

# U.S. Fish and Wildlife Service

## Nebraska Ecological Services Field Office

### Recommended Conservation Measures for Federally Listed Species in Nebraska

*Disclaimer: This document is intended to serve as technical assistance and a guide during project development. The conservation measures and practices provided below are not exhaustive or prescriptive, and may not be suitable for all projects, locations, or activities. Project proponents and lead federal agencies should use this information to comply with their responsibilities under the Endangered Species Act Section 7(a)2 to avoid, minimize, and compensate for impacts to sensitive species and their habitats during project planning and the development of biological assessments. We strongly recommend that project proponents and managers utilize the US Fish and Wildlife Service (Service) Information for Planning and Consultation (IPaC) [tool](#) to streamline project reviews and coordination. IPaC includes technical assistance information, a consultation package builder, and applicable determination keys (D-keys) that will assist you assembling a submission package if needed. The project code issued by IPaC (i.e., YEAR-XXXXXX) will be requested when contacting our office for additional coordination or concurrence requests. Entering projects into IPaC helps the Service better track project reviews and coordination.*

### American Burying Beetle (*Nicrophorus americanus*):

Federal Listing Status: Threatened

State Listing Status: Threatened

**Species Description:** In Nebraska, this species range includes the Nebraska Sandhills and the Loess Canyons, collectively referred to as the Northern Plains Analysis Area (NPAA). The American burying beetle (ABB) emerges from grasslands at night in the active season (generally June through October in Nebraska) and can fly miles to locate carrion, where it finds a mate to bury the carcass and raise their young. ABB is considered a habitat generalist as it has been successfully live-trapped in a wide range of vegetation habitats, including wet meadows, partially forested loess canyons, oak-hickory forests, shrubland and grasslands, lightly grazed pasture, riparian zones, coniferous forest, and deciduous forests with open understory. In Nebraska, ABB are commonly found in the Sandhill and Loess Canyon ecosystems, but less commonly found in areas with agricultural lands that are tilled frequently, permanently saturated soils, or urban areas with manicured lawns. Within the NPAA, areas with drier soils that have nearby seasonally flooded wetlands or grasslands with moist soils are also suitable habitats. Because ABB remain in burrows during the day and throughout the inactive season, areas without topsoil that are heavily compacted (i.e. pavement, gravel roads, etc.) are not considered suitable habitat.

**Threats:** In Nebraska, threats to the ABB include but are not limited to habitat loss and alteration (soil disturbance, agricultural conversion), availability of carrion, competition with meso-carnivores, inter and

intra-specific competition, loss of genetic diversity, disease/pathogens, climate change, and other factors including pesticides and artificial lighting. In Nebraska, the loss of suitable habitat (grasslands), application of pesticides, and artificial lighting within the NPAA are our biggest threats.

**Recommended Conservation Measures for Northern Plains Analysis Area (NPAA)\*:**

1. It is critical that if the project includes soil disturbance, the amount of suitable habitat impacted should be minimized to the furthest extent feasible. Whenever practicable, limit soil disturbance to areas of unsuitable habitat (as described above). If impacts to suitable habitat are unavoidable, then be sure to accurately quantify the amount of disturbance (see below), as the amount and type will be needed to determine whether offsets are needed, and the appropriate amounts.
2. Avoid nighttime work with lights during the ABB active season (May 1st to September 30th).
3. If temporary construction lighting is planned between May 1st and September 30th or if permanent lighting is being installed, lighting should be limited to a Nominal CCT of 3000 Kelvin +/- 300 K, shielded and directed away from suitable habitat, such as lighting compliant with the "BUG rating" set forth by the Illumination Engineering Society as feasible.

*\*The Service previously supported the application of mowing and carrion removal as conservation measures to avoid construction-related effects. However, the Service has since rescinded this policy as it could not be demonstrated that complete avoidance of adverse effects could be achieved through these measures. Ongoing research indicates these protocols greatly overestimate the benefit of these measures, and not all prohibited take could be avoided through their implementation.*

**If soil disturbance is anticipated:**

Follow the 4(d) Rule Determination Key in IPaC to determine if activities will result in prohibited or non-prohibited take. The 4(d) Rule prohibits, with some exceptions, the taking of ABB through soil disturbance activities in suitable habitat.

Complete the following steps if the 4(d) Rule Key confirms the potential for prohibited take via soil disturbance. When assessing the impacts to ABB habitat, the Service recommends providing a calculation of impacts to habitat from soil disturbance based upon permanence and suitability shown in the categories below. The standard for this calculation is based upon surface disturbance, primarily assessed in acres.

1. Total Permanent Suitable Habitat Soil Disturbance
2. Total Temporary Suitable Habitat Soil Disturbance
3. Total Permanent Unfavorable Habitat Soil Disturbance
4. Total Temporary Unfavorable Habitat Soil Disturbance
5. Total Soil Disturbance in Suitable Habitat

## Blowout Penstemon (*Penstemon haydenii*)

Federal Listing Status: Endangered

State Listing Status: Endangered

**Species Description:** Blowout penstemon (BP) is native to the Nebraska Sandhills and is restricted to active blowouts or loose sands in or on the margins of open sand blowouts. It requires sites that are devoid or nearly devoid of vegetation. These are usually sites of active wind erosion. As succession progresses and the blowout heals, BP is unable to compete with other prairie vegetation and is gradually eliminated. Within limits, activities or processes promoting wind erosion or active dune migration will favor the continuation of the species.

**Threats:** For this species in Nebraska, activities which can threaten the survival of individual plants or BP populations are often related to range management practices which stabilize the sand dunes (major cause of the species decline), grazing, trampling by cattle, periods of drought, herbicide, and insects (e.g. pyralid moths).

