**DEPARTMENT OF NATURAL RESOURCES**

**DRAFT FOR REVIEW**

## Lac qui Parle Wildlife Management Area

## Master Plan, 2024-2034

6/30/2024

**DEPARTMENT OF NATURAL RESOURCES**

Notice is hereby given that the Lac qui Parle Wildlife Management Area Master Plan, 2024-2034 for the Minnesota Department of Natural Resources has been completed and is now adopted.

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Sarah Strommen, Commissioner                                Date

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Dave Olfelt, Fish and Wildlife Division Director                 Date

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Kelly Straka, Wildlife Section Manager                         Date

# Executive Summary

## Department of Natural Resources Mission Statement

The mission of the Minnesota Department of Natural Resources (DNR) is to work with Minnesotans to conserve and manage the state's natural resources, to provide outdoor recreation opportunities, and to provide for commercial uses of natural resources in a way that creates a sustainable quality of life.

## Fish and Wildlife Division Vision and Purpose

The Fish and Wildlife Division (FAW) is responsible for managing fish and wildlife populations and providing related outdoor recreational opportunities in Minnesota. We conserve and enhance water and land habitats; regulate hunting, trapping, and fishing; foster environmental stewardship; and work with partners and the public to accomplish shared goals. Our work is informed by biological and social sciences, cultural and economic values, and our public trust obligation to manage fisheries and wildlife in perpetuity.

## WMA System Description and Purpose

Wildlife Management Areas (WMAs) are part of Minnesota's outdoor recreation system and are established to protect those lands and waters that have a high potential for wildlife production, public hunting, trapping, fishing, and other compatible recreational uses. They are the backbone of the DNR's wildlife management efforts and are key to protecting wildlife habitat for future generations. WMAs provide Minnesotans with opportunities for hunting, fishing, and wildlife watching, and by promoting important wildlife-based tourism in the state.

## Lac qui Parle WMA Vision Statement

Lac qui Parle WMA will be managed to provide quality hunting, fishing, trapping, and wildlife viewing, as well as other outdoor recreational experiences compatible with the statutory purpose of WMAs. These opportunities will be provided in a way that recognizes Lac qui Parle WMA's ecological significance as the only prairie-dominant major unit WMA in the state.
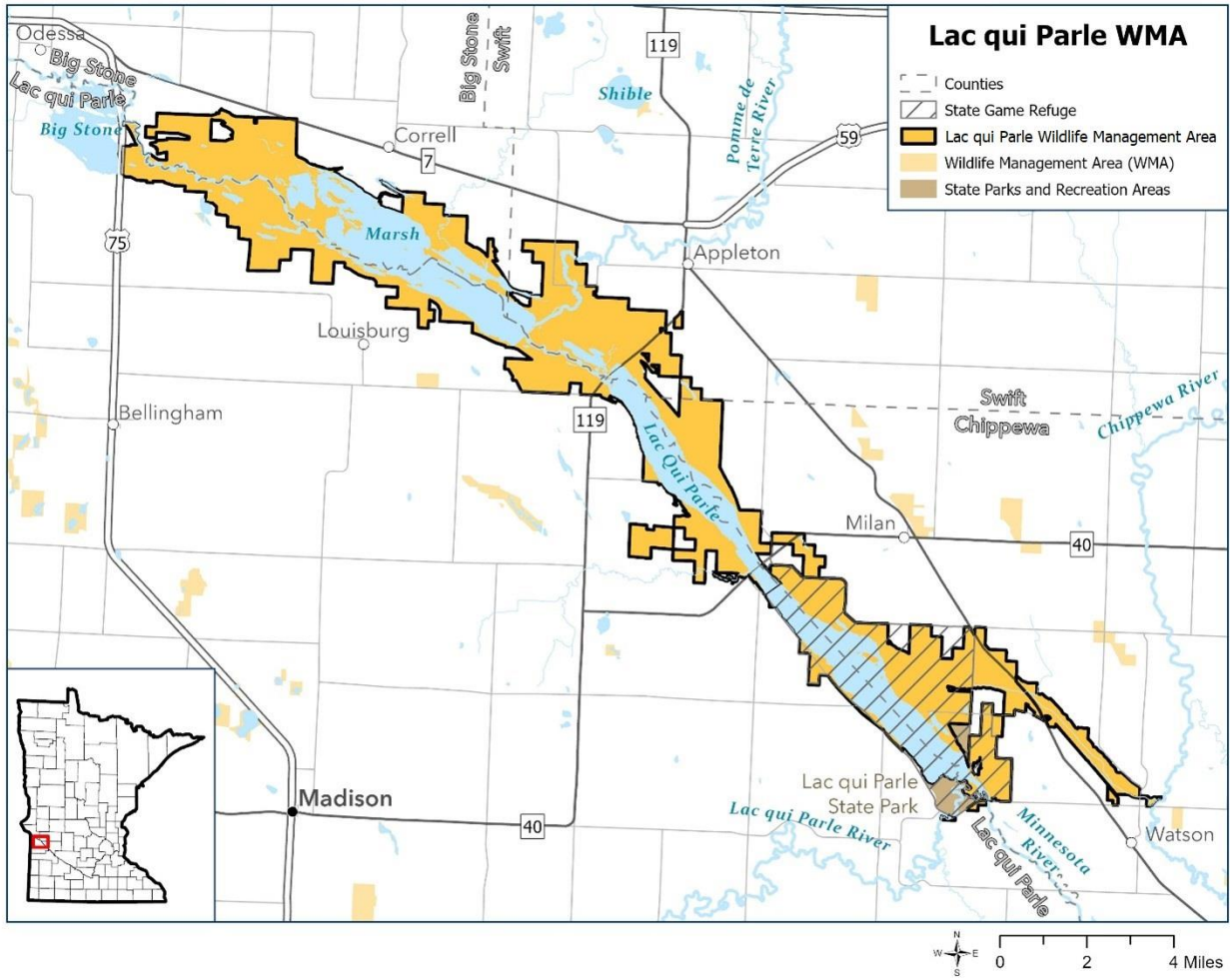
## Lac qui Parle WMA Master Plan Summary

This plan summarizes management activities for the Lac qui Parle WMA, an approximately 33,000-acre WMA in west-central Minnesota. The DNR completed the last master plan for Lac qui Parle WMA in 1977, which was intended to cover a 10-year period. The DNR also developed a Lac qui Parle Area Management Plan in 1997 that included the adjacent state park. Significant changes in this current plan reflect: a greater emphasis on restoring and enhancing native plant communities and habitats and the wildlife populations they support; increased knowledge of the plants and wildlife of Lac qui Parle WMA; new and evolving management techniques; changing wildlife and public use of the area; and new challenges like invasive species and changing climate. This plan reaffirms the commitment to provide healthy terrestrial and aquatic systems that support biodiversity and

1    outdoor recreation. Planned management actions will benefit a variety of wildlife species and improve human
2    use, as described below.

3    Management, restoration, protection and enhancement of prairies/grasslands will benefit prairie-dependent
4    species, waterfowl, white-tailed deer, pheasants, and furbearers by providing secure nesting habitat, cover and
5    food. Lac qui Parle WMA has some of the largest tracts of remaining native tallgrass prairie left in Minnesota and
6    in the Midwest. Management and restoration of wetlands and impoundments will benefit waterfowl, waterfowl
7    hunters, and birdwatchers. These habitats will support a wide range of goose, duck, shorebird, and waterbird
8    species, including Canada geese, mallards, blue- and green-winged teal and wood ducks, during spring and fall
9    migration seasons and the summer nesting and brood rearing seasons. The DNR will manage all wetland types
10   for a variety of open water and native emergent habitats favorable to a diversity of game and non-game species.
11   The DNR and partner agencies will manage Lac qui Parle Lake and Marsh Lake for less turbid water and healthy
12   vegetation. Management of upland oak forest communities and floodplain forests will benefit white-tailed deer,
13   turkey, rabbit, squirrel, and non-game species. Wetland and upland management activities will benefit aquatic
14   and terrestrial furbearers. Trappers, and wildlife observers will also benefit from ensuring there is quality
15   wetland habitat for aquatic furbearers and floodplain forest and upland habitats for terrestrial furbearers. Work
16   in these habitats is critical to support abundant fish and wildlife populations and provide hunting, trapping and
17   fishing opportunities on Lac qui Parle WMA. WMA users will also benefit from well-maintained roads, parking
18   lots, and clearly defined property boundaries that support public access to a rich diversity of wildlife and plant
19   communities. The maintenance and addition of modern buildings and other facilities provide WMA staff the
20   resources necessary to manage for quality habitats efficiently and safely.

21   This 10-year master plan spells out management goals and objectives as well as the strategies needed to achieve
22   them. Techniques are presented for management of the different habitat types, including prescribed fire;
23   grazing; haying; wetland protection, enhancement and restoration; and savanna/forest habitat enhancement
24   through thinning and invasive species management. An annual calendar of management activities is included, as
25   is a discussion of current and potential research and monitoring efforts.

1    **Figure 1. Lac qui Parle Wildlife Management Area**



2

# Contents

## Figures

# Tables

# 1   Introduction

## 2   Major Unit Definition

Minnesota currently has over 1,500 Wildlife Management Areas (WMAs) distributed across the state, totaling nearly 1.4 million acres. These WMAs are managed out of 37 local offices, and eight of them are classified as "major units" due to the large and generally connected acreages under management in that administrative area. Each of the major units manages a primary WMA and may also manage other nearby units. Major units are typically, although not always, distinguished by having resident staff (wildlife area supervisor and assistant wildlife area manager). They also typically have greater acreage that is more intensely managed than most WMAs; more fleet assets including heavy equipment such as bulldozers, tractors, and graders; larger staff complements; and more capital improvements.

## 11   Purpose of Plan

This master plan outlines the management of Lac qui Parle WMA through 2034, in accordance with the Minnesota Outdoor Recreation Act of 1975. The plan's purpose is to provide management guidance, a basis for allocating staff and fiscal resources, direction for annual work planning, and metrics for measuring management accomplishments.

The previous management plan was prepared in 1997, and many environmental and social changes have occurred since then. Minnesota's population has grown, the climate has changed and continues to change, invasive species have proliferated, new state and federal policies have been enacted, recreation demands and preferences have changed, and many wildlife and plant populations have declined throughout the state. A revised management plan is needed to address and manage these changing conditions. The plan update process also provides an opportunity to engage with a wide variety of Minnesotans. This plan is among six other comprehensive management plans the DNR is updating for the state's WMA major units. They are 10-year management plans, which will continue to be revised as new management practices develop, resource paradigms evolve, and new challenges are encountered.

## 25   Long-range Goals

For Lac qui Parle WMA, the overarching long-range goals outlined in this plan are:

1. To maintain or enhance wildlife populations, habitat, and biodiversity.
2. To maintain or increase hunting, fishing, trapping, and other compatible outdoor recreational opportunities.

## 30   Planning Process

The planning process began in July 2023, when an internal planning team was assembled of staff from multiple DNR divisions with diverse areas of expertise (Appendix A).

On October 9, 2023, the DNR published an online questionnaire and requested feedback from the public via a DNR news release. Postcards containing a link to the online questionnaire were distributed in the local community and handed out to individuals using Lac qui Parle WMA. The online questionnaire was available in English, Spanish, and Hmong, and was open for public input from October 9 to November 8, 2023. The questionnaire received responses from 358 individuals. The planning team also hosted an online public meeting on October 25, 2023, to provide an overview of Lac qui Parle WMA and collect public input. Appendix B contains a summary of all input. The planning team reviewed the public comments and considered them while developing content for the plan.

The review process for the full draft of the Lac qui Parle WMA plan started in the spring of 2024. The DNR received comments and incorporated them into multiple rounds of revisions. In March 2024, a complete draft of the plan was distributed for internal DNR staff review. A tribal review process took place from March 21 to April 3, 2024.

The DNR held a second public comment period from April 22 to June 2, 2024 to provide the public an opportunity to review the draft Lac qui Parle WMA plan. Comments were accepted via mail, email, an online survey, and two public meetings. The DNR hosted an in-person public meeting on May 8, 2024 and an online public meeting on May 9, 2024. A list of the comments received, and the responses provided to these comments, can be found in Appendix C.

## Guiding Documents

Management at Lac qui Parle WMA is guided by an array of statutes, rules, directives, and plans that do not have a strict hierarchy. A list of many of these documents is included in Table 1. The management objectives and strategies in this plan were developed within the context of these existing guidance documents. Due to the interdisciplinary nature of DNR's work, individual management decisions are often context-dependent and require consistent coordination beginning at the local level. When appropriate, the DNR aligns its work with plans developed by other agencies and organizations. This coordination helps ensure that all management decisions taken within Lac qui Parle WMA will be made to benefit wildlife, wildlife habitats, and compatible outdoor recreation.

## Select WMA Statutes and Rules

Minnesota Statues, Chapter 84 Department of Natural Resources, Section 84.942 Fish and Wildlife Resources Management Plan states that the commissioner shall prepare fish and wildlife management plans designed to accomplish the policy of section 84.941.

Minnesota Statutes, Chapter 86A Outdoor Recreation System, Section 86A.05 Classification and Purposes defines the purpose of WMAs as "to protect those lands and waters that have a high potential for wildlife production and to develop and manage those lands and waters for the production of wildlife, for public hunting, fishing, and trapping, and for other compatible outdoor recreation uses." It also directs WMAs be administered in a manner that will "perpetuate, and if necessary, reestablish quality wildlife habitat for maximum production of a variety of wildlife species." Finally, "public hunting, fishing, trapping, and other uses shall be consistent with

the limitations of the resource, including the need to preserve an adequate brood stock and prevent long-term habitat injury or excessive wildlife population reduction or increase. Physical development may provide access to the area but will be developed to minimize intrusion on the natural environment."

Minnesota Statutes, Section 86A.09 Development and Establishment of Units describes the requirements that apply to the development of the master plan.

Minnesota Statutes, Section 97A.135 Acquisition of Wildlife Lands, Subdivision 1 Public Hunting and Wildlife Areas states that the commissioner may designate land acquired under this subdivision as a WMA for the purposes of the outdoor recreation system.

Minnesota Rules, Chapter 6230 Wildlife Management has additional rules that apply to WMAs.

