

Lessard-Sams Outdoor Heritage Council

Fiscal Year 2020 / ML 2019 Request for Funding



Date: May 29, 2018

Program or Project Title: Floodplain Forest Enhancement-Mississippi River, Phase 3

Funds Requested: \$4,505,000

Manager's Name: Andrew Beebe
Organization: Audubon Minnesota
Address: 1 West Water Street
City: St Paul, MN 55107
Office Number: (608)-881-9707
Email: abeebe@audubon.org

County Locations: Dakota, Goodhue, Houston, Wabasha, and Winona.

Regions in which work will take place:

- Southeast Forest

Activity types:

- Enhance

Priority resources addressed by activity:

- Forest

Abstract:

Reed canary grass and other invasive plants are preventing natural regeneration of trees and threatening floodplain forests and wildlife along the Mississippi River. This effort builds on two previous LSOHC grants to control invasive species and plant trees as part of a long-term restoration strategy by Audubon Minnesota and key partners to sustain diverse and productive floodplain forests and the wildlife and birds they support.

Design and scope of work:

The Mississippi River from Hastings to the Iowa border contains some of the largest tracts of floodplain forest along the entire Upper Mississippi River. These forests and mixed wetlands cover thousands of acres and are critical to many species of birds and other wildlife, including wood ducks, which use these areas for nesting and feeding.

While historically diverse in the number, age, and size of tree species, much of the forest now consists of silver maple ranging from 50-70 years old. These trees are expected to live another 50-70+ years, after which they will die naturally. Unfortunately, when trees are lost, reed canary grass and other invasive species move in and prevent natural regeneration. This is occurring throughout the project area, and without aggressive, long-term management these floodplain forests will decline or in some locations disappear completely.

Floodplain forest regeneration is a slow process taking decades to accomplish. By selectively controlling invasive species and regenerating trees the forest can be maintained long-term. Restoring forest at small sites within larger tracts will ensure that a diversity of tree species, sizes, and ages are present. This approach over time will maintain large contiguous blocks of forest and provide habitat for many wildlife species, including rare birds like cerulean warbler and red-shouldered hawk.

This proposal seeks funding to continue floodplain forest enhancement throughout the project area. The number of sites needing enhancement or restoration is extensive. To date we have completed or begun work on 15 sites totaling over 500 acres. This proposal significantly expands our scope and includes 25 sites covering 4,300 acres. Sites were determined in collaboration with Minnesota Department of Natural Resources, US Fish and Wildlife Service, and US Army Corps of Engineers and identify locations under serious threat of losing critical floodplain forest. All sites are located on public lands within state forests, WMA's, Upper Mississippi River National Wildlife and Fish Refuge, or US Army Corps of Engineers owned lands open to hunting and fishing.

Funding will be used to control invasive species, especially reed canary grass, plant trees of various sizes and species, and maintain

plantings. Timber stand improvement will create small openings allowing for greater diversity in species and age structure. Seedlings will be planted in the understory of ash dominated stands to ensure regeneration when the canopy opens due to ash borer. Old agricultural fields will be planted to native forest. Timber harvest will be used to improve forest structure and regenerate young trees. Deer and vole protection will be provided as needed. Over time trees will establish and develop a canopy that shades out invasive species and maintains overall forest diversity.

This project will require significant labor. Finding sufficient contractors to accomplish forest enhancement under previous LSOHC grants has been challenging. To ensure the work can be completed, the proposal includes a full-time Conservation Corp Minnesota crew. A full-time crew will provide the man-power and flexibility to accomplish the work proposed. A project manager position is included to oversee project activities and monitor.

