



Featured Species Habitat Management Guidance for Massasauga Rattlesnake

Latin Name: *Sistrurus catenatus*

Scope: Statewide

Rationale - *why we value the species and the problem for the species:*

The eastern massasauga rattlesnake (EMR) is the only free-ranging venomous snake in Michigan. Michigan has been described as its last stronghold (Szymanski 1998; Lee and Legge 2000). EMR is state listed as “species of special concern” (Michigan DNR 2015). It is a candidate for federal listing by the U.S. Fish and Wildlife Service (USFWS 1999) and the Michigan DNR is in the process of developing a Candidate Conservation Agreement with Assurances (Michigan DNR 2010). The greatest threat to EMR is the loss and degradation of habitat due to the draining of wetlands for agriculture, (Szymanski 1998), and the conversion of open areas to shrubland or woodlands (Beltz 1992; Johnson 1995).

Habitat Need - *the cause & effect relationship between habitat and species and its primary limiting habitat need:*

EMRs inhabit open wetland as well as adjacent upland open cover types that support gestation and parturition (Foster et al. 2009). Populations in southern Michigan are typically associated with open wetlands, particularly prairie fens and sedge meadows, while those in northern Michigan often use lowland coniferous forests, such as cedar swamps, as well as open wetlands (Legge and Rabe 1996, Sage et al. 2006). Upland sites may range from forest openings to old fields, agricultural lands and prairies (Lee and Legge 2000).

Habitat Objectives - *the treatment or management to address the primary limiting habitat need:*

- 1) In areas where EMRs occur, maintain $\leq 50\%$ canopy from trees and shrubs in wetland and upland vegetation types.
- 2) Maintain suitable habitat patches ≥ 250 acres (Durbian et al. 2008).
- 3) Remove barriers to movement between open upland and open wetland vegetation types and manage for/provide connectivity between suitable vegetation types.
- 4) No loss or conversion of wetlands in occupied EMR habitat.
- 5) Mow and burn when EMR are in hibernation (November – March).
- 6) Refrain from manipulating water levels between November and March at known EMR sites.

Priority Geographic Areas – *the specific geographic areas where we should focus management for the species:*

The 15 Wildlife project areas and 11 Park and Recreation areas identified as “Managed Habitat” in the draft EMR Candidate Conservation with Assurances (MDNR, 2010; MDNR, 2014); the 15 Northern Lower Peninsula Regional State Forest Management Plan Management Areas that list EMR as a featured species; and private land in core areas with cooperating land-owners.

Priority Landscapes – *the landscape, setting, or cover-type where we should focus management within the areas above:*

Complexes of wetlands and adjacent uplands that are open or have openings within them.

Population Goal - *the goal for the species, its habitat, or a stakeholder's actions:*

- 1) Maintain presence at sites currently occupied and identified as “Managed Habitat” in the draft Candidate Conservation with Assurances.
- 2) Maintain a minimum of 10 viable populations in each of the 2 core areas in the Southern Lower Peninsula and a minimum of 3 viable populations in each of the 4 core areas in the NLP.

Evaluation Method - *the monitoring method to measure progress towards the goal above:*

Conduct presence/absence surveys on areas defined as “Managed Habitat” in the Candidate Conservation with Assurances (<http://www.fws.gov/midwest/endangered/reptiles/eama/eama-survey.html>) and on private lands where habitat management has been conducted. Surveys should be conducted the 1st, 2nd, and 5th years following treatment.

Incidental Species – *other species which may benefit from management for this species:*

American bittern; mallard; Mitchell’s satyr butterfly; and ring-necked pheasant.

References - citation for documents referenced in this guidance:

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- Bissell, K.M. 2006. Modeling habitat ecology and population viability of the Eastern Massasauga Rattlesnake in southwestern lower Michigan. M.S. Thesis, Michigan State University, East Lansing, Michigan. 124 PA.
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- Sage, J., J. Manning, and B. Kingsbury. 2006. Research on the ecology and conservation of the Eastern Massasauga Rattlesnake (*Sistrurus catenatus catenatus*) in Michigan.
- Szymanski, J.A. 1998. Status assessment for the eastern massasauga. U.S. Fish and Wildlife Service, Fort Snelling, Minnesota. 19 pp. + apps.