

# DID YOU SAY SIGGEN?

*SGCN designation:  
A heads-up that a  
species requires special  
attention to improve its  
outlook in Minnesota.*

## SPECIES IN GREATEST CONSERVATION NEED, OR SGCN

**Species in Greatest Conservation Need, or SGCN** (the acronym pronounced “siggen”) is a term used to describe native wildlife species whose populations are in trouble. The term originated in 2000 with a federal program created by Congress to fund wildlife conservation in the states. It is used to describe native wildlife—game and nongame—whose populations are rare, declining or vulnerable to decline and below levels desirable to ensure their long-term health and stability.

Minnesota is currently home to 346 species designated as SGCN, which includes but is not limited to state and federally listed species found within its borders. The state’s Wildlife Action Plan outlines strategies designed to benefit these species and is the main mechanism by which the MN DNR’s Nongame Wildlife Program receives critical federal funding for its work. When the Plan is approved, it “unlocks” the state’s apportioned share of funds from the State and Tribal Wildlife Grant Program as well as its eligibility for additional, competitive grants administered by the U.S. Fish and Wildlife Service.



Canada lynx is one of 346 Minnesota Species in Greatest Conservation Need.  
Photo by Thomas J. Spence

SGCN designation sparks action. This designation is the impetus to work on everything from landscape-level, multi-partner initiatives on public and private lands (such as creating wildlife corridors linking core habitat areas), to narrowly-targeted projects that seek remedies to threats faced by particular populations (such as flooding of wood turtle nests or dewatering of mussel colonies). It drives research that looks at Minnesota's environment through the lens of these at-risk species, informing strategies that allow people and wildlife to better co-exist.

Alison Cariveau, with the Nongame Wildlife Program, helps to secure funding for research and conservation of rare species.

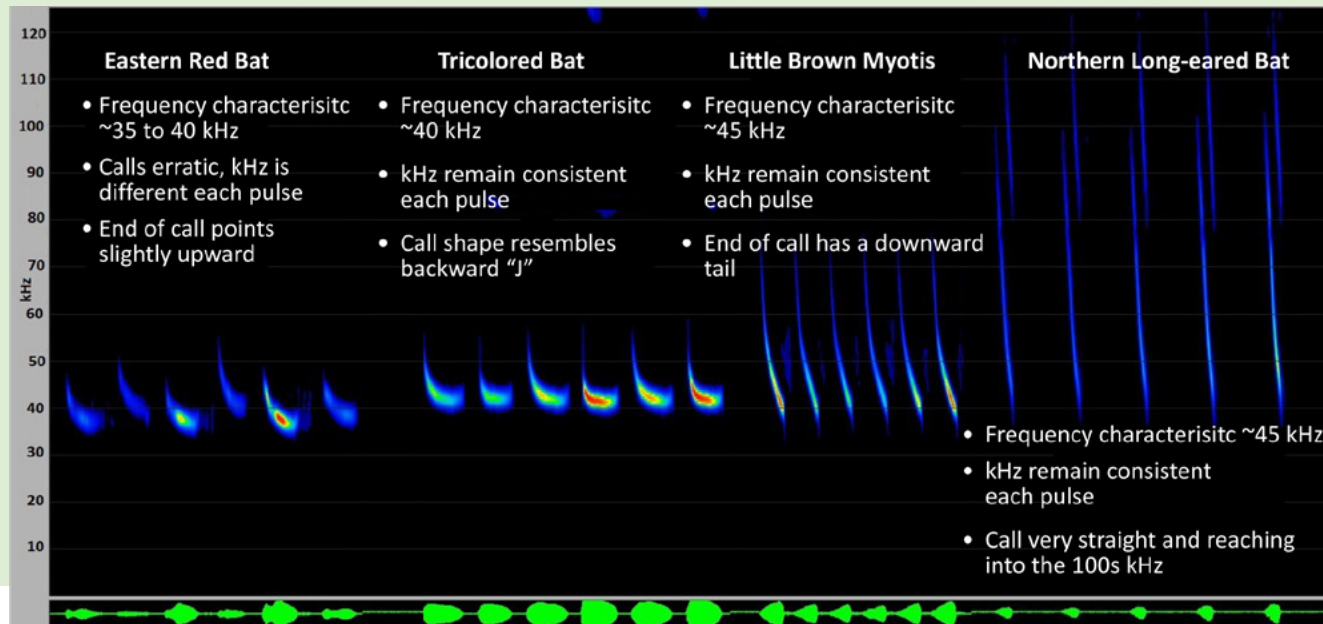
Photo by MN DNR



*“For me, what’s fun about this work is, it’s focused on a lot of species that are under the radar and under-recognized. They may be hard to find because they occupy a tight habitat niche, or may be present for only two weeks a year as adults, spending the rest of the year as eggs or in larval stages, but they’re out there supporting the better known parts of our biota. If we don’t pay attention to them, they could be gone. So, we work to reverse negative impacts to the species and their habitats. It’s actually a very hopeful program.”*

