MINNESOTA BIOLOGICAL SURVEY

STRATEGIC PLAN

DEPARTMENT OF NATURAL RESOURCES

FROM THE DIRECTOR

Minnesota lies at the convergence of four of North America's biomes: the Tallgrass Aspen Parklands, Prairie Parkland, Eastern Broadleaf Forest, and Laurentian Mixed Forest. As a result, our state has a rich diversity of habitats and biological resources. This biological diversity has long contributed to our high quality of life and strong economy. Minnesota's native prairies, forests, wetlands, and plant and animal species provide us with recreation, timber, fertile soils, clean water, crop pollination, flood protection, carbon storage, and other valuable services.

Understanding the location and condition of our native prairies, forests, wetlands, and species and how they are affected by our changing environment is the first step in effective conservation and management.

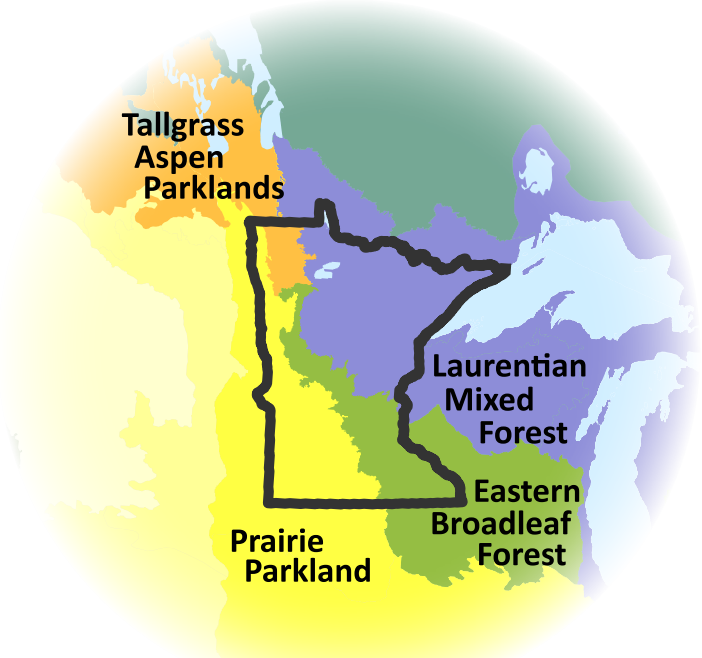
Fortunately for Minnesota, the ongoing work of the Minnesota Biological Survey (MBS) is providing us with this understanding. Originally formed as a DNR project in 1987 to carry out a border-to-border biological survey of Minnesota, MBS today is an established Unit within the Division of Ecological and Water Resources. MBS makes critical contributions to the DNR Mission and the EWR Vision by conducting ongoing biological survey, monitoring, and research projects in response to pressing conservation needs. The work of MBS has established Minnesota as a national leader in incorporating information on native plants, animals, and plant communities into conservation and management decisions.

Many DNR and partner efforts rely on the data and information collected and interpreted by the Minnesota Biological Survey, including environmental review; rare species conservation; nongame wildlife conservation and planning; Scientific and Natural Area acquisition and management; forest certification; watershed and groundwater restoration and protection; and land asset management to name a few. Indeed, MBS data and information are put to use every day throughout Minnesota.

In 2022, the Minnesota Biological Survey is on the cusp of a major change. It is nearing completion of the first phase of its border-to-border baseline biological survey. This approaching milestone, along with an uptick in retirements of long-standing staff, increasing demand for MBS data and information, and the ongoing DNR priority to more fully integrate land, water, and biological conservation and management prompted us to reassess and plan the direction and work of MBS for the next ten years.

This plan represents our perspectives on the priorities and direction of the Minnesota Biological Survey. The plan will help the DNR and EWR position MBS to continue the fundamental work it is carrying out in service of the people of Minnesota. The work we need to do as a state to sustainably manage lands and waters across Minnesota in the coming years can only be done with the guidance of comprehensive natural resource data collected by programs such as the Minnesota Biological Survey.

Katie Smith, Director
Division of Ecological and Water Resources
Minnesota Department of Natural Resources



MBS STAFF ASSESSING A SEDGE MEADOW IN LAKE COUNTY, MINNESOTA.

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FRONT COVER: MBS STAFF SURVEYING IN THE BOUNDARY WATERS CANOE AREA WILDERNESS, LAKE COUNTY, MINNESOTA.

RECORDING THE COMPLEXITY OF MINNE

KING'S AND QUEEN'S BLUFFS SCIENTIFIC & NATURAL AREA, WINONA COUNTY, MINNESOTA.

A Systems Approach

Central to all of the Minnesota Biological Survey's work is understanding relationships among species and native plant communities to their environments. Soil, water, air and climate—all of these exert an influence on plants and animals in Minnesota and are themselves influenced by the plants and animals they support. Understanding the complex interactions and relationships of living beings and the environment–a whole systems approach–is essential for sound conservation and management of Minnesota's biological diversity. The more we study and learn about individual elements of the system the more we realize how change in one element can ripple through or even disrupt entire systems. The work of MBS helps to understand the individual parts of Minnesota's native biological diversity, as well as how these parts fit into and contribute to healthy ecosystems and landscapes.