### Recommended Conservation Measures:

1. If a project's action area contains blowout habitat and it will be affected, have a qualified biologist conduct a survey during the blooming period (typically late May through June). Coordination with the field office is recommended to ensure proper timing of the survey given blooming periods may vary year to year. Qualifications of the surveyor, methods of the survey, and results should be provided to the Nebraska Field Office during coordination.
2. During the blooming period, limit grazing to no more than one out of every three years in occupied blowout habitat to minimize grazing damage to flowers. Grazing outside of this time period is beneficial and encouraged to maintain open/blowing sand.
3. Every fifth year, use a combination of prescribed fire and intense livestock grazing to reduce grass cover and maintain sand movement to prevent blowout healing and penstemon decline.

## Higgins Eye Mussel (*Lampsilis higginsii*)

Federal Listing Status: Endangered

State Listing Status: Endangered

## Scaleshell Mussel (*Leptodea leptodon*)

Federal Listing Status: Endangered

State Listing Status: Endangered

**Species Description:** For both Higgins eye mussel and scaleshell mussel, suitable habitat within the Missouri River is recognized from Gavin's Point Dam down to Ponca (Cedar & Dixon Counties in Nebraska and Clay, Union, and Yankton Counties in South Dakota). Within this reach, habitats would include stable riffles and runs with gravel or mud substrate and moderate current velocity. These mussels require good water quality and are usually found where a diversity of other mussel species exist. Only the shells of these species have been found and no populations are currently known to exist in Nebraska. These species may be extirpated in Nebraska, although, it remains protected wherever it is found.

**Threats:** Both mussel species are impacted by water quality degradation, excess sedimentation, channel alteration, and habitat destruction. These factors are contributing to the decline of these species throughout their historic range. The spread of the nonnative zebra mussel (*Dreissena polymorpha*) may also threaten mussel populations through resource competition.

**Recommended Conservation Measures:**

1. All outlets, bank disturbance, and/or in stream work should be designed to avoid or minimize sedimentation and stream bank erosion and should not otherwise impact stream channel/bank form and function.
2. If in river/stream work is anticipated, a presence/ probable absence survey should be completed by a qualified biologist in the wetted channel after early coordination with the Service. Qualifications of the surveyor, methods of the survey, and results should be provided to the Nebraska Field Office during coordination.
3. Any barges or equipment that will be used in the water should be inspected and de-contaminated of invasive species prior to use.
4. All construction debris should be captured and/or contained from entering suitable habitat.
5. There should be no direct discharge of any materials (i.e., water, chemicals, or spoil) that negatively impact water quality or quantities.

## Northern Long-eared Bat (*Myotis septentrionalis*)

Federal Listing Status: Endangered

State Listing Status: Endangered

## Tricolored Bat (*Perimyotis subflavus*)

Federal Listing Status: Proposed Endangered

State Listing Status: N/A

**Species Description:** A vast majority of Nebraska is within the northern long-eared bat (NLEB) range while the entire state is within the tri-colored bat (TCB) range. Nebraska contains suitable forested habitat for foraging and roosting during the species' summer occupancy period (April 1st-September 30th). The NLEB primarily forages and roosts in the interior of dense forests. The TCB is more versatile foraging and roosting in the forest interior and edges. In the fall, when outdoor temperatures consistently drop below 50°F and daylight hours decrease, these species migrate to the entrances of hibernacula for fall swarming from August 16th to November 15th. During the winter, they predominately hibernate in caves and abandoned mines from November 16th to March 31st. In the spring, when temperatures and daylight hours begin to increase, they begin emerging from hibernacula for spring staging (April 1st to May 14th) in preparation to migrate to their summer ranges. Caves and mines in Nebraska with documented use by these species occur in Cass, Greeley, Lancaster, and Sarpy counties. A deep rock crevice in a limestone cliff face on the Missouri River in Dixon County also has documented use during winter. Due to this finding, we suspect that these species also hibernate in deep rock crevices along the Missouri River (upstream of Ponca, Nebraska), Niobrara River, and Republican Rivers where rocky outcroppings are available.

**Threats:** NLEB and TCB have been severely impacted by the presence of a fungal disease commonly referred to as white-nose syndrome (WNS). Due to significant population declines caused by WNS and these species' reproductive rates, these species are more vulnerable to additional mortality events such as wind turbine strikes and barotrauma, summer and winter habitat loss or disturbance, and climate change.

Impacts to these species should be evaluated in IPaC using the appropriate Determination Key (D-Key), if eligible. Upon completion of the appropriate D-Key(s), a concurrence or consistency letter outlining the next steps for coordination with the Service will be issued. Note that the Rangewide D-Key does not apply conservation measures to projects in statement form. This DKey presents conservation measures as questions to determine if the project is reasonably certain to cause take of the species. Below are some of the recommended conservation measures to assist with planning your project.

**Recommended Conservation Measures:**

1. Avoid removal of suitable tree roosting habitat during the summer occupancy period (April 1st-September 30th). If this is not possible, we recommend completing a Presence/Absence Survey in accordance with the Service's Range-wide Summer Survey Guidance to establish presence or probable absence.
2. Avoid removal or modification of structures that may be suitable for roosting during the summer occupancy period (April 1st– September 30th). If this is not possible, we recommend completing Presence/Absence Survey in accordance with the Service's Range-wide Summer Survey Guidance to establish presence or probable absence.
3. Avoid removing suitable roost trees within 0.50-mile of known hibernacula entrances and the physical or other alteration of hibernacula entrances and interiors at any time.
4. Avoid conducting prescribed burns during these species pup season (May 15th – July 31st). If this is not possible, we recommend completing a Presence/Absence Survey in accordance with the Service's Range-wide Summer Survey Guidance to establish probable absence.
5. Avoid herbicide applications that may affect suitable summer habitat during the summer occupancy period unless applications will utilize targeted application methods like spot-spraying, hack-and-squirt, basal bark, injections, cut stump, or foliar spraying on individual herbaceous plants (no foliar spraying on tree leaves).
6. If nighttime work is planned between April 1st and September 30th, lighting should be limited to a Nominal CCT of 3000 Kelvin +/- 300 K, shielded, and directed away from suitable roosting habitat, such as lighting that is compliant with the "BUG rating" set forth by the Illumination Engineering Society as feasible.