## Additional Documents

**Table 1. Additional documents used to guide the development of the Lac qui Parle WMA Master Plan. Acronyms used in this plan are listed in Appendix D.**

| Document Name | Plan Year | Plan Owner |
|---|---|---|
| Audubon Blueprint for Minnesota Bird Conservation | 2014 | Audubon Minnesota |
| Big Stone National Wildlife Refuge Comprehensive Conservation Plan | 2012 | USFWS |
| Conservation Agenda | 2015-2025 | DNR |
| Deer Population Goal Setting | 2022 | DNR |
| Executive Order 11990, Protection of Wetlands | 1977 | Executive Order |
| FAW Directive No. 070605: Development Standards for WMA/AMAs | 2010 | DNR |
| Forest Resource Management Plan Strategic Direction 10-Year Stand Exam List (2021-2030) | 2018 2019 | DNR |
| Lac qui Parle Area Management Plan | 1997 | DNR |
| Lac qui Parle Lake Management Plan | 2016 | DNR |
| Lac qui Parle Lake Management Plan Amendment | 2018 | DNR |
| Lac qui Parle Wildlife Management Area Master Plan, 1977-1986 | 1977 | DNR |
| Long Range Duck Recovery Plan | 2006 | DNR |
| Long Range Plan for the Wild Turkey in Minnesota | 2006 | DNR |

| Document Name | Plan Year | Plan Owner |
|---|---|---|
| Managing Minnesota's Shallow Lakes for Waterfowl and Wildlife: Shallow Lakes Program Plan | 2010 | DNR |
| Marsh Lake Management Plan | 2019 | DNR |
| Minnesota Prairie Conservation Plan | 2011 | Minnesota Prairie Plan Working Group |
| Minnesota's Endangered Species Statute | 2022 | Minnesota Statute |
| Minnesota's White-tailed Deer Management Plan | 2019-2028 | DNR |
| Minnesota's Wildlife Management Area Acquisition | 2002 | The Citizens' Advisory Committee |
| Minnesota's Wildlife Action Plan 2015-2025 | 2015-2025 | DNR |
| One Watershed One Plan | Ongoing | BWSR |
| Pheasant Action Plan | 2020-2023 | DNR |
| Surveillance and Management Plan for Chronic Wasting Disease | 2019 | DNR |
| Wetland Conservation Act | 1991 | BWSR |

# History

## Area History

The Lac qui Parle area (Figure 1) has long been known for its plentiful and rich natural resources. Knowledge of the habitats, wildlife, and communities in an area at different periods can be a valuable tool for natural resource planning into the future. The area has undergone substantial human and ecological changes since European colonization. The Dakota and other indigenous peoples traveled in and out of the Minnesota River Valley and surrounding lands for thousands of years prior to Europeans and relied heavily on its natural resources for subsistence and cultural uses. For at least the past millennium, in addition to hunting and gathering, these indigenous peoples cultivated various crops. They used fire to support these land uses, influencing plant communities, habitats, and wildlife species (e.g., elk and bison). Understanding these historical forces that helped shape and maintain a diverse tallgrass prairie landscape are critical to preserving and revitalizing this now-endangered grassland landscape and the species that depend on it.

Explorers, fur traders, and surveyors visited and started to inhabit the Minnesota River Valley in the 1700s and early 1800s (Minnesota River Basin Data Center). Lac qui Parle is a French translation of the name given to the lake by the Dakota, the "Lake that Speaks." Joseph Renville, a Dakota-French interpreter and fur company agent, worked with missionaries in the vicinity to create the first Dakota written language alphabet and dictionary; see the Minnesota Historical Society's Lac qui Parle Mission site for additional information.

Four bands of Dakota – the Mdewakanton, Wahpekute, Sisseton, and Wahpeton – ceded most of their homelands in southern Minnesota through a series of treaties in 1851. The Dakota moved to reservations along the Minnesota River in exchange for promises of food, supplies, and regular payments from the United States government (Reciher, 2014). White settlement accelerated in the 1850s. The Dakota people received little of the payment promised and experienced starvation and death during the summer of 1862 when the United States government failed to provide the food promised to them by treaty. This led to the U.S.-Dakota War of 1862 and the subsequent forced removal of the Dakota from their homelands.

With the region's fertile soils and favorable climate for agricultural production, farming became a primary draw and occupation for white settlers. Thus, the prairie and wetland landscapes were dramatically transformed into an agriculturally dominated system.

## Lac qui Parle WMA History

The area that is now Lac qui Parle WMA was first established in 1936 as a state-sponsored flood control project under the federal Works Progress Administration. The unit was authorized as a federal flood control project later in 1936. By 1939, the state completed a series of water control structures, and the United States Army Corps of Engineers (USACE) completed the remainder of the project between 1941 and 1951. Operational authority was transferred from the Minnesota Commissioner of Drainage and Waters to USACE in 1950. In 1957, the Minnesota Legislature placed project lands, except for a small acreage near the water control structures, under the management of the Minnesota Conservation Department, today the DNR, for use as a wildlife refuge and public hunting grounds. The acreage at the time of transfer was 22,877 acres. For more information about the flood control project, and the resulting state park and wildlife area, see this brochure from Lac qui Parle State Park.

Since 1957, Lac qui Parle WMA has expanded to increase the area's potential for wildlife production; to protect, restore, and enhance native plant and animal communities; and to increase outdoor recreation opportunities. In 2024, Lac qui Parle WMA covered 33,567 acres.

The Lac qui Parle WMA has two designated units, each with historically very different management focus:

- The State Game Refuge, centered on lower Lac qui Parle Lake, which is most famous for its role in the restoration of Canada geese and for goose hunting.
- The larger land base of WMA designated lands that lie generally east of Chippewa County Road #32 and northwest of State Highway 40 (Figure 1).

## Lac qui Parle State Game Refuge and Canada Geese

The Lac qui Parle State Game Refuge served a pivotal role in the story of Canada geese restoration in the United States. In the early 1900s, Canada geese were rare across the United States. At one time, the giant Canada goose, a subspecies of Canada goose that does not reliably migrate like other subspecies, was thought to be extinct. In July of 1958, the Lac qui Parle State Game Refuge was established under Game Refuge Order #274. The Lac qui Parle Goose Management Project began that same year with the stated goals to re-establish Canada geese in Minnesota and to attract migratory geese. Initially, two locations were considered: Marsh Lake and

lower Lac qui Parle Lake. The lands surrounding lower Lac qui Parle Lake were ultimately selected due in part to the amount of open water, topography, cropland, and ownership patterns. In the early 1960s, Dr. Harold Hanson of the Illinois Natural History Survey rediscovered a flock of giant Canada geese residing in Rochester, Minnesota. These birds then became the "seed stock" for restoration of the giant Canada goose. The 1977 Lac qui Parle WMA Master Plan provides more details on early goose restoration efforts, and early goose and hunt management.

Goose hunting became very popular in the 1960s and Lac qui Parle WMA, with its large concentration of geese, became a destination for waterfowl hunters. In the early years, goose hunting took place in the road ditches surrounding the refuge, with high hunter numbers and intense competition for hunting spots. To facilitate this use, 102 goose hunting blinds were established on the WMA in 1974. Although overnight camping was not allowed, many goose hunters paid local youth to sleep in the blinds to reserve their spots. In 1976, a reservation system was instituted with four drawings per day; in the first year of the reservation system, over 12,000 hunters used the refuge blinds. At the height of goose hunting in the late 1980s, almost every field within a 10-mile radius of the refuge had goose hunters, with daily car counts exceeding 200 vehicles. Goose hunting generated millions of dollars in local economic activity. High harvest levels, short seasons, and the emergence of avian cholera caused tension over the balance of allowable harvest and economic activity. In the 1990s, goose blinds were moved out of the road ditches into the refuge to increase hunter satisfaction. A few years later, below-ground pits were installed to encourage field hunting and the use of decoys and calling. Hunting regulations became less restrictive as goose hunter numbers declined, reflecting overall declines in hunter numbers. The reservation system was discontinued in 2014, and the shell limit was eliminated in 2023. Today, 51 goose hunting blinds remain.

Peak numbers of Canada geese at Lac qui Parle WMA steadily increased from only a few hundred in the 1950s to over 150,000 by the mid-1980s. Annual goose numbers then ranged from 120,000 to 150,000 geese over the next 20 years. However, starting in 2008, goose numbers began to decline; recently, annual goose numbers have peaked at around 11,000 to 20,000 birds. In addition, the dates when migratory geese arrive at Lac qui Parle WMA have occurred later in the season since the 1980s. From the 1950s through the 1980s, migratory geese started arriving in mid-September and peak numbers occurred in October. In the 1990s, geese did not start arriving until mid-October and numbers did not peak until November. Today, geese do not arrive until late November or early December.

The changes in migratory goose numbers and arrival dates at Lac qui Parle WMA are also observed at other mid-latitude goose staging areas and involve many interrelated factors. Changes in agricultural production are one factor affecting migration. Corn is now grown farther north, and fall tillage is increasingly rare across Canada and the Dakotas. This means that high-energy food for migratory geese persists for longer periods of time north and west of Minnesota, which allows for delayed migration. Climate change is also affecting the migration patterns of geese. Snow and cold temperatures, which trigger geese to start migrating south, are arriving later in the season. At the same time, warm temperatures that trigger geese to migrate north are beginning earlier in the season at Lac qui Parle WMA. Due to these shorter winters, geese and other migratory birds stay for only brief periods of time at Lac qui Parle WMA. The migration corridor has also widened due to a very wet cycle in the 1990s and an abundance of water in the Dakotas, increasing options beyond Lac qui Parle WMA for geese to

stop on their migration. The resurgence of giant Canada geese across the landscape is also a factor, as these birds act as "decoy flocks"; when migratory geese leave Canada and encounter giant Canada geese across Minnesota and the Dakotas, they settle with them instead of continuing to migrate.

Interestingly, the spring concentration of waterfowl at Lac qui Parle WMA has not changed over the same period. The State Game Refuge still provides sanctuary and food to hundreds of thousands of waterfowl as they push north to their breeding grounds. Although Canada goose numbers have declined, number of species such as white-fronted geese have seen recent increases.

The Lac qui Parle Goose Management Project has completed its stated goals. Giant Canada geese are now common across the Midwest, and migratory goose populations are robust and now offer hunting opportunities throughout Minnesota. While migration patterns have changed, Lac qui Parle WMA's commitment to migratory waterfowl and their habitats remains.

## WMA Designated Lands and Management Efforts

The late 1950s through the 1960s was a period of rapid growth for Lac qui Parle WMA. Accomplishments during this time included hiring staff and securing equipment, facilities, and residences. Resurveying and posting property boundaries using barbed wire fences was an initial priority for WMA staff; encroachment by other parties was common since the lands condemned for the Flood Control Project were never surveyed. A few of these initial boundary fences remain on Lac qui Parle WMA today. Land acquisition was another early priority and focused on rounding out irregular boundaries and securing lands in the state game refuge for the Lac qui Parle Goose Management Project. Upland habitat work during this period focused on establishing dense bromegrass and alfalfa nesting cover, planting woody cover, establishing the first agricultural agreements, and noxious weed control. DNR staff also built most of the waterfowl impoundments (i.e., areas designed to control and hold water using dams or dikes) during this period. Lac qui Parle WMA had two dedicated heavy equipment operators who traveled across the region building dikes and water control structures, many of which remain today. Impoundment work focused on larger, deeper wetlands, as the importance of temporary and seasonal wetlands for breeding waterfowl was not well understood at the time.

In the 1980s, appreciation and understanding of prairie habitat started to grow along with efforts to protect the few remaining native prairie parcels. To support these efforts, DNR formed a strong partnership with The Nature Conservancy (TNC) that remains today. Many of the highest-quality native prairie tracts in Lac qui Parle WMA were purchased by TNC and then donated to the DNR. Thanks to concerted efforts by numerous agencies, non-profits, and individuals across decades, most remaining native prairie tracts are now under permanent protection across the upper Minnesota River Valley. Using fire as a prairie management tool also began in the late 1980s and grew throughout the 1990s. Passage of Minnesota's Legacy Amendment in 2008 enabled the formation of DNR "roving crews", with specialized equipment that could operate in wet ground and open water. The staff on these crews are solely dedicated to habitat enhancement and restoration; on prairie habitats, this work includes prescribed burns, tree removal, grassland restorations, removal of old fencing, and installing fenceposts for conservation grazing.

Cattle grazing as a prairie management tool began at Lac qui Parle WMA in the 1990s, and several partnerships have since formed with local cattle producers. Grazing regimes started simply (e.g., grazing one month in spring) and grew in complexity, including a 2012 3,000-acre patch-burn-graze project at Chippewa Prairie in cooperation with TNC. That project aimed to harness the powerful fire-grazing interaction that shaped the prairies and use fire instead of fences to move cattle. The DNR's Minnesota Biological Survey (MBS) installed research plots to study the effects of fire and grazing across the plant and animal communities.

In the 1970s and from the late 1990s through early 2000s, the DNR and partners made two attempts to restore greater prairie-chickens to Lac qui Parle WMA and the surrounding landscape. Greater prairie-chickens are one of four native grouse species in Minnesota and are associated with open prairie habitat. The first attempt used birds from the Carlos Avery Game Farm. Despite the best efforts of WMA staff, the restoration effort failed, with the pen-reared birds unable to thrive in Lac qui Parle WMA. The second attempt was under the direction of the late Dr. John Toepfer, a nationwide expert in prairie grouse conservation. From 1999 to 2006, the DNR and partners released 574 wild-trapped greater prairie-chickens in the project area, and all birds were radio-marked. Surveys recorded over 100 males on booming grounds. Adult survival was high, but unfortunately, chick survival was low. The birds disappeared from Lac qui Parle WMA by 2013.

Surveys of radio-marked prairie-chickens also helped locate several sharp-tailed grouse dancing grounds. These sharp-tailed grouse had arrived unaided, probably from South Dakota. A few dancing grounds remain today at Lac qui Parle WMA. Sharp-tailed grouse are considered more adaptable to a range of habitat types.

The Marsh Lake Ecosystem Restoration Project was the culmination of several decades of planning that began in the 1970s.The aim was to improve water quality and habitat by redesigning the Marsh Lake dam to allow water level manipulation than more closely mimics the natural variability of a prairie lake. Through a long planning process, the project came to fruition through the coordination of USACE, Upper Minnesota River Watershed District, Ducks Unlimited, and the DNR. The completed project involved returning the Pomme de Terre River to its original channel below the Marsh Lake Dam, building a new embankment road, installing a rock ramp fishway with a notch in the original spillway, and installing a water control structure.

Following the completion of the construction phase of the project, the DNR and partners initiated a drawdown of Marsh Lake in the fall of 2019. This drawdown continued until June 2022, when the gates were closed. Since June 2022, the lake has been allowed to rise and lower with the seasons and prevailing precipitation and runoff, as designed. Any future drawdowns will be guided by the Monitoring and Adaptive Management Plan for the Marsh Lake Ecosystem Restoration Project.

For more information about Marsh Lake restoration, including the history, habitat changes, project features, and videos, view the Marsh Lake Habitat Enhancement Project StoryMap provided by the USACE.

## Archaeological and Historic Aspects

Three prehistoric burial mounds are in Chippewa County just outside Lac qui Parle WMA. Nine other burial mounds are located within Lac qui Parle State Park. None of the sites have been excavated. Other burial mounds are known in the vicinity of Lac qui Parle WMA.

The Minnesota State Archaeologist previously assessed the archaeological potential as follows: "This is an area of extremely high potential as reflected in the large number of archaeological sites recorded in the area. The area has not been surveyed to locate habitation or village sites, and these must exist in numbers and most probably in the lowlands within the management area." (Johnson, 1977)

Four sites of historic interest are in Lac qui Parle WMA in Lac qui Parle County. The sites include wagon road remnants, a habitation site, a river crossing, and a partially completed railroad line, all of which date to the early Euro-American settlement period.

# Existing Conditions

## Land Ownership

### Introduction

Land ownership and associated policies strongly influence natural resource management on state-managed lands. Management goals and designation type are affected by acquisition history, present land ownership patterns, sources of acquisition funds, and state and county policies. Multiple land type designations make up Lac qui Parle WMA, each carrying different implications.