SOTA'S NATURAL HISTORY

The Minnesota Biological Survey (MBS) is a Unit within the DNR Division of Ecological and Water Resources' (EWR) Ecosystem Management Protection Section.

DNR and EWR Mission To work with citizens to conserve and manage the state's natural resources, to provide outdoor recreation opportunities, and to provide for commercial uses of natural resources in a way that creates a sustainable quality of life.

MBS Mission

To collect, analyze, and deliver data and information to support conservation and management of biological diversity.

MBS Vision

Healthy and resilient biological diversity throughout Minnesota.

MBS Values

Science: We are dedicated to providing objective scientific information.

Collaboration: We believe that working with each other, our partners, and the public is essential.

Leadership: We are respected and sought out for understanding Minnesota's biological diversity.

Adaptation: We are receptive to new information and innovative ideas.

COLLECTING DATA ON THE STATE'S **NATURAL HERITAGE**

MBS helps people to make data-driven decisions about the conservation and management of biological diversity. MBS data, information on native and rare species, plant communities, and sites of biodiversity significance are foundational to the work of the DNR and others throughout Minnesota.

MBS combs the state to collect information on Minnesota's biological diversity. MBS interprets this information, develops it into usable formats, and engages with others to apply it. The DNR and our partners rely upon MBS information and technical guidance for a broad range of purposes.

A FLOODPLAIN FOREST IN ST. LOUIS COUNTY, MINNESOTA.

...used for a broad range of purposes

Environmental Review

DNR relies on MBS rare features data for environmental review of proposed development projects—for example, comparing alternate locations for wind energy farms and pipelines.

Conservation Planning

MBS data and technical expertise are important in developing and implementing conservation plans such as the *Minnesota Prairie Conservation Plan* and the *State Wildlife Action Plan.*

Calcareous Fens

MBS mapping and information have been critical in documenting and protecting these rare groundwater-dependent wetlands—about 200 are currently known in Minnesota.

Land Protection

MBS rare species and plant community data guide many Scientific and Natural Area acquisitions as well as other natural land protection, acquisition and stewardship.

Endangered Species

MBS records on rare plants and animals are a primary source for reviewing and updating Minnesota's State List of Endangered, Threatened and Special Concern Species.

Groundwater Permitting

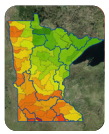
MBS data are used in defining boundaries and assessing sustainable groundwater use within state Groundwater Management Areas.

Land Management

MBS data help the DNR and partners comply with the Minnesota Sustainable Forest Resources Act, third-party forest certification, and other sustainable land management efforts.

Outreach

MBS educational and technical information are the basis for books such as *Trees and Shrubs of Minnesota* and *Amphibians and Reptiles in Minnesota,* field trips, reports and workshops.



Watershed Health

MBS data and information are incorporated into the DNR Watershed Health Assessment Framework to evaluate and monitor watershed condition.

ABOUT the PLAN

PURPOSE

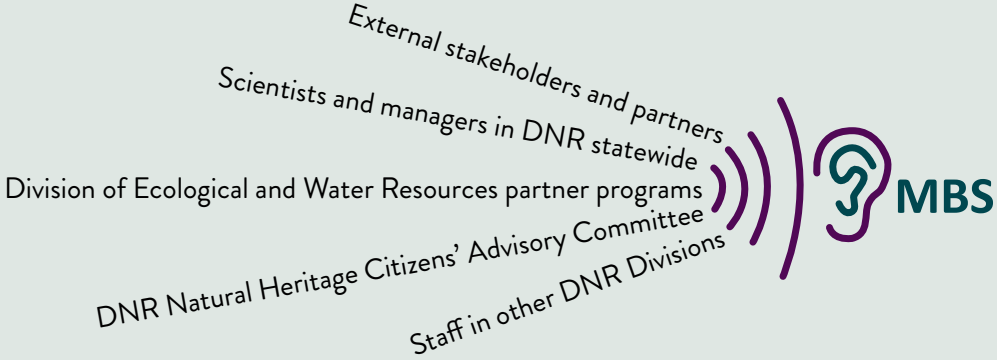
This plan will guide MBS over the next ten years in efforts to collect and deliver statewide biological data and address emerging issues. The plan provides guidance for funding, staffing, partnerships, and integrating our work with other key programs within the DNR. We hope this plan will increase awareness of MBS, and promote coordination with others who work to manage and conserve our natural resources.

This plan builds upon many of the goals and strategies found in the DNR's Conservation Agenda, the Strategic Plan of the Division of Ecological and Water Resources, and Minnesota's Wildlife Action Plan.

