

Illinois Threatened and Endangered Species



Hine's Emerald Dragonfly
Image: University of South Dakota

Varsity
Lake Shelbyville Eco-Meet 2013



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What is a threatened or endangered species?

An *endangered species* is a plant or animal species that is in danger of extinction throughout all of its *range* (the entire area in which a species is known or thought to occupy). A *threatened species* is a plant or animal that is likely to become endangered throughout all or a significant portion of its range. Beginning in the early 1970s, local, state, and federal government agencies became interested in passing specific laws and codes protecting disappearing plants and animals from further human harm. In most areas of the United States, two endangered species lists are compiled: state and federal.

The Illinois Endangered Species Protection Act (IESPA) was passed by the state General Assembly in 1972, and signed into action by early 1973. The IESPA was the first state-wide endangered species protection legislation passed in the United States, and predates its Federal counterpart. The act established the Illinois Endangered Species Protection Board, which works with the state Department of Natural Resources to identify, advise the public, and conserve the species named on the list. In its most recent iteration (2011), the list included 484 species: 332 plants and 152 animals. By comparison, the Federal endangered and threatened species list (maintained by the US Fish and Wildlife Service) lists only 29 species: 20 animals and 9 plants.

Why protect threatened and endangered species?

Those who work with endangered and threatened species often hear questions and comments such as “Why do we spend our money to protect these plants and animals?” or “Who cares about most of these species? They aren’t good for anything.” or “So what if a fish disappears from the Mississippi River? Most people will never see one anyway.”

There are many good reasons to protect all species of plants and animals. Special attention is given to those that have become very rare in order to prevent their complete elimination from our environment. The reasons we put forth a large effort to protect these species range from practical to spiritual and from utilitarian to aesthetic. Each person interested in the preservation of plants and animals has his or her own reasons, but some of the more widely expressed motivations include:

1) Any species of plant or animal may someday provide a product or service that is valuable to humans. We cannot predict what food, fibers, chemicals, or other products can be obtained from “wild” plants and animals in the future. The loss of species may eliminate potential human benefits.

2) Plants or animals can serve as early indicators of environmental problems that are potentially dangerous to humans. The variable sensitivity of different species to contaminants allows them to act as environmental monitors, alerting us to the fact that something is wrong in our world.

3) Every plant or animal species contributes to the stability of the ecosystem of which it is a part. This ecological concept is often compared to a house of cards. A house with many components is much more difficult to disrupt than one having a few basic elements. There is also a complex network of relationships among the parts. No plant or animal exists independently of all others. The loss of ANY species has effects on the other species that have evolved along with it.

4) Each species is the result of untold ages of evolution and has a right to continue to exist. Many people feel that it is morally wrong for humans to be the cause of the

extinction of a species or to allow a species to disappear if human intervention could save it.

5) The loss of any plant or animal species diminishes the natural beauty of the earth. The existence and interaction of diverse life forms brings pleasure to those who take time to observe the species around them.

Federally-Recognized Endangered and Threatened Species in Illinois

Much of the information contained in the species description section of this study guide has been adapted from the US Fish and Wildlife Service's Midwest Regional Office's materials on the federal threatened and endangered species list. For additional information on any plant or animal listed here, please visit their website at www.fws.gov, or contact the Marion sub-office at (618) 997-3344, ext. 340.

Mammals

Indiana Bat (*Myotis sodalis*)—ENDANGERED



The Indiana bat was listed as endangered in 1967 due to episodes of people disturbing hibernating bats in caves during winter, resulting in the death of large numbers of bats. Indiana bats are vulnerable to disturbance because they hibernate in large numbers in only a few caves (the largest hibernation caves support from 20,000 to 50,000 bats). Other threats that have contributed to the Indiana bat's decline include commercialization of caves, loss of summer habitat, pesticides and other contaminants, and most recently, the disease white-nose syndrome.

Indiana bats are found over most of the eastern half of the United States. Almost half of them hibernate in caves in southern Indiana. This species can be found throughout all of east-central Illinois. The 2009 population estimate was about 387,000 Indiana bats, less than half as many as when the species was listed as endangered in 1967.

Indiana bats are quite small, weighing only one-quarter of an ounce (about the weight of three pennies) although in flight they have a wingspan of 9 to 11 inches. Their fur is dark-brown to black. They hibernate during winter in caves or, occasionally, in abandoned mines. During summer they roost under the peeling bark of dead and dying trees. Indiana bats eat a variety of flying insects found along rivers or lakes and in uplands.

Indiana bats mate during fall before they enter caves to hibernate. Females store the sperm through winter and become pregnant in spring soon after they emerge from the caves.

After migrating to their summer areas, females roost under the peeling bark of dead and dying trees in groups of up to 100 or more. Such groups are called maternity colonies. Each female in the colony gives birth to only one pup per year. Young bats are nursed by the mother, who leaves the roost tree only to forage for food. The young stay with the maternity colony throughout their first summer.

Gray Bat (*Myotis grisescens*)—ENDANGERED



Gray bats are distinguished from other bats by the unicolored fur on their back. In addition, following their molt in July or August, gray bats have dark gray fur which often bleaches to a chestnut brown or russet. They weigh 7-16 grams. The bat's wing membrane connects to its ankle instead of at the toe, where it is connected in other species of *Myotis*.