Which sections of the Minnesota Statewide Conservation and Preservation Plan are applicable to this project:

- H5 Restore land, wetlands and wetland-associated watersheds
- LU8 Protect large blocks of forest land

Which other plans are addressed in this proposal:

- Upper Mississippi Systemic Forest Stewardship Plan; Upper Mississippi River National Wildlife and Fish Refuge Habitat Management Plan; Audubon Blueprint for Minnesota Bird Conservation: Recommendations for Minnesota's Prairie Hardwood Transition Region

Describe how your program will advance the indicators identified in the plans selected:

Our program will help support floodplain forests long-term by creating a diversity of tree species, sizes and ages in areas currently dominated by reed canary grass, or where the existing forest is at risk of converting to reed canary grass or other invasive species. This will ensure large tracts of floodplain forest that include a mix of ages, including old growth, are sustained along the Mississippi River that will meet the needs of wildlife and birds, including rare species.

Which LSOHC section priorities are addressed in this proposal:

Southeast Forest:

- Protect from long-term or permanent endangerment from invasive species

Describe how your program will produce and demonstrate a significant and permanent conservation legacy and/or outcomes for fish, game, and wildlife as indicated in the LSOHC priorities:

Without aggressive action to regenerate floodplain forest, much of the existing forest is at risk of converting to invasive species over the next 50-70 years. Loss of these forests would be devastating to many species of forest dependent birds, especially rare species like red-shouldered hawk and cerulean warbler. More common species, like wood duck, would also be affected by loss of trees and nesting cavities.

As forests are lost to invasive grasses, water tables also begin to rise creating conditions that may not allow certain sites to be reforested. Our program is intended to regenerate trees in these areas before these conditions occur, to create and ensure a diverse mix of tree ages, sizes, and species. These actions will help these areas remain forested and prevent them from converting to poor quality grassland meadows. By focusing efforts in priority areas, we can maintain larger forested tracts and ensure quality habitat is available at sites throughout the Mississippi River floodplain.

Describe how the proposal uses science-based targeting that leverages or expands corridors and complexes, reduces fragmentation or protects areas identified in the MN County Biological Survey:

The Upper Mississippi River Systemic Forest Stewardship plan prepared by the US Army Corps of Engineers and other partners in 2012 was used to guide restoration and enhancement strategies. This plan outlines the problem, urgency, and recommended actions to regenerate trees and sustain quality floodplain forest habitats. Through this grant our forestry program will continue to enhance lands currently identified as floodplain forest by the Minnesota County Biological Survey while reducing current and future fragmentation threats.

How does the proposal address habitats that have significant value for wildlife species of greatest conservation need, and/or threatened or endangered species, and list targeted species:

Floodplain forests are rare habitats compared to adjacent upland forests, often found in relatively narrow ribbons along river corridors

and historically providing important travel routes for wildlife. The Mississippi River, a critical migration corridor for birds, provides some of the most significant tracts of floodplain forest in the United States. In Minnesota, the Mississippi River and lower ends of tributaries include large areas of high biodiversity significance as identified by the Minnesota County Biological Survey. Studies by the US Geological Survey along the Upper Mississippi River have shown more species of songbirds use these floodplain forests than adjacent upland forests. Species of special concern, including cerulean warbler and red-shouldered hawk, require large contiguous habitat blocks of floodplain forest for survival. This proposal will help ensure the long-term sustainability of floodplain forests along the Mississippi River.

Identify indicator species and associated quantities this habitat will typically support:

Red-shouldered hawk and cerulean warbler are indicator species requiring large, contiguous tracts of floodplain forest including large trees. While not abundant, this habitat will support their continued survival and presence in these areas. Other species, like wood duck and prothonotary warbler, which also require floodplain forest habitats, will maintain viable populations. Audubon has been working with US Fish and Wildlife Service and US Army Corps of Engineers to identify and enhance the largest available tracts of floodplain forest in order to have the greatest impact on these species. Additionally, we have begun to utilize bird monitoring data in order to better understand the specific habitat requirements of these species.

