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A HERD OF FOSSIL PECCARIES (*Platygonus compressus*) FROM LATE WISCONSINAN DEPOSITS IN CENTRAL INDIANA

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ABSTRACT: Five articulated skeletons of the extinct Pleistocene peccary *Platygonus compressus* discovered beneath late Wisconsinan drift in Marion County, Indiana represent animals that died simultaneously about 20,000 ybp when a cutbank collapsed upon them. The peccaries were living in a periglacial environment characterized as cool, open coniferous parkland. The paleoenvironmental correlation, herd composition (ages and sexes), sizes of the animals, and mode of death and deposition compare well with penecontemporary fossil occurrences of this species in the Midwest and Northeast.

INTRODUCTION

In the summer of 1976, during excavation of a deep sewer trench in southern Marion County, Indiana, the articulated skeletons of five mammals were encountered in a sand stratum 6.7 m below the surface. The contractor and one of the workmen recognized the potential importance of the discovery and attempted to contact someone qualified to identify these animals, assess the geological context, and recover the fossils. Unfortunately they failed in this endeavor, and due to the press of the construction schedule the trench was backfilled shortly thereafter. However, portions of all five skeletons were recovered and retained.

Over a decade later a visitor to Indiana University mentioned to me that Mr. Jerry Kindred (the contractor on the project) owned the skull of an "unusual animal." I subsequently contacted Mr. Kindred and found that this was a complete and exceptionally well preserved cranium and mandible of the extinct, late Pleistocene peccary *Platygonus compressus* LeConte. Mr. Kindred remembered the name of the workman, Mr. Gaylis Blackwell, who had also recovered some parts of the peccaries, and when he was contacted it was discovered that he possessed another almost complete skull and articulating lower jaw of this species, as well as cranial fragments, jaw fragments, and isolated teeth of three other individuals and a number of post-cranial elements.

Mr. Kindred temporarily loaned the skull and jaw that he had found (Specimen No. 1) for the purposes of measurement and photographs; it is presently in his possession. Mr. Blackwell generously donated all of the fossil materials that he had recovered to the Glenn A. Black Laboratory of Archaeology, Indiana University-Bloomington, where they are now curated under Accession Number 5510.

GEOLOGY, DATING, AND PALEOENVIRONMENT

The fossil peccaries were found in southern Marion County, Indiana (SE 1/4, SW 1/4, SW 1/4, Sec. 2, R 3 E, T 14 N) approximately 10 km south of Indianapolis and

along the eastern margin of the valley of the West Fork of the White River. As related by Mr. Blackwell and Mr. Kindred, there were five articulated individuals in a group in an area about 2.5 m in diameter. They were embedded in a stratum of coarse sand. At this location the sand stratum extends downward for at least several meters below the peccaries. About 0.5 m above the fossils the coarse sand is disconformably overlain by a stratum of poorly sorted sand and gravel some 6.2 m in thickness, which extends to the surface (213 m ASL at this location).

Southern Marion County was glaciated during the early part of the Woodfordian Stage of the Wisconsinan Glaciation. The southern boundary of the Shelbyville Moraine of Malott (1922), or the Center Grove Till Member of Wayne (1963), lies about 35 km to the south of the peccary location. Radiocarbon age determinations (Rubin and Alexander, 1960; Wayne, 1963) from deposits directly underlying the Center Grove Till in Marion and adjacent Johnson and Henricks counties range from 22,300 ± 800 ybp (W-595) to 20,800 ± 800 ybp (W-579).

Stagnation and melting of the Center Grove ice mass apparently commenced shortly after it had reached its maximum southward extent, and during this period the West Fork of the White River served as a sluiceway for meltwater. Cross-sections a few kilometers north of the peccary location show the valley to be filled with upward-fining glacial outwash deposits to a depth of 20 m or more (Harrison, 1963). During the latter stages of this outwash episode the valley floor of the White River in the vicinity of the fossil deposit was at least 5 km in width and apparently consisted of a series of braided stream channels. It was at this time that the peccary herd was entrapped. Perhaps while crossing the valley floor they became mired in quicksand, or, more likely I would think, they were taking refuge from the sun or wind under an overhanging cutbank of one of the channels and it collapsed upon them.