**ALISON CARIVEAU,**  
Nongame Wildlife Program Grants Coordinator

## Discoveries in the Data: A Selected Sampling



**Figure 1.** Data from acoustic detectors is generated as an audio file that can be visualized as a sonograph. Bat species recorded on the route are then identified by the characteristic signature of their calls (i.e. shape, frequency minimum/maximum, pulse traits). Calls not identifiable to species can be narrowed to groups.

Bats hold a unique place in these efforts, in that all seven of the state's regularly occurring bat species have SGCN designation. Research is casting new light on these small nocturnal mammals belonging to the order Chiroptera (derived from the Greek, meaning hand-wing).

Since 2009, annual acoustic surveys for bats have been conducted by biologists from the MN DNR's Minnesota Biological Survey and Nongame Wildlife Program, and the U.S. Forest Service. Mobile audio surveys are conducted at night to monitor trends in summer bat activity,

with the chief aim of assessing impacts of white-nose syndrome on the state's populations of hibernating bats. Millions of bats in eastern North America have died from white-nose syndrome, a disease linked to the fungus *Pseudogymnoascus*, which can wipe out entire colonies of hibernating bats.

Surveys are undertaken in the period from late May through July. "We start recording along our assigned routes half an hour after sunset and finish by around midnight, each of us driving a 30-mile transect at 20 m.p.h. with a bat

acoustic detector mounted on the roof of the vehicle," relates Minnesota Biological Survey zoologist Melissa Boman. Driving slowly along the dirt or gravel county roads, the researchers will often see bats foraging in front of the vehicle. "It's out of our range of hearing, but we know they're emitting the search-phase calls they use when navigating or hunting for insects. These calls are different from the social calls they use while roosting, which are more like a song. It's basically a language from a library we're still building."



Data from acoustic surveys complements data from mist-net surveys, in which captured bats are banded and released. Whereas acoustic surveys can assess call abundance by species to indicate population trends, recaptures from mist-netting can reveal information about individual bats. One little brown myotis bat banded by Minnesota Biological Survey Mammalogist Gerda Nordquist in 1983 was recaptured 32 years later, demonstrating remarkable longevity for a small mammal. Minnesota Biological Survey Zoological Specialist Melissa Boman pictured.

*“It’s basically a language from a library we’re still building.”*

**MELISSA BOMAN, Minnesota Biological Survey Zoological Specialist**

Four of Minnesota’s bat species (little brown myotis, northern long-eared, tricolored and big brown) are year-round residents that hibernate during winter and three (hoary, eastern red and silver-haired) are present during the growing season but migrate south during the winter. All seven species have been documented through these acoustic surveys.

In more than 10 years of acoustic monitoring, researchers have driven over 10,000 miles along 20 established routes recording the ultrasonic frequencies that bats emit while echolocating. The resulting audio files, visualized in the form of sonographs (see figure on page 23), enable researchers to distinguish between species and compare call abundance from year to year.

As feared, the data confirmed declines in hibernating species. An unexpected result was the decline in call abundance of two migratory bats—hoary and eastern red bats—which are not known to be impacted by white-nose syndrome. The cause of this decline has yet to be determined, but it coincides with increased wind energy production in the Midwest, and similar trends have been observed in other Midwest states. Whether due to wind turbines or other factors, it calls for attention and a timely response to set a better trajectory for these SGCN populations. “With mobile audio monitoring,” says Boman, “for the first time we are gaining some hard data on what’s happening to the populations of bat species in Minnesota.”

## Ascertain • Examine • Investigate • Monitor • Survey

When surveys reveal that a SGCN population is present at a given location, the work is only beginning. The operative question is *why*. What conditions are present that allow this species to persist or reproduce here? Management for vulnerable species requires defining and continually refining our understanding of the characteristics of suitable habitat.

