

Lessard-Sams Outdoor Heritage Council

Fiscal Year 2017 / ML 2016 Request for Funding

Date: June 01, 2015

Program or Project Title: DNR Stream Habitat

Funds Requested: \$6,095,000

Manager's Name: Brian Nerbonne

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County Locations: Becker, Cass, Clay, Crow Wing, Dakota, Nobles, Otter Tail, Pine, Redwood, St. Louis, Swift, Wabasha, and Winona.

Regions in which work will take place:

- Northern Forest
- Forest / Prairie Transition
- Southeast Forest
- Prairie
- Metro / Urban

Activity types:

- Restore
- Enhance

Priority resources addressed by activity:

- Habitat

Abstract:

The Minnesota Department of Natural Resources will restore or enhance habitat to facilitate fish passage, restore degraded streams, and enhance habitat critical to fish and other aquatic life. Projects are prioritized based on ecological benefit, urgency, feasibility, and stakeholder support.

Design and scope of work:

Minnesota may be the Land of 10,000 lakes, but often overlooked are its over 69,000 miles of streams. From small trout streams to the mighty Mississippi, streams support a wealth of biodiversity and also provide excellent fishing opportunities. In some parts of the state that lack natural lakes, such as Southeast Minnesota and the Red River Valley, streams represent the only local opportunity for fishing. Trout, smallmouth bass, lake sturgeon, and walleye are among the species stream anglers can pursue.

Minnesota streams host 162 fish species and 48 mussel species, of which 23 are listed as special concern, threatened or endangered. Streams in Minnesota have been degraded through a history of alterations to the streams themselves by channelization (straightening), poor riparian management, and fragmentation by barriers such as dams. The Minnesota Department of Natural Resources (MNDNR) works to restore or enhance habitat to address these impacts, benefiting fish, mussels, and other aquatic life. However, department resources for stream habitat work fall far short of the need; funding from the Outdoor Heritage Fund (OHF) has been critical to an acceleration of stream habitat work by the department. In past rounds of OHF, stream habitat has been part of a larger MNDNR package of aquatic habitat protection, restoration, and enhancement projects. In this round we have chosen to create a proposal focused solely on stream restoration and enhancement, with aquatic habitat protection in a separate proposal.

One of the biggest limitations to fish and mussel species is the fragmentation of rivers. Dams and other obstructions block fish from migrating to key habitats such as spawning areas. The juvenile life stage of mussels spends its first weeks of life on the gills of a fish, and relies on that fish to transport it upstream to hospitable habitats. Barriers can lead to the loss of fish and mussel species above dams, and reduce populations living below them. Often dams and other barriers are no longer serving their intended function and can be removed. In cases where the dam is still functioning, the structure can be modified to allow fish passage. Examples of modifications include projects that have converted dams into rapids, and construction of nature-like fishways around or over dams.

A case study in the benefits of fish passage is the removal of a dam on the Pomme de Terre River in Appleton, MN. Following removal, 10 fish species including walleye and channel catfish have returned to 42 upstream miles of river that became accessible. Mussel species have also benefited, with two native mussel species now found in areas upstream of the dam where formerly they had been absent. Another example is the modification of the Heidberg Dam on the Wild Rice River to allow fish passage, where 10 fish species including walleye, sauger, channel catfish, and smallmouth bass are now found where they had formerly been absent, as far as 75 miles upstream of the dam. These case studies show that although the footprint of fish passage projects is small (typically only a few acres) and the cost per acre appears high, the benefits go far beyond the project site. We can impact miles of stream in a single project, and the benefits will endure.

Some proposed fish passage projects target species living in lakes that use streams for spawning. Many species including northern pike, walleye, suckers, and numerous minnow species migrate out of lakes and into streams to spawn before returning to the lake. On many lakes, the outlet has been dammed in order to stabilize water levels for property owners. These dams block fish from returning to the lake when they've finished spawning, as well as blocking their offspring from migrating to the lake when they mature.

The potential for fish passage projects to enable access by invasive species has been examined for all proposed projects. None of these projects serve as a barrier between problem species such as Invasive Carp and upstream waters. Most aquatic invasive species (e.g. zebra mussels or Eurasian water milfoil) rely on other vectors such as unintentional transport by recreational boaters, rather than swimming upstream past barriers.