## Pallid Sturgeon (*Scaphirhynchus albus*)

Federal Listing Status: Endangered

State Listing Status: Threatened

**Species Description:** Pallid sturgeon (PS) inhabits large rivers, including the Elkhorn, Loup, Niobrara, Missouri, and Platte rivers in Nebraska. Floodplains, backwaters, chutes, sloughs, islands, sandbars, and main channel waters form these river ecosystems providing suitable habitat for this species. Specifically, these river segments in Nebraska include but are not limited to:

- Elkhorn River - between the Nebraska Highway 91 Bridge at Nickerson and the Platte River confluence.
- Loup River- upstream from the Platte River confluence to the Loup Power canal head gates.
- Missouri River - bordering the entire length of the state (approximately River Mile 490 to 874.5).
- Niobrara River - from Schindler Creek confluence to the Missouri River confluence (approximately the lower 7 miles of the Niobrara River).
- Platte River - between the Loup River confluence and the Missouri River confluence.

**Threats:** PS in Nebraska are impacted by the destruction, modification, or curtailment of its habitat/range, including river channelization, bank stabilization, impoundment, and altered flow regimes (<sup>1</sup>See Platte River Depletions Endnote). Threats also include water quality degradation, entrainment (i.e. water-cooling intake structures), dredge operations, diversions, flood control points (dams, levees, dikes, retention ponds, etc.), climate change, energy development, hybridization, and invasive species.

### Recommended Conservation Measures:

1. Avoid project impacts to riverine systems in the designated segments (listed above) of the Elkhorn, Loup, Missouri, Niobrara, and Platte River channels from March 1st – June 30th, which coincides with species spawning and larval drift. Implementation of this conservation measure ensures incidental take of spawning adults, eggs, and free embryos are not “reasonably certain to occur.”
2. Construction activities within and upstream of designated segments should be designed to prevent streambank erosion and should not otherwise impact the stream channel/bank. Minimize disturbance to ground cover and vegetation within riparian areas by utilizing existing disturbed areas such as roads, trails, etc.
3. Any upland soil disturbances should be designed to avoid or minimize excess sedimentation which can affect water quality.
4. Avoid entrainment and/or impingement of fish when designing or repairing water control structures in the designated segments.

## Piping Plover (*Charadrius melodus*)

Federal Listing Status: Threatened

State Listing Status: Threatened

**Species Description:** The piping plover (PP) nests and forages on unvegetated or sparsely vegetated sandbars on the Elkhorn, Loup, Middle Loup, Missouri, Niobrara, Platte, and South Platte rivers in Nebraska. PP also readily use sand and gravel mines and lake shores/beaches for nesting along these river systems. The nesting season is from April 15th- August 15th in Nebraska.

**Threats:** The primary threat to this species in Nebraska is altered riverine systems that limit the formation and maintenance of non-vegetated sand bars upon which they nest. This includes but is not limited to destruction, modification, or curtailment of habitat or range including reservoir construction, river channelization, and modifications to hydrologic regime (<sup>1</sup>See Platte River Depletions Endnote). Furthermore, as PP readily utilize commercial aggregate (sand and gravel) mining areas and other cleared areas (energy production, agricultural development, lakefront housing, etc.) to nest and raise young outside riverine systems, these areas must be similarly evaluated for impacts. Other threats include predation, pesticides, invasive species, and excessive vegetation growth of nesting areas. Human disturbances including off road vehicles, boats, and pets also pose a risk to nesting habitat or direct take of young.

### Recommended Conservation Measures:

1. Avoid construction within 0.25-miles of suitable habitat during the species' nesting season (April 15th– August 15th).
2. If construction must occur during the nesting season, follow the U.S. Fish and Wildlife Service and Nebraska Game and Parks Commission Survey Protocol, dated March 2021.
3. Herbaceous species used for re-seeding within ¼ mile of suitable habitat will be native grass or forb species. Native shrub or woody species used in restoration should reach no more than 4 feet in height at maturity.
4. If temporary construction lighting is planned between April 15th and August 15th or if permanent lighting is being installed, lighting should be limited to a Nominal CCT of 3000 Kelvin +/- 300 K, shielded and directed away from suitable habitat, such as lighting compliant with the "BUG rating" set forth by the Illumination Engineering Society as feasible.
5. Avoid project activities that alter natural river form or function. For example, those that would hinder the ability for natural creation of sandbar habitats along the listed river systems.

## Salt Creek Tiger Beetle (*Cicindela nevadica lincolniana*) and Critical Habitat

Federal Listing Status: Endangered

State Listing Status: Endangered

**Species Description:** The Salt Creek tiger beetle (SCTB) has a metallic brown to dark olive dorsal and metallic dark green ventral side. This species is distinguished from other tiger beetles by its color pattern and reduced markings on its elytra. It has one of the most restricted ranges of any insect, now only occurring along portions of the Little Salt Creek and adjacent remnant saline wetlands in Lancaster County. Federally designated critical habitat for the species includes saline seeps along the Rock, Little Salt, Oak, and Haines Branch Creeks with a 137-foot-wide dispersal zone on either side to ensure SCTB access to saline wetlands and seeps across the floodplains in Lancaster and southern Saunders Counties.

