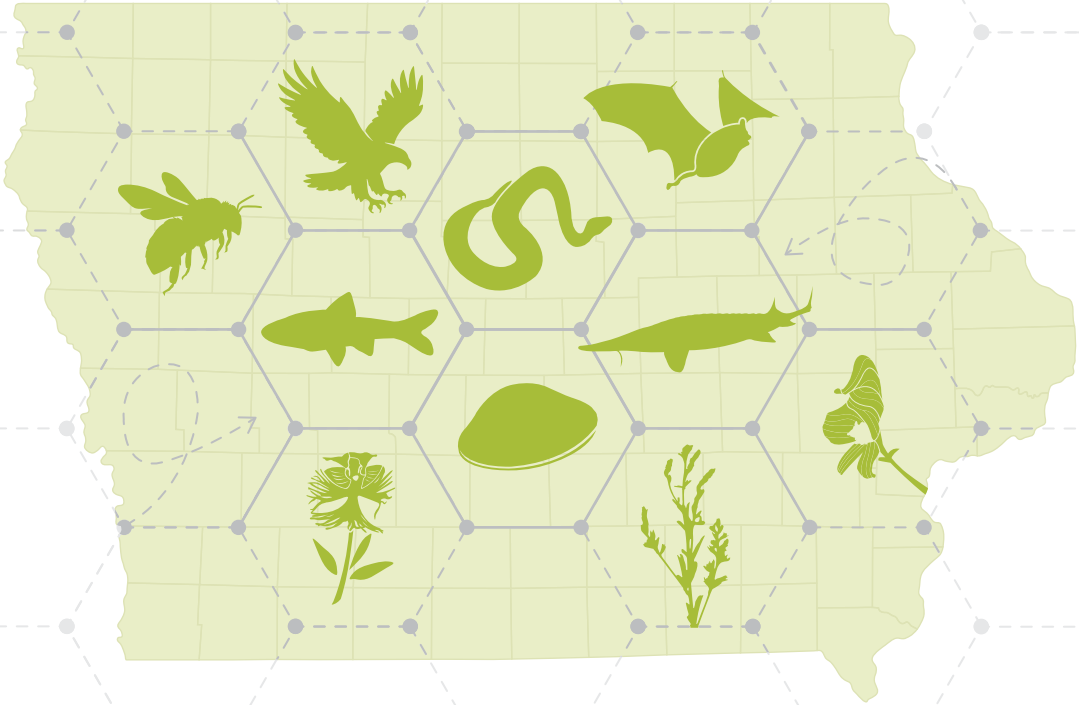
Iowa's Federally Listed Species



Iowa LTAP
Local Technical Assistance Program

Iowa State University
Institute for Transportation

Iowa DOT

About the Iowa Local Technical Assistance Program

The mission of the Iowa Local Technical Assistance Program (Iowa LTAP) is to foster a safe, efficient, and environmentally sound transportation system by improving skills and knowledge of local transportation providers through training, technical assistance, and technology transfer, thus improving the quality of life for Iowans.

About the Institute for Transportation

The mission of the Institute for Transportation (InTrans) at Iowa State University is to save lives and improve economic vitality through discovery, research innovation, outreach, and the implementation of bold ideas.

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Eastern Massasauga Rattlesnake (*Sistrurus catenatus*)

Federal Status: *Threatened*

State Status: *Endangered*

Introduction

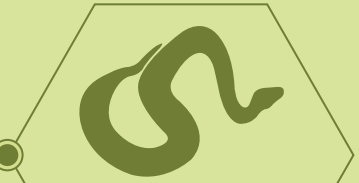
The eastern massasauga rattlesnake (EMR) is a small, thick-bodied pit viper with a triangular-shaped head, vertical pupils, and a rattle at the end of the tail. Individuals are gray or light brown in color with large brown to black blotches down the back with smaller spots along the sides. Their bellies are black or dark gray with some irregular white markings along the edges. Adults average around 2 feet in length.

EMR populations have declined primarily due to the loss of their natural habitat. The species is also vulnerable to accidental fatalities from vehicles on roads or from mowing. EMRs exhibit shy behavior and rarely rattle or bite humans, preferring to use their excellent camouflage to remain unnoticed.

Habitat

EMRs use a variety of habitats that feature open canopies, including bogs, fens, marshes, old fields, prairies, sedge meadows, pastures, and wet grasslands. They are found in areas adjacent to bottomland forest but generally avoid heavily forested areas. In Iowa, available suitable habitat is limited. Often, lower-quality habitats such as levees, road ditches, and agricultural grassed waterways are used.

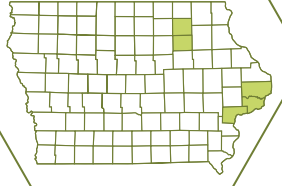
EMRs use different habitats depending on the season. In summer, they are found in drier upland areas. In winter, spring, and fall, EMRs use wetland areas with abundant crayfish and rodent burrows for hibernation.



Iowa DOT Districts:

2, 5, and 6

Presence of Eastern Massasauga in Iowa



Ryan Rasmussen, Stantec, used with permission

Eastern massasauga

Brock Struecker, Iowa DOT, used with permission

Typical eastern massasauga habitat

Avoidance and Minimization

EMRs are present year-round in Iowa and have both an active and inactive season. EMRs typically emerge from hibernation in April and stay close to overwintering sites until days and nights are warmer. They remain in upland grasslands through summer before returning to overwintering sites in mid-September, where they remain active until late October. The active season for EMRs generally runs from April 1 to October 31. EMRs are inactive from November 1 to March 31, when they hibernate underground in crayfish burrows.

Project activities that do not require ground disturbance (such as mowing and prescribed burns) should occur during the inactive season (November 1 to March 31). Project activities that involve ground disturbance may require installation of exclusionary silt fence, combined with regular sweeps to remove any EMRs from the project area. These activities, particularly when conducted in areas with crayfish burrows, should occur from April 1 to October 31 to avoid collapsing burrows while EMRs are hibernating.

Mitigation

Mitigation for EMRs is determined on a case-by-case basis. Projects that use appropriate avoidance measures are less likely to require mitigation. If required, mitigation will be coordinated directly with the U.S. Fish and Wildlife Service (USFWS).

Additional Resources

Species Status Assessment for the Eastern Massasauga Rattlesnake (*Sistrurus catenatus*). A 117-page document by the U.S. Fish and Wildlife Service, July 2016. https://iris.fws.gov/APPS/ServCat/DownloadFile/120127.

