Environment and Natural Resources Trust Fund

2021 Request for Proposal

General Information

Proposal ID: 2021-455

Proposal Title: Habitat Associations of Mississippi Bottomland Forest Marsh Birds

Project Manager Information

Name: Andrew Beebe

Organization: Audubon Minnesota

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Project Basic Information

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

Funds Requested: $275,000

Proposed Project Completion: 2024-06-30

LCCMR Funding Category: Methods to Protect, Restore, and Enhance Land, Water, and Habitat (F)

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

Narrative

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? i.e. What are you seeking funding to do? You will be asked to expand on this in Activities and 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.

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	Completion Date
Completion of point count surveys	2023-09-30
Scenario modeling predicting bird response to future restoration efforts	2024-01-31
Evaluation of species-specific bird response to implemented restoration efforts	2024-01-31
Analysis of baseline bottomland forest species-specific bird-habitat relationships	2024-01-31

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	Completion Date
Completion of all survey bird points bird	2023-07-31
Scenario modeling predicting bird response to future restoration efforts	2024-01-31
Evaluation of species-specific bird response to implemented restoration efforts	2024-01-31
Analysis of habitat used data	2024-01-31

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
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
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
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

Long-Term Implementation and Funding

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

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

Project Manager and Organization Qualifications

Project Manager Name: Andrew Beebe

Job Title: Forest Ecologist

Provide description of the project manager's qualifications to manage the proposed project.

Andrew joined Audubon Minnesota's team as Forest Ecologist five years ago. He is passionate about forestry health and managing forests for birds and wildlife. Andrew attended Michigan Technological University where he earned a BS in Forestry with an additional major in Wildlife Ecology and Management.

He lives and works in southeast Minnesota and he has worked extensively on projects with a special focus on bird

habitat. His work has included major projects managing reed canary grass and other invasive plants that prevent natural regeneration of trees and threaten floodplain forests and wildlife along the Mississippi River. He has effectively managed a wide-range of contractors, volunteers, and partners involved in bird habitat projects covering thousands of acres of forest.

Andrew's work is guided by the implementation of the Bottomland Forest Avian Stewardship Plan. He regularly collaborates with Minnesota Department of Natural Resources, U.S. Fish and Wildlife Service, and U.S. Army Corps of Engineers and he is skilled at managing partnerships with these agencies. Andrew's knowledge of birds and bird habitats of southeast Minnesota - and his ability to coordinate with a wide range of partners - have been invaluable to Audubon's work.

Organization: Audubon Minnesota

Organization Description:
Audubon Minnesota was established in 1979 and is the state office of the National Audubon Society, one of the oldest conservation organizations in the world. For the last 40 years, Audubon Minnesota has been at the forefront of critical conservation issues that will impact us for generations to come.

While we are one of 23 Audubon state offices, we establish our own statewide conservation projects, generate our own funding, and have an 11-member state Board of Directors who meet quarterly. Our state office mission is, "To conserve and restore natural ecosystems in Minnesota, focusing on birds and their habitats for the benefit of humanity and the earth's biological diversity." Today there are 24,000 Audubon members in Minnesota and 13 geographically-based chapters from the Mississippi Headwaters Audubon Chapter in Bemidji to Zumbro Valley Audubon Chapter in Rochester.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	$ Amount
Personnel								
Minnesota Director of Conservation		Project Director			24%	1.5		$168,000
Conservation Science Associate		Project Coordinator			24%	0.75		$44,550
Office Adminstrator		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	**$253,880**
Contracts and Services								
Field Technician	Professional or Technical Service Contract	Field technician @ $20 per hour for 100 hours (3 years)				0.3		$6,000
Field Technician	Professional or Technical Service Contract	Field Technician @ $20 per hour, 100 hours for 3 years				0.3		$6,000
							Sub Total	**$12,000**
Equipment, Tools, and Supplies								
	Equipment	Binoculars	To conduct bird surveys, for bird identification					$1,600
							Sub Total	**$1,600**
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
	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
							Sub Total	**$7,020**
Travel Outside Minnesota								
							Sub Total	**-**
Printing and Publication								
	Publication	Final Report	Summarize and communicate the details and findings of the work					$500
							Sub Total	**$500**
Other Expenses								
							Sub Total	**-**
							Grand Total	**$275,000**

Classified Staff or Generally Ineligible Expenses

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

Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
State				
			State Sub Total	**-**
Non-State				
In-Kind	Audubon indirect charges (24.66%)	(No description provided)	Potential	-
Cash	USFWS - $125,000 USACE - $60,000	Project restoration and collaboration	Potential	$185,000
			Non State Sub Total	**$185,000**
			Funds Total	**$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

Optional Attachments

Support Letter or Other

Title	File
Map of Project Area Focus - Reno Bottoms	ee99ca71-3f1.pdf

Administrative Use

Does your project include restoration or acquisition of land rights?