With rare exceptions, gray bats live in caves year-round. During the winter gray bats hibernate in deep, vertical caves. In the summer, they roost in caves which are scattered along rivers. These caves are in limestone karst areas of the southeastern United States. They do not use houses or barns.

The gray bat occupies a limited geographic range in limestone karst areas of the southeastern United States. They are mainly found in Alabama, northern Arkansas, Kentucky, Missouri, and Tennessee. A few can be found in northwestern Florida, western

Georgia, southeastern Kansas, southern Indiana, southern and southwestern Illinois, northeastern Oklahoma, northeastern Mississippi, western Virginia, and possibly western North Carolina.

Gray bats are endangered largely because of their habit of living in very large numbers in only a few caves. As a result, they are extremely vulnerable to disturbance. Arousing bats while they are hibernating can cause them to use up a lot of energy, which lowers their energy reserves. If a bat runs out of reserves, it may leave the cave too soon and die. In June and July, when flightless young are present, human disturbance can lead to mortality as frightened females drop their young in the panic to flee from the intruder.

BIRDS

Least Tern (*Sterna antillarum*)—ENDANGERED



Appearance - This 8 to 9 inch birds have a black "crown" on their head, a snowy whiter underside and forehead, grayish back and wings, orange legs, and a yellow bill with a black tip.

Habitat - From late April to August, terns use barren to sparsely vegetated sandbars along rivers, sand and gravel pits, or lake and reservoir shorelines.

Reproduction - The terns nest in a shallow hole scraped in an open sandy area, gravelly patch, or exposed flat. They nest in small colonies. The chicks leave the nest only a few days after hatching, but the adults continue to care for them, leading them to shelter in nearby grasses and bringing them food.

Feeding Habits - The terns hover over and dive into standing or flowing water to catch small fish.

Range - Interior least terns breed in isolated areas along the Missouri, Mississippi, Ohio, Red, and Rio Grande river systems. Their winter home is not known, but probably includes coastal areas of Central and South America.

Why is the Least Tern endangered?

Habitat Loss or Degradation - Dams, reservoirs, and other changes to river systems have eliminated most historic least tern habitat. The wide channels dotted with sandbars that are preferred by the terns have been replaced by narrow forested river corridors.

Nest Disturbance - Recreational activities on rivers and sandbars disturb the nesting terns, causing them to abandon their nests.

Piping Plover (*Charadrius melodus*)—ENDANGERED



Appearance--The piping plover is a small Nearctic shorebird approximately 17 centimeters (7 inches) long with a wingspread of about 38 cm (15 in). Breeding birds have white underparts, light beige back and crown, white rump, and black upper tail with a white edge. In flight, each wing shows a single, white wing stripe with black highlights at the wrist joints and along the trailing edges. In winter, the birds lose the black bands, the legs fade from orange to pale yellow, and the bill becomes mostly black. Breeding plumage characteristics are a single black breastband, which is often incomplete, and a black bar across the forehead.

Habitat--Piping plovers spend three to four months on their breeding grounds in the Great Lakes and then migrate to wintering areas along the Atlantic and Gulf Coasts. They start arriving in Michigan and Wisconsin in late April. Piping plovers nest, feed, and rear their young in open, sparsely vegetated sandy areas during spring and summer in the Great Lakes. On Lake Michigan, piping plovers nest on sand spits and sand beaches with wide, unforested dunes and swales or in the flat pans behind the primary dune.

Reproduction—The birds perform courtship rituals to attract mates. The rituals involve displays and behavior that varies somewhat from bird to bird. The display most often seen by people is a courtship flight in which the male plover loops through the air, constantly peeping, often swooping very close to the ground near the female.

Feeding Habits--Piping plovers feed on exposed beach surfaces by pecking for invertebrates that are 1/2 inch or less below the surface. They feed mostly during the day and eat insects, marine worms, crustaceans, and mollusks as well as eggs and larvae of flies and beetles. A study in Michigan found that chicks ate insects including wasps and bees, beetles, and flies

Why is the Piping Plover endangered?

Loss of habitat with construction of recreation facilities along many shorelines integral for migration.

REPTILE

Eastern Massasauga Rattlesnake (*Sistrurus catenatus catenatus*)—CANIDATE SPECIES



The eastern massasauga rattlesnake is a Federal candidate species. Candidate species are those species for which there is sufficient information on their biological status and threats to propose them as endangered or threatened. Candidate species receive no legal protection, however, conservation is encouraged since they may warrant future protection under the Endangered Species Act.

Appearance - Massasaugas are small snakes with thick bodies, heart-shaped heads and vertical pupils. The average length of an adult is about 2 feet. Adult massasaugas are gray or light brown with large, light-edged chocolate brown blotches on the back and smaller blotches on the sides. The snake's belly is marbled dark gray or black and there is a narrow, white stripe on its head. Its tail has several dark brown rings and is tipped by

gray-yellow horny rattles. Young snakes have the same markings, but are more vividly colored. The head is a triangular shape and the pupils are vertical.

Habitat - Massasaugas live in wet areas including wet prairies, marshes and low areas along rivers and lakes. In many areas massasaugas also use adjacent uplands during part of the year. They often hibernate in crayfish burrows but they may also be found under logs and tree roots or in small mammal burrows. Unlike other rattlesnakes, massasaugas hibernate alone.

