



## *Questions and Answers*

# **Final Decision to List the Eastern Massasauga Rattlesnake as a Threatened Species**

### **1. What action is the U.S. Fish and Wildlife Service taking?**

The U.S. Fish and Wildlife Service is protecting the eastern massasauga rattlesnake (*Sistrurus catenatus*) as a threatened species under the Endangered Species Act. We also determined that designating critical habitat for the eastern massasauga is not prudent.

To list the eastern massasauga as threatened, we first published a proposed rule in the *Federal Register* on Sept. 30, 2015, and opened a 60-day public comment period. We then gathered and analyzed comments and new information received during that comment period. Based on that analysis, we determined that the eastern massasauga may become endangered in the foreseeable future, which is the definition of a threatened species. We published a final rule in the *Federal Register* on September 30, 2016, that adds the eastern massasauga to the list of threatened species. The final rule has an effective date of October 31, 2016.

### **2. What is the eastern massasauga rattlesnake and where is it found?**

Eastern massasaugas are small, thick-bodied snakes that live in wetlands and use adjacent uplands. Adults average about 2 feet in length and have heart-shaped heads and vertical pupils. Habitat that massasaugas use varies with the season. After coming out of hibernation in spring, they travel to the habitat they use from spring through fall (their active season), which varies considerably among individuals depending on region and local conditions. Generally, eastern massasaugas use wet prairies, marshes, low areas along rivers and lakes and adjacent uplands. Foraging habitat can be floodplain, riparian, lowland and upland forest that provides an adequate abundance of suitable prey. Foraging habitat usually has an open canopy and a sedge or grass ground cover. Eastern massasaugas tend to use areas with a mix of sparse plant cover and sunny areas so they can bask in the sun to regulate their temperature, but they also need shady areas nearby for protection from predators and as a source of prey. In fall they move to areas where they will hibernate over winter. These are almost always wetlands, and they frequently hibernate in crayfish burrows, or under tree roots or logs.

Like all rattlesnakes, eastern massasaugas bear live young. The young actually hatch from eggs while still in the female's body. Adult females tend to bear young every other year.

Eastern massasaugas eat small rodents like mice and voles, but they sometimes eat frogs and other snakes. They hunt by sitting and waiting. Massasaugas can find prey by sight, by feeling vibrations, by sensing heat given off by their prey, and by detecting chemicals given off by the animal (like odors). Heat sensitive pits near their eyes alert the snake to the presence of prey.

Eastern massasaugas currently live in an area that extends from central New York and southern Ontario to southern Iowa and includes eight states and one Canadian province. Today, most populations occur in Michigan and Ontario, but also in New York, Pennsylvania, Ohio, Indiana, Illinois, Wisconsin and Iowa. Historically, eastern massasaugas also occurred in small parts of

Minnesota and Missouri. The range of the snake has generally remained the same over time; however, the number of populations and the numbers of snakes within populations have steadily declined. Currently, we find only small, isolated populations of the massasauga throughout its former range. In every state and province within this range, the eastern massasauga is state- (or province) listed as endangered, threatened, or a species of concern.

### **3. Why did the Service list the eastern massasauga as threatened?**

The Service listed the eastern massasauga as threatened because of loss of populations throughout its range, declines in the number of individuals within those populations and the fact that threats will continue to cause declines into the future. If we continue to lose eastern massasauga populations, the species is likely to face extinction in the future.

Throughout its range, biologists have confirmed that less than half of the eastern massasauga's historical populations still exist. We know of 558 historical populations, of which 211 have been lost and the status of 84 is uncertain – with the likelihood that many of those populations have also been lost. We have information indicating that 267 of the historical populations still exist today. Most of those populations are in Michigan and Ontario, Canada. New York, Pennsylvania, Ohio, Indiana, Illinois, Wisconsin and Iowa have fewer populations.

We prepared a Species Status Assessment to assess the eastern massasauga's current and projected future ability to survive. The report on the Status Assessment was peer reviewed by 21 individuals with expertise in the eastern massasauga, its habitat and ecology, and threats affecting it.

