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ABSTRACT BOOK

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Migratory movements of a population of Columbian mammoth (*Mammuthus columbi*) from Laguna de las Cruces, San Luis Potosí, México

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Proposing migratory patterns by Quaternary mammal species is a topic scarcely addressed in paleoecological studies. This is due to the lack of direct evidence that provides any information about those movements. However, in the last 20 years, the use of strontium isotopic ratios has turned into a useful tool for determining migration patterns for some species of herbivorous mammals from the United States and Europe (Hoppe and Koch, 2007; Julien et al., 2012). This technique is based on the following assumptions: the isotopic ratios of $^{87}\text{Sr}/^{86}\text{Sr}$ in a rock, depends upon its age, and initial content of ^{87}Rb (Faure, 1977). The rocks suffer diverse chemical, physical and biological alterations processes forming soil; however, those processes do not affect $^{87}\text{Sr}/^{86}\text{Sr}$ isotopic ratios, so that soil will have $^{87}\text{Sr}/^{86}\text{Sr}$ values similar to the rock that formed it (Capo et al., 1998). Plants incorporate the strontium from soil, and animals do it from plants, but strontium isotopic ratio remains the same (Feranec et al., 2009). Using strontium isotopic ratios from dental enamel, we inferred the distance that a Columbian mammoth population (*Mammuthus columbi*) migrated out of Laguna de las Cruces, San Luis Potosí, México. The dental enamel of three individuals was leached, while three samples from the same individual were not leached. The $^{87}\text{Sr}/^{86}\text{Sr}$ values were compared with those obtained for plants and soils collected at several localities in the state of San Luis Potosí following the technique proposed by Schaaf et al. (2012). One of the individuals has $^{87}\text{Sr}/^{86}\text{Sr}$ ratios similar to those shown by soils and plants from Laguna de las Cruces: while the other two individuals have quite different $^{87}\text{Sr}/^{86}\text{Sr}$ values from soil and plants from all sites (Fig. 1). In contrast, a fourth individual, whose sample was not leached, shows differences between its values, which suggest the presence of secondary Sr. This corroborates the need to use the leaching technique to remove secondary Sr from other sources. Finally, the assays suggest that two individuals may have moved more than 100 km from Laguna de las Cruces, but lack of enough soil and plant samples restricted us from determining where they moved to or from. Such results support other proposals (either using current mammal fauna or geomorphological studies), which point out that megaherbivores moved through the valleys in central Mexico feeding on the large food sources of the savannas and grasslands.

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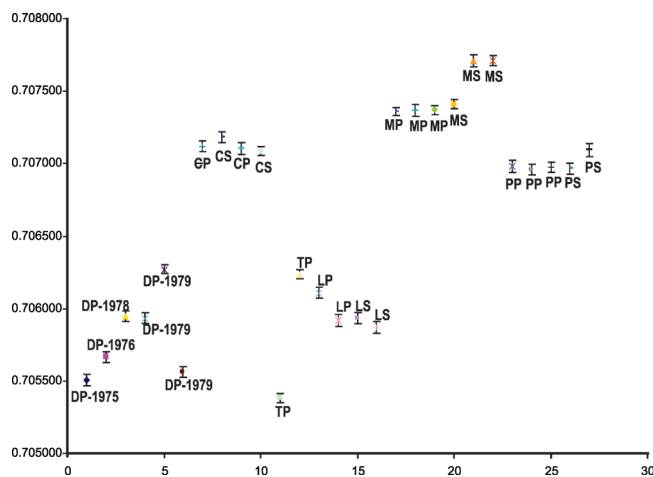


Fig. 1. Comparison between $^{87}\text{Sr}/^{86}\text{Sr}$ values of mammoths (DP) and plants and soil.

LS, Laguna de las Cruces, soil; LP, Laguna de las Cruces, plant; CS, Cedral, soil; CP, Cedral, plant; MS, Mina de San Antonio, soil; MP, Mina de San Antonio, plant; PS, Paso del Águila, soil; PP, Paso del Águila, plant; TS, El Tepetate, soil; TP, El Tepetate, plant.

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