Environment and Natural Resources Trust Fund

M.L. 2021 Approved Work Plan

General Information

ID Number: 2021-113

Staff Lead: Corrie Layfield

Date this document submitted to LCCMR: July 21, 2021

Project Title: Minnesota Biological Survey

Project Budget: $1,500,000

Project Manager Information

Name: Bruce Carlson

Organization: MN DNR - Ecological and Water Resources Division

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Project Reporting

Date Work Plan Approved by LCCMR: July 20, 2021

Reporting Schedule: February 1 / August 1 of each year.

Project Completion: June 30, 2024

Final Report Due Date: August 14, 2024

Legal Information

Legal Citation: M.L. 2021, First Special Session, Chp. 6, Art. 6, Sec. 2, Subd. 03e

Appropriation Language: $1,500,000 the first year is from the trust fund to the commissioner of natural resources to complete the statewide baseline biological survey by finalizing data, analyses, and publications and by conducting targeted field surveys to fill missing gaps of information needed to support conservation of Minnesota's biodiversity. Any revenues generated through the publication of books or other resources created through this appropriation may be reinvested as described in the work plan approved by the Legislative-Citizen Commission on Minnesota Resources according to Minnesota Statutes, section 116P.10.

Appropriation End Date: June 30, 2024

Narrative

Project Summary: Provide information on Minnesota's biodiversity by collecting and interpreting data and delivering results that support conservation actions by natural resource managers, decision-makers, and scientists.

Describe the opportunity or problem your proposal seeks to address. Include any relevant background information.

The ongoing need to protect and manage functional ecological systems, with their component plant and animal communities, is accelerating with demands for clean water, energy, outdoor recreation, and natural resources. Data and analyses that help to conserve, manage, and restore the state's biodiversity are necessary to address issues such as habitat loss and fragmentation, water contamination, loss of species and genetic diversity, and the spread of invasive species.

The Minnesota Biological Survey (MBS) collects, interprets, and delivers data on native plant and animal communities and functional landscapes to support conservation and management of biodiversity. These data and the information and products developed from them help public and private decision-makers and resource managers alike to evaluate options and prioritize actions to conserve, manage and restore Minnesota's natural heritage. Since 1987, MBS with ENRTF support has been working towards completion of county-by-county baseline biological surveys for native and rare terrestrial plants and vertebrate animals (ML19-004A and previous).

What is your proposed solution to the problem or opportunity discussed above? i.e. What are you seeking funding to do? You will be asked to expand on this in Activities and Milestones.

MBS will achieve statewide completion of field work (i.e. data collection) for the county surveys by June 30, 2022 (see ML19-004A). The ML21 work plan proposed here wraps up and closes out the entire county survey project by bringing to final completion all 1) data entry into the state's Natural Heritage Information System, 2) curation and permanent archiving of biological survey records, 3) preparation of biological specimens and accession to the Bell Museum of Natural History, 4) map products, and 5) analyses of MBS county survey findings for the period 1987-2022.

In addition, the ML21 work plan proposes to continue progress on (see ML19-004A and previous):

- statewide baseline surveys for invertebrate animals (insects, specifically pollinators) and aquatic plant communities. These are two subject areas that were not included at the start of the county biological survey in 1987 but launched at later dates in response to demand for this information; and
- targeted biological surveys in high priority locations to update biodiversity data from one-point-in-time observations made more than 20 years ago. This work is in response to ongoing and increasing demand for providing a current status of existing biodiversity data such that those data can more efficiently and

What are the specific project outcomes as they relate to the public purpose of protection, conservation, preservation, and enhancement of the state's natural resources?

Results from this project and previous MBS ENRTF appropriations have broad use and applicability throughout the state. Recent applications of MBS data and information include identification and management of Scientific and Natural Areas; updates to Minnesota's list of endangered, threatened and special concern species; development of pollinator best-management practices; site selection and seed mix development for cover crop, buffer and clean water initiatives; collection of biological specimens for use in the Minnesota Biodiversity Atlas (ENRTF ML18 004-A); and technical support tools for groundwater management.

