



United States Department of the Interior

FISH AND WILDLIFE SERVICE

2651 Coolidge Road, Suite 101

East Lansing, Michigan 48823-6360



April 5, 2023

General Recommendations for Planning Projects in Michigan

Dear Project Planner:

Thank you for contacting our office for recommendations regarding planning projects in Michigan. We welcome the opportunity to work with you. If you have reached out to us because you are preparing an environmental document or are seeking our input on other types of plans, please use this guidance and the additional resources highlighted as our initial response.

Effective project planning is iterative, whereby at each stage there are likely to be opportunities for you to refine plans to avoid, minimize, and offset potential wildlife impacts. Appropriate siting of new developments is one of the best methods available to minimize the potential for wildlife impacts and reduce the potential need for more costly measures later. Impacts that are avoided or sufficiently minimized can reduce the significance of the action's environmental impact and streamline regulatory compliance.

Federal laws specify that the U.S. Fish and Wildlife Service (Service) has a management responsibility for a variety of wildlife resources and plays a role in advising other Federal and State agencies in their review of permit applications and project planning. These laws include the Endangered Species Act (ESA; 87 Stat. 884; 16 U.S.C. 1531 et seq.), the Clean Water Act section 404(j) (CWA; as amended; 33 U.S.C. 1251 et seq.), the Fish and Wildlife Coordination Act (FWCA; 48 Stat. 401; 16 U.S.C. 661 et seq.), Migratory Bird Treaty Act (MBTA; 16 U.S.C. 703 et seq.), and the Bald and Golden Eagle Protection Act (Eagle Act; 16 U.S.C. 668 et seq.). The Service, other agencies, and organizations offer a variety of resources that can help you in planning your project in terms of addressing wildlife considerations. We highlight many of these resources in Enclosure 1.

Initial Description of “Action” and “Action Area” of your Project

To begin early planning (e.g., evaluating site selection options), you first need to be able to assess the project's potential effects on wildlife and other natural resources. This may involve literature searches or contracting assistance from natural resource professionals. After gaining an understanding of the potential effects for your type of project, we recommend using the ESA's regulatory framework for characterizing the “Action Area” and “effects of the Action.” This thorough approach will ensure you can address any ESA processes that may be needed.

The ESA's Action Area includes all areas to be affected directly or indirectly by the action and not merely the immediate area involved in the Action. For example, for a culvert replacement

that will change water-level elevations, the Action Area not only includes the areas where the culvert replacement will occur, but also the areas where water-levels will change. Other effects included in an Action Area are those that occur downstream of the immediate project area (e.g., areas affected by sedimentation, water quality changes, etc.). Even a relatively small impounding of water may change water temperatures for miles downstream (Zaidela et al. 2021). In another example, a construction project may include loud sounds above ambient noise levels. In this example, the Action Area encompasses all of the areas impacted by the sound. Lastly, the Action Area also includes areas that are used to help offset project impacts (e.g., areas where species are to be relocated, mitigation areas, etc.).

The Action Area is also determined by the “effects of the Action.” The effects include all consequences to listed species or critical habitat that are caused by the proposed Action, including the consequences of other activities that are caused by the Action. A consequence is caused by the proposed action if it would not occur but for the proposed Action and it is reasonably certain to occur. Effects of the Action may occur later in time and may include consequences occurring outside the immediate area involved in the Action. For example, a Federal agency is consulting on the permitting of installation of an outfall pipe. A secondary, connecting pipe owned by a third party is to be installed and would not occur “but for” the proposed outfall pipe, and existing plans for the connecting pipe make it reasonably certain to occur. The secondary pipe is included in the Action Area, and any consequences to listed species or critical habitat caused by the secondary pipe would be considered within the effects of the Action for answering questions within our on-line planning tools.

The description of the Action and Action Area may change as you move through the planning process and into later design phases. As part of your planning, look for conservation measures that may help minimize the projects impacts and begin to build them into your project plans.