**Threats:** The SCTB requires exposed mudflats associated with saline wetlands or exposed banks and islands of streams and seeps that contain adequate soil moisture and soil salinity for egg laying and foraging. SCTB also require vegetated wetlands adjacent to these habitats that provide shade for thermoregulations and support prey for larvae and adults. Direct and indirect loss of these habitats from commercial, residential, transportation, and agricultural development remains the greatest threat to the SCTB. Habitat is being lost because development is causing changes in hydrology from bank stabilization, stream channelization, and stream bed incision. Stormwater runoff from development is diluting existing saline wetlands and soils and degrading overall water quality.

### Recommended Conservation Measures:

1. Modify stormwater facilities and construct permanent and temporary retention basins to avoid freshwater and sediment inputs into designated critical habitats, including tributaries.
2. Install sediment control measures (i.e., silt fence, mulch, cover crops) in disturbed areas.
3. Avoid equipment operation/ground disturbance in suitable habitat and designated critical habitat. Coordination with the Service is necessary to establish where SCTB are present.
4. Avoid nighttime construction work with lights from May 15th –July 31st. in occupied suitable habitat and federally designated critical habitats. Coordination with the Service is necessary to establish where SCTB are present.
5. If temporary construction lighting is planned between May 15th – July 31st or if permanent lighting is being installed, lighting should be limited to a Nominal CCT of 3000 Kelvin +/- 300 K, shielded and directed away from suitable habitat, such as lighting compliant with the “BUG rating” set forth by the Illumination Engineering Society as feasible.
6. Utilize targeted application methods like spot-spraying, hack-and-squirt, basal bark, injections, cut stump, or foliar spraying on individual herbaceous plants when managing suitable or critical habitats and avoid contact with species life stages.



## Topeka Shiner (*Notropis topeka*) and Critical Habitat:

Federal Listing Status: Endangered

State Listing Status: Endangered

**Species Description:** The Topeka shiner (TS) is listed as federally endangered with designated critical habitat. In Nebraska, this small-bodied fish species inhabited high quality cool water streams, and potentially still occur in Cherry County in Big Creek of the North Loup River Watershed; and in Madison County in an unnamed tributary to Union Creek and Taylor Creek (critical habitat) in the Elkhorn River watershed. Federally designated critical habitat for the species includes Taylor Creek upstream from its confluence with Union Creek in Madison County near the town of Madison, NE.

**Threats:** For TS potential impacts include but are not limited to altered hydrology, climate change (flood, drought intensity and frequency, water temperature rise), habitat fragmentation, reduced water quality, agricultural land conversion, grazing, tiling, channelization, irrigation, and confined feeding operations. Furthermore, urbanization, predation, instream mining/dredging, disease, and hybridization also play a role in the species limited presence in Nebraska.

### Recommended Conservation Measures:

1. Avoid conducting activities in streams classified as federally designated critical habitat or in streams that are classified as suitable habitat for Topeka shiner.
2. If work must occur, avoid conducting activities in streams classified as federally designated critical habitat or known occupied streams during the Topeka Shiner spawning period, May 15th – July 31st.
3. Conserve natural hydrology by avoiding dam and impoundment construction in Topeka Shiner streams and their headwaters. Plan removal of existing structures outside the spawning period (May 15th-July 31st) and coordinate with the Service.
4. Avoid water withdrawal and dewatering of suitable habitat for construction activities. (i.e., dust control, cofferdam pumping, etc.)
5. Conserve and maintain vegetated stream buffer strips on Topeka Shiner streams. If removal of stream buffer strips is necessary for work (e.g. bridge replacement), replant vegetated buffer strips with native vegetation.

## Ute Ladies' Tresses (*Spiranthes diluvialis*)

Federal Listing Status: Threatened

State Listing Status: Threatened

**Species Description:** Ute ladies'-tresses is a terrestrial orchid found in the western United States and Canada. It inhabits early- to mid-seral stage wetlands along rivers, perennial streams, canals, lakeshores, and springs. It also occurs in wet meadows both naturally occurring and human-created, borrow pits, and agricultural ditches. Specifically in Nebraska, Ute ladies'-tresses is found in somewhat alkaline wet meadows only along a short stretch of the Niobrara River Valley in Sioux County.

**Threats:** Ute ladies'-tresses (ULT) are impacted by anthropogenic activities such as agricultural development, livestock grazing practices, urbanization, conversion of grasslands, water management practices, and invasive species. Furthermore, environmental condition changes from drought, flooding, loss of pollinators, and vegetative succession all impact the species success.

**Recommended Conservation Measures:**

1. Projects should avoid activities within or near wet meadow habitats to the maximum extent practicable within the species range.
2. Avoid prescribed burning between May 15th and October 1st during the ULT growing season. Only prescribed burn potential habitats every 3-4 years as applicable.
3. Modify haying and grazing practices to promote ULT habitat and seed germination as applicable. Further coordination with the Service and species experts may be necessary to identify potential habitat management needs.
4. If a project's action area contains suitable habitat and it will be affected, have a qualified biologist conduct a survey during the blooming period (August 1st-August 31st). Coordination with the field office is recommended to ensure proper timing of the survey given blooming periods may vary year to year. Qualifications of the surveyor, methods of the survey, and results should be provided to the Nebraska Field Office during coordination.

## Western Prairie Fringed Orchid (*Platanthera praeclara*)

Federal Listing Status: Threatened

State Listing Status: Threatened

**Species Description:** In Nebraska, the Western Prairie Fringed Orchid (WPFO) has been found in tallgrass calcareous silt loam or sub-irrigated sand prairies and wet meadows located in the northern sandhills, eastern, central, and northeast regions.

