Final Abstract

Final Report Approved on October 30, 2026

M.L. 2023 Project Abstract

For the Period Ending June 30, 2026

Project Title: Modernizing Minnesota's Wildlife (and Plant) Action Plan

Project Manager: Kristin Hall

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Funding Source:

Fiscal Year:

Legal Citation: M.L. 2023, Chp. 60, Art. 2, Sec. 2, Subd. 03n

Appropriation Amount: $889,000

Amount Spent: $884,625

Amount Remaining: $4,375

Sound bite of Project Outcomes and Results

Minnesota advanced conservation of priority habitats and species through boreal owl research, comprehensive vernal pool and salamander monitoring, new vegetation protocols, and targeted climate assessments. Findings shaped the updated 2025–2035 Wildlife Action Plan and an interactive website highlighting 1,142 Species in Greatest Conservation Need and key conservation strategies.

Summary of Project and Outcomes

This proposal helped update the third iteration of the Minnesota Wildlife Action Plan (Plan) which provides strategic guidance for conserving Species in Greatest Conservation Need (SGCN) and their habitats. These non-regulatory Plans outline proactive and voluntary approaches to conservation designed for collaborative implementation by a broad range of partners. For this update we consulted with 327 experts from 64 conservation organizations including universities, tribes, federal, state and local governments as well as NGOs. These Plans reflect a shared commitment to maintaining a healthy environment for animals, plants and people and are intended to guide conservation efforts proactively, before species become critically imperiled. This grant advanced understanding and conservation of several priority wildlife and habitat systems in Minnesota through five major deliverables. First, boreal owl population analyses combined historical

and new monitoring datasets, confirmed that declines are not driven by seasonal shifts or survey effort, but are instead linked to climate-driven habitat loss and range contraction that reduce breeding opportunities. Second, monitoring of 45 vernal pools using a Before, After, Control, Impact (BACI) design evaluated habitat management effects on four toed salamanders. Trail cameras and eDNA tools verified occupancy in most pools and helped identify data mismatches. This effort supported updates to the Rare Species Guide and contributed to development of a new vernal pool survey application. Third, a vernal pool vegetation protocol produced 83 relevé plots across 63 pools, informing native plant community classification and hydroperiod monitoring; information included in the new vernal pool chapter of the Plan. Fourth, climate assessments focused on grasslands and non-forested wetlands—habitats supporting the greatest number of declining species—inform conservation strategies now reflected in the Plan. Finally, a new interactive website launched the updated Minnesota Wildlife Action Plan, detailing 1,142 SGCN and 15 primary habitat types, shaped through extensive stakeholder input.

Project Results Use and Dissemination

A comprehensive boreal owl report was completed with UM Duluth–NRRI (available as attachment). Salamander and vernal pool data have been validated and entered into the Natural Heritage Information System, with preliminary findings shared through public presentations and internal DNR events. Forty plant and animal species profiles are ready for publication, with fifty more in development. Minnesota's 2025–2035 Wildlife Action Plan is now available online in 28 downloadable chapters and an interactive web portal, enabling users to explore species and habitat information. Ongoing presentations continue to promote the Plan, with all materials following required LCCMR acknowledgment guidance.

Environment and Natural Resources Trust Fund

M.L. 2023 Approved Final Report

General Information

Date: November 2, 2026

ID Number: 2023-209

Staff Lead: Tiffany Schaufler

Project Title: Modernizing Minnesota's Wildlife (and Plant) Action Plan

Project Budget: $889,000

Project Manager Information

Name: Kristin Hall

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Project Reporting

Final Report Approved: October 30, 2026

Reporting Status: Project Completed

Date of Last Action: October 30, 2026

Project Completion: June 30, 2026

Legal Information

Legal Citation: M.L. 2023, Chp. 60, Art. 2, Sec. 2, Subd. 03n

Appropriation Language: $889,000 the first year is from the trust fund to the commissioner of natural resources to modernize the Minnesota Wildlife Action Plan by filling critical data gaps, including adding rare plants to the plan, and standardizing conservation status assessment methods to ensure Minnesota's natural heritage is protected into the future.

Appropriation End Date: June 30, 2026

Narrative

Project Summary: Updating the Species in Greatest Conservation Need list through surveys, standardized assessments, and including rare plants for the first time to create v.3.0 of Minnesota's Wildlife Action Plan

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

Minnesota's Wildlife Action Plan (MNWAP) is a ten-year guide to the conservation of Minnesota's rare and at-risk species. The MNWAP needs to be revised by 2025, with the input of state agencies, private landowners, sporting groups, and environmental organizations, to lay out conservation strategies and actions for the next ten years and sustain access to critical federal conservation funding.

Three primary issues will hinder the MNWAP revision if not addressed: 1) critical gaps in the species data that are the foundation of the MNWAP, 2) a lack of standardized methods to establish the State conservation status of animals and plants and 3) not including plants that wildlife rely on and are critical components of Minnesota's biodiversity. This proposal addresses these urgent needs in order to develop the most relevant and future facing plan possible.

In previous versions of the MNWAP, plants were not included because the federal funding available for plan implementation did not extend to plant conservation efforts. Federal legislation currently under consideration incentivizes states to include rare plant species and contains a provision specifically for plant conservation. Including plants will broaden our ability to implement conservation actions supporting our full natural heritage and ensure access to future funding.