Silts overlying the Center Grove Till Member about 30 km south of the peccary location and penecontemporaneous with the peccaries have yielded wood samples radiocarbon dated 20,300 ± 800 ybp (W-597) and 20,100 ± 800 ybp (W-598). Molluscs and plant macrofossils associated with these silts suggest that the environment a few kilometers to the south of the peccary location was "cool to cold, moist . . .; probably open park with scattered conifers" (Wayne, 1963).

Shortly following this minor interstadial, ice again moved over the area, terminating some 30 km to the south of the peccary location at Malott's (1922) Champaign Moraine or the southern margin of Wayne's (1963) Cartersburg Till Member. The subsequent stagnation and melting of this ice mass resulted in the deposition of a complex and extensive area of kames and eskers along the east side of the White River valley in southern Marion and northern Johnson counties (Gray et al., 1979). One of these eskers, consisting of poorly sorted sand and gravel, caps and directly overlays the coarse sand outwash stratum containing the peccary fossils.

DESCRIPTION OF THE PECCARIES

When discovered the peccaries consisted of five complete, articulated, unbroken skeletons. Breakage and loss of elements occurred during the discovery and recovery. Cranial and/or dental elements were recovered for all five individuals. Only a few of the post-cranial bones were saved, however, and no attempt was made to keep these elements in association with their respective crania. Measurements are summarized in Tables 1 and 2.

Table 1.—Measurements (mm) of skulls, mandibles, and teeth of *Playtgonus compressus* from Marion County, Indiana.

	No. 1			No. 2			No. 3	
	Skull	L	R	L	R	L		R
Greatest length		301.6			—		—	
Condylobasal length		274.8			—		—	
Anterior margin of foramen magnum to anterior of premaxilla		264.0			—		—	
Anterior margin of orbit to anterior of premaxilla	193.7		196.0	—	—	—		—
Zygomatic breadth		116.0		128.1			c. 140	
Breadth of skull above P2		36.1		39.0			—	
Depth of zygoma from end of postorbital process to end of preglenoid process	65.3		—	70.3	71.1	—		72.6
Depth of zygoma at middle below orbit	32.0		31.7	33.9	34.9	—		37.6
Vertical diameter of orbit	35.5		35.4	34.5	—	—		34.5
Width across canines		65.5		—			—	
Height of canine buttress from alveolus	37.2		36.9	—	37.2	—		—
Palatal width between canines		37.8		38.0			—	
Palatal width just anterior of P2s		28.0		32.2			—	
Palatal width between P2s		20.5		24.2			—	
Palatal width between M2s		18.8		20.6			—	
Length of upper pre-canine diastema	22.2		22.0	—	—	—		—
Length of upper post-canine diastema	40.1		39.1	42.3	42.6	—		—
Height of occiput from ventral border of condyles		95.0		95.9			—	
Width of, and including, occipital condyles		52.5		54.9			—	
Mandible								
Length		212.1		211.0			—	
Height		90.6		88.0			—	
Length of post-canine diastema	44.2		43.5	49.9	50.4	—		—
Least depth of post-canine diastema	31.9		31.9	33.8	34.1	—		—
Depth below anterior margin of m1	—		36.9	40.0	40.4	—		—
Length of symphysis		64.9		62.2			—	
Teeth								
Length P2-M3	75.8		74.7	73.1	73.0	—		—
Length P2-P4	27.5		27.4	29.2	28.5	—		—
Length M1-M3	48.5		48.0	44.0	44.5	—		—
Upper canine, antero-posterior diameter	13.2		13.0	—	13.7	16.3		—
Upper canine, transverse diameter	7.6		7.6	—	8.7	9.7		—
P2 length	8.8		8.7	8.8	9.2	—		—
P2 width	8.5		8.8	10.4	10.6	—		—
P3 length	10.1		9.8	10.0	10.1	—		—
P3 width	11.0		10.9	11.6	11.8	—		—
P4 length	9.5		9.4	10.0	10.0	—		—
P4 width	11.4		11.4	12.8	12.6	—		—
M1 length	12.6		12.4	11.9	11.8	—		—
M1 width	12.4		12.3	12.3	12.4	—		—
M2 length	15.6		15.0	15.5	15.7	—		—
M2 width	14.6		14.4	15.2	15.3	—		—
M3 length	20.1		20.1	18.0	18.0	—		—
M3 width	14.8		15.0	15.1	15.4	—		—

