

Metric Analysis of a Complete Bison Radius from the Hot Tubb Folsom Site, Crane County, Texas

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A large number of fragmented bison bones were recovered from the Hot Tubb site (Seebach 2004). Although the primary diagnostic artifacts from Hot Tubb are Folsom projectile points, later-period artifacts are present, rendering the association between the bison remains and Folsom tools uncertain. Efforts to ^{14}C -date bone have proven unsuccessful, owing to insufficient collagen preservation. Therefore, we undertook a morphometric study of one of the few intact elements, a complete bison radius, to determine if the animal was within the range of *Bison antiquus* or *Bison bison* (McDonald 1981, Todd 1987a).

Two measurements described by Todd (1987b:376-77) are used in our analysis, (RD2 [greatest length] and RD3 [greatest breadth of the proximal end]), as these are best represented in sampled archaeofaunas. Radii from five archaeological sites and two modern specimens comprising various ages, sexes, and species are compared. These are: 1) Bonfire Shelter (BB2-average values), associated with *Bison antiquus* (Lorrain 1968); Lipscomb, associated with *Bison antiquus* (Todd et al. 1992); 3) Horner, associated with *Bison antiquus* (Todd 1987a, 1987b); 4) Kaplan-Hoover, associated with *Bison bison* (S. L. Potter pers. comm. 2003; Todd et al. 2001); and 5) Mustang Springs, associated with *Bison bison* (Byerly and Meltzer 2004).

The Hot Tubb specimen is a large, fully fused right bison radius that is intact despite diaphyseal cracking and crushing to the posteromedial portion of the proximal end. Because of this damage, RD3 is estimated. A scatterplot of RD3 vs. RD2 (Figure 1) indicates the Hot Tubb radius falls within the range of Horner males and Lipscomb females, suggesting association with *Bison antiquus*. Thus, point t-tests (Sokal and Rohlf 2001:227-29) were conducted for RD2 measurements to examine whether the Hot Tubb specimen could come from the same statistical population as either the Lipscomb or Horner samples. Results indicate that there is a higher probability the Hot Tubb radius came from a population similar to Lipscomb ($t_s = -.82, p = .50 \geq x \geq .40$) and Horner males ($t_s = 1.09, p = .40 \geq x \geq .20$) rather than Lipscomb ($t_s = 2.34, p = .05 \geq x \geq .02$) and Horner ($t_s = 4.58, p \leq .001$) females. Given these data, and assuming a valid correlation between radius dimensions and time, we accept that the Hot Tubb specimen is from a population of similar proportions to Lipscomb and Horner *Bison antiquus* males, indicating an association with Folsom and not later components.

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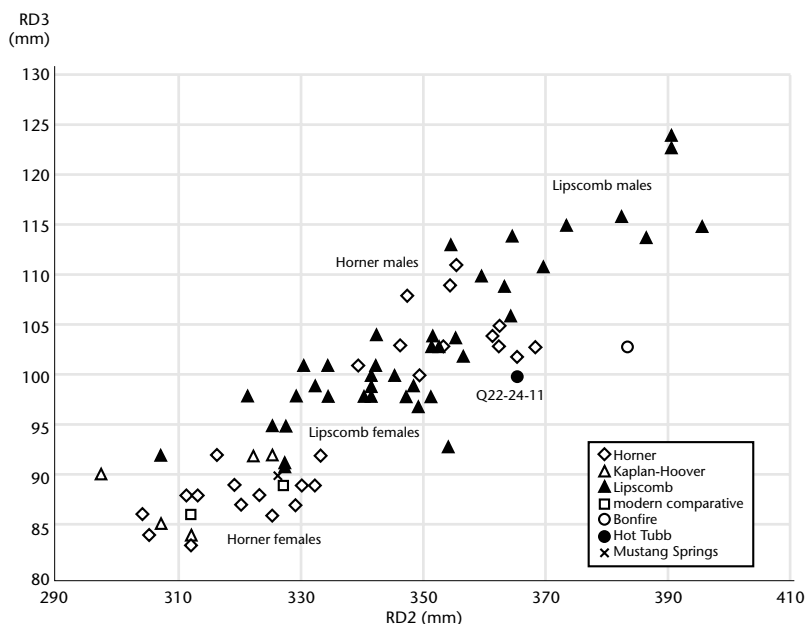


Figure 1. RD3 (greatest breadth of proximal end) vs. RD2 (greatest length) for archaeological and comparative samples. For the Hot Tubb specimen, RD2 = 365 mm and RD3[est.] = 100 mm (measured value = 95 mm).

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