IPaC

We have several online tools and resources that can assist you with project planning (websites are listed in Enclosure 1), including our **Information for Planning and Consultation (IPaC)** site. You start in IPaC by defining your project location (i.e., enter the Action Area as described above). Our IPaC website then allows you to see if threatened or endangered species, designated critical habitat, migratory birds, and/or other natural resources may occur in or near a proposed project location. IPaC will also allow you to download an official ESA species list. You can use an IPaC species list to help in evaluating siting and layout alternatives; however, it’s critically important that the species list you use to base your planning reflects an IPaC “project location” that captures the Action Area—all areas to be affected directly or indirectly by the action.

The best place to explore alternative project sites and layouts is in our “Beta” version of IPaC. In [IPaC Beta](#) you can generate unofficial species lists and test determination keys (see below), without generating official correspondence and triggering the reviews and follow-up coordination that will occur when using the official (production) version of IPaC. However, please keep in mind that because the Beta platform is used to test IPaC changes before they are pushed to production, determination key questions and effects pathways that appear in Beta may not perfectly mirror current or future production versions of IPaC.

Obtaining Service Concurrence

Once you have assessed siting options and developed a thorough Action Area for a specific project, we recommend using another tool in IPaC, the *Michigan All Species Determination Key (MI D-key)*. The MI Dkey uses a series of questions to help you evaluate potential impacts to all ESA species and critical habitats in Michigan. Although several Determination Keys are available in IPaC, we strongly encourage all planners to specifically use the **Michigan All Species Determination Key** to evaluate potential impacts to all listed species in your project area. Please watch our [video on how to use this Dkey](#).

The Michigan All-Species Dkey may include identifying recommendations for protecting and enhancing wildlife populations. In some circumstances, by confirming you will implement specific measures for your project, you may receive an automated concurrence from IPaC that your project is consistent with a "no effect" (NE) or "not likely to adversely affect" (NLAA) determination for ESA listed species (using a determination key in IPaC to generate a "NE Consistency Letter", NLAA Consistency or Concurrence Letter, or MA Verification Letter). Carefully review your IPaC-generated letter and adhere to any instructions on verification periods, if applicable.

If your project will require Federal funding or permitting, but you did not receive an automated "NE Consistency Letter, NLAA Concurrence Letter, or MA Verification Letter" from IPaC for your project (either because you chose not to use a DKey, or you received a "May Affect Consistency Letter" or notification that the project is outside the scope of the Dkey), please contact our office and see our *ESA Section 7 Technical Assistance* website (Enclosure 1) for additional resources on project planning. This website provides additional step-by-step instructions for Federal agencies, their applicants, and designated non-Federal representatives to meet their section 7 obligations. If your project is not federally funded or permitted, but the project is reasonably certain to result in the take of endangered or threatened species, please contact our office for more information about ESA permits.

Recommendations for Siting, Constructing, and Operation

We recommend project planners work to avoid and minimize wildlife impacts as well as enhance the wildlife values of the project in three general phases: (1) Site Selection and Layout (i.e., where the project is built); (2) Project Construction (i.e., how the project is built, including timing, methods, and materials); and (3) Operational Considerations (i.e., how the project is operated and maintained).

Site Selection and Layout Recommendations:

- (1) When more than one location may be possible for a project, select a site with the least wildlife value practicable. Sites such as brownfields, prior industrial developments, or other types of previously developed land may provide adequate space for a new development and have no impact to existing wildlife habitat.
- (2) If low wildlife value sites are not a feasible option, we recommend avoiding or minimizing to greatest degree the conversion of forested areas, native grasslands, and wetlands. These areas provide important habitat for variety of species and also help to protect water quality.

