



## **Mammalian extinctions in the age of humans**

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Currently approximately 1 million species are at risk of extinction because of human impacts. While these impacts have increased considerably since the industrial revolution, hominins have been having outsized effects on ecosystems for far longer. As hominins dispersed out of Africa and increased in abundance, extinctions that were spatially and temporally transgressive followed. They were highly size selective and unlike mammalian extinctions in the rest of the Cenozoic. Life history traits associated with large size and difficulty responding to perturbations (e.g., small litter size) are good predictors of late Pleistocene extinctions. By the terminal Pleistocene, large bodied mammals were extirpated from most of the globe with the few remaining species found in Africa and southeast Asia. Species of all sizes are at risk today including almost all large bodied mammals. Thus, understanding the consequences of these extinctions is important not simply for ecological theory, but also for conservation efforts. After the terminal Pleistocene extinctions, we find significant changes to many macroecological patterns including continental body size distributions, the relationship between geographic range size and body size, and maximum body size and land area. We also find significant changes in community structure including decreased beta diversity, shifts in pairwise co-occurrence of species, changes in the role of functional traits in mediating co-occurrence, and decreased importance of biotic interactions relative to abiotic factors. Mammalian extinctions in the age of humans are unlike extinctions at other times in evolutionary history and understanding their effects can help us predict how species and ecosystems will respond to future perturbations.