Reproduction - Like all rattlesnakes, massasaugas bear live young. The young actually hatch from eggs while still in the female's body. Depending on the health of the individual, adult females may bear young every year or every other year. When food is especially scarce they may only have young every three years. Massasaugas that have young every year, mate in the spring and bear their young in late summer or early fall. In contrast, snakes that have young every other year, mate in autumn and bear young the next summer. Litter size varies from 5 to 19 young.

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

Range - Eastern massasaugas live in an area that extends from western New York and southern Ontario to southern Iowa. Historically, the snake's range covered this same area, but within this large area the number of populations and the number of snakes within populations have steadily shrunk. The eastern massasauga is generally found in small, isolated populations throughout its range. Today, the massasauga is listed as endangered, threatened, or a species of concern in every state and province in which it lives.

Why is the Eastern Massasauga a candidate species for endangerment?

Eradication - People seem to have an innate fear of snakes and fear of venomous snakes is particularly strong. Therefore, not only are massasaugas killed when they show up near homes or businesses, but people may go out of their way to kill or even eliminate them. Indeed, many states had bounties on all rattlesnakes, including massasaugas.

Habitat loss - Massasaugas depend on wetlands for food and shelter but often use nearby upland areas during part of the year. Draining wetlands for farms, roads, homes, and urban development has eliminated much of the massasauga habitat in many states. Also, massasaugas are not long distance travelers, so roads, towns, and farm fields prevent

them from moving between the wetland and upland habitats they need. These same barriers also separate and isolate remaining populations from each other. Small, isolated populations often continue on a downward spiral until the massasauga is lost from those areas.

FISH

Pallid Sturgeon (*Scaphirhynchus albus*)—ENDANGERED



Pallid sturgeon are bottom dwelling, slow growing fish that feed primarily on small fish and immature aquatic insects. This species of sturgeon is seldom seen and is one of the least understood fish in the Missouri and Mississippi River drainages. It is an ancient species that has existed since the days of the dinosaurs.

Appearance--Pallid sturgeons have a unique dinosaur-like appearance. They have a flattened snout, long slender tail and are armored with lengthwise rows of bony plates instead of scales. Their mouth is toothless and positioned under the snout for sucking small fishes and invertebrates from the river bottom. Pallid sturgeons can weigh up to 80 pounds and reach lengths of 6 feet, whereas the closely related shovelnose sturgeon rarely weighs more than 8 pounds. The back and sides of pallid sturgeons are grayish-white versus the brown color of the shovelnose sturgeons.

Reproduction-- Sexual maturity for males is estimated to be 7-9 years, with 2-3 year intervals between spawning. Females are not expected to not reach sexual maturity until 7-15 years, with up to 10-year intervals between spawning. Pallid sturgeons are long lived, with individuals perhaps reaching 50 years of age.

Habitat--Pallid sturgeons evolved and adapted to living close to the bottom of large, silty rivers with natural a hydrograph. Their preferred habitat has a diversity of depths and velocities formed by braided channels, sand bars, sand flats and gravel bars.

Current Range-- Today, pallid sturgeons are scarce in the upper Missouri River above Ft. Peck Reservoir; scarce in the Missouri and lower Yellowstone Rivers between Ft. Peck Dam and Lake Sakakawea; very scarce in the other Missouri River reservoir reaches; scarce in the Missouri River downstream of Gavins Point Dam; scarce but slightly more common in the Mississippi and Atchafalaya Rivers; absent from other tributaries.

Why are Pallid Sturgeon endangered? The pallid sturgeon experienced a dramatic decline throughout its range since the mid to late 1960's. Nearly all of its habitat has been modified through river channelization, construction of impoundments, and related changes in water flow. These changes blocked the pallid sturgeon's movements, destroyed or altered its spawning areas, reduced its food sources or its ability to obtain food, and altered water temperatures and other environmental conditions necessary for the fish's survival.

MUSSELS

In Illinois, over 11 species of mussels are endangered, proposed as endangered, or have a range of habitat deemed as critically in decline. For brevity, only one species of mussels, with a local presence, is described in this study guide. To view a complete list, please visit the US Fish and Wildlife Service's website.

Snuffbox Mussel (*Epioblasma triquetra*)--ENDANGERED



Shell



Living Snuffbox, with host fish (logperch) trapped



Snuffbox displaying mantle as lure, attempting to attract a fish host for larvae

Appearance--The snuffbox is a small- to medium-sized freshwater mussel with a yellow, green or brown shell interrupted with green rays, blotches or chevron-shaped lines. The shell becomes darker and the interruptions less clear with age. Shell shape is typically triangular in females and oblong or ovate in males. Males can grow up to 2.8 inches, with females reaching only up to 1.8 inches.

Range--Historically the snuffbox was widespread, occurring in 210 streams and lakes in 18 states and Ontario, Canada. The population has been reduced to 79 streams and lakes in 14 states and Ontario, representing a 62 percent rangewide decline. The snuffbox is found in several Midwestern states. Locally, snuffbox populations have been identified in Coles, Cumberland, and Douglas counties. Most populations are small and geographically isolated from one another, further increasing their risk of extinction.

Habitat--The snuffbox is usually found in small- to medium-sized creeks, inhabiting areas with a swift current, although it is also found in Lake Erie and some larger rivers. Adults often burrow deep in sand, gravel or cobble substrates, except when they are spawning or the females are attempting to attract host fish. They are suspension feeders, typically feeding on algae, bacteria, detritus, microscopic animals, and dissolved organic material.

