Changes in Turkey and Artiodactyl Abundance in Central Mesa Verde and Northern Rio Grande Archaeological Assemblages

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Introduction
Previous zooarchaeological studies in the Southwest indicate that over time, larger animal resources such as deer are replaced by smaller ones such as lagomorphs (cottontails and jackrabbits) and domesticated turkey in Ancestral Pueblo sites. These trends are identified on the basis of various faunal indices that measure the proportional abundance of one animal resource against another. In this study, we utilize an index that measures the proportion of domesticated turkey relative to artiodactyl (primarily deer) remains to explore the changes in the food contributions of the two largest food animals. We use this index to make regional and temporal comparisons between the central Mesa Verde (CMV) and northern Rio Grande regions (NRG). In the CMV, turkey became an important source of animal protein in later periods as artiodactyls decreased in abundance on the landscape. For the NRG, we expect a lower reliance on turkeys until populations increased following the depopulation of the CMV.

Materials and Methods
Zooarchaeological data were collected from site reports for 75 sites in the central Mesa Verde region (CMV), 15 sites in the Pajarito Plateau, and 30 sites in other sub-regions of the Northern Rio Grande (NRG) region. The number of identified specimens, NISP, for identified artiodactyls, unidentified mammals deer, turkeys, and large birds were used to calculate a turkey-artiodactyl (T-A) index. Faunal indices, designed to range between 0 and 1, are commonly used to measure and evaluate temporal changes in the proportional abundances of key taxa. Changes in these values are assumed to reflect changes in the relative abundance of these animals. High values for an index (near 1) indicate a high relative abundance of taxa in the numerator.

Effects of Sample Size
Potential effects of sampling bias can have a significant influence in meta-analyses (Jones and Gabe 2015). We conducted Pearson’s R correlations between total sample size (NISP) and T-A index and found non-significant results ($r = 0.107, df = 120, p = 0.24$). Overall, T-A indices were not affected by sample size.

Effects of Context
Potential effects of differential distributions across sites can also influence meta-analyses (Jones and Gabe 2015). For example at Sand Canyon Pueblo (Figure 4), larger frequencies of artiodactyl remains were recovered from structures whereas more turkey remains were recovered from middens. If similar patterns exist in other sites, this could significantly influence our results if some contexts were excavated more than others.

To contextualize our examination of the T-A index through time in each region, estimates of population density for each respective region are also included. CMV population estimates reflect those reported by Struever et al. (2016) for the McElmo subregion, where most of our sites are located. Population estimates for the NRG and Pajarito Plateau are those reported by Ortmann (2016).

Data Quality Assessment

Effects of Screen Size
Screen size information was recorded for a subset of CMV assemblages (n = 42). Although non-significant chi square associations were found between screen type and T-A indices ($r^2 = 0.112, df = 112, p-value = 0.93$), this result only applies to a subset rather than all sites considered.

Conclusions
As populations increased in the CMV, people relied heavily upon turkeys as a food resource. In the NRG, people began to rely more heavily on turkeys as populations increased and populations decreased in the CMV. This is especially so in the Pajarito Plateau. Unlike in the CMV, people in the NRG apparently had greater access and continued to rely heavily on deer. Our results are unaffected by assemblage size and screening methods. Contextual and other cultural biases, however, may have influenced our results. Additional considerations related to the effects of sampling bias on meta-analyses must be made (Jones and Gabe 2015).

References