Length p2-m3	76.5	76.6	75.5	75.7	—	—
Length p2-p4	27.7	27.8	29.5	29.9	—	—
Length m1-m3	49.1	48.8	46.0	45.8	—	—
Lower canine, antero-posterior diameter	12.4	12.7	11.1	10.6	—	—
Lower canine, transverse diameter	11.6	11.8	9.6	9.2	—	—
p2 length	7.2	7.2	8.5	9.0	—	—
p2 width	7.1	7.4	7.6	8.1	—	—
p3 length	10.4	10.1	10.3	10.1	—	—
p3 width	8.4	8.2	8.9	8.7	—	—
p4 length	10.0	10.0	11.0	11.0	—	—
p4 width	9.6	9.7	10.2	10.3	—	—
m1 length	11.7	11.8	11.7	12.0	—	—
m1 width	9.7	9.7	10.0	9.9	—	—
m2 length	15.7	15.2	14.9	15.0	16.0	—
m2 width	12.1	12.1	11.8	11.9	11.8	—
m3 length	21.8	22.1	19.8	19.4	21.5	—
m3 width	12.5	12.2	12.8	12.7	12.0	—

Table 2.—Measurements (mm) of post-cranial elements of *Platygonus compressus* from Marion County, Indiana

Atlas, greatest width	96.0
Atlas, width of condylar facets	49.9
Scapula, antero-posterior diameter of neck	22.5, 22.4
Humerus, length	182.3
Humerus, maximum distal width	38.8
Femur, length	182.6
Femur, least shaft width	17.7
Femur, maximum distal width	52.4
Tibia, maximum proximal width	52.8
Axial III phalanx, length	31.2, 32.6

Specimen 1 (Figure 1) consists of a well preserved cranium and articulating lower jaw, complete except for the anterior nasals, the right preglenoid process, the left mastoid process, and the right condyle. There is a shovel cut across the midportion of the right nasal area and minor damage on the temporal. Permanent dentition is fully erupted and there is extensive wear on the first molars (although they are not worn smooth). Guilday et al. (1971) have presented criteria for eight age classes for *Platygonus* based on tooth replacement and wear; this specimen is in age class 6 (middle-aged adult) on this scale. The left m1 is severely abscessed. This condition was apparently sufficiently painful that the individual favored the right side in chewing; all of the right teeth show appreciably more wear that the left teeth. The tip of the lower left canine had been broken in life, and the broken surface is worn smooth. Both lower canines show slight grooving at the gum-line on the lingual surfaces; this "gum-line notching" or "root-drag wear" has been observed on many Pleistocene peccaries, and it has been argued (Mehl, 1966) that it resulted from the use of the lower canines to dig for and pull up roots.

Specimen 2 consists of a well preserved cranium and articulating lower jaw. During recovery the following portions were broken and lost: premaxilla and anterior nasals, right alveolus, left canine buttresses, left upper and both lower canines (broken at the gum-lines), both lower left incisors, right supraorbital, right postglenoid process, and right mastoid process. There is also a deep shovel cut on the right posterior nasal. All permanent teeth are fully erupted. The first molars are worn smooth and there is moderate wear on the second and third molars: age class 7 (late middle age).