Many streams in Minnesota have also been degraded by habitat alteration such as channelization (straightening). This simplifies the habitat and eliminates the shallow riffles and deeper pools that are required by different life stages of fish. Other streams have issues with bank erosion that degrade habitat. Channel restoration and enhancement projects can address these impacts by recreating appropriate habitat, and stabilizing eroding banks. This benefits not only the project area, but reaches that lie downstream that are no longer affected by eroded sediment.

MNDNR has decades of experience in stream restoration and enhancement. Outdoor Heritage funding has allowed us to increase our stream habitat work, and we will continue our expanded program by completing the projects listed in this proposal. Our package of fish passage and stream channel restoration and enhancement includes 16 projects that occur in all five LSOHC planning regions (refer to Figure 1). Although the footprint of projects is 66 acres, the projects will benefit over 8,600 acres of lakes and streams (refer to Table 1) through restoration or enhancement of fish passage. Projects were selected from a prioritized list that includes factors such as ecological benefit, feasibility, urgency, and stakeholder support.

Several of the projects on our parcel list (e.g. Buffalo River, Phelps Mill, the Cottonwood River dams, and Mission Creek) will involve partnership with other state agencies or local governments. Partners in many cases are local governments that own a dam proposed for removal or modification. In all cases local partners are supportive of the project, and will contribute in-kind staff time toward the projects' completion.

This request also funds an ongoing stream habitat coordinator position and a part-time intern for two years. The increased work of coordinating complex stream projects funded by OHF is greater than can be handled by existing MNDNR staff. These positions create the capacity for MNDNR to effectively complete the proposed projects.

Crops:

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

How does the request address MN habitats that have: historical value to fish and wildlife, wildlife species of greatest conservation need, MN County Biological Survey data, and/or rare, threatened and endangered species inventories:

The Phelps Mill, Cottonwood River Dams, and Grindstone Dam projects are known to have rare mussel species in the vicinity. This project has the potential to benefit those species by allowing their upstream movement past the barriers. Restoration of fish passage will help to return fish and mussel diversity that was present upstream of dams prior to their construction. Projects with the potential to benefit rare species is one of the criteria by which stream projects are ranked.

All projects will have a search of the MNDNR's Natural Heritage Database that tracks known locations of rare species or plant communities. Project plans will incorporate that information into design to that impacts to rare species are minimized to the greatest extent possible. This may include mitigation measures such as mussel relocation prior to project construction.

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

The Cottonwood Dams, Phelps Mill Dam, and Tischer Creek projects have willing local partners to support these projects, which could change with different leadership in those communities. Urgency is one of the criteria used to prioritize the list of stream projects.

Describe the science based planning and evaluation model used:

MNDNR uses a science-based planning model for selection of stream projects. The prioritization incorporates factors known to be important for stream health, as well as measures of stakeholder support and urgency. Evaluation of projects by MNDNR allows assessment of project success, and provides lessons to be used in future projects.

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

- H3 Improve connectivity and access to recreation
- H6 Protect and restore critical in-water habitat of lakes and streams

Which other plans are addressed in this proposal:

- Minnesota DNR Strategic Conservation Agenda
- Outdoor Heritage Fund: A 25 Year Framework

Which LSOHC section priorities are addressed in this proposal:

Prairie:

- Restore or enhance habitat on public lands

Forest / Prairie Transition:

- Protect, enhance, and restore wild rice wetlands, shallow lakes, wetland/grassland complexes, aspen parklands, and shoreland that provide critical habitat for game and nongame wildlife

Northern Forest:

- Protect shoreland and restore or enhance critical habitat on wild rice lakes, shallow lakes, cold water lakes, streams and rivers, and spawning areas

Metro / Urban:

- Enhance and restore coldwater fisheries systems

Southeast Forest:

- Protect, enhance, and restore habitat for fish, game, and nongame wildlife in rivers, cold-water streams, and associated upland habitat

Relationship to other funds:

- Clean Water Fund
- Parks and Trails Fund

For the Carley State Park project, DNR will use Parks and Trails Funds to pay for shore fishing platforms that will allow youth and handicapped anglers an opportunity to fish in habitat enhanced by the LSOHF project. Because these funds are not directly related to habitat restoration, they are not counted in the budget table.