Many animals on the SGCN list are highly specialized in their habitat requirements. For example, a manager who aims to “think like a skink” in the Minnesota River Valley where they occur can follow recommendations learned through Nongame Wildlife Program monitoring: control vegetation on bedrock outcrops to maximize areas with more than 25% bare rock and leave downed woody debris (especially oak) greater than six inches in diameter.

Long-term monitoring of migratory species like the common loon calls for work not only in the 600 lakes annually monitored within Minnesota, but also in the places where loons overwinter, such as the Gulf of Mexico. Loons are on the SGCN list primarily due to their vulnerability to contaminants, ranging from lead fishing tackle to oil spills.

Data transmitters implanted in and geolocators attached to loons were key to documenting impacts on Minnesota’s loon population from an oil spill in the Gulf. The resulting data gives managers a more complete picture of population vulnerabilities and protection strategies. Today, a special focus on protection of nesting habitat aims to support reproductive success. “While labor-intensive, the ongoing work of population monitoring pays off with interest in the form of insight,” says Nongame Wildlife Program Leader Cynthia Osmundson.

*“Monitoring projects not only contribute to our understanding of SGCN population status and trends, but also serve as an indicator of the health of the habitats on which they depend.”*

**2015-2025 MINNESOTA WILDLIFE ACTION PLAN**



The common five-lined skink, a state listed Special Concern species and SGCN, is associated with granite outcrops in the Minnesota River Valley, and with exposed limestone and sandstone outcrops in the eastern part of the state. Photo by Jeff LeClere, MN DNR



Extensive areas of rich fen in large peatland complexes are recognized as habitat for Nelson's sparrow, a state listed Special Concern species and SGCN. Pictured (at left) is an aerial view of Red Lake Scientific and Natural Area, and a Nelson's sparrow (above).

Photo by Erika Rowe, MN DNR



Piping plover  
Photo by Stephen Maxson

*Decades of breeding bird surveys inform the protection of critical habitat. Pine & Curry Island Scientific and Natural Area is one of only a few places in the state where the piping plover has nested in recent years. The species is state listed as endangered and is federally listed as threatened. Report of a nesting pair with two chicks offered welcome good news in 2021. Part of the site is designated as a sanctuary, closed to the public April 1–September 1.*



Nongame Wildlife Program Biologist Gaea Crozier working with wood turtles in northeast Minnesota  
Photo by MN DNR

## The Best Use of our Time: Science-based Strategies

Say you have a long-lived species—the wood turtle—that can live 50 years or more but doesn't reach reproductive age until it's about 15 years old. You know that badgers are major nest predators in your area (St. Louis County). A significant number of wood turtles are struck by cars as they cross roads, including gravid (egg bearing) females. Extreme storm/flood events associated with climate change are happening more frequently, jeopardizing nest sites on sandbars and cutbanks along rivers. Adjacent forests where the turtles forage for food have become increasingly fragmented and are now dominated by younger aspen rather than older pine, which new data suggest

may impact the quality of foraging habitat.

