

WHITE-TAILED DEER BODY SIZE AT LAMOKA LAKE: ADDITIONAL EVIDENCE FROM PLOWZONE DEPOSITS

T. CREGG MADRIGAL

©2016

How big were the white-tailed deer that were hunted by the Native Americans who lived at the Late Archaic Lamoka Lake site? Deer body size was estimated from measurements of the astragalus, a bone found in the lower hindlimb of deer (Madrigal 2014). Additional astragali excavated from the plowzone at the site are now compared to the earlier data.

In 1990, a Utica College field school under the direction of Tony Luppino began excavation of two 10 x 10 foot (3m x 3m) units, called the South Pit and the North Pit, at the Lamoka Lake site in Schuyler County, New York. Plowzone or otherwise disturbed contexts extended to a depth of approximately 16 inches (40.6 cm) and were excavated as a single level. For underlying levels, each pit was subdivided into four 5 x 5 foot quads (labeled I-IV). Additional work, primarily in the North Pit, was undertaken in 1991 and 1992.

A sample of over 3,000 bones from sub-plowzone contexts in Quads II, III, and IV of the North pit were previously analyzed (Madrigal 2001). Deer body size estimates were derived from five astragali from this sample ("UC Lamoka") and many other deer astragali excavated from Lamoka Lake several years earlier (Madrigal 2014).

Recently, animal bones from the South Pit plowzone level (LL.1990.93; "plowzone") have been studied. A total of 3,536 vertebrate animal bones were recovered from this context, including 472 white-tailed deer (*Odocoileus virginianus*) bones from at least 13 individuals.

Calculation of deer live weight followed methods developed by Purdue (1987) and used by Madrigal (2014). Because of the difficulty in determining sex from individual astragali, the regression for combined sexes is used. The estimates derived from this equation are considered an approximation of the Fall-Early Winter live weight (i.e., weight of the entire individual, including all internal organs and blood) of deer in good health.

There are 26 deer astragali from the South Pit plowzone level. Nine of these are complete enough to obtain the three measurements necessary to estimate deer body weight. These nine deer have an average estimated body weight of 77.4 kg (S.D.= 13.22), with a range of 58.6 to 99.8 kg.

While the average weight of the five deer astragali from the UC Lamoka assemblage is lower (71.51 kg), there is no significant difference between that assemblage and the South Pit plowzone astragali (ANOVA: $F=0.436272$, $p=0.5214$). The earlier study demonstrated that there was no significant difference between the UC Lamoka astragali and two other Late Archaic Lamoka assemblages so they were combined into a single group ("Lamoka LA"). This combined sample of 49 astragali has an average body size estimate of 77.0 kg, almost identical to the estimate derived from the South Pit plowzone deer.