Work funded by LSOHC and by the Clean Water Fund (CWF) both protect, restore, and aquatic habitat. This project directly leverages \$187,000 from CWF to pay for project design or implementation. In addition, DNR involvement in the CWF Watershed Restoration and Protection Strategies (WRAPS) process helps identify projects eligible for CWF. CWF supports DNR monitoring using biological indicators, which are used to track condition of aquatic communities and are part of the evaluation for success of LSOHC funded projects. CWF supported projects restore connectivity, enhance stream channel stability, and restore natural hydrographs.

How does this proposal accelerate or supplement your current efforts in this area:

DNR conducts habitat protection, restoration, and enhancement projects for aquatic habitats. Limitations of staffing and funding limit the amount of habitat work that can be accomplished. Other program priorities include monitoring, regulations, stocking, and outreach. LSOHC funded projects have increased capacity and allowed acceleration of habitat work. The work funded by LSOHC would be unlikely to be completed without this funding. DNR will continue to pursue traditional funding sources for stream habitat work such as bonding, Game and Fish Fund, and Trout Stamp money. With combined traditional sources and LSOHC funding, potential projects continue to exceed available resources.

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

Appropriation Year	Source	Amount
2009	Game and Fish Fund, Trout Stamp, Heritage Enhancement, Federal grants	762,000
2010	Game and Fish Fund, Trout Stamp, Heritage Enhancement, Federal grants	545,000
2011	Game and Fish Fund, Trout Stamp, Heritage Enhancement, Federal grants	217,000
2012	Game and Fish Fund, Trout Stamp, Heritage Enhancement, Federal grants	1,182,000
2013	Game and Fish Fund, Trout Stamp, Heritage Enhancement, Federal Grants	1,035,000

2014	Game and Fish Fund, Trout Stamp, Heritage Enhancement, Federal Grants	578,000
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How will you sustain and/or maintain this work after the Outdoor Heritage Funds are expended:

All projects will have initial monitoring to insure they are functioning as intended, and maintenance during the establishment of native vegetation is included in the project budget. Stream projects will follow natural channel design principles, which creates conditions for habitat to be self-sustaining. Long-term maintenance requirements are not expected. Any unexpected expenses to make adjustments to projects can be covered from a variety of DNR funding sources, including the Game and Fish Fund, the Heritage Enhancement Fund, or Trout Stamp money.

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

Year	Source of Funds	Step 1	Step 2	Step 3
First year post-project	Game and Fish, Heritage, Trout Stamp, or LSOHF	In riparian areas control invasive plants to allow native vegetation to establish. May involve mowing, hand-pulling, or herbicide treatments.	Assess whether structural elements (e.g. weirs, instream habitat structures) are functioning properly.	Make adjustments or perform maintenance as needed, using DNR staff and equipment or contracting with outside entities.
Second year post-project	Game and Fish, Heritage, Trout Stamp, or LSOHF	In riparian areas control invasive plants to allow native vegetation to establish. May involve mowing, hand-pulling, or herbicide treatments.	Assess whether structural elements (e.g. weirs, instream habitat structures) are functioning properly.	Make adjustments or perform maintenance as needed, using DNR staff and equipment or contracting with outside entities.
Third year post-project	Game and Fish, Heritage, Trout Stamp, or LSOHF	In riparian areas control invasive plants to allow native vegetation to establish. May involve mowing, hand-pulling, or herbicide treatments.	Assess whether structural elements (e.g. weirs, instream habitat structures) are functioning properly.	Make adjustments or perform maintenance as needed, using DNR staff and equipment or contracting with outside entities.
Fourth year post-project	Game and Fish, Heritage, Trout Stamp, or LSOHF	For prairie vegetation, a prescribed burn may be done in the fourth year. All other vegetation types will be considered established.	Once projects have had any initial structural adjustments and riparian areas are well-vegetated, projects will be self sustaining.	

Activity Details:

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 activity on permanently protected land per 97A.056, subd 13(f), tribal lands, and/or public waters per MS 103G.005, Subd. 15 - **Yes (AMA, County/Municipal, Public Waters, State Park)**

Accomplishment Timeline:

Activity	Approximate Date Completed
Complete surveys, data collection, and design of projects	June 30, 2019
Complete permitting and contracting for project construction	June 30, 2020
Complete project construction and initial maintenance of projects	June 30, 2021

Federal Funding:

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

Are the funds confirmed - **Yes**

[Documentation](#)

What are the types of funds?
Cash Match - \$84000

Outcomes:

Programs in the northern forest region:

- Improved aquatic habitat indicators *We will evaluate the miles of streams and acres of lake opened up to fish passage through surveys of fish communities. Fish species not previous found may appear, or increases in abundance of target species may increase.*

Programs in forest-prairie transition region:

- Protected, restored, and enhanced nesting and migratory habitat for waterfowl, upland birds, and species of greatest conservation need *Migratory habitat for several rare mussel species will be enhanced by this project by creating fish passage at a barrier. Physical conditions required for fish passage will be measured to gauge project success.*

Programs in metropolitan urbanizing region:

- Improved aquatic habitat indicators *The project will stabilize an eroding streambank and enhance woody cover for trout and other coldwater aquatic species. The Minnesota Stream Habitat Assessment protocol will measure if habitat conditions improve.*

Programs in southeast forest region:

- Rivers, streams, and surrounding vegetation provide corridors of habitat *Habitat will be restored or enhanced on three trout streams, improving conditions for trout and other coldwater species. We will monitor trout populations within these projects for evidence of an increase in abundance.*

Programs in prairie region:

- This project will improve fish passage on rivers in this planning region, creating connectivity between upstream and downstream reaches. Conditions suitable for fish passage will be measured to guage project success. Fish survey work may detect species that were previously not found above barriers.

Budget Spreadsheet

Total Amount of Request: \$6,095,000

Budget and Cash Leverage

Budget Name	LSOHC Request	Anticipated Leverage	Leverage Source	Total
Personnel	\$220,000	\$0		\$220,000
Contracts	\$4,746,000	\$271,000	Clean Water Legacy, US Fish and Wildlife Service, NOAA Coastal Zone Management Program	\$5,017,000
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	\$30,000	\$0		\$30,000
Professional Services	\$840,000	\$0		\$840,000
Direct Support Services	\$149,000	\$0		\$149,000
DNR Land Acquisition Costs	\$0	\$0		\$0
Capital Equipment	\$0	\$0		\$0
Other Equipment/Tools	\$0	\$0		\$0
Supplies/Materials	\$110,000	\$0		\$110,000
DNR IDP	\$0	\$0		\$0
Total	\$6,095,000	\$271,000		-\$6,366,000

Personnel

Position	FTE	Over # of years	LSOHC Request	Anticipated Leverage	Leverage Source	Total
Stream Habitat Coordinator	1.00	2.00	\$180,000	\$0		\$180,000
Intern	0.50	2.00	\$40,000	\$0		\$40,000
Total	1.50	4.00	\$220,000	\$0	-	\$220,000

Amount of Request: \$6,095,000

Amount of Leverage: \$271,000

Leverage as a percent of the Request: 4.45%

Output Tables

Table 1a. Acres by Resource Type

Type	Wetlands	Prairies	Forest	Habitats	Total
Restore	0	0	0	58	58
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	0	4	4
Total	0	0	0	62	62

Table 2. Total Requested Funding by Resource Type

Type	Wetlands	Prairies	Forest	Habitats	Total
Restore	\$0	\$0	\$0	\$4,980,000	\$4,980,000
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	\$0	\$1,115,000	\$1,115,000
Total	\$0	\$0	\$0	\$6,095,000	\$6,095,000

Table 3. Acres within each Ecological Section

Type	Metro/Urban	Forest/Prairie	SE Forest	Prairie	Northern Forest	Total
Restore	0	0	21	7	30	58
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	1	1	0	0	2	4
Total	1	1	21	7	32	62

Table 4. Total Requested Funding within each Ecological Section

Type	Metro/Urban	Forest/Prairie	SE Forest	Prairie	Northern Forest	Total
Restore	\$0	\$0	\$482,800	\$1,438,900	\$3,058,300	\$4,980,000
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	\$17,700	\$536,300	\$0	\$0	\$561,000	\$1,115,000
Total	\$17,700	\$536,300	\$482,800	\$1,438,900	\$3,619,300	\$6,095,000

Table 5. Average Cost per Acre by Resource Type

Type	Wetlands	Prairies	Forest	Habitats
Restore	\$0	\$0	\$0	\$85,862
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	\$0	\$278,750

Table 6. Average Cost per Acre by Ecological Section

Type	Metro/Urban	Forest/Prairie	SE Forest	Prairie	Northern Forest
Restore	\$0	\$0	\$22,990	\$205,557	\$101,943
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	\$17,700	\$536,300	\$0	\$0	\$280,500