- (3) Recognize that surveys may be needed where suitable habitat will be impacted to confirm species presence or probable absence. Surveys may have seasonal limitations and often must be conducted by experienced professionals that hold appropriate permits. Where surveys are used, effective planning requires early coordination with permittees and adequate scheduling. In some cases, assuming presence and using appropriate conservation measures may eliminate need for surveys and be a more practicable option.
- (4) Protect aquatic resources. Plan to incorporate measures that reduce surface water runoff, maintain adequate buffers around wetlands and other water resources, etc. Consider construction methods that can reduce impacts to streams and wetlands (e.g., rerouting, direction drilling, clear-spanning or other ways of reducing or eliminating the need for in-stream/wetland construction, etc.).
- (5) Plan the site to help ensure bat habitat is adequately protected by minimizing removal of forested habitats and protecting forested hedgerows or other treed corridors connecting patches of forested habitats (Enclosure 2).
- (6) Plan the site to help ensure eastern massasauga rattlesnake (EMR) habitat is adequately protected by avoiding suitable EMR habitat reported in our on-line planning tool--*Information for Planning and Consultation (IPaC)*, as Tier 1 (documented occupied by EMR) or Tier 2 (high potential for EMR to occur). See Enclosure 2 for additional details.
- (7) For other threatened or endangered species identified in the official IPaC Species List, determine if their habitat is present in the project's Action Area. If suitable habitat is present in the project area, if possible, plan to avoid impacts to the listed species' habitat. Look for conservation measures to incorporate into your project plans to avoid or minimize impacts to the species and its habitat. If habitat impacts cannot be avoided, we recommend conducting appropriate surveys to confirm species presence.
- (8) Identify bald eagle nests that are within or near the project site. Bald eagle nests are large (usually about 4-6 feet in diameter and 3 feet deep) and therefore noticeable, especially when in deciduous trees after leaf drop. Alternatively, eagle nests may be located by monitoring for eagle use on or near the project area. The Michigan Natural Features Inventory maintains a database of many of the known bald eagle nesting locations (see Enclosure 1)
- (9) Plan the site to provide habitat for pollinators (Enclosure 1). Many pollinators are declining, including species that pollinate key agricultural crops and help maintain natural plant communities. Planting pollinator habitat in and around the new development can help offset the loss of habitat elsewhere around the site.
- (10) Planting a diverse group of native plant species will help support the nutritional needs of Michigan's pollinators We recommend a mix of flowering trees, shrubs, and herbaceous plants so that something is always blooming and pollen is available during the active periods of the pollinators, roughly early spring through fall (mid-March to mid-October).

- (11) Incorporate a water source (e.g., ephemeral pool or low area) that provides resources for pollinators and bats.

Project Construction Recommendations:

- (1) If removing potential wildlife habitat is necessary, plan to avoid spring and summer (e.g., March 15 – August 15) when feasible to help prevent the loss of nests, non-mobile young, and help wildlife populations maintain productivity (Enclosure 2). Note that some locations may require additional timing measures (e.g., near a bald eagle nest or listed bat hibernaculum or in modeled listed bat habitat).
- (2) Consider voluntary mitigation in addition to any required to offset the losses of forest, native grassland, or wetland habitats.
- (3) Use construction techniques and materials that are likely not to cause additional harm to wildlife, such as wildlife friendly erosion control materials (Enclosure 2).
- (4) Implement measures to reduce the chances that equipment will exacerbate the spread of invasive species into natural habitats (e.g., cleaning of equipment prior to accessing site, post-site restoration monitoring, and invasive plant treatments, as necessary).
- (5) Any aboveground electrical transmission lines or other equipment should follow the Avian Power Line Interaction Committee guidelines for minimizing avian electrocution and collision risk (Enclosure 1).

Operational Recommendations:

- (1) Require staff that visit the project area to report any wildlife mortalities or injuries they observe, specifically birds and bats. These can be reported to the Service's Injury and Mortality Reporting System (Enclosure 1).
- (2) Once built, if wildlife mortalities or injuries are associated with the project, look for effective mitigation strategies. For example, if an office building is found to have many migratory bird-window collisions, ensure lights in offices are turned off at night during peak migration periods or use window treatments that make bird collisions less likely.
- (3) Incorporate wildlife friendly mowing practices (e.g., timing of mowing to benefit pollinators (Enclosure 1).