Massasauga Rattlesnake (*Sistrurus catenatus*). A one-page fact sheet by the Iowa Department of Natural Resources. https://programs.iowadnr.gov/naturalareasinventory/images/elements/606.pdf.

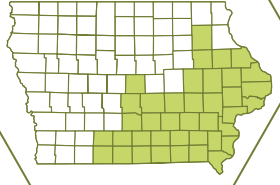
Eastern Prairie Fringed Orchid (*Platanthera leucophaea*) and Western Prairie Fringed Orchid (*Platanthera praeclara*)

Federal Status: *Threatened (Eastern and Western)*

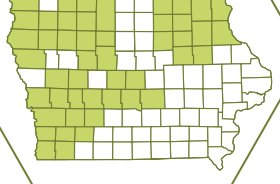
State Status: *Endangered (Eastern) and Threatened (Western)*

Iowa DOT Districts
Eastern: 1, 2, 4, 5, and 6
Western: 1, 2, 3, 4, and 6

Presence of Eastern Prairie Fringed Orchid in Iowa



Presence of Western Prairie Fringed Orchid in Iowa



Introduction

The eastern prairie fringed orchid and western prairie fringed orchid are perennial orchids with similar characteristics; however, the eastern prairie fringed orchid primarily inhabits the eastern half of the state. The eastern prairie fringed orchid flowers from late June to early July with 5 to 40 creamy white flowers on a single flower spike. The spike can reach up to 40 inches tall, with 3- to 8-inch lance-shaped leaves around the stem. The western prairie fringed orchid also flowers in June and July but has 24 large, creamy white flowers from a single stem. The stem can reach up to 4 feet tall, with 2 to 5 narrow clasping leaves.

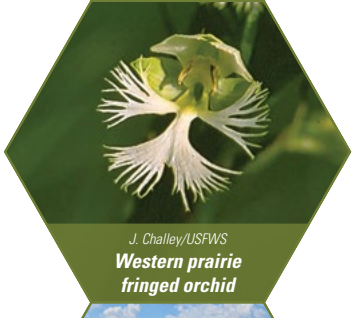
Eastern and western prairie fringed orchid populations were once abundant in the tallgrass prairies of Iowa but have declined primarily due to the loss of their natural habitat as prairie is converted to cropland, roads, or urban development. Invasion of nonnative plants and trees/shrubs also negatively impacts both species.

Habitat

Both eastern and western prairie fringed orchids inhabit mesic (moderately moist) to wet tallgrass prairies and sedge meadows. Both species require full sun for flowering and are generally not found in habitats with woody encroachment where they will be shaded by trees or shrubs.

Eastern and western prairie fringed orchids may also be found along ditches or roadways, provided the conditions remain moist to wet and the orchids are not shaded by other plants.

USFWS
Eastern prairie fringed orchid



J. Challey/USFWS
Western prairie fringed orchid

Ryan Rasmussen, Stantec, used with permission
Prairie fringed orchid habitat

Avoidance and Minimization

Though only flowering in June and July, eastern and western prairie fringed orchids are present year-round in Iowa. They are perennial plants that grow from an underground tuber. Therefore, there is no avoidance window for either species.

Project activities that do not require ground disturbance (such as mowing and prescribed burns) should occur between October and March, prior to the emergence of leaves and flower stalks (April and May) and after seed dispersal (September). Project activities that involve ground disturbance will be unable to avoid impacts to either species.

Mitigation

Mitigation for eastern or western prairie fringed orchids is determined on a case-by-case basis. If required, mitigation will be coordinated directly with the U.S. Fish and Wildlife Service (USFWS).

Additional Resources

Eastern Prairie Fringed Orchid (*Platanthera leucophaea*). A one-page fact sheet by the Iowa Department of Natural Resources. https://programs.iowadnr.gov/naturalareasinventory/images/elements/2894.pdf.

Western Prairie Fringed Orchid (*Platanthera praeclara*). A one-page fact sheet by the Iowa Department of Natural Resources. https://programs.iowadnr.gov/naturalareasinventory/images/elements/2896.pdf.

Federally Listed Bats

Introduction

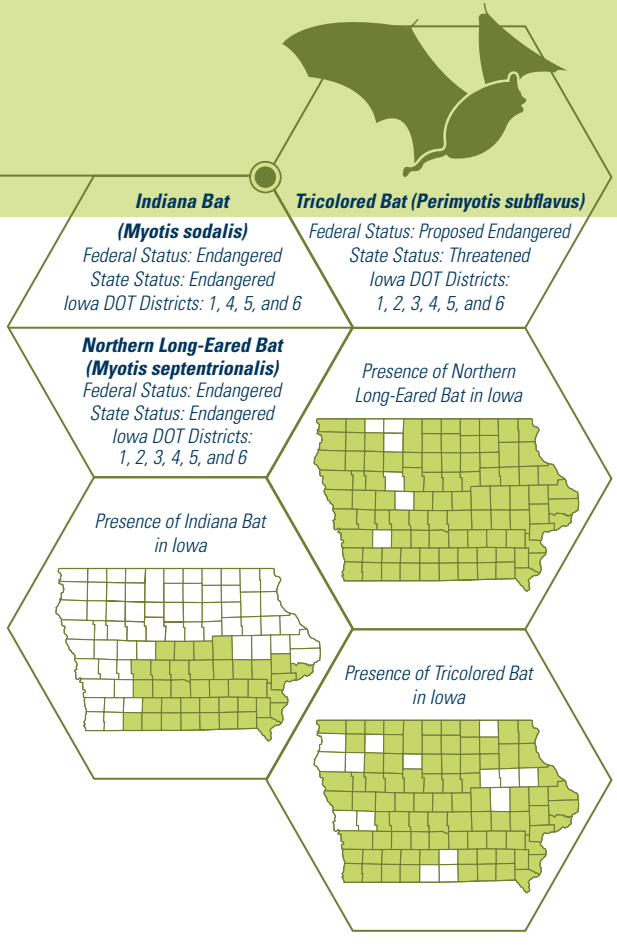
Nine species of bats are regularly found in Iowa. As of July 2026, two of these species are federally listed as endangered (Indiana bat and northern long-eared bat) and one is listed as proposed endangered (tricolored bat). A fourth species (little brown bat; *Myotis lucifugus*) is under review for federal listing and is currently listed in Iowa as threatened. All three federally listed species have been negatively impacted by white-nose syndrome and loss of roosting habitat.