Target Lake/Stream/River Feet or Miles

5

Parcel List

Section 1 - Restore / Enhance Parcel List

Becker

Name	TRDS	Acres	Est Cost	Existing Protection?
Shell Lake	14037218	1	\$28,000	Yes

Cass

Name	TRDS	Acres	Est Cost	Existing Protection?
McKeown Lake	14029210	1	\$15,000	Yes
Pine River/Norway Lake	13829231	1	\$30,000	Yes

Clay

Name	TRDS	Acres	Est Cost	Existing Protection?
Buffalo River	13945212	4	\$325,000	Yes

Crow Wing

Name	TRDS	Acres	Est Cost	Existing Protection?
Red Sand Lake	13329201	1	\$68,000	Yes

Dakota

Name	TRDS	Acres	Est Cost	Existing Protection?
Vermillion River	11418220	1	\$17,000	Yes

Nobles

Name	TRDS	Acres	Est Cost	Existing Protection?
Kanaranzi Creek - Adrian Dam	10243213	1	\$66,000	Yes

Otter Tail

Name	TRDS	Acres	Est Cost	Existing Protection?
Ottertail River - Phelps Mill Dam	13441235	1	\$500,000	Yes

Pine

Name	TRDS	Acres	Est Cost	Existing Protection?
Grindstone River Dam	04121224	1	\$350,000	Yes

Redwood

Name	TRDS	Acres	Est Cost	Existing Protection?
Cottonwood R. Dam - Lambertson	10937215	1	\$300,000	Yes
Cottonwood R. Dam - Sanborn Golf Course	10936226	1	\$300,000	Yes
Cottonwood R. Dam - Sanborn Park	10936236	1	\$300,000	Yes

St. Louis

Name	TRDS	Acres	Est Cost	Existing Protection?
Miller Creek	05014218	9	\$600,000	Yes
Mission Creek	04815205	9	\$1,250,000	Yes
Tischer Creek Dam	05014202	12	\$1,000,000	Yes

Swift

Name	TRDS	Acres	Est Cost	Existing Protection?
Drywood Creek	12243201	2	\$50,000	Yes

Wabasha

Name	TRDS	Acres	Est Cost	Existing Protection?
Gorman Creek	10911201	10	\$250,000	Yes
North Br. Whitewater River	10811232	5	\$150,000	Yes

Winona

Name	TRDS	Acres	Est Cost	Existing Protection?
Coolridge Creek	10509223	4	\$50,000	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.

