

Final Abstract

Final Report Approved on October 13, 2025

M.L. 2020 Project Abstract

For the Period Ending June 30, 2025

Project Title: Habitat Associations of Mississippi Bottomland Forest Marsh Birds

Project Manager: Dale Gentry

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Funding Source:

Fiscal Year:

Legal Citation: M.L. 2021, First Special Session, Chp. 6, Art. 5, Sec. 2, Subd. 08g

Appropriation Amount: \$275,000

Amount Spent: \$271,366

Amount Remaining: \$3,634

Sound bite of Project Outcomes and Results

Our surveys collected avian population data to identify the habitat preferences of floodplain forest birds. This information will inform adaptive management strategies for the Upper Mississippi River and a bottomland forest for birds manual to guide habitat restoration and enhancement projects on federal, state, and private lands.

Overall Project Outcome and Results

The Upper Mississippi River provides critical habitat for a diverse community of birds including over 80 breeding species, and over 90 migratory species that seasonally use floodplain forests. However, these forests are declining as a result of changes in hydrology including historic inundation and recent precipitation patterns. The U.S. Army Corps of Engineers and the U.S. Fish and Wildlife Service have committed to managing Upper Mississippi River floodplain forests to maintain a functional, sustainable floodplain ecosystem sufficient to support important wildlife habitat. This study collected avian point count data to evaluate the abundance, and habitat use of avian communities and their response to forest management in floodplain forest ecosystems to allow managers to implement adaptive management and more effectively conserve Mississippi River habitat. We completed two years of avian point counts totaling 148 statistically independent points adjacent to forest survey points in the Reno Bottoms area of the Mississippi River in southeastern

Minnesota. These data, integrated with additional data from surveys in Wisconsin and Missouri, revealed diverse patterns of habitat preference. Canopy height and tree density (total basal area) influenced the avian community, although not in consistent ways. American Redstarts, Warbling Vireos, and Prothonotary Warblers were more abundant in forests with higher basal area, but Indigo Buntings and Willow Flycatchers preferred forests with lower basal area. We also found that five of the nine focal species were significantly more abundant in restored than non-restored areas indicating the value of forest restoration efforts. A healthy avian community is dependent on the presence of many different forest types, some dominated by older and taller trees and others in early successional stages. We are now using these results to develop a Bottomland Forest for Birds manual to guide forest management practices in the floodplain forests of the Mississippi River.

Project Results Use and Dissemination

We presented our project findings through oral presentations at six professional conferences. We are developing two peer-reviewed publications, and we assembled a meeting of foresters, ornithologists and natural resources managers in January 2025 at the Midwest Fish and Wildlife Convention and in March 2025 at the Upper Mississippi River Conservation Committee annual conference to inform the development of a Bottomland Forestry for Birds manual to be shared with conservation partners. We are also developing a website where we will share the manual and the results of our work which will be released with the manual in 2027.



Environment and Natural Resources Trust Fund

M.L. 2020 Approved Final Report

General Information

Date: November 12, 2025

ID Number: 2020-029

Staff Lead: Tom Dietrich

Project Title: Habitat Associations of Mississippi Bottomland Forest Marsh Birds

Project Budget: \$275,000

Project Manager Information

Name: Dale Gentry

Organization: Audubon Upper Mississippi River

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Email: dale.gentry@audubon.org

Web Address: <https://mn.audubon.org/>

Project Reporting

Final Report Approved: October 13, 2025

Reporting Status: Project Completed

Date of Last Action: October 13, 2025

Project Completion: May 31, 2025

Legal Information

Legal Citation: M.L. 2021, First Special Session, Chp. 6, Art. 5, Sec. 2, Subd. 08g

Appropriation Language: \$275,000 the second year is from the trust fund to the commissioner of natural resources for an agreement with the National Audubon Society, Minnesota office, to evaluate habitat associations of bottomland forest birds in response to restoration actions to better target restoration efforts for wildlife. This appropriation is available until June 30, 2025, by which time the project must be completed and final products delivered.

