa, the glacial record is rather complex, including weathered and reworked sediments of four major periods of glaciation. If more information can be gathered on changing animal communities, it will be useful in dating and interpreting the Pleistocene and may have feedback on our understanding of proboscidians' distribution in time and space and perhaps shed light on problems relating to their disappearance.

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LITERATURE CITED

- CALVIN, S. 1909. Aftonian mammalian fauna. *Bulletin of the Geological Society of America*, Vol. XX, pp. 341-56.
 ———. 1911. Aftonian mammalian fauna II. *Bulletin of the*

- Geological Society of America*, Vol. XXII, pp. 207-16.
- CARMEN, J. ERNEST. 1917. The Pleistocene geology of northwestern Iowa. *Iowa Geological Survey*, Vol. XXVI, pp. 233-445.
- CLEMENT, G. M. 1932. Some Pleistocene mammals of Iowa. Master's thesis, The University of Iowa.
- DAVIS, LEO CARSON, RALPH E. ESHELMAN and JEAN C. PRIOR. 1972-73. A primary mammoth site with associated fauna in Pottawattamie County, Iowa. *Proceedings of the Iowa Academy of Science*, Vol. 79, No. 2, pp. 62-65.
- DECHERY, HEDY S. 1968. Paleocology and correlation of the "Aftonian" fauna from Harrison and Monona counties, Iowa. Master's thesis, The University of Iowa.
- FRANKFORTER, W. D. 1971. Local faunas of the Great Plains and central lowland provinces. Paper delivered to the Nebraska Academy of Science meeting, 1971.
- HAY, OLIVER P. 1914. The Pleistocene mammals of Iowa. *Iowa Geological Survey*, Vol. XXIII, 662 pp.
- . 1924. *The Pleistocene of the Middle Regions of North America and Its Vertebrate Animals*. Carnegie Institute Publication No. 322A. 385 pp. Washington, D.C.
- JENKINS, JOHN T. 1972. The Pleistocene geology and paleocology of the Fremont County Quarry, Fremont County, Iowa. Master's thesis, The University of Iowa.
- MEHL, M. G. 1962. *Missouri's Ice Age Animals*. Missouri Geological Survey and Water Resources, Educational Series No. 1. pp. 45-58. Rolla.
- SHIMEK, B. 1910a. Geology of Harrison and Monona counties. *Iowa Geological Survey*, Vol. XX, pp. 273-485.
- . 1910b. Evidence that the fossiliferous gravel and sand beds of Iowa and Nebraska are Aftonian. *Bulletin of the Geological Society of America*, Vol. XXI, pp. 119-140.
- SKEELS, MARGARET A. 1962. The mastodons and mammoths of Michigan. *Papers of the Michigan Academy of Science, Arts and Letters*, Vol. 47, pp. 101-133.
- TODD, J. E. 1880. On the relation of loess to drift in southwestern Iowa. *Proceedings of the Iowa Academy of Science*, 1875-1880, p. 19.
- UDDEN, J. A. 1901. Geology of Pottawattamie County. *Iowa Geological Survey*, Vol. XI, pp. 201-77.
- . 1903. Geology of Mills and Fremont counties. *Iowa Geological Survey*, Vol. XIII, pp. 123-83.
- NORTHWEST IOWA ARCHAEOLOGICAL SOCIETY NEWSLETTER, Cherokee.