Indiana Bat

Indiana bats are primarily associated with the south-central and southeastern areas of Iowa. Individuals measure approximately 2.9 to 3.9 inches in length. Their fur is chestnut brown to dark gray in color. Their ears and wing membranes have a dull appearance with limited contrast to their fur color.

Northern Long-Eared Bat

Northern long-eared bats are known to occur throughout Iowa but are primarily found in the central and eastern thirds of the state. Individuals measure approximately 3.0 to 3.7 inches in length. They are brown to light brown in color with dull brown ears and wing membranes. Their ears are longer than those of similar-sized bat species.



Ryan Hagerty/USFWS
Indiana bat

Jill Utrup/USFWS
Northern long-eared bat

Pete Pattavina/USFWS
Tricolored bat

Tricolored Bat

Tricolored bats are found throughout Iowa but are primarily associated with the central and eastern thirds of the state. Individuals measure approximately 3.0 to 3.5 inches in length. They get their name from their tricolored fur, which is dark at the base, lighter in the middle, and dark at the tip. This pattern gives their fur color a yellowish appearance. Their ears are pinkish, and their wing membranes are dark brown to black with contrasting pinkish forearms.

Habitat

Habitat requirements for all three federally listed bats change depending on the season. All three species are active in Iowa from spring to fall and retreat to hibernacula in the winter.

Winter

All three species are cave bats, meaning that they hibernate in caves or cave-like locations (e.g., mines) during winter. These hibernacula typically have high humidity and minimal air current and maintain a relatively cool temperature (32°F to 48°F).

Northern long-eared bats hibernate in small clusters or alone in caves used by other hibernating bat species. Indiana bats migrate out of Iowa to hibernacula located in Missouri and Illinois, where they hibernate in large groups. Because there are no known hibernacula for this species in Iowa, Iowa's population of Indiana bats are not found in the state during winter. Tricolored bats hibernate alone deep in caves found in eastern and southern Iowa. They likely hibernate longer than other species, entering hibernacula in early fall and emerging in late spring.

Summer

All three species prefer to roost in trees in summer, though they may use human-made structures (e.g., bridges, culverts, and barns). Their roosting habitat includes trees and snags with exfoliating bark, cracks, and crevices. Habitats generally include riparian zones, upland forests, and wooded wetlands. Suitable habitat for all three species includes (1) woodlands that are greater than 5 acres in size or (2) trees within 1,000 ft of a woodland that is at least 5 acres in size.

Females of all three species form maternity colonies with other females. Males occupy similar habitats but use a wider range of roosts.

Northern long-eared bats form maternity colonies of generally 30 to 60 females, typically utilizing trees at least 3 inches in diameter at breast height. Females give birth at the beginning of the summer (typically late May to June). Pups start flying and feeding on their own 18 to 21 days after birth.

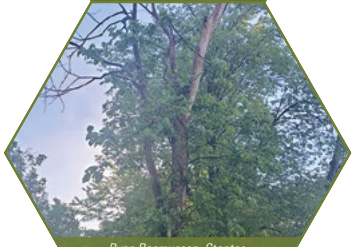
Indiana bats generally form maternity colonies of 100 or fewer females, utilizing trees at least 5 inches in diameter at breast height. Females give birth between mid-June and early July. Pups begin flying and feeding on their own within 25 to 37 days after birth. Female Indiana bats return to the same maternity colony year after year.

Tricolored bats form maternity colonies of 15 to 30 females, utilizing trees at least 4 inches in diameter at breast height. Females give birth between May and July. Pups begin flying and feeding on their own 21 to 28 days after birth.

Spring and Fall

All three species migrate between their winter hibernacula and summer roosting habitat in spring and fall. Migrations typically occur between mid-March and mid-May in the spring and mid-August through mid-October in the fall. During migration, all three species prefer to use forested corridors, tree-lined riparian zones, and forested edges as stopover points.

Ann Froschauer/USFWS
Hibernacula



Ryan Rasmussen, Stantec, used with permission
Maternity roost tree

Avoidance and Minimization

All three federally listed bat species are active in Iowa from spring to fall. If suitable bat habitat is present on a project, Iowa Department of Transportation Specification 2101.01A requires that trees 3 inches or more in diameter at breast height be cut between October 1 and March 31 to avoid impacts to roosting and foraging bats. Additionally, bats may be roosting on bridges or in culverts. If the project will impact a bridge or culvert, the Bridge and Structure Bat Assessment Form must be completed. The QR code above links to the form. If bat activity is identified at the bridge/culvert, several options are available to avoid and minimize impacts to bats. The preferred option is to remove the bridge/culvert in winter (October 1 to March 31), as the three federally listed bat species are not active at this time of year. If the bridge/culvert cannot be removed in winter, the project may choose to apply exclusion methods that close off any potential areas where bats may be roosting, preventing bats from roosting in these areas while work is being carried out.

Occasionally, projects impact both one or more of the federally listed bat species and the federally endangered rusty patched bumble bee (*Bombus affinis*). Avoidance windows for these species are different. Tree clearing must occur between August 1 and October 10. This avoids impacts to overwintering rusty patched bumble bee queens and greatly reduces impacts to roosting federally listed bats.

Mitigation

Projects requiring tree clearing within 100 feet from the edge of an existing road or active railroad do not require mitigation as long as tree clearing occurs between October 1 and March 31. If tree clearing is required more than 100 feet from the edge of an existing road or active railroad or if tree clearing cannot be done between October 1 and March 31, the U.S. Fish and Wildlife Service (USFWS) may require mitigation. Mitigation is determined on a case-by-case basis and, if required, will be coordinated directly with the USFWS. The QR code above provides a table of compensatory mitigation ratios for Indiana bats and northern long-eared bats.

Additional Resources

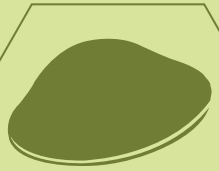
Mammals of Iowa Field Guide. A 134-page field guide by the Iowa Department of Natural Resources and Iowa State University Extension, April 2018. https://shop.iastate.edu/extension/farm-environment/natural-resources-and-environment/conservation/wl6.html.

Indiana Bat (*Myotis sodalis*). A one-page fact sheet by the Iowa Department of Natural Resources. https://programs.iowadnr.gov/naturalareasinventory/images/elements/494.pdf.

