

## SHORT COMMUNICATIONS

### A WHOOPING CRANE FROM THE PLEISTOCENE OF NORTH FLORIDA

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In a small collection of bird fossils given to me for study by Dr. Richard Ohmes of Chaires, Florida, there is a distal two-thirds of a right tibiotarsus of a Whooping Crane (*Grus americana*). It was collected in 1969 by Dr. Ohmes from river-bottom deposits in a branch of the Aucilla River on the west side of Ward Island in the NE ¼ sec. 13, T. 4 S., R. 3 E., Jefferson County, Florida, and is now number 170878 in the paleontological collections of the U.S. National Museum. Because of its manner of deposition, it is not possible to age the bone precisely, but it was associated with numerous remains of Pleistocene to Recent vertebrates including such forms as *Megalonyx*, *Mammut*, *Tapirus*, *Equus*, *Camelops*, and *Geochelone*, which are either extinct or no longer present in Florida, and it is safe to assume its contemporaneity with these animals. Analysis of the other avian elements is not yet complete but so far indicates a mixture of fresh and salt water avifaunas of extant species.

Recent Florida records of Whooping Cranes have generally been subject to doubt (Sprunt 1954), but Hallman (1965) has published photographs of a mounted specimen said to have been obtained in 1927 or 1928, 12 miles N of St. Augustine, St. Johns County. Other Florida fossil records are from Ich-tucknee River, Columbia County; Seminole Field,

Pinellas County; and Melbourne, Brevard County (Wetmore 1931). In addition, Brodkorb (pers. comm.) informs me that his record (Neill et al. 1956) of a Sandhill Crane (*Grus canadensis*), based on a proximal portion of a left carpometacarpus from Lemon Bluff on the St. Johns River, Volusia County, actually pertains to *G. americana*. The Aucilla River specimen represents the westernmost locality for the state and is the first indication of the species in the panhandle. The Whooping Crane is also known from Pleistocene fossils or prehistoric remains from California, North Dakota, Illinois, Idaho, Michigan, Kentucky, Virginia (Brodkorb 1967), and Arizona (Craft 1968).

I would like to thank D. Bruce Means and Pierce Brodkorb for their assistance with this note, and Tall Timbers Research Station for providing facilities and support for myself and Means to carry out research at the Aucilla site.

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### THE INCREDIBLE TERATORN AGAIN

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Under grants from the National Science Foundation, the Natural History Museum of Los Angeles County (LACM) has been, since 1958, studying the extensive fossil deposits in the Vallecito-Fish Creek area of the Anza-Borrego Desert State Park, San Diego County, California. The birds from the upper 4000 ft in Vallecito Creek sites (of Middle Pleistocene, Irvingtonian age) were recorded in a previous paper (Howard 1963). Continuing work (under National

Science Foundation Grant no. GB 5116) has carried the collecting to a depth of 8000 ft in Fish Creek sites, where the mammalian forms found are of the type characteristic of the Plio-Pleistocene (Blancan) of Kansas and Arizona (Downs and White 1968:43). Found with these early mammals, at LACM locality 6747, is the fragment of a beak of a large bird (LACM no. 26697).

The specimen represents the anterior portion of the upper mandible, anterior to the nasal opening (fig. 1). The outer surfaces are badly weathered, but the shape and contours are retained, and structural characters of the ventral side are preserved. Both the shape of the beak and the characters of this ventral portion bear marked resemblance to specimens of *Teratomis merriami* from the late Pleistocene of Rancho La Brea, except for more than 40% larger size.