Project Location

What is the best scale for describing where your work will take place?

Statewide

What is the best scale to describe the area impacted by your work?

Statewide

When will the work impact occur?

During the Project and In the Future

Activities and Milestones

Activity 1: County Biological Surveys 1987-2022: Final Data Synthesis and Delivery

Activity Budget: $848,994

Activity Description:
MBS will bring to completion final data entry, interpretation, mapping, specimen preparation for recently finished county biological surveys in north-central Minnesota (ML19 MBS and previous). This will complete baseline biological surveys statewide and provide the complete set of documentation and records spanning the entire 35-year statewide survey, start to finish. MBS will complete the final synthesis, standardization (e.g. digitizing hard-copy records), and archiving of project records. MBS reports, website, social media, presentations, public exhibits, and online data and information delivery systems will also be updated with final statewide survey results that provide interpretations of status, significance, and future outlook of the state's biodiversity.

Activity Milestones:

Description	Completion Date
Final survey records and documents compiled and accessioned to DNR or other State archives.	June 30, 2024
Digital maps (GIS polygon data) finalized for native plant communities and MBS sites.	June 30, 2024
Final biological specimens prepared and accessioned to the Bell Museum and the UMN Entomology collections.	June 30, 2024
Final plant and animal survey data, field notes, photos entered into DNR databases.	June 30, 2024
Final statewide survey results and analyses delivered through standard MBS online platforms and hard-copy formats.	June 30, 2024

Activity 2: Conduct targeted surveys in high priority sites and habitats.

Activity Budget: $651,006

Activity Description:
MBS will continue from the ML19 and previous MBS appropriations to update and expand county biological survey data that is >20 years old. Focus in this work plan will be placed in high priority sites in southwest, southeast, and east-central MN. MBS will continue progress on statewide baseline aquatic plant surveys, focusing this work plan on lakes in southern and east-central MN. ML19 and previous ENRTF appropriations to MBS have provided plant data for 2,020 lakes to-date and the discovery of species not previously documented in the state. MBS will continue progress on statewide baseline surveys for Lepidoptera (moths and butterflies), focusing this work plan on southwest, southeast, and east-central MN. ML19 and previous ENRTF appropriations to MBS focused Lepidoptera surveys in the far north and northwest part of the state and have resulted in the discovery of moth species new to science, documentation of species not previous recorded in the state, and significant improvements to our basic understanding of pollinator occurrence and distribution in the state.

Activity Milestones:

Description	Completion Date
1980s–90s era county surveys updated and enhanced in >20 sites in southern and east-central	June 30, 2024
Surveys for Lepidoptera (moths and butterflies) in ~50 sites in southern and east-central Minnesota.	June 30, 2024
Surveys for native and rare aquatic plants in ~75 lakes in southern and east-central Minnesota.	June 30, 2024
Data, specimens, field notes, photos from this Activity entered into DNR databases and UMN collections.	June 30, 2024

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Midwest Regional Endangered Species Coordinator	US Fish & Wildlife Service - Midwest Region Ecological Services	Listed species coordination and collaboration.	No
Ralph Holzenthal - Professor; Collections Manager	UMN Dpt. Of Entomology	Biological specimen curation.	No
George Weiblen - Professor and Science Director	UMN Bell Museum	Biological specimen curation and delivery of related project outcomes through the MN Biodiversity Atlas.	No

Dissemination

Describe your plans for dissemination, presentation, documentation, or sharing of data, results, samples, physical collections, and other products and how they will follow ENRTF Acknowledgement Requirements and Guidelines.
MBS publishes and distributes project and program results in a variety of formats for various audiences.

MBS data are stored primarily in the DNR Natural Heritage Information System. Many GIS datasets, including MBS mapped native plant communities and MBS sites of biodiversity significance, are publicly delivered through MN Geospatial Commons (https://gisdata.mn.gov/) and within the DNR via the standard GIS data delivery system, QuickLayers. Data on state and federal-listed species are available through agreements with the requesting agency and the DNR, a data request form is available online: http://www.dnr.state.mn.us/nhnrp/nhis.html. MBS delivers data to national and international audiences through NatureServe (https://www.natureserve.org/) with much of these data accessible through their Explorer website (https://explorer.natureserve.org/). MBS often delivers data in response to requests from researchers at academic institutions, government agencies, and other organizations.