Range-Wide Indiana Bat and Northern Long-Eared Bat Survey Guidelines. A survey protocol document updated annually by the U.S. Fish and Wildlife Service. https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

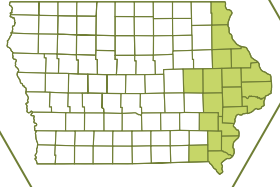
Higgins' Eye Pearlymussel (*Lampsilis higginsii*)

Federal Status: *Endangered* ***State Status:*** *Threatened*



Iowa DOT Districts:
2, 5, and 6

Presence of Higgins' Eye Pearlymussel in Iowa



Gary J Wege/USFWS
Higgins' eye pearlymussel

Introduction

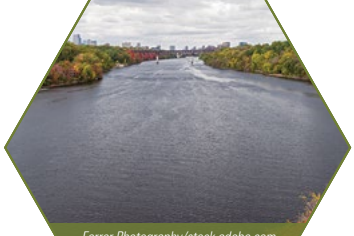
The Higgins' eye pearlymussel (Higgins' eye) is a freshwater mussel species found in large rivers. Higgins' eye mussels reach up to 6 inches in length and are oval in shape, with females being more rounded and inflated. The outside of the shell is yellow, greenish, reddish, or brown and generally has green rays. The inside of the shell is white with some iridescence.

The Higgins' eye was one of the first freshwater mussel species to receive federal protection. The species has experienced significant population declines due to habitat degradation and the introduction of invasive zebra mussels (*Dreissena polumorpha*), which attach to the shells of Higgins' eye and prevent normal movement.

Habitat

In Iowa, Higgins' eye mussels are found in large rivers, with the Mississippi River containing the largest Higgins' eye mussel population. Recently, Higgins' eye mussels have been reintroduced into the Iowa River and the Wapsipinicon River in an effort to re-establish populations in the species' historic range.

Higgins' eye mussels occupy various stable substrates ranging from sand to boulders but do not use firmly packed clay, silt, or unstable sand. The species is generally found in mussel beds containing at least 15 other species with a density of at least 10 mussels per square meter.



Ferrer Photography/stock.adobe.com

Typical Higgins' eye habitat

Avoidance and Minimization

Higgins' eye mussels are present year-round in Iowa. For this reason, there is no avoidance window for this species. Surveys should be conducted to determine whether Higgins' eye mussels are present in the project area. These surveys can be conducted when water temperatures are greater than 50°F (generally from May 1 to October 1).

If Higgins' eye mussels are found within the project area, moving the project to another location can avoid impacts to the species. If moving the project is not possible, the mussels should be relocated to a suitable location prior to construction.

Mitigation

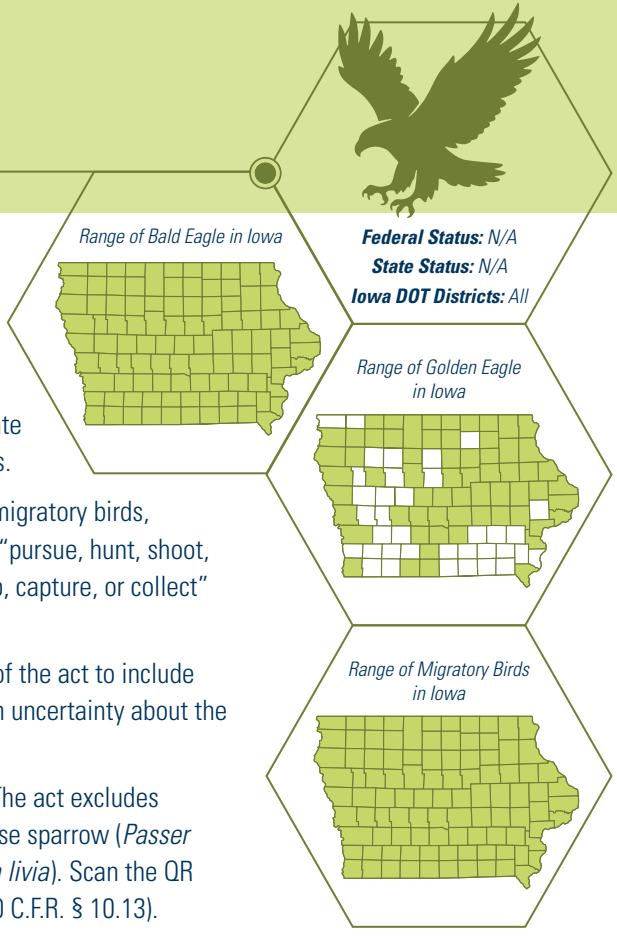
Mitigation is not required for this species if any mussels found within the project area can be relocated to another suitable location. If the mussels cannot be relocated, the U.S. Fish and Wildlife Service (USFWS) may require mitigation. If required, mitigation will be coordinated directly with the USFWS.

Additional Resources

Higgins Eye Pearlymussel (*Lampsilis higginsii*) Recovery Plan: First Revision. A 141-page document by the U.S. Fish and Wildlife Service, May 2004. https://ecos.fws.gov/docs/recovery_plan/040714.pdf.

Migratory Birds and Eagles

Multiple species covered by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act



Introduction

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) was signed into law in 1918 and is one of the oldest wildlife protection laws in the United States. Enacted in response to the extinction or near extinction of multiple bird species, its original purpose was to regulate overhunting of migratory birds, many of which were taken for sport or for their feathers.

The MBTA prohibits the taking, killing, possession, transportation, and importation of migratory birds, including their eggs, parts (e.g., feathers), or nests. "Take" is defined in regulations as "pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect" (50 C.F.R. § 10.12).

In the 1970s, the U.S. Fish and Wildlife Service (USFWS) broadened its interpretation of the act to include the incidental (unintentional) take of migratory bird species. Since then, there has been uncertainty about the act's take prohibition, with interpretations changing every few years.

The list of species protected by the MBTA includes 1,106 species of birds as of 2023. The act excludes nonmigratory birds and nonnative or human-introduced species such as house sparrow (*Passer domesticus*), European starling (*Sturnus vulgaris*), and rock pigeon (*Columba livia*). Scan the QR code at left for a complete list of bird species protected under the MBTA (50 C.F.R. § 10.13).

Alaskajade/stock.adobe.com
Swallow nests on a bridge

USFWS
Bald eagle

USFWS
Golden eagle

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) was enacted in 1940 (and amended several times after) to provide protection to bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*). The BGEPA states that it is unlawful to "take" an eagle, including their parts (e.g., feathers), nests, or eggs. "Take" is defined in the BGEPA as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, or molest, or disturb." The term "disturb" is further defined as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best available 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" (50 C.F.R. § 22.6).