Reproduction--The life cycle of the snuffbox, like most freshwater mussels, is unusual and complex. Males release sperm into the water column that is then siphoned by females to fertilize their eggs. Fertilized eggs develop into microscopic larvae, called *glochidia*, within special gill chambers. After brooding for up to 7 months, females expel mature glochidia, which then must attach to the gills or fins of specific host fish species (logperch, when available) to complete development into juvenile mussels. While holding the brood, females will lure potential host fish by displaying their mantle (see photo

above). When the fish arrives close enough, the mussel will clamp down on the fish's head, holding it while blowing all of the glochidia out of its entire, into the fish's gills. If successfully attached to a host fish, glochidia mature within a few weeks. Juvenile mussels then drop off and continue to grow, if they fall onto appropriate substrate. Using host fish allows the snuffbox to move upstream and populate habitats it could not otherwise reach.

Why is the Snuffbox Mussel endangered?

Dams--Dams affect both upstream and downstream mussel populations by disrupting natural river flow patterns, scouring river bottoms, and changing water temperatures. Adapted to living in flowing water, the snuffbox cannot survive in the lakes or slow water created by dams. Snuffbox mussels depend on host fish to move upstream. Because dams block fish passage, they also prevent mussels from moving upstream, isolating downstream mussels from upstream populations. This fragmentation leads to small, unstable populations that easily die out.

Pollution--Adult mussels, because they are sedentary (meaning that they tend to stay in one place), are easily harmed by toxins and poor water quality caused by pollution.

Nonnative species--The invasion of the nonnative zebra mussel into the U.S. poses a serious threat. Zebra mussels proliferate in such high numbers that they use up foodresources and attach to native mussel shells in such large numbers that the native mussel cannot eat or breath. Another invasive species, the round goby, is a nonnative fish species that may displace native host fish species, thus reducing the ability of the snuffbox to reproduce.

SNAILS

Iowa Pleistocene Snail (*Discus macclintocki*)-ENDANGERED



Appearance--These small land snails are only about 1/4-inch in diameter. Their shells are brown or greenish white.

Habitat--The snails live in the leaf litter of special cool and moist hillsides called algific talus slopes. Cool air and water, from underground ice, flow out of cracks in the slopes and keep the ground temperatures below 50 degrees F in summer and above 14 degrees F in winter. Jo Daviess County, in Northern Illinois, is the only part of the state within the snail's range

Reproduction--Iowa Pleistocene snails breed from late March to August. Two to six eggs are laid among the leaf litter and hatch in about 28 days. The snail's life span is about five to seven years.

Feeding Habits--The snails eat the fallen leaves of birch and maple trees and dogwood shrubs.

Range--These snails have only been found at about 30 sites in Iowa and Illinois. Fossilized shells indicate they were once much more widespread during cooler glacial periods.

Why is the Iowa Pleistocene Snail endangered?

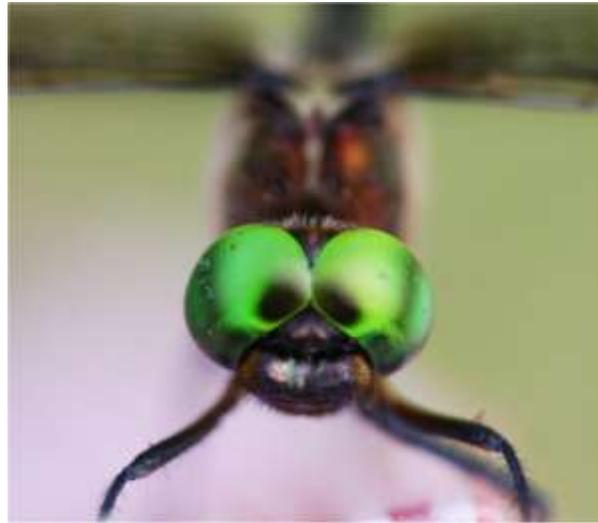
Habitat loss and degradation--The major long-term cause of snail population decline is climate change. The most immediate habitat threats are from logging, quarrying, road building, sinkhole filling and contamination, human foot traffic, livestock grazing and trampling, and misapplication of pesticides.

INSECTS

Hine's Emerald Dragonfly--ENDANGERED



Hine's Emerald Dragonfly--ENDANGERED



Appearance-- This dragonfly has bright emerald-green eyes and a metallic green body, with yellow stripes on its sides. Its body is about 2.5 inches long; its wingspan reaches about 3.3 inches.

Range-- Historically, the Hine's emerald dragonfly was found in Alabama, Indiana, and Ohio and probably has been extirpated in those states. Today the dragonfly can only be found in Illinois, Michigan, Missouri and Wisconsin.

Habitat-- The Hine's emerald dragonfly lives in calcareous (high in calcium carbonate) spring-fed marshes and sedge meadows overlaying dolomite bedrock.

Reproduction-- Adults males defend small breeding territories, pursuing and mating with females who enter. The female lays eggs by repeatedly plunging the tip of her body into shallow water. Later in the season or the following spring, immature dragonflies, called nymphs, hatch from the eggs. The nymph lives in the water for 2 to 4 years, eating smaller aquatic insects and shedding its skin many times. The nymph then crawls out of the water and sheds its skin a final time, emerging as a flying adult. The adults may live only 4 to 5 weeks.