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

DNR's Nongame Wildlife Program will lead the MNWAP revision, and is requesting support for two tasks. First, information gaps for targeted species need to be filled, and second, a standardized process to assess species conservation status needs to be implemented and expanded to include rare plants. This proposal will address the expressed need through these activities:

1. Working with Minnesota Biological Survey (MBS) and others, we will conduct surveys and gather data to ensure that information for rare and at-risk species is up-to-date and well represented in conservation status assessments. This includes surveys for species where: current information is lacking, species that are difficult to detect by traditional means, and unique plants and habitat types associated with those species. This information will be used in our species list assessment process, Activity 2.

2. We will implement a standardized method, used nationwide, for assessing and ranking the conservation status of Species of Greatest Conservation Need (SGCN), including plants. This standardized process will help to improve transparency, repeatability, and integrity of our conservation status ranks. It will also modernize our ranking methods by including a threats assessment that integrates habitat change, up-to-date climate data, and other species-specific stressors.

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?

This project will produce foundational data and threats assessment information critical to developing and implementing a relevant and practical Minnesota Wildlife Action Plan, which has major influence on nongame wildlife management, conservation, and funding through 2035. This proposal will help natural resource managers to be precise, effective, and efficient in implementing conservation actions and guiding management decisions. It will help Minnesota with a v3.0 MNWAP that addresses a complete system of wildlife conservation, integrating plants and habitats. This project supports the sustained health of Minnesota's biodiversity.

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: Survey targeted species to improve knowledge of status, distribution and conservation needs.

Activity Budget: $454,000

Activity Description:
Some species have been identified as needing additional surveys to better assess their status. We propose conducting surveys for:

- Boreal owl nest and singing male reports have decreased substantially since the 1990s, suggesting a decline in Minnesota's population. Current, detailed, and comprehensive information is critical to understand population status; breeding ecology and habitat use. The University of MN – Duluth, Natural Resources Research Institute (NRRI) will conduct surveys, including using acoustic detectors, to collect the data for this remote species.

- Rare forest salamanders have highly specific habitat requirements and a limited ability to recover once restricted in their range. Standard surveys are limited to about one month a year when salamanders breed. Adopting innovative survey techniques may greatly extend the survey window. We will use eDNA sampling (extracting DNA from the environment), proven effective for sampling secretive, low density amphibian species, to gain vital information on status and habitat use of four-toed and/or spotted salamanders.

- Forest vernal pools are an under-studied and biodiversity-rich wetland-forest system which require specialized plant and animal surveys. This work will advance the much-needed basic classification and inventory of vernal pool types to inform v. 3.0 of the MNWAP and to assist future conservation efforts.

Activity Milestones:

Description	Approximate Completion Date
Boreal Owl- complete collaborative survey design phase and first field season	April 30, 2024
Boreal Owl survey work and analysis with NRRI is completed	July 31, 2025
Complete eDNA and traditional surveys for rare forest salamanders to detect presence	September 30, 2025
Complete surveys in forested vernal pool systems	September 30, 2025
Update survey data of under documented species within the Natural Heritage Inventory System (NHIS) database	October 31, 2025

Activity 2: Update conservation status and conduct threats assessment of plant and animal species to update the SGCN list and revise MNWAP

Activity Budget: $435,000

Activity Description:
The previous species ranking process relied heavily upon occurrence data and expert inputs. While the process was rigorous and credible, it was not repeatable or standardized. We will update our current SGCN list by applying a nationally-adopted species conservation assessment process to standardize our information with other states and make future updates more efficient. We will calculate and review species ranks for at least the 346 existing SGCN as well as species that previously lacked sufficient data for ranking. We will also expand the SGCN list to plants, considering at least the 417 vascular plant species that are currently classified as Endangered, Threatened, Special Concern or watch-listed.

Species conservation status assessments will be based on 5 factors: species range, area of occupancy, number of

occurrences, short-term population trend, and threats. The generated rankings will be reviewed by taxonomic experts.

To conduct this ranking process we will:
1. Format, synthesize and analyze existing data for standardized assessment process
2. Integrate current habitat, climate, and stressor information within the threats assessment
3. Run the species and ranking tool
4. Share outputs for expert review and revision
5. Project staff will finalize updated SGCN list and assist in the overall MNWAP revision

Activity Milestones:

Description	Approximate Completion Date
Synthesize and format existing plant and wildlife data for inputs into the species ranking tool	December 31, 2023
Generate the species inputs and conduct threats assessment to go into the S-rank tool	November 30, 2024
Use S-rank calculator on resulting formatted data to create update SGCN list	December 31, 2024
Convene taxonomic teams and review results of the S-ranking process	July 31, 2025
Publish updated SGCN list in approved MNWAP	December 31, 2025

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Alexis Grinde	University of MN - Duluth, Natural Resource Research Institute	NRRI will conduct the boreal owl survey portion of proposal, This collaboration will bring additional value to the project because it leverages NRRI's avian expertise and capacity that will provide updated species status information of boreal species foundational to the next ten years of the Minnesota Wildlife Action Plan.	Yes