Many products are available on the DNR and MBS websites (www.dnr.state.mn.us/mbs/index.html) including MBS procedures, program and project updates, maps, reports, native plant community field guides, and references on biodiversity sampling techniques and methods. MBS web pages are updated with new information and have links to associated resources. MBS also communicates program and project highlights through the DNR and partner programs' Facebook pages.

Staff routinely make presentations that describe MBS methodologies and results to a wide range of audiences including county boards, local planning groups, citizen advisory groups, other biologists, land managers, and students. MBS staff provide local planners with ecological interpretations describing important native and rare species, ecological communities, and sites of biodiversity significance to assist with management plans.

Biological collections are deposited at Minnesota repositories, primarily at the University of Minnesota's J.F. Bell Museum of Natural History and at the UMN Entomology insect collection. As part of a larger network of museums and biological collections, these cooperators are essential to the documentation, permanent curation, and sharing of MBS

results. MBS biological specimens are publicly available to view digitally through the Bell Museum's Biodiversity Atlas (https://bellatlas.umn.edu/). MBS and museum staff meet periodically to address curatorial, data management, and specimen and data sharing needs.

MBS has published several ecological books and field guides that are variously free to the public or sold through the MN Bookstore and the UMN Press. The DNR, Legislative, local, and academic libraries often have these products in their collections.

The Minnesota Environment and Natural Resources Trust Fund (ENRTF) will be acknowledged through use of the trust fund logo or attribution language on project print and electronic media, publications, signage, and other communications per the ENRTF Acknowledgement Guidelines.

Long-Term Implementation and Funding

Describe how the results will be implemented and how any ongoing effort will be funded. If not already addressed as part of the project, how will findings, results, and products developed be implemented after project completion? If additional work is needed, how will this be funded?

MBS data, products, and technical guidance have proven critical and foundational to societal and scientific applications. MBS receives operational funding from General Fund, Heritage Enhancement Fund, Federal State Wildlife Grants and project funding from ENRTF, Fish & Game Fund, and federal funds. DNR is developing strategies to sustainably fund MBS, recently completing a 10-year strategic plan for the program. MBS will continue to address relevant needs and add value to existing ENRTF investments through statewide baseline biological surveys; biodiversity monitoring; outreach and product delivery; targeted field surveys to inform conservation planning and decisions; and surveys for under-surveyed taxa and ecological systems.

Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
Minnesota Biological Survey	M.L. 2015, Chp. 76, Sec. 2, Subd. 03c	$2,450,000
Minnesota Biological Survey - Continuation	M.L. 2017, Chp. 96, Sec. 2, Subd. 03d	$2,900,000
Minnesota Biological Survey	M.L. 2019, First Special Session, Chp. 4, Art. 2, Sec. 2, Subd. 03a	$1,500,000

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	$ Amount
Personnel								
Project Manager		Project records and document management, volunteer coordination, landowner and partner coordination, project business management			25%	1.6		$139,664
Research Scientist 2 - Entomologist		Design and conduct insect pollinator fields surveys, data curation and analysis, product development, technical guidance			25%	0.4		$43,848
Natural Resource Specialist Int. - Entomologist		Pollinator field surveys, data and specimen preparation.			25%	1.6		$129,920
Natural Resource Specialist SR - Plant Ecologist		Plant and vegetation data synthesis, analysis, mapping, and targeted field surveys.			25%	4.2		$460,414
Natural Resource Specialist Int - Botanist/Plant Ecologist		Terrestrial and aquatic plant surveys, data and specimen processing, data synthesis, analysis, mapping.			25%	4.2		$383,264
Information Officer 2		Digital and print media and information design, management, and dissemination.			25%	1		$101,500
							Sub Total	**$1,258,610**
Contracts and Services								
MN.IT	Professional or Technical Service Contract	GIS, mapping, and spatial data/database design and technical expertise, delivery of data to public platforms, digital field data collection applications.				1		$110,000
							Sub Total	**$110,000**