Appropriation End Date: June 30, 2025

Narrative

Project Summary: Determine habitat associations of breeding bottomland forest birds in response to restoration actions along the Mississippi River at the Reno Bottoms outside Reno, MN

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

This project will determine habitat associations of breeding bottomland forest birds and evaluate their response to habitat restoration actions. This will allow managers to target restoration actions to specific habitat conditions or bird species. In the past, Audubon has collaborated with the Minnesota DNR (MDNR), US Fish and Wildlife Service (USFWS), and the U.S. Army Corps of Engineers (USACE) to restore the quality of bottomland forest habitat along the Upper Mississippi River. These forests are under numerous threats, including habitat loss, invasive species, and altered flood cycles. Currently, much of the forest consists of stands dominated by single species. These trees are expected to live another 50-70 years, after which they will die-off and disappear. Unfortunately, when trees are no longer there, reed canary grass and other invasive species move in and prevent natural regeneration.

In partnership with MDNR and USFWS, several restoration sites have been implemented in Winona, Houston and Wabasha counties. These efforts have been followed by the identification of the best restoration strategies to control invasive species and establish early-successional forest. These management recommendations improve our understanding of best practices for controlling promoting forest diversity. However, a better understanding of restoration impacts on wildlife is needed.

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.

We propose to use techniques developed by Audubon and USACE, to evaluate the abundance, and habitat use of avian communities in bottomland forest. Improved understanding of these bird-habitat associations will allow managers to implement adaptive management and continue more effective conservation along the river. Subsequently these restoration and research efforts will contribute to the Bottomland Forest Avian Stewardship Plan developed by the USACE and Audubon. Restoration efforts often target plant communities, with the implementation of these techniques we have to objective of creating a directly link between land management and the response of wildlife communities. As we develop more understanding of human-wildlife-habitats relationships we will be able to better target conservation efforts along the Mississippi river.

Surveys will be co-located with USACE forest inventory plots. Surveys will consist of a point count with two forms of auxiliary data (distance and time of detection) enabling correction for imperfect detection. Survey locations will be spaced at least 400 meters apart, and associated with forest inventory plots surrounding the survey point.

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?

We will determine baseline understanding of bottomland forest bird-habitat relationships along the Upper Mississippi River in Minnesota and determine response of bottomland forest birds to habitat restoration to help inform future habitat restoration work and priorities in Minnesota.

Project Location

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

Region(s): SE

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

Region(s): SE

When will the work impact occur?

During the Project and In the Future

Activities and Milestones

Activity 1: Determine baseline understanding of bottomland forest bird-habitat relationships along the Upper Mississippi River in Minnesota

Activity Budget: \$75,000

Activity Description:

We will conduct surveys within bottomland forest at the Reno Bottoms area of Pool 9 near Reno Minnesota within the Upper Mississippi River National Wildlife Refuge. Surveys will be co-located with USACE forest inventory plots previously conducted at this site. Surveys will consist of a point count with two forms of auxiliary data (distance and time of detection) enabling correction for imperfect detection (Knutson et al. 2016). Survey locations will be spaced a minimum of 400 meters apart, and associated with forest inventory plots on and surrounding the survey point.

We will model bird-habitat relationships, using both forms of auxiliary data to estimate densities of focal species and detection-corrected counts with habitat variables drawn from forest inventory surveys. This analysis will be used to understand relationships of multiple vegetation variables. These models will be extrapolated to forest inventory sites across Pool 9 to predict species occurrence and abundance given site conditions and management strategies.

Activity Milestones:

Description	Approximate Completion Date
Completion of point count surveys	September 30, 2023
Analysis of baseline bottomland forest species-specific bird-habitat relationships	January 31, 2024
Evaluation of species-specific bird response to implemented restoration efforts	January 31, 2024
Scenario modeling predicting bird response to future restoration efforts	January 31, 2024

Activity 2: Determine response of bottomland forest birds to habitat restoration

Activity Budget: \$200,000

Activity Description:

We will follow a Before After analysis, implementing bird surveys following the Knutson et al. (2016) protocol at restoration and control sites both before and after restoration. Bird-habitat relationships will be modeled as described in Activity 1, with the addition of two predictors: year and management strategy. This design enables managers to evaluate species-specific response to restoration action, and can be used in scenario modeling to predict bird response to management.