Why is the Hine's Emerald Dragon endangered?

Habitat loss and degradation- The greatest threat to the Hine's emerald dragonfly is habitat destruction. Most of the wetland habitat that this dragonfly depends on for survival has been drained and filled to make way for urban and industrial development.

Pesticides and other pollutants- Contamination of wetlands by pesticides or other pollutants also poses a threat. The dragonfly depends on pristine wetland or stream areas, with good water quality, for growth and development.

Changes in ground water- Development that decreases the amount or quality of ground water flowing to the dragonfly's habitat threatens its survival because it depends on spring-fed shallow water to breed.

Karner Blue Butterfly (*Lycaeides melissa samuelis*)



Appearance-- The male and female of this small (wingspan of about one inch) butterfly are different in appearance. The topside of the male is silvery or dark blue with narrow black margins. The female is grayish brown, especially on the outer portions of the

wings, to blue on the topside, with irregular bands of orange crescents inside the narrow black border. The underside of both sexes is gray with a continuous band of orange crescents along the edges of both wings and with scattered black spots circled with white.

Reproduction--The Karner blue butterfly usually has two generations, and thus two hatches, each year. In April, the first group of caterpillars hatch from eggs that were laid the previous year. The caterpillars feed only on wild lupine plant leaves. By about mid-May, the caterpillars pupate and adult butterflies emerge from their cocoon-like chrysalis by the end of May or in early June. These adults mate, laying their eggs in June on or near wild lupine plants. The eggs hatch in about one week and the caterpillars feed for about three weeks. They then pupate and the summer's second generation of adult butterflies appears in July. These adults mate and lay eggs that will not hatch until the following spring.

Feeding Habits-- Karner blue caterpillars feed only on the leaves of the wild lupine plant. Adults feed on the nectar of flowering plants. This severely restricts where they can survive.

Range-- Karner blue butterflies are found in the northern part of the wild lupine's range. The butterfly is most widespread in Wisconsin, and can be found in portions of Indiana, Michigan, Minnesota, New Hampshire, New York, and Ohio. It may also be present in Illinois.

Why is the Karner Butterfly endangered?

Habitat loss and degradation-- Habitat throughout the range of the Karner blue butterfly has been lost as a result of land development and lack of natural disturbance, such as wildfire and grazing by large mammals. Such disturbance helps maintain the butterfly's habitat by setting back encroaching forests, encouraging lupine and flowering plant growth.

Collection-- The Karner blue butterfly's rarity and beauty make it a desirable addition to butterfly collections. Because butterfly numbers are so low, the collection of even a few individuals could harm the butterfly population. Collection is illegal without a permit from the U.S. Fish and Wildlife Service.

CRUSTACEAN

Illinois Cave Amphipod (*Gammarus acherondytes*)--ENDANGERED



Appearance—The cave amphipod is a small, cave-dwelling crustacean. It measures less than one inch in length and is light blue-gray in color.

Habitat and Diet—The Illinois cave amphipod lives in the "dark zone" of cave streams. Like other amphipods, this species needs cold water and does not tolerate a wide range in water temperatures. They are sensitive to touch and avoid light. The Illinois cave amphipod feeds on all kinds of dead animals and plants as well as the thin bacterial film covering submerged surfaces. Because of its sensitivity to contamination, the Illinois cave amphipod is an excellent indicator of the water quality of the cave systems it inhabits and the groundwater from the surrounding area.

Range-- This species has never been widely distributed. It is endemic to the Illinois Sinkhole Plain in Monroe and St. Clair Counties in southwestern Illinois. Historically, the Illinois cave amphipod was known from six cave systems, all within a 10-mile radius of Waterloo, Illinois. These caves are each fed by separate watersheds, with no known connection among them. Therefore, scientists believe it is unlikely that the amphipod could be distributed to other cave systems via streams.

Currently, the Illinois cave amphipod is found in only three of the original six cave sites. These caves are all in Monroe County. Entrances to two caves are owned by the Illinois Department of Natural Resources, which allows public use of one of the sites. Three entrances to the third cave, which is privately owned, are dedicated as Nature Preserves and are protected.

Why is the Illinois Cave Amphipod endangered?

Groundwater pollution-- Groundwater feeding the caves in which the amphipod lives can be affected in a number of ways, including seasonal application of pesticides and

fertilizers, contamination from septic systems, sewers, or livestock feedlots, or accidental or intentional dumping of toxic substances into a sinkhole.

Scientists have found evidence of several pesticides, some of which may be affecting the amphipod, in streams, wells, and springs near the caves inhabited by the species. Also found were quantities of metals and bacterial pollution from livestock and human wastes. The presence of these contaminants indicates that the deterioration of water quality is likely the primary cause of the decline of the Illinois cave amphipod.

PLANTS

Decurrent False Aster (*Boltonia decurrens*)—THREATENED



Appearance-- Decurrent false aster is a perennial plant that occasionally reaches heights of over 6 feet. It blooms from July to October and bears seeds from August to October. Leaves are linear and narrow and have a blue tint. The lower leaves are broader and larger.

This plant is called "decurrent" because the leaf tissue extends down the stem from the point of leaf attachment. The flowers are about the size of a quarter. They occur in branched groups of composite heads with yellow disk flowers and white to purplish or pinkish ray flowers.