### Acquisition of Wildlife Lands

The commissioner of natural resources, or their designee, such as the FAW director, is authorized to acquire lands for wildlife management purposes (Minnesota Statutes, 1978). Proposed acquisitions are reviewed through the Strategic Land Asset Management process. This process uses six goals to affirm an acquisition aligns with the DNR's strategic land portfolio. After approval through this region-led review process, FAW may attempt to acquire lands from willing sellers. FAW must also obtain approval from the appropriate county board before land can be purchased for a WMA. Newly acquired WMAs are designated by the commissioner and the public is notified through the State Register.

The DNR uses multiple funding sources for wildlife land acquisition, including the Game and Fish Fund (GFF), which is funded by proceeds of hunting and fishing licenses, and federal matching funds from the Pittman-Robertson Wildlife Restoration Act. In addition, wildlife land acquisition has been supported through state bonding funds, and through the Environment and Natural Resources Trust Fund as recommended by an administrative committee, the Legislative-Citizen Commission on Minnesota Resources (LCCMR). A legislative appropriation known as the Outdoor Heritage Fund (OHF) became available for wildlife land acquisitions starting in 2009 through its administrative body, the Lessard-Sams Outdoor Heritage Council.

Lands purchased with federal dollars and most purchased with state dollars have use restrictions. The land must be bought and continue to be used for wildlife conservation purposes. Examples of such programs include the federal Pittman-Robertson Fund (50CFR Part 80.134), the OHF, and the state GFF. Generally, approved wildlife conservation activities in Lac qui Parle WMA include the operation of public hunting grounds and the maintenance, restoration, and enhancement of wildlife habitats.

**Acquisition of the Present WMA**

In 1957, the Minnesota Executive Council transferred 22,877 acres of the Lac qui Parle flood control project to the DNR for a wildlife refuge and public hunting ground. Since 1957, approximately 9,100 acres were purchased from private owners using funds from the Pittman-Robertson Wildlife Restoration Act, the North American Wetlands Conservation Act, the OHF, and others. The federal government licenses an additional 340 acres to the DNR. The unit area as of March 2024 was approximately 33,567 acres.

## Area Description

### Landscape Context

Lac qui Parle WMA lies on the western edge of the Minnesota River Prairie Ecological Subsection (Figure 2). The boundaries of this subsection coincide with large till plains flanking the Minnesota River. Lac qui Parle WMA is bounded to the southwest by the Prairie Coteau. A series of end moraines define the eastern boundary, starting with the Alexandria Moraine to the northeast and ending with end moraines associated with the Des Moines lobe in the southeast. The Minnesota River Prairie subsection consists of a gently rolling ground moraine about 60 miles wide. Loamy ground moraine (till plain) is the dominant landform, but end moraines and lake plains also occupy a significant area (Hobbs & Goebel, 1982). The Minnesota River occupies a broad valley that splits the subsection in half. The valley was created by Glacial River Warren, which drained Glacial Lake Agassiz (Matsch & Wright, 1967).

1    **Figure 2. Ecological subsections of Minnesota.**



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3    Lac qui Parle WMA ranges in elevation from roughly 920 feet above sea level (the lowest depth of Lac qui Parle

4    Lake) to roughly 1,000 feet above sea level. The highest elevation is above the bluff line that encircles most of

5    the lakes and river valley.

6    Lac qui Parle WMA has several water bodies within its boundaries. The Minnesota River flows through the entire

7    unit from northwest to southeast. The mouth of the Pomme de Terre River is just below Marsh Lake and flows

8    into the Minnesota River. The Lac qui Parle River flows into the Minnesota River at the base of Lac qui Parle Lake

9    near the Churchill Dam. The Chippewa River will flow into Lac qui Parle Lake through the Watson Sag during high

1 water periods. Several minor streams and ditches flow into Lac qui Parle WMA, as well as several fens and

2 springs. Lac qui Parle Lake and Marsh Lake are dammed reservoirs entirely in Lac qui Parle WMA boundaries.

3 The Lac qui Parle and Pomme de Terre Rivers terminate their respective watersheds in Lac qui Parle WMA; this,

4 along with a highly altered watershed, is the cause of frequent flooding. Flooding conditions place additional

5 burdens on both wildlife and human users of Lac qui Parle WMA. Wildlife species expend additional energy to

6 adapt to flood conditions and can experience impacts on their habitat and reproduction. Impacts on people

7 include lost recreational opportunities and increased expenditures and workload due to the effects of flooding

8 on infrastructure.

9 **Other public lands adjacent to Lac qui Parle WMA include the Big Stone National Wildlife Refuge (NWR), TNC Chippewa**

10 **Prairie and Plover Prairie Preserves, Lac qui Parle State Park and Hastad and Hegland Waterfowl Production Areas**

11 **(WPAs; Figure 3). There are numerous other conservation lands in the vicinity, including WMAs, WPAs, Scientific and**

12 **Natural Areas (SNAs), United States Fish and Wildlife Service (USFWS) easements, Minnesota Board of Water and Soil**

13 **Resources (BWSR) easements, and Conservation Reserve Program (CRP) lands (Table 2,** *Conservation lands and acreages

14 derived from DNR Quick Layers for ArcGIS, March 2024.

15 Figure 4). These tracts of protected land provide critical habitat for diverse wildlife species and rare features,

16 such as fens, in this vastly altered landscape. Lac qui Parle WMA and the surrounding area have been recognized

17 in several planning initiatives, including Audubon Minnesota's Important Bird Areas and Minnesota's Wildlife

18 Action Plan (MNWAP).

1    **Figure 3. Public lands in the vicinity of Lac qui Parle WMA**
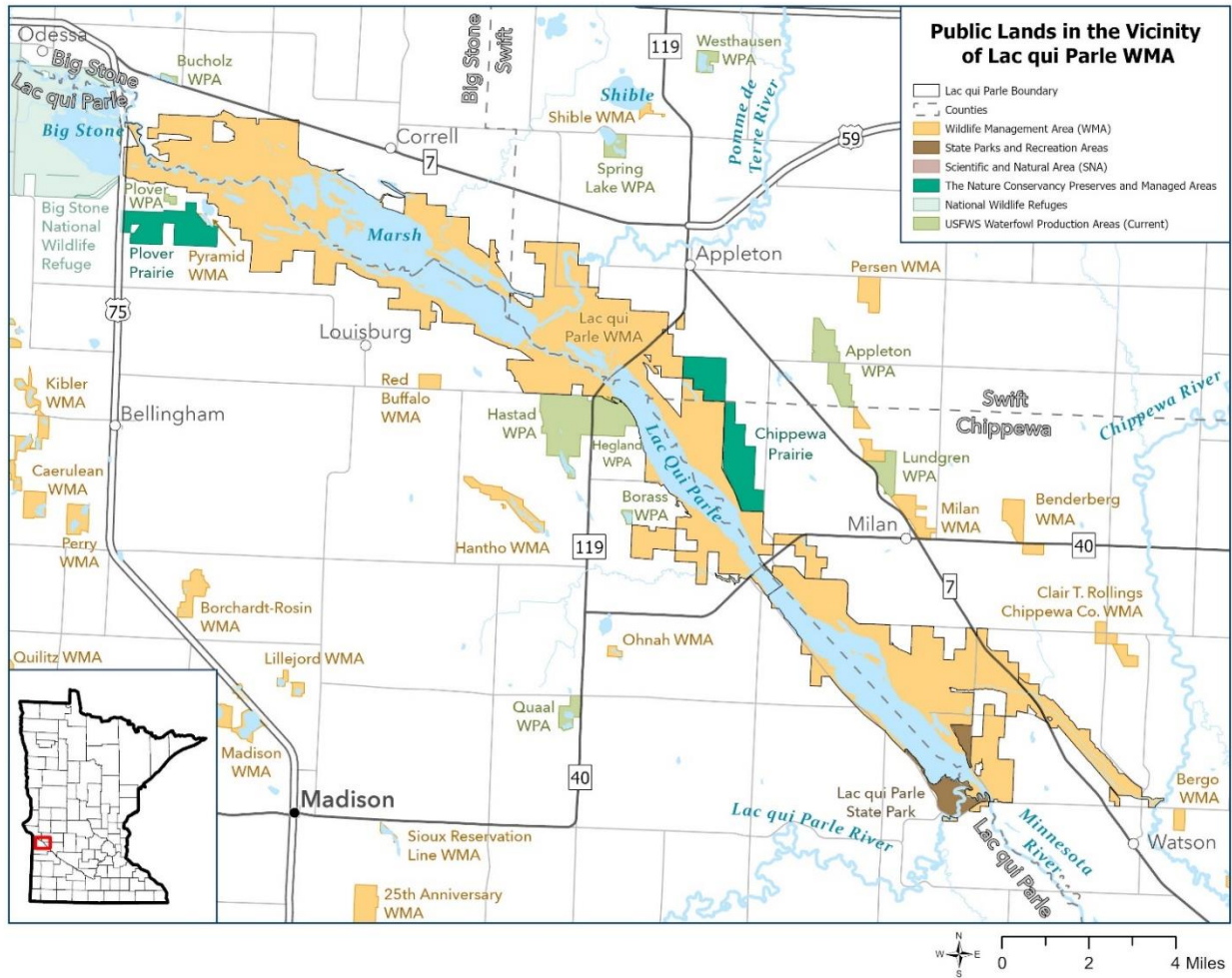


2

3    **Table 2. Total acres of conservation lands in the four counties covered by Lac qui Parle WMA.**

| Land Unit | Big Stone County | Chippewa County | Lac qui Parle County | Swift County |
|---|---|---|---|---|
| Lac qui Parle WMA | 7,329 | 9,940 | 11,745 | 4,553 |
| Other WMA | 4,426 | 3,387 | 10,894 | 6,816 |
| SNA | 269 | 235 | 79 | 0 |
| State Park | 1,023 | 214 | 443 | 0 |
| NWR | 1,100 | 0 | 10,566 | 0 |
| WPA | 12,626 | 1,049 | 4,430 | 9,384 |
| USFWS Easement | 4,880 | 0 | 730 | 1,066 |
| BWSR Easement | 1,800 | 10,671 | 10,118 | 9,266 |

| Land Unit | Big Stone County | Chippewa County | Lac qui Parle County | Swift County |
|---|---|---|---|---|
| TNC Preserves and Managed Areas | 0 | 861 | 919 | 520 |
| Total Acres | 33,453 | 26,357 | 49,924 | 31,605 |

1  *Conservation lands and acreages derived from DNR Quick Layers for ArcGIS, March 2024.

2  **Figure 4. CRP enrollments by federal fiscal year, 1986-2022**
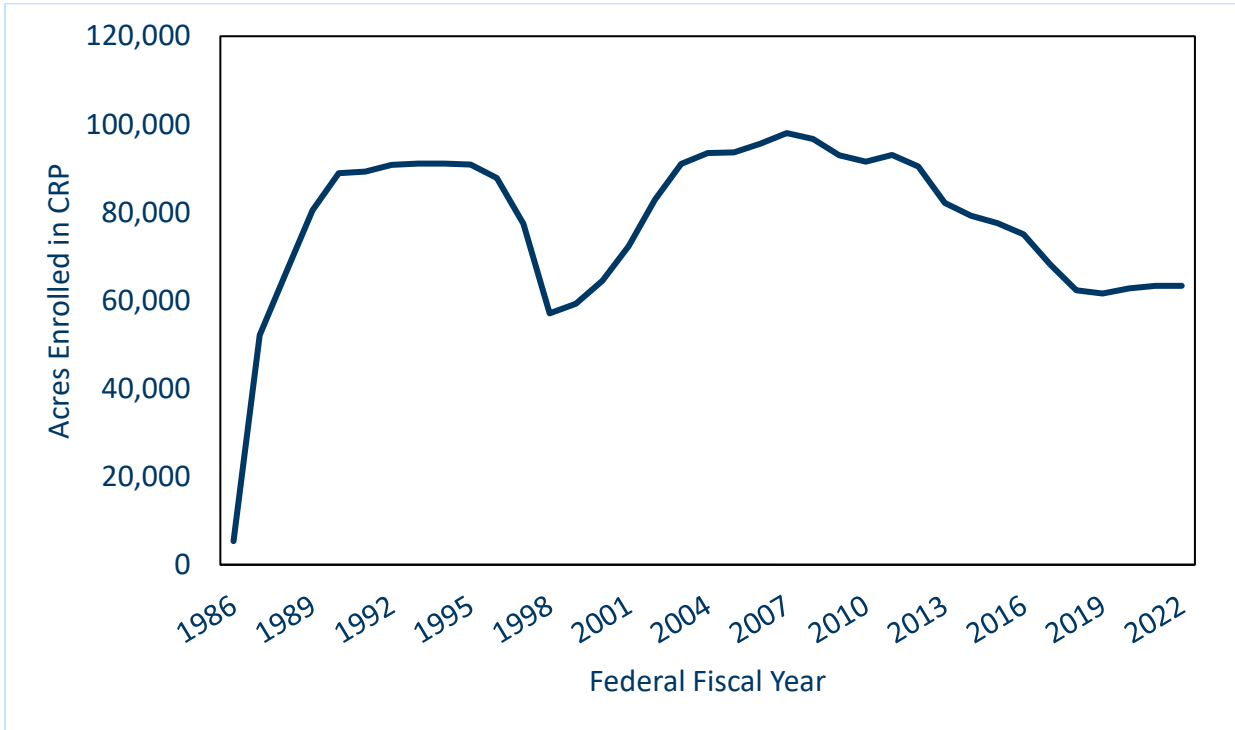


3

4  Many areas within Lac qui Parle WMA have been identified as areas of Outstanding, High, or Moderate
5  biodiversity significance by the Minnesota Biological Survey (MBS; Figure 5). Within the area of Outstanding
6  Biodiversity Significance are several areas of remnant prairie (i.e., areas of native prairie that have never been
7  plowed or converted to other land uses), including the Chippewa, Plover, Moen, Sleeping Bison and Ripple
8  Prairies. The areas of Outstanding Biodiversity Significance are shown in in Figure 5. Some of these areas are
9  managed cooperatively with TNC, the USACE and the USFWS.

10  Other unique features of Lac qui Parle WMA include granite rock outcrops, springs, and fens. The granite
11  outcrops are mostly found on the west end of the unit near the Louisburg Grade. Other areas of rock outcrops
12  are found within Lac qui Parle Lake and Lac qui Parle State Park. Springs and fens are primarily found on the
13  southern end of Lac qui Parle WMA.