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.
The revised and updated SCGN list will be published within the 2025 Minnesota Wildlife Action Plan. This plan is available in print form and as a digital download. Attribution language for ENTRF will be included on the inside of the front cover to the Plan. We also anticipate creating an interactive Minnesota Wildlife Action Plan webpage for version 3.0. Beyond Minnesota, Federally approved Wildlife Action Plans are posted in a national database hosted by USGS. Upon completion and approval of the 2025 Plan, Nongame Wildlife Program staff will host a series of in- person workshops and online webinars introducing stakeholders and partners to the approved product and promoting its use in their conservation planning efforts. The Environment and Natural Resources Trust Fund will be acknowledged during all associated outreach through use of the trust fund logo or attribution language on project print and electronic media, publications, signage, and other communications per the ENTRF Acknowledgment 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 work be funded?
This project will produce updated species status information foundational to the next ten years of the Minnesota Wildlife Action Plan. Long-term, the results of this project will be implemented through the conservation actions guided by the MNWAP and funded by a blend of federal and state resources currently dedicated to the conservation of Minnesota's Species in Greatest Conservation Need. We will be able to access increased federal funding, per pending federal legislation, by adding plants to our list of SGCN, thus increasing the capacity of our state to care for its highly valued natural heritage.

Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
Nongame Wildlife Program Acceleration	M.L. 2018, Chp. 214, Art. 4, Sec. 2, Subd. 08a	$220,000
Nongame Wildlife Program Acceleration	M.L. 2019, First Special Session, Chp. 4, Art. 2, Sec. 2, Subd. 08e	$513,000

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	$ Amount	$ Amount Spent	$ Amount Remaining
Personnel										
Data management and analysis (classified)		Format data inputs including: both archival and newly collected data, documenting species specific decisions and rules, and develop/implement GIS scripts for S Rank tool process		X	25%	1	X	$80,000	-	-
Field & Data Biologist		Conduct rare species surveys, conduct plant data analysis for S Rank tool, v3.0 MNWAP plant coordination.		X	25%	2	X	$190,000	-	-
Taxonomic specialists		Consult on ranking process			25%	0.5		$50,000	-	-
Project Coordinator		Coordinate animal and plant project teams to complete surveys and S Ranking process. Compile reports, conduct partner coordination and integrate species list revision process with overall MNWAP update.			25%	2		$184,000	-	-
							Sub Total	**$504,000**	**$503,981**	**$19**
Contracts and Services										
U of MN - Duluth NRRI	Subaward	Boreal owl work: conduct surveys, including using acoustic detectors, to collect the data for this remote species.				-		$160,000	$160,000	-
Midwest Climate Adaptation Science Center, Consortium Member Associate Professor Benjamin Zuckerberg, UW-Madison	Subaward	Threats assessment work				0		$97,849	$97,849	-

SWAP writing assistance contract	Service Contract	Contracting a Plan writing and content editor to provide assistance in compiling content, formatting sections and finalizing the Plan draft prior to submission for approval.				0.15		$16,000	$16,000	-
Survey contracts - vernal pool plants/ salamanders	Service Contract	Contracted specialists to assist with conducting salamander and vernal pool plant surveys will allow us to increase capacity and the number of sites we can inventory.				0.14		$15,000	$15,000	-
							Sub Total	**$288,849**	**$288,849**	**-**
Equipment, Tools, and Supplies										
	Tools and Supplies	eDNA supplies	To collect and analyze environmental samples to determine species presence: total cost of site filtration kits plus expendables ($3000). Total cost of eDNA analysis (extraction and amplification) ($9000)					$10,186	$10,186	-
	Tools and Supplies	Field trail cameras	Requesting addition of tail cameras for placement at vernal pools to assess habitat status and seasonality of these intermittent wetlands. Cameras provide a way to measure seasonal fluctuations at multiple sites simultaneously.					$19,900	$19,900	-
							Sub Total	**$30,086**	**$30,086**	**-**
Capital Equipment										
							Sub Total	**-**	**-**	**-**
Acquisitions and Stewardship										

							Sub Total	**-**	**-**	**-**
Travel In Minnesota										
	Miles/ Meals/ Lodging	Estimate based on 20 overnight field days/ season = 40 days total: ($36/day meals = $1,440; $100/day lodging = $4,000; and 23,867 miles @ .625/mile = $14,917)	Conducting field surveys					$19,422	$15,066	$4,356
							Sub Total	**$19,422**	**$15,066**	**$4,356**
Travel Outside Minnesota										
							Sub Total	**-**	**-**	**-**
Printing and Publication										
							Sub Total	**-**	**-**	**-**
Other Expenses										
		DNR Direct and Necessary	Direct and necessary costs to cover HR support ($10,027), Safety Support ($2,020), Financial Support ($9,151), Communication Support ($1,811), IT Support ($22,609), and Planning Support ($1,020).	X				$46,643	$46,643	-
							Sub Total	**$46,643**	**$46,643**	**-**
							Grand Total	**$889,000**	**$884,625**	**$4,375**

