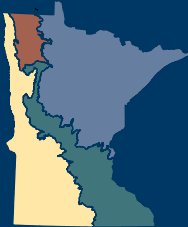


Minnesota Biological Survey's

Ecological Monitoring Network



Improving land use decision making and sustainable resource management through greater reliance on scientific knowledge

2025 Update



m DEPARTMENT OF
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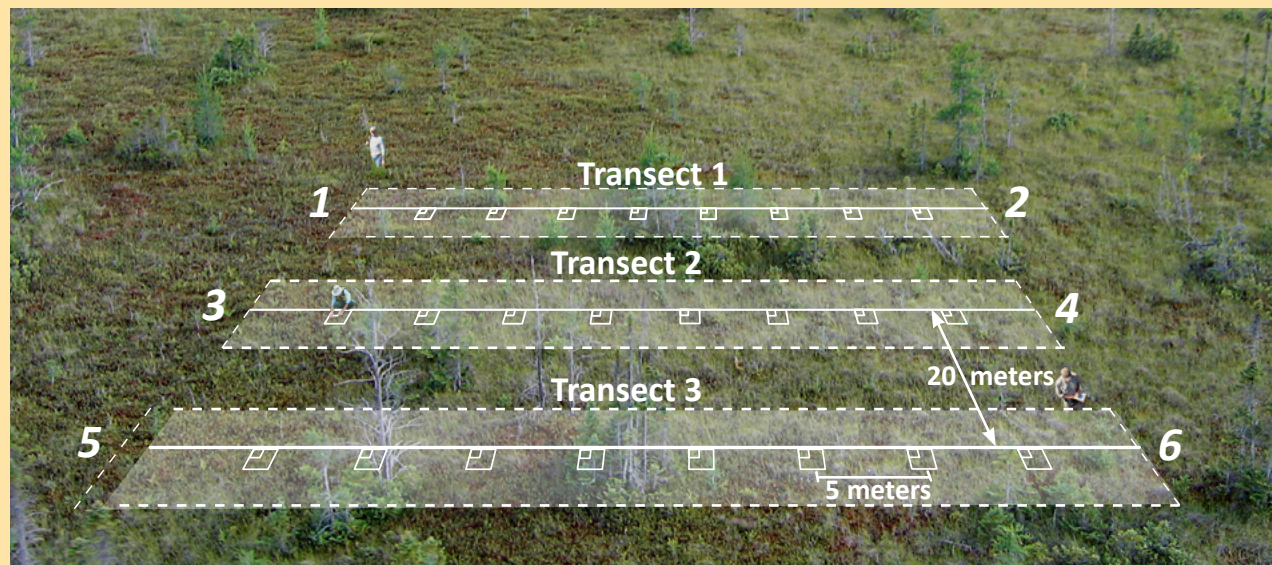
Who We Are

In 2017, the Minnesota Biological Survey (MBS), a program in the Minnesota Department of Natural Resources, established the Ecological Monitoring Network (EMN) to track long-term ecological change in our forests, prairies, and wetlands. Through monitoring we hope to better understand how Minnesota is changing because of climate change, the introduction and spread of invasive species, loss of pollinators, habitat fragmentation, increasing use of land and water resources and other pressures. This effort, while being led by MBS, is in collaboration with other Department of Natural Resources divisions and partners including The Nature Conservancy, the

University of Minnesota, the US Forest Service, and the US Fish and Wildlife Service.

What We Do

EMN ecologists are establishing a network of permanent plots across the state's diverse landscapes, ranging from remote wilderness to metropolitan natural areas. Data collected from each plot include documenting the abundance of all plant species present, the amount of deer browse on woody species, earthworm activity and water chemistry. Scientists are also testing strategies to expand monitoring to include species such as bees, moths, mosses, and lichens.



A scale diagram of the general plot showing three 45 meter parallel transects along which various data are collected. Woody plants in the tree canopy and subcanopy layer are sampled in a 45 x 10 meter subplot centered along each transect. Ground layer plants, including woody plants and vines in the shrub layer, are recorded in 24, 1 meter² quadrats (includes a small nested plot) placed every 5 meters along each transect. Depending on the habitat, other metrics are recorded that are not shown, such as deer browse and coarse woody debris measurements, water chemistry, or the height and density of grassland vegetation. A few of the elements of this design are subject to change as we continue to refine our metrics to best capture the data.



EMN surveyors pause to confirm the identification of a plant specimen within a monitoring plot.

Next Steps

To fully capture Minnesota's diverse habitats, our goal is to establish at least 500 permanent plots, resampling every 8-10 years. Our data have started revealing important trends, including higher proportions of non-native species in southern and western Minnesota, disproportional invasive earthworm impacts, and higher deer browse pressure in southern Minnesota (See EMN website). As we continue expanding our network of plots, we plan to explore more detailed analyses on community composition, forest regeneration, and landscape ecology. We plan to make data summaries, analyses and visualizations

more accessible to landowners, resource managers, researchers, and educators and will help promote public understanding and conservation of Minnesota's natural resources.



For more information on EMN, visit our website at mndnr.gov/mbs/ecologicalmonitoring

Funding for this project was provided by the Minnesota Environment and Natural Resources Trust Fund as recommended by the Legislative-Citizen Commission on Minnesota Resources (LCCMR). The Trust Fund is a permanent fund constitutionally established by the citizens of Minnesota to assist in the protection, conservation, preservation, and enhancement of the state's air, water, land, fish, wildlife, and other natural resources.



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ECOLOGICAL MONITORING NETWORK

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