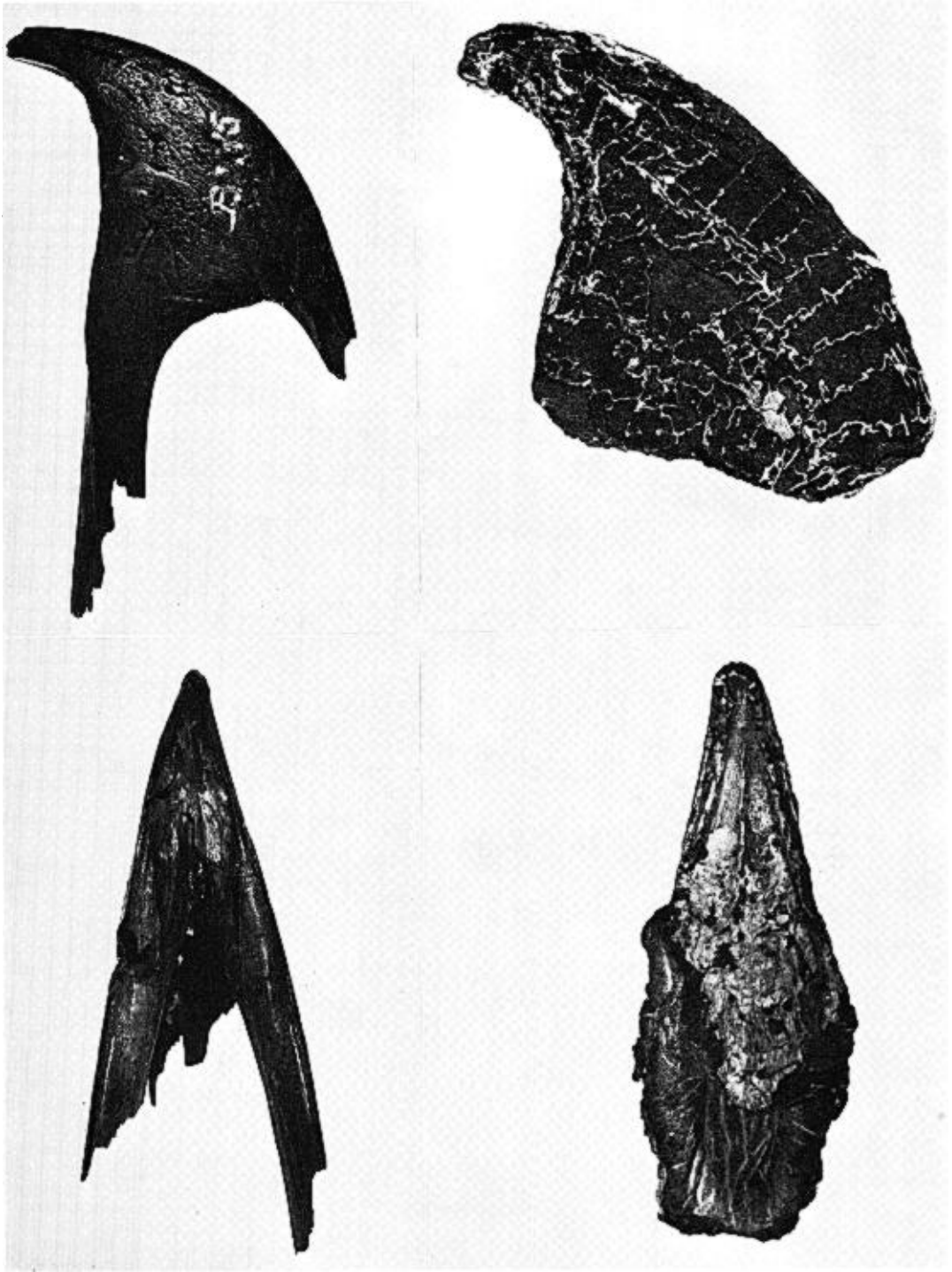


FIGURE 1. Left: beak of *Teratomis merriami*, LACM no. B 185, from Rancho La Brea; lateral and ventral views. Right, similar views of beak of *Teratomis cf. incredibilis*, LACM no. 26697, from Anza-Borrego Desert State Park. Natural size. Photographs by Lawrence S. Reynolds, Natural History Museum of Los Angeles County.

Characters of this beak are as follows: resembling *Teratomis merriami* in the markedly compressed, high beak, with roof of mouth relatively flat (not highly vaulted as in cathartids) and bearing a central ridge near the tip; tomial edges bordered by longitudinal ridges that curve together markedly at

the tip to form a narrow, deep channel. These incurving ridges thicken the tip of the hooked beak and undoubtedly strengthened its tearing power. They, as well as the central ridge, are better developed than in *T. merriami*, and the tomium curves more abruptly. The roof of the mouth, except for

slight perforations, is solid, as in *T. merriami*, but is slightly more concave and shows no evidence of median division. In *T. merriami*, division is apparent anterior to the point of greatest depth of the tomium (which, in turn, is on a line with the anterior border of the nares). The narial border is not delineated in the Fish Creek fragment, nor can we determine whether the greatest depth of the tomium is here preserved.