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
Personnel - Data management and analysis (classified)		Format data inputs including: both archival and newly collected data, documenting species specific decisions and rules, and develop/implement GIS scripts for S Rank tool process	Existing employees have unique skills and experience with the data used to achieve this work, their existing duties will be backfilled **Classified :** Any classified staff position paid for by ENRTF will either: 1) be backfilled with a new position OR 2) the work done by this position will be delayed, eliminated, or completed by the start of the project. The activities of all or portions of the classified staff are directly related to this proposal for data management in Activity 2. Due to extensive experience with MN DNR databases and Geographic Information System knowledge, this data manager brings specific knowledge and perspectives that will result in high quality results.
Personnel - Field & Data Biologist		Conduct rare species surveys, conduct plant data analysis for S Rank tool, v3.0 MNWAP plant coordination.	Existing employees have unique skills and experience with the data used to achieve this work, their existing duties will be backfilled **Classified :** Any classified staff position paid for by ENRTF will either: 1) be backfilled with a new position OR 2) the work done by this position will be delayed, eliminated, or completed by the start of the project. The activities of all or portions of the classified staff are directly related to this proposal for data management in Activity 2. Due to extensive experience with MN DNR databases and Geographic Information System knowledge, this data manager brings specific knowledge and perspectives that will result in high quality results.
Other Expenses		DNR Direct and Necessary	These are costs associated with activities that are directly related to and necessary for accomplishing appropriated programs/projects.

Non ENRTF Funds

Category	Specific Source	Use	Status	$ Amount	$ Amount Spent	$ Amount Remaining
State						
Cash	Nongame Wildlife Program Funds	covering zoological surveys, staff administrative and advisory costs	Secured	$50,000	$50,000	-
Cash	Reinvest in Minnesota	Covering plant taxonomic expertise	Secured	$50,000	$50,000	-
			State Sub Total	**$100,000**	**$100,000**	**-**
Non-State						
Cash	Competitive State Wildlife Grant	Plan Enhancement	Secured	$200,000	$200,000	-
Cash	State Wildlife Grants	MBS Surveyors	Secured	$155,000	$155,000	-
			Non State Sub Total	**$355,000**	**$355,000**	**-**
			Funds Total	**$455,000**	**$455,000**	**-**

Attachments

Required Attachments

Visual Component

File: baf651ad-6f0.pdf

Alternate Text for Visual Component

The graphic depicts 6 steps in the proposal process swooping across the page from left to right: animal icons depict surveys, a computer icon depicts conducting the threats assessment, three additional icons depict data processing resulting in the updated list for v 3.0 of MNWAP, which guides wildlife conservation....

Supplemental Attachments

Capital Project Questionnaire, Budget Supplements, Support Letter, Photos, Media, Other

Title	File
NRRI Letter of Support	8dd8a6ea-511.pdf
required background check	e6d16e1a-ae9.pdf
Boreal Owl Research Poster - UMD NRRI	2e8b7dc5-f73.pdf
Salamander and Vernal Pool status update presentation. MNDNR Biodiversity Report out session winter 2024-25	fc7a65e9-31c.pdf
MINNESOTA'S WILDLIFE ACTION PLAN 2025-2035	7c1a1df9-ae3.pdf

Media Links

Title	Link
Minnesota's Wildlife Action Plan 2025 - 2035: Conserving Habitats and Biodiversity	https://www.dnr.state.mn.us/eco/mnwap/index.html

Difference between Proposal and Work Plan

Describe changes from Proposal to Work Plan Stage

The only change that was made to the content of the original proposal was the addition of the dissemination details and minor clean up on some grammatical errors. For the budget section, we had a minor change in the D&N calculation, a difference of 5$, which was balanced from the travel line so the overall budget is the same as the version recommended. Additional minor changes and additions were made as a result of LCCMR staff recommendations for revision.

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 understand that travel expenses are only approved if they 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 understand the Commissioner's Plan applies.

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

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?

Yes

Does the organization have a fiscal agent for this project?

No

Do you understand that a named service contract does not constitute a funder-designated subrecipient or approval of a sole-source contract? In other words, a service contract entity is only approved if it has been selected according to the contracting rules identified in state law and policy for organizations that receive ENRTF funds through direct appropriations, or in the DNR's reimbursement manual for non-state organizations. These rules may include competitive bidding and prevailing wage requirements

Yes, I understand

Work Plan Amendments

Amendment ID	Request Type	Changes made on the following pages	Justification For Amendment Request (word limit 75)	Date Submitted	Approved	Date of LCCMR Action
1	Amendment Request	• Other • Budget - Personnel • Budget - Professional / Technical Contracts • Budget - Capital, Equipment, Tools, and Supplies • Attachments	Non-monetary Amendment Request Move $15,000 from Survey/field personnel to Supplies adding trail cameras at vernal pools which allow for simultaneous data collection during a short seasonal window. Move $15,000 from Survey/field personnel for contracted plant/salamander surveys to add capacity for seasonal surveys Move $16,500 from Coordination personnel to contracted SWAP writing assistance to provide content editing services, add historical content, create consistency and formatting to the comprehensive Plan.	May 12, 2025	Yes	May 14, 2025
2	Amendment Request	• Budget - Professional / Technical Contracts • Budget - Capital, Equipment, Tools, and Supplies • Budget - Travel and Conferences	End of grant budget reconciliation: Underspent the full award by $4375 overall. Need minor line-item corrections for final expenses. Moved $2,151 from Contracts to Tools and Supplies, moved $935 from travel to Tools and Supplies. New totals per category are $288,849 Contracts and Services, $30,086 Tools and Supplies and $19,422 for Travel.	October 29, 2026	Yes	October 30, 2026