Eagle Act

Bald eagles, golden eagles, and their nests are protected under the Eagle Act. The Eagle Act prohibits, except when authorized by a permit, the taking of bald and golden eagles and defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." The Eagle Act's implementing regulations define disturb as "...to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

Our National Bald Eagle Management Guidelines (Enclosure 1) are intended to help people protect eagle nests and avoid “disturbance” of eagles as required by the Eagle Act. We have also developed guidance to help determine if you may need an incidental take permit for bald eagles (Enclosure 1, D) if disturbance cannot be avoided. If your project may impact a bald eagle nest or you anticipate that you will be unable to avoid disturbing bald eagles, please contact us regarding the Eagle Act permit process.

Additional Planning Notes

If project plans change or new information reveals that listed species or habitats may be affected in a manner or to an extent not previously considered, please re-enter project plans/updates into IPaC and contact our office for further assistance if needed.

Please also note that when a project requires consultation under section 7 of the ESA, the Service must consult directly with the Federal action agency unless that agency formally designates a non-Federal representative (50 CFR 402.08). Non-Federal representatives may prepare analyses or conduct informal consultations; however, the ultimate responsibility for section 7 compliance under the ESA remains with the Federal agency.

Your cooperation and coordination with the Service is greatly appreciated. In an effort to continue and/or improve our current level of coordination, we request that you contact us to provide an update on the status of your project as you complete planning or construction. If you have questions or we can be of further assistance, please contact us at eastlansing@fws.gov or phone: 517-351-2555.

Sincerely,

Scott Hicks
Field Supervisor

Enclosures (2)

cc: Jennifer Kleitch, MDNR, Wildlife Division, Lansing

Enclosure 1: Websites for Planning Information

General and ESA Related

[Information for Planning and Consultation \(IPaC\)](#)

[IPaC Beta](#)

[Instructions for Conducting Endangered Species Act Project Reviews using IPaC](#)

[Video on how to use the MI All Species Determination Key](#)

[ESA Section 7 Technical Assistance](#)

[Wildlife and environmentally friendly erosion control materials](#)

[U.S. Fish and Wildlife Service Land-Based Wind Energy Guidelines](#)

[USFWS' Injury and Mortality Reporting System](#)

Bat Related

[Michigan Bat Project Design Guidelines](#)

[Range-wide Indiana Bat and Northern long-eared Bat Survey Guidelines](#)

[Beneficial Forest Management Practices for WNS-affected Bats Voluntary Guidance for Land Managers and Woodland Owners in the Eastern United States, May 2018](#)

Bald Eagle Related

[National Bald Eagle Management Guidelines](#)

[Do I need an eagle take permit?](#)

[Eagle Conservation Plan Guidance, Module 1 – Land-based Wind Energy](#)

[Michigan Natural Features Inventory](#)

Migratory Bird Related

[Avoiding and Minimizing Incidental Take of Migratory Birds](#)

[Recommended Best Practices for Communication Tower Design, Siting, Construction, Operation, Maintenance, and Decommissioning](#)

[Migratory Bird Program's Nationwide Standard Conservation Measures](#)

[Reducing Avian Collisions with Power Lines: The State of the Art in 2012](#)

[Threats to Birds: Collisions-Buildings & Glass](#)

Freshwater Mussel

[Michigan Freshwater Mussel Survey Protocols and Relocation Procedures for Rivers and Streams](#)

[Developing Conceptual Models for Assessing Benefits and Impacts of USACE Activities on Freshwater Mussel Communities](#)

Pollinator Related

[Roadside Best Management Practices that Benefit Pollinators](#)

[Pollinator Planting](#)

Enclosure 2: Additional Planning Considerations for ESA Listed Bats and the Eastern Massasauga Rattlesnake

Indiana Bat and Northern Long-eared Bat (NLEB)

In Michigan, summering Indiana bats (*Myotis sodalis*) roost in trees in riparian, bottomland, and upland forests from approximately April through September. Indiana bats may summer in a wide range of habitats, from highly altered landscapes to intact forests. Roost trees vary considerably in size, but those used by Indiana bat maternity colonies are typically greater than 9 inches diameter at breast height (DBH). Male Indiana bats have been observed roosting in trees as small as 3 inches DBH.