Outcomes:

Programs in southeast forest region:

- Large corridors and complexes of biologically diverse wildlife habitat typical of the unglaciated region are restored and protected *Existing forests within the Mississippi River floodplain have been mapped, including location and tract size. Over time, forested land cover can be re-mapped to determine if forested locations and/or tract size has changed. In addition, forest inventory is being completed by Minnesota DNR, US Fish and Wildlife Service, and US Army Corps of Engineers to document forest cover, tree species, and size, regeneration, etc. These can be re-surveyed over time to document changes in these parameters.*

How will you sustain and/or maintain this work after the Outdoor Heritage Funds are expended:

Project sites need to be monitored after trees are planted for evidence of weed competition and deer or rodent damage. In some cases follow up weed control or deer/mouse protection may be necessary. In some cases, flooding or other factors may cause a tree planting to fail and trees need to be replanted. Audubon is committed to monitoring these sites and addressing any issues that arise using funding from a variety of sources including private donors, foundations, and non-state grants. Some maintenance is built into this OHF proposal for post treatment weed control in the latter years of the OHF appropriation. Also, Minnesota Department of Natural Resources will complete follow-up maintenance on projects on state forest and lands and Wildlife Management Areas. When available, the US Fish and Wildlife Service and US Army Corps of Engineers will utilize staff and funding to maintain forestry management practices.

Explain the things you will do in the future to maintain project outcomes:

Year	Source of Funds	Step 1	Step 2	Step 3
2019-2023	LSOHC, USFWS, McKnight	Write Prescriptions	Conduct Site Preparation and Plant Trees	Post Planting Maintenance
2023-2026	USFWS, McKnight	Post Planting Maintenance		

What is the degree of timing/opportunistic urgency and why it is necessary to spend public money for this work as soon as possible:

As trees age and die, canopy disappears and areas become invaded by reed canary grass and other invasive species. These aggressive species out-compete native plants and prevent trees from regenerating naturally. Because floodplain forest enhancement takes time a long time to establish trees, action is needed now and over the next several decades to ensure floodplain forests remain intact and diverse.

How does this proposal include leverage in funds or other effort to supplement any OHF appropriation:

Audubon has two professional staff responsible for floodplain forest enhancement along the Mississippi River, including a full-time Forester. The Forester position is cost shared 50% with the Upper Mississippi River National Wildlife and Fish Refuge. Funding from private donors is also used to fund staff salaries associated with this work. Most of our funding for implementing projects (contractors, tree purchase, etc.) is dependent upon LSOHC funding. Also, partners including USFWS, US Army Corps of Engineers, and volunteers provide technical expertise and/or labor to assist with project design and implementation.

Relationship to other funds:

- Environmental and Natural Resource Trust Fund

Describe the relationship of the funds:

Environment and Natural Resource Trust funds were secured in 2016 to study the most effective methods to control reed canary grass and regenerate trees. This study will conclude in June 2019 and results will be used to develop a decision support tool to guide enhancement decisions for individual project sites. The results of the study will help select the most effective enhancement tools for projects included in this proposal.

Per MS 97A.056, Subd. 24, Any state agency or organization requesting a direct appropriation from the OHF must inform the LSOHC at the time of the request for funding is made, whether the request is supplanting or is a substitution for any previous funding that was not from a legacy fund and was used for the same purpose:

LSOHC funding is in addition to other funding sources, and does not supplant that work. Without LSOHC funding, Audubon MN would not have resources to implement enhancement projects, and would have greater challenges in funding personnel salaries associated with this work.

Describe the source and amount of non-OHF money spent for this work in the past:

Appropriation Year	Source	Amount
FY 14	US Fish and Wildlife Service	\$80,000
FY 16	US Fish and Wildlife Service	\$35,000
FY 14 Fy 16	McKnight Foundation	\$40,000

Activity Details

Requirements:

If funded, this proposal will meet all applicable criteria set forth in MS 97A.056 - **Yes**

Will restoration and enhancement work follow best management practices including MS 84.973 Pollinator Habitat Program - **Yes**

Is the restoration and enhancement activity on permanently protected land per 97A.056, subd 13(f), tribal lands, and/or public waters per MS 103G.005, Subd. 15 - **Yes (WMA, Refuge Lands, State Forests)**

Do you anticipate federal funds as a match for this program - **Yes**

Are the funds confirmed - **No**

What is the approximate date you anticipate receiving confirmation of the federal funds - **Annually from 2019-2023**

Land Use:

Will there be planting of corn or any crop on OHF land purchased or restored in this program - **No**

Accomplishment Timeline

Activity	Approximate Date Completed
Complete Management Prescriptions	2019-2021
Complete Site Preparation	2019-2022
Plant Trees	2019-2022
Post Planting Weed Control and Maintenance	2020-2024

Budget Spreadsheet

Total Amount of Request: \$4,505,000

Budget and Cash Leverage

Budget Name	LSOHC Request	Anticipated Leverage	Leverage Source	Total
Personnel	\$525,000	\$250,000	Private Foundation, USFWS	\$775,000
Contracts	\$2,940,000	\$0		\$2,940,000
Fee Acquisition w/ PILT	\$0	\$0		\$0
Fee Acquisition w/o PILT	\$0	\$0		\$0
Easement Acquisition	\$0	\$0		\$0
Easement Stewardship	\$0	\$0		\$0
Travel	\$0	\$0		\$0
Professional Services	\$0	\$0		\$0
Direct Support Services	\$0	\$0		\$0
DNR Land Acquisition Costs	\$0	\$0		\$0
Capital Equipment	\$40,000	\$0		\$40,000
Other Equipment/Tools	\$0	\$0		\$0
Supplies/Materials	\$1,000,000	\$0		\$1,000,000
DNR IDP	\$0	\$0		\$0
Total	\$4,505,000	\$250,000		\$4,755,000

Personnel

Position	FTE	Over # of years	LSOHC Request	Anticipated Leverage	Leverage Source	Total
Project Manager	1.00	5.00	\$300,000	\$100,000	Private Foundation	\$400,000
Forest Ecologist	0.75	5.00	\$200,000	\$150,000	USFWS	\$350,000
Grants Coordinator	0.10	5.00	\$25,000	\$0		\$25,000
Total	1.85	15.00	\$525,000	\$250,000		\$775,000

Capital Equipment

Item Name	LSOHC Request	Anticipated Leverage	Leverage Source	Total
Boat and Motor to Access Floodplain Forest Sites	\$20,000	\$0		\$20,000
ATV and Trailer with Boom Sprayer	\$20,000	\$0		\$20,000
Total	\$40,000	\$0		\$40,000

Amount of Request: \$4,505,000

Amount of Leverage: \$250,000

Leverage as a percent of the Request: 5.55%

DSS + Personnel: \$525,000

As a % of the total request: 11.65%

Easement Stewardship: \$0

As a % of the Easement Acquisition: -%

Does the amount in the contract line include R/E work?

Contract work includes funding a full-time, 5 person CCM crew for 5 years for project implementation (\$160,000/year x 5 = \$800,000), and \$2,140,000 for outside contracts to implement projects. \$1,000,000 is included in supplies/materials mostly to purchase trees, with approximately \$20,000 of that for other supplies (flagging, herbicide, etc.).

Describe and explain leverage source and confirmation of funds:

Leverage for project manager position would be from private foundations. Leverage for the Forest Ecologist position would be provided by US Fish and Wildlife Service.

Does this proposal have the ability to be scalable? - Yes

Tell us how this project would be scaled and how administrative costs are affected, describe the “economy of scale” and how outputs would change with reduced funding, if applicable:

The project can be scaled by reducing the acres of projects. This would primarily reduce contract and supply costs. Based on our experiences with the first two LSOHC grants, a full-time project manager dedicated to overseeing the program is important to project success and more difficult to scale down.

Output Tables

Table 1a. Acres by Resource Type

Type	Wetlands	Prairies	Forest	Habitats	Total
Restore	0	0	0	0	0
Protect in Fee with State PILT Liability	0	0	0	0	0
Protect in Fee W/O State PILT Liability	0	0	0	0	0
Protect in Easement	0	0	0	0	0
Enhance	0	0	4,300	0	4,300
Total	0	0	4,300	0	4,300