Status Update Reporting

Final Status Update August 14, 2026

Date Submitted: August 29, 2026

Date Approved: September 22, 2026

Overall Update

This proposal helped advanced understanding and conservation of several priority wildlife and habitat systems in Minnesota through five major deliverables. First, boreal owl population analyses combined historical and new monitoring datasets, confirming that declines are not driven by seasonal shifts or survey effort, but are instead linked to climate-driven habitat loss and range contraction that reduce breeding opportunities. Second, monitoring of 45 vernal pools using a BACI design evaluated habitat management effects on four toed salamanders. Trail cameras and eDNA verified occupancy in most pools and helped identify data mismatches. This effort supported updates to the Rare Species Guide and contributed to development of a new vernal pool survey application. Third, a vernal pool vegetation protocol produced 83 relevé plots across 63 pools, informing native plant community classification and hydroperiod monitoring; information included in the new vernal pool chapter of the State Wildlife Action Plan (SWAP). Fourth, climate assessments focused on grasslands and non-forested wetlands—habitats supporting the greatest number of declining species—inform conservation strategies now reflected in the SWAP. Finally, a new interactive website launched the updated Minnesota Wildlife Action Plan, detailing 1,142 Species in Greatest Conservation Need and key habitats, shaped through extensive stakeholder input.

Activity 1

Owls: To determine the reason for apparent declines in boreal owl populations, analysis of historical and newly collected owl monitoring data showed that potential seasonal shifts or monitoring effort changes are not the reasons for declines. However, the habitat depletion and range contraction due to climate impacts were statistically significant and may act in tandem, compounding the reduction of observed breeding pairs.

Salamanders: Over this grant, 45 vernal pools with four toed salamander nesting activity were monitored using a BACI design (24 impacted, 21 control) to assess habitat management response. Trail cameras were used to document hydroperiod and eDNA supported manual survey efforts, confirming presence in 23; mismatches occurred in four pools. A vernal pool survey app was developed, and the Rare Species Guide was updated for rare salamander species.

Vernal Pools: A vegetation sampling protocol was developed and applied to collect 83 relevé plots across 63 vernal pools over two seasons. Work included extensive planning, coordination, and abiotic data collection, plus support for hydroperiod monitoring. All data were entered into the relevé database to inform native plant community classification and expanded sampling in 2026. Results contributed to the first Vernal Pools chapter in the SWAP and a management proposal.

(This activity marked as complete as of this status update)

Activity 2

Climate assessments: While some climate impact assessments are available for forested systems (e.g., climate atlas for trees) information is lacking for the two habitat types supporting the greatest number of Species in Greatest Conservation Need (SGCN) in Minnesota: grasslands and non-forested wetlands. We worked with the University of WI to address this by interpreting empirically derived plant-climate relationships alongside regional climate exposure projections to guide active conservation efforts. Stressors and management recommendations derived from this assessment are included in the State Wildlife Action Plan

Species Assessments: In July of 2026 we launched a new interactive website featuring Minnesota's Wildlife Action Plan 2025–2035: Conserving Habitats and Biodiversity. The updated Plan was developed by the DNR's Nongame Wildlife Program, with input from 327 individuals representing 64 organizations. The Plan identifies 1,142 Species in Greatest

Conservation Need (rare, declining or vulnerable species) including 543 animals and 599 plants and lichens. An additional 860 species are classified as Species in Need of Information, underscoring the importance of ongoing surveys and research. In addition, the Plan identifies 15 habitats that support these at-risk species and Conservation Opportunity Areas for on-the-ground efforts.
(This activity marked as complete as of this status update)

Dissemination
Owls -We worked with UM Duluth-NRRI who created and submitted a comprehensive final report on the boreal which may include non-public data and is available upon request.
Salamanders and Vernal Pools - Proofed data is in the Natural Heritage Information System and preliminary results have been shared via public presentations and internal DNR meetings through Biodiversity Highlights presentation events.
Overall Species information - Forty plant and animal species profiles are ready for publication, with another 50 in draft form.
Plan Presentations and Publications: Minnesota's Wildlife Action Plan 2025-2035: Conserving Habitats and Biodiversity is now available online (link: https://www.dnr.state.mn.us/eco/mnwap/index.html) and is presented in modules so partners and the public can focus on topics of interest. There are 28 pdf chapters, all downloadable and featuring a cover page acknowledging funding sources. There is also a dynamic online web portal where users can interact with and query data of interest. Multiple presentations and announcements have been given and will continue as we promote the completion and use of this Plan. The LCCMR acknowledgement guidance is followed and featured in all presentations and on websites associated with this product.

Status Update Reporting

Status Update April 1, 2026

Date Submitted: April 1, 2026

Date Approved: April 14, 2026

Overall Update

Over the winter season we focused on data management and analysis of the vernal pool and salamander components of the project. Winter is the active field season for the boreal species portion of this work and the second field season wintering owls and other boreal species (via ARU recordings) was completed. Summarized climate assessments for prairie and wetland systems were compiled and integrated into the final draft of the State Wildlife Action Plan. The Plan was drafted and submitted to the USFWS for approval in October 2025 and officially approved for implementation in January 2026. The final document is a revision based on the two prior Plans and is entitled Minnesota's Wildlife Action Plan: Conserving Habitats and Biodiversity. The collaborative effort took over two years and included 327 contributors from 64 conservation entities. In total there are approximately 870 pages which will be available online as modules highlighting 8 species group chapters and 15 habitat chapters.