Specimen 3 consists only of a frontal with supraorbitals, dorsal occipital, and right orbit, zygoma, glenoid, temporal, mastoid, and auditory bulba, plus a probably associated right upper canine and a fragment of the left mandible with molars 2-3. The molars show slight wear: age class 6 or 7 (middle- or late middle-aged adult). Compared to Specimens 1 and 2, this individual exhibits extreme zygomatic flaring, and the ventral margins of the zygomata have thickened, gnarled "buttressing." Specimen 3 is also appreciably larger than the other two in almost all dimensions.

Specimen 4 is represented in the collection only by the lower right permanent canine. The tooth shows only a moderate amount of wear and is assumed to represent a sub- or young adult. Antero-posterior diameter of the canine is 10.8 mm; transverse diameter is 8.8 mm.

Specimen 5 is represented by only the tip of the upper right permanent canine. The tooth exhibits no wear, indicating that it had only recently erupted: juvenile.

Post-cranial portions of at least two adult individuals were saved, and consist of one atlas, two cervical vertebrae, one right humerus, two proximal portions of right scapulae, one distal portion of a left scapula, one left pelvis, one right femur, one proximal left tibia, and two axial III phalanges.

DISCUSSION

The five peccaries described here died simultaneously, and their proximity argues that this was a herd. Although it has not been possible to sex them, their ages and relative sizes suggest the following herd composition: one large, robust adult (No. 3, male?); two smaller, less robust adults (Nos. 1 and 2, females?); one subadult (No. 4); and one juvenile (No. 5).

Fossils of *Platygonus compressus* have previously been reported from four other locations in Indiana. A portion of a lower jaw was recovered in Wabash County (Cope