- 1:2 pp. 3, 6 (1953) "County Abbreviation List."
- 2:3 p. 4 (1954) "Lake View Mammoth."
- 3:1 p. 4 (1955) "Recent Finds and Reports," No. 4.
- 3:3 p. 5 (1955) "The Bone Pile," No. 2.
- 3:3 p. 6 (1955) "The Bone Pile," No. 4.
- 3:3 p. 6 (1955) "The Bone Pile," No. 5.
- 3:4 p. 5 (1955) "The Bone Pile," No. 1.
- 3:5 p. 3 (1955) "Recent Finds," No. 4.
- 3:6 p. 3 (1955) "Member News," No. 14.
- 3:6 p. 4 (1955) "Member News," No. 18.
- 3:6 p. 4 (1955) "Recent Finds," No. 2.
- 3:6 p. 5 (1955) "Recent Finds," No. 5.
- 4:3 p. 4 (1956) "Current Activities and News," No. 5.
- 4:5 p. 3 (1956) "Recent Finds," No. 8.
- 4:5 p. 3 (1956) "Recent Finds," No. 11.
- 4:5 p. 3 (1956) "Recent Finds," No. 12.
- 4:5 p. 3 (1956) "Recent Finds," No. 13.
- 4:5 p. 4 (1956) "Current Activities and News," No. 8.
- 4:6 p. 2 (1956) "Recent Finds," No. 3.
- 4:6 p. 3 (1956) "Recent Finds," No. 8.
- 4:6 p. 3 (1956) "Recent Finds," No. 12.
- 5:2 p. 4 (1957) "Recent Finds and Activities," No. 13.
- 5:5 p. 4 (1957) "Recent Finds and Activities," No. 7.
- 5:6 p. 2 (1957) "Recent Finds and Activities," No. 4.
- 6:1 p. 5 (1958) "Recent Finds and Activities," No. 14.
- 6:3 p. 8 (1958) "Recent Finds and Activities," No. 5.
- 6:3 p. 8 (1958) "Recent Finds and Activities," No. 10.
- 6:5 p. 6 (1958) "Museum Notes," No. 3.
- 6:5 p. 7 (1958) "Museum Notes," No. 9.
- 6:5 p. 7 (1958) "Museum Notes," No. 10.
- 7:4 pp. 6-7 (1959) "Museum Notes," No. 25.
- 7:5 p. 2 (1959) "Museum Notes," No. 1.
- 8:6 p. 4 (1960) "Museum News and Notes," No. 9.
- 9:3 p. 3 (1961) "News and Notes from the Museum," No. 3.
- 9:4 p. 3 (1961) "News and Notes," No. 3.
- 9:5 p. 5 (1961) "News and Notes," No. 10.
- 10:5 p. 2 (1962) "Museum Notes," No. 2.
- 10:6 pp. 2-3 (1962) "Mammoth Remains Found at Ida Grove."
- 17:5 p. 1 (1969) "Museum Notes," No. 3.
- 17:6 p. 1 (1969) "Museum Notes," No. 1.
- 17:6 p. 2 (1969) "Museum Notes," No. 4.
- 18:1 p. 2 (1970) "Museum Notes," No. 4.
- 18:3 p. 2 (1970) "Recent Finds and Activities," No. 3.
- 18:4 p. 2 (1970) "Museum Notes," No. 5.
- 18:4 p. 2 (1970) "Recent Finds and Activities," No. 1.
- 18:4 p. 3 (1970) "Recent Finds and Activities," No. 2.
- 19:4 p. 2 (1971) "Museum Notes," No. 3.
- 19:4 p. 2 (1971) "Museum Notes," No. 8.
- 19:5 p. 2 (1971) "Museum Notes," No. 5.
- 19:5 p. 3 (1971) "Museum Notes," No. 9.
- 19:6 p. 2 (1971) "Museum Notes," No. 2.
- 20:2 p. 2 (1972) "Museum Notes," No. 1.
- 20:4 p. 3 (1972) "Recent Finds and Activities," No. 15.
- 20:5 p. 2 (1972) "Museum Notes," No. 2.
- 21:3 p. 1 (1973) "Museum Notes," No. 3.
- 21:5 p. 1 (1973) "Museum Notes, Recent Finds and Activities," No. 1.
- 21:5 p. 1 (1973) "Museum Notes, Recent Finds and Activities," No. 2.
- 21:6 p. 1 (1973) "Recent Finds and Activities," No. 1.
- 22:1 p. 1 (1974) "Museum Notes," No. 1.
- 22:4 p. 2 (1974) "News and Notes," No. 9.