Habitat-- This plant is found on moist, sandy, floodplains and prairie wetlands along the Illinois River. It relies on periodic flooding to scour away other plants that compete for

the same habitat. Although not very tolerant to prolonged flooding this plant relies on periodic flooding to scour away other plants that compete for the same habitat.

Why is the Decurrent False Aster threatened?

Excessive silting seems to be a major cause of the decurrent false aster's decline. Highly intensive agricultural practices have increased topsoil runoff, which smothers seeds and seedlings. Habitat destruction is another threat. Agriculture has eliminated wet prairies and marshes within the species' range, natural lakes have been drained and converted to row crops. Building levees along rivers and draining wetlands for cultivation has also changed patterns of flooding and eliminated habitat. Herbicides also kill these plants and may be a factor in the decline of the species. Several communities of decurrent false asters have been found in areas of low-intensity agriculture. Biologists believe that the plant may actually benefit from occasional farming, which eliminates competitive plant species.

Eastern Prairie Fringed Orchid (*Platanthera leucophaea*)—THREATENED





Appearance-- This plant is 8 to 40 inches tall and has an upright leafy stem with a flower cluster called an inflorescence. The 3 to 8 inch lance-shaped leaves sheath the stem. Each plant has one single flower spike composed of 5 to 40 creamy white flowers. Each flower has a three-part fringed lip less than 1 inch long and a nectar spur (tube-like structure) which is about 1 to 2 inches long.

Habitat-- The eastern prairie fringed orchid occurs in a wide variety of habitats, from mesic prairie to wetlands such as sedge meadows, marsh edges, even bogs. It requires full sun for optimum growth and flowering, and a grassy habitat with little or no woody encroachment. A symbiotic relationship between the seed and soil fungi, called mycorrhizae, is necessary for seedlings to become established. This fungi helps the seeds absorb nutrients in the soil. The orchid's range includes most of east-central Illinois

Life History-- This orchid is a perennial herb that grows from an underground tuber. Flowering begins from late June to early July, and lasts for 7 to 10 days. Blossoms often rise just above the height of the surrounding grasses and sedges. The more exposed flower clusters are more likely to be visited by the hawkmoth pollinators, though they are also at greater risk of being eaten by deer. Seed capsules mature over the growing season and are dispersed by the wind from late August through September.

Why is the Eastern Prairie Fringed Orchid threatened?

Loss of habitat—With the establishment of agriculture throughout most of the Midwest, much of the orchid's original habitat was converted to cropland and pasture. The orchid

was also collected by many of its range's inhabitants for its natural beauty, and face severe competition from invasive species.

Lakeside Daisy (*Hymenoxys acaulis* var. *glabra*)—THREATENED



Habitat-- This plant is found in dry, rocky prairie grassland underlain by limestone. It requires open sites with full sun. Although it grows in Great Lakes states and along the

Canadian shore of Lake Huron, it is named for Lakeside, Ohio, near one of its best known sites.

Why is the Lakeside Daisy threatened?

Limestone quarrying- Limestone quarrying, which has increased in recent years, destroys the daisy's habitat.

Human collection- This beautiful daisy is easily transplanted - threatening it with over collection yet offering hope of survival through cultivation.

The wide area encompassing known Lakeside daisy sites suggests that the species was once widespread in prairie habitats throughout the midwestern United States and along Huron's northern shore. Fire suppression practices have eliminated the wildfires which once regularly cleared prairie grasslands of the encroaching woods. Now the expansion of shrubs and trees threatens the daisy, which needs full sun to survive.

Leafy Prairie Clover (*Dalea foliosa*)—ENDANGERED



Habitat--This plant is found in prairie remnants along the Des Plains River in Illinois, in thin soils over limestone substrate. In Alabama and Tennessee it lives in prairie-like areas on the edges of cedar glades. It favors sites with a wet spring and fall and a dry summer.

Why is Leafy Prairie Clover endangered? Surviving today at only 14 sites, this clover and its habitat are threatened by land development. Leafy prairie-clover is especially vulnerable to commercial and residential development and to road construction. Other threats include off-road vehicle use and grazing by rabbits and deer.

Fire suppression practices have eliminated the wildfires which once regularly cleared prairie grasslands of the encroaching woods. Now the expansion of shrubs and trees threatens this clover, which needs hot, sunny sites to survive.

Mead's Milkweed (*Asclepias meadii*)--THREATENED



Habitat--This milkweed requires moderately wet (mesic) to moderately dry (dry mesic) upland tallgrass prairie or glade/barren habitat characterized by vegetation adapted for drought and fire. It persists in stable late-successional prairie.

Appearance--Mead's milkweed has a single slender unbranched stalk, 8 to 16 inches high, without hairs but with a whitish waxy covering. The hairless leaves are opposite, broadly ovate, 2 to 3 inches long, 3/8 to 2 inches wide, also with a whitish waxy covering. A solitary umbel (an umbrella-like cluster of flowers) at the top of the stalk has 6 to 15 greenish, cream-colored flowers.

Life History-- Mead's milkweed is a long-lived perennial herb. Studies suggest that it may take 15 years or more to mature from a germinating seed to a flowering plant. After maturing, it can persist indefinitely.