1    **Figure 5. MBS sites of biodiversity significance at Lac qui Parle WMA**



2
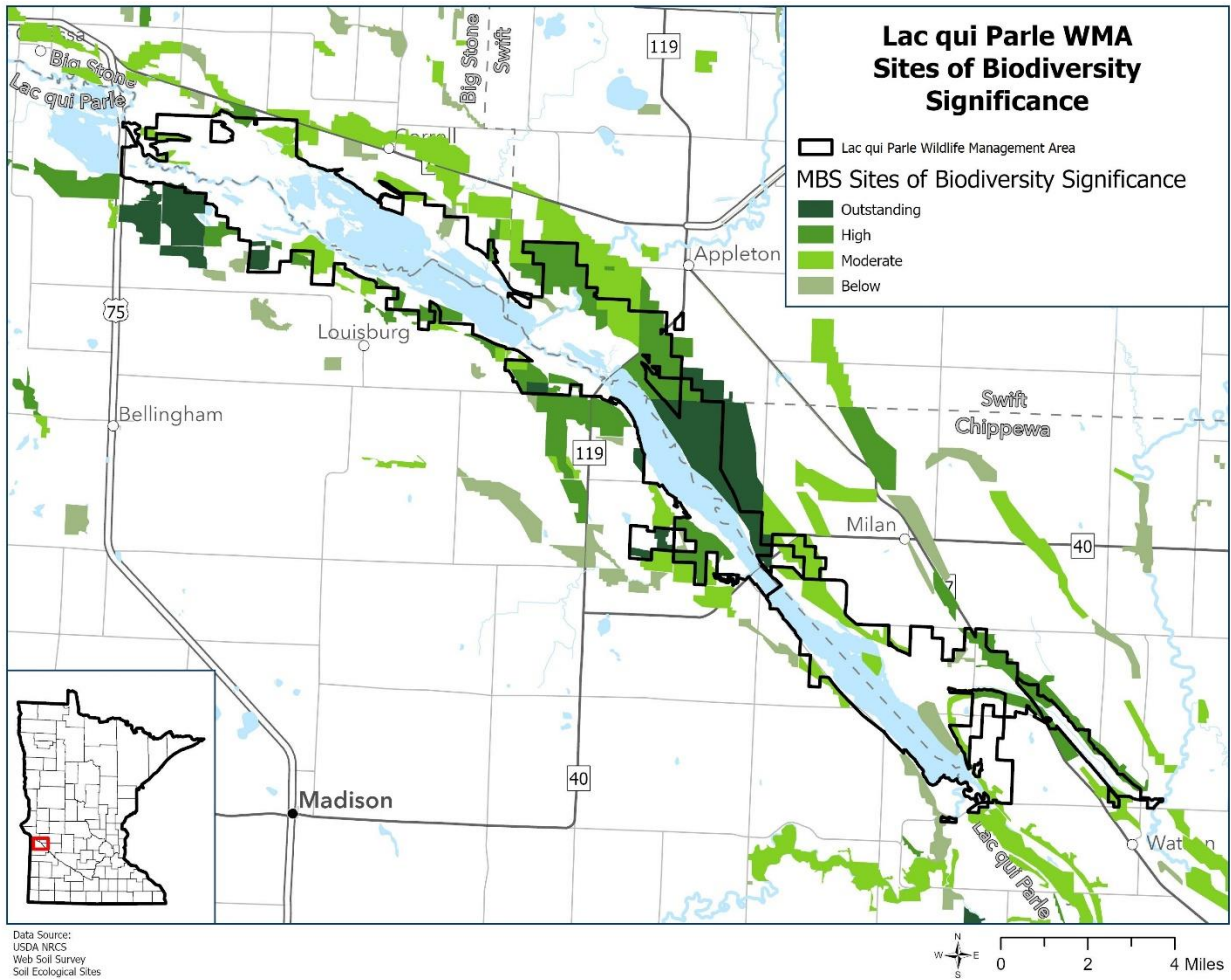
### Socioeconomic Context

4    Lac qui Parle WMA is in the western Minnesota counties of Chippewa, Swift, Big Stone and Lac qui Parle. The
5    population of these four counties is approximately 35,000 people, with nearby cities being Montevideo (pop.
6    5,513), Appleton (pop. 1,425), Ortonville (pop. 2,072) and Madison (pop. 1,518). In 2022, the median household
7    incomes for Chippewa, Swift, Big Stone, and Lac qui Parle counties were $62,112, $58,362, $63,024, and
8    $66,967, respectively (U.S. Census Bureau, 2022). The largest industries in the surrounding counties are
9    Healthcare/social assistance, Agriculture, and Manufacturing.

10   Public lands and waters around Lac qui Parle WMA are an important source of tourism revenue for the local
11   economy, as they attract visitors from across the state with unique recreation opportunities. Lac qui Parle WMA
12   and surrounding public lands are essential in preserving grassland and wetland ecosystems. It is the largest
13   contiguous block of public land in west-central Minnesota and a top-rated destination for hunters, bird and
14   wildlife watchers and others.

1    **Climate**

2    Lac qui Parle WMA has a humid, continental climate with warm to hot summers and cold winters. Based on
3    1991 to 2023 climate data, the hottest month is July (72°F), and the coldest month is January (12°F) (Minnesota
4    State Climatology Office, 2024). The median dates for last and first hard freeze (i.e., when temperature is at or
5    below 28°F) from 1981 to 2010 are approximately April 24 and October 7, respectively. The growing season,
6    which is the time between the last and first hard freeze, in Lac qui Parle WMA is typically around 165 days
7    according to data from the Milan station (National Centers for Environmental Information, 2013). Average
8    annual precipitation is approximately 26 inches, placing Lac qui Parle WMA on the lower end of the statewide
9    range of 21–38 inches (Figure 6; Minnesota Climate Explorer, 2024). The region has pronounced wet and dry
10   seasons, with precipitation during the summer more than five times greater on average than during the winter.

11   **Figure 6. Normal annual precipitation across Minnesota, 1991-2020**



Normal Precipitation
Annual
(1991-2020)
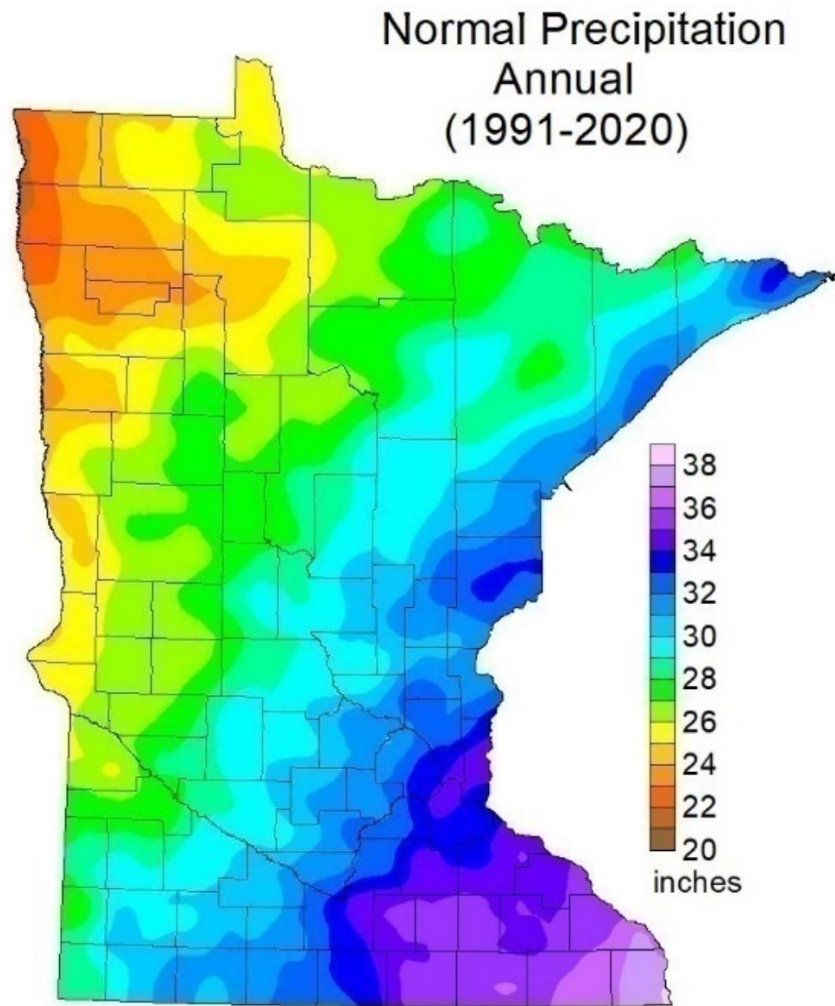
DNR State Climatology Office, April 16, 2021

12

13   The number of 1.5-2" and 2-3" daily precipitation events have doubled in recent decades when comparing the
14   2001-2015 period to previous 14-year increments in the Yellow Bank River watershed, a major tributary of the

Minnesota River located upstream of Lac qui Parle WMA (Minnesota Department of Natural Resources, 2019). The wettest month is typically July, with 3.95 inches of precipitation, and the driest month is January, with 0.7 inches (Minnesota State Climatology Office, 2024). Lac qui Parle WMA receives approximately 40-45 inches of snowfall annually from October through April based on records from 1981 – 2010 (Minnesota State Climatology Office, 2024).

## Geology and Soils

Glacial activity shaped the landscape at Lac qui Parle WMA. When the glacial lobes began their retreat around 14,000 years ago, the resulting meltwater formed enormous rivers and lakes. At one time the largest glacial lake in North America, Glacial Lake Agassiz had a basin of almost 600,000 square miles and covered all of northwestern Minnesota at one time. Glacial River Warren carved the present-day Minnesota River Valley when Glacial Lake Agassiz broke through the Big Stone Moraine near present-day Browns Valley, Minnesota, approximately 11,700 years ago and flowed for roughly 2,300 years (Minnesota River Basin Data Center). The Watson Sag, a marshy arm of Lac qui Parle Reservoir, is a relic channel of Glacial River Warren. As major tributaries joined the Minnesota River, deltas formed natural dams, resulting in expansive lakes. As Marsh Lake to the north was formed in this manner, Lac qui Parle Lake was formed similarly. Alluvium, outwash, lacustrine, and till-plain materials are the primary sedimentary features associated with the mapped surficial geology.

Calcareous glacial till, modified glacial outwash, or lacustrine or alluvial deposits formed the soils in Lac qui Parle WMA. Generally, soils on Lac qui Parle WMA can be described as loam, clay, silt, and sand on slopes of 0-25% (Figure 7). They can have a dark, thick, humus-rich topsoil and contain an accumulation of calcium salts in the subsoil. The soils on Lac qui Parle WMA can be highly productive, although many areas with agricultural history have been impacted by soil erosion and have lost much of the organic matter and carbon that had accumulated in these soils before European settlement and modern intensive agriculture. Drainage class of soils varies between very poorly drained to well drained (Figure 8; Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture).

Soil types in Lac qui Parle WMA are generally delineated by topography. Poorly developed, highly organic mineral soils were formed in marsh and river flat areas, and saline soils were formed where high water tables or evaporated shallow water concentrated mineral salts as the soil formed. Sediment depths range from 0-300 feet. The escarpment above the floodplain has drought-prone soils that are easily eroded. Above the escarpment is a flat, gently rolling terrace, where soils are more variable. These soils are generally fertile and had historically been cultivated where feasible. Additionally, there are areas of exposed bedrock on the western end and on the south end of Lac qui Parle WMA within Lac qui Parle State Park and Lac qui Parle Lake.

1    **Figure 7. Ecological types found at Lac qui Parle WMA.**
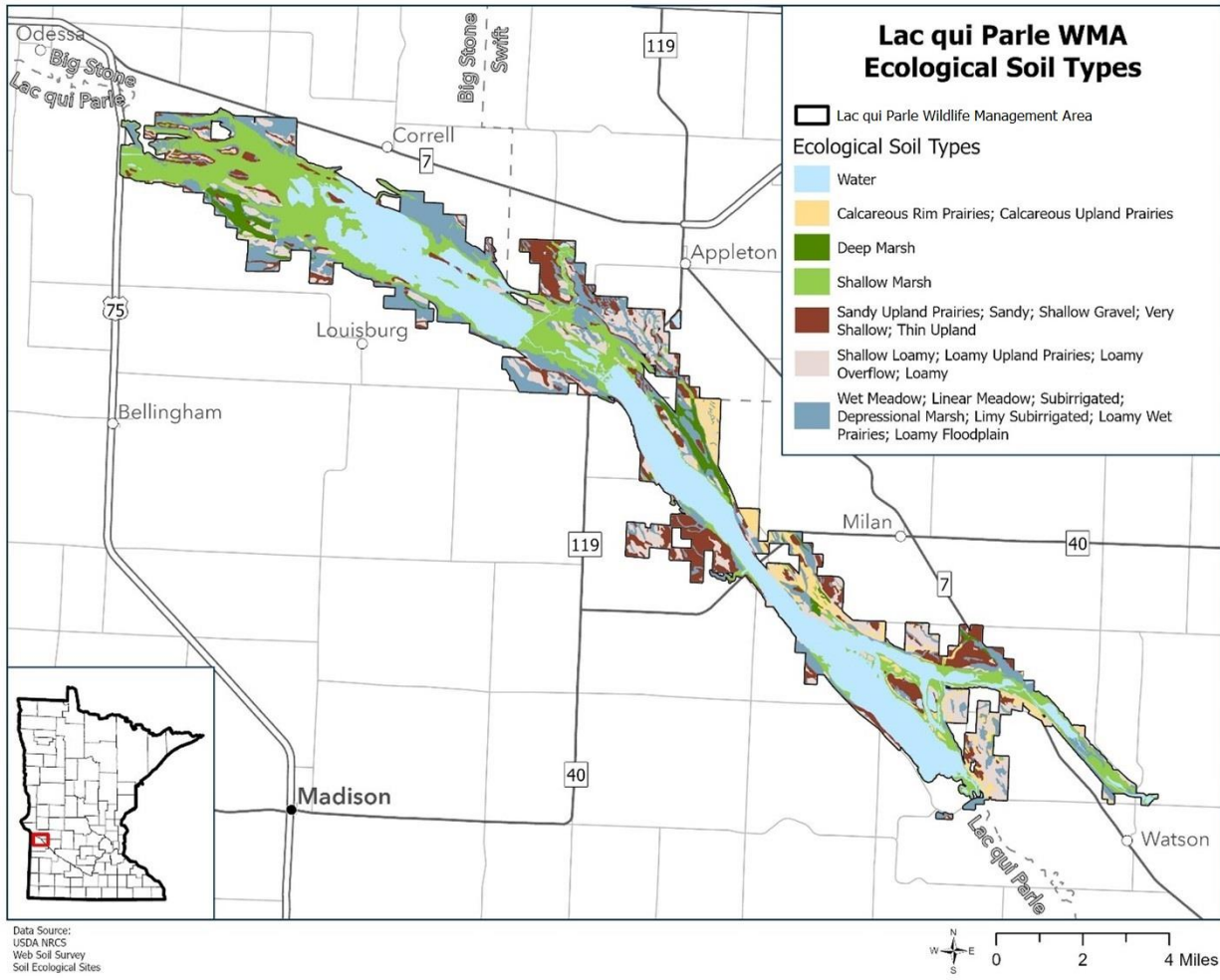


