

Lessard-Sams Outdoor Heritage Council

Fiscal Year 2019 / ML 2018 Request for Funding



Date: May 31, 2017

Program or Project Title: Improving Forest Wildlife Habitat and Forest Health through Increased Species and Structural Diversity

Funds Requested: \$987,800

Manager's Name: Leslie McInenly

Organization: MN DNR Wildlife

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County Locations: Becker, Beltrami, Carlton, Cass, Clearwater, Crow Wing, Hubbard, Mille Lacs, Morrison, Pine, and Wadena.

Regions in which work will take place:

- Northern Forest

Activity types:

- Enhance

Priority resources addressed by activity:

- Forest

Abstract:

This project focuses on improving wildlife habitat benefits provided by fire-dependent jack pine woodland and oak forest communities as well as mixed hardwood stands in more mesic environments. Forest wildlife habitat enhancement will be implemented on over 4500 acres across Central and East Central Minnesota. Forested state lands have been identified for habitat enhancement activities designed to improve mast/browse availability, enhance thermal cover, increase species/structural diversity, minimize invasive species, and promote forest community resilience for the benefit of game and non-game species.

Design and scope of work:

Minnesota has a strong foundation of sustainable forest management, supported in statute (MN 89A), that emphasizes site-level best management practices and monitoring, landscape-level coordination, and an emphasis on research to inform policy and practices. The LSOHC Northern Forest Section (Laurentian Mixed Forest Province) holds more than 85% of Minnesota's forests, over 14 million acres. The Northern Forest hasn't been immune to land cover conversion, fragmentation, and degradation. Yet maintenance of forest cover in this region has supported water quality, forest wildlife populations, and recreational opportunities for Minnesotans.

As noted in the LSOHC's 25-Year Framework, conservation leaders in Minnesota identified the loss of functioning systems and habitat fragmentation or degradation as the major constraint on the goal to increase Minnesota's conservation estate. Within the Northern Forest Section, restoration and enhancement activities were identified for LSOHC project support due to high levels of public ownership in this region.

Retention of forest cover in Minnesota is due in part to an economically viable forest economy; forests in Minnesota are primarily managed through commercial timber management. However, current forest management practices and funding resulting from those activities has not optimally maintained native plant communities for habitat and other benefits. Specifically, this project focuses on habitats that have limited timber markets; have been susceptible to agricultural conversion; have been simplified through management activities focused on marketable timber; or are threatened by invasive species.

- Jack pine woodlands are being lost to agricultural conversion and conversion to other forest types; many remaining stands require active management to maintain and enhance the quality and future opportunities for this habitat.

- Much of the oak on state land is currently in mid- to older-age classes, with few younger stands coming to serve future mast and oak habitat needs.
- Mixed hardwood stands are commonly managed to maximize timber production, resulting in younger, sometimes less diverse, forest stands.
- Without proactive management and stand-level species diversification, wet forest ash stands are at risk for conversion to non-forest cover types due to the presence of Emerald Ash Borer (EAB) in Minnesota.

DNR wildlife managers, ecologists, and foresters have identified forested state lands within the Northern Minnesota Drift and Lake Plains, Western Superior Uplands, and Southern Superior Uplands subsections for habitat enhancement activities including removal of undesired and invasive species, native hardwood and conifer tree planting and protection, and species diversification to benefit wildlife.

Depending on the forest community and site conditions, management actions designed to increase species and structural diversity may include prescribed fire, mowing, scarification, invasive species control, direct or aerial seeding, tree release and natural regeneration, planting, thinning, and bud capping or other seedling protection to help achieve existing Section Forest Resource Management Plan (SFRMP) goals, with an emphasis on increasing oak and/or conifer species. Forest diversification will promote forest resilience in the face of changing conditions (e.g., potential ash mortality in light of EAB) and enhance habitat conditions for a variety of game and non-game species.