Range--This milkweed formerly occurred throughout the eastern tallgrass prairie region of the central United States, from Kansas through Missouri and Illinois and north to southern Iowa and northwest Indiana. It currently is known from 171 sites in 34 counties in eastern Kansas, Missouri, south-central Iowa, and southern Illinois. Although extirpated from Indiana and Wisconsin it has been reintroduced in both states.

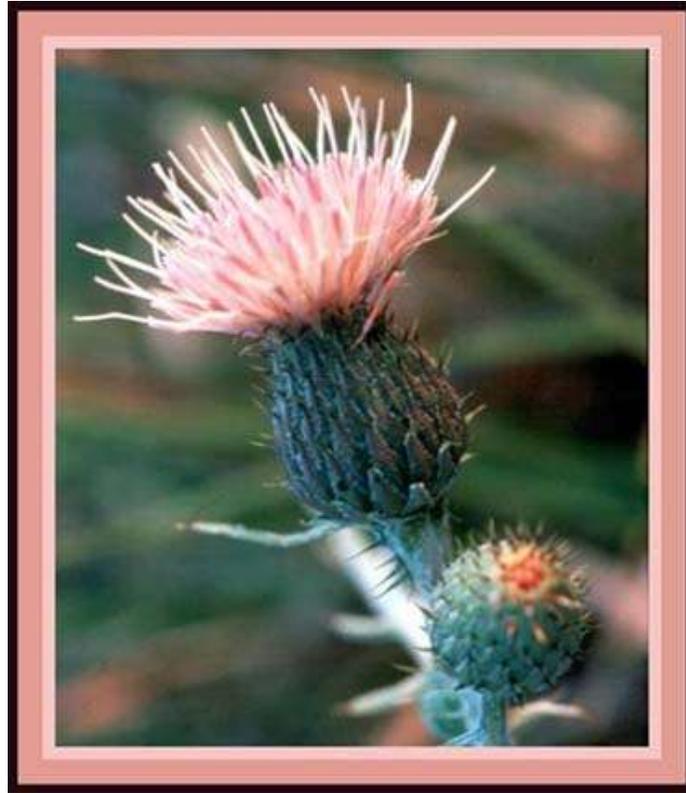
Why is Mead's Milkweed threatened?

Habitat loss and fragmentation-- Mead's milkweed is threatened by the destruction and alteration of tallgrass prairie due to farming along with residential and commercial development. Sites known to have Mead's milkweed were destroyed by plowing and land development. Smaller habitat fragments support lower numbers of plants, and thus, fragmentation may hasten or explain the loss of genetic diversity and failure of this plant to sexually reproduce. Populations with low numbers may not attract sufficient numbers or types of pollinators

Hay mowing-- Most Kansas and Missouri populations occur in prairie hay fields where mowing typically takes place in late June to early July, which removes immature Mead's milkweed fruits and prevents completion of the plant's life cycle.

Pitcher's Thistle (*Cirsium pitcher*)-THREATENED





Appearance-- The Pitcher's thistle grows for five to eight years before it flowers. Its non-flowering form is a rosette or cluster of silvery leaves and its flowering form typically has one stem with many branches. The entire flowering plant may grow 3 feet tall. Cream or pink flowers grow at the end of branches and from the leaf axils. Leaves are finely and deeply lobed and may be one foot long. The stems and leaves of both the flowering and non-flowering forms are covered with white hairs that give the plant a woolly white or silvery appearance. These hairs are an adaptation to its beach environment and help the plant retain water and reflect the sun's strong rays. Spines are found along the edges of leaves near the base and at the tips of some of the lobes. Both non-flowering and flowering plants have a long taproot, up to 6 feet long.

Habitat-- Pitcher's thistle grows on the open sand dunes and low open beach ridges of the Great Lakes' shores. It is most often found in near-shore plant communities but it can grow in all nonforested areas of a dune system.

Reproduction--The Pitcher's thistle blooms and sets seed once during its lifetime, after a five to eight year (i.e., juvenile) non-flowering period. It then blooms from June to September. The blooms are pollinated by insects. Thirty species of insects, mainly bees, have been observed visiting Pitcher's thistle blossoms. After the seeds mature, they fall or are windblown and germinate the following spring and early summer. Pitcher's thistle tends to colonize open areas or areas with low plant cover.

Why is the Pitcher's Thistle Threatened?

Shoreline development-- Residential, condominium, and marina development along with associated landscaping directly eliminates Pitcher's thistle and its habitat within the footprint of the development. Such development also fragments remaining populations and dune habitats.

Road construction-- Construction of coastal roads removes and fragments sand dune habitat, alters dune processes, provides access for destructive recreational activities, and spurs shoreline development.

Shoreline Recreation-- People are drawn to shorelines for their beauty and recreational opportunities so the remaining shoreline areas with dune habitat are often also public use areas. Hikers and Off Road Vehicles (ORVs) trample Pitcher's thistle which harms or destroys the plants. ORV traffic in dunes also causes erosion which creates unstable areas where it's difficult for plants to take hold. Pitcher's thistle and its dune habitat are also destroyed for the creation and maintenance of public beaches.