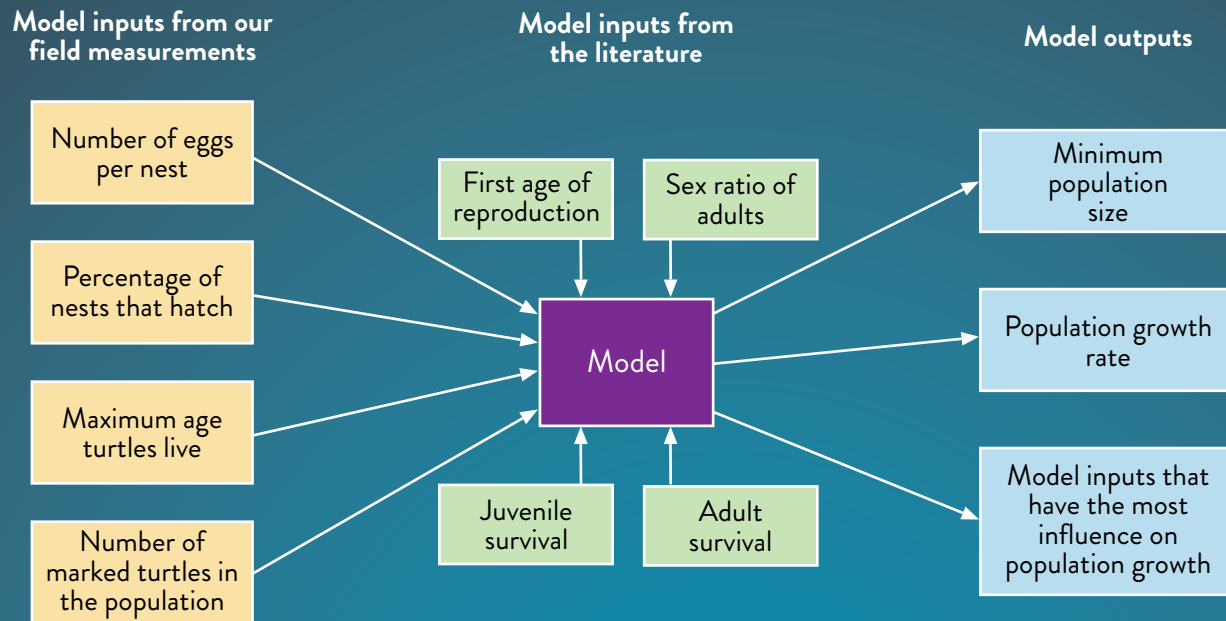
You hope to stabilize and increase the population of this state listed SGCN. Where do you focus your efforts for the greatest positive impact?

“Population modeling (see figure 2) helped to answer that question,” says Nongame Wildlife Program biologist Gaea Crozier. “It showed that increasing survival of eggs/hatchlings had a proportionately higher effect on population size compared to increasing adult survival. We still need to prevent mortality of adults related to cars and other threats, but we're prioritizing efforts on juvenile recruitment.”

*“We still need to prevent mortality of adults related to cars and other threats, but we're prioritizing efforts on juvenile recruitment.”*

**GAEA CROZIER, Nongame Wildlife Program Biologist**





**FIGURE 2**

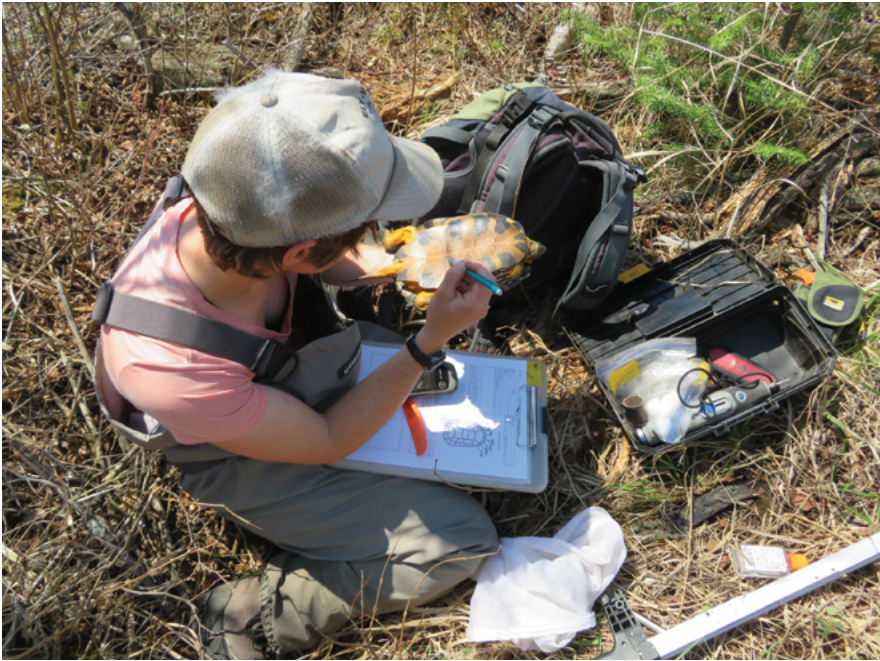
Simplified schematic of population model used to determine which management strategies are most likely to benefit the wood turtle population.

Early signs are that it's paying off. Nest cages or electric fencing were installed on six wood turtle nesting sites to protect nests from predators. This resulted in a 50% nesting success rate, as compared to 5% from unprotected nests. These efforts have produced an estimated 174 hatchlings over a four-year period, resulting in a pulse of reproduction into the population.

The work was undertaken as part of the Upper Midwest Turtle Conservation Project, a joint effort involving the states of Minnesota, Wisconsin, Michigan and Iowa funded by a competitive federal grant to state wildlife agencies.