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

- H7 Keep water on the landscape
- LU10 Support and expand sustainable practices on working forested lands

Which other plans are addressed in this proposal:

- A Vision for Wildlife and Its Use -- Goals and Outcomes 2006-2012
- Minnesota's Wildlife Action Plan 2015-2025

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

The first goal in Minnesota's Wildlife Action Plan is to ensure "the long-term health and viability of Minnesota's wildlife, with a focus on species that are rare, declining or vulnerable to decline." Performance measures include projects that are prioritized based upon the Wildlife Action Network, promote best management practices (e.g., Minnesota Forest Resources Council [MFRC] Voluntary Site-level Guidelines), facilitate habitat changes to sustain ecological function and resilience, and improve the condition of disturbance-dependent habitats.

The third goal in A Vision for Wildlife and Its Use is to have "healthy and productive wildlife populations and habitats managed on a sustainable basis." Application of ecological management principles to ensure a "diversity of forest types, ages, and patch sizes" as well as diverse age classes and stand-level diversity were identified as important for game species including white-tailed deer, ruffed grouse, woodcock, spruce grouse and pine marten.

This project will contribute

Which LSOHC section priorities are addressed in this proposal:

Northern Forest:

- Restore and enhance habitat on existing protected properties, with preference to habitat for rare, endangered, or threatened species identified by the Minnesota County Biological Survey

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:

Forest enhancement activities associated with long-lived tree species can provide benefits over multiple decades. In addition, project activities will be designed to support the desired future forest conditions identified in DNR SFRMPs and contribute to goals identified in the MFRC's landscape plans. Both SFRMPs and MFRC landscape plans are designed to provide a long-term vision and shorter-term operational direction for forest management in Minnesota. For example, DNR forest management plans have noted the age class disparities and called for increased efforts to successfully regenerate oak.

Project benefits for wildlife include promoting desirable species establishment and growth, resulting in more diverse forests that

provide habitat and food sources for a variety of wildlife. Increased species, structural, and age class diversity will also create more resilient stands to withstand threats such as insects, disease, and climate change. The benefits of forest diversity for wildlife habitat and long-term forest resilience are identified in a variety of conservation plans focused on species in greatest conservation need (e.g., Minnesota's Wildlife Action Plan), game species (e.g., Ruffed Grouse in Minnesota), forest communities (e.g., USDA's Minnesota Forest Ecosystem Vulnerability Assessment) and resource conservation (e.g., Minnesota Statewide Conservation and Preservation Plan).

In addition to game species such as white-tailed deer or ruffed grouse, examples of species that could benefit from enhanced habitat in the projects' focal forest communities include red-shouldered hawk, wood thrush, eastern towhee, forest salamanders, eastern hog-nosed snake, and northern barrens tiger beetle.

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:

Department staff targeted project sites, primarily within two ecological sections, that are on permanently protected, state-administered lands needing habitat-oriented forest enhancement which cannot readily be achieved simply through commercial timber production purposes. Potential project opportunities have been identified on over 80 Wildlife Management Areas, State Forests and Scientific and Natural Areas. Many of these units have substantial overlap with priority areas in Minnesota's Wildlife Action Plan and its Wildlife Action Network, including all seven of the associated Conservation Focus Areas mapped within this region. Substantial overlap also occurs with other priority management areas for the Northern Forest, such as High Conservation Value Forests designated as a component of third-party forest certification and Important Bird Areas in the area.

If funded, projects will be prioritized to:

- Support the Wildlife Action Network and Conservation Focus Areas identified by the Minnesota Wildlife Action Plan;
- Address timely management needs for sustaining or regenerating the critically-imperiled jack pine woodlands whose decline is increasing at alarming rates;
- Assure that the pine component of mixed species forests is sustained; and
- Maintain a dominant oak component in existing oak stands, enhance oak presence on sites where it is not dominant, and to introduce oak to appropriate sites where it is currently absent/not regenerating.