Table 2. Total Requested Funding by Resource Type

Type	Wetlands	Prairies	Forest	Habitats	Total
Restore	\$0	\$0	\$0	\$0	\$0
Protect in Fee with State PILT Liability	\$0	\$0	\$0	\$0	\$0
Protect in Fee W/O State PILT Liability	\$0	\$0	\$0	\$0	\$0
Protect in Easement	\$0	\$0	\$0	\$0	\$0
Enhance	\$0	\$0	\$4,505,000	\$0	\$4,505,000
Total	\$0	\$0	\$4,505,000	\$0	\$4,505,000

Table 3. Acres within each Ecological Section

Type	Metro/Urban	Forest/Prairie	SE Forest	Prairie	Northern Forest	Total
Restore	0	0	0	0	0	0
Protect in Fee with State PILT Liability	0	0	0	0	0	0
Protect in Fee W/O State PILT Liability	0	0	0	0	0	0
Protect in Easement	0	0	0	0	0	0
Enhance	0	0	4,300	0	0	4,300
Total	0	0	4,300	0	0	4,300

Table 4. Total Requested Funding within each Ecological Section

Type	Metro/Urban	Forest/Prairie	SE Forest	Prairie	Northern Forest	Total
Restore	\$0	\$0	\$0	\$0	\$0	\$0
Protect in Fee with State PILT Liability	\$0	\$0	\$0	\$0	\$0	\$0
Protect in Fee W/O State PILT Liability	\$0	\$0	\$0	\$0	\$0	\$0
Protect in Easement	\$0	\$0	\$0	\$0	\$0	\$0
Enhance	\$0	\$0	\$4,505,000	\$0	\$0	\$4,505,000
Total	\$0	\$0	\$4,505,000	\$0	\$0	\$4,505,000

Table 5. Average Cost per Acre by Resource Type

Type	Wetlands	Prairies	Forest	Habitats
Restore	\$0	\$0	\$0	\$0
Protect in Fee with State PILT Liability	\$0	\$0	\$0	\$0
Protect in Fee W/O State PILT Liability	\$0	\$0	\$0	\$0
Protect in Easement	\$0	\$0	\$0	\$0
Enhance	\$0	\$0	\$1,048	\$0

Table 6. Average Cost per Acre by Ecological Section

Type	Metro/Urban	Forest/Prairie	SE Forest	Prairie	Northern Forest
Restore	\$0	\$0	\$0	\$0	\$0
Protect in Fee with State PILT Liability	\$0	\$0	\$0	\$0	\$0
Protect in Fee W/O State PILT Liability	\$0	\$0	\$0	\$0	\$0
Protect in Easement	\$0	\$0	\$0	\$0	\$0
Enhance	\$0	\$0	\$1,048	\$0	\$0

Target Lake/Stream/River Feet or Miles

0

I have read and understand Section 15 of the Constitution of the State of Minnesota, Minnesota Statute 97A.056, and the Call for Funding Request. I certify I am authorized to submit this proposal and to the best of my knowledge the information provided is true and accurate.

Parcel List

Explain the process used to select, rank and prioritize the parcels:

Not Listed

Section 1 - Restore / Enhance Parcel List

Dakota

Name	TRDS	Acres	Est Cost	Existing Protection?
Gores AMA DNR Fisheries	11517225	35	\$52,500	Yes

Goodhue

Name	TRDS	Acres	Est Cost	Existing Protection?
Garvin Brook USACE	10708201	100	\$60,000	Yes
Gores South USACE	11416214	602	\$180,600	Yes
Gores WMA USACE	11416210	55	\$27,700	Yes
North Lake USACE	11416224	378	\$113,400	Yes
Vermillion Bottoms MNDNR	11315208	400	\$600,000	Yes

Houston

Name	TRDS	Acres	Est Cost	Existing Protection?
Hayshore Lake/Reno Bottoms	10103219	300	\$300,000	Yes
Root River 1	10404235	150	\$160,000	Yes
Root River 2	10404236	100	\$50,000	Yes
Root River 3	10404236	270	\$135,000	Yes
Root River 4	10304201	80	\$40,000	Yes
Root River 6 North	10404222	54	\$54,000	Yes
Root River Barrier Islands 5	10304212	145	\$145,000	Yes
Root River South USACE	10404202	283	\$141,500	Yes