Figure 1. DNR Stream Habitat Projects



0 12.5 25 50 75 100 Miles

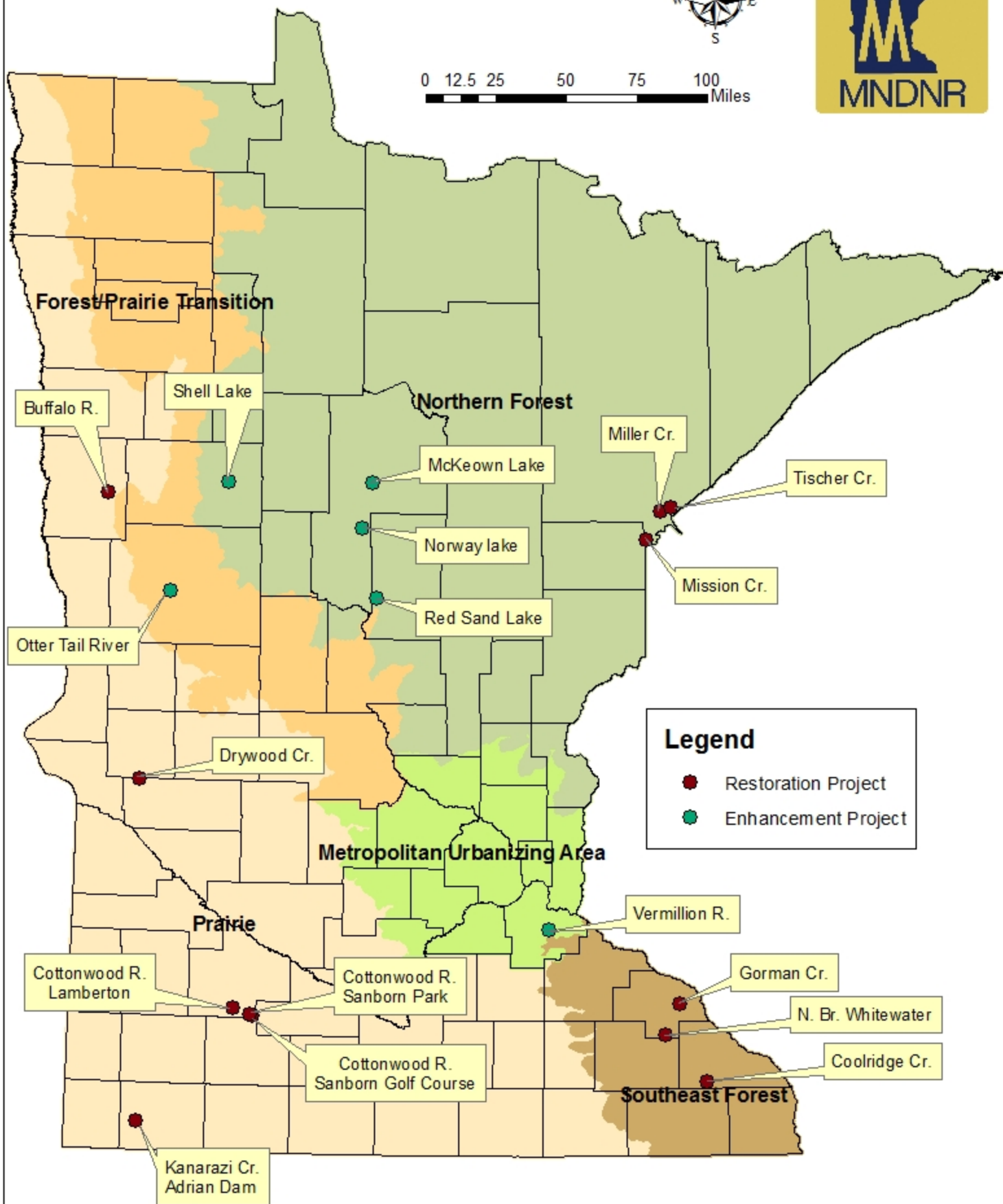


Table 1. Stream habitat project summary, including acres benefitted beyond project footprint.

<u>PROJECT</u>	<u>County</u>	<u>LSOHC Region</u>	<u>Type</u>	<u>Project Footprint</u>	<u>Acres benefitted</u>	<u>LSOHC Request</u>
Mission Creek restoration	St. Louis	Northern Forest	Restore	9	9	\$1,250,000
Miller Creek restoration	St. Louis	Northern Forest	Restore	9	9	\$600,000
Adrian dam removal	Nobles	Prairie	Restore	1	228	\$310,500
Drywood Cr. restoration	Swift	Prairie	Restore	2	2	\$50,000
N. Branch Whitewater restoration	Wabasha	Southeast Forest	Restore	5	5	\$150,000
Cottonwood River -Sanborn Golf Course	Redwood	Prairie	Restore	1	350	\$300,000
Cottonwood River -Sanborn Park	Redwood	Prairie	Restore	1	350	\$300,000
Cottonwood River - Lambertson	Redwood	Prairie	Restore	1	350	\$300,000
Tischer Creek dam removal	St. Louis	Northern Forest	Restore	12	49	\$1,000,000
Gorman Cr. restoration	Wabasha	Southeast Forest	Restore	10	10	\$250,000
Buffalo R. restoration	Clay	Prairie	Restore	4	4	\$325,000
Phelps Mill fish bypass	Otter Tail	Forest/ Prairie	Enhance	1	1,687	\$500,000
Shell Lake fish passage	Becker	Northern Forest	Enhance	1	3,147	\$28,000
Red Sand Lake fish passage	Crow Wing	Northern Forest	Enhance	1	515	\$68,000
McKeown Lake fish passage	Cass	Northern Forest	Enhance	1	1,564	\$15,000
Vermillion River	Dakota	Metro	Enhance	1	1	\$16,500
Coolridge Creek restoration	Fillmore	Southeast Forest	Restore	4	4	\$50,000
Pine River/ Norway Lake fish passage	Cass	Northern Forest	Enhance	1	50	62,000
Grindstone River Dam	Pine	Northern Forest	Enhance	1	350	350,000
Total Acres				66	8639	