**Threats:** WPFO is primarily impacted by conversion of its habitats to agricultural production, channelization and hydrology alterations (<sup>1</sup>See Platte River Depletions Endnote), siltation, road and bridge construction, grazing, haying, and the application of herbicides. Additionally, one of the most pervasive threats to the species has become exotic plants. Smooth brome (*Bromus inermis*), reed canary grass (*Phalaris arundinacea*), and Garrison creeping foxtail (*Alopecurus arundinaceus*) invade orchid meadow habitats.

**Recommended Conservation Measures:**

1. Projects should avoid activities within or near wet meadow habitats to the maximum extent practicable within the species range.
2. Avoid prescribed burning between May 15th and October 1st during the WPFO growing season. Only prescribed burn potential habitats every 3-4 years as applicable.
3. Modify haying and grazing practices to promote WPFO habitat and seed germination as applicable. Further coordination with the Service and species experts may be necessary to identify potential habitat management needs.

4. If a project's action area contains suitable habitat and it will be affected, have a qualified biologist conduct a survey during the blooming period (typically June 15th-July 15th). Coordination with the field office is recommended to ensure proper timing of the survey given blooming periods may vary year to year. Qualifications of the surveyor, methods of the survey, and results should be provided to the Nebraska Field Office during coordination.
5. If temporary construction lighting is planned between June 15th and July 15th or if permanent lighting is being installed, lighting should be limited to a Nominal CCT of 3000 Kelvin +/- 300 K, shielded and directed away from suitable habitat, such as lighting compliant with the "BUG rating" set forth by the Illumination Engineering Society as feasible.

## Whooping Crane (*Grus americana*) and Critical Habitat

Federal Listing Status: Endangered

State Listing Status: Endangered

**Species Description:** Whooping cranes, federally listed as endangered, use shallow, sparsely vegetated streams and wetlands in which to feed and roost during migration between the wintering grounds in Texas (Aransas National Wildlife Refuge) and summering grounds in Canada (Wood-Buffalo National Reserve). Major river systems used by whooping cranes during migration in Nebraska include the central Platte, Loup, Republican, and Niobrara rivers and their associated wetlands. In addition, a 3-mile-wide, 56-mile-long reach of the Platte River between Lexington and Denman, Nebraska has been federally designated as critical habitat for whooping cranes. Migration periods for the whooping crane in Nebraska are from approximately March 6th through April 29th and from October 9th through November 15th.

**Threats:** Whooping cranes and their habitats are impacted by physical and hydrologic stream and river alterations including reductions and alterations to flows, channel constrictions caused by bridges, bridge approaches, roadway embankments, bank stabilization, levees, and other unnatural obstructions that can result in the loss of broad, shallow, unobstructed channels and sandbar complexes used as roosting habitat by whooping cranes. Alterations to river flows (<sup>1</sup>See Platte River Depletions Endnote), as well as drainage and filling of playa wetlands can also result in the loss of important foraging and roosting habitats. Human activities in the vicinity of important roosting and feeding habitats can disturb whooping cranes, prematurely hastening their departure from, or preventing their use of riverine and wetland habitats. Permanent impacts to habitat used by whooping cranes can reduce the amount, quality and distribution of migratory stopover habitat, ultimately resulting in adverse effects to whooping cranes. Wind turbines, transmission lines and other tall structures pose collision risks to migrating whooping cranes when their location coincides with suitable habitat.

**Recommended Conservation Measures:**

1. Avoid siting projects with negative consequences in suitable habitat or within the migration corridor whenever feasible.
2. To the maximum extent practicable avoid or minimize alterations to hydrology within river systems including their watersheds.
3. To the maximum extent practicable avoid or minimize impacts to habitats used by or with the potential to be used by whooping cranes (i.e., riverine, wetlands, wet meadows, and associated grasslands) throughout the migration corridor.
4. To avoid impacts, construction activities should not occur during whooping crane migration periods (spring migration: March 6th – April 29th; and fall migration: October 9th – November 15th).
5. To minimize impacts from construction activities which occur during whooping crane migration periods (Spring migration: March 6th – April 29th; and fall migration: October 9th – November 15th), trained personnel, or a qualified biologist, should conduct surveys prior to the start of daily construction activities within 0.5 mile according to the Nebraska Field Office Whooping Crane survey protocol. If whooping cranes are spotted, stop work within 0.5 mile of the whooping cranes and contact the U.S. Fish and Wildlife Service to determine when work can resume.
6. Herbaceous species used for re-seeding suitable habitat should be native species (grass, wetland, or forb). Native shrub or woody species used in restoration should reach no more than 4 feet in height at maturity.
7. If temporary construction lighting is planned during whooping crane migration periods (Spring migration: March 6th – April 29th; and fall migration: October 9th – November 15th), or if permanent lighting is being installed, lighting should be limited to a Nominal CCT of 3000 Kelvin +/- 300 K, shielded and directed away from suitable habitat, such as lighting compliant with the “BUG rating” set forth by the Illumination Engineering Society as feasible. Furthermore, work should not begin until evening surveys have been completed according to protocol.

## Candidate, Proposed, or Species Under Review for Listing:

### Blanding's Turtle (*Emydoidea blandingii*)

Federal Listing Status: Under Review

State Listing Status: Tier 1

**Species Description:** The Blanding's turtle is a semi-aquatic freshwater turtle that inhabits wetlands in Nebraska across the central and eastern portion of the state including the Sandhills (i.e. Valentine National Wildlife Refuge). They can live to 70 years of age, tend to reach sexual maturity at more than 20 years of age, and have low reproductive potential. Adults often must reproduce for their entire lives for just one or two of their hatchlings to survive to adulthood.