AUDIENCE

The plan is for DNR and EWR leadership, policymakers, public- and private-sector partners, and staff. It is intended to be useful to division and program leadership in developing priorities, budgets, funding proposals and in improving organizational effectiveness and efficiency.

MBS listened to a wide range of interested parties when drafting this strategic plan.



MBS STAFF IN THE BOUNDARY WATERS CANOE AREA WILDERNESS, ST.LOUIS COUNTY, MINNESOTA.

PROCESS

Development of this plan was led by an MBS team representing different aspects of the Unit.

Listening sessions with DNR, partners, and staff were conducted to identify important issues that affect the conservation and management of biological diversity and solicit ideas on how a statewide biological survey, monitoring, and research program can most effectively address them.

Mandate analysis: We completed a review of statutes, rules, policies, and conservation and land management plans to identify formal and informal mandates to the DNR for the collection, management, and delivery of biological diversity information. Examples include:

The Minnesota Environmental Policy Act
Tasks state government with maintaining statewide environmental information systems sufficient to gauge environmental conditions; defining, designating, and protecting environmentally sensitive areas; and preserving important existing natural habitats of rare and endangered species of plants, wildlife, and fish.

Minnesota's Endangered Species Statute and Rule
Establishes that the DNR may conduct investigations to determine the status and requirements for survival of a resident species of wild animal or plant. Tasks the DNR with developing and maintaining a state list of endangered, threatened, and special concern plants and animals.

TRENDS

The MBS strategic plan highlights trends (below) that affect Minnesota's biological diversity and our ability to achieve our mission to collect, analyze, and deliver biological data. Goals and Strategies explain our role and priorities in addressing these trends in order to achieve our vision of healthy and resilient biological diversity throughout Minnesota.

- Increases in human populations, land-use intensity, and land development are diminishing biological diversity, disrupting watersheds, and reducing water quality.
- Minnesota's climate is changing, causing increasing stress on native plant and animal populations and disruptions to ecological systems.
- Invasive species are causing degradation and displacement of native plants and animals in more habitats and regions of the state.
- Demands from the DNR and partners for up-to-date and new types of biological survey, monitoring, and research data and information are increasing, often exceeding MBS program capacities.
- Finding answers to resource and conservation questions is increasingly complex and often beyond the capacity of any program to effectively address alone.
- New data collection, storage, and delivery technologies and data governance expectations put pressure on programs to invest in and use state-of-the-art data management systems
- Funding is increasingly from dedicated sources focused on short-term or new initiatives while funding for long-term, mandated work is decreasing.

TRENDS

SURVEYING IN THE RED LAKE PEATLANDS OF BELTRAMI COUNTY, MINNESOTA.

In order to sustain, protect, and enhance Minnesota's biological diversity and meet the needs of the DNR and our conservation partners, we:

1. **Collect biological data and information**
2. **Manage and deliver biological information**
3. **Exemplify operational excellence in our work.**

GOALS

GOAL 1 | Collect Biological Data And Information

THE PRAIRIE COTEAU OF SOUTHWEST MINNESOTA.

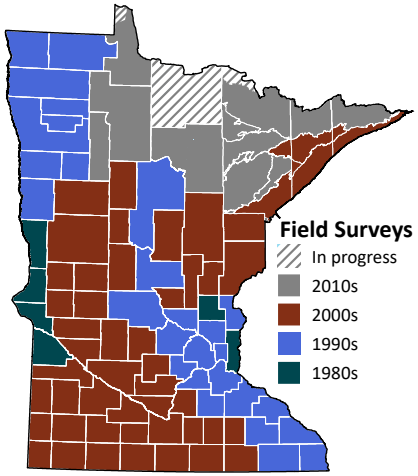
Strategy 1.1:

Conduct surveys to determine the distribution and abundance of native and rare plants, animals, and plant communities

A baseline understanding of the types of biological diversity that exist, their location, and their abundance are basic ingredients for biological conservation, management, and policy decisions. Statewide biological surveys, guided by standardized approaches, provide data that help us understand and address important questions and issues. Statewide biological surveys provide context for land and resource managers and conservationists working regionally or on specific sites, species, or habitat types. Accurate and up-to-date biological surveys are necessary to address day-to-day conservation and management questions faced by decision-makers.

Priority actions:

- Complete statewide, baseline surveys of Minnesota's native terrestrial plants, plant communities, birds, amphibians, reptiles, and small mammals.
- Continue progress in statewide baseline surveys of aquatic plants, bees, moths and butterflies, and nongame fish.
- Conduct systematic return-surveys to update statewide survey data >20 years old.
- Conduct statewide surveys on under-sampled sites, species, and plant communities.