Activity 1

Vernal Pools: Surveyors were able to survey 83 releve plots across 63 pools. the information collected is being used to better document vernal pool conditions across the state and set up survey locations that can be monitored repeatedly into the future especially with respect to forest management and climate impacts.
Rare salamanders: data formatting, summarization and analysis was the focus of this reporting period. Because salamanders and their egg masses are difficult to detect and these wetlands are extremely sensitive, and we had concerns about the impact on nest success with repeated surveys within the same season. Therefore, we devised detection trials to estimate individual observer detection probability which can be applied to all surveys as a way of normalizing the observations of any given survey based on each observers probability of detecting a salamander or their nest. Trail cameras have provided a unique insight into year-to-year variation of hydroperiod documenting viable salamander habitat availability over time. Preliminary analysis suggests lower adult or egg mass encounter rates between control and forest treatment areas..
Boreal Species: Autonomous Recording Units (ARUs) were deployed and surveys were conducted for the second full field season on owls and other hard to detect boreal birds.

Activity 2

During this reporting period, we continued to work on some additional species ranking for aquatic invertebrates and compiling threats assessment details for habitat level climate assessments. We had several meetings to guide revisions and additions to a draft final report on the outputs of climate analysis for grassland and wetlands habitats. Figures from this climate analysis have been featured in several presentations about the Wildlife Action Plan revision. The full Plan was submitted and approved for publication in January 2026, we are currently working to publish the plan in modules on the MN DNR Nongame Wildlife Program website as 28 individual chapter documents with the tabular and spatial data available for download as GIS layers, excel tables and ultimately, a searchable dashboard. We have also focused on creating and updating rare plant publications, with 40 species profiles ready for publication, and an additional 50 profiles in draft format.

Dissemination

This winter we were invited to speak at 6 state level conferences and gave two national presentations about the State Wildlife Action Plan and our rare salamander research. Presentations were given at a variety of venues including the Minnesota Ornithological Union, The Wildlife Society, and the Association of Fish and Wildlife Agencies Wildlife Diversity

Managers meeting. Presentations were given both in person and virtually and acknowledged of all funding sources including the ENTRF.

Status Update Reporting

Status Update October 1, 2025

Date Submitted: October 1, 2025

Date Approved: November 18, 2025

Overall Update

This was the second field season for all the under surveyed components in this project: Vernal Pools, rare salamanders and boreal species. For vernal pools MBS staff identified and prioritized sampling pools for 2025 season including pools being monitored for rare salamanders by Nongame program. More than 50 pools were identified as potential priority targets for 2025 surveys. Between May and June, we assessed early season conditions and vegetation, assisted with salamander and hydroperiod observations, and identified additional sampling pool opportunities for priority survey areas. Nongame biologists completed nesting surveys for four-toed salamanders in 45 long-term monitoring wetlands. Detected salamanders and/or nests in 35 of 46 wetlands. We also deployed remote trail cameras to monitor hydroperiod (duration of water inundation) in 33 wetlands. For Boreal species NRRI staff collected habitat information from locations where Boreal Owls were detected in spring 2025. and previously deployed Audio Recording Units (ARUs) were collected in early summer 2025 and data processing is ongoing.
The species status assessment work was completed and translated to an updated list for Species in Greatest Conservation Need as well as a separate list of Species in Need of Information.

Activity 1

Vernal pools
More than 50 pools were identified as potential priority targets for 2025 surveys.
Development of updated survey protocol for use in 2025 vegetation sampling (informed by 2024 pilot effort).
Data entry completed for 21 vegetation releves conducted.
Conducted early season field visits to some priority pool areas (May-June). Assessed early season conditions and vegetation, assisted with salamander and hydroperiod observations, and identified additional sampling areas.
Salamanders
Completed nesting surveys for four-toed salamanders in 45 long-term monitoring wetlands. Detected salamanders and/or nests in 35 of 46 wetlands. Data collection is ongoing.
Deployed remote trail cameras to monitor hydroperiod in 33 wetlands. Cameras will be retrieved in November 2025 and data will be analyzed in winter 2025/2026. Camera data also supports vernal pool inventory needs.
Partnered with St. Cloud State University for eDNA sampling, in conjunction with egg mass and larval surveys, in 27 wetlands with spotted salamander detections.
Boreal Owls
NRRI collected and began analyzing cover type change and/or loss around historical Boreal Owl sightings in Lake and Cook Counties, MN.
collected habitat information from locations where Boreal Owls were detected in spring 2025.
ARUs were collected in early summer 2025 and data processing is ongoing.

Activity 2

Climate threats assessment:
During this reporting period, a summary of research findings relative to anticipated effects of climate change for Minnesota's grasslands was developed, for inclusion in the Prairie and Other Grasslands chapter of the revised Minnesota State Wildlife Action Plan. The assessment included the types of climate stressors that would be most likely to affect grasslands, based on a literature review, which included drought, higher temperatures, and higher precipitation, and a summary of how those stressors affect plant species diversity, productivity, and other response

variables. This was paired with a graph/figure showing the factors of growing season drought, temperature, precipitation, and spring precipitation as projected over the grasslands of Minnesota into the mid-century, using the Minnesota Climate Mapping and Analysis tool developed by the University of Minnesota Climate Adaptation Partnership.

The 2025-2035 Species in Greatest Conservation Need list contains 1,142 species, along with 860 Species in Need of Information. Plants comprise 448 of the SGCN, followed by lichens (151 species), butterflies and moths (122), and bees (117). Together, plants and lichens comprise 52% of the SGCN list. Vertebrates, including amphibians, birds, fishes, mammals, and reptiles, total 166 species and represent 15% of the list.

