Biodiversity

Minnesota's transportation system directly impacts the state's wildlife and habitat resources. As the state experiences global trends like pollinator and species decline, it is important that transportation decision-makers consider ecosystem health. Understanding the challenges and opportunities associated with biodiversity could help protect native plants and animals – and the habitat that supports them. Minnesota's 141,000 total road miles offer an opportunity to provide safety for people, as well as habitat for pollinators, nesting birds and other small wildlife.

Figure 1: Native Plants on a Roadside in Minnesota

MINNESOTA WILDLIFE

Minnesota is home to several endangered or threatened species, including the rusty-patched bumble bee, Topeka shiner, and northern long-eared bat. Of over 2,000 known native wildlife species, approximately 16 percent (346) are considered "Species in Greatest Conservation Need" because they are rare, declining, or face serious threats that may cause them to decline. This is up from 292 species in 2005. Habitat degradation is one of the leading stressors of "Species in Greatest Conservation Need".[1]

Pollinators play a unique, key role in food and flower production. Bumble bees and monarch butterflies are two types of pollinators that are essential to Minnesota's environmental health. However, habitat loss and herbicide use have caused both bee and monarch populations to decline. Monarch populations, for example, have decreased 80 percent since the mid-1990s and that trend is expected to continue.[2] Changing practices and policy can help support pollinator populations.

NATIVE PLANTINGS ALONG ROADSIDES PROVIDE HABITAT

Native prairie land provides important habitat for pollinators and other species. Less than 2 percent of the original native prairie land in Minnesota still exists today. Roadsides provide a vast amount of land that can be used to reverse the loss of native prairie plants and pollinators. In addition to helping pollinators, native plantings help upland birds, songbirds, and provide places to filter water and reduce run-off.

Native planting habitat varies in quality. High quality habitat has a high diversity and abundance of native plants that bloom continuously throughout the growing season, adequate food and nesting resources, and minimal pesticide use, among other

characteristics. MnDOT works to plant native seeds on constructions projects – between 2010 and 2015, native seed mixes were used in 36 percent of MnDOT project areas, resulting in 2,709 acres of pollinator-friendly habitat.

OTHER ANIMALS AT RISK

Minnesota is home to eight bat species. While bats are not pollinators, they do provide ecological benefits – like pest control for farmers. The populations of many bat species are declining due to habitat destruction, direct killing, colony disturbance, cave vandalism, use of pesticides, and most recently, white-nose syndrome. Transportation-related construction projects can impact bat populations, so it is important to develop strategies that limit disruption to bat communities.

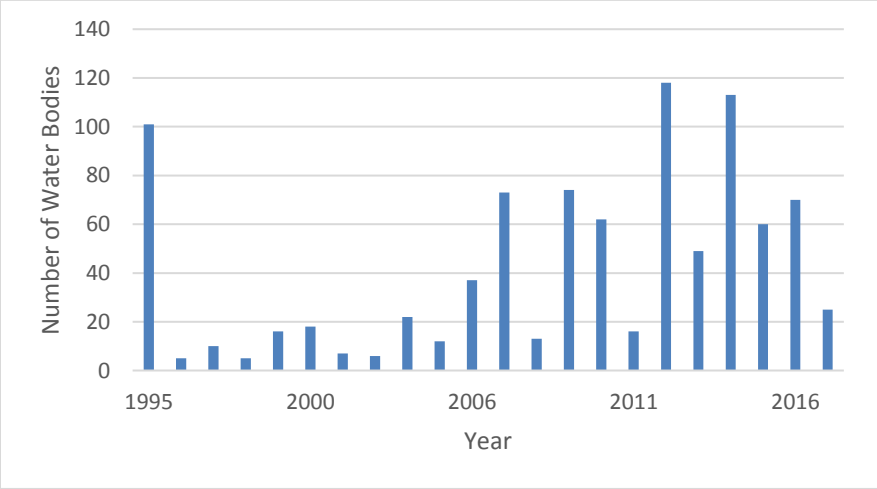
Transportation can also impact wildlife crossings – many different species of wildlife have trouble crossing over roads built through their native habitat. The Minnesota Department of Natural Resources provides solutions specifically for turtles and fish. Transportation professionals can help minimize the impact on turtles and fish by building bridges and selecting appropriate culvert designs.[3]

AQUATIC INVASIVE SPECIES

Like roadsides, Minnesota's waterways are both affected by and can contribute to environmental health. Opening the Great Lakes Seaway to modern shipping in the mid-20th century increased the risk of aquatic invasive species spreading on ships and through ballast water. Despite recent efforts to prevent the introduction of aquatic invasive species, aquaculture, intentional or unintentional releases, shipping, recreational boating and water gardening have all spread invasive species like the zebra mussel, sea lamprey, spiny and fishhook waterfleas, Eurasian milfoil and purple loosestrife. Aquatic invasive species impacts range from nuisance to devastation, including some forced extinctions of native plants and animals.

The Minnesota DNR tracks water bodies infested with aquatic invasive species that could spread to other waters. About 5 percent of the lakes in Minnesota are on the infested waters list. As of August 2016, zebra mussels were confirmed in 121 lakes, rivers and wetlands. Figure 4 shows the number of water bodies that were added to the infested waters list by year. As of October 2015, there are a total of 820 water bodies listed on the infested waters list.

Figure 2: Number of Water Bodies Added to Infested Waters List by Year [4]



[1] Minnesota DNR MN State Wildlife Action Plan

[2] 2017 Minnesota State Agency Pollinator Report

[3] Minnesota DNR Roadways and Turtles: Solutions for Safety

[4] Minnesota DNR Infested Waters List