KAS 2017 Abstract

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Title: Morphological Analysis of *Astarte* (Class: Bivalvia) using Geometric Morphometrics

The bivalve genus *Astarte* is commonly found within the Pliocene-aged Atlantic Coastal Plain of the United States. This genus has many formally named species, even though it lacks many features that would encourage diversification. As a result, the validity of some *Astarte* taxa has been called into question. A well-defined taxonomy is a key component to the reliable testing of paleoecological hypotheses. A morphometric analysis of 918 specimens representing ten species from the Pliocene was conducted. A total of 9 homologous landmarks and 5 pseudo-landmarks were collected from scaled digital photographs using ImageJ. Procrustes transformation and Principle Components Analysis (PCA) was performed on the collected dataset using R.

The PCA results show a large amount of overlap between all species, with PC1 and PC2 accounting for 51.5% of the overall variance. *Astarte concentrica* and *Astarte undulata* show the most phenotypic variation. These two species occupy their own morphospace with minimal overlap. The other eight species show considerable overlap with the morphospaces of *A. concentrica,* *A. undulata,* and each other. The overlap in the morphospaces show there is a lack of morphological distinction among species. *A. concentrica* and *A. undulata* possessing their own morphospace suggest these two species are likely valid species, but have high amounts of intraspecific variation. These results indicate that numerous species of *Astarte* could potentially be synonymized, providing a more rigorous and reliably applied taxonomy.