




RECOMMENDATION

New insights into the palaeoecology of Miocene Eurasian rhinocerotids based on tooth analysis

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A recommendation of

Hullot M, Merceron G, and Antoine PO (2022). Spatio-temporal diversity of dietary preferences and stress sensibilities of early and middle Miocene Rhinocerotidae from Eurasia: impact of climate changes. *bioRxiv* 490903, ver. 4 peer-reviewed by PCI Paleo. DOI: 10.1101/2022.05.06.490903

Rhinoceroidea originated in the Lower Eocene and diversified well during the Cenozoic in Eurasia, North America and Africa. This taxon encompasses a great diversity of ecologies and body proportions and masses. Within this group, the family Rhinocerotidae, which is the only one with extant representatives, appeared in the Late Eocene (Prothero and Schoch, 1989). They were well diversified during the Early and Middle Miocene, whereas they began to decline in both diversity and geographical range after the Miocene, throughout the Pliocene and Pleistocene, in conjunction with the marked climatic changes (Cerdeño, 1998).

In Eurasian Early and Middle Miocene fossil localities, a variety of species are often associated. Therefore, it may be quite difficult to estimate how these large herbivores cohabited and whether competition for food resources is reflected in a diversity of ecological niches. The ecologies of these large mammals are rather poorly known and the detailed study of their teeth could bring new elements of answer. Indeed, if teeth carry a strong phylogenetic signal in mammals, they are also of great interest for ecological studies, and they have the additional advantage of being often numerous in the fossil record.

Hullot et al. (2022) analysed both dental microwear texture, as an indicator of dietary preferences, and enamel hypoplasia, to identify stress sensitivity, in a large number of rhinocerotid fossil teeth from nine Neogene (Early to Middle Miocene) localities in Europe and Pakistan. Their aim was to analyse whether fossil species diversity is associated with a diversity of ecologies, and to investigate possible ecological differences between regions and time periods in relation to climate change. Their results show clear differences in time and space between and within species, and suggest that more flexible species are less vulnerable to environmental stressors.

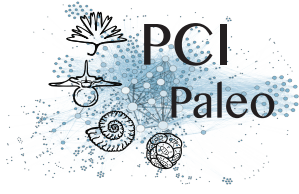
Very few studies focus on the palaeoecology of Miocene rhinos. This study is therefore a great contribution to the understanding of the evolution of this group.

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Appendix

Reviews by Antigone Uzunidis, Christophe Mallet, and Matthew Mhlbachler, DOI: 10.24072/pci.paleo.100012.