The analysis included in the Assessment Report predicts a continuing decline in the number of eastern massasauga populations. We know that 38 percent of historical populations have been lost as of 2014 and the status of another 15 percent is uncertain. Our analysis projects a 90 percent reduction in number of populations over the next 50 years. The southwestern portion of the snake's range will see the most severe declines with a predicted 97 percent loss of historical populations over the next 50 years. In addition to the loss of populations, we expect the extent of species' range will shrink by more than 80 percent over the next 50 years as populations are lost.

### **4. What is causing the loss of eastern massasauga populations?**

Habitat loss is the primary threat driving declines of eastern massasaugas, but as their numbers decline, direct mortality plays a more significant role. Entire populations have been lost, and we expect them to continue to be lost, because development and vegetative succession eliminates available habitat, reduces habitat quality and fragments what little habitat remains. Habitat is also lost indirectly when development affects the amount and movement of water in and near wetlands, which may dry out the wetlands or degrade their value for the massasauga by causing drought and flooding. Direct mortality further reduces massasauga numbers. Eastern massasaugas are killed while crossing roads as they travel between wetlands or after they emerge from hibernation; people intentionally kill or collect them; and they are killed by prescribed fires and mowing when these activities occur after snakes have emerged from hibernation.

In addition to threats from habitat loss, habitat degradation and direct mortality, a recent Climate Change Vulnerability Analysis indicates that populations in the southwestern parts of the range

are extremely vulnerable to the effects of climate change. The report, prepared for the Service by Pomara and colleagues (Pomara *et al.*, unpublished Technical Report<sup>1</sup>) identifies the increasing intensity of winter drought and increasing risks of summer floods as the climate factors causing population losses. Eastern massasauga populations in the eastern and central parts of the range are vulnerable to climate variables but less so than the southwestern populations.

### **5. What should land managers know to protect the eastern massasauga when conducting prescribed burns or mowing to manage vegetation?**

Prescribed burning and mowing are important tools for managing habitat for eastern massasaugas and many other grassland-dependent wildlife and plants. However, fire and mowing can kill individual snakes if done after the snakes have emerged from hibernation. In general, avoid burning and mowing during the massasaugas active season. For people managing lands on or near eastern massasauga occupied sites, we recommend using “The Eastern Massasauga Rattlesnake: A Handbook for Land Managers,” available at [www.fws.gov/midwest/endangered/reptiles/pdf/eama-mgmt-guide.pdf](http://www.fws.gov/midwest/endangered/reptiles/pdf/eama-mgmt-guide.pdf). People managing state-owned land in Michigan may also use the “Candidate Conservation Agreement with Assurances for the Eastern Massasauga Rattlesnake in Michigan.” This agreement includes conservation measures for eastern massasaugas when using prescribed burns, mowing and other vegetation control methods.

### **6. Why did the Service determine that designating critical habitat for the eastern massasauga rattlesnake is not prudent?**

Designating critical habitat for the eastern massasauga rattlesnake is not prudent because it would increase persecution and unauthorized collection. The eastern massasauga rattlesnake has commercial value in the pet trade and snakes, in general, are feared and persecuted by people - venomous species even more so. Due to market demand and the documented willingness of individuals to collect eastern massasauga rattlesnakes and the willingness of others to kill them out of fear or wanton dislike, any action that publicly discloses the location of eastern massasauga rattlesnakes (such as critical habitat) puts the species in further peril.

One of the basic measures to protect eastern massasauga rattlesnakes from unauthorized collection and intentional killing is restricting access to information showing the location of the species’ populations. Publishing maps and narrative descriptions of eastern massasauga rattlesnake critical habitat would significantly affect our ability to reduce the threat of persecution and unauthorized collection.

### **7. Why does the Service want to conserve a venomous snake?**

The eastern massasauga is a natural part of our environment that has evolved over millennia; it has an ecological role within its communities, and conserving it and its habitat benefits a suite of plants and animals.

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<sup>1</sup> Pomara, L. Y., B. Zuckerberg, O.E. Ledee, and K.J. Martin. Technical Report. A Climate Change Vulnerability Assessment for the Eastern Massasauga Rattlesnake an Endemic of the Upper Midwest and Great Lakes Region. Unpublished report prepared for the U.S. Fish and Wildlife Service Upper Midwest and Great Lakes Landscape Conservation Cooperative. Available online at [bit.ly/2cYr3bd](http://bit.ly/2cYr3bd)

The eastern massasauga is both predator and prey. It eats small mammals (mice and shrews) and small snakes, helping to keep their numbers in check. At the same time, it is food for herons, hawks, eagles and other snakes.