Other Considerations:

- Sites allowing multi-season access will be prioritized given challenges with recent winter conditions;
- Larger stands/blocks of stands will be prioritized;
- Stands near High Conservation Value (HCV) forests will be prioritized;
- Ash management will consider identified priority areas for proactive ash harvest and stand conversion; and
- Sites on Trust Land were not considered for habitat work to avoid conflicts with maximum economic revenue objectives.

Project activities will be designed to contribute to landscape-level habitat objectives identified within SFRMP plans as well as habitat and conservation priority areas described above.

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:

According to Minnesota's Wildlife Action Plan, habitat concerns, including degradation and fragmentation, are the main stressor for 70% of Species in Greatest Conservation Need (SGCN). This proposal includes management actions specifically recommended to enhance SGCN wildlife habitat value in the project's focal forest communities. Goal 1, Objective 1.1., of the Wildlife Action Plan is to "sustain and enhance species, habitat and landscape biodiversity within the Wildlife Action Network." In particular, implementation of SFRMP and MFRC regional landscape plans, maintenance/promotion of diversity in mesic hardwood stands, and enhancement of disturbance dependent habitats through actions that mimic natural disturbance (e.g., prescription fire) were identified as potential conservation actions to address Goal #1. By design, management actions are focused on habitats important for SGCN as well as wildlife and plant species.

Conservation Focus Areas (CFAs) likely to intersect with forest enhancement activities in this proposal include Aitkin Hardwoods, Cornish Hardwoods, Holyoke, Mille Lacs Moraines, Pine Sands North, Pine Sands South, and The St. Croix River Watershed. Target habitats in these areas include the mesic hardwood forests, fire-dependent upland conifer forests, and wet forests (e.g., ash forests) that are the focus of this OHF proposal. Forest enhancement actions recommended by the Wildlife Action Plan and proposed in this project include increased age, species, and structural diversity; gap harvests; invasive species monitoring and management; use of prescribed fire and alternate management methods to increase natural regeneration; reduction of herbivory impacts (e.g., via protection); and mechanical brush removal. Some target SGCN species identified in these CFAs include red-shouldered hawk (special concern), wood thrush, golden-winged warbler, eastern towhee, eastern whip-poor-will, forest salamanders, eastern hog-nosed snake, smooth green snake, and northern barrens tiger beetle (special concern). Habitat for Ram's Head (threatened) and White Adder's Mouth (special concern) orchids and Hill's thistle will also be enhanced by this project.

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

Ovenbirds (*Seiurus aurocapilla*) are found in upland forests statewide; typically in relatively mature forest but can also be found in younger forests. Deciduous, mixed coniferous-deciduous, and coniferous forests may be suitable. Ovenbirds nest on the ground in leaf litter. This species has been identified as a priority species to monitor, as an indication of the health of mature forest uplands, within the area represented by the LSOHC Northern Forest planning section. While territories vary in size and may overlap, an average of 10 pairs for every 10 hectares may be translated to roughly 16 pairs for every 40 acres.

White-tailed deer (*Odocoileus virginianus*) use a wide variety of forested habitats, are found throughout Minnesota, and are an important game species in the state. Deer have also been suggested as potential ecological indicators for forest systems. In the 33 forested deer permit areas for which deer densities are estimated, covering most of the LSOHC Northern Forest section, the six-year average (2010-2015) for pre-fawn deer densities across all deer permit areas is 13 deer per square mile of land (excluding water). This translates to 0.02 deer (pre-fawning) per acre of forest land habitat or roughly 1 deer (pre-fawning) for every 50 acres of land. On average, densities within the Forest/Prairie Transition, Metropolitan Area, and Southeast Forest LSOHC planning sections will be higher than those in the Northern Forest. Note that pre-fawn estimates provide an indication of deer numbers when they are at their seasonal low (spring).