No

Does your project have patent, royalties, or revenue potential?

No

Does your project include research?

Yes

Does the organization have a fiscal agent for this project?

No

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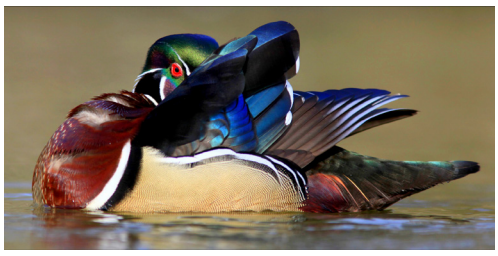
David Mitrou, Great Backyard Bird Count

Rebecca Field

Red-shouldered Hawks (top photo) and Cerulean Warblers (above) are classified as Species of Greatest Conservation Need by the MN DNR. Red-shouldered Hawks have seen a steep decline and Cerulean Warblers are quickly disappearing, with their population crashing by 70 percent.



Wood Ducks feed and nest within floodplain forests.

Ensuring High Return on Investment for Mississippi River Forest Restoration

Project Title: Understanding bird-habitat associations on conservation lands across the Upper Mississippi River
Project ID: 224-F

The science around floodplain forest restoration is relatively new, and is challenging because forests are often inaccessible. Audubon Minnesota is working cooperatively with partners including the University of Minnesota and the Minnesota Department of Natural Resources to develop methods to restore these habitats by controlling reed canary grass and increasing the diversity of tree species within floodplain forests.

Measuring restoration impacts to birds like Cerulean Warblers positions our work to save declining species by adapting our approach. A wide range of conservation professionals across Minnesota will use results from these surveys to implement well-tested approaches to managing invasive plants and choosing resilient tree types for restoration projects. We will become more effective and efficient in fine-tuning our floodplain forest restoration techniques.

Ensuring High Returns on Investment for Forest Restoration

Urgency and Knowledge Base – Many floodplain-forest dependent birds have seen sharp population declines in recent decades as a result of habitat loss. Audubon Minnesota is known for collaboration, science-based planning, and bird conservation.

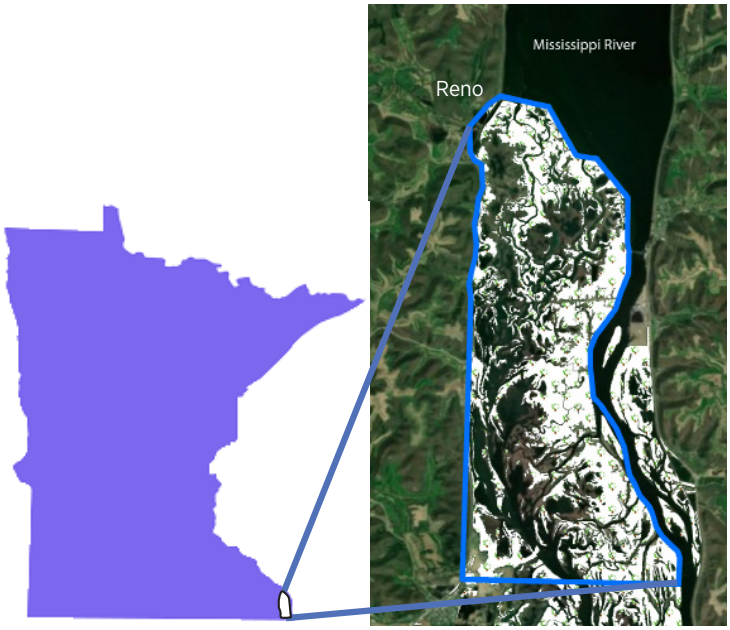
Scientific Basis – We need to monitor to understand how to best support bird population growth. Habitat restoration dollars are used to restore wetlands effectively and efficiently, which will also improve flood control, sediment and pollutant filtration, recreation opportunities, and much more.

Capacity and Readiness – Audubon Minnesota will launch an Upper Mississippi River citizen science effort as part of this project. Audubon is also partnering with U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and U.S. Geological Survey, the MN DNR, University of Minnesota and others to implement landscape-level conservations plans for the Mississippi River.

Leverage – Federal agencies, The Outdoor Heritage Fund, and The McKnight Foundation are just a few of the funders that are supporting the overall effort on floodplain forest conservation. This project will help to keep Audubon Minnesota situated in a competitive position to pursue diverse funding.

Extent of Impact - Reno Bottoms is a forest within the floodplain of the Mississippi River in southeast Minnesota. **The map below shows the land area that will be directly impacted by restoration efforts.** However, restoration assessment techniques will be used across the whole Upper Mississippi basin to improve the impact of restorations and forest management.

Already, Audubon Minnesota has worked with partners to restore more than 1500 acres of floodplain forest and advance the science of conservation planning in the Upper Mississippi River valley.



Map Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community