It is difficult to make comparative measurements of the incomplete Fish Creek fragment with specimens of *T. merriami*. A measurement of greatest height from tomium to culmen (at right angles to the plane of the ventral surface) is probably the most reliable. In this dimension, the Fish Creek beak is 41% larger than the largest of four measurable specimens of *T. merriami* from Rancho La Brea: Fish Creek, 60.8 mm; *T. merriami*, 40.9–43.0 mm. Other measurements of LACM 26697 are: breadth at point of greatest tomial convexity, 34.0 mm (*T. merriami*, 23.3–24.9 mm); distance from anterior tip of culmen to point of greatest convexity of tomial edge, 54.4 mm (*T. merriami*, 45.7–47.7 mm); length from anterior tip of culmen to posterior edge of ventral surface, 61.5 mm (*T. merriami*, length before median division, 24.8–35.6 mm).

The Fish Creek beak is the third occurrence of a teratornithid specimen of similar gigantic size. The first, a wrist bone (cuneiform, = ulnare), was found with a late Pleistocene bird and mammal fauna in Smith Creek Cave, Nevada, and described as *Teratornis incredibilis* (Howard 1952:51). This bone is 43% larger than a large ulnare of *T. merriami* and exhibits some structural differences from that species. The second occurrence was a distal end of a radius found near the 3600-ft level in the Vallecito Creek area, with the Irvingtonian age fauna. This bone is approximately 40% broader than a large radius of *T. merriami*. Like the ulnare, the radius is generally similar to the comparable element of *T. merriami* with some structural distinctions; it was referred to *T. incredibilis* (Howard 1963:16). A similar combination of gigantic size and general resemblance to *T. merriami* is found in the beak at hand.

Ordinarily, the paleontologist might hesitate to align three separate elements from three different geologic horizons under one extinct species. However, the repeated pattern of gigantic size, plus the same degree of structural similarity to *T. merriami* in each element is so marked that the probability that they represent the same species outweighs the possibility that there could have been more than one such creature. Nevertheless, because of the geologic range involved, it seems advisable to record the beak as *Teratornis cf. incredibilis*.

The acceptance of the beak from Fish Creek as representing the same species as that described from the ulnare found in Smith Creek Cave would present a rare documentation of avian longevity. The fauna of the Fish Creek beds at the 7000–8000-ft level, where the beak was found, apparently represents that part of the Blancan provincial age that Hibbard et al. (1965:512) now consider to be late Pliocene (Downs and White 1968:43–45). A potassium-argon dating of beds presumably of the same geologic position suggests an age in years of 3.2–3.5 million years (Savage and Curtis 1970:226; Evernden et al. 1964:164).

The Smith Creek Cave deposits in which the type of *T. incredibilis* occurred have not been dated in years. The fauna is, however, typically Quaternary,

certainly no older than late Pleistocene. On the basis of percentage of extinct species, graphically portrayed (Howard 1963:31), the Smith Creek avifauna is shown to be somewhat younger than that of Pit 3 of Rancho La Brea. Dating for Pit 3, based on carbon-14 tests of wood and bone, ranges from 12,500 to 22,000 years Before Present (Ho et al. 1969). Geologically between the ulnare and the beak, the radius of Irvingtonian age is probably over a million years old. Savage and Curtis (1970:223) give potassium-argon dates for the Irvingtonian of 1.0 to 1.5 million years.

Except for *Teratornis incredibilis*, the record of the family Teratornithidae, which includes *Teratornis merriami* and *Cathartornis gracilis*, is limited to the late Pleistocene. *Teratornis merriami* has several late Pleistocene records from California and Florida and also from Nuevo Leon, México. The monotypic *Cathartornis* is known only from two tarsometatarsi from Rancho La Brea, which are shorter than the average for *T. merriami* and are relatively more slender. The generic distinction of *Cathartornis* from *Teratornis* is based on structural differences of the tarsometatarsi equalling in degree those observed among genera of the family Cathartidae (Miller 1910:14–17; Miller and Howard 1938:170).

When the ulnare of *T. incredibilis* was described, the possibility of generic separation from *T. merriami* was entertained. However, in view of the lack of knowledge concerning the diagnostic value of this element, the species was placed in *Teratornis* pending further knowledge of the skeleton (Howard 1952:51). The radius, at best an element of little diagnostic value, was too poorly preserved to add cogent information. The beak, too, is incomplete and badly weathered. The greater curvature of the tomium, greater reinforcement of the tip, and sturdier roofing of the mouth compared to the rostrum of *T. merriami* may have generic significance. On the other hand, these characters may merely reflect a strengthening of the beak consistent with the size of the bird. Until more complete material on which to form a reliable diagnosis can be obtained, it seems advisable to continue to retain the species in *Teratornis*, the type genus of the family.