Activity Milestones:

Description	Approximate Completion Date
Completion of all survey bird points bird	July 31, 2023
Analysis of habitat used data	January 31, 2024
Evaluation of species-specific bird response to implemented restoration efforts	January 31, 2024
Scenario modeling predicting bird response to future restoration efforts	January 31, 2024

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
US Army Corps of Engineers	US Army Corps of Engineers	Collaborate on surveys within bottomland forest at the Reno Bottoms area of Pool 9 near Reno Minnesota within the Upper Mississippi River National Wildlife Refuge	No
US Fish & Wildlife Service	US Fish & Wildlife Service	Collaborate on surveys within bottomland forest at the Reno Bottoms area of Pool 9 near Reno Minnesota within the Upper Mississippi River National Wildlife Refuge	No
MN Department of Natural Resources	MN Department of Natural Resources	Collaborate on surveys within bottomland forest at the Reno Bottoms area of Pool 9 near Reno Minnesota within the Upper Mississippi River National Wildlife Refuge	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.

Audubon Minnesota will work with the National Audubon Society science division to analyze the results of the surveys and prepare a final report of findings that will be disseminated to internal and external partners to inform future habitat restoration work and priorities in Minnesota. We anticipate that the findings will be presented by Audubon staff at future regional meetings and conferences of conservation professionals and agencies that work on the Mississippi River.

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?

The aim of this project is to inform bird habitat conservation efforts across the Upper Mississippi River region and significantly increase the understanding of the impact that the different bottomland forest management strategies have on promoting wildlife habitat. The project team will be able to increase the impact that Outdoor Heritage and other funds have already had along these important forest habitats. Audubon and other partners are committed to improve the restoration and bird conservation efforts along the Mississippi River and tributaries, and this work will help to understand what conservation practices are more effective to promote wildlife habitat.

Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
Minnesota Breeding Bird Atlas - Final Phase	M.L. 2014, Chp. 226, Sec. 2, Subd. 05f	\$300,000
Creating a Statewide Wetland Bird Survey	M.L. 2015, Chp. 76, Sec. 2, Subd. 03f	\$146,000
Controlling Reed Canary Grass to Regenerate Floodplain Forest	M.L. 2016, Chp. 186, Sec. 2, Subd. 08e	\$218,000
Local Planning and Implementation Efforts for Bird Habitat	M.L. 2017, Chp. 96, Sec. 2, Subd. 05e	\$280,000
Maximize Value of Water Impoundments to Wildlife	M.L. 2017, Chp. 96, Sec. 2, Subd. 06f	\$195,000
Implementing Conservation Plans for Avian Species of Concern	M.L. 2019, First Special Session, Chp. 4, Art. 2, Sec. 2, Subd. 03k	\$124,000

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount	\$ Amount Spent	\$ Amount Remaining
Personnel										
Minnesota Director of Conservation		Project Director			24%	1.5		\$158,000	-	-
Conservation Science Associate		Project Coordinator			24%	0.75		\$44,550	-	-
Office Administrator		Project Support			24%	0.3		\$13,860	-	-
Engagement Director		Project Outreach and Report Production			24%	0.15		\$11,630	-	-
Quantative Ecologist		Data Processing			24%	0.15		\$15,840	-	-
							Sub Total	\$243,880	\$243,880	-
Contracts and Services										
Field Technician	Professional or Technical Service Contract	Field technician @ \$20 per hour for 100 hours (3 years)				0.3		\$6,000	\$6,000	-
Bird Surveyor (contractor)	Professional or Technical Service Contract	Contractor to complete year two of bird surveys				0.2		\$16,000	\$16,000	-
							Sub Total	\$22,000	\$22,000	-
Equipment, Tools, and Supplies										
	Equipment	Binoculars	To conduct bird surveys, for bird identification					\$1,600	\$1,475	\$125
							Sub Total	\$1,600	\$1,475	\$125
Capital Expenditures										