The BGEPA also covers effects of human-induced alterations around previously used nests when eagles are not present if, when the eagle returns, the alterations disrupt an eagle to a degree that interferes with its normal behavior and causes injury, death, or nest abandonment.

A USFWS program under the BGEPA authorizes take (including disturbance take) of bald or golden eagles and/or their nests through permits. Conditions of these permits vary; more information is available in 50 C.F.R. § 22.

Habitat

Migratory Birds

Migratory birds use a wide range of habitats in Iowa, including forests, riparian corridors, grasslands, wetlands, agricultural fields, and open water. Many species also utilize human made or disturbed areas such as bridges, culverts, buildings, roadside vegetation, and urban environments. For example, several species of swallows build nests on bridges throughout Iowa.

Migratory birds use different habitats depending on the season. During the breeding season, many species nest in wooded or shrubby areas, in grasslands, at wetland edges, or on structures. Although nesting periods vary by species, the nesting season in Iowa generally extends from March 1 through August 1, with peak nesting activity from mid-May through mid-July. In late summer and fall, numerous species leave Iowa and migrate to wintering grounds. Some species remain in Iowa through winter (e.g., black-capped chickadee [*Poecile atricapillus*], northern cardinal [*Cardinalis cardinalis*], and red-tailed hawk [*Buteo jamaicensis*]). Wintering birds may use forests, agricultural areas, open water, and sheltered urban environments. Although present in Iowa year-round, these species do not nest during winter.

Bald and Golden Eagles

Bald eagles are found throughout Iowa. While some individuals reside in the state year-round, many more migrate through Iowa seasonally. Iowa's peak bald eagle season is in winter (December through March), when large numbers gather communally near open water. Dams and other human activity on Iowa's large rivers keep portions of the water unfrozen, allowing bald eagles to hunt fish and waterfowl in the winter months.

After winter, most migratory bald eagles leave Iowa to reach breeding areas elsewhere in the United States and Canada. For resident bald eagles, the nesting season generally extends from late February through mid-July, with peak nesting activity occurring from March through June. Nesting habitat typically includes large, mature trees located near rivers, lakes, or wetlands that provide structural support for their large nests and access to prey such as fish, waterfowl, and carrion. Northeast Iowa, particularly along the Mississippi River, has the highest concentration of bald eagle nests in the state, followed by central Iowa near the Des Moines River. Foraging habitat during both nesting and non-nesting periods includes open water, riparian corridors, wetlands, adjacent upland forests, and agricultural fields. Winter roosts are commonly located in sheltered wooded areas near open water.

Golden eagles are primarily found in the western United States and Canada and do not nest in Iowa. However, some individuals overwinter in Iowa, typically from November through March. When present, golden eagles use open habitats such as prairies, agricultural fields, bluffs, and woodland edges for hunting small mammals. Roost sites are typically located in protected wooded areas, bluff faces, or sheltered ravines that provide cover during winter conditions. Golden eagles leave Iowa in spring to return to their breeding grounds in the western United States and Canada.

Avoidance and Minimization

Migratory Birds

To minimize impacts to migratory birds, project activities should be conducted outside of the nesting season whenever practicable. Scheduling tree and vegetation clearing, as well as bridge removal, outside of this period will reduce the potential for disturbance to nesting birds. Maintaining tall vegetation in a mowed condition throughout the project duration is also recommended to discourage birds from establishing nests within the work area.

Active nests are protected under the MBTA. If an active nest (e.g., containing eggs or nestlings) is observed within the work area, work in the immediate area of the nest should be suspended until nestlings have fledged or the nest becomes inactive. When work cannot be suspended, a protective buffer may be established around the nest until it is no longer active. Removal of inactive nests, partially constructed nests, or newly initiated nests is permissible prior to egg laying or after nestlings have fledged.

Bald and Golden Eagles

Bald and golden eagles may be affected by transportation projects through disturbance to nesting, roosting, or foraging habitats.

Eagle nests are protected under the BGEPA. The USFWS defines an active eagle nest as a structure that contains eggs or eaglets, or a nest being attended by adult eagles during the breeding season. Tree removal and construction activities occurring between February and July that are within 660 feet of an active nest may disturb bald eagles. If an active nest is present at a work site, work within 660 feet of the nest should be suspended until the nest is no longer active (i.e., suspended from February through July). If work must continue within 660 feet of the nest during the nesting period, coordination with USFWS is required to determine appropriate protective measures. Removal of eagle nests is generally prohibited without an eagle take permit, even when a nest is not currently being used, because many eagles return to the same nest year after year.

Mitigation

Migratory Birds

There are no mitigation requirements for non–federally listed species protected under the MBTA. Coordination with the USFWS is recommended if project activities have the potential to repeatedly or unavoidably affect migratory bird species. If federally listed bird species are impacted, mitigation may be required by the USFWS.

Bald and Golden Eagles

If take of eagles and/or their nests is necessary for a project, an eagle take permit must be authorized by the USFWS. Compensatory mitigation may be a requirement of the permit. To ensure preservation of the affected eagle species, a 1.2:1 (mitigation:take) ratio is generally required. Compensatory mitigation must be approved by the USFWS and will be coordinated directly with the USFWS.

Additional Resources

Bald Eagle (*Hali[a]eetus leucocephalus*) status in Iowa, 2025. A 12-page document by the Iowa Department of Natural Resources. https://www.iowadnr.gov/media/9063/download?inline.

Migratory Bird Treaty Act of 1918. A webpage by the U.S. Fish and Wildlife Service. https://www.fws.gov/law/migratory-bird-treaty-act-1918.

Bald and Golden Eagle Protection Act. A webpage by the U.S. Fish and Wildlife Service. https://www.fws.gov/law/bald-and-golden-eagle-protection-act.

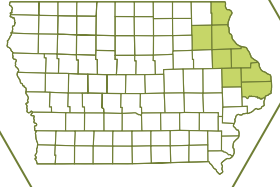
USFWS
Bald eagle at a wildlife refuge

Northern Wild Monkshood (*Aconitum noveboracense*)

Federal Status: *Threatened* ***State Status:*** *Threatened*

Iowa DOT Districts:
2 and 6

Presence of Northern Wild Monkshood in Iowa



Brandon Jones/USFWS
Northern wild monkshood

Introduction

The northern wild monkshood is a perennial plant that occurs in just three isolated geographic regions: one bordering northeast Iowa/southwest Wisconsin (the Driftless Area), a second in northeast Ohio, and a third in the Catskill Mountains of New York. The species is a member of the buttercup family, and all parts of the plant are deadly poisonous. The plant's dark-purple to blue flowers are about 1 inch in length and have a distinct hood shape. A single stem may grow up to 5 feet tall and have many flowers, which bloom between June and August. Northern wild monkshood leaves are broad with coarse, toothed lobes.