Compared to other aquatic turtles, the Blanding's turtle is known to travel long distances, often more than a mile over land in search of suitable vernal pool habitat for breeding and feeding. Because of their movement patterns, Blanding's turtles require larger intact landscapes than many other turtle species, and they are vulnerable to habitat fragmentation and degradation.

**Threats:** Blanding's turtles are extremely sensitive to the loss of reproductive adults, whether from mortality or illegal collection. In Nebraska, moving across the landscape means these turtles are forced to cross roads where risks of vehicle strike mortality are high. Furthermore, native habitat fragmentation and development also pose risks to species survival and reproductive potential.

#### **Recommended Conservation Measures:**

1. Avoid impacts to suitable habitat by siting development projects away from wetlands and adjacent potential nest sites.
2. Avoid construction activities from May 1st – June 30th and August 15th – September 30th in suitable habitat, these are the most vulnerable times for movement and reproduction.
3. During construction of roadway culverts/bridges, utilize appropriately sized structures that provide passage for Blanding's turtle and other aquatic wildlife.
4. As feasible, provide fencing in sensitive areas to guide Blanding's turtle and other wildlife to passage structures.
5. For short duration construction, install barriers to prevent Blanding's from entering the worksite (i.e. silt fence or chain link).
6. During construction, survey for Blanding's turtle and only move turtles out of harms way in the direction they were originally seen moving.

## Little Brown Bat (*Myotis lucifugus*)

Federal Listing Status: Under Review

State Listing Status: Tier 1

**Species Description:** The little brown bat (LBB) is a member of the *Myotis* genus and exhibits many of the same patterns as those of the Northern long-eared bat. The LBB utilize a diverse range of habitats during the summer. Reproductive females roost in buildings when available, especially in the Pine Ridge region where suitable tree roosts may be limited, or the preference of the species is human made structures. In contrast, adult males commonly roost in trees. During the winter, this species hibernates in caves and mines.

**Threats:** The LBB was once very abundant but has experienced severe declines particularly in eastern North America due to white-nose syndrome. This species is also subject to significant mortality by turbines at wind energy facilities. The LBB is still common in much of their historical range apart from northeastern North America, however these populations may be subject to declines in the foreseeable future. The Service is currently reviewing the status of the LBB because of these described threats.

### **Recommended Conservation Measures:**

1. Avoid removal of suitable tree roosting habitat during the pup season (May 15th – July 31st).
2. Avoid removal or modification of structures that may be suitable for roosting during the pup season (May 15th – July 31st).
3. Avoid removing suitable roost trees within 0.50-mile of known hibernacula entrances and the physical or other alteration of hibernacula entrances and interiors at any time.
4. Avoid conducting prescribed burns during these species pup season (May 15th – July 31st). If this is not possible, we recommend completing a Presence/Absence Survey in accordance with the Service's Range-wide Summer Survey Guidance to establish probable absence.
5. Avoid herbicide applications that may affect suitable summer habitat during the summer occupancy period unless applications will utilize targeted application methods like spot-spraying, hack-and-squirt, basal bark, injections, cut stump, or foliar spraying on individual herbaceous plants (no foliar spraying on tree leaves).

## Monarch Butterfly (*Danaus plexippus plexippus*)

Federal Listing Status: Candidate

State Listing Status: Tier 1

**Species Description:** The Monarch Butterfly (MB) is a candidate for listing under the Endangered Species Act, due to a widespread population decline across North America. MB has a unique life history of migration and multiple life stages within a single season, and a unique dependence upon milkweed plants (primarily common milkweed) for reproduction. This species occurs throughout Nebraska, but is most common east of the 100th meridian, in open habitats including prairies, meadows, marshes and along roadsides.

**Threats:** MB are impacted by chemical applications, habitat degradation, climate change (drought, unpredictable storm events, temperature extremes), collection, agricultural disturbances, changes in nectar/milkweed resources, and by disease/natural enemies. Furthermore, the loss of greenspaces, excessive mowing, insecticides, and the change in overwintering habitat all seem to be key drivers influencing monarch dynamics.

### **Recommended Conservation Measures:**

1. Avoid construction in suitable habitats, especially those providing high quality diverse native vegetation including milkweed resources. If construction must occur in suitable habitat, implement time of year restrictions, and minimize overall disturbance of habitat.
2. Establish post construction seeding mixes utilizing local seed containing a diversity of native species. Utilize wildflowers including milkweed, which bloom throughout the growing season to support wildlife during all life cycles of the species within project area.
3. Mowing should avoid sensitive timeframes for species growth and development. For example, avoid mowing during the bloom period for milkweed or other nectar producing plants (approx. April 1st-September 30th). If mowing must occur, try to avoid milkweed and nectar producing resources during these activities.
4. Herbicide application should be limited to spot spray application as practicable. If spot spraying isn't practicable, application (i.e., broadcast, aerial) should be conducted in such a way to avoid sensitive species and habitat types.

## Regal Fritillary (*Speyeria idalia*)

Federal Listing Status: Proposed Threatened

State Listing Status: Tier 1

**Species Description:** The Regal Fritillary (RF) is proposed for listing by the Service as of 8/2024. Nebraska is home to the Western subspecies of the RF population, which is proposed as threatened with a section 4(d) rule. The RF has been observed across Nebraska in association with native tallgrass prairies in the east, wet meadows in the sandhills, and sub-irrigated meadows associated with stream drainages throughout the state. Wet meadows along the Platte River in central Nebraska have historically provided habitat for high density populations. More specifically, RF requires high quality prairie habitats which provide violets (the only food source for RF larvae), nectar producing species for adults, and native warm season bunchgrasses for all life cycles to sustain populations.