Survey groups added 1990s and 2000s and ongoing

- aquatic plants
- bees
- moths
- butterflies
- nongame fishes

Statewide Survey Taxa 1987-2022

- native plant communities
- terrestrial plants
- small mammals
- birds
- amphibians
- reptiles

Survey groups proposed 2018-2028

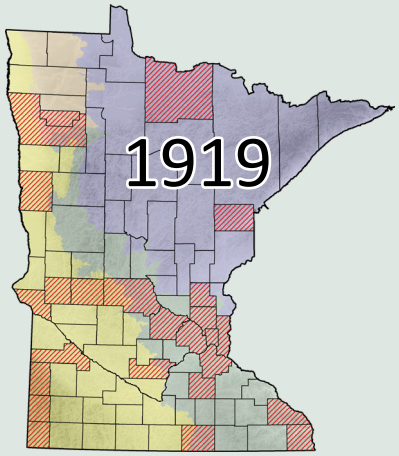
– bryophytes
– fungi
– aquatic macroinvertebrates
– other insects

MBS started as a DNR project in 1987 with an ambitious goal: conduct baseline, county-by-county biological surveys of Minnesota native plant communities, terrestrial plants, and selected animal groups. MBS is scheduled to finish baseline surveys of these groups in all 87 of Minnesota's counties by 2022.

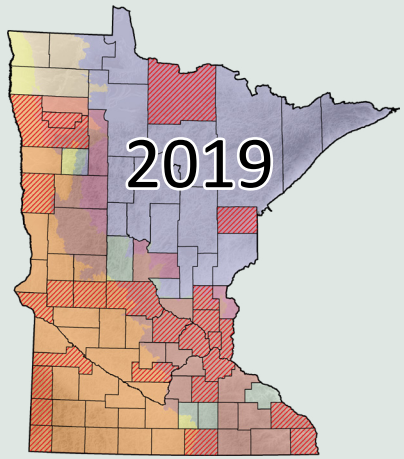
In response to ongoing and emerging conservation and management needs, MBS added statewide surveys of additional animal and plant groups. Statewide surveys for these groups will be completed by various dates after 2022. MBS also proposes to be a positive force in launching statewide baseline surveys for mosses and lichens, fungi, aquatic macroinvertebrates, and other insects.

Records and Collections: Expanding our knowledge

MBS native bee surveys begun in 2014 have increased the number of documented bee species in Minnesota from 66 based on the last known survey in 1919 to over 500 today. One example, the common sweat bee (*Halictus ligatus*), which was known in the state only from specimen collections, has now been found by MBS and partners in 56 Minnesota counties.



Counties with documented bee species, 1919



Counties with documented bee species, 2019

COLLECTING DATA TO TRACK STATUS AND TRENDS OF RARE ORCHIDS, JACKSON COUNTY, MINNESOTA.

Strategy 1.2:

Monitor native and rare plant and animal populations, plant communities, and landscapes to detect and measure change through time

Species populations and plant communities have natural fluctuations in abundance and distribution, and change through time in response to environmental change. Understanding the status of Minnesota's native species and plant communities over time and in response to environmental change is necessary to make conservation and management decisions. In addition, monitoring the effects of conservation, management, and policy decisions helps us understand whether these efforts and decisions are effective or need to be modified.

Priority actions:

- Monitor status and trends of native plant communities and sites of biodiversity significance.
- Continue to monitor status and trends of state- and federally-listed plants and animals.
- Monitor the response of plant communities and species to land and water management.
- Conduct surveillance monitoring of species and ecosystems under threat from emerging diseases and pests.
- Enhance program capacities in statistics and monitoring design and analysis.

MBS detects and measures change through time...

Statewide long-term monitoring of status and trends of prairies, forests, and wetlands.

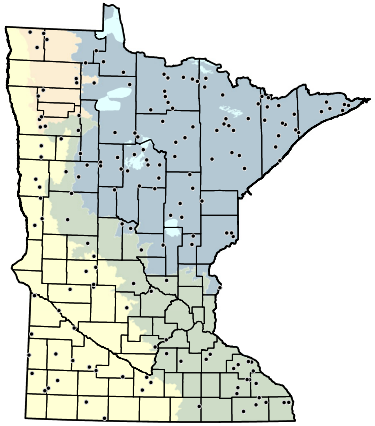
MBS plant ecologist recording vegetation in a monitoring plot, as part of MBS's Ecological Monitoring Network.

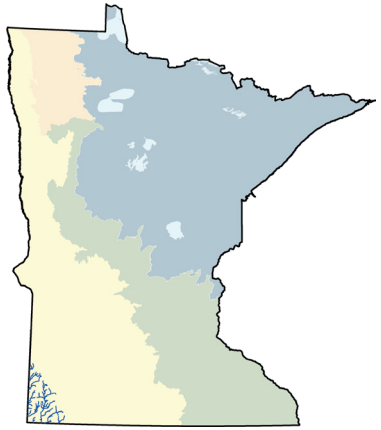
Monitoring of federal and state endangered plant species.