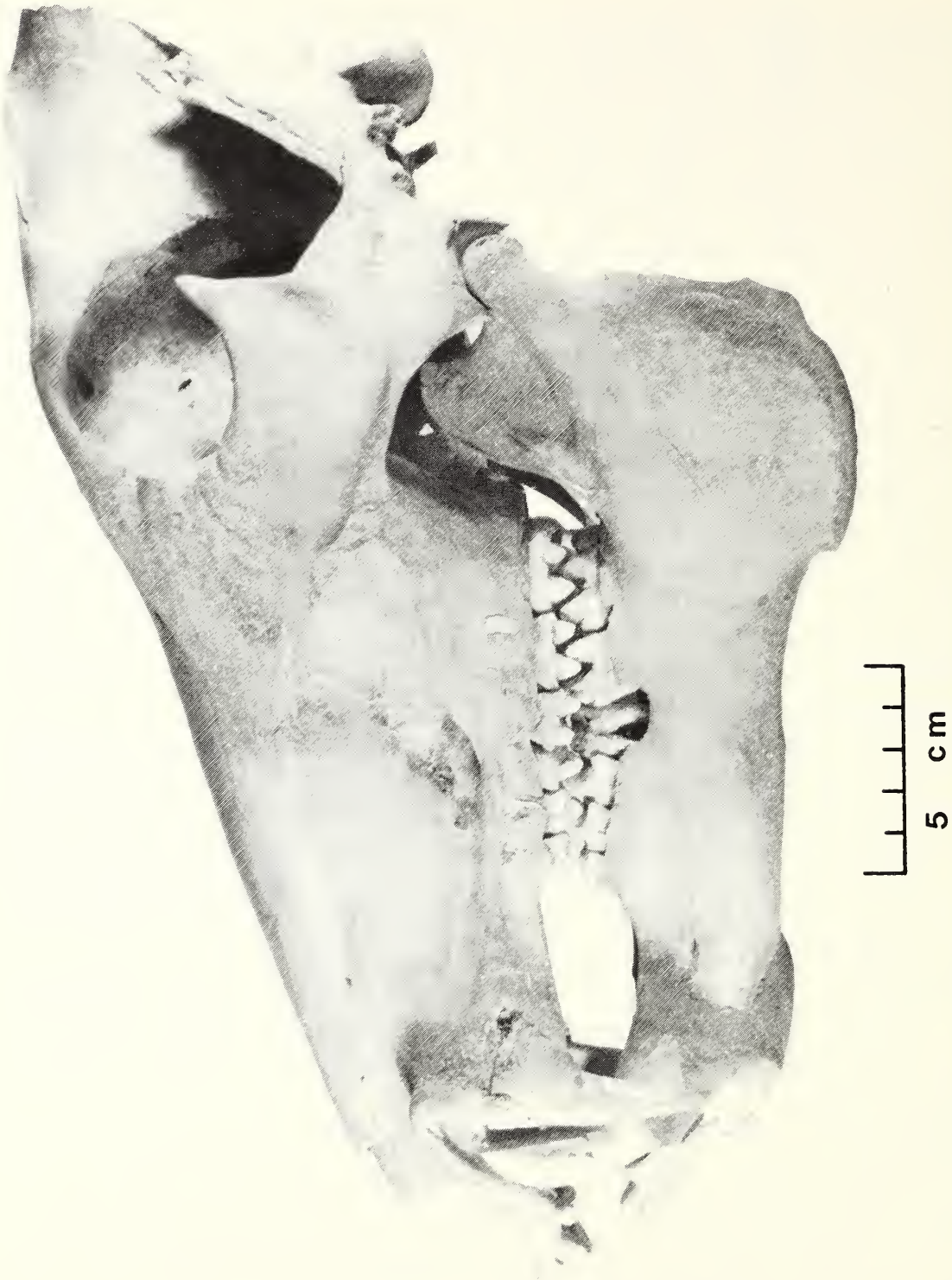

Figure 1. Skull of *Platygonus compressus* (Specimen No. 1) from Marion County, Indiana. Note abscessed m1.

and Wortman, 1885; Lyon, 1936). The complete upper and lower left jaws of a specimen from Allen County has been illustrated (Griswold, 1917). Several isolated deciduous teeth, probably from a single individual, have been recovered from a rockshelter in Monroe County (Richards and Munson, 1988). A recently discovered cave deposit in Crawford County has yielded parts of at least 44 individuals of this species (Richards, 1988).

Numerous remains of *Platygonus compressus* have been recovered from Pleistocene deposits elsewhere in North America. All datable examples are from deposits correlated with the Wisconsinan Glaciation. Many of the fossils from the northcentral and northeastern United States have been recovered from glacial or periglacial contexts, and Martin and Guilday (1967) have argued that the species was adapted to open habitats, including the cold, treeless conditions that existed immediately south of the glacial margins. The Marion County herd, which lived when environmental conditions in this area were cool to cold conifer parkland, conforms to this pattern.

The majority of *Platygonus* fossils have been recovered from two kinds of depositional situations. Disarticulated, often fragmentary remains of multiple individuals of both *P. compressus* and the earlier, larger *P. vetus* (=*P. cumberlandensis*) occur in numerous cave deposits. The frequent co-occurrence of dire wolves (*Canis dirus*) in these cave deposits has prompted Mehl (1966) to suggest that the caves were dire wolf dens and that *Platygonus* was a common prey species for these wolves. Many of the remaining fossils of *P. compressus* occur as articulated individuals, either singly or as groups of two to twelve individuals. Finch et al. (1972) have summarized eight of the herd occurrences, all of which are in contexts suggesting simultaneous, catastrophic deaths and burial: miring in quicksand, collapse of cutbanks, smothering in dust storms, etc. The Marion County herd represents another instance of this type of mass mortality.

Measurements of the peccaries described in this study compare closely to late Wisconsinan examples from southern Michigan (Eshelman et al., 1972), northwestern Ohio (Hoare et al., 1964), and northern Pennsylvania (Ray et al., 1970). Ray et al. (1970) review measurements of late Wisconsinan specimens of *P. compressus* from central Mexico to the northeastern United States and suggest that the species exhibits a negative Bergmann's Response. The small sizes of the Marion County peccaries support this position.

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