**Threats:** The threats to RF include but are not limited to conventional row crop agriculture, urban and residential development, road construction and maintenance, herbicide and pesticide use, and ill-timed controlled burns. Also, the RF individuals can be threatened by collection and overutilization for commercial or recreational purposes. It is also likely that females collected for such purposes have not had a chance to reproduce due to the species' extended period of reproductive diapause. The extensive loss of native prairie habitats and lack of diverse management regimes is the primary driver of this species population decline in Nebraska.

### Recommended Conservation Measures:

1. Avoid construction in suitable habitats, especially those providing high quality diverse native vegetation including violets and warm season bunchgrasses. If construction must occur in suitable habitat, implement time of year restrictions, and minimize overall disturbance of habitat.
2. Establish post construction seeding mixes utilizing local seed containing a diversity of native species. Utilize wildflowers, including violets, which bloom throughout the growing season to support wildlife during all life cycles of the species within project area.
3. Mowing should avoid sensitive timeframes for species growth and development. For example, avoid mowing during the bloom period for violets or other nectar producing plants (approx. April 1st-September 30th). If mowing must occur, try to avoid violets and nectar producing resources during these activities.
4. Herbicide application should be limited to spot spray application as practicable. If spot spraying isn't practicable, application (i.e., broadcast, aerial) should be conducted in such a way to avoid sensitive species and habitat types.



## Suckley's Cuckoo Bumble Bee (*Bombus suckleyi*)

Federal Listing Status: Proposed Endangered

State Listing Status: Tier 1

**Species Description:** The Suckley's Cuckoo Bumble Bee (SCBB) is an obligate social parasite of social bumble bees in the genus *Bombus*. Cuckoo bumble bee females emerge from hibernation in the spring and take over the nest of a suitable host colony, where host workers provision their young. SCBB is described as a semi-specialist parasite and is confirmed to parasitize nests of Western bumble bees (*Bombus occidentalis*) and Nevada bumble bees (*Bombus nevadensis*), with other potential hosts in subgenus *Bombus* throughout the extent of its range. The species can be found in various habitat types including prairies, grasslands, meadows, urban, agricultural areas, and woodlands. SCBB has a historic range across Nebraska with documented occurrences in the panhandle and southeastern Nebraska. SCBB requires suitable nesting sites for host colonies, nectar and pollen resources during the colony and rearing period (spring, summer, and fall), and suitable overwintering sites for mated females. The nests that host SCBB are primarily underground cavities that have been created naturally or by other animals such as abandoned rodent nests. Overwintering sites are generally close to the ground surface an inch or two under loose soil or under leaf litter or other debris, in sites that are undisturbed and have adequate organic material to provide shelter such as mulch or other decomposing vegetation.

**Threats:** The viability of this bee is highly dependent on its host bumble bee species, many of which have declined historically, and are expected to continue to do so in the near term. Other major threats include pesticides, introduced disease, habitat fragmentation and conversion, and climate change.

### Recommended Conservation Measures:

1. Avoid construction in suitable habitats of SCBB and host species, especially those providing high quality diverse native vegetation. If construction must occur in suitable habitat, minimize overall disturbance of habitat. If possible, distribute the disturbance to only portions of the habitat leaving some habitat available throughout the year.
2. Establish post construction seeding mixes utilizing local seed containing a diversity of native species. Utilize wildflowers which bloom throughout the growing season to support wildlife during all life cycles of the species within project area.
3. Mowing should avoid sensitive timeframes for species growth and development. For example, avoid mowing during the growing season for nectar producing plants (approx. April 1st-September 30th). If mowing must occur, try to avoid nectar producing resources during these activities and only mow a portion of the project area in one year.
4. Herbicide application should be limited to spot spray application as practicable. If spot spraying isn't practicable, application (i.e., broadcast, aerial) should be conducted in such a way to avoid sensitive species and habitat types.

## Western Bumble Bee (*Bombus occidentalis*)

Federal Listing Status: Under Review

State Listing Status: Tier 1

**Species Description:** Western Bumble Bee (WBB) is found in a range of habitats in western North America, including mixed woodlands, farmlands, urban areas, and montane meadows with the eastern edge of the range extending partially into prairie grasslands. In Nebraska, WBB have only been found in the panhandle region of the state.

There is a lot of variability in coloration, but the most likely patterns to be seen in Nebraska have yellow hair on the thorax behind the wings, and yellow on the rear of the second and all of the third abdominal segments. Coloration of males is similar except that males have pale yellowish hair on the front of the face and the top of the head has pale yellowish hairs in the middle, with a few black hairs on the sides. ([https://www.xerces.org/sites/default/files/publications/21-041\\_01\\_web-print.pdf](https://www.xerces.org/sites/default/files/publications/21-041_01_web-print.pdf))

**Threats:** The primary threats to all bumble bees include habitat destruction or alteration, the spread of pests and diseases (in both the commercial bee industry and those naturally occurring), pesticides, invasive species, natural pest or predator population cycles, and climate change.

### Recommended Conservation Measures:

1. Establish post construction seeding mixes utilizing local seed containing a diversity of native species. Utilize wildflowers which bloom throughout the growing season to support western bumble bee during all life cycles of the species within project area.
2. Mowing should avoid sensitive timeframes for species growth and development. For example, avoid mowing during the growing season for nectar producing plants (approx. April 1st-September 30th). If mowing must occur, try to avoid nectar producing resources during these activities and only mow a portion of the project area in one year.
3. Herbicide application should be limited to spot spray application as practicable. If spot spraying isn't practicable, application (i.e., broadcast, aerial) should be conducted in such a way to avoid sensitive species and habitat types (including by drift). Neonicotinoid use should be avoided due to the danger posed to western bumble bee and other pollinator species.
4. Prescribed fire activities should be timed in such a way to remove undesirable species and promote native vegetative cover/disturbance regime while not removing vegetation from the whole area in one year.