Equipment, Tools, and Supplies								
	Tools and Supplies	Field survey tools and supplies, specimen preparation supplies.	Tools and supplies for conducting field surveys and preparing biological specimens for accession to MN collections.					$5,000
							Sub Total	**$5,000**
Capital Expenditures								
							Sub Total	**-**
Acquisitions and Stewardship								
							Sub Total	**-**
Travel In Minnesota								
	Miles/ Meals/ Lodging	Fleet, lodging, meal expenses while in travel status for field surveys.	Fleet, lodging, meal expenses while in travel status for field surveys.					$39,067
							Sub Total	**$39,067**
Travel Outside Minnesota								
							Sub Total	**-**
Printing and Publication								
							Sub Total	**-**
Other Expenses								
		Direct & Necessary	DNR's direct and necessary costs pay for activities that are directly related to and necessary for accomplishing appropriated projects. HR Support ($21,594), Safety Support ($4,011), Financial Support ($15,717),					$87,323

			Communication Support ($1,324), IT Support ($43,528), and Planning Support ($1,149).					
							Sub Total	**$87,323**
							Grand Total	**$1,500,000**

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request

Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
State				
Cash	Heritage Enhancement	Senior ecologists and zoologists who lead and provide oversight to field survey efforts and associated analysis. Associated operations budget.	Pending	$375,000
Cash	General Fund	A portion of MBS program management and supervision; office space; program operations.	Pending	$250,000
			State Sub Total	**$625,000**
Non-State				
Cash	State Wildlife Grant (Federal)	Animal surveys and monitoring, data management, outreach, technical guidance	Pending	$225,000
			Non State Sub Total	**$225,000**
			Funds Total	**$850,000**

Attachments

Required Attachments

Visual Component

File: 7d183504-66f.pdf

Alternate Text for Visual Component

A 1-page fact sheet showing Activity 1 with a series of MN maps showing the 35-year progress and final completion of statewide county biological surveys and a map of Activity 2 showing locations of the field survey milestones....

Optional Attachments

Support Letter or Other

Title	File
Background Check Certification Form	37722d18-659.pdf

Difference between Proposal and Work Plan

Describe changes from Proposal to Work Plan Stage

We proposed $3.2 million and were recommended for $1.5 million. All of Activity 2 in the $3.2m proposal was removed and the budget reduced accordingly. We feel that the milestones in the $3.2m proposal's Activity 2 can stand alone as future proposals. The draft $1.5m work plan has 2 Activities that are largely the same as the $3.2m proposal but reductions in personnel, equipment/supplies, and travel were necessary to arrive at a $1.5 million budget. In addition, the $3.2m proposal's Activity 1 had a milestone for a statewide report and 9 regional reports on the statewide survey but with reduced budget and personnel we have reduced that deliverable in Activity 1 of the draft $1.5m work plan.

Additional Acknowledgements and Conditions:

The following are acknowledgements and conditions beyond those already included in the above workplan:

Do you understand and acknowledge the ENRTF repayment requirements if the use of capital equipment changes?

N/A

Do you agree travel expenses must follow the "Commissioner's Plan" promulgated by the Commissioner of Management of Budget or, for University of Minnesota projects, the University of Minnesota plan?

Yes, I agree to the Commissioner's Plan.

Does your project have potential for royalties, copyrights, patents, or sale of products and assets?

No

Do you understand and acknowledge IP and revenue-return and sharing requirements in 116P.10?

N/A

Do you wish to request reinvestment of any revenues into your project instead of returning revenue to the ENRTF?

N/A

Does your project include original, hypothesis-driven research?