Wabasha

Name	TRDS	Acres	Est Cost	Existing Protection?
Wabasha Bottoms 1	11009220	134	\$134,000	Yes
Wabasha Bottoms 2	11009220	12	\$8,000	Yes
Whitewater Delta USACE	10909233	115	\$34,500	Yes
Winona District EAB Mitigation	10909209	72	\$100,000	Yes
Zumbro Bottoms Ag Conversion MNDNR	11011213	100	\$100,000	Yes
Zumbro Bottoms MNDNR	11011215	100	\$100,000	Yes

Winona

Name	TRDS	Acres	Est Cost	Existing Protection?
Garvin	10708202	200	\$175,000	Yes
Horseshoe Bend USACE	10808226	365	\$182,500	Yes
Richmond Island USACE	10605222	96	\$96,000	Yes
Whitewater WMA DNR	10710215	78	\$150,000	Yes

Section 2 - Protect Parcel List

No parcels with an activity type protect.

Section 2a - Protect Parcel with Bldgs

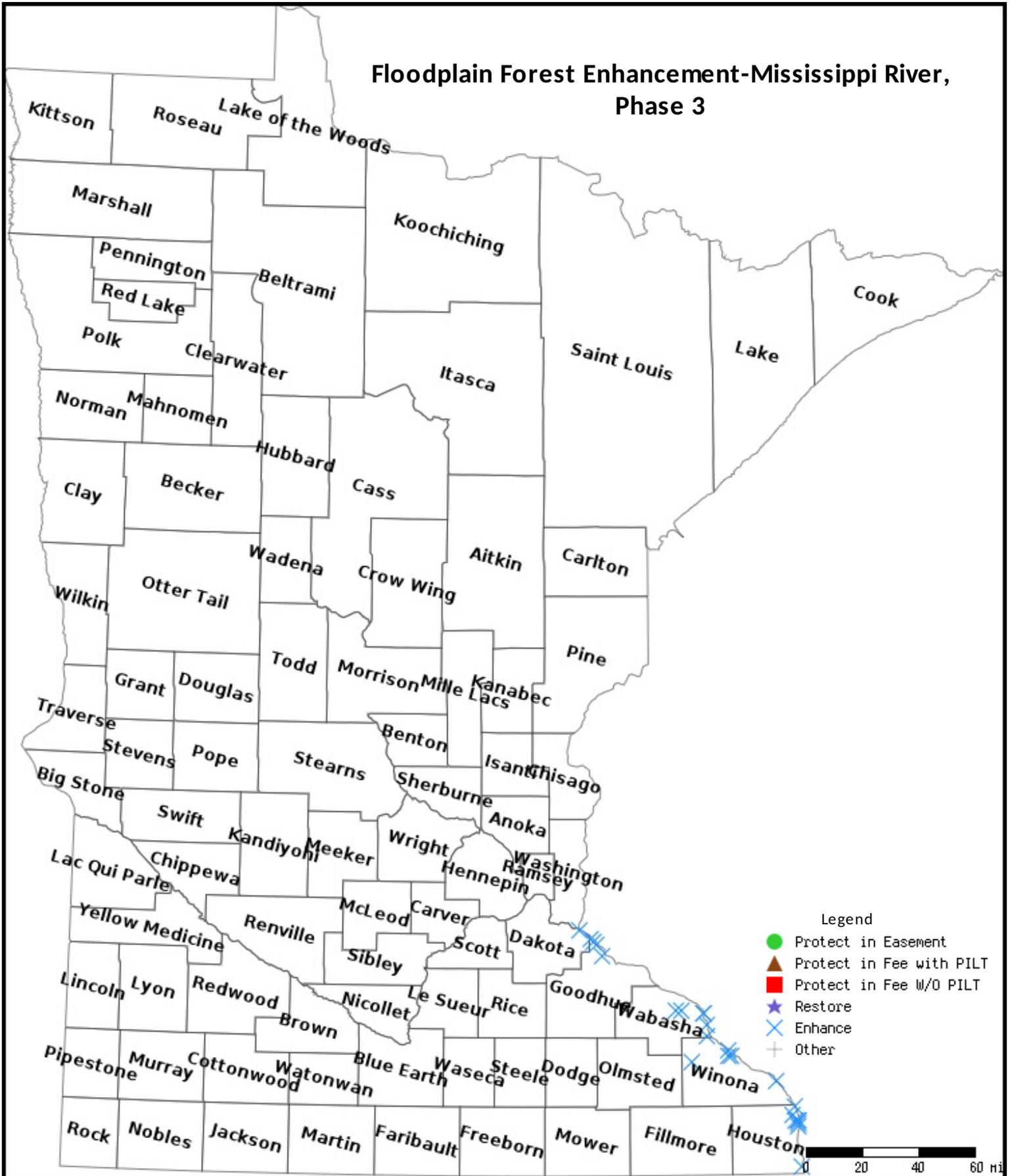
No parcels with an activity type protect and has buildings.