2

1    **Figure 8. Soil drainage classes at Lac qui Parle WMA**



2
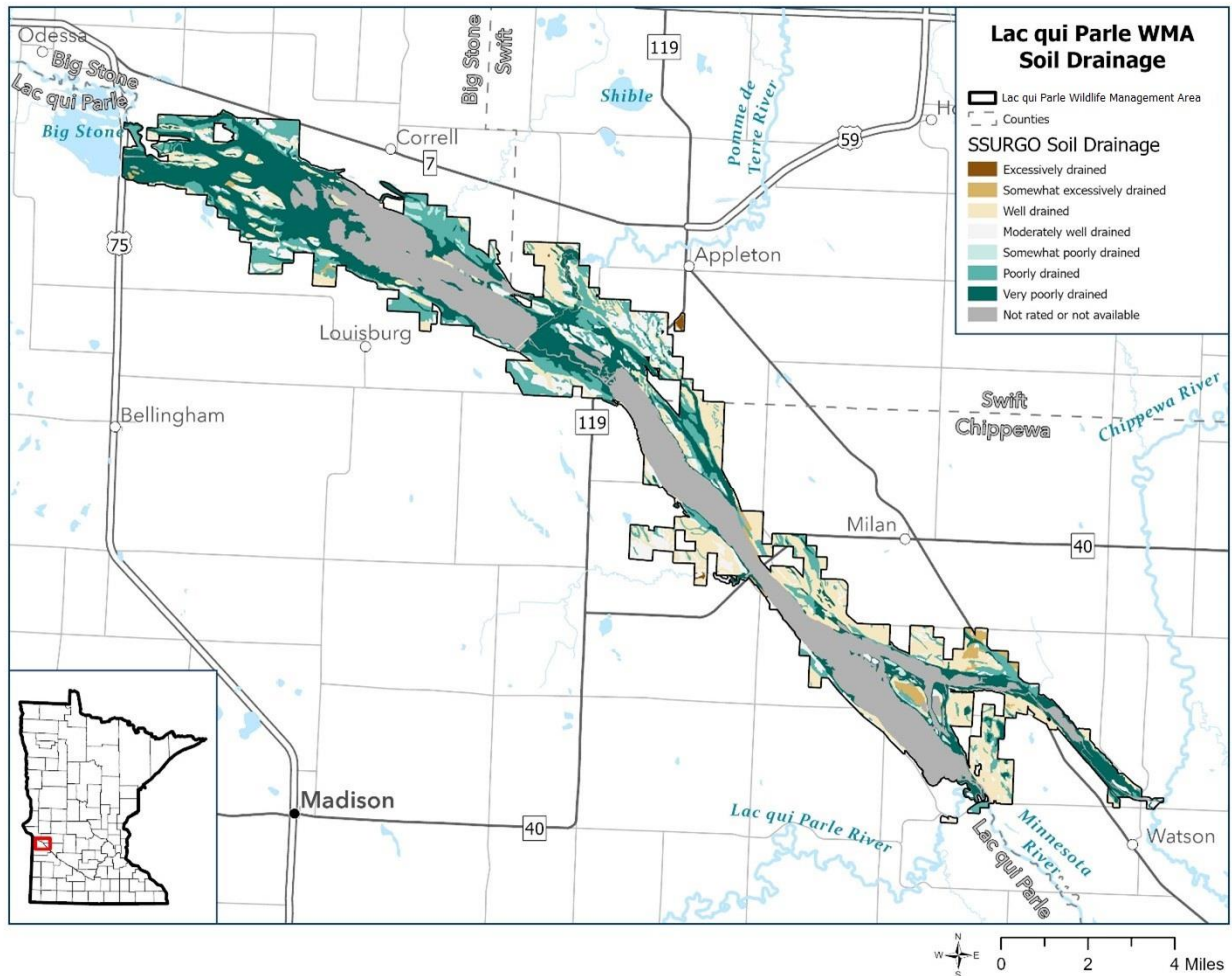
## Hydrology

4    Lac qui Parle WMA encompasses most of Lac qui Parle Lake and Marsh Lake, two large reservoirs located on the
5    mainstem of the Minnesota River. Four major watersheds contribute to Lac qui Parle WMA (Figure 9):
6    Minnesota River Headwaters, Pomme de Terre River, Lac qui Parle River and Chippewa River. The Minnesota
7    River Headwaters Watershed drains an area of approximately 2,132 square miles and includes most of Lac qui
8    Parle WMA. The Pomme de Terre River watershed outlets into Lac qui Parle WMA immediately downstream of
9    Marsh Lake dam and has a contributing area of approximately 875 square miles, which includes a small portion
10   of Lac qui Parle WMA. The Lac qui Parle River watershed discharges into Lac qui Parle WMA immediately
11   upstream of the Lac qui Parle Lake outlet and includes a contributing watershed area of approximately 1,100
12   square miles. The fourth contributing watershed to Lac qui Parle WMA is the Chippewa River watershed, which
13   has a 2,080 square mile watershed and outlets into Lac qui Parle WMA on the southeast side of Lac qui Parle
14   Lake. A portion of the Chippewa River flow is diverted into Lac qui Parle WMA via the Watson Sag channel at the
15   Chippewa River diversion structure near Watson, operated by USACE. Flow for the rivers in the management

1    area is highly variable depending on the winter snowfall, rapidity of snow melt, and variability in precipitation
2    throughout the large watershed area.

3    **Figure 9. Lac qui Parle WMA area watersheds**
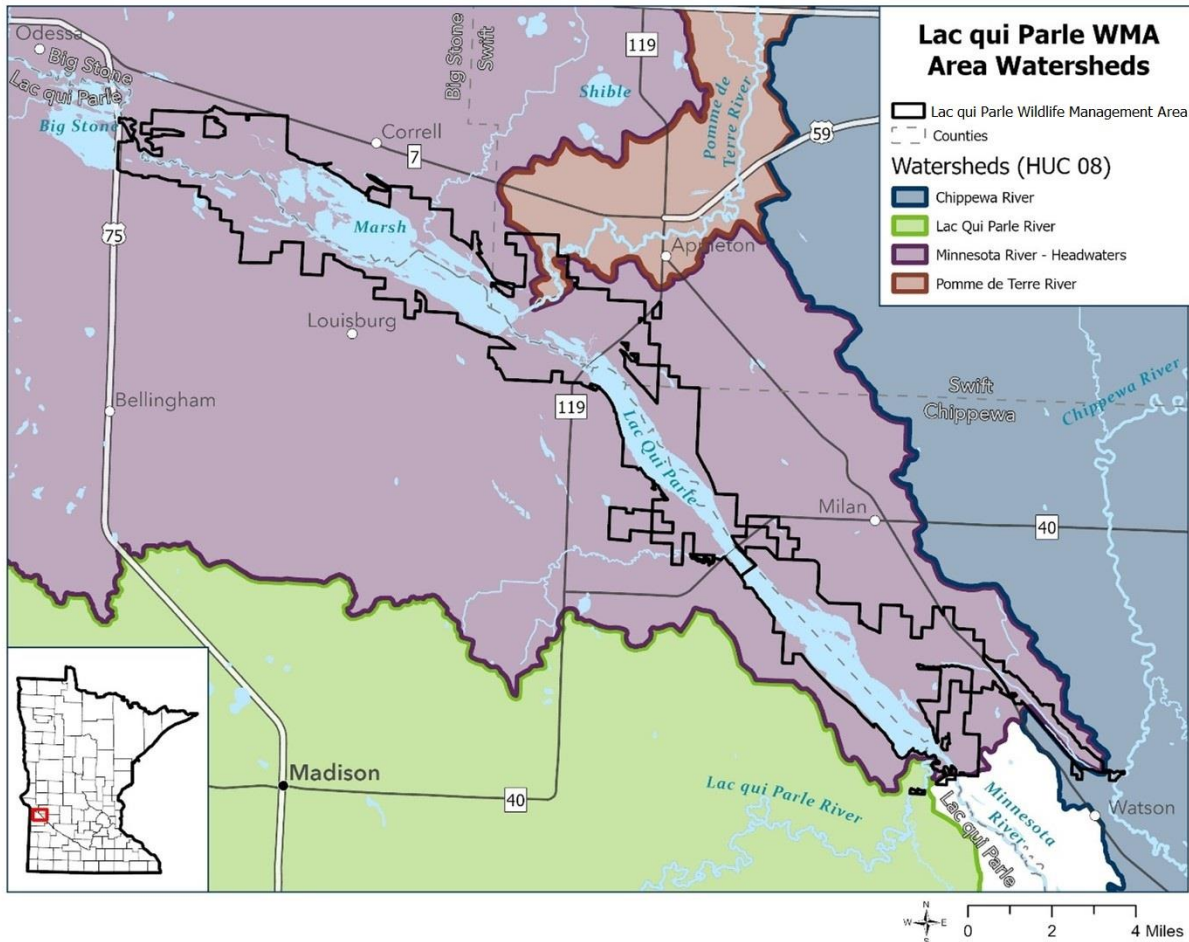


4
5    All major watersheds have completed or are in the process of completing a comprehensive watershed
6    management plan under the One Watershed One Plan framework. Lac qui Parle WMA staff ensure that
7    management actions on Lac qui Parle WMA contribute to improving downstream water quality. The following is
8    a description of the four major watersheds.

9    *Minnesota River Headwaters*

10   The Minnesota River Headwaters watershed is primarily located in west-central Minnesota and South Dakota. A
11   small section of the northern portion of the watershed is in North Dakota. The waterway originates in South
12   Dakota as the Little Minnesota River and crosses into Minnesota near Browns Valley where it enters Big Stone
13   Lake. At the outlet of Big Stone Lake (near Ortonville, Minnesota), the waterway officially becomes the
14   Minnesota River. The Minnesota River Headwaters watershed retains a variety of rare and unique features that
15   primarily occur along the Minnesota River. The total watershed area for the Minnesota River Headwaters

1   watershed is 2,132 square miles, of which Minnesota contains approximately 784 square miles (or 37% of the
2   watershed). The watershed drains portions of six Minnesota counties with the largest areas in Big Stone and Lac
3   qui Parle Counties (52.3% and 29.8% watershed coverage, respectively) followed by Swift, Chippewa, Traverse,
4   and Stevens Counties. Approximately three-fourths of the watershed for the Minnesota River lies within the
5   Northern Glaciated Plains Level III ecoregion, while the southeastern quarter lies within the Western Corn Belt
6   Plains ecoregion.

7   According to the DNR's Evaluation of Hydrology Change 2023, precipitation increased only moderately while
8   annual discharge increased 133% and instantaneous peak discharge increased 88% for the Minnesota River
9   Headwaters watershed near Lac qui Parle when comparing the data prior to 1984 to the post-period. High flows
10  for the Minnesota River near Lac qui Parle gauge have increased in magnitude by 109% and are exceeded
11  approximately 27% of the time post-change point. Low flows have increased in magnitude by 258% and are
12  exceeded approximately 96% of the time.

13  *Lac qui Parle River*

14  The Lac qui Parle River watershed is located in southwest Minnesota, straddling the border between South
15  Dakota and Minnesota, and near the headwaters of the Minnesota River Basin. While the uppermost portions of
16  the watershed are in South Dakota, the Lac qui Parle River itself begins at the outlet of Hendricks Lake near the
17  town of Hendricks, Minnesota. The total watershed area for the entire Lac qui Parle River Watershed is
18  approximately 1,100 square miles, of which Minnesota contains roughly 760 square miles. The watershed
19  overlaps three Minnesota counties: Lac qui Parle County (covering 66% of the Minnesota portion of the
20  watershed area), Yellow Medicine County, and Lincoln County. The Lac qui Parle River converges with the
21  Minnesota River at Lac qui Parle State Park near the outlet of the Lac qui Parle Lake about nine miles northwest
22  of Montevideo, Minnesota.

23  The land use and general water quality is similar through this watershed. Much of the land use is predominately
24  row crops with extensive agricultural drainage into the river. Water quality is good where the river drains out of
25  Hendricks Lake and deteriorates steadily going downstream as agricultural drainage inputs increase.

26  *Pomme de Terre River*

27  The Pomme de Terre River is located within the Minnesota River Basin in west-central Minnesota. The northern
28  portion of the watershed drains an 875 square mile area. The river is in the Northern Central Forest Ecoregion
29  while the central and southern portions are located in the Northern Glaciated Plains Ecoregion. Portions of six
30  counties are within the watershed, including Otter Tail, Douglas, Grant, Stevens, Swift and Big Stone Counties.
31  The watershed discharges into Lac qui Parle WMA immediately downstream of the Marsh Lake Dam.

32  The land use and general water quality transitions throughout the watershed. The northern, headwater region
33  of the watershed is rich with lakes, wetlands, forests, and grasslands. Moving south down the watershed, the
34  land use transitions to predominately row crops in the central and southern regions of the watershed.

*Chippewa River*

The Chippewa River has a 2,080 square-mile watershed located immediately east of the Pomme de Terre River watershed in west-central Minnesota. The headwaters of the Chippewa River are located in Otter Tail County, and it flows 130 miles southwest to its mouth in Montevideo, where it joins the Minnesota River. The basin drains portions of eight counties, including Ottertail, Grant, Pope, Swift, Kandiyohi, Chippewa, Stevens and Douglas Counties. Lands in the western half of the Chippewa River Watershed fall within the Northern Glaciated Plains Ecoregion.

The Chippewa River diversion dam, located near Watson, is operated by USACE, and serves to divert a portion of flows from the Chippewa River through the Watson Sag and into Lac qui Parle Lake within Lac qui Parle WMA. During most flows, discharge from the Chippewa River is split somewhat evenly between the Chippewa diversion channel into the Watson Sag and the mainstem Chippewa River, which ultimately joins the Minnesota River in Montevideo.

## Habitat and Plant Communities

### Introduction

Lac qui Parle WMA is a diverse site that provides many different habitat types for wildlife. Wildlife habitat can be defined as the totality of an animal's abiotic (e.g., water, mineral, thermal, solar) and biotic (typically plant) environmental components that allow for it to reproduce and survive interim periods to reproduce. For some animals (e.g., small mammals, reptiles, amphibians), one habitat provides for both needs; however, most animals (e.g., migratory mammals and birds) require different habitats, often vastly different and far apart, to optimize reproduction and survival.

### Native Plant Communities

The habitats at Lac qui Parle WMA can be categorized into distinct native plant communities (NPCs) using the NPC classification system. This document categorizes habitat types at a system group based on vegetative and hydrological characteristics (e.g., upland forest and woodland systems) and then at the broad ecological system level determined by seasonal delivery and movement of nutrients and by timing and severity of natural disturbances (e.g., fire-dependent forest/woodland). Next, classification moves to a finer NPC class, determined by local environmental conditions (e.g., southern terrace forest). Finally, it is classified by the specific NPC type (e.g., FFs59c Elm – Ash – Basswood Terrace Forest), which is determined by canopy dominants, substrate, and finer environmental conditions.

DNR staff have fully categorized and mapped NPCs on portions of Lac qui Parle WMA. However, many natural areas have not yet been mapped to the NPC class or type level. Figure 10 shows the ecological systems and other land types at Lac qui Parle WMA. Table 3 shows the relative percentage of the ecological systems and other land types. An NPC-informed management approach recognizes the inherent ecological characteristics of a site and incorporates that information into natural resource management activities.