During the summer, northern long-eared bats (*M. septentrionalis*; NLEBs) typically roost singly or in colonies underneath bark or in cavities, crevices, or hollows of both live and dead trees and/or snags (typically ≥ 3 inches DBH). This species also roosts in structures, such as barns and sheds, occasionally (particularly when suitable tree roosts are unavailable). These bats forage for insects in upland and lowland woodlots and tree-lined corridors. During the winter, NLEBs hibernate predominantly in caves and abandoned mine portals.

For listed bats in Michigan, the follow conditions describe which tree-clearing projects are not expected to rise to the level of reasonable certainty of take (at any MI location):

1. Clearing/cutting/trimming does not include any potential roost trees. The Service defines suitable roosting habitat for Indiana bats as forest patches containing live trees and/or snags ≥ 5 inches DBH that have exfoliating bark or cracks/crevices, and/or suitable roosting habitat for NLEB as forest patches containing live trees and/or snags ≥ 3 inches DBH that have exfoliating bark, cracks, crevices, and/or cavities. OR,
2. If suitable roost trees must be cut/trimmed, it is done so during the inactive season to avoid direct effects. During the inactive season, listed bats are hibernating or migrating away from summer roosting habitat. Cutting/felling trees during November 1 through March 31 is protective of listed bats anywhere in the state; alternatively, see our [Michigan Bat Project Design Guidelines](#) for more refined, location-specific date recommendations. AND,
3. Clearing does not exceed 10 contiguous acres of forest, excluding narrow, linear project areas (e.g., roads/trails, pipelines, transmission lines). This clearing threshold is protective of listed bats anywhere in the state; alternatively, see our [Michigan Bat Project Design Guidelines](#) for more refined, location-specific acreage recommendations. AND,
4. Clearing does not fragment a connective corridor between two or more forest patches of at least 5 acres. Although listed bats rarely traverse non-forested areas of 1000 feet or more, they are frequently observed using vegetated corridors like tree lines to travel among suitable forest patches. Because they may connect important foraging and roosting habitats, removal of forested corridors (regardless of size/area of corridor, as long as it connects suitable forest patches) could severely fragment available habitat and result in adverse effects or indirect take of listed bats. Therefore, projects that remove connective corridors between forest patches warrant project-specific consideration and coordination with the Service. (For more information, see [Michigan Bat Project Design Guidelines](#)).

Note that these conditions are only necessary if listed bats are present. There are few data on the presence and/or absence of listed bats in much of their respective ranges, however, and they are potentially present throughout suitable habitat in these areas. Prior to conducting a project, including tree clearing, surveys

can be done to determine whether listed bats are present in the Action Area. See our survey guidelines for more information (Enclosure 1).

In the absence of site-specific survey data, adherence to the above conditions should appreciably reduce the potential for reasonable certainty of take.

Minimizing impacts to suitable habitat and implementing protective measures for bats indirectly helps to protect Michigan's agriculture and forests. Bats are significant predators of nocturnal insects, including many crop and forest pests. For example, Whitaker (1995) estimated that a single colony of 150 big brown bats (*Eptesicus fuscus*) would eat nearly 1.3 million pest insects each year. Boyles et al. (2011) noted the "loss of bats in North America could lead to agricultural losses estimated at more than \$3.7 billion/year, and Maine and Boyles (2015) estimated that the suppression of herbivory by insectivorous bats is worth >1 billion USD globally on corn alone. In captive trials, NLEBs were found to significantly reduce the egg-laying activity of mosquitoes, suggesting bats may also play an important role in controlling insect-borne disease (Reiskind and Wund 2009). Mosquitoes have also been found to be a consistent component of the diet of Indiana bats and are eaten most heavily during pregnancy (6.6%; Kurta and Whitaker 1998). Taking proactive steps to help protect bats may be very valuable to agricultural and forest product yields and pest management costs in and around a solar energy development.