							Sub Total	-	-	-
Acquisitions and Stewardship										
							Sub Total	-	-	-
Travel In Minnesota										
	Miles/ Meals/ Lodging	Site-based travel around Caledonia @ 1,000 miles per years @56 cents per mile	Site-based travel around Caledonia					\$5,000	\$2,004	\$2,996
	Miles/ Meals/ Lodging	Travel from St. Paul to Caledonia 4 round trips per year @ 322 miles @56 cents per mile	Staff travel to project site from St. Paul					\$2,020	\$2,007	\$13
							Sub Total	\$7,020	\$4,011	\$3,009
Travel Outside Minnesota										
							Sub Total	-	-	-
Printing and Publication										
	Publication	Final Report	Summarize and communicate the details and findings of the work					\$500	-	\$500
							Sub Total	\$500	-	\$500
Other Expenses										
							Sub Total	-	-	-
							Grand Total	\$275,000	\$271,366	\$3,634

Classified Staff or Generally Ineligible Expenses

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

Category	Specific Source	Use	Status	\$ Amount	\$ Amount Spent	\$ Amount Remaining
State						
			State Sub Total	-	-	-
Non-State						
Cash	USFWS - \$56,750 USACE - \$60,000	Addition bird monitoring in WI and MO to support the larger effort to model bird communities	Secured	\$116,750	\$116,750	-
In-Kind	Audubon indirect charges (24.66%)	Federally negotiated rate to support Audubon national grant management, administration and facilities etc.	Secured	\$68,250	\$68,250	-
			Non State Sub Total	\$185,000	\$185,000	-
			Funds Total	\$185,000	\$185,000	-

Attachments

Required Attachments

Visual Component

File: [2f8e439d-b30.pdf](#)

Alternate Text for Visual Component

Project handout...

Financial Capacity

File: [40787497-7b7.pdf](#)

Board Resolution or Letter

Title	File
Audubon Minnesota Board Letter	644c318b-1cf.pdf
Background Check Certification	13d28319-c6f.pdf

Supplemental Attachments

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

Title	File
Map of Project Area Focus - Reno Bottoms	ee99ca71-3f1.pdf
ENRTF background check	24211d52-295.pdf
Final report summarizing bird habitat associations of bottomland forests of the Upper Mississippi River	bf9cab1a-b88.pdf
Appendix to the final report	b1efe53f-c24.docx

Difference between Proposal and Work Plan

Describe changes from Proposal to Work Plan Stage

We have reviewed all components for accuracy and have added dissemination details for this project.

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

Work Plan Amendments

Amendment ID	Request Type	Changes made on the following pages	Explanation & justification for Amendment Request (word limit 75)	Date Submitted	Approved	Date of LCCMR Action
1	Amendment Request	<ul style="list-style-type: none"> • Project Collaborators - Project Manager Info • Other • Budget - Personnel • Budget - Professional / Technical Contracts 	We hired a contractor to complete the 2023 surveys because the staff responsible for the surveys was promoted and the position was not back-filled until September 2023. We hope to move \$3,000 from travel and \$7,000 from the personnel budgets to the contracts budget to account for the additional contracting expense. This work has already been completed and this amendment is to align the budget with the actual implementation.	February 13, 2024	Yes	February 15, 2024
2	Completion Date	Previous Completion Date: 07/31/2024 New Completion Date: 05/31/2025	To complete the data analysis and publication of the results and align the project completion with the contract.	September 18, 2024	Yes	September 19, 2024
3	Amendment Request	<ul style="list-style-type: none"> • Other • Budget - Non-ENRTF Funds Contributed 	We need to separate the sources of the matching funds to include unrecovered indirect costs in addition to the matching funds from other projects. I mistakenly lumped these sources together into one source in previous reports.	July 15, 2025	Yes	August 1, 2025

Status Update Reporting

Final Status Update July 15, 2025

Date Submitted: August 21, 2025

Date Approved: September 11, 2025

Overall Update

This project was a success. We completed two years of avian point counts totaling 148 statistically independent points in the Reno Bottoms area of the Mississippi River in southeastern Minnesota. These data were integrated with our data from surveys in Wisconsin, Missouri and partner data to determine baseline understandings of bottomland forest birds habitat relationships in the Upper Mississippi River (UMR), their response to forest management, and a spatial prioritization of breeding birds within bottomland forests along the Upper Mississippi River. Five of the nine focal species showed a positive response to forest enhancements, and two of the species showed a negative relationship. This pattern clearly demonstrates that forest management is changing habitat characteristics and benefiting the bird community although it will take many decades for mature forest characteristics to develop. The full report and an appendix are both now in the attachments tab. We are now using the results of these analysis to develop a Bottomland Forest for Birds manual that we will share with land management partners in the five states in the UMR to guide forest management practices in the bottomland forests of the Mississippi River.