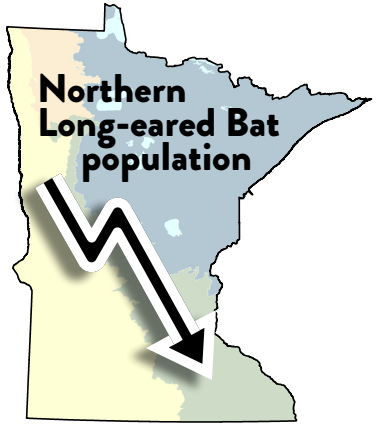
The Topeka shiner (*Notropis topeka*) is a federally endangered fish. MBS monitoring of this prairie minnow has established its current range in Minnesota's southwest.

Surveillance of native bats for the disease White-nose Syndrome.

MBS zoologist inspecting a native bat for signs of disease.







SMOOTH GREEN SNAKE (*OPHEODRYS VERNALIS*)

Strategy 1.3:

Research native and rare biological diversity to address specific questions, detect patterns, and test alternatives

Targeted research helps the DNR and its partners respond effectively to specific management, conservation planning, and policy issues, such as meeting statutory mandates to conserve and manage rare species and habitats. Research also provides basic understanding of how species and plant communities function and respond to environmental change. Research helps address important conservation and management issues illuminated by survey and monitoring efforts, and is used to test ideas or explore options in developing conservation and management actions. MBS often contributes data and subject-matter expertise to research being led by academic and other government partners.

Priority actions:

- MBS proposes to lead or help others lead research relationships of native species and plant communities to climate change.
- Research relationships among biological diversity and water quantity and quality.
- Research relationships among plants and pollinators.
- Continue systematic collection of quantitative data on native plant communities (e.g., relevés–a vegetation sampling method).
- Research the effects of resource management on native species and plant communities and ecological systems.
- Enhance program capacities in statistics and research design and analysis.

MBS conducts research to address specific questions, detect patterns and test alternatives...

Conducts research to understand the effects of cattle grazing on native prairies.

Seasonal native prairie wetland before (left) and after cattle grazing (right).

Collects data on native plant communities using robust vegetation sampling methods.

MBS and partners have collected data from over 10,000 vegetation plots.

Researches the effects of management on fragile plant communities.

A calcareous fen–a rare native plant community that is dependent on a constant upwelling of groundwater.

Native Plant Communities of Minnesota Field Guides

MBS -in collaboration with other agency staff- have produced a three-volume series to promote better understanding of the patterns and processes that characterize Minnesota's native plant communities. Composition and structure, landscape setting, soils, natural history and ecological processes that shape the vegetation of the region, are all highlighted in these guides specifically designed to meet the needs of land managers, field surveyors, and researchers working at a variety of scales.

GOAL 2 | Manage And Deliver Biological Information

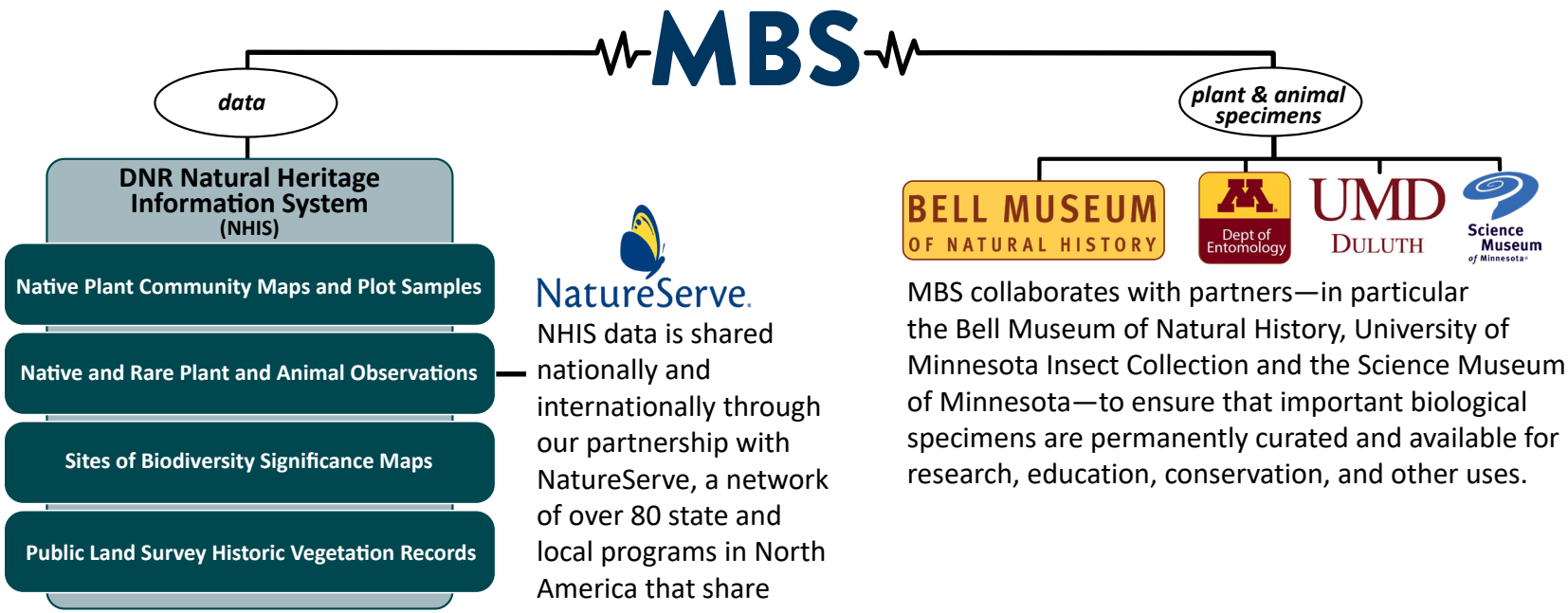
Strategy 2.1:

Support and enhance the DNR Natural Heritage Information System's data and information on native and rare plants and animals, plant communities, and ecosystems

The data and specimens we collect are intended for use by the DNR and partners to help inform and guide conservation, management, and sustainable use of natural resources. MBS is the largest contributor of data to the Natural Heritage Information System (NHIS), the state's most comprehensive centralized repository for electronic data on Minnesota biological diversity. MBS has key roles in fundamental NHIS processes such as data entry, quality control, and ongoing database maintenance and development. Biological specimens collected by MBS are contributed to major Minnesota repositories for permanent storage and access. The NHIS and biological specimens are public assets and expected to be secure and accessible in perpetuity.

Priority actions:

- Process and securely store field data and biological specimens promptly.
- Promote the standardization of data collection and management.
- Maintain modern technology for data collection and management.
- Continue our commitment to DNR data governance standards.
- Enhance our partnerships with Minnesota biological specimen repositories.



The data MBS collects is managed in the DNR's Natural Heritage Information System (NHIS).

NatureServe

NHIS data is shared nationally and internationally through our partnership with NatureServe, a network of over 80 state and local programs in North America that share scientific data and analyses.

MBS collaborates with partners—in particular the Bell Museum of Natural History, University of Minnesota Insect Collection and the Science Museum of Minnesota—to ensure that important biological specimens are permanently curated and available for research, education, conservation, and other uses.

Why collect specimens?

Scientists collect voucher specimens—actual individual plants, animals, and other organisms—to store in natural history collections for future reference and study. Specimens are physical proof that species have been described accurately by their observers. Specimens have been important tools for understanding genetics, the spread of diseases, environmental impacts of climate change and pesticide use, and how species vary and change across space and through time. They are one of the tools we use to track and understand Minnesota's endangered and rare species and statewide distribution of native plants and animals.

ONE OF THE WAYS MBS DELIVERS INFORMATION IS THROUGH FIELD WORKSHOPS FOR NATURAL RESOURCE PROFESSIONALS.

Strategy 2.2:

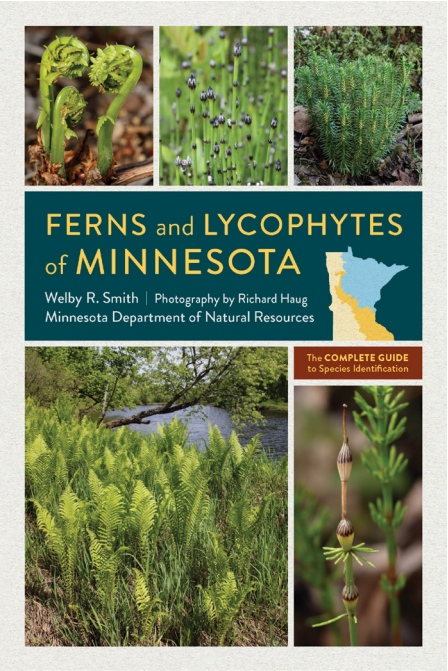
Make our data understandable and available through analysis, interpretation, and outreach

Analyzing and interpreting raw data adds value and greater utility to the data we collect by revealing important ecological relationships and conservation significance. This work is used, for example, to forecast management outcomes, compare development project alternatives, and identify indicators of environmental health. Our analyses and interpretations serve the information needs of the DNR and our partners and aid the ongoing development of MBS staff expertise. Data interpreted and analyzed by MBS are delivered to others through technical guidance, books, reports, maps, and other products for a broad range of uses and audiences.

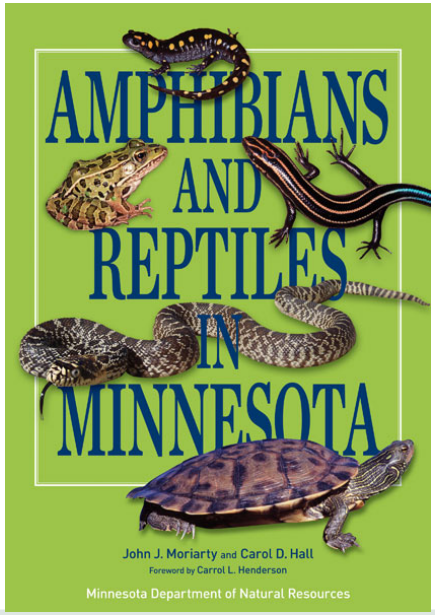
Priority actions:

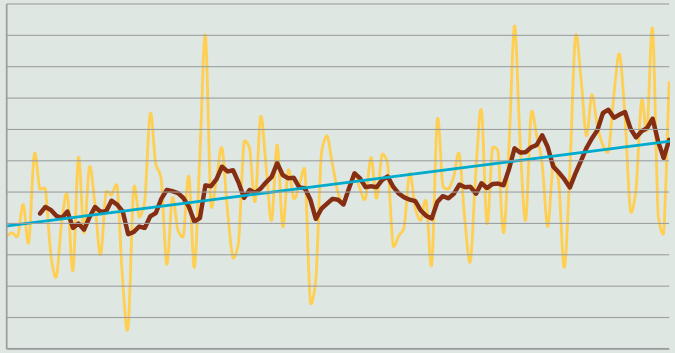
- Contribute reports, published literature, and web-based resources on Minnesota biological diversity, natural history and ecology.
- Increase the visibility of MBS data, information, and expertise.
- Analyze data to improve understanding of native biological diversity relative to climate change, water quality and use, watershed health, and invasive species control.
- Continue refinement of the DNR statewide native plant community classification and development of related products.

MBS staff are major contributors to DNR's *Rare Species Guide*, an online resource for endangered, threatened, and special concern species. @mndnr.gov/rsg



MBS delivers unique and valuable information through the publishing of natural history books with the University of Minnesota Press.





Climate Change: a DNR -and MBS-call to action

It is the DNR's responsibility to use the best available science to develop adaptation and mitigation strategies that will minimize the negative impacts of climate change on the state's natural resources. MBS develops information and products that help DNR meet this responsibility and that builds understanding of how climate change is affecting the Minnesota's natural heritage.

A PLANT IDENTIFICATION WORKSHOP LED BY MBS STAFF.

Strategy 2.3:

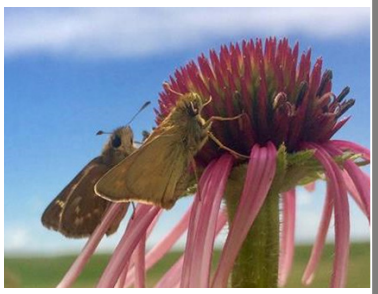
Strengthen our commitment to engagement and collaboration with partners inside and outside of the DNR

One of the most important things we do is developing and maintaining strong partnerships. Relationships help us to broaden our reach in providing information and assistance critical for conservation and management. Our partners each focus on specific areas but work can overlap because of the interrelatedness of ecological systems and complexity of statewide conservation and management issues. MBS works with DNR programs, and our Tribal and other external partners to achieve biological diversity conservation, sustainable resource management, healthy watersheds, and clean water.

Priority actions:

- Align with Minnesota's State Wildlife Action Plan priorities.
- Meet regularly to network and exchange information with partners inside and outside of the DNR.
- Collaborate to establish priorities for data collection, analysis, and outreach.
- Collaborate with partners to develop project and funding initiatives.
- Develop a standard system for partners to request professional services from MBS.
- Enhance integration among MBS and related DNR programs.
- Enhance efforts to deliver presentations, network, and share information at DNR and partner events.

DEPARTMENT OF NATURAL RESOURCES



MINNESOTA ZOO

MBS and the MN Zoo collaborate on projects to restore imperiled native species to their native habitats, for example reintroductions of Dakota Skippers to prairies where they were once common.

Minnesota Biodiversity Atlas

The UMN Bell Museum of Natural History is utilizing plant and animal specimens collected by MBS to develop the online MN Biodiversity Atlas.

MBS works with DNR Scientific & Natural Areas program and organizations such as The Nature Conservancy and the Minnesota Land Trust to identify and prioritize lands for protection, acquisition, or special management.

MBS collaborates with the Nongame Wildlife Program and other wildlife partners to implement and deliver intended outcomes of Minnesota's Wildlife Action Plan.

One of many MBS-State Parks collaborations focused on the collection of rare plant and plant community data on sensitive cliff features to help locate rock climbing activities in appropriate areas.

GOAL 3 | Exemplify Operational Excellence In Our Work

FUNDING FROM MINNESOTA'S ENVIRONMENT AND NATURAL RESOURCES TRUST FUND SUPPORTED MBS FIELD SURVEYS THAT LED TO THE ESTABLISHMENT OF THE LA SALLE LAKE STATE RECREATION AREA IN HUBBARD COUNTY.

