

A NEW RACE OF CARACARA FROM THE PLEISTOCENE OF MEXICO

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Excavations carried on during 1938 and 1939 by the California Institute of Technology in San Josecito Cave, Nuevo León, Mexico, have yielded a large number of bird bones. This material is now in the hands of Dr. Loye Miller, of the University of California at Los Angeles, for examination. I am indebted to Dr. Miller as well as to the California Institute of Technology for the opportunity to study and report upon the thirty or more bones of caracara that are included in this collection.

According to Dr. Miller (MS), the cave deposit is Pleistocene in age, the avifauna closely paralleling that of Rancho La Brea in California. It is not surprising, therefore, to find the caracara well represented, for it is an abundant type in the California Pleistocene.

In all structural characteristics the bones from the cave resemble those of the Rancho La Brea species, *Polyborus prelutosus* (Howard, Carnegie Inst. Wash. Publ. no. 487, 1938, pp. 217-240). However, they are, on the average, shorter and broader. As previously observed (*op. cit.*, p. 221), there is in *Polyborus* a tendency to stoutness in the shorter tarsometatarsi and to relative slenderness in the longer ones. It is to be expected, therefore, that the tarsi from the cave, which average 7 per cent shorter than in *prelutosus*, should be found to be relatively broad as well. A similar tendency to greater breadth is found also in the ulnae and carpometacarpi from the cave, elements for which such a correlation of breadth and length has not previously been noted. However, in all measurements and ratios the cave specimens are found to overlap with *prelutosus* and it is, therefore, impossible to separate the Mexican bird specifically. The intergrading differences agree, rather, with our present conception of the subspecies. With the suggestion that, in the Pleistocene, the San Josecito avifauna was contemporaneous with that of Rancho La Brea, it is not unreasonable to assume the occurrence of two geographic races of the species *Polyborus prelutosus* at that time. Therefore, considering the California bird as *Polyborus prelutosus prelutosus*, the bird from north-eastern Mexico is here described as

***Polyborus prelutosus grinnelli* new subspecies**

Type.—Tarsometatarsus no. 2709, coll. Calif. Inst. Tech.; San Josecito Cave, southern Nuevo León, Mexico; Pleistocene.

Description of type.—Within range of variability of *Polyborus prelutosus prelutosus* except for shorter length and relatively greater breadth. Depression on internal side of shaft pronounced, but of less extent proximally and anteriorly than in extreme development of *P. p. prelutosus*; posterior contour angular with point of greatest depth 6.4 mm. below tip of calcaneum; distalmost foramen on posterior side nearly at border of intertrochlear space and 1.5 mm. below upper one. Length 77.2 mm.; shortest of series of eleven tarsometatarsi from this locality and 4.7 mm. shorter than smallest of series of 271 specimens from Rancho La Brea. Breadth relative to length: proximal end, 16.8 per cent; distal end, 18.2 per cent; shaft, 7.0 per cent; middle trochlea, 6.2 per cent. All ratios, except that for shaft, exceed maximum calculated ratios in *P. p. prelutosus*. Shaft ratio exceeded by other specimens from San Josecito Cave, however (see table).

Description of assigned material.—Series of ten cave tarsometatarsi (nos. 2710-2719, coll. Calif. Inst. Tech.) average 82 mm. in length, contrasted with 88 mm. for Rancho La Brea series, but with average ratios of breadth to length greater than in the latter. Characters of internal side of shaft and distal foramina include range of variation found in *P. p. prelutosus*.

Three cave ulnae (nos. 2723-2725, coll. Calif. Inst. Tech.) average 111 mm. in length, contrasted with 116 mm. for typical *prelutosus*. Though minima are nearly the same in both races, forty-one of fifty-two available specimens of *P. p. prelutosus* exceed the maximum for cave specimens. Ratios of breadth to length of ulna average greater in *grinnelli* than in *P. p. prelutosus*.

Specimens of humerus (nos. 2720-2722), tibiotarsus (nos. 2735-2736) and coracoid (no. 2737), all shorter than average for *P. p. prelutosus*; those of femur (nos. 2731-2734) and carpometacarpus (nos. 2726-2730) with maximum equal to average for *P. p. prelutosus*. Relative breadth of humerus,

tibiotarsus and femur tends to approximate average of *P. p. prelutosus*; depth of head of coracoid slightly greater; trochlea of carpometacarpus relatively broader and deeper.