Activity 1

This activity was previously marked complete.

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

Activity 2

This activity was previously marked complete.

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

Dissemination

After completing our analysis, we presented our results at six unique conferences or events (Mississippi River Research Consortium (4/17/24), Northern Lake States EAB and Ash Symposium (9/4/24), U.S. Fish and Wildlife Service Upper Mississippi/Great Lakes Joint Venture board meeting (9/5/24), River Resources Action Team conference (9/25/24), Midwest Fish and Wildlife Conference (1/26/25), and the Upper Mississippi River Conservation Committee conference (3/18/2025). We are developing two publications from the study, and we assembled a meeting of foresters, ornithologists and natural resources professionals in January 2025 at the Midwest Fish and Wildlife Convention to begin the development of a Bottomland Forestry for Birds manual to be shared with conservation partners. We are also developing a website where we will share the manual and the results of our work which will be released with the manual in 2027. At every presentation, we have acknowledged funding provided by the Minnesota Environment and Natural Resources Trust Fund.

Status Update Reporting

Status Update April 1, 2025

Date Submitted: April 1, 2025

Date Approved: April 23, 2025

Overall Update

This project is largely complete. We have completed activities one and two and could call the project complete but the results are worthy of wider publication so we are working on disseminating the results through presentations and writing peer reviewed publications to share with partners and extend the reach of this work. Since the last status update, we presented the results of this work at the Midwest Fish and Wildlife Conference in January, 2025 and the Upper Mississippi River Conservation Committee Conference in March 2025 (we did not use these LCCMR project funds to pay for attendance to either conference). We are also developing a bottomland forests for birds manual which we will share with partners upon completion 2027. We anticipate completing the report for the project by July, 2025 as outlined in the contract and submitting our final report before the same date.

Activity 1

This activity was previously marked complete.

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

Activity 2

This activity was previously marked complete.

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

Dissemination

After performing the statistical analysis in the spring/summer of 2024, we presented the work at the Mississippi River Research Consortium conference (4/17/24), at the Northern Lake States EAB and Ash Symposium (9/4/24), to the U.S. Fish and Wildlife Service Upper Mississippi/Great Lakes Joint Venture board meeting (9/5/24), and at the River Resources Action Team annual conference (9/25/24). We are developing two publications from the study, and we assembled a meeting of foresters, ornithologists and natural resources professionals in January 2025 at the Midwest Fish and Wildlife Convention to begin the development of a Bottomland Forestry for Birds manual to be shared with conservation partners. We are also developing a website where we can share the results of our work but it is not yet complete. At every presentation, we have acknowledged funding provided by the Minnesota Environment and Natural Resources Trust Fund.

Status Update Reporting

Status Update October 1, 2024

Date Submitted: November 12, 2024

Date Approved: November 13, 2024

Overall Update

This project is nearly complete. We have technically completed activities one and two and could call the project complete but the results are worthy of wider publication so we are working on disseminating the results through presentations and writing peer reviewed publications to share with partners and extend the reach of this work. We anticipate completing this project by July, 2025 as outlined in the contract and submitting our final report before the same date.

Activity 1

This activity was previously marked complete.

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

Activity 2

In the late spring of 2024 we completed our analysis of bird habitat relationships and the Before and After analysis to assess how modeled forest management influences bird communities. Our analysis includes species-specific habitat variables that we are translating into forest prescriptions for land managers. We are working on two separate peer-reviewed publications and a bottomland forest for birds manual for land managers to share the results of this work. The manual will take a few years to complete (and is not a specific deliverable for this project) and the publications will be submitted this winter. All four components of Activity 2 are technically complete.