Outcomes:

Programs in the northern forest region:

- Improved availability and improved condition of habitats that have experienced substantial decline *Habitat enhancement activities will promote the maintenance of oak and conifer species in forest stands. Area wildlife or forestry staff and regional ecologists will monitor completed projects to determine success of implementation and the need for future management and/or maintenance.*

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

Stands will be monitored for success with regular regeneration surveys at year 1, 5, and 10, and will receive additional silvicultural treatment as necessary. Released stands 10-15 years post harvest should be "free to grow."

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

| Year | Source of Funds | Step 1 | Step 2 | Step 3 |
|-----------|-----------------|--------------------------------|---|--------|
| 2020-2023 | DNR funding | First-year regeneration checks | Follow-up treatment as need and funding allows | |
| 2024-2027 | DNR funding | 5-year regeneration checks | Follow-up treatment as need and funding allows | |
| 2029-2033 | DNR funding | 10-Year regeneration checks | Follow-up treatment as need and funding allows. | |

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

Jack- and mixed-jack pine forests in Minnesota have experienced substantial decline; between 2003 and 2013, over 85,000 acres were lost in the Chippewa Plains and Pine Moraines—Outwash Plains subsections alone (reported by the USDA Forest Service). Without aggressive management, the presence and quality of this habitat will continue to decline.

The advanced age and limited regeneration success of oak and other mast-producing species has resulted in an age class imbalance that will require attention in order to maintain wildlife benefits such as mast production over time. Augmenting regeneration through targeted and alternative forest management techniques is needed now to maintain oak on the landscape.

Forest practices in recent decades have prioritized aspen management for commercial timber, resulting in reduced age/species/structural diversity of forests in many parts of the state. Additionally, Minnesota's ash forest is at risk due to the presence and expansion of EAB.

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

Associated forest management planning and timber sales administration will be supported by current DNR staff through implementation of SFRMP plans. However, our ability to track and directly tie expenditures to specific OHF projects precludes us from listing specific leverage amounts.

Relationship to other funds:

- Not Listed

Describe the relationship of the funds:

Not Listed

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

Not Listed

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 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, SNA, AMA, State Forests, Consolidated Conservation (state-administered))**

Do you anticipate federal funds as a match for this program - **No**

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 |
|---|----------------------------|
| Interdisciplinary review of targeted stands on annual exam lists, site-visits, selection or addition of stands for management | 2018, 2019, 2020 |
| Timber stand improvement: invasive species removal, regeneration harvest, mast tree release | 2018, 2019, 2020, 2021 |
| Trees (seeds or seedlings) ordered and planted | 2019, 2020, 2021, 2022 |
| First-year regeneration checks | 2020, 2021, 2022, 2023 |

Budget Spreadsheet

Total Amount of Request: \$987,800

Budget and Cash Leverage

| Budget Name | LSOHC Request | Anticipated Leverage | Leverage Source | Total |
|----------------------------|---------------|----------------------|-----------------|-----------|
| Personnel | \$40,000 | \$0 | | \$40,000 |
| Contracts | \$736,200 | \$0 | | \$736,200 |
| 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 | \$29,000 | \$0 | | \$29,000 |
| Professional Services | \$0 | \$0 | | \$0 |
| Direct Support Services | \$21,600 | \$0 | | \$21,600 |
| DNR Land Acquisition Costs | \$0 | \$0 | | \$0 |
| Capital Equipment | \$0 | \$0 | | \$0 |
| Other Equipment/Tools | \$0 | \$0 | | \$0 |
| Supplies/Materials | \$161,000 | \$0 | | \$161,000 |
| DNR IDP | \$0 | \$0 | | \$0 |
| Total | \$987,800 | \$0 | - | \$987,800 |

Personnel

| Position | FTE | Over # of years | LSOHC Request | Anticipated Leverage | Leverage Source | Total |
|---------------------------------|------|-----------------|---------------|----------------------|-----------------|----------|
| Specialist, technician, laborer | 0.13 | 3.00 | \$40,000 | \$0 | | \$40,000 |
| Total | 0.13 | 3.00 | \$40,000 | \$0 | - | \$40,000 |