Eastern Massasauga Rattlesnake (EMR)

The EMR's habitat is typically associated with open to forested wetlands and adjacent uplands. During colder months (generally October through April), EMR hibernate below the frost line in crayfish or small mammal burrows, tree root networks or rock crevices in areas where the water table is near the surface (areas where the soil is saturated but not inundated) and with consistent hydrology to support over-winter survival. Hibernacula are typically near wetland edges, or slightly upland (typically within 500 meters of regulated wetland). EMR stay in the area around their hibernacula until overnight temperatures warm up enough for them to move to their active season range.

In IPaC, you can determine whether your project overlaps Tier 1 or Tier 2 habitat by clicking on the thumbnail for EMR in your official species list. If the popup says "Project is Within EMR Range", then it is outside of Tier 1 or Tier 2 habitat but within the range of the species. For projects within the range of EMR, we recommend incorporating the General Best Management Practices (BMPs) into your project's design.

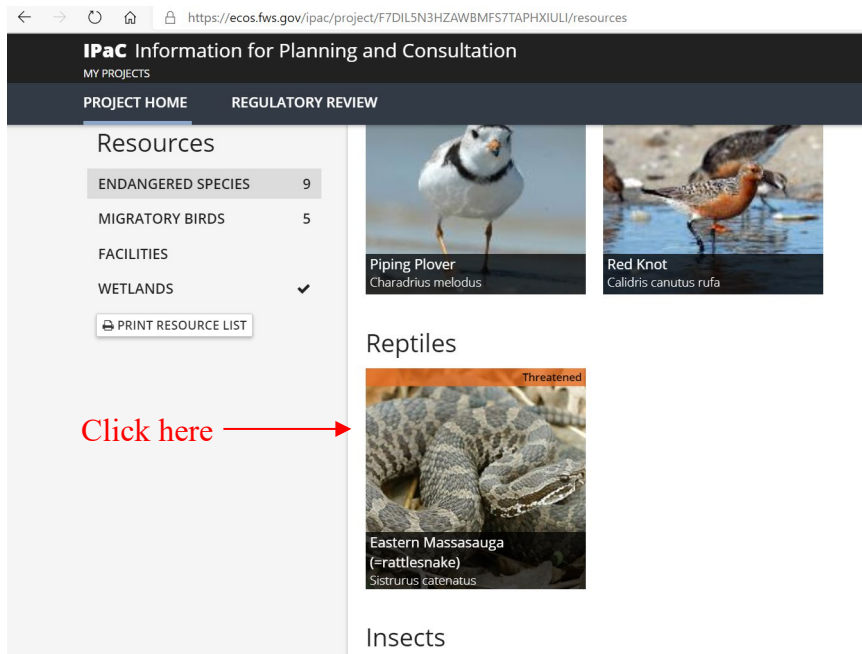


Figure 1: A screenshot showing the thumbnail of EMR to click on to determine whether your project is within Tier 1 or Tier 2 habitat.