## Uncommon and Potentially Extirpated

*The following federally listed species are not commonly found in Nebraska or are considered extirpated. Despite being extremely rare in the state, they remain protected wherever found. Sightings of these species should be reported to the Nebraska Ecological Services Field Office and Nebraska Game and Parks Commission if encountered.*

### Black-footed Ferret (*Mustela nigripes*)

Federal Listing Status: Endangered

State Listing Status: Endangered

**Species Description:** The black-footed ferret is a nocturnal, medium-sized carnivore of the mustelid family, a group of mammals that includes weasels, badgers, martens, mink, and otters. This species has a creamy white to yellowish body with a dark brown face mask, black feet, and a black-tipped tail. The black-footed ferret is the only ferret species native to North America with a distribution that coincides with prairie dogs. In Nebraska, this species' distribution coincided with the range of the black-tailed prairie dog (*Cynomys ludovicianus*) historically. Suitable habitat for this species includes black-tailed prairie dog colonies of at least 1,500 acres or greater in size with no two colonies more than four miles apart that occur within the historic black-tailed prairie dog range.

### Eastern Black Rail (*Laterallus jamaicensis*)

Federal Listing Status: Threatened

State Listing Status: Threatened

**Species Description:** The eastern black rail is a sparrow-sized, secretive marsh bird, and the smallest rail in North America. Adults have an average length of 4 to 6 inches (10 to 15 centimeters) and a wingspan of 8.7 to 11 inches (22 to 28 centimeters). An adult eastern black rail is gray-black in coloration, with white speckled upperparts, and has a grayish crown, a chestnut-colored nape of the neck, and a short tail. These secretive birds have red eyes, black bills and dusty pink or wine-colored legs.

*Last Confirmed Nebraskan sighting was 15 Jun 2016, one recorded calling at Harvard WPA, Clay Co (Jorgensen et al 2021, 2022).*

## Eskimo Curlew (*Nemenius borealis*)

Federal Listing Status: Endangered

State Listing Status: Endangered

**Species Description:** Eskimo curlew is a medium-sized shorebird (about 30 cm long) with a slender, slightly downcurved bill; dark crown and rather indistinct pale crownstripe; cinnamon tone above with whole underparts washed cinnamon; heavy v-shaped black marks and barring on breast and flanks; underwings and axillaries bright cinnamon with brown barrings; and legs bluish-grey with reticulated scales posteriorly.

*The last accepted occurrence of the species in Nebraska was a flock of eight near Hastings, Adams County Apr 1926 (Brooking 1942; Swenk 1926; Bray et al 1986).*

## Gray Wolf (*Canis lupis*)

Federal Listing Status: Endangered

State Listing Status: Endangered

**Species Description:** Gray wolves are the largest wild members of Canidae, or the dog family. Adults range in weight from 40-175 pounds depending on sex and geographic locale. Wolves historically ranged widely across North America, primarily preying on large hooved animals including moose, elk, white-tailed deer, mule deer, and bison. Pelt color varies in wolves more than in almost any other species, from white to grizzled gray to brown to coal black.

*The most recent documented wolf residing in Nebraska was likely killed near Oconto in Custer County in 1913. One additional record exists of a wolf from the Great Lakes area being killed near Spalding, NE in 2002, however this record was likely a case of attempted dispersal where young wolves can travel hundreds of miles in search of new territories and mates.*

## Rufa Red Knot (*Calidris canutus rufa*)

Federal Listing Status: Threatened

State Listing Status: Threatened

**Species Description:** Adults in spring are finely mottled with grays, black and light ochre, running into stripes on crown; throat, breast and sides of head cinnamon-brown; dark gray line through eye; abdomen and undertail coverts white; uppertail coverts white, barred with black. Adults in winter: Pale ashy gray above, from crown to rump, with feathers on back narrowly edged with white; underparts white, the breast lightly streaked and speckled, and the flanks narrowly barred with gray. Adults in autumn: Underparts of some individuals show traces of the "red" of spring.

*Last documented Nebraskan sightings: one occurring in the spring of 2008 at Funk WPA, Phelps County, and again in the fall of 2011 when a juvenile was spotted in Knox County.*

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<sup>1</sup> The Platte River, its tributaries, and associated wetland habitats are resources of national and international importance. Due to the cumulative effect of many water depletion projects in the Platte River basin, the Service considers any direct or indirect depletion of flows from the Platte River system to be significant and will continue to further deteriorate the already stressed habitat conditions. If the proposed Project activities (construction and operation) would create new or increase depletions to the Platte River system, the Service has general concerns and recommends that construction activities (i.e., any associated borrow sites, ponded water, access roads, etc.) be further assessed to ensure they do not result in an instream flow depletion(s) that could indirectly impact the federally listed species and/or designated critical habitat in the central and lower Platte River basins. The federally listed species that could be impacted from Platte River water depletions include the federally endangered whooping crane (*Grus americana*), and pallid sturgeon (*Scaphirhynchus albus*); the threatened piping plover (*Charadrius melodus*) and western prairie fringed orchid (*Platanthera praeclara*). Streamlined coverage for depletions in the Platte River upstream of the Loup River confluence is available under the Platte River Recovery Implementation Program. Contact the Nebraska Ecological Services Field Office for further guidance if your project will result in depletions to stream flows anywhere in the North, South, or mainstem of the Platte River in Nebraska.