Conserving eastern massasaugas means conserving the wetlands and adjacent uplands where they live. Game animals such as white-tailed deer and turkey share habitat with the massasauga. Sandhill cranes, sora rails, Virginia rails, bobolinks and sedge wrens live in the marshes and low areas that massasaugas frequent. Northern leopard frog, Kirtland's snake and spotted turtle – all species of concern -- co-exist with eastern massasaugas. The massasauga's wetlands are also home to the burrowing crayfish; tunnels created by these crayfish provide hibernation sites for massasaugas and many other species of insects and wildlife. Some of the same wetlands are home to the Mitchell satyr and the Poweshiek skipperling, endangered butterflies. In addition to providing wildlife habitat, wetlands benefit people by storing floodwaters and filtering sediments and other pollutants from water eventually used for drinking and recreation.

Many plants and animals are directly important to humans for their aesthetic and cultural value and for biological diversity. These resources may become important in the future as sources of food or medicine. By saving species from extinction, we ensure that their beneficial uses will be available to us in the future. For example, rattlesnake venom has been explored for human medicinal use, including treatments for arthritis, multiple sclerosis and polio. Rattlesnake venom also has anti-coagulant properties that stay localized, unlike some other anti-coagulants that are currently used to prevent strokes and heart attacks.

### **8. Are eastern massasauga rattlesnakes dangerous?**

People's fears related to eastern massasauga rattlesnake are largely exaggerated. Massasaugas are typically docile and non-confrontational. If given a choice, when confronted with a human they usually quietly move away. Encounters with humans are rare and fatalities associated with snake bites are even rarer. In rare cases that snake bites do occur, it is often because people are actively trying to get close to the snake or trying to kill it, and the snake naturally defends itself and its young.

If you live near areas with eastern massasaugas, there are steps you can take to keep them away from your yard. Cut your grass short and often; remove structures that a snake might use (leaf piles, brush piles, dead logs, rocks, stack of firewood); and remove food or habitat that might attract small rodents.

Human safety always comes first. Even though the massasauga is listed as threatened, the Endangered Species Act allows you to protect yourself or others if threatened.

### **9. What can I do if I see an eastern massasauga near my home?**

If you encounter an eastern massasauga rattlesnake, it is best not to disturb it and walk away from it. In most situations it will leave on its own and you will never see it again.

In areas near natural habitat, eastern massasaugas occasionally find their way into backyards and campgrounds and it may be necessary to take other action. Non-harmful actions that encourage eastern massasauga rattlesnakes to leave, stay off, or keep out of areas with frequent human use,

(i.e., residences, yards, structures, sidewalks, roads, trails, footpaths, or campgrounds) are not prohibited. If an eastern massasauga is in a high use area, it can be relocated. If you need it moved, we advise you to use caution and encourage anyone wishing to move a snake to contact an appropriate state or local agency for professional expertise in handling rattlesnakes. They may be able to help you directly or recommend an animal damage control company that can help.

If there is an imminent threat to human safety, all forms of take, including lethal take, are allowed for human safety. The Act's implementing regulations include a take exemption for the defense of human life and state that any person may take threatened wildlife: "...in defense of his own life or the lives of others." The regulations require that any person taking, including killing, listed wildlife in the defensive of human life under this exception must notify our headquarters law enforcement office in writing within five days.

#### **10. How does listing as threatened under the Endangered Species Act help conserve the eastern massasauga?**

Listing under the Endangered Species Act helps conserve plants and animals by focusing conservation planning and funding for species recovery, raising awareness through outreach and education that can lead to additional opportunities and partnerships, and by regulation protecting listed animals from intentional and unintentional harm.

The Endangered Species Act requires the Service to prepare a recovery plan for each listed species. A recovery plan identifies and prioritizes actions needed to conserve and recover a species. Non-governmental agencies, universities and other federal and state agencies often carry out conservation actions identified in recovery plans.