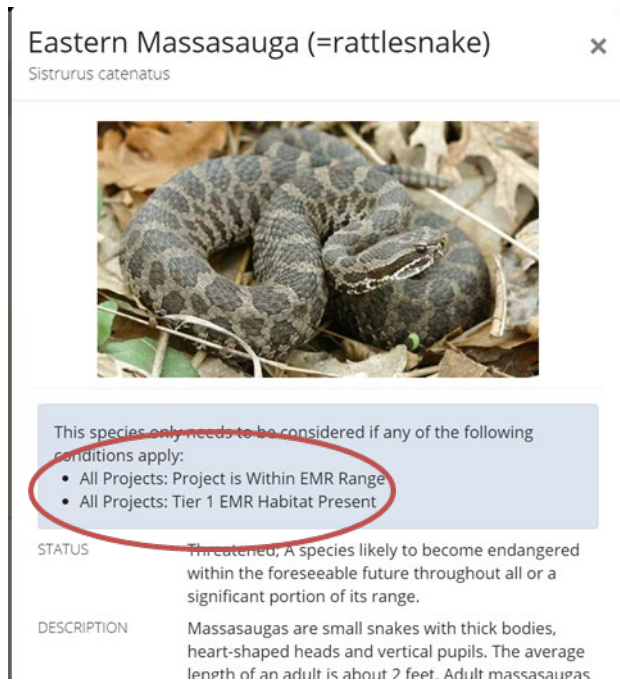


Figure 2: A screenshot of the popup you see when you click on the EMR thumbnail for your project. For this example project, a portion of the area overlaps Tier 1 habitat, and a portion of the project is “within the range” (outside of Tier 1 or Tier 2 habitat).

In order to avoid reasonable certainty of take of EMR:

- Site your project so that it does not overlap with modeled Tier 1 or Tier 2 habitat for EMR or use the determination key to evaluate plans in greater detail.
- For projects “within the range”, implement the Service-recommended General BMPs to minimize potential for adverse effects to EMR:
 - Use wildlife-safe materials for erosion control and site restoration throughout the project area. Do not use erosion control products containing plastic mesh netting or other similar material that could entangle EMR. Wildlife safe materials are those that are 100% biodegradable and use a loose weave (often called leno weave) that allow animals to wiggle free. To minimize wildlife entanglement and plastic debris pollution, choose temporary erosion and sediment control products that either do not contain netting, or that contain netting manufactured from 100% biodegradable non-plastic materials such as jute, sisal, or coir fiber. Degradable, photodegradable, UV-degradable, oxo-degradable, or oxo-biodegradable plastic netting (including polypropylene, nylon, polyethylene, and polyester) are not acceptable alternatives. All netting materials used should have a wildlife-safe, loose-weave design with movable, non-welded joints between the horizontal and vertical twines, allowing the twines to move independently and thus reducing the potential for wildlife entanglement. Avoid the use of silt fences reinforced with metal or plastic mesh. When no longer required, temporary erosion and sediment control products should be promptly removed.
 - To increase human safety and awareness of EMR, those implementing the project should first watch MDNR’s “60-Second Snakes: The Eastern Massasauga Rattlesnake” video (available at https://youtu.be/~PFnXe_e02w), review the EMR factsheet (available at <https://www.fws.gov/midwest/endangered/reptiles/eama/pdf/EMRfactsheetSept2016.pdf>), or call (517) 351-2555.
 - During project implementation, require reporting of any federally listed species, including EMR, to the Service within 24 hours.

References

Boyles, J.G., P.M. Cryan, G.F. McCracken, T.H. Kunz. 2011. Economic Importance of Bats in Agriculture. *Science* 332(1): 41-42.

Kurta, A. and J.O. Whitaker. 1998. Diet of the Endangered Indiana Bat (*Myotis sodalis*) on the Northern Edge of Its Range. *The American Midland Naturalist* 140(2):280-286.

Maine J.J. and J.G. Boyles. 2015. Bats initiate vital agroecological interactions in corn. [Epub ahead of print]. *Proceedings of the National Academy of Science* 12(40):12438-12443.

Reiskind, M.H. and M.A. Wund. 2009. Experimental assessment of the impacts of northern long-eared bats on ovipositing *Culex* (Diptera: Culicidae) mosquitoes. *Journal of Medical Entomology* 46(5):1037-1044

Whitaker, Jr., J.O. 1995. Food of the big brown bat *Eptesicus fuscus* from maternity colonies in Indiana and Illinois. *American Midland Naturalist* 134(2):346-360.

Zaidel, P. A., Roy, A. H., Houle, K. M., Lambert, B., Letcher, B. H., Nislow, K. H., & Smith, C. (2021). Impacts of small dams on stream temperature. *Ecological Indicators*, 120, 106878.