Section 3 - Other Parcel Activity

No parcels with an other activity type.

Parcel Map

Floodplain Forest Enhancement-Mississippi River, Phase 3



Data Generated From Parcel List



Restoring Mississippi River Floodplain Forests

Floodplain forests are unique habitats that are home to many species of birds, including the brightly colored prothonotary warbler, secretive red-shouldered hawk, melodic cerulean warbler, and brilliantly colored wood duck.



Red-shouldered Hawk



Prothonotary warbler



Cerulean warbler



Wood duck

The Mississippi River supports some of the most significant tracts of floodplain forest in North America. There are over 60,000 acres of floodplain forest with the Upper Mississippi National Wildlife and Fish Refuge alone.

These forests are under threat. Locks and dams create artificially high water levels, and invasive species are preventing the natural regeneration of trees. Action is needed now to prevent existing forest from converting to reed canary grass, an aggressive invasive species that provides no habitat for forest dependent birds.

What is Audubon doing:

- We have a full-time Forest Ecologist working with partners to implement enhancement projects – this position is cost shared with the US Fish and Wildlife Service and provides the technical expertise needed for this important work
- Working closely with the Minnesota DNR (Forestry and Wildlife), US Army Corps of Engineers, and US Fish and Wildlife Service to identify and implement projects at high priority sites on public lands along the Upper Mississippi River.
- Completing enhancement projects by controlling invasive species and planting trees
- LSOHC funding from Phase 1 and 2 has allowed us to complete or initiate projects on over 500 acres to date.
- Phase 3 funding would allow us to complete projects on an additional 4,300 acres over the next 5 years.
- Advancing the science around floodplain forest restoration and its effects on birds by working with University and agency partners to evaluate restoration methods

To learn more about Audubon Minnesota's floodplain forest restoration program, contact Andy Beebe, Forest Ecologist: abeebe@audubon.org

Floodplain Forest Enhancement Along the Upper Mississippi River



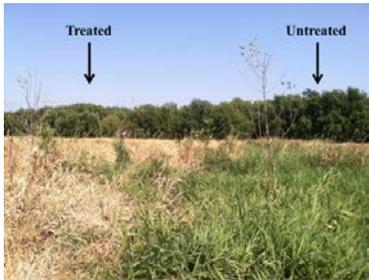
Floodplain forest that has converted to reed canary grass

Goal →



Healthy floodplain forest

Reaching our Goal:



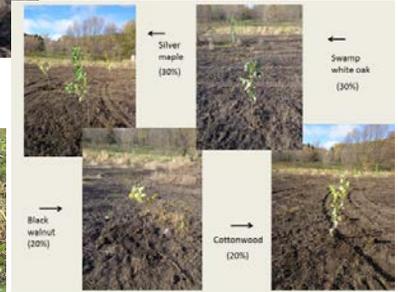
Site preparation – herbicide treatment, disking, mulching



Tree planting



Labor intensive



Species diversity



Deer and vole protection



Post planting maintenance



Partnering to maintain healthy floodplain forests