Managers and planners usually consider federally listed threatened and endangered species as priorities during land-use planning.

Listing protects species by prohibiting "take" under Section 9 of the Endangered Species Act, unless otherwise permitted. Take is defined in the Act as ". . . to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." The take prohibition includes significant habitat modification or degradation that results in the direct killing or injury to listed animal species. States may also have their own laws restricting activity that affect federally listed species.

In addition, Section 7 of the Endangered Species Act protects listed species by requiring that federal agencies consult with the Service to ensure their actions are not likely to jeopardize the continued existence of a listed species. Through this consultation, the Service works with the federal agency and advises on whether the actions would affect the species or critical habitat as well as ways to avoid impacts. Listed species often become priorities for grants and other funding because of the section 7(a)(1) requirement that all federal agencies use their authorities to carry out programs for the conservation of threatened and endangered species.

#### **11. Now that the eastern massasauga is listed as threatened, what happens next?**

The primary purpose of the Act is the conservation of endangered and threatened species and the ecosystems upon which they depend. The ultimate goal of those conservation actions is the

recovery of listed species, so that they no longer need the Act's protective measures. Therefore, the Act calls for the Service to develop and implement recovery plans for listed species.

Recovery plans identify actions to halt or reverse the species' decline by addressing the threats to its survival and recovery. The goal is to restore listed species to a point where they are secure, self-sustaining, and functioning components of their ecosystems. Recovery planning includes the development of a recovery outline shortly after a species is listed, then preparation of a recovery plan.

Implementation of recovery actions generally requires the participation of a broad range of partners. Examples of recovery actions include habitat restoration (*e.g.*, restoration of native vegetation) and management, research, captive propagation and reintroduction, and outreach and education.

After the eastern massasauga is listed as threatened, funding for recovery actions will be available from a variety of sources, including federal budgets, state programs, and cost share grants for non-federal landowners, the academic community, and nongovernmental organizations. In addition, pursuant to section 6 of the Act, the states of Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, New York, Ohio, Pennsylvania and Wisconsin would be eligible for federal funds for the protection or recovery of the eastern massasauga rattlesnake. Information on our grant programs available to aid species recovery can be found at: [www.fws.gov/grants](http://www.fws.gov/grants).

Please let us know if you are interested in participating in recovery efforts for the eastern massasauga rattlesnake. Additionally, we invite you to submit any new information on this species whenever it becomes available and any information you may have for recovery planning purposes. You may contact the U.S. Fish and Wildlife Service's Chicago Field Office at the address and phone number provided in the answer to question 13.

## **12. What can I do to help the eastern massasauga?**

*If you see a massasauga, leave it alone:* Most bites occur when people pick up and handle snakes. If you see a massasauga in your yard, leave it alone and you are unlikely to see it again. They often travel between habitats, and if they are in your yard, they are likely in route to somewhere else. If you need it moved, contact your state natural resource agency. They may be able to help you directly or recommend an animal damage control company that can help.

*Visit local parks, refuges, and sanctuaries:* While you enjoy these areas, your entrance fees and donations provide essential funds to manage and conserve habitat for plants and animals that rely on these lands. Visiting parks and refuges also provides opportunities to learn more about wildlife in your area.

*Spread the Word:* Understanding the important ecological role that snakes play is a key to conserving the eastern massasauga and other snakes. Helping people learn more about the eastern massasauga and other endangered species can lead to more effective recovery efforts.

*Join and Volunteer:* Join a conservation group; many have local chapters. Volunteer at a local nature center, zoo or national wildlife refuge. Many state natural resource agencies benefit greatly from citizen involvement in monitoring wildlife. Check your state agency websites and get involved in citizen science efforts in your area.

**13. Where can I learn more about the eastern massasauga, the final rule to list it as threatened and recovery?**

Information is online at [www.fws.gov/midwest/endangered](http://www.fws.gov/midwest/endangered) or you may contact the U.S. Fish and Wildlife Service's Chicago Field Office at:

Louise Clemency, Field Supervisor  
U.S. Fish and Wildlife Service  
Chicago Ecological Services Field Office  
1250 S. Grove Ave., Suite 103  
Barrington, IL 60010-5010

Telephone 847-381-2253

If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 800-877-8339.