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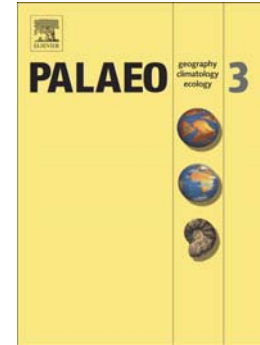
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Increasing locomotor efficiency among North American ungulates across the Oligocene-Miocene boundary

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ABSTRACT

The proportions of the limb bones of tetrapods contribute to the energetic costs of locomotion. Consequently, they can be used to classify locomotor type and can inform hypotheses about changes in community structure. We examined mechanical advantage in the limbs of North American Oligocene and Miocene ungulates (Artiodactyla and Perissodactyla), with the expectation that the distribution of limb morphologies would change with the spread of grass-dominated plant communities; that is, we expect to find morphological optimization for efficient high-speed locomotion with more open habitats. We assess changes in the occupation of locomotor ecomorphospace (LEMS) through time using measurements of the lengths of

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