1 **Figure 10. Overview of ecological systems and other land types found at Lac qui Parle WMA.**
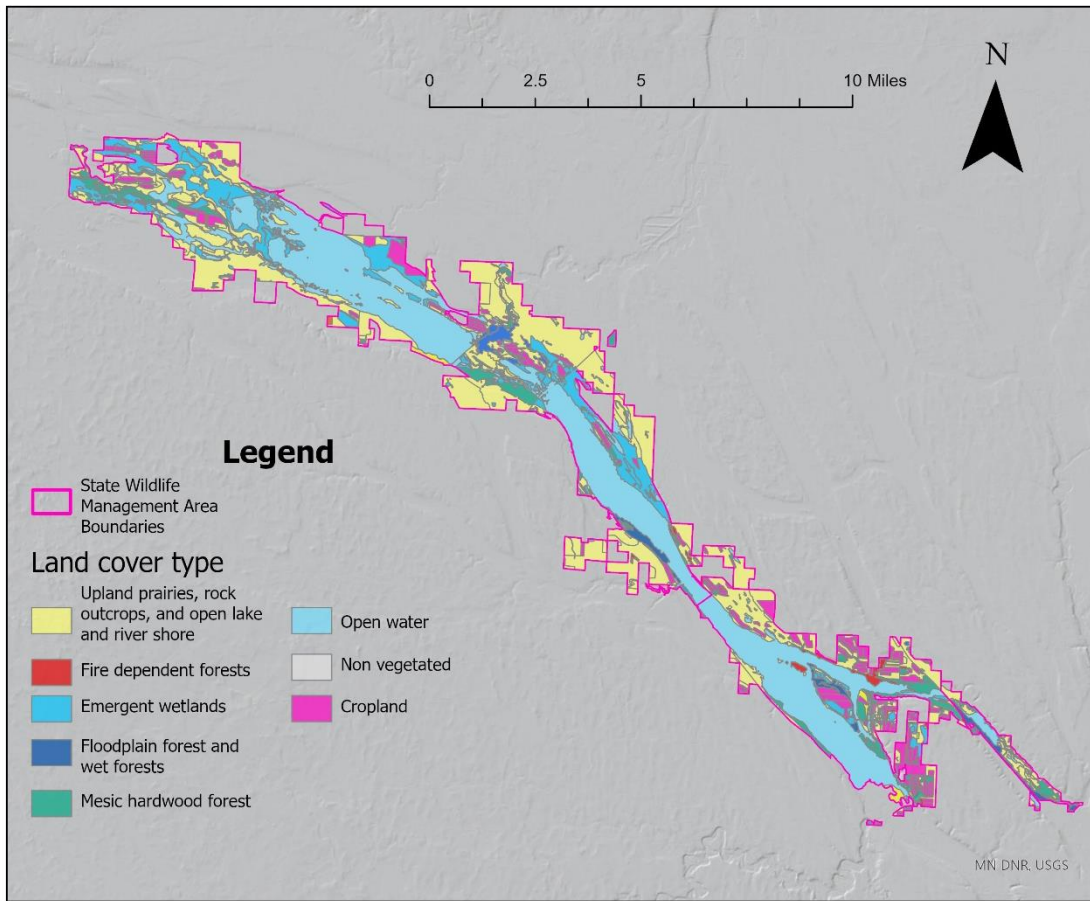


2

3 **Table 3. NPC ecological systems, approximate acreage, and relative percentage of mapped ecological systems and other**
4 **land types found at Lac qui Parle WMA.**

| Ecological Systems | Acreage[1] | Percentage of WMA |
|---|---|---|
| Fire Dependent Forests and Woodland | 343 | 1% |
| Mesic Hardwood Forests | 813 | 2% |
| Floodplain Forests and Wet Forests | 1,786 | 5% |
| Upland Prairies, Rock Outcrops, Lakeshores, and River Shores | 14,900 | 44% |
| Open Water, and Wetland Grasslands, Shrublands, and Marshes | 12,513 | 37% |
| Other land types (cropland, non-vegetated areas, etc.) | 2,790 | 8% |
| Not inventoried | 422 | 1% |
| Total | 33,567 | 100% |

5 [1] Acreage is approximate and may not reflect recent habitat conversions (e.g., restoration of former agricultural
6 land to prairie or wetland)

The following sections provide an overview of the NPC system groups, ecological systems, classes, and types documented at Lac qui Parle WMA.

### Upland Forests and Woodlands

**Mesic Hardwood Forests.** This ecological system is characterized by a closed canopy of oak and basswood associated with natural fire breaks in prairie landscapes.

**Fire-Dependent Forests and Woodlands.** Relatively open-canopy woodlands on fire-prone landscapes characterize this ecological system. These communities occur primarily on relatively dry upland sites. Fire is a driving factor for perpetuating these forest types.

### Wetland Forests

**Floodplain Forest.** This ecological system occurs in wet, lowland areas, particularly along streams. They are most often closed canopy, and are dominated by silver maple, cottonwood, ash, and other hardwood tree species.

There is one class of Floodplain Forest in Lac qui Parle WMA:

- **FFs59 Southern Terrace Forest -** Wet-mesic deciduous forests on silty or sandy alluvium on level, occasionally flooded sites along small streams to large rivers in the southern half of Minnesota. Specific community type FFs59c Elm – Ash – Basswood Terrace Forest is known to occur within Lac qui Parle WMA.

### Upland Grasslands, Shrublands, and Sparse Vegetation

**Upland Prairie.** This ecological system is fire-dependent and is dominated by tall and short native grasses and forbs (flowers) with few to no trees.

There are two classes of Upland Prairie in Lac qui Parle WMA:

- **UPs13 Southern Dry Prairie -** Grass-dominated herbaceous communities on level to steeply sloping sites with droughty soils. Moderate growing-season moisture deficits occur most years, and severe moisture deficits are frequent, especially during periodic regional droughts. Historically, fires probably occurred every few years. Specific community type UPs13d Dry Hill Prairie (Southern) is known to occur within Lac qui Parle WMA.
- **UPs23 Southern Mesic Prairie -** Grass-dominated but forb-rich herbaceous communities on somewhat poorly drained to well-drained loam soils mainly formed in unsorted glacial till, sometimes in a thin loess layer over till, and locally in lacustrine sediments and outwash deposits. Communities in this class occur primarily on level to gently rolling sites. Drought stress is irregular in occurrence and usually not severe.

**Rock Outcrop.** This ecological system is characterized by open or shrub-dominated plant communities on horizontal or sloping bedrock exposures. It occurs in landscapes with bedrock or just above the ground surface.

There is one class of Rock Outcrop in Lac qui Parle WMA:

- **ROs12 Southern Bedrock Outcrop** - Dry, open lichen-dominated plant communities on areas of exposed bedrock. Woody vegetation is sparse, and vascular plants are restricted to crevices, shallow soil deposits, and rainwater pools. Specific community type ROs12a1 Minnesota River Subtype is known to occur at Lac qui Parle WMA.

**Lakeshore.** This ecological system occurs along the shorelines of lakes and ponds throughout Minnesota in the zone between the annual low-water level and the upper limit of storm waves and spring ice scouring. Most communities are sparsely vegetated because of absence of well-developed soils and frequent disturbance by waves, ice, and wind.

There are two classes of Lakeshore in Lac qui Parle WMA:

- **LKi32 Inland Lake Sand/Gravel/Cobble Shore** - Plant communities characterized by variable cover of shrubs, forbs, graminoids, and aquatic plants on well-drained, wave-washed sand, gravel, or small cobbles on shores along inland lakes. Present in the zone between low-water level and the upper reach of storm waves or ice scouring.
- **LKi54 Inland Lake Clay/Mud Shore** - Plant communities on clay, mud, or silt substrates—often mixed with organic detritus—on shores of inland lakes and ponds. Vegetation is typically zonal, reflecting seasonal changes in water level. LKi54 includes plant communities in shallow basins and along the edges of ponds and lakes where spring flooding is followed by summer drawdown, exposing mudflats that are colonized by plants.

### *Wetland Grasslands, Shrublands, and Marshes*

**Wet Meadow/Carr.** This ecological system is characterized by graminoid- or shrub-dominated wetlands that are subjected to moderate inundation by standing water following spring thaw and heavy rains and to periodic drawdowns during the summer.

There is one class of Wet Meadow/Carr in Lac qui Parle WMA:

- **WMs92 Southern Basin Wet Meadow/Carr** - Open wetlands dominated by dense cover of broad-leaved sedges. Typically present in small, closed, shallow basins isolated from groundwater inputs.

**Marsh.** This ecological system is characterized by tall forb– and graminoid-dominated wetland communities that have standing or, in the case of riverine marshes, slow-flowing water present through most of the growing season.

There is one class of Marsh in Lac qui Parle WMA:

- **MRp83 Prairie Mixed Cattail Marsh** - Emergent marsh communities, typically dominated by cattails. Present on floating mats or rooted in mineral soil in shallow wetland basins. Specific community type MRp83b Cattail Marsh (Prairie) is known to occur at Lac qui Parle WMA.

**Open Rich Peatland System.** This ecological system is characterized by graminoid- or low shrub–dominated wetlands on actively forming deep (> 16 in) peat.

There is one class of Open Rich Peatland in Lac qui Parle WMA:

- **OPp93 Prairie Extremely Rich Fen -** Open graminoid-dominated fens on permanently saturated peat sustained by mineral-rich groundwater discharge, with little influence from surface water inputs. Typically present on sloping sites; peat is sometimes mounded or domed. Small pools and sparsely vegetated marly peat areas are commonly present. Specific community type OPp93b Calcareous Fen (Southwestern) is known to occur at Lac qui Parle WMA.

**Wetland Prairie System.** This ecological system is characterized by herbaceous plant communities dominated by graminoid species with a forb component that can approach codominance with the graminoids. The herbaceous dominance of Wetland Prairie communities is closely tied to the frequent occurrence of fire.

There is one class of Wetland Prairie in Lac qui Parle WMA:

- **WPs54 Southern Wet Prairie -** Grass-dominated but forb-rich herbaceous communities on poorly drained to very poorly drained loam soils formed in lacustrine sediments, unsorted glacial till, or less frequently outwash deposits. Typically, in slight depressions, sometimes on very gentle slopes. Flooded for brief periods at most; upper part of rooting zone is not saturated for most of growing season, but saturation usually persists in lower zone for much of season. Specific community types WPs54a Wet Seepage Prairie (Southern) and WPs54b Wet Prairie (Southern) are known to occur at Lac qui Parle WMA.

Some of the plant communities found at Lac qui Parle WMA exhibit excellent ecological integrity and are uncommon for the area, Minnesota, and even globally (Table 4). Conservation Status Ranks, which reflect the imperilment of a community across its range (state ranks referred to as S-ranks and global ranks referred to as G-ranks), and the Condition Ranks, which refer to the integrity or quality of an individual occurrence of a community, are used to assess the relative importance of different occurrences. More information on Conservation Status Ranks and Condition Ranks can be found in Appendix E and on the DNR NPC status and procedures webpages.

**Table 4. Rare NPCs mapped and known to occur at Lac qui Parle WMA and their associated conservation status and observed condition ranks.**

| NPC | Description | Status Rank | Acres |
|---|---|---|---|
| ROs12 | Southern Bedrock Outcrop | G3/S2 | 27.9 |
| ROs12a1 | Minnesota River Subtype | | |
| UPs23 | Southern Mesic Prairie | G1/S2 | 3,909.9 |
| Ups23a | Mesic Prairie (Southern) | | |
| WPs54 | Southern Wet Prairie | G2/S1 | 818.2 |
| WPs54a | Wet Seepage Prairie (Southern) | | |
| WPs54b | Wet Prairie (Southern) | | |
| UPs13 | Southern Dry Prairie | G2/S2 | 376.0 |

| NPC | Description | Status Rank | Acres |
|---|---|---|---|
| UPs13d | Dry Hill Prairie (Southern) | | |
| OPp93 | Prairie Extremely Rich Fen | G2/S2 | 18.8 |
| OPp93b | Calcareous Fen (Southwestern) | | |
| MRp83 | Prairie Mixed Cattail Marsh | G5/S1 | 9.9 |
| MRp83b | Cattail Marsh (Prairie) | | |
| FFs59 | Southern Terrace Forest | G4/S2 | 0.2 |
| FFs59c | Elm - Ash - Basswood Terrace Forest | | |
| LKi32 | Inland Lake Sand/Gravel/Cobble Shore | G4/S1 | 0.5 |
| LKi54 | Inland Lake Clay/Mud Shore | G2/S1 | 0.03 |
| WMs92 | Southern Basin Wet Meadow/Carr | G3/S2 | 4.8 |
| WMs92a | Basin Meadow/Carr | | |

1   G1 – Critically imperiled, G2 – Imperiled, G3 – Vulnerable, G4 – Apparently Secure, G5 – Secure.

2   S1 – Critically imperiled, S2 – Imperiled.

## Agricultural Lands

Lac qui Parle WMA has approximately 1,500 acres of cropland managed through cooperative farming agreements, which are a legal contract with local farmers to farm agricultural fields on a WMA on a sharecrop basis. The state typically receives one-third share of the crops produced, which is usually left standing over winter as a food source for resident wildlife species and migrating waterfowl in the fall and spring. DNR and the farmers mutually agree on the crops which include corn, soybeans, alfalfa, oats, spring and winter wheat, grass hay, and other wildlife mixes. Recently, cooperators have been seeding cover crops into standing corn and soybean fields as well as incorporating cover crop mixes on a variety of state-owned agricultural lands. Neonicotinoid seed treatments, insecticide spraying, and fall tillage practices have been prohibited since 2017. Farming practices on the WMA have a focus on soil health and diversity of crop types.

Lac qui Parle WMA staff also plant agricultural crops. These food plots are often small and hard to access with larger farming equipment. In total, staff plant about 300 acres annually on 40 different plots. Common crops planted include sorghum, sunflowers, corn, soybeans, buckwheat, wildlife plot mixes, and cover crops. All crops remain standing though the winter. Food plots are strategically located throughout the unit close to major deer and/or pheasant wintering areas to provide food and cover for resident wildlife. These fields and surrounding cover are very popular with wildlife viewers and dove, pheasant, and deer hunters.