Dissemination

During the internal DNR field season report out session in February, MBS and nongame staff gave a summary report and presentation for 2024 vernal pool and salamanders project efforts.

MBS and Nongame staff also Co-authored a new vernal pool habitat chapter for the State Wildlife Action Plan (SWAP) update which incorporated information collected to date for this project.

A complete draft of the SWAP (roughly 800 pages) will be submitted to the USFWS for approval this fall.

Status Update Reporting

Status Update April 1, 2025

Date Submitted: May 8, 2025

Date Approved: May 14, 2025

Overall Update

The State Wildlife Action Plan revision and data collection activities included in this proposal are well underway. This has been a collaborative process on many levels with contributions from agencies, tribes, partners and other stakeholders. Introducing the new species status update process has resulted in major improvements towards involving multiple perspectives into the SWAP and strengthening the plan over the long term. Here is a summary of the collaborative efforts since our last report:

SWAP Regional Workshop Survey

•138 respondents (64% DNR, 36% external)

•Of the DNR Divisions: 46% Ecological and Water Resources, 30% Fish and Wildlife, 11% Forestry, 11% Parks and Trails.

•25 external organizations represented

SWAP Regional Workshop Meetings

•161 attendees (74% DNR, 26% external)

•28 external organizations represented

SWAP Engagement and Outreach Workshop

•47 attendees (~28% DNR, 72% external)

•20 organizations represented

Species-ranks/SGCN list update:

•Expert review process advertised to ~350 internal and external experts

•Comments received from 50+ experts

This summary of collaboration serves to highlight the significant effort and interest in making sure this 10-year plan is updated in a way that resonates and can be sustained over time.

Activity 1

Owls

•Analysis of historical data and field efforts to document the current distribution of Boreal Owls are ongoing.

•29 autonomous recording units (ARUs) were deployed to detect Boreal Owls and other rare species.

•Two Boreal Owls were detected and follow up habitat assessments were made. ARUs were also placed at these sites to monitor singing behavior across the night and throughout the breeding season.

Salamanders

•Completed nesting surveys for four-toed salamanders in 45 long-term monitoring wetlands. Detected salamanders and/or nests in 41 of 45 wetlands.

•Deployed remote trail cameras to monitor hydroperiod (duration of water inundation) in 32 wetlands. Majority of wetlands held water for 74 – 152 days. Camera data collected also supports vernal pool inventory needs.

•Partnered with St Cloud State for ongoing eDNA efforts and analysis.

Vernal Pools

•Finalized methods for pilot vegetation sampling in vernal pools and executed some preliminary testing.
•Sampled 13 pools of various sizes and with varying types of dominant vegetation. Several designs were tested, but two primary designs were used for the collection of plant species composition and abundance information in these habitats.
•Nine of the sampled pools were four-toed salamander monitoring sites that were prioritized for collaboration.

Activity 2

To date the Species assessment aspect of the SWAP revision has grown beyond the goals of this proposal and helped leverage additional important processes for updating species status and trend information throughout the DNR. The Species assessment team received a Commissioner's Award for their accomplishments in leading the process which involved:

- Updating S-Ranks for over 7,000 native species in Minnesota.
- Creating and updating automated data processing scripts.
- Collaborating with approximately 350 experts for data, process assistance, and results assessment.
- Addressing over 1,500 comments.
- Communicating with all interested parties throughout the process.

The work of this team provided a foundation for the State Listed Species revision process and the Species in Greatest Conservation Need list and SWAP update and is critical for the long-term protection of Minnesota’s native species.

Dissemination

Activity 1 - Owls -We also shared preliminary findings and engaged the broader research community through a poster presentation at the NRRI poster session, generating interest and support for Boreal Owl research.
Salamanders - Proofed data and submitted to Natural Heritage Information System. Disseminated preliminary results via public presentations and internal DNR meetings.
Activity 2 - The State Wildlife Action Plan revision is ongoing with deadlines for public comment and review scheduled for this summer. Our promotional and information dissemination efforts will be in high gear. The announcement and distribution of the completed plan revision will be our most public facing dissemination activity which will be included in future status updates.

Status Update Reporting

Status Update October 1, 2024

Date Submitted: October 1, 2024

Date Approved: February 7, 2025

Overall Update

The field survey season (Jan – June 2024 for this report) for boreal species, rare salamanders and vernal pool habitats went as planned. The vernal pool survey work is being used to pilot the survey protocol developed last winter. Vernal pool survey efforts will continue into the fall to capture greatest range of vegetation present in pools and to avoid impact to four-toed salamanders still in the larval stage (often until mid-July).

The Species in Greatest Conservation Need list update is also progressing and includes careful documentation of the entire process, expert reviews, categorizing review comments, responding to expert review, and using the review feedback to update rankings. The preliminary sRank classifications, which are data derived, are currently being considered for SGCN designation through a documented flowchart process. The draft, updated SGCN list will be completed in fall of 2024.

Activity 1

Boreal Surveys

Data Compilation - Historical data has been compiled from National Forest Service surveys conducted by Steve Wilson and other crew members during the 1980-2000 period. We continue to work on obtaining additional survey data from surveys conducted by private individuals in the region. MNBBA and eBird data have also been compiled.