The northern wild monkshood is a glacial relict whose populations have greatly declined since the end of the last Ice Age. In Iowa, remaining populations are found in the Driftless Area, an area that escaped glacial flattening and maintained the specific habitat that northern wild monkshood plants require. Grazing, trampling, logging, spread of nonnative plants, and sinkhole filling have negatively impacted the species.

Habitat

Northern wild monkshood plants are found only in the microclimates of algific (cold-producing) talus slopes and moist, shaded cliff faces. These areas create a natural refrigerator effect, keeping the soil and air temperatures constantly cool and moist throughout the summer. The species requires partial to full shade, typically shade associated with mature forests or cliff overhangs. Areas without shade create warmer and drier air and soil conditions, which are unsuitable for the species.

Justin Trutwin/USFWS (top) and Ryan O'Connor/Wisconsin DNR (bottom)

Algific Talus Slope

Avoidance and Minimization

Northern wild monkshood plants are present year-round in Iowa. They are perennial and reproduce from both seeds and small tubers. Therefore, there is no avoidance window for the species.

Project activities should avoid impacts to northern wild monkshood plants. Habitat that supports the northern wild monkshood is rare, and the species is highly sensitive to disturbance. Maintaining buffer zones around areas containing northern wild monkshood plants may reduce impacts to the species and its habitat.

Mitigation

Mitigation for northern wild monkshood plants is determined on a case-by-case basis. If required, mitigation will be coordinated directly with the U.S. Fish and Wildlife Service (USFWS).

Additional Resources

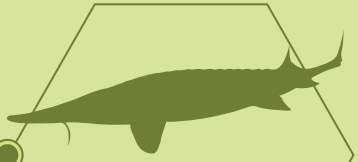
Northern Monkshood (*Aconitum novboracense*). A one-page fact sheet by the Iowa Department of Natural Resources. https://programs.iowadnr.gov/naturalareasinventory/images/elements/2275.pdf.

National Recovery Plan for Northern Monkshood (*Aconitum noveboracense*). An 83-page document by the U.S. Fish and Wildlife Service. https://ecos.fws.gov/docs/recovery_plan/830923.pdf.

Karst Topography and Algific Talus Slopes. A two-page fact sheet by Winneshiek County Conservation. https://www.winneshiekwild.com/wp-content/uploads/2019/11/Karst-Topography-and-Algific-Talus-Slopes.pdf.

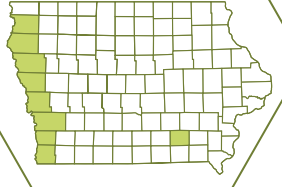
Pallid Sturgeon (*Scaphirhynchus albus*)

Federal Status: *Endangered* ***State Status:*** *Endangered*



Iowa DOT Districts:
3, 4, and 5

Presence of Pallid Sturgeon in Iowa



Ryan Hagerty/USFWS
Pallid sturgeon

Introduction

The pallid sturgeon is a large, bottom-dwelling fish native to large river systems of the central United States. Reaching over 5 feet long and more than 65 pounds, it grows much larger than the similar shovelnose sturgeon (*Scaphirhynchus platorynchus*). Pallid sturgeons have a shovel-shaped snout, bony plates, and a deeply forked tail. They are pale gray to whitish in color.

The pallid sturgeon is one of the most endangered species in North America. It has experienced significant population declines due to habitat fragmentation, river channelization, and dam construction.

Habitat

In Iowa, pallid sturgeons are typically associated with the Missouri River. However, in 2025 two pallid sturgeons were captured by Iowa Department of Natural Resources biologists in the lower Des Moines River in Wapello County. This is the first documented occurrence in that waterway.

Pallid sturgeons are found in large rivers with deep channels, flowing water, and sandy or gravelly substrates. They are rarely observed in habitats that lack flowing water (i.e., sloughs and areas removed from the main channel).

silukstockimages/stock.adobe.com (top) and Ean Miller Photos/stock.adobe.com (bottom)

Typical pallid sturgeon habitat

Avoidance and Minimization

Pallid sturgeons are likely present year-round in Iowa but migrate extensively throughout the Missouri River and Mississippi River systems. Spawning season for pallid sturgeons occurs in late spring to early summer (typically April through July) and is cued by increased water temperatures. Avoiding in-stream work during this window greatly reduces impacts to the species.

Mitigation

Potential impacts to pallid sturgeons should be identified early so that contractors can plan to avoid in-stream work during the spawning season (April through July).

In general, mitigation is not required for this species in areas not designated as critical habitat, provided that work during the spawning season can be avoided. If impacts during the spawning season cannot be avoided, formal consultation with the U.S. Fish and Wildlife Service (USFWS) may be necessary, and mitigation, if required, will be coordinated directly with the USFWS.

Additional Resources

Fish Iowa - Fish Species - Pallid Sturgeon. A species summary by the Iowa Department of Natural Resources. https://programs.iowadnr.gov/lakemanagement/FishIowa/FishDetails/PAS.

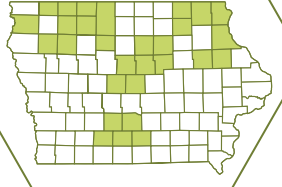
Revised Recovery Plan for the Pallid Sturgeon. A 126-page document by the U.S. Fish and Wildlife Service, January 29, 2014. https://ecos.fws.gov/docs/recovery_plan/Pallid%20Sturgeon%20Recovery%20Plan%20First%20Revision%20signed%20version%20012914_3.pdf.

Prairie Bush-Clover (*Lespedeza leptostachya*)

Federal Status: *Threatened* ***State Status:*** *Threatened*

Iowa DOT Districts:
1, 2, 3, 4, 5, and 6

Presence of Prairie Bush-Clover in Iowa



Phil Delphey/USFWS
Prairie bush-clover

Introduction

The prairie bush-clover is a perennial plant species in the pea family. Plants take five or more years to reach maturity, after which they flower annually. Seeds germinate between May and July, and seedlings and young plants grow minimally in their first few years. Adult plants grow rapidly until they flower from mid-July until early September. Stems of adult plants grow up to 3 feet and have narrow, oblong-shaped leaflets in clusters of three. Flowers range in color from white to yellow to light pink and produce small, white, wooly seed pods that turn brown between late August and early October.