## Land Cover Types

The Section of Wildlife uses another classification system for WMAs: the Wildlife and Aquatic Habitat Management Application (WAHMA) land cover types. Open Water and Tall Grasses make up the largest portion of the cover, and Forested areas predominate near the Pomme de Terre River and portions of Lac qui Parle and Marsh Lakes. Figure 11 shows the WAHMA land cover types mapped within Lac qui Parle WMA, and Table 5

1 shows the approximate acreage and relative percentage of each land cover type. The WAHMA classification

2 system is distinct from the NPC classification system described above; habitat acreages and areas defined in the

3 NPC classification system above may not directly line up with the WAHMA classifications.

4 **Figure 11. WAHMA land cover types found at Lac qui Parle WMA**
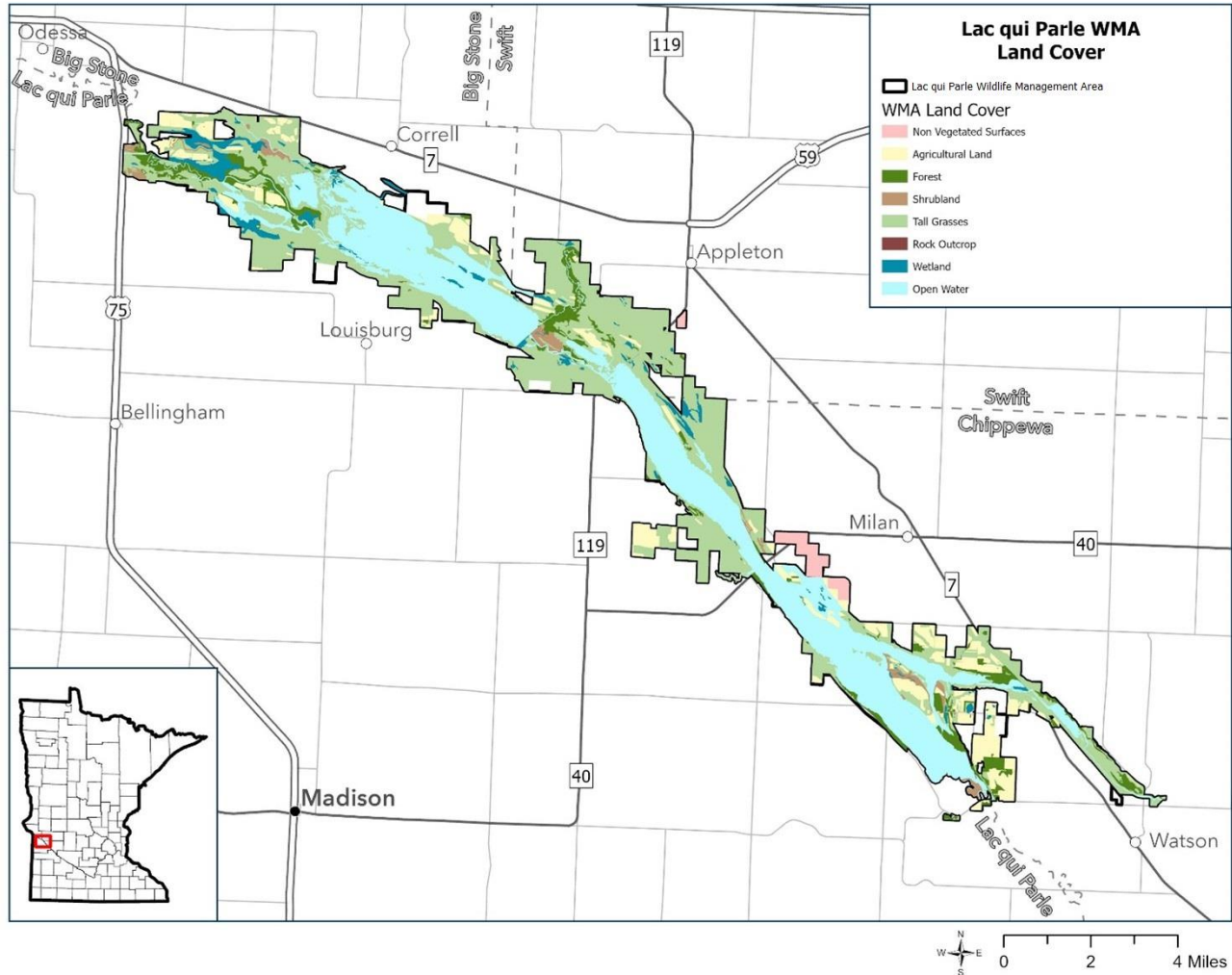


5

6 **Table 5. Acreage of WAHMA land cover types found at Lac qui Parle WMA**

| Land Cover Type | Acreage[1] | Percent of WMA |
|---|---|---|
| Non-Vegetated Surfaces | 496 | 1% |
| Agricultural Land | 3,290 | 10% |
| Forest | 2,171 | 6% |
| Shrubland | 568 | 2% |
| Tall Grasses | 13,067 | 39% |

| Land Cover Type | Acreage[1] | Percent of WMA |
|---|---|---|
| Rock Outcrop | 3 | <1% |
| Wetland | 1,261 | 4% |
| Open Water | 11,803 | 35% |
| Not inventoried | 908 | 3% |
| Total | 33,567 | 100% |

[1] Acreage is approximate and may not reflect recent habitat conversions (e.g., restoration of former agricultural land to prairie or wetland)

### Rare Plants

Rare plant species found at Lac qui Parle WMA are listed in Table 6. State status designation is also included. A species is designated as endangered (END) if threatened with extinction throughout all or a significant portion of its range. A species is designated as threatened (THR) if the species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range. A species is designated as a species of special concern (SPC) if although the species is not endangered or threatened, it is extremely uncommon in this state, or has unique or highly specific habitat requirements and deserves careful monitoring of its status. Species on the periphery of their range that are not listed as threatened may be included in this category along with those species that were once threatened or endangered but now have increasing or protected, stable populations. Additional information on Minnesota's rare species can be found in the DNR Rare Species Guide. Species that are federally listed receive additional protection.

**Table 6. Rare plant species known to occur at Lac qui Parle WMA.**

| Common Name | Scientific Name | State Status |
|---|---|---|
| Oregon cliff fern | *Woodsia oregana ssp. cathcartiana* | SPC |
| A lichen | *Buellia nigra (lichen)* | SPC |
| Small white lady's-slipper | *Cypripedium candidum* | SPC |
| Slender milk-vetch | *Astragalus flexuosus var. flexuosus* | SPC |
| Hall's sedge | *Carex hallii* | SPC |
| Missouri milk-vetch | *Astragalus missouriensis var. missouriensis* | SPC |
| Yellow-fruit sedge | *Carex annectens* | SPC |
| Hooded arrowhead | *Sagittaria montevidensis ssp. calycina* | THR |
| Three-stamened waterwort | *Elatine triandra* | SPC |
| Waterhyssop | *Bacopa rotundifolia* | THR |
| Louisiana broomrape | *Orobanche ludoviciana* | THR |
| Eared false foxglove | *Agalinis auriculata* | END |

| Common Name | Scientific Name | State Status |
|---|---|---|
| Hair-like beak rush | *Rhynchospora capillacea* | THR |

# Wildlife

## Introduction

Lac qui Parle WMA provides habitat for over 260 species of birds, 56 species of mammals, and 18 species of reptiles and amphibians during some part of the year. Abundant populations of diverse wildlife species are found at Lac qui Parle WMA due largely to the wide diversity and quality of habitats.

## Birds

Approximately 260 resident and non-resident bird species have been observed in the vicinity of Lac qui Parle WMA. A full list of bird species known to occur or likely to occur on or near the unit can be found in Appendix F. A non-exhaustive list of common bird species found at Lac qui Parle WMA and their associated habitats can be found in Table 7.

Lac qui Parle WMA provides habitat for many high-priority bird species. These birds include Species of Greatest Conservation Need (SGCN), a designation in the MNWAP that indicates a species whose population is rare, declining, or vulnerable, and for which there are concerns for their long-term health and stability. All state-listed species and federally listed species that occur in Minnesota are automatically SGCN; additional non-listed species are SGCN based on specific criteria and expert opinion. Seventy-eight bird species designated as SGCN have been observed in Lac qui Parle WMA (Appendix F). Of these 78 species, there are 13 that are state listed as special concern: American kestrel, American white pelican, Bell's vireo, Forster's tern, Franklin's gull, lark sparrow, marbled godwit, peregrine falcon, purple martin, red-shouldered hawk, short-eared owl, trumpeter swan and yellow rail. One species, Wilson's phalarope, is state listed as threatened, and 4 species are state listed as endangered: Henslow's sparrow, horned grebe, loggerheaded shrike, and the piping plover. Two species are federally listed: the rufa red knot is threatened, and the piping plover is endangered.

**Table 7. Common bird species found at Lac qui Parle WMA and their associated habitats.**

| Habitat | Game Species | Nongame Species |
|---|---|---|
| Lakes, Wetlands and Waterways | Canada goose, wood duck, mallard, blue-winged teal, green-winged teal, gadwall, redhead, hooded merganser, common snipe, sora rail, American coot. | Tundra swan, pied-billed grebe, least sandpiper, American white pelican, double-crested cormorant, lesser yellowlegs, pectoral sandpiper, great blue heron, American bittern, least bittern, great egret, black-crowned night heron, bald eagle, northern harrier, belted kingfisher (SGCN), franklin's gull, northern rough- |

| Habitat | Game Species | Nongame Species |
|---|---|---|
| | | winged swallow (SGCN), bank swallow, cliff swallow, long-billed marsh wren, red-winged blackbird, yellow-headed blackbird. |
| Grasslands | Ring-necked pheasant, mourning dove | Red-tailed hawk, Swainson's hawk, American kestrel, upland sandpiper, eastern kingbird, western kingbird, yellow warbler, bobolink, western meadowlark, dickcissel, savannah sparrow, grasshopper sparrow, vesper sparrow, chipping sparrow, clay-colored sparrow. |
| Brushlands | Wild turkey, ring-necked pheasant, mourning dove. | Eastern kingbird, western kingbird, yellow warbler, ruby-throated hummingbird, gray catbird, brown thrasher, rose-breasted grosbeak, American goldfinch, indigo bunting, common yellowthroat, song sparrow, clay-colored sparrow. |
| Forests | Wild turkey, mourning dove. | Great horned owl, turkey vulture, red-tailed hawk, Swainson's hawk, cooper's hawk, American kestrel, bald eagle, ruby-throated hummingbird, red-bellied woodpecker, downy woodpecker, hairy woodpecker, northern flicker, eastern phoebe, blue jay, American robin, common crow, black-capped chickadee, white-breasted nuthatch, cardinal, northern oriole, gray catbird, brown thrasher, yellow warbler, rose-breasted grosbeak, American goldfinch, indigo bunting. |
| Agricultural Areas | Canada goose, mallard, ring-necked pheasant, wild turkey, mourning dove. | Killdeer, rock dove, red-tailed hawk, American kestrel, European starling, house sparrow, red-winged blackbird, brewer's blackbird, common grackle, common crow, brown-headed cowbird. |

1    SGCN = Species of Greatest Conservation Need

2    Lac qui Parle WMA and neighboring habitats at Big Stone NWR, Chippewa Prairie, and Plover Prairie are major
3    population stronghold for species that are undergoing severe declines region-wide. These declining species
4    include prairie birds such as upland sandpiper, marbled godwit, western meadowlark, grasshopper sparrow, and
5    American kestrel. Additionally, Lac qui Parle WMA is a crucial reserve for declining wetland species, both
6    migrating and breeding, such as common merganser, black tern, Forster's tern, western grebe, and northern
7    pintail.

8    ***Waterfowl and Game Birds***

9    **Waterfowl.** Lac qui Parle WMA is a vitally important and nationally recognized stopping ground for many species
10    of waterfowl during both the spring and fall migrations. Lac qui Parle Lake is where migrating geese concentrate
11    in the spring and fall. In general, Marsh Lake tends to attract more ducks, but geese can also be present at
12    Marsh Lake in vast numbers in spring. The wetlands, impoundments, moist soil units, and large lakes in Lac qui
13    Parle WMA serve as both feeding and resting areas for waterfowl. Management of moist soil units simulates a
14    seasonal wetland by adding and removing water, most often artificially, in a systematic way to maximize food
15    production for waterfowl and shorebirds. An area managed for moist soil is typically flooded in the spring and
16    then maintained moist during the growing season to target the summer production of annual wetland plants
17    that produce large amounts of seed. The unit must be dry enough to till and plant if crops are planted in lieu of
18    natural seed production. When reflooded in late summer or early fall, the decomposing plants also provide ideal
19    habitat for aquatic invertebrates, an important source of duck and shorebird nutrition (Fredrickson & Reid,
20    1988). These benefits can carry over to the next spring until the water is again drained off. The food plots and
21    agricultural fields located throughout Lac qui Parle WMA also serve as an important food source to migrating
22    geese and ducks. These food plots are often planted in diverse mixes to provide waterfowl with a highly
23    nutritious food source.

24    At least 30 different waterfowl species have been documented at Lac qui Parle WMA. The most common fall
25    migrant species observed are Canada geese, mallard, blue-winged teal, green-winged teal, wood duck, and ring-
26    necked duck. The large tracts of restored and native grasslands adjacent to the many wetlands and
27    impoundments located on Lac qui Parle WMA provide excellent nesting and brood rearing habitat for many
28    waterfowl species. Canada geese, mallard, blue-winged teal, and wood duck are the most common species to
29    nest on Lac qui Parle WMA.

30    **Wild Turkey**. Wild turkeys use a variety of habitats throughout their life cycle. Mature oak forests provide roost
31    trees and acorns as food. Grasslands and hay fields are used as nesting cover and brood rearing habitat.
32    Agricultural fields can be used for feeding, especially in winter.

33    Wild turkey reintroduction efforts used live-trapped and translocated wild turkeys of the eastern subspecies.
34    Several releases conducted in the late 1990s and early 2000s resulted in the wild turkeys present at Lac qui Parle
35    WMA today.

36    **Ring-necked Pheasant**. Pheasants are the most common gamebird in the area and the most iconic gamebird of
37    the southwest Minnesota prairie region. Pheasants are found in all habitat types on Lac qui Parle WMA. They are

1  most often associated with grassland and agriculture, but also use wetlands, shelterbelts, and hayfields. Nesting
2  and brood rearing habitat are critical for successful pheasant populations. Pheasants are a short-lived bird with
3  annual survival only around 50%. During severe winters, survival can be much lower. Pheasants exhibit one of
4  the highest reproductive potentials of gamebird species, enabling populations to quickly rebound if habitat is
5  good.

6  The DNR has implemented a Pheasant Action Plan that helps focus efforts The goals are:

7  • Increase the amount of grassland habitat for pheasants.
8  • Maintain and enhance grassland habitats for pheasants.
9  • Increase opportunities for and participation in outdoor recreation related to pheasants and their
10  habitat.
11  • Increase public awareness and appreciation of grassland conservation for pheasants and people.

12  ### *Nongame Birds*

13  Of the birds in Appendix F, 231 are nongame, and 78 are listed as SGCN in the MNWAP (Minnesota Department
14  of Natural Resources, 2016). While this list includes forest species, Lac qui Parle WMA is a vital habitat reserve
15  primarily because of tallgrass prairie and associated wetlands and waterbodies. Tallgrass prairie is among the
16  planet's most endangered ecosystems; less than two percent of the original tallgrass prairie in Minnesota
17  persists today (Minnesota Prairie Plan Working Group, 2018). Subsequently, grassland birds are the most
18  endangered group of birds in North America when compared to other habitat guilds. In North America,
19  grassland birds overall have declined by over 50% in the last 50 years (Rosenberg, et al., 2019). The population
20  changes in many individual species reflect this trend, such as western meadowlark, which is declining at 7.2 %
21  per year in Minnesota, grasshopper sparrow at 6.3 % per year, and black tern at 6.8 % per year (Ziolkowski, et
22  al., 2023). For context, a 7.0 % per year decline rate means a population is reduced by half in a ten-year period.

23  Lac qui Parle WMA's role as a preeminent prairie landscape in southwest/west-central Minnesota makes it a
24  vital reserve for grassland birds. Lac qui Parle WMA is a large and connected prairie landscape compared to
25  other areas in southwest Minnesota. This size and connectedness are landscape characteristics especially
26  important for grassland birds (Cunningham & Johnson, 2006; Davis, et al., 2013). Thus, many of these declining
27  grassland and wetland birds are still present at Lac qui Parle WMA, often in relatively large numbers. For
28  example, the DNR conducts bird surveys at Chippewa Prairie as part of a long-term prairie monitoring effort.
29  Chippewa Prairie is the largest contiguous remnant prairie in southwest Minnesota and is co-managed by Lac qui
30  Parle WMA and TNC. Using the most recent data from 2018, which included 32 point counts, surveyors detected
31  62 Grasshopper Sparrows at Chippewa Prairie at a rate of 1.9 birds per point count. This detection rate was over
32  4.5 times greater than the detection rate in remnant prairies statewide (0.4 per point count). Likewise, Western
33  Meadowlarks were detected at Chippewa Prairie at over 2.5 times the statewide detection rate.