Strategy 3.1:

Enhance funding diversity and sustainability

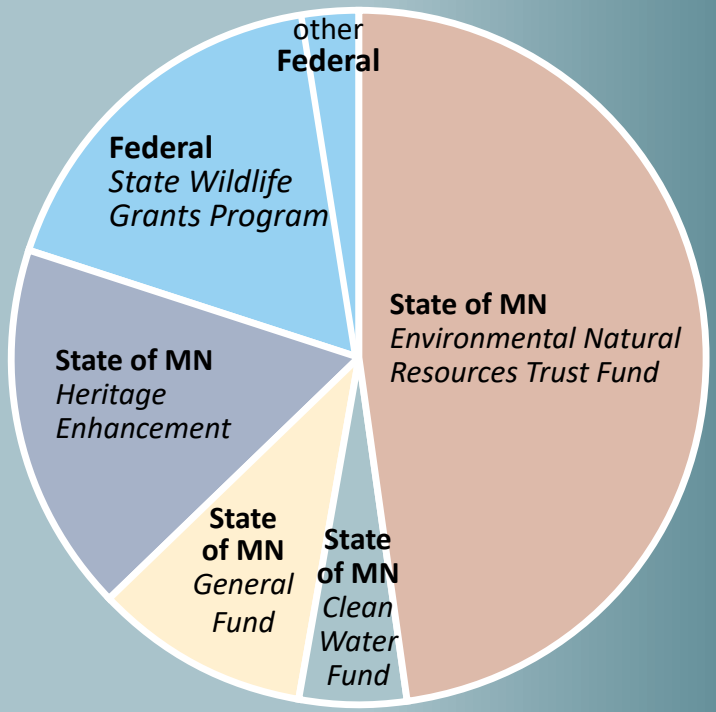
Stable and diverse funding are necessary for MBS to meet ongoing responsibilities in support of the DNR's mission and to effectively respond to planned and unplanned priorities and emerging issues. State General Fund and Heritage Enhancement Fund are critical to covering core MBS functions within the DNR. However, a large proportion of MBS funding is short-term and dedicated to specific projects. For example, MBS botany and plant ecology is largely funded by two- to three-year state project funding (via the Environment and Natural Resources Trust Fund) whereas MBS zoology is largely supported and defined by two-year federal funding through the USFWS state wildlife grants program. These factors affect our capacity to fully respond and contribute to ongoing and emerging DNR and partner needs.

Priority actions:

- Be adaptive in budgeting, project and funding initiatives, and partnerships to maintain program continuity.
- Seek increased funding from long-term state funding sources to adequately support essential program positions and functions.
- Pursue new or innovative funding sources such as Outdoor Heritage Fund, Parks and Trails Fund, and private foundations.
- Develop funding proposals that address priorities identified in Minnesota's State Wildlife Action Plan and LCCMR's Minnesota Statewide Conservation and Preservation Plan.

Typical Annual Budget:

$3-3.5 million



Funding

MBS receives funding from a variety of sources including the Environment and Natural Resource Trust Fund, the U.S. Fish and Wildlife Service's State Wildlife Grants program, the Minnesota General Fund, Heritage Enhancement Fund, Game and Fish Fund, and other funding sources that vary by year. The total annual MBS budget in recent years averages around $3-3.5 million.

ENVIRONMENT AND NATURAL RESOURCES TRUST FUND

Ongoing support has been provided by the Environment and Natural Resources Trust Fund administered by the Legislative-Citizen Commission on Minnesota Resources.

INVESTING IN WILDLIFE SINCE 2000
STATE WILDLIFE GRANTS

Since 2000 MBS has also received ongoing funding from the U.S. Fish and Wildlife Service's State Wildlife Grants program.

The Nature Conservancy

The Minnesota Biological Survey project received start-up funding from The Nature Conservancy.

Strategy 3.2:

Foster a program with a diverse, skilled, and adaptable staff

Our work requires specialized skills and expertise in the identification, biology, ecology, and distribution of Minnesota's native plant and animal species. These skills take commitment to develop and maintain; fortunately, MBS scientists and specialists often stay with the program for decades and are self-motivated in advancing their professional expertise. Challenges include emerging issues and new initiatives, which require MBS to develop new skills and expertise; retirements of long-term staff, which can result in loss of professional expertise and knowledge gained from years of fieldwork and study in Minnesota; long-term retention of younger-generation staff; and balancing staff presence geographically in the state.

Priority actions:

- Promote a workplace where staff learn new skills, share knowledge with one-another, and achieve excellence in their field.
- Develop practical succession plans to weather retirements and staff turnover.
- Locate staff geographically to provide expertise and services in all parts of the state.
- Promote safe and respectful workplace practices.
- Promote diversity, equity and inclusion.
- Enhance our use of and relationships with citizen scientists and volunteers.

FIELD WORK IN THE BOUNDARY WATERS CANOE AREA WILDERNESS, ST. LOUIS COUNTY, MINNESOTA.

The majority of year-round MBS staff are scientists specializing in plant ecology, botany, mammalogy, ornithology, herpetology, and entomology. Other positions include outreach specialists, data management specialists, and supervisors. Staffing also often includes seasonal or short-term biological and data management positions. MBS also has short-term and long-term volunteers and citizen scientists who help us to, for example, collect field data, design databases, and archive our survey records.

MBS STAFF, 2022.

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