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TAXONOMIC STATUS OF THE PLEISTOCENE RINGTAIL
BASSARISCUS SONOITENSIS (CARNIVORA)

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Recovery of a ringtail (*Bassariscus*) skull from middle Wisconsinan deposits of U-Bar Cave, Hidalgo Co., New Mexico (Harris, 1987), prompted this review of the status of *Bassariscus sonoitensis* Skinner, 1942. The holotype of *B. sonoitensis*, from Papago Springs Cave, Santa Cruz Co., Arizona, is a skull (F:A.M. 42857) with I³ and P²-M¹ represented; referred material from the deposits included another skull, two dentaries, and five limb bones. Although Harris (1985) considered the Papago Springs Cave fauna as probably late Wisconsinan, recent work strongly indicates that deposition began during Sangamonian interglacial time and ended before the full-glacial stage of the late Wisconsinan (Czaplewski et al., 1989). The only other site from which the taxon is reported is San Josecito Cave, Nuevo León, Mexico (Hall, 1960). Although of late Pleistocene age, a more

exact age of the San Josecito Cave fauna is problematic; Jakway (1958) considered it to be of about the same age as the Papago Springs Cave fauna.

Skinner (1942) noted that size of the skull of *B. sonoitensis* was equal to that of *Bassariscus astutus* but with the muzzle tending to be more robust. The major differences between *B. astutus* and *B. sonoitensis* were in the dentition (Skinner, 1942:167): "As compared to *B. astutus*, the P² and P³ tend to be heavier; the P⁴ tending slightly heavier and different in proportion, the metaconule more posteriorly placed; the M¹ protocone somewhat larger and more anteriorly placed, the hypocone not so strongly crescent-shaped, the metaconule well developed. The MI of *B. sonoitensis* has a rectangular rather than a triangular outline when viewed from the palatal side. In *B.*

TABLE 1—Measurements of skulls and teeth of fossil and modern *Bassariscus*. Measurements of holotype after Skinner (1942) and of the specimen from San Josecito Cave after Hall (1960). For modern *Bassariscus astutus*, figures are mean \pm SD, range, and *n*.

Measurement	<i>B. astutus</i>	<i>B. sonoitensis</i>				
		Holotype	San Josecito	5689-140-53	5689-104-1	26866/11
Greatest skull length	79.73 \pm 2.30 75.9-83.7 (14)	80.1	79.9	83.3		
Basilar length	70.76 \pm 2.58 67.4-75.9 (13)	73.8	68.8	75.3		
Maxillary tooth row	30.35 \pm 1.11 28.5-33.0 (18)	31.2		33.6	32.6	
Muzzle breadth (P ¹ -P ² level)	14.46 \pm 0.83 13.2-16.0 (18)		16.3	15.9		13.0
Width P ²	1.90 \pm 0.10 1.7-2.1 (17)	2.2		2.1		1.8
Length P ²	3.83 \pm 0.13 3.6-4.1 (17)	4.0		4.3	3.9	
Width P ³	2.19 \pm 0.12 2.0-2.4 (16)	2.4			2.5	
Length P ³	4.08 \pm 0.16 3.8-4.3 (16)	4.5			4.1	
Width P ⁴	4.79 \pm 0.38 4.1-5.4 (17)	5.2	5.2	5.1	5.2	4.5
Length P ⁴	7.03 \pm 0.38 6.4-7.7 (18)	7.1	7.4	7.5	7.2	7.0
Width M ¹	7.04 \pm 0.41 6.4-7.9 (17)	7.7	7.4	7.7	7.4	6.7
Length M ¹	5.32 \pm 0.35 4.8-6.0 (17)	5.9	5.5	5.9	5.3	5.4

astutus, the more triangular-shaped M¹ constitutes the character which most readily distinguishes the two species."

Skinner (1942) compares *B. sonoitensis* with the somewhat larger *Bassariscus sumichrasti*, stating that the P² and P³ are nearly equal in size but that *sumichrasti* is distinctive from both *B. sonoitensis* and *B. astutus* in characters of P⁴ and M¹. Despite this distinctiveness, Skinner (1942: 169) concludes that "*B. sonoitensis* has tooth characters that appear to place it between *B. astutus* and the Central American species, *B. sumichrasti*. . . ."

Hall (1960:533), describing the San Josecito Cave skull, emphasized the inflated or high frontal region, which "causes the dorsal outline, when viewed laterally, to resemble that of *Bassariscus sumichrasti* more than that of *Bassariscus astutus*. . . ." Otherwise, the skull was said to resemble *B. astutus* more. The posterior border of M¹ is concave in the San Josecito

Cave specimen rather than nearly straight as in *B. astutus* (33 of 34 modern specimens), "and the inner part is, anteroposteriorly, narrower in relation to the transverse width of the tooth. M² also is more nearly rectangular than triangular as in Recent specimens" (Hall, 1960:534).

