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The impact of climatic changes on ant distributions

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Understanding how and if human induced climate change is impacting biodiversity will require large and extensive biological collection data spanning at least the last 100 years. Leveraging the ant collections of the Field Museum of Natural History in Chicago, USA we are addressing this question for species found across the United States. Ants (Hymenoptera: Formicidae) are widely considered biological indicators of ecosystem health and our recent efforts to database, digitize, and georeference the >25,000 ant collections provide us with a unique opportunity to produce an extensive snapshot of ant biodiversity spanning 1915 to the present. The depth and breadth of this project will allow us to address questions surrounding the effects of climatic changes on ant biodiversity by determining if ant species are shifting their geographical distributions within the United States through time. Our preliminary ecological niche modeling suggests a northward shift in ant distributions for many low elevation species and an upward shift in elevation for species found in mountain regions, which is consistent with models of global warming and climate change. Although these findings have potential impacts for all ants, species with limited geographic ranges are the most likely to face serious extinction threats.