The one complete humerus shows contour of bicipital crest well-rounded, with broadest point near scar of infrapinatus; crest curves into shaft at intermuscular line bordering bicipital surface. Pneumatic fossa, above level of bicipital crest, with "step" between fossa and crest. Distal end with well-marked ectepicondylar process and ridge distal thereto, as in type of *P. p. prelutosus*.

Area below articular surface on posterior side of tibiotarsus, faintly ridged but unexcavated, agreeing with eighteen specimens of typical *prelutosus* from Rancho La Brea.

Variability of femur, in curvature and rugosity, similar to that in *P. p. prelutosus*; none with trochanteric portion as little flared as in *P. cheriway*.

Area surrounding pisiform process, in carpometacarpus, excavated, with crest-like character of trochlea evident; variability as in typical *prelutosus*. One specimen with posterior contour of external ridge of trochlea intact, showing equal development of potentially prominent points. Same specimen showing inward curved process of metacarpal I; notch between process and trochlea anterior to their junction.

In proportion to lengths of other limb elements, tarsometatarsus of cave bird appears relatively somewhat shorter than that of typical *prelutosus*. However, with limited amount of Mexican material available, this not definitely ascertained.

The occurrence of this southerly race of *prelutosus* in the Pleistocene raises the question of the subspecific allocation of the Florida fossils assigned to *P. prelutosus* (Howard, *op. cit.*, pp. 237-238). Although the Florida bones are incomplete, there are several specimens the measurements of which lead to the conclusion that *Polyborus p. prelutosus* is the race represented. These are: (1) An ulna with length approximately 123 mm. (nearly 10 mm. greater than the maximum for *grinnelli*); (2) three ulnae with breadth of shaft less than any available specimen of *grinnelli* (the shaft in the Mexican race averages actually, as well as relatively, broader than in *prelutosus*); and (3) two tarsometatarsi with breadth of middle trochlea less than the minimum for *grinnelli*, but within the range of *prelutosus*.

Possible measurements on the few specimens of *prelutosus* from the Quaternary deposits of Conkling Cavern, New Mexico (Howard, *op. cit.*, p. 237), are all within the overlapping range of the two races and cannot, therefore, be given subspecific allocation.

As caracaras evidently were common birds in the Pleistocene, it is to be hoped that future discoveries will throw more light on the question of distribution of the races of *Polyborus prelutosus*.

MEASUREMENTS IN MILLIMETERS
(ratios in per cent)

Coracoid					
	a Length	b Height proximal end	c Least depth head	Ratio b to a	Ratio c to a
<i>P. p. grinnelli</i> no. 2737	45.5	17.5	2.9	38.2	6.4
<i>P. p. prelutosus</i>					
minimum	43.6	17.2	2.0	36.6	4.7
mean	47.0	18.0	2.7	38.6	6.0
maximum	50.0	19.0	3.3	41.2	7.0
Humerus					
	a Length	b Breadth distal end	c Breadth shaft	Ratio b to a	Ratio c to a
<i>P. p. grinnelli</i>					
no. 2720	.....	17.7	8.3	.....	.....
no. 2721	105.3	18.2	8.3	17.2	7.9
no. 2722	105.6	.....	8.0	.....	7.5
<i>P. p. prelutosus</i>					
minimum	100.3	17.0	7.9	16.2	7.2
mean	109.1	18.6	8.5	16.8	7.7
maximum	115.3	19.6	9.4	17.4	8.3

Ulna

	a Length	b Breadth proximal end, diagonally	c Breadth distal trochlea	d Breadth shaft	Ratio b to a	Ratio c to a	Ratio d to a
<i>P. p. grinnelli</i>							
no. 2723	109.1	14.7	8.2	6.2	13.4	7.5	5.6
no. 2724	111.4	14.6	7.7	5.8	13.1	6.9	5.2
no. 2725	113.5	14.8	8.0	5.8	13.0	7.0	5.1
<i>P. p. prelutosus</i>							
minimum	109.9	14.1	7.4	5.0	12.3	6.4	4.4
mean	116.0	14.9	7.9	5.7	12.6	6.8	4.8
maximum	122.3	16.3	8.7	6.1	13.4	7.2	5.1