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

Dissemination

After performing the statistical analysis in the spring/summer of 2024, we presented the work at the Mississippi River Research Consortium conference (4/17/24), at the Northern Lake States EAB and Ash Symposium (9/4/24), to the U.S. Fish and Wildlife Service Upper Mississippi/Great Lakes Joint Venture board meeting (9/5/24), and at the River Resources Action Team annual conference (9/25/24). We are developing two publications from the study and we are convening a meeting of foresters, ornithologists and natural resources professionals in January 2025 to begin the development of a Bottomland Forestry for Birds manual to be shared with conservation partners. We are also developing a website where we can share the results of our work but it is not yet complete. At every presentation, we have acknowledged funding provided by the Minnesota Environment and Natural Resources Trust Fund.

Status Update Reporting

Status Update April 1, 2024

Date Submitted: April 1, 2024

Date Approved: May 30, 2024

Overall Update

We are in the final stages of this project. We have completed field data collection, transcribing into digital spreadsheets, integrating data collected in our matched project funded by the Upper Mississippi/Great Lakes Joint Venture, and statistical interpretation of the data to estimate density and abundance of bottomland bird species. Remaining still is the before after statistical analysis. Once that analysis is complete we will interpret our results and write our final reports which will prepare us to share the outcomes of this project on our website and with our partners. We anticipate completing this project in July, 2024 as anticipated and submitting our final report by 9/14/2024 as anticipated.

Activity 1

We completed both years of avian surveys within bottomland forest at the Reno Bottoms area of Pool 9 near Reno Minnesota within the Upper Mississippi River National Wildlife Refuge. Surveys were co-located with USACE forest inventory plots previously conducted at this site.

We have completed modeling bird-habitat relationships and estimating densities of focal species and detection-corrected counts with habitat variables drawn from forest inventory surveys. We are in the process of interpreting these results and developing our final report.

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

Activity 2

We completed our initial analysis of bird habitat relationships and we have initiated the Before After analysis to assess how modeled forest management influences bird communities. Our analysis will enable managers to evaluate species-specific response to restoration action, and predict bird response to management. We anticipate completing the analysis this spring and sharing our results at two conferences in May, 2024. We will complete this portion of the project and submit our final report as anticipated.

Dissemination

We are working closely with our partners in the Minnesota Department of Natural Resources, U.S. Geological Survey, U.S. Fish and Wildlife Service, and the Army Corps of Engineers to keep them updated on project progress and outcomes. These partners will be instrumental in the development and execution of adaptive-management plans that will emerge from the understandings produced by this study. We will develop a manuscript for publication in peer-reviewed scientific journals and give presentations at regional wildlife and river management conferences. Audubon's communication team will work to place newsworthy stories on Audubon's websites and in the media. A dedicated webpage for the project will be created at the conclusion of this project by July of 2024 on mn.audubon.org. This page will depict the project overview and also updates and results.

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.

Status Update Reporting

Status Update October 1, 2023

Date Submitted: September 29, 2023

Date Approved: November 30, 2023

Overall Update

We successfully completed our first and second (and final) field season and we have begun the process of data collection and analysis that will lead to our final reports and the sharing of our outcomes. We completed our data collection as anticipated and we are on track to complete the analysis and dissemination as described in the work plan.

Activity 1

Our staff worked closely with partners from the USFWS, the U.S. Geological Survey (USGS), and the U.S. Army Corps of Engineers (USACE) to establish 197 random points within 100 m of the existing forest inventory points within the footprint of Reno Bottoms. Many of these points could not be surveyed because they were not in the forest, are too close to a forest edge, or were not safely accessible. We did survey 73 of those points in 2022 and 75 points in 2023. Field data collection is now complete and we are moving onto data analysis. Our science team met in August to develop a plan for the integration and analysis of these data with the bird survey data collected in 2021 and 2022 in the Winona district. We are currently working on that and we are on track to complete the data analysis and thus Activity 1 as anticipated in the work plan.

Activity 2

We entered and proofed all the data collected in the summers of 2022 and 2023. Now that data collection is complete, we developed a plan for data analysis to evaluate species-specific bird response to implemented restoration efforts and scenario modeling predicting bird response to future restoration efforts. We are on target to complete Activity 2 by 1/31/2024 as described in the work plan.