Prairie bush-clover plants were once abundant in the tallgrass prairie of Iowa. However, the species has been negatively impacted by the conversion of remnant prairie to cropland or developed sites, the encroachment of woody vegetation, and the spread of nonnative plant species.

Habitat

Prairie bush-clover plants are adapted to a variety of prairie habitats, including dry, dry-mesic, mesic, or bedrock, with most populations being found in dry prairie. Though they are typically found in undisturbed remnant prairies, prairie bush-clover plants have been found in disturbed tallgrass prairies that have been previously mowed, cultivated, grazed, or burned.

Prairie bush-clover plants require full sun and are generally not found in prairie habitats with tree or shrub encroachment.

Brock Struecker, Iowa DOT, used with permission
Prairie bush-clover habitat

Avoidance and Minimization

Prairie bush-clover plants are present year-round in Iowa. They are long-lived perennial plants, and a single plant may live for 30 years or more. Therefore, there is no avoidance window for the species.

Project activities that do not require ground disturbance (such as mowing and prescribed burns) should occur between October and April, prior to germination and after seed dispersal. Project activities that involve ground disturbance will be unable to avoid impacts to the species.

Mitigation

Mitigation for prairie bush-clover plants is determined on a case-by-case basis. If required, mitigation will be coordinated directly with the U.S. Fish and Wildlife Service (USFWS).

Additional Resources

Prairie Bush Clover (*Lespedeza leptostachya*). A one-page fact sheet by the Iowa Department of Natural Resources. https://programs.iowadnr.gov/naturalareasinventory/images/elements/1950.pdf.

Species Status Assessment for Prairie Bush-Clover (*Lespedeza leptostachya*). An 89-page document by the U.S. Fish and Wildlife Service, August 2021. https://iris.fws.gov/APPS/ServCat/DownloadFile/206530.

Rusty Patched Bumble Bee (*Bombus affinis*)

Federal Status: *Endangered* ***State Status:*** *Endangered*

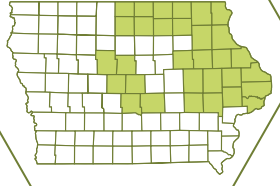
Introduction

The rusty patched bumble bee (RPBB) is a large, stout bee species once common throughout the eastern and midwestern United States. It is estimated that RPBBs have been eliminated from 87% of their historic range, with declines likely caused by pesticide exposure, habitat loss, and disease transmission from commercial bumble bees. The U.S. Fish and Wildlife Service (USFWS) has designated critical habitat for RPBBs in a rule effective July 1, 2026 (91 FR 32516). In Iowa, this designation includes approximately 45,631 acres in and around Iowa City in Johnson County. Scan the QR code at left for the full text of this rule and details about the designated critical habitat in Iowa.

RPBBs are eusocial and form colonies consisting of a single queen, female workers, and male drones. Colonies are relatively large compared to those of other bumble bee species, reaching up to 1,000 workers in a season. Workers and drones look similar, with a solid black head, a yellow thorax with a black "thumbtack"-shaped marking between their wings, a yellow first abdominal segment, a brown to orange "rusty patch" on the second abdominal segment, and black remaining segments. Queens are larger than workers and drones and lack the "thumbtack" and "rusty patch." Instead, queens have a yellow thorax with a central black spot, yellow first and second abdominal segments, and black remaining segments.

Iowa DOT Districts:
1, 2, and 6

Presence of Rusty Patched Bumble Bee in Iowa



Ryan Rasmussen, Stantec, used with permission

Rusty patched bumble bee

Ryan Rasmussen, Stantec, used with permission

Overwintering habitat

Ryan Rasmussen, Stantec, used with permission

Foraging habitat

Habitat

The annual life cycle of RPBBs begins in early spring, when a solitary queen emerges from overwintering, selects a suitable nesting location, and produces workers. Throughout summer, the queen continues to produce workers. In mid to late summer and early fall, she begins to produce males and new queens, which then disperse to mate with individuals from other colonies. Before winter, males, workers, and the original founding queen die. Newly produced queens hibernate over winter and begin the cycle again the following spring.

Suitable habitat for RPBBs varies throughout this cycle.

Overwintering

In winter, solitary queens overwinter in upland forests and woodlands. Overwintering queens have been found in stands of maple, oak, basswood, and hickory, a few centimeters below the surface in soft soils beneath leaf litter or moss. Although research is limited, RPBB queens are not believed to overwinter in floodplains or woodlands with dense understory vegetation or high concentrations of invasive species (e.g., honeysuckle [*Lonicera spp.*]).

Nesting

In spring, the queen selects a suitable nesting site in grassland and shrubland. These areas are very close to suitable foraging plants, as the queen must forage for food while rearing the first generation of workers on her own. Nests are typically located 1 to 4 feet underground in abandoned rodent burrows and are often situated within approximately 100 feet of forest or woodland edges.

Foraging

From spring through early fall, RPBBs forage in a variety of habitats depending on the availability of floral resources. In early spring, woodlands may serve as important foraging habitat when spring ephemerals are present. Later in the season, RPBBs may use prairies, meadows, old fields, marshes, fens, and even urban flower gardens as long as abundant nectar resources are available.

Avoidance and Minimization

RPBBs occur in Iowa year-round. Queens overwinter in upland forests and woodlands between October 10 and March 15 south of 42° latitude, and between October 10 and April 10 north of 42° latitude. During spring, summer, and fall, RPBBs forage and nest in areas with abundant nectar resources.

Although RPBBs can occur broadly across the landscape, the USFWS identifies high-potential zones (HPZs) where the species is most likely to occur and its presence should be presumed. HPZs signal potential species presence, but they do not necessarily indicate suitable habitat; therefore, the impact potential of a transportation project depends on habitat conditions within the project area. Projects located within HPZs must evaluate whether suitable habitat is present in areas where project activities are planned.

If suitable RPBB nesting or foraging habitat is present, project activities should be conducted during the inactive season (October 10 to March 15 south of 42° latitude, October 10 to April 10 north of 42° latitude). If suitable overwintering habitat is present, ground disturbing activities should be avoided during winter. Conducting clearing or grubbing in woodlands during the species' active season (mid-March to mid-October) may reduce impacts to overwintering queens.