New Surveys - All spring surveys were conducted as planned. Each route was surveyed four times in person and a subset of routes were surveyed with Autonomous Recording Units (ARUs). Kaleidoscope software and active listeners were used to attempt to detect Boreal Owl vocalizations on the hundreds of hours of recordings. Data from the ARUs has been fully processed, and only one possible (very faint, no additional vocalizations) Boreal Owl was detected.

Vernal Pools and Rare Salamanders

Continued scoping and planning effort for vegetation sampling in seasonal pools of northern forests.

Botanists and biologists coordinated on survey sites, developed draft methods for two vegetation sampling approaches and visited several priority sites in late May/early June to assess early season conditions in target seasonal pools.

Vegetation surveys will continue through fall to capture greatest range of vegetation present in pools and avoid potential impacts to larval salamanders.

Activity 2

The primary focus of Activity 2 for this reporting period is revising the Species in Greatest Conservation Need (SGCN) list. Staff completed preliminary species assessments (sRanks) which included range, area of occupancy, number of occurrences, population trends, and threats (exposure and severity) for over 7000 species known to occur in MN.

- We solicited review of preliminary sRanks from over 100 taxonomic experts.
- Processed expert review feedback including follow-up as needed to derive a second preliminary sRank for further review.
- Developed a flowchart using sRank and other information to identify SGCN as part of Plan revision.
- Currently conducting final expert feedback for sRank updates and to implement the SGCN flowchart.
- The resulting SGCN list will not be published until the State Wildlife Action Plan revision is complete, but the draft list is the bedrock of the revised plan and will be used to develop outputs such as a prioritized/ mapped conservation action network.

For climate related threats

- The climate assessment project has completed the literature review. Currently working on a synthesis and analysis of climate impacts on grassland and wetland habitats in Minnesota. Results of this effort will enable us to identify and prioritize climate related actions in these important habitats.

Dissemination

The Nongame Wildlife Program has been seeking input on the State Wildlife Action Plan revision process (funded by both state and federal grants) through surveys, virtual mailings and in-person meetings, including the MN DNR annual partnership roundtable. The ENTRF logo and acknowledgement is included in presentations regarding the revision. To date, no publications have resulted from this effort, but the Wildlife Action Plan will feature appropriate acknowledgement of funders.

Status Update Reporting

Status Update April 1, 2024

Date Submitted: April 7, 2024

Date Approved: May 6, 2024

Overall Update

The Wildlife Action Plan revision process is well underway. Initial planning and survey efforts to gather species level data for vernal pools, boreal species and rare salamanders have begun. The boreal surveys are already underway, and the vernal pool and salamander surveys scheduled to begin this spring.

The data analysis and processing for updating the Species in Greatest Conservation Need (SGCN) list following a standardized process developed by NatureServe, started in fall of 2023. We have the preliminary, updated conservation status ranks for over 7000 species of plants and animals occurring in Minnesota. These preliminary results are currently being considered by taxonomic experts with consultations and follow up meetings scheduled throughout 2024. The SGCN list is the foundation for many of the goals, objectives, and conservation actions within the 2025 - 2035 Wildlife Action Plan.

Activity 1

Activity 1: Survey Targeted species to improve knowledge of status, distribution, and conservation need. NRRI is conducting the boreal species portion of this work. In fall of 2023, study design and coordination efforts with partners and volunteers increased the spatial and temporal extent of the historic Rare Owl surveys. Specifically, autonomous recording units (ARUs) were deployed in target areas in winter and in-person surveys started two weeks earlier than usual. A protocol was developed for volunteer surveyors to contact the NRRI lab if Boreal Owls were detected during a survey. They are currently conducting the third round (of four) of surveys, at this point there have been no Boreal Owls detected, however many other owl species, including Northern Saw-whet Owls which have been the most common, are bring detected. Additionally, they are processing the ARU data from sites that Boreal Owls have been detected at in recent years but have not picked up any on the ARUs.

For surveys related to vernal pool systems in northern Minnesota, DNR botanist and biologists worked over the winter to determine study site locations based on previous salamander survey efforts. Survey and monitoring protocols have been determined and will begin this spring.

Activity 2

Activity 2: Update conservation status and conduct threats assessment of plant and animal species to update the SGCN list and revise Wildlife Action Plan. In fall of 2023, we developed a script to automate visit, source feature, and spatial data for over 7,000 species of animals and plants, corresponding to the NatureServe element occurrence (EO) creation methodology. This script relieves heavily on data from the DNR's Observation Database to produce these spatial data; however, data on various taxa are lacking within our own database and therefore additional databases and datasets (both internal to the DNR and external) were sought for creating comprehensive occurrence data. The resulting spatial data became inputs for calculating rarity factors in a second script that we created that also follows the NatureServe element ranking calculator. This second script calculates preliminary, state-level status rankings (s-ranks) and includes additional information relating to threat and trend factors.

Specific to the threat of climate change, we initiated a project with the Midwest Climate Adaptation Center to research how climate factors can be expected to disrupt/transform key habitats for declining species. A literature review of climate impacts on grassland and wetland habitats is complete with modeling and analysis underway.

Dissemination

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partnership roundtable. The ENTRF logo and acknowledgement is included in presentations regarding the revision. To date, no publications have resulted from this effort, but the Wildlife Action Plan will feature appropriate acknowledgement of funders.