Dissemination

We are working closely with our partners in the Minnesota Department of Natural Resources, U.S. Geological Survey, U.S. Fish and Wildlife Service, Army Corps of Engineers to keep them updated on project progress and outcomes. These partners will be instrumental in the development and execution of adaptive-management plans that will emerge from the understandings produced by this study. We will develop a manuscript for publication in peer-reviewed scientific journals and give presentations at regional wildlife and river management conferences. Audubon's communication team will work to place newsworthy stories on Audubon's websites and in the media. A dedicated webpage for the project will be created at the conclusion of this project by January of 2024 on mn.audubon.org. This page will depict the project overview and also updates and results.

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.

Status Update Reporting

Status Update April 1, 2023

Date Submitted: April 1, 2023

Date Approved: May 15, 2023

Overall Update

We successfully completed our first field season and we have completed planning for the second and final season which will take place this summer of 2023. We hired Dr. Eileen Kirsh (UGSG) to conduct the point counts and applied for and were awarded, a two-year special use research permit by the U.S. Fish and Wildlife Service (USFWS). We completed our first season of surveys and have entered and conducted a preliminary analysis of the data. We completed our first season as anticipated and we are on track to complete the two years of surveys as described in the work plan.

Activity 1

Our staff worked closely with partners from the USFWS, the U.S. Geological Survey (USGS), and the U.S. Army Corps of Engineers (USACE) to establish 197 random points within 100 m of the existing forest inventory points within the footprint of Reno Bottoms. Many of these points could not be surveyed because they were not in the forest, are too close to a forest edge, or were not safely accessible. Point count surveys in Minnesota must be completed in June while birds are actively singing during the migratory bird breeding season. We were not able to find a qualified contractor so the MN conservation manager led the team and we hired seasonal staff to support the surveys. We started the first season of point counts on June 1st and finished on June 22nd. We hired Dr. Eileen Kirsch to complete the surveys in the summer of 2023. We completed the first season of point count surveys as described in the work plan and we are on track to complete the rest of the analysis and project as anticipated.

Activity 2

We entered and proofed all the data collected in the summer of 2022. We identified 2440 individual birds of 63 different bird species through our 10 minute, full-circle, unlimited distance point count surveys (Knutson et al., 2008). This included five of the nine project focal species: American Redstart, Indigo Bunting, Warbling Vireo, Red-headed Woodpecker, and Prothonotary Warbler. We are waiting until after the last season of data collection in 2023 to complete a full analysis. At that time, our quantitative ecologist will analyze all the point count data collected on the upper Mississippi River to model habitat associations of breeding bottomland forest birds and begin to evaluate their response to habitat restoration actions. We are on target to complete Activity 2 by 1/31/2024 as described in the work plan.

Dissemination

We are working closely with our partners in the Minnesota Department of Natural Resources, U.S. Geological Survey, U.S. Fish and Wildlife Service, Army Corps of Engineers, and others to keep them updated on project progress and outcomes. These partners will be instrumental in the development and execution of adaptive-management plans that will emerge from the understandings produced by this study. We will develop a manuscript for publication in peer-reviewed scientific journals and give presentations at regional wildlife and river management conferences. Audubon's communication team will work to place newsworthy stories on Audubon's websites, national magazine, and in the media. A dedicated webpage for the project will be created at the conclusion of this project by January of 2024 on mn.audubon.org. This page will depict the project overview and also updates and results.

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.

Status Update Reporting

Status Update October 1, 2022

Date Submitted: October 1, 2022

Date Approved: October 11, 2022

Overall Update

Our project team met numerous times to plan for the first field season which began this summer of 2022. We hired seasonal staff to assist with the point counts and applied for and were awarded, a two-year special use research permit by the U.S. Fish and Wildlife Service (USFWS). We completed our first season of surveys and have entered and conducted a preliminary analysis of the data. We completed our first season as anticipated and we are on track to complete the two years of surveys as described in the work plan.