Amount of Request: \$987,800
 Amount of Leverage: \$0
 Leverage as a percent of the Request: 0.00%
 DSS + Personnel: \$61,600
 As a % of the total request: 6.24%
 Easement Stewardship: \$0
 As a % of the Easement Acquisition: -%

How did you determine which portions of the Direct Support Services of your shared support services is direct to this program:

DNR calculates direct support services costs that are directly related to and necessary for each request based on the type of work being done and which division it is being done by.

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

The entire amount shown in the contract line of the budget will be used for enhancement work.

Does the amount in the travel line include equipment/vehicle rental? - Yes

Explain the amount in the travel line outside of traditional travel costs of mileage, food, and lodging:

The amount listed in the travel line is to support fleet costs for travel and operation of DNR field equipment.

Describe and explain leverage source and confirmation of funds:

State funding and federal dollars contribute to forest habitat management activities on WMAs, SFs and SNAs. However, the our internal tracking of these management expenditures precludes the ability to tie specific expenditures to specific OHF projects.

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, although a reduced number of habitat acres will be enhanced as a result. Additional prioritization to meet conservation plan goals would be required and could depend on whether priority habitats or geographies were identified for funding by the Council.

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 | 4,562 | 0 | 4,562 |
| Total | 0 | 0 | 4,562 | 0 | 4,562 |

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 | \$987,800 | \$0 | \$987,800 |
| Total | \$0 | \$0 | \$987,800 | \$0 | \$987,800 |

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 | 0 | 0 | 4,562 | 4,562 |
| Total | 0 | 0 | 0 | 0 | 4,562 | 4,562 |

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 | \$0 | \$0 | \$987,800 | \$987,800 |
| Total | \$0 | \$0 | \$0 | \$0 | \$987,800 | \$987,800 |

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 | \$217 | \$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 | \$0 | \$0 | \$217 |

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:

Project proposals are submitted by area wildlife managers after interdisciplinary coordination and receive reviews by regional and central office DNR staff for suitability. Prioritization of projects includes area assessment of need, opportunities, and feasibility given current forest management planning as well as review and consideration of related strategic and operational plans (e.g., SFRMP and MN Wildlife Action Plan). Because over 80 administrative units (WMAs, state forests, and SNAs) have been identified and require further review during annual forest management stand review, only a subset of parcels has been uploaded to give a general sense of project areas. If "0" appears for acres or dollars in the table below, it is because that location is associated with another project described elsewhere in the table. An attached map depicts current sites under consideration. As with other OHF grants, parcels may be changed, added, or deleted as needed in keeping with the scope of the project proposal.

Section 1 - Restore / Enhance Parcel List

Becker

| Name | TRDS | Acres | Est Cost | Existing Protection? |
|-----------------------------|----------|-------|----------|----------------------|
| Park Rapids Area WMAs , SFs | 14136219 | 0 | \$0 | Yes |

Beltrami

| Name | TRDS | Acres | Est Cost | Existing Protection? |
|-------------------|----------|-------|----------|----------------------|
| Bemidji Area WMAs | 14734206 | 0 | \$0 | Yes |

Carlton

| Name | TRDS | Acres | Est Cost | Existing Protection? |
|-----------------------|----------|-------|----------|----------------------|
| East Central WMAs/SFs | 04717225 | 0 | \$0 | Yes |

Cass

| Name | TRDS | Acres | Est Cost | Existing Protection? |
|---|----------|-------|-----------|----------------------|
| Brainerd, Aitkin, Cloquet Area WMAs/SFs | 13531222 | 440 | \$253,000 | Yes |

Clearwater

| Name | TRDS | Acres | Est Cost | Existing Protection? |
|-------------------|----------|-------|----------|----------------------|
| Bemidji Area WMAs | 14837224 | 65 | \$22,000 | Yes |