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## BIRD BONES IDENTIFIED FROM INDIAN SITES AT WESTERN END OF LAKE ERIE

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The earliest eyewitness accounts of the land and the birds at the western end of Lake Erie did not come until the region was already in transition from wilderness to farm and town. Although French and English traders had visited the area earlier, clearing of the forest and permanent settlement by white men did not begin here until the early 1800s and was not completed until late in the century. Clearing and agriculture developed here more slowly than in the rest of Ohio and southern Michigan. The obstacle was the exceeding wetness of the land and in particular the Black Swamp that lay like a moat across northwestern Ohio from Sandusky Bay on Lake Erie to Indiana (Mayfield 1962:36-37).

This first direct information on the birds of the region in prehistoric times comes from Indian sites recently excavated by Professor Earl J. Prah and his students of the Sociology and Anthropology Department of the University of Toledo.

### SITES

The four sites represented in this report are all within 10 mi. of the courthouse of Toledo, Ohio, although one of them is located in Michigan. Cultural and radiocarbon evidence places all the sites in the late Woodland Period and before contact with white men, roughly 700 to 1300 years ago.

The principal site, supplying 225 identified bird bones, is on land now occupied by the Indian Hills School of Rossford (NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 23, T. 8 N., R. 11 E., Ross Township, Wood County, Ohio). Digging here took place in the summers of 1967 and 1968. Only a part of the area was dug exhaustively, but the amount of excavation was substantial. More than 45,000 ft<sup>2</sup> of surface were scraped and more than 2000 ft<sup>2</sup> were excavated to the level of sterile sand. Over 5000 manhours of work went into this project. Much of the effort was concentrated in 10-ft-square test pits. All material was sifted through  $\frac{1}{4}$ -inch screen. Post molds revealed the locations of a number of former dwellings and 800 ft of stockade, which was estimated to be about half the original length. The highest concentration of food remains, ceramics, and artifacts occurred within the house patterns.

The University of Michigan Radiocarbon Laboratory gave the following dates for three samples from this site: A.D. 710  $\pm$  120 (M-2043), A.D. 890  $\pm$  130 (M-2044), and A.D. 1110  $\pm$  100 (M-2042).

A smaller collection, 18 identified bird bones, came from the John Morin farm in Michigan, just north of Toledo. It was excavated in 1967. This site is on the north bank of Halfway Creek  $\frac{1}{4}$  mi. from its mouth (NW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 32, T. 8 S., R. 8 E., Erie Township, Monroe County, Michigan). A radiocarbon sample was dated A.D. 1070  $\pm$  110 (M-2087).

Two sets of two bones each were identified from the Williams site on the flood plain south of the Maumee River at the crossing of Interstate Highway 475 and from the Fort Meigs State Memorial site at the southwest edge of Perrysburg, Ohio. Pottery fragments and artifacts in these two sites pointed to the late Woodland Period.

### DISCUSSION

This region is a flat lake plain. Up to almost 1910, parts of it remained in its original water-soaked state. The land could not be farmed until drained, and the early settlers, coming from hilly country, were slow to master the art of tiling. Deciduous trees of great size and diversity covered most of the land, but the swamp forest was broken in many places by extensive grassy marshes, shallow ponds and meandering streams. Deeper water occurred where the Maumee River and larger creeks broadened into estuaries near their mouths.

In such wet land it is not surprising that the birds captured by the Indians were mainly waterfowl. Of 247 bird bones identified, 222 (90%) were of ducks, geese, swans, or grebes. This sample includes 34 species of birds, a few identified tentatively. The entire list appears in table 1.

I have made no attempt to estimate the numbers of individual birds. Since the digging pits were scattered in larger deposits and the identified bones came from many depths, I suspect most of the bones represent separate birds.

Bird bones made up about 4% by weight of one large sample analyzed from the Indian Hills site and judged fairly representative of all the excavations. This sample contained 17,000 g of nonhuman bones from three test pits. Fish bones made up 56% of the sample by weight; mammals, 40%; and turtle, less than 1%.

Among the mammals only the black bear (*Ursus americanus*), wolf (*Canis lupus*), porcupine (*Erethizon dorsatum*), and elk (*Cervus canadensis*) are now absent from the area.

Plant remains included wood of the shagbark hickory (*Carya ovata*) and nuts of the black walnut (*Juglans nigra*) and hazelnut (*Corylus americana*), all of which are still common here. Some of the sites contained maize.

Before commenting on the birds in detail, I would like to voice some cautions. The proportions of the species are only roughly indicative of the abundance of the species at the time of capture. The Indians probably were selective in their hunting, focusing on