What next? "We're using tiny transmitters to track the hatchlings short-term, with batteries

that last just two weeks, to better understand what habitat the hatchlings are using," says Crozier. "But we recognize that represents just a sliver of time. Looking ahead, we really need to better understand what happens in those 15 years before they reach sexual maturity, and help them to get there if we can."



University of Minnesota graduate student Maddy Cochran collects data on wood turtles in order to inform our understanding of habitat characteristics and survival.

Photo by MN DNR

Baseline monitoring is another important aspect of the state's work on this SGCN. It turns out that field research on wood turtles presents unique challenges requiring refinements in methodology. During the project, turtles moved too slowly to trigger the motion sensor cameras! (Subsequent phases of the project added time-lapse photography).

Graduate student Maddy Cochran recalls her own experiences following hot on the trail of the state's wood turtles in northeast Minnesota and perspectives gained along the way:

"First, they're very terrestrial. In spring and summer, they might be hidden under brush or grass. Their yellow and black plastron (underside of the shell) is not noticeable from above, so we'd be following a transect crawling on our hands and knees.

"You have to develop an eye for what a turtle butt looks like. Later in the season, we could track individuals we'd affixed with transmitters. Sometimes that meant holding the antennae over our heads as we waded through streams or, in winter, skiing up a frozen river to determine where they were hibernating, getting within five meters or so of their hibernacula in the riverbank or in mud below the ice.

"A lot of the wood turtles we were working with were 30-40 years old, older than we were. They're such beautiful animals with such ancient origins, and they're restricted to these areas where they now face so many obstacles that we've created. It would be great if people became more cognizant of turtles crossing the road and paid them heed. They're just trying to survive and reproduce."

*Tiny wood turtle hatchlings need tiny transmitters. The battery life of these small transmitters is really short (the battery only lasts about 14 days). Biologist Gaea Crozier explains, "We need to replace the transmitters about every 12 days before the battery dies to ensure we can continue to track the hatchlings. The transmitter will eventually fall off on its own."*

Photo by Gaea Crozier, MN DNR



## Sharing the Latest News

A recent five-year report on the state's Wildlife Action Plan offers a closer look into the often solitary work that happens in remote places across the state to support these at-risk species designated as SGCN. There is exciting news, like the long-sought identification of the "host fish" species necessary for reproduction of the federally listed endangered spectacle case mussel, making it possible to rear juveniles in a laboratory setting for reintroduction into selected rivers. Also on the good news front, invertebrate surveys have led to discovery of a moth species in Beltrami County's Red Lake Peatland that is not only new to Minnesota, but new to science.

Sometimes the findings are not what Minnesotans would hope, such as the declines in migratory bat species or the surveys that have not turned up a single crystal darter. But even then, we are further ahead than we were, better prepared for the task of supporting SGCN and a diversity of native wildlife. Unlike the bats, we do better when we're not operating in the dark. And the state's past conservation efforts have

taught us that species in decline—from trumpeter swans to peregrine falcons—can sometimes rebound after strategic, concerted efforts.

In the meantime, work continues across the state, much of it focused on research, such as the American kestrel work pictured here, and improving important habitats. There are now channelized streams in southwestern Minnesota that have been re-meandered, their seasonal connections to off-channel habitats re-established. This not only benefits a rare, federally listed endangered minnow called the Topeka shiner, it also benefits people in local communities by slowing down the run-off from extreme storm events and letting it absorb into the soil. Elsewhere, sharp-tailed grouse have rebounded in restored oak savanna/barrens habitat, and "islands" of pollinator-friendly habitat have been created within seas of row-crops for the benefit of regal fritillary butterflies and other prairie species.

This, and so much more. Follow the progress, and find out how you can be part of it at [mndnr.gov/nongame](http://mndnr.gov/nongame). 🇲🇳



Wildlife Action Plan Coordinator Kristin Hall (right) works with (right to left) Mary Lee (Army National Guard), Mark Martell and Amber Burnette, to study migration of American kestrels, another SGCN. Small transmitters are placed on adult as well as young kestrels just after they fledge from nest boxes. As a result we are able to learn about migration risks and patterns of our smallest falcon. Persistence is a necessary component of conservation.

Photo by Kristin Hall, MN DNR



# SELECTED RESOURCES

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