

NORTHERN ILLINOIS UNIVERSITY

CONSERVATION GENETICS AND ECOLOGICAL NICHE MODELING
OF KIRTLAND'S SNAKE, *CLONOPHIS KIRTLANDII*, AND
THE EASTERN MASSASAUGA RATTLESNAKE,
SISTRURUS CATENATUS CATENATUS

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ABSTRACT

Kirtland's Snake (*Clonophis kirtlandii*) and the Eastern Massasauga (*Sistrurus catenatus catenatus*) are Midwestern snakes with similar ranges, habitat preferences, and histories of disturbance. Both are listed as threatened or endangered across most of their ranges. The goal of this project was to analyze genetic data and ecological niche models for patterns important to the future management of these species. Genetic sequences were analyzed from two mitochondrial genes, ND2 and CytB. Ecological niche models were constructed to determine current range extents and the possible impacts climate change might have on the species' distributions.

Genetic data for Kirtland's Snake indicates the species can be protected as a single unit. For the Eastern Massasauga, statistical parsimony showed evidence of three lineages: a western group, central group, and an eastern group. These lineages are geographically and genetically unique and are proposed as conservation units that should be maintained independently in both the wild and within the captive breeding program. Ecological niche models indicated range contractions for both species by the year 2050.