Carpometacarpus

	a Length	b Depth trochlea	c Breadth trochlea	d Breadth shaft	Ratio b to a	Ratio c to a	Ratio d to a
<i>P. p. grinnelli</i>							
no. 2726	.....	14.7	.....	5.9	.....	.....	.....
no. 2727	57.6	15.4	6.1	5.3	26.7	10.5	9.2
no. 2728	59.8	15.2?	6.1	5.5	25.4?	10.1	9.2
no. 2729	60.6	.....	.....	5.7	.....	.....	9.4
no. 2730	63.4	.....	.....	5.8	.....	.....	9.1
<i>P. p. prelutosus</i>							
minimum	57.8	14.6	5.5	5.2	23.6	9.0	8.5
mean	63.1	15.7	6.1	5.6	24.8	9.4	8.9
maximum	67.8	17.0	6.6	6.2	25.7	10.1	9.4

Femur

	a Length	b Breadth proximal end	c Breadth distal end	d Breadth shaft	Ratio b to a	Ratio c to a	Ratio d to a
<i>P. p. grinnelli</i>							
no. 2731	61.1	15.8	13.8	7.0	25.9	22.6	11.4
no. 2732	62.8	15.7	.....	6.3	25.0	.....	10.1
no. 2733	63.0?	15.2?	.....	7.1	24.1?	.....	11.2
no. 2734	65.5	16.6	14.0	7.5	25.3	21.4	11.4
<i>P. p. prelutosus</i>							
minimum	61.7	14.5	13.2	6.5	23.0	20.0	10.0
mean	65.5	16.4	14.7	7.2	25.9	22.4	11.0
maximum	72.8	18.0	16.4	8.0	27.1	24.1	12.5

Tibiotarsus

	a Length	b Breadth proximal end	c Breadth distal end	d Least breadth shaft distal to fibula	Ratio b to a	Ratio c to a	Ratio d to c
<i>P. p. grinnelli</i>							
no. 2735	103.6	11.8	12.8	6.3	11.4	12.3	49.2
no. 2736	104.1	12.4	12.3	6.4	11.9	11.8	52.8
<i>P. p. prelutosus</i>							
minimum	100.5	11.7	12.2	6.2	11.0	11.4	47.5
mean	106.2	12.3	12.9	6.5	11.5	12.1	50.8
maximum	112.3	13.0	13.8	6.9	12.0	12.6	53.0

Tarsometatarsus

	a Length	b Breadth proximal end	c Breadth distal end	d Breadth shaft	e Breadth middle trochlea	Ratio b to a	Ratio c to a	Ratio d to a	Ratio e to a
<i>P. p. grinnelli</i>									
no. 2709									
(type)	77.2	13.0	14.1	5.4	4.8	16.8	18.2	7.0	6.2
no. 2710	78.1	.....	13.9	6.1	5.0	.....	17.8	7.8	6.4
no. 2711	80.0	12.1	13.1	5.3	4.8	15.1	16.3	6.6	6.0
no. 2712	80.8	13.0	14.0	6.4	5.0	16.1	17.3	7.9	6.1
no. 2713	82.2?	.....	14.5	5.5	5.3	.....	17.6?	6.7?	6.4?
no. 2714	83.1	12.7	13.6	6.0	4.9	15.2	16.3	7.2	5.9
no. 2715	83.4	.....	12.8	5.6	.....	.....	15.3	6.7	.....
no. 2716	83.9	13.1	14.3	5.8	5.0	15.8	17.0	6.9	6.0
no. 2717	84.4	13.2	14.1	5.5	5.2	15.6	16.7	6.5	6.1
no. 2718	85.4	12.9?	13.8	5.2	.....	15.1?	16.1	6.1	.....
no. 2719	85.6	.....	14.1	5.9	5.2	.....	16.4	6.9	6.0
mean	82.2	12.8	13.8	5.7	5.0	15.7	16.6	6.9	6.1
<i>P. p. prelutosus</i>									
minimum	81.9	12.1	13.0	4.8	4.4	13.4	14.4	5.3	4.9
mean	88.6	13.1	14.4	5.4	4.9	14.7	16.2	6.1	5.6
maximum	94.8	14.0	15.5	6.0	5.5	16.1	17.4	7.1	6.0

The new subspecific name is chosen in honor of the late Professor Joseph Grinnell who did so much to clarify the concept of the subspecies and its significance in evolution.

Los Angeles Museum, Los Angeles, California, November 14, 1939.