

A Simulation of Anthropogenic Columbian Mammoth Extinction

Matthew Klapman and Alex Capaldi*

The cause of the extinction of the Columbian mammoth (*Mammuthus columbi*) and other species of megafauna during the end of the Pleistocene epoch is an ongoing debate. In this study, we used mathematical modeling to test the overkill hypothesis first proposed by Martin in 1973. The overkill hypothesis claims that early humans migrating from Asia through Beringia and into North America hunted the majority of the continent's megafauna to extinction. Previous research has been conducted on the overkill hypothesis for the Columbian mammoth using a continuous differential equations model. We improved on this work by developing a computationally more efficient and more realistic discrete stochastic model. Most model parameters were obtained directly from the literature; migration parameters were informed by the literature and calibrated for the model. Our results provide evidence in support of the overkill hypothesis.