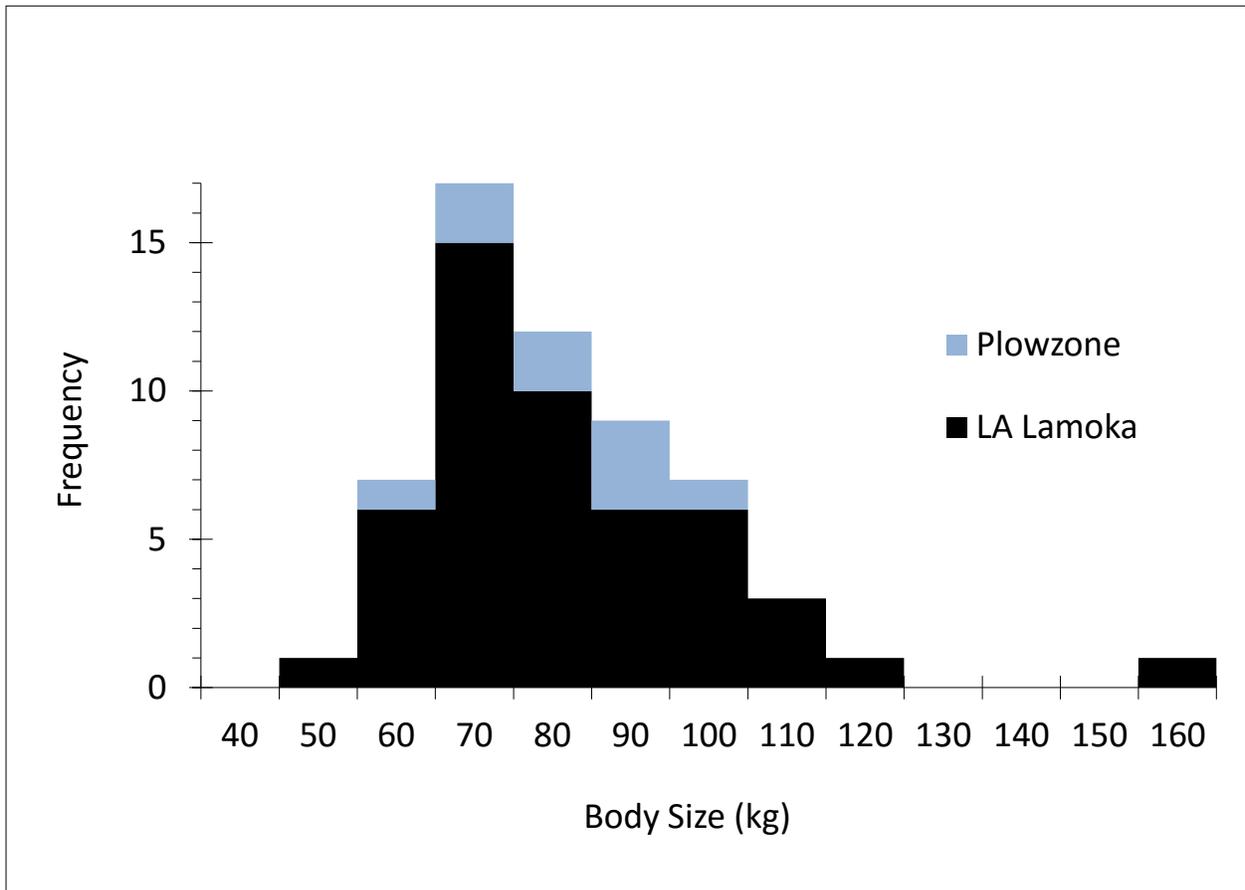
The Lamoka LA weight estimates have an essentially unimodal distribution, as does the plowzone assemblage. The combined frequency distribution is shown in Figure 1.

In sum, the plowzone deer astragali are very similar to deer bones excavated from other parts of the Lamoka Lake site. This suggests that the larger faunal assemblage from the plowzone, even though it has been disturbed and displaced by agricultural and other activities may retain analytical value. As identification of other animal bones from different contexts continues, additional deer astragali will be added to the sample.

Table 1. Astragalus measurements (mm) and body size estimates (kg)

Catalog No.	ASDW	ASMD	ASMLEN	Weight
1990.93.3	25	22.2	37.6	60.35
1990.93.5	26.3	24.4	41.2	84.08
1990.93.6	28.7	25.7	40.5	99.76
1990.93.9	28.3	24.1	39.3	85.71
1990.93.10	25.9	23.4	38.2	69.80
1990.93.12	27.8	23.8	40.7	86.27
1990.93.16	26.5	23.7	39.3	76.36
1990.93.18	26.9	24.2	37.8	76.03
1990.93.19	23.6	23.2	37.3	58.55

Figure 1. Late Archaic Astragali from Lamoka Lake



References

Madrigal, T. Cregg

2014 Preliminary Archaeological Evidence for a Decrease in White-Tailed Deer Body Size in New York during the Holocene. *The Bulletin, Journal of the New York State Archaeological Association* 128:40-48.

2001 Deer, Passenger Pigeons, and Hunter-Gatherers: Late Archaic Subsistence and Seasonality in Central New York. *The Bulletin of the Archaeological Society of New Jersey* 56:66-73.

Purdue, James R.

1987 Estimation of Body Weight of White-Tailed Deer (*Odocoileus virginianus*) from Bone Size. *Journal of Ethnobiology* 7(1):1-12.