

## **Can texture analysis of tooth microwear detect within guild niche partitioning in extinct species?**

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Recent work shows that tooth microwear analysis can be applied further back in time and deeper into the phylogenetic history of vertebrate clades than previously thought (e.g. niche partitioning in early Jurassic insectivorous mammals; Gill et al., 2014, *Nature*). Furthermore, quantitative approaches to analysis based on parameterization of surface roughness are increasing the robustness and repeatability of this widely used dietary proxy. Discriminating between taxa *within* dietary guilds has the potential to significantly increase our ability to determine resource use and partitioning in fossil vertebrates, but how sensitive is the technique? To address this question we analysed tooth microwear texture in sympatric populations of shrew species (*Neomys fodiens*, *Neomys anomalus*, *Sorex araneus*, *Sorex minutus*) from BiaŁowieza Forest, Poland. These populations are known to exhibit varying degrees of niche partitioning (Churchfield & Rychlik, 2006, *J. Zool.*) with greatest overlap between the *Neomys* species. *Sorex araneus* also exhibits some niche overlap with *N. anomalus*, while *S. minutus* is the most specialised. Multivariate analysis based only on tooth microwear textures recovers the same pattern of niche partitioning. Our results also suggest that tooth textures track seasonal differences in diet. Projecting data from fossils into the multivariate dietary space defined using microwear from extant taxa demonstrates that the technique is capable of subtle dietary discrimination in extinct insectivores.