Crow Wing

| Name | TRDS | Acres | Est Cost | Existing Protection? |
|-----------------------|----------|-------|-----------|----------------------|
| East Central WMAs/SFs | 04528232 | 3,200 | \$242,200 | Yes |

Hubbard

| Name | TRDS | Acres | Est Cost | Existing Protection? |
|-----------------------------|----------|-------|-----------|----------------------|
| Badoura Jack Pine SNA | 13932211 | 70 | \$100,000 | Yes |
| Lester Lake SNA | 14232206 | 15 | \$60,000 | Yes |
| Park Rapids Area WMAs , SFs | 13933228 | 280 | \$41,000 | Yes |

Mille Lacs

| Name | TRDS | Acres | Est Cost | Existing Protection? |
|---------------------------------|----------|-------|----------|----------------------|
| Mille Lacs and Four Brooks WMAs | 04125229 | 300 | \$76,000 | Yes |

Morrison

| Name | TRDS | Acres | Est Cost | Existing Protection? |
|------------------------|----------|-------|-----------|----------------------|
| Little Falls Area WMAs | 04131230 | 192 | \$172,000 | Yes |

Pine

| Name | TRDS | Acres | Est Cost | Existing Protection? |
|-----------------------|----------|-------|----------|----------------------|
| East Central WMAs/SFs | 04317205 | 0 | \$0 | Yes |

Wadena

| Name | TRDS | Acres | Est Cost | Existing Protection? |
|-----------------------------|----------|-------|----------|----------------------|
| Park Rapids Area WMAs , SFs | 13733205 | 0 | \$0 | Yes |

Section 2 - Protect Parcel List

No parcels with an activity type protect.

Section 2a - Protect Parcel with Bldgs

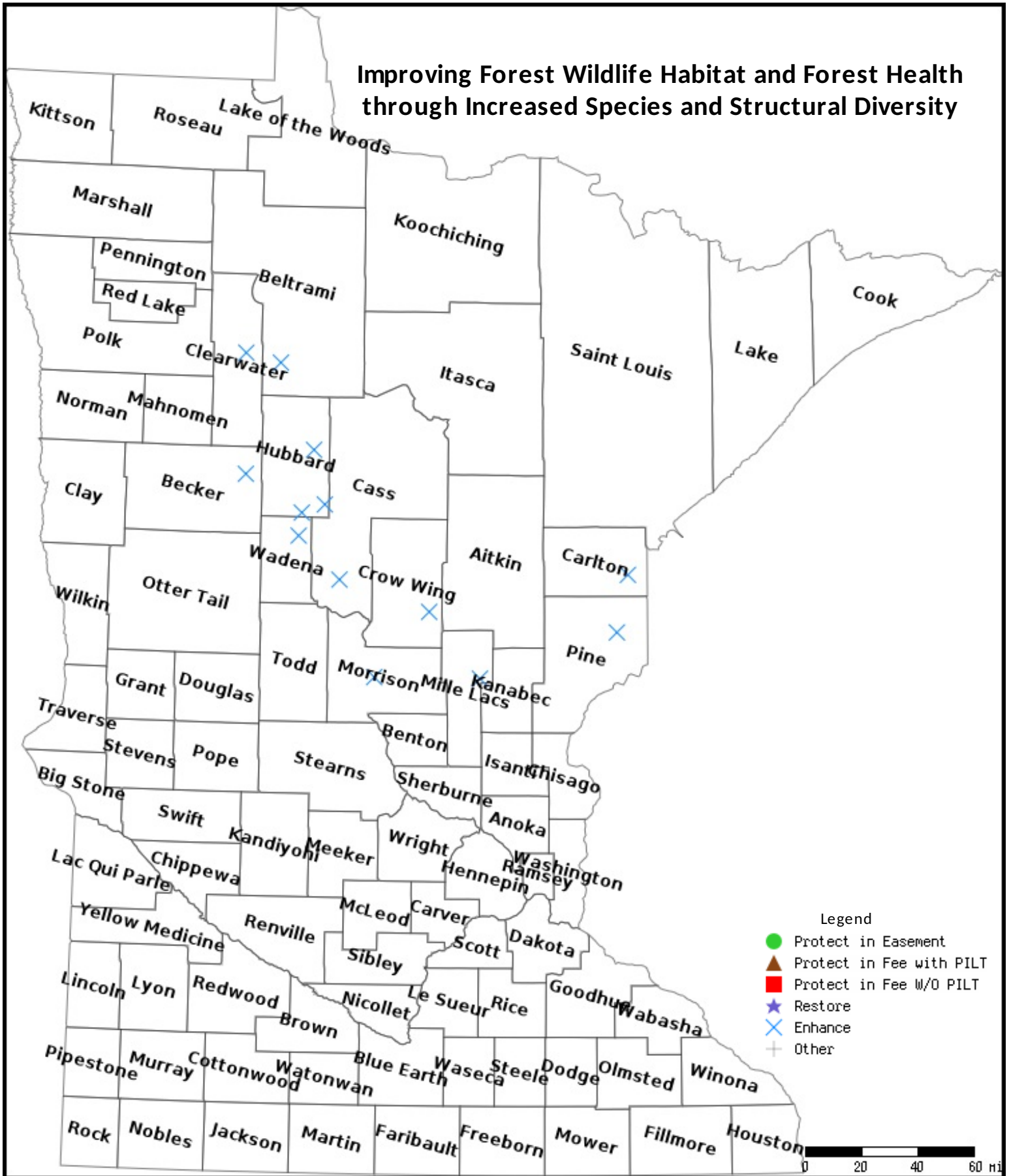
No parcels with an activity type protect and has buildings.

