

## USING MESOWEAR TO TEST WHETHER HYPSONDONT NOTOUNGULATES WERE GRAZERS

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The great diversity of high-crowned (hypsodont) mammals – especially notoungulates – in Oligocene (Tinguirirican and Deseadan SALMA) faunas suggests the presence of open habitats (e.g., savannas) in South America 10-15 million years earlier than in other continents. The lack of extant notoungulates precludes directly examining the correlation between hypsodonty and diet/habitat in this clade, but methods such as microwear, mesowear, and isotopes provide a quasi-independent test of hypsodonty and, potentially, the presence of open habitats. This study is the first to apply the mesowear method to notoungulates.

We studied mesowear in three very hypsodont tyrotherian notoungulates from the Deseadan fauna of Salla, Bolivia: the “archaeohyracid” *Archaeohyrax* (an unnamed new species; N=16), the mesotheriid *Trachytherus* (an unnamed new species; N=19), and an unnamed intertheriid (Salla New Taxon B; N=21). Following standard procedures, buccal cusps of M2 (N=50) or other molars (N=6) were scored for relief (high or low) and shape (sharp, rounded, or blunt). The percentages of individuals of each taxon displaying high, sharp, and blunt cusps were then used to infer diet using hierarchical cluster and discriminant function analyses based on comparative data from 66 modern ungulates of known diet. *Archaeohyrax* is classified as a grazer in all analyses. *Trachytherus* is classified as a grazer (compared to 27 “typical” ungulates) or a mixed feeder (compared to all ungulates). The intertheriid is classified as a mixed feeder (compared to 27 “typical” ungulates), but clusters with various small browsers/mixed feeders when compared to all 66 modern ungulates.

The mesowear data imply at least some open habitat feeding in all of these notoungulates, paralleling interpretations based on tooth crown height alone. Combined with microwear and isotopic studies of Miocene and younger notoungulates, this analysis suggests that the “precocious” hypsodonty of notoungulates was correlated with the appearance of more open habitats in the Oligocene, but that later notoungulates facultatively changed their diets (and, possibly, their habitats) to take advantage of available resources.