Prairie Bush Clover (*Lespedeza leptostachya*)—THREATENED



Photo by USFWS; Phil Delphey



Appearance-- Prairie bush clover is a member of the pea family. Also known as slender-leaved bush clover, it has a clover-like leaf comprised of three leaflets about an inch long and a quarter inch wide. Flowering plants are generally between nine and eighteen inches tall with the flowers loosely arranged on an open spike. The pale pink or cream colored flowers bloom in mid-July. The entire plant has a grayish-silver sheen, making it easy to distinguish from its more round-leaved cultivated relative, the sweet clover (*Melilotus* species). The only closely related bush clover species that is widespread throughout the range of prairie bush clover is the round headed bush clover. This plant is similar in color but more robust, with leaflets about 1-1/2 inches long and 3/8 inches wide and a tight round flowering head. The more southern Virginia bush clover (*Lespedeza virginica*) overlaps the range of prairie bush clover in Illinois. Although it has slender leaves like the prairie bush clover, Virginia bush clover can be distinguished by the fact that its leaves are closer together on the stem and its flowers are the brighter pink than prairie bush clover.

Habitat-- Prairie bush clover (*Lespedeza leptostachya*) is a federally threatened prairie plant found only in the tallgrass prairie region of four midwestern states. It is a member of the bean family and a midwestern "endemic" – known only from the tallgrass prairie region of the upper Mississippi River Valley

Importance-- Prairie bush clover possesses a unique genetic and chemical makeup, different from that of any other species. This genetic information has an unknown potential value. For example, cultivated crops such as wheat and corn have been developed and improved by using wild relatives as breeding stock. Prairie bush clover

and round headed bush clover (*Lespedeza capitata*) provide the only potential native genetic stock for breeding of cold tolerant bush clovers suitable for the midwest.

Alkaloids from wild plants are used as the active agents in anesthetics, insecticides, anticancer drugs and muscle relaxants. Loss of prairie bush clover would eliminate forever the opportunity for future biological research and the potential for such medical and agricultural benefits.

Why is Prairie Bush Clover threatened?

Loss of habitat-- Prairie bush clover's rarity is probably best explained by the loss of its tallgrass prairie habitat. At the beginning of the 19th century, native prairie covered almost all of Illinois and Iowa, a third of Minnesota and six percent of Wisconsin. Prairie with moderately damp to dry soils favored by prairie bush clover was also prime cropland; today only scattered remnants of prairie can be found in the four states. Many of today's prairie bush clover populations occur in sites that escaped the plow because they were too steep or rocky.

Price's Potato Bean (*Apios priceana*)—THREATENED





Habitat-- This plant prefers lightly disturbed areas such as forest openings, wood edges and where bluffs descend to streams. It also grows along highway rights-of-way and powerline corridors

Appearance-- Price's potato bean is a twining perennial vine in the legume family. Each vine leaf is about 8 to 12 inches with several leaflets. Leaves are alternately arranged on the stem. The plant's large underground tuber distinguishes it from other *Apios* species and was gathered as a food source by Indians and pioneers. The pink flowers form a large fragrant bloom that grows from the leaf bases, and the fruit is a long slender pod which can be as long as 8 inches.

Why is Price's Potato Bean threatened?

Loss of habitat-- Never a very common species due to its exacting habitat requirements, only 13 populations of the plant are known to exist today. These are threatened by cattle which graze and trample on the plant. Timber clearcutting destroys its habitat and herbicides applied to highway rights-of-way kill individual populations of the plant. Almost half the known populations have disappeared in recent years. None are now found within our 8-state region.

Paradoxically, in some areas, lack of forest clearing is threatening the potato-bean. A species that depends on natural disturbance, the potato-bean is, in some places, being eliminated as surrounding forest closes in over the plants. This creates habitat for shade-loving plants that crowd out the potato-bean. Selective cutting at some sites may be necessary, therefore, to save these populations. With 10 of the 13 populations occurring on private lands and none made up of more than 50 plants, the voluntary cooperation of landowners will be necessary to save this species.

Small Whorled Pogonia (*Isotria medeoloides*)—THREATENED



Appearance--The small whorled pogonia is a member of the orchid family. It usually has a single grayish-green stem that grows about 10 inches tall when in flower and about 14 inches when bearing fruit. The plant is named for the whorl of five or six leaves near the top of the stem and beneath the flower. The leaves are grayish-green, somewhat oblong and 1 to 3.5 inches long. The single or paired greenish-yellow flowers are about 0.5 to 1 inch long and appear in May or June. The fruit, an upright ellipsoid capsule, appears later in the year.

Habitat-- This orchid grows in older hardwood stands of beech, birch, maple, oak, and hickory that have an open understory. Sometimes it grows in stands of softwoods such as hemlock. It prefers acidic soils with a thick layer of dead leaves, often on slopes near small streams.

Reproduction-- The small whorled pogonia flowers from mid-May to mid-June, with the flowers lasting only a few days to a week. It may not flower every year but when it does flower, one or two flowers are produced per plant. If pollinated, a capsule forms that contains several thousand minute seeds. The pogonia appears to self-pollinate by mechanical processes. The flower lacks both nectar guides and fragrance and insect pollination has not been observed.

Why is the Small Whorled Pogonia threatened?

Habitat loss and degradation- The primary threat to the small whorled pogonia is the past and continuing loss of populations when their habitat is developed for urban expansion. Some forestry practices eliminate habitat. Also, habitat may be degraded or individual plants lost because of recreational activities and trampling.

Collection- As with all rare orchids, the small whorled pogonia is vulnerable to collecting for commercial or personal use.