Section 3 - Other Parcel Activity

No parcels with an other activity type.

Parcel Map

Improving Forest Wildlife Habitat and Forest Health through Increased Species and Structural Diversity



Data Generated From Parcel List

Improving Forest Wildlife Habitat and Forest Health through Increased Species and Structural Diversity

Habitat Need

Current forest management practices and funding resulting from those activities has not optimally maintained native plant communities for habitat and other benefits.

Project Goals

This project will improve forest wildlife habitat benefits on over 4500 acres of forested state lands across Central and East Central Minnesota. Habitat enhancement activities will be designed to:

- improve mast/browse availability,
- enhance thermal cover,
- increase species/structural diversity,
- minimize invasive species, and
- promote forest community resilience for the benefit of game and non-game species.



Conifers provide important thermal cover



Increasing structural diversity provides habitat such as denning sites



Mast species support a variety of wildlife

Priority Habitats and Activities



Planting jack pine seedlings to ensure regeneration of Jack pine forests

Jack pine woodlands are being lost to agricultural conversion and conversion to other forest types; many remaining stands require active management to maintain and enhance the quality and future opportunities for this habitat.

Much of the oak on state land is currently in mid- to older-age classes, with few younger stands coming to serve future mast and **oak habitat** needs.

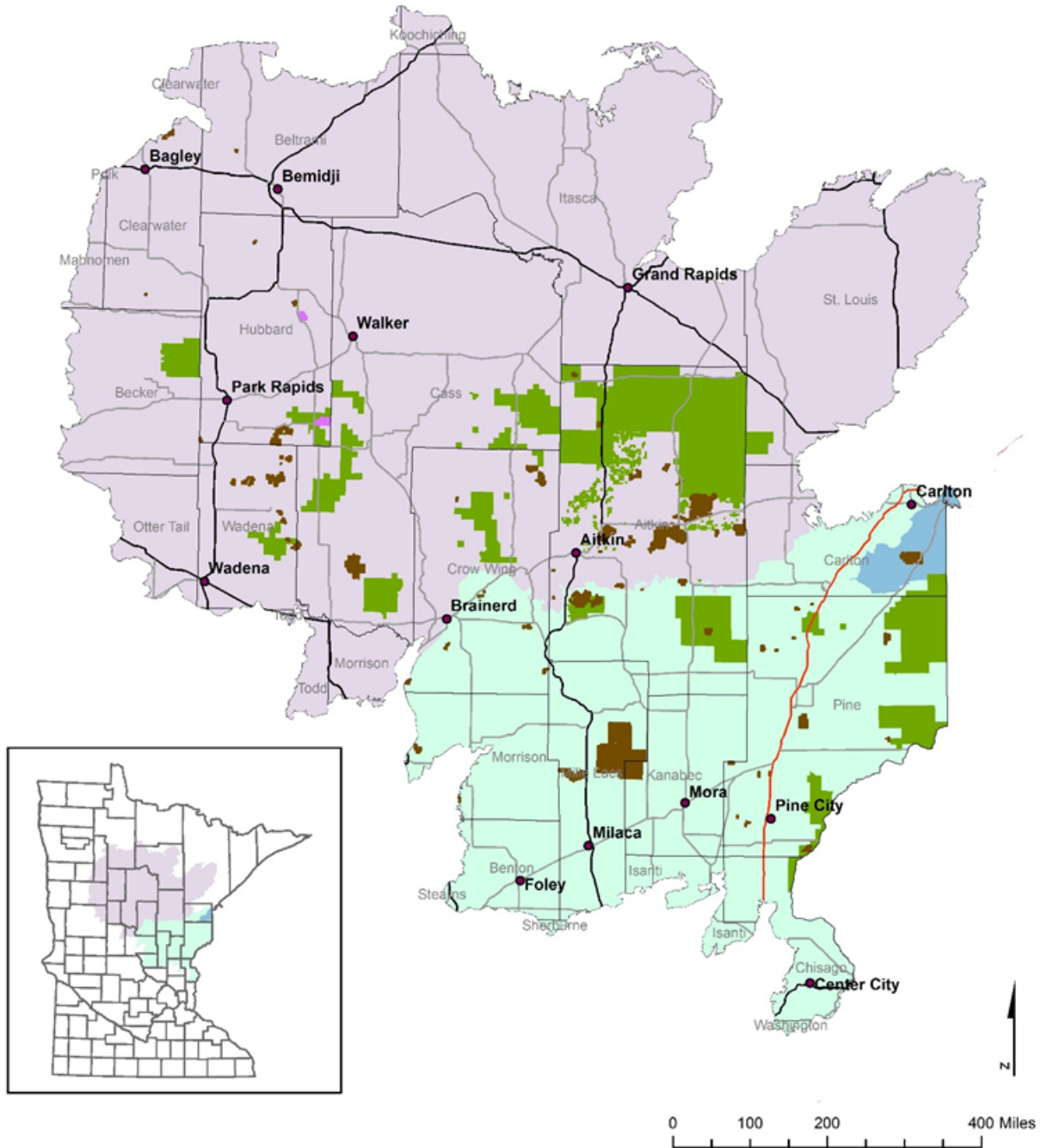


Without proactive species diversification, **wet forest ash stands** are at risk for conversion to non-forest cover types due to the presence of Emerald Ash Borer in Minnesota.

Mixed hardwood stands are commonly managed to maximize timber production, resulting in younger, sometimes less diverse, forest stands.

Improving Forest Wildlife Habitat and Forest Health

Potential Project Areas: LSOHC Proposal ML18/FY19



Legend

- N. Minnesota Drift & Lake Plains Section
- Southern Superior Uplands Section
- Western Superior Uplands Section
- Counties
- Interstate Trunk Highway
- U.S. Trunk Highway
- MN Trunk Highway
- Wildlife Management Areas
- Scientific and Natural Areas
- State Forests