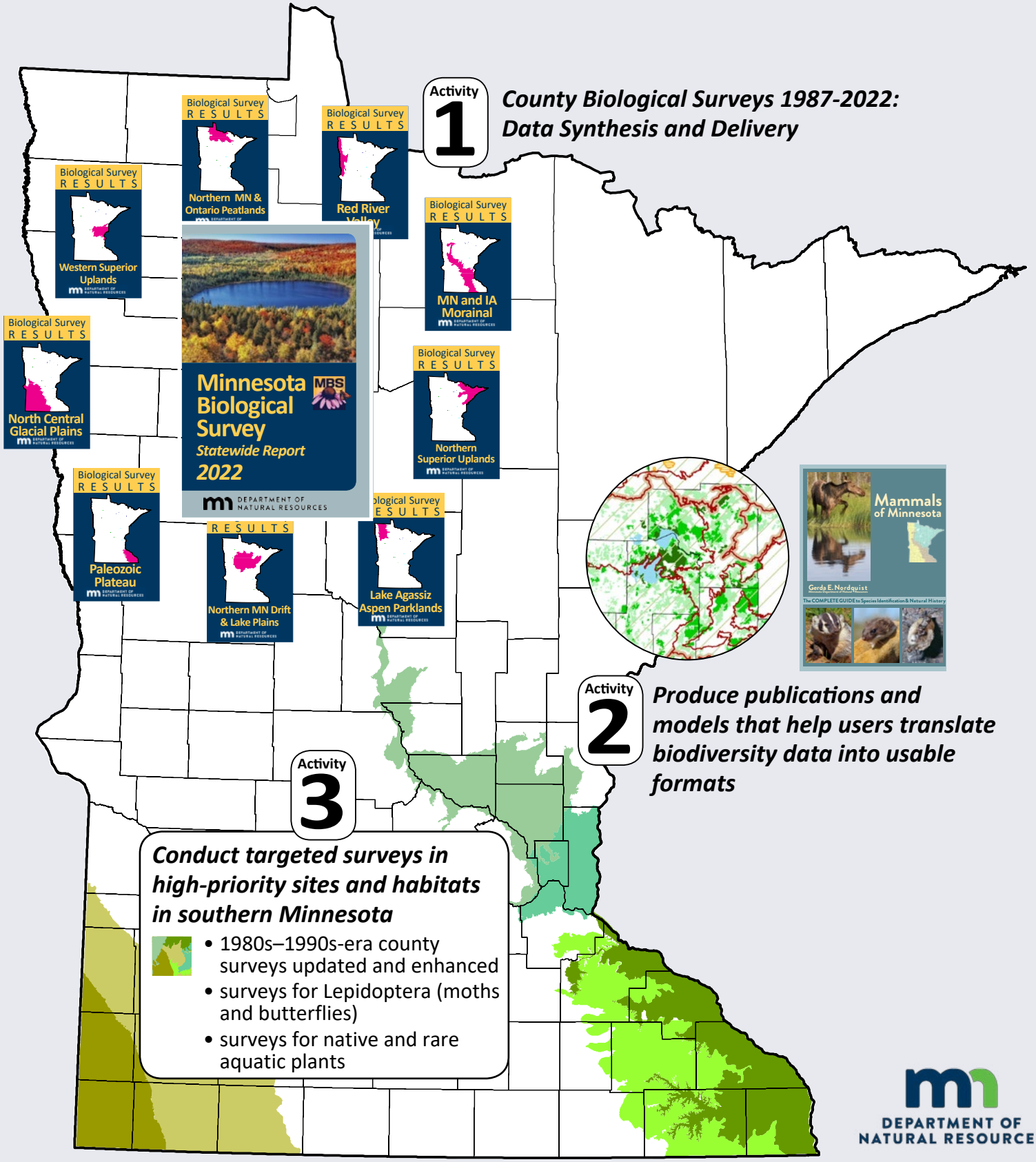
No

Does the organization have a fiscal agent for this project?

No

Minnesota Biological Survey

setting a future course



Activity 1

County Biological Surveys 1987-2022: Data Synthesis and Delivery

Activity 2

Produce publications and models that help users translate biodiversity data into usable formats

Activity 3

Conduct targeted surveys in high-priority sites and habitats in southern Minnesota

- 1980s–1990s-era county surveys updated and enhanced
- surveys for Lepidoptera (moths and butterflies)
- surveys for native and rare aquatic plants

DEPARTMENT OF NATURAL RESOURCES