USFWS recommends reseeding disturbed areas with native plants that provide suitable forage for RPBBs. A combination of native plant species with different blooming periods will benefit RPBBs. Scan the QR code at left for a list of recommended native plant species.

Some projects may affect both RPBBs and federally listed bat species. Generally, tree clearing should occur in winter (October 1 to March 31) to avoid impacts to bats; however, this overlaps with the RPBB overwintering period. When both species may be present on a project site, tree clearing must occur between August 1 and October 10 to avoid impacts to overwintering RPBBs while reducing impacts to listed bats.

Mitigation

Mitigation for RPBBs is determined on a case-by-case basis. Projects that incorporate appropriate avoidance measures are less likely to require mitigation. If required, mitigation will be coordinated directly with USFWS.

Additional Resources

Conservation Management Guidelines for the Rusty Patched Bumble Bee (*Bombus affinis*). An 18-page document by the U.S. Fish and Wildlife Service, February 2018. https://www.fws.gov/sites/default/files/documents/ConservationGuidanceRPBBv1_27Feb2018_0.pdf.

Planting for rusty patched bumble bees. A web page by the U.S. Fish and Wildlife Service. https://www.fws.gov/story/planting-rusty-patched-bumble-bees.

Rusty Patched Bumble Bee (*Bombus affinis*) Endangered Species Act Section 7(a)(2) Voluntary Implementation Guidance. A 31-page document by the U.S. Fish and Wildlife Service, December 2021. https://www.fws.gov/sites/default/files/documents/Section%207%20guidance%20for%20rusty%20patched%20bumble%20bee%20%28Bombus%20affinis%29.pdf.

Rusty Patched Bumble Bee (*Bombus affinis*) Species Status Assessment. A 100-page document by the U.S. Fish and Wildlife Service, June 2016. https://iris.fws.gov/APPS/ServCat/DownloadFile/120109.

Topeka Shiner (*Notropis topeka*)

Federal Status: *Endangered* ***State Status:*** *Threatened*

Introduction

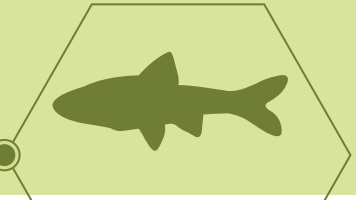
The Topeka shiner is a small minnow with a straw-colored back, silvery sides, and a silvery-white belly. A dusky lateral band runs the length of its body and ends at the base of the tail fin with a small, dark wedge-shaped spot. Scales above the lateral band have a dark outline, and scales below the band have no outline. Breeding males have bright red or orange fins.

The population of Topeka shiners has declined approximately 70% in the last 50 years due to habitat loss, pollution, fragmentation, and land conversion. Altered hydrology of prairie streams, including stream channelization and stream barriers, most significantly affects the species.

Habitat

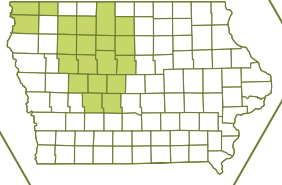
The current known extent of Topeka shiners in Iowa is limited to the Rock River, Boone River, and Raccoon River watersheds. These watersheds are located in west-central and northwest Iowa, in Districts 1, 2, 3, and 4. Scan the QR code at left to access a map of these watersheds and the species' critical habitat.

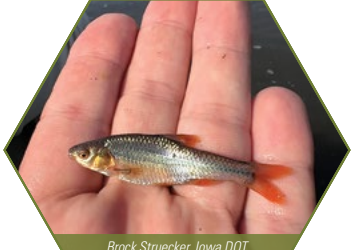
Topeka shiners are found in pools of low-order streams, oxbows, and ponds with gravel or sandy substrates. The species prefers off-channel pools with little or no flow and the presence of streamside vegetation. They are generally tolerant of poor water quality.



Iowa DOT Districts:
1, 2, 3, and 4

Presence of Topeka Shiner in Iowa





Brock Struecker, Iowa DOT, used with permission
Topeka shiner

Brandon Walls, Iowa DOT, used with permission

Typical Topeka shiner habitat

Avoidance and Minimization

Topeka shiners are present year-round in Iowa. However, their behavior changes with the seasons. In mid-May, Topeka shiners leave deeper overwintering pools in favor of shallower pools and slow runs for spawning. Peak spawning season for Topeka shiners is from May 15 through July 31. Avoiding in-stream work during this window greatly reduces impacts to the species.

The Iowa Department of Transportation has set forth several best management practices (BMPs) that are required for the protection of the Topeka shiner when work is conducted in Topeka shiner watersheds. These BMPs are outlined in Standard Specification 1107.18.B.3.

Scan the QR code at right for the complete text of Standard Specification 1107.18.B.3.

Mitigation

Potential impacts to Topeka shiners should be identified early so that contractors can plan to follow the BMPs provided in Standard Specification 1107.18.B.3.

In general, mitigation is not required for this species in areas not designated as critical habitat, provided that the BMPs in Standard Specification 1107.18.B.3 are implemented. If critical habitat will be impacted by a project, formal consultation with the U.S. Fish and Wildlife Service (USFWS) is necessary, and mitigation, if required, will be coordinated directly with the USFWS.

Additional Resources

Recovery Plan for Topeka Shiner. A document by the U.S. Fish and Wildlife Service, March 25, 2021. https://ecos.fws.gov/docs/recovery_plan/20210325_Final_Recovery_Plan_for_Topeka_shiner_SIGNED.pdf.

Topeka Shiner. A two-page summary by the Iowa Department of Transportation, July 24, 2025. https://iowadot.gov/media/3499/download?inline.

Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for the Topeka Shiner. A rule by the U.S. Fish and Wildlife Service published in the Federal Register, 50 CFR Part 17, July 27, 2004. https://www.federalregister.gov/documents/2004/07/27/04-16646/endangered-and-threatened-wildlife-and-plants-final-designation-of-critical-habitat-for-the-topeka.

Oxbow Restoration in Iowa with an Emphasis on Topeka Shiner. An article in *Outdoor News Bulletin* by the Wildlife Management Institute, February 2020. https://wildlifemanagement.institute/outdoor-news-bulletin/february-2020/oxbow-restoration-iowa-emphasis-topeka-shiner.

Brandon Walls, Iowa DOT, used with permission

Overview and mitigation measures for threatened and endangered species in Iowa

Iowa LTAP
Local Technical Assistance Program

Iowa State University
Institute for Transportation

Iowa DOT