Hall (1960) also commented on a fossil skull earlier assigned to *B. astutus* (Hall, 1927) from Potter Creek Cave, Shasta Co., California. In that specimen, more of the inner surface of P⁴ is visible when the occlusal surface of M¹ is at right angles to the line of sight than in the modern; also, there is a stronger ridge along the lingual side of P⁴ than in Recent specimens. These two features are not seen in *B. sonoitensis*. However, on the basis of a more nearly quadrangular M¹ than in most Recent specimens (though less quadrangular than in *B. sonoitensis*), he suggested that restudy might reassign the specimen to *B. sonoitensis* despite the structural intermediacy of the M¹.

The skull from U-Bar Cave (Museum of New

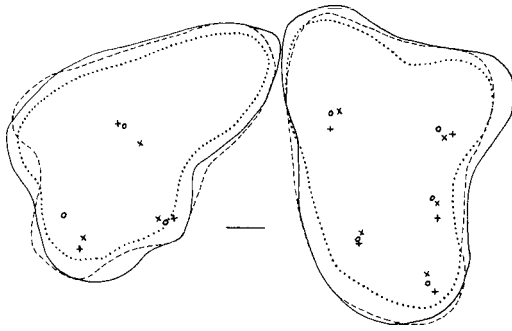


FIG. 1--Comparison of occlusal outlines and cusp placements, left P^4 and M^1 of *Bassariscus*, anterior to left. Solid outlines, 5689-140-53 from U-Bar Cave (plus signs for cusp positions); dashed outline, UTEP 3062 from Eddy Co., New Mexico (circles); dotted outline, UTEP 3955 from Brewster Co., Texas (crosses). Bar = 1 mm.

Mexico no. 5689-140-53) is nearly complete; left I^{2-3} , right P^2 , and right and left P^4 and M^1 are present. Skull and dentition agree well with Skinner's (1942) description (Table 1) of *B. sonoiensis*, and there seems no doubt but that the same taxon is represented. However, study of a series of *B. astutus* from Texas, Arizona, and New Mexico casts strong doubts on the specific distinctiveness of *B. sonoiensis*. Although both the holotype of *B. sonoiensis* and the specimen from U-Bar Cave are notably robust in muzzle and dental features, size and qualitative characters can be duplicated among the small sample of modern *B. astutus* (Table 1) with the following exceptions: the holotypic width of P^2 is 2.2 mm as compared to a maximum of 2.1 mm in the modern sample; length in the specimen from U-Bar Cave is 4.3 mm as compared to a modern sample maximum of 4.1 mm. In P^3 , the holotype has a length of 4.5 mm, and the modern sample a maximum of 4.3.

Qualitative tooth characters of the modern sample are variable among the specimens, including in development and placement of cusps and in the degree of triangularity of M^1 that was cited by Skinner (1942) as the most readily-seen, distinguishing character (Fig. 1); the features considered diagnostic of *B. sonoiensis* can be matched among the modern sample of *B. astutus*.

Several other specimens of *Bassariscus* are available from U-Bar Cave. One, a left premaxilla/maxilla with I^3 and P^2 - M^1 (no. 5689-1041), has a wider P^3 than any other specimen examined, but,

in other measurements (Table 1), it is within the modern range (P^2 width is unmeasurable, however). The age of this specimen can only be placed as late middle Wisconsinan or early late Wisconsinan.

A skull with right P^2 , left P^4 , and both M^1 's (26866/11) was excavated from level 1 of an archaeological excavation within U-Bar Cave in 1960 (Johnson, 1961). Preservation as well as provenience suggests Holocene age, and tooth measurements vary from near to well below the mean of the modern sample of *B. astutus* (Table 1).

A dentary with P_3 and M_1 (5689-126-1) from probable middle Wisconsinan deposits has tooth measurements indistinguishable from modern *B. astutus*. Other dentaries from the cave are edentulous and without provenience, having been recovered from miner's spoil.

On the basis of the data summarized here, *B. sonoiensis* appears to be within or near the upper range of tooth length and width and of robustness of muzzle seen among modern specimens of *B. astutus* from the Southwest. In view of the general agreement between the specimens in these features, it seems likely there was an average difference in these characters between pre-pleniglacial Pleistocene *Bassariscus* and those of later southwestern representatives of the genus. These differences do not appear to be of specific magnitude; *B. sonoiensis* is conspecific with *B. astutus* and should, at most, be considered a temporal subspecies of the latter.

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