Activity 1

Our staff worked closely with partners from the USFWS, the U.S. Geological Survey (USGS), and the U.S. Army Corps of Engineers (USACE) to establish 197 random points within 100 m of the existing forest inventory points within the footprint of Reno Bottoms. Many of these points could not be surveyed because they are not in the forest, are too close to a forest edge, or were not safely accessible. Point count surveys in Minnesota must be completed in June while birds are actively singing during the migratory bird breeding season. We were not able to find a qualified contractor so the MN conservation manager led the team and we hired seasonal staff to support the surveys. We started the first season of point counts on June 1st and finished on June 22nd. We will resurvey these same points in the summer of 2023. We completed the first season of point count surveys as described in the work plan and we are on track to complete the project as anticipated.

Activity 2

We entered and proofed all the data collected in the summer of 2022. We identified 2440 individual birds of 63 different bird species through our 10 minute, full-circle, unlimited distance point count surveys (Knutson et al., 2008). This included five of the nine project focal species: American Redstart, Indigo Bunting, Warbling Vireo, Red-headed Woodpecker, and Prothonotary Warbler. We are waiting until after the last season of data collection in 2023 to complete a full analysis. At that time, our quantitative ecologist will analyze all the point count data collected on the upper Mississippi River to model habitat associations of breeding bottomland forest birds and begin to evaluate their response to habitat restoration actions. We are on target to complete Activity 2 by 1/31/2024 as described in the work plan.

Dissemination

We are working closely with our partners in the Minnesota Department of Natural Resources, U.S. Geological Survey, U.S. Fish and Wildlife Service, Army Corps of Engineers, and others to keep them updated on project progress and outcomes. These partners will be instrumental in the development and execution of adaptive-management plans that will emerge from the understandings produced by this study. We will develop a manuscript for publication in peer-reviewed scientific journals and give presentations at regional wildlife and river management conferences. Audubon's communication team will work to place newsworthy stories on Audubon's websites, national magazine, and in the media. A dedicated webpage for the project will be created at the conclusion of this project by January of 2024 on mn.audubon.org. This page will depict the project overview and also updates and results.

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Status Update Reporting

Status Update April 1, 2022

Date Submitted: April 1, 2022

Date Approved: April 4, 2022

Overall Update

Our project team has met numerous times to plan for the first field season beginning this summer of 2022. We applied for and were awarded, a two-year special use research permit by the U.S. Fish and Wildlife Service (USFWS). We have met with partners to determine study locations and protocols and we have reserved transportation and acquired field equipment. We are on track to complete our first season of surveys as described in the work plan.

Activity 1

Our point count surveys must be completed in the month of June while birds are actively singing during the migratory bird breeding season. Our first season of point counts will start on Monday, May 30th and we expect to be done by July 1st. Our staff is working closely with partners from the USFWS, the U.S. Geological Survey (USGS), and the U.S. Army Corps of Engineers (USACE) to establish 100 random survey points within 100 meters of USACE forest inventory plots. We have created those points and we plan to visit the sites this spring to determine if any points need to be excluded (e.g. they are too close to a forest edge or they are not safely accessible). We are on track to complete the first season of point count surveys as described in the work plan

Activity 2

Our first review of data will occur after this summer and most data analysis will be completed after the summer 2023 field season. At that time, our quantitative ecologist will analyze all the point count data collected on the upper Mississippi River to model habitat associations of breeding bottomland forest birds and begin to evaluate their response to habitat restoration actions. We are on target to complete Activity 2 by 1/31/2024 as described in the work plan.

Dissemination

Over the course of the project, we will work closely with our partners in the Minnesota Department of Natural Resources, U.S. Geological Survey, U.S. Fish and Wildlife Service, Army Corps of Engineers, and others to keep them updated on project progress and outcomes. These partners will be instrumental in the development and execution of adaptive-management plans that will emerge from the understandings produced by this study. We will develop a manuscript for publication in peer-reviewed scientific journals and give presentations at regional wildlife and river management conferences. Audubon's communication team will work to place newsworthy stories on Audubon's websites, national magazine, and in the media. A dedicated webpage for the project will be created at the conclusion of this project by January of 2024 on mn.audubon.org. This page will depict the project overview and also updates and results.

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