34  While species have unique life history traits and habitat requirements, there are some broad habitat
35  management objectives that apply to all priority nongame bird species: avoid any further fragmentation of
36  habitat; seek opportunities to build connectivity through habitat restoration or reconstruction; and diversify
37  habitat management, both in time and in space and at multiple scales. Management should strive for the

heterogeneity or patchiness of the natural habitat disturbances with which these species evolved prior to European colonization. Structural heterogeneity is of particular importance to birds. A species will often need different vegetation structures in close proximity for different phases of its life history. For example, a species may nest in dense grass thickets, but also use nearby patches of sparser vegetation for foraging and escaping predators. The species may benefit from nearby patches of diverse forbs where fledglings can forage for insects, and also use adjacent shrubs or trees as singing perches. Planned implementation of these management strategies to benefit nongame bird species can be found starting on page 71 of this report.

The Marsh Lake Waterbird Colony boasts the largest nesting colonies in the state for both double-crested cormorants (1800 total nesting pairs in 2020; Cuthbert, et al., 2020) and American white pelicans (10,289 nests in 2015; Cuthbert et al., 2016). In 2015, 63% of Minnesota's pelican population nested at Marsh Lake. The pelican population at Marsh Lake declined by 22% from 2004 to 2015, while the cormorant population increased by 165% from 2004 to 2020. Monitoring of these colonies is an important priority given these large fluctuations and the colony's statewide and continental significance. The Nongame Program historically has contracted with the University of Minnesota to census waterbird colonies throughout the state on an approximate five-year rotation. These censuses can be supplemented at Marsh Lake with less intensive surveys conducted annually by Nongame or Wildlife staff.

In addition to the waterbird colony, Marsh Lake is also important breeding/nesting habitat for other waterbirds and as stopover habitat for migrating birds.

## Mammals

Most mammal species found at Lac qui Parle WMA today were present during pre-European settlement times. As European settlement progressed, habitat destruction and unregulated hunting and trapping decimated populations of several larger mammals. The historical distribution of small, inconspicuous species is unknown. Mammal species present at Lac qui Parle WMA were determined from information supplied by Section of Wildlife records and observations from staff working at Lac qui Parle WMA. Fifty-six mammal species are known to occur on or near Lac qui Parle WMA (Appendix G). Nineteen of these 56 mammal species are identified as game species, 11 are state listed as special concern, one species (eastern spotted skunk) is state listed as threatened, and 18 are considered SGCNs.

### *Large Mammals and Big Game*

Lac qui Parle WMA supports a moderate population of deer and accommodates large numbers of deer hunters. Deer are habitat generalists and use almost all the habitats available at Lac qui Parle WMA. They tend to feed in prairies and grasslands, brushlands, early successional forests, and on agricultural crops. Deer use forested habitat and wetlands for security and thermal cover. They prefer that these cover types are well interspersed with each other and favor edge habitat. A variety of habitats are managed for deer cover and forage at Lac qui Parle WMA. Prairies, grasslands, brushlands and forest transition areas are regularly burned. The resulting new growth (e.g., resprouting shrubs) after a burn provide high quality forage and browse for deer. Some areas of brush, including sandbar willow and plum, that are not regenerated by fire are mowed to maintain these areas as cover and regenerate high-quality browse.

*Mid-sized Mammals, Small Game, and Furbearers*

Lac qui Parle WMA is home to several mid-sized mammals, many of which are classified as small game in hunting regulations or as furbearers in trapping regulations. Common small game hunted at Lac qui Parle WMA include raccoons, coyote and rabbits. Furbearers include a variety of mammals trapped or hunted for their pelts. Important furbearers at Lac qui Parle WMA include muskrats, mink, beaver, otter and raccoon. Many furbearers are associated with water and wetlands (e.g., muskrats, otters, beavers and weasels). Rabbits, raccoons and coyotes can be found in a wide variety of habitats, including croplands, open areas and forests.

*Small Mammals*

Small mammals are important to ecosystems, serving as food for predators, seed distributors, grazers and invertebrate consumers. Although generally inconspicuous, small mammals are present in deciduous forest, wetland and grassland communities at Lac qui Parle WMA. Several species of small squirrels, voles, mice, shrews, bats and moles are common.

## Fish

Lac qui Parle WMA has abundant fisheries resources, including Lac qui Parle and Marsh Lakes, the Minnesota River, portions of the Pomme de Terre and Lac qui Parle Rivers and several wetlands. The primary game fish are crappies, walleyes, catfish, pike and bass. Forty-six fish species have been sampled in Lac qui Parle WMA since 1956 (Appendix H). American eel and lake sturgeon are listed as SGCN in the MNWAP. Lake sturgeon have likely originated from stockings upstream in Big Stone Lake. Numerous species are noticeably absent from Lac qui Parle WMA, likely due to the major migration barrier posed by the Granite Falls dam downstream on the Minnesota River. Some of those species include river carpsucker (*Carpiodes carpio*), gizzard shad (*Dorosoma cepedianum*), shovelnose sturgeon (*Scaphirhynchus platorynchus*), shortnose gar (*Lepisosteus platostomus*), flathead catfish (*Pylodictis olivaris*) and sauger (*Sander canadensis*).

## Herpetofauna

Lac qui Parle WMA has a moderate diversity of reptiles and amphibians, influenced by the diversity of habitats, native plant communities and their landscape connections. Nine amphibian species and nine reptile species are known to occur at Lac qui Parle WMA. Herpetofauna species that occur at Lac qui Parle WMA and their current conservation status are listed in Appendix I.

Lac qui Parle WMA provides habitat for three SGCN and state listed herpetofauna: mudpuppy, Great Plains toad and plains hog-nosed snake. Mudpuppies are the only entirely aquatic salamander found in Minnesota. They are found primarily in lakes and rivers in Lac qui Parle WMA. Mudpuppies are the only known host for the larval form of the rare salamander mussel. They are at risk due to habitat loss and habitat damage from siltation, dredging, damming, and pollution. Great Plains toad depends on grasslands and associated wetlands and is at risk due to habitat loss. The plains hog-nosed snake is a habitat specialist, preferring open, sparsely vegetated habitats on well-drained soils. The major threat to plains hog-nosed snake is habitat loss caused primarily by agriculture and urban development.

The [Habitat Management Guidelines for Amphibians and Reptiles of the Midwestern United States](#) provides guidelines for reptiles and amphibians management.

## Insects and Other Arthropods

Arthropods make up a vast, diverse phylum containing not only thousands of species of insects but species as diverse as spiders, centipedes and crayfish. These creatures are vital for the Lac qui Parle WMA ecosystem; they are an important part of the food chain and carry out vital functions such as pollination and decomposition of organic matter. Nearly all the data currently existing for Lac qui Parle WMA is for insects, but there is need for data on other arthropods. Interest in arthropod species has grown in recent years, and survey efforts and capacity to identify these challenging species have increased. Lac qui Parle WMA is among the strongholds in west-central Minnesota for insect populations, especially for those species associated with tallgrass prairie and associated wetlands. It may have a particularly high diversity and potentially greater abundance of insects due to the size, diversity, and connectivity of the habitat. Lac qui Parle WMA was formerly a key area for the Poweshiek skipperling *(Oarisma poweshiek),* a butterfly species federally endangered that may now be extirpated from Minnesota.

There are 15 species of arthropods known to occur or likely to occur on Lac qui Parle WMA that are considered SGCN. These species are in five different taxonomic groups and include three bees, the American bumble bee (*Bombus pensylvanicus*), yellow bumble bee (*Bombus fervidus*) and yellow-banded bumble bee (*Bombus terricola*); seven butterflies and moths, the abbreviated underwing (*Catocala abbreviatella*), Whitney's underwing (*Catocala whitneyi*), monarch (*Danaus plexippus*), leadplant flower moth (*Schinia lucens*), Pawnee skipper (*Hesperia leonardus montana*), phlox moth (*Schinia indiana*) and regal fritillary (*Speyeria idalia*); four jumping spiders; and one leafhopper, red-tailed prairie leafhopper (*Aflexia rubranura*). Of the SGCN butterflies and moths found at Lac qui Parle WMA, all are listed as special concern in Minnesota except for the monarch. All the SGCN-designated spiders and the leafhopper are listed as special concern.

A new edition of the MNWAP will be written to cover species conservation from 2025 – 2035 and will be published later in 2024. Biodiversity management priorities for Lac qui Parle WMA should incorporate information from the most recent plan and respond to new science. Management for these species could include increasing habitat connectivity, floral diversity (e.g., abundant blooming plants available throughout the season), structural diversity (e.g., patches of grass and forbs with sparsely vegetated areas for nesting), and propagation of specific host plants for butterflies, including milkweed (*Asclepias* spp.) for monarchs and violets (*Viola* spp.) for regal fritillary. Minimizing grassland-crop field edges and creating large, contiguous grassland tracts may provide refugia in which beneficial arthropods can avoid insecticide drift (Goebel K.M., 2024).

## Mussels

Surveys conducted between 2000 and 2022 found eighteen species of mussels on Lac qui Parle WMA (Appendix J). The elktoe and spike are both considered to be threatened in Minnesota, and the black sandshell is listed as special concern in Minnesota; all three species are considered SGCN in Minnesota. Nine species that may have historically occurred on Lac qui Parle WMA are likely extirpated from the Minnesota River basin: mucket (*Actinonaias ligamentina*), rock pocketbook (*Arcidens confragosus*), yellow sandshell (*Lampsilis teres*),

flutedshell (*Lasmigona costata*), hickory nut (*Obovaria olivaria*), round pigtoe (*Pleurobema sintoxia*), salamander (*Simpsonaias ambigua*), monkeyface (*Theliderma metanevra*) and pistolgrip (*Tritogonia verrucosa*).

## Public Use

### Introduction

By statute, Minnesota's WMAs are used for public hunting, trapping, fishing, and other activities compatible with wildlife and fish management. Hunting and fishing have consistently accounted for the largest share of public use at Lac qui Parle WMA. Lac qui Parle WMA is also used for other compatible activities, including wildlife watching, foraging, nature photography, dog training, antler hunting and hiking. Knowledge of the present use levels is necessary to predict the future demand for outdoor recreation and guide management objectives and strategies. Outdoor recreationists and general visitors are provided with a unique opportunity to experience a variety of activities when visiting the area because Lac qui Parle State Park, Minnesota River Scenic Byway, and Lac qui Parle Mission border Lac qui Parle WMA near Lac qui Parle Lake. A recent questionnaire revealed that, beyond hunting and fishing, the following activities are popular at Lac qui Parle WMA: enjoying solitude and relaxing in the outdoors, viewing or photographing wildlife or nature, boating, canoeing and/or kayaking, bird watching and hiking. Visitors indicated they like the diversity and abundance of wildlife, waterfowl, pheasant, deer hunting, fishing, birdwatching, habitat, recreation, natural beauty, location, size, and access at Lac qui Parle WMA. See Appendix B for the November 2023 summary of public scoping results.

### Hunting

#### *Waterfowl Hunting*

Lac qui Parle WMA is probably best known as a destination to go waterfowl hunting; it is widely known for its excellent Canada goose hunting. People come from all over Minnesota and the upper Midwest to hunt waterfowl each year. Waterfowl hunting at Lac qui Parle WMA can be subdivided into the controlled hunt from the designated hunting blinds within the state game refuge, as well as duck and goose hunting over land and water on the rest of Lac qui Parle WMA.

The controlled hunt occurs within the state game refuge boundary on Lac qui Parle WMA. Currently, waterfowl hunting is allowed at designated hunting stations from the third Thursday in October through the end of the goose season. Currently, small game hunting is restricted from the Saturday before the third Thursday in October through November 30. The following general restrictions apply at Lac qui Parle WMA controlled hunt:

- Hunters must use designated hunting stations on a first-come, first-served basis.
- No one may park in or otherwise occupy any designated controlled hunting zone parking lot or any hunting station from 10 p.m. to 5 a.m.
- General regulations for WMAs and state game refuges apply to hunters using designated blinds.
- Hunters must also comply with all other waterfowl and general hunting regulations.
- No one may leave any refuse, offal, or feathers on public lands in the controlled hunting zone, parking lot, or designated overnight use area of the management area.
- No alcoholic beverages may be consumed or possessed at any hunting stations on public lands.

Most waterfowl hunting takes place over water from small boats and canoes on Marsh Lake and Upper Lac qui Parle Lake. In addition, field hunting opportunities for both ducks and geese take place on the harvested agricultural crop areas within Lac qui Parle WMA. During the opening day of the regular waterfowl season, area staff conducted a vehicle count to estimate hunter participation trends (Table 8). Hunters are then interviewed at access points, and records of hunter success (i.e., numbers of ducks harvested per hunter) and bag composition (i.e., species harvested) are collected.

Although variable from year to year, the number of vehicles in Lac qui Parle WMA during the opening day car count has been relatively stable. Hunter success is highly variable and can be impacted by weather, water levels, and bird populations.

**Table 8. Opening day waterfowl season car counts and bag checks, 2013-2023**

| Year | Car Count | Hunters Interviewed | Birds Harvested | Birds/Hunter |
|------|-----------|---------------------|-----------------|--------------|
| 2013 | 92 | 93 | 301 | 3 |
| 2014 | 79 | 102 | 242 | 2 |
| 2015 | 99 | 86 | 312 | 4 |
| 2016 | 73 | 90 | 155 | 2 |
| 2017 | 85 | 68 | 172 | 3 |
| 2018 | 87 | 48 | 126 | 3 |
| 2019 | 65 | 23 | 17 | 1 |
| 2020 | 73 | 71 | 143 | 2 |
| 2021 | 60 | 30 | 88 | 3 |
| 2022 | 68 | 20 | 118 | 6 |
| 2023 | 67 | 55 | 111 | 2 |

*White-tailed Deer Hunting*

White-tailed deer hunting is another popular activity at Lac qui Parle WMA. Lac qui Parle WMA lies entirely within deer permit area (DPA) 278 which runs along the Minnesota River from Ortonville southeast to Montevideo, containing parts of Big Stone, Chippewa, Lac qui Parle and Swift counties. Big Stone NWR and Lac qui Parle WMA are in this DPA. Nearly 20 percent of the DPA is public land, the majority being Lac qui Parle WMA. Agriculture is the other dominant land use outside public lands. Population goals are set through a stakeholder-informed process with hunting pressure the primary tool available for management. Annual population modeling and hunter harvest data are used by DNR staff to develop harvest regulations that help meet deer density goals.

1 Lac qui Parle WMA provides a mix of habitats preferred by deer and deer hunters. The primary habitat type is
2 grassland, a mix of native prairie and prairie reconstructions. Deer hunting opportunities are available from mid-
3 September through the end of December in archery, firearms and muzzleloader seasons. In addition to open
4 public hunting, Lac qui Parle WMA staff coordinate with Capable Partners Inc. to hold a special deer hunt within
5 the state game sanctuary on Rosemoen Island. Fourteen blinds are wheelchair accessible and offer outdoor
6 recreational opportunities for those with physical disabilities. The fall of 2023 marks the 27th year Lac qui Parle
7 WMA has offered this hunting opportunity.

8 Figure 12 shows reported white-tailed deer harvest by year Figure 12in DPA 27. Car counts are conducted at Lac
9 qui Parle WMA on the opening day of the firearms A season and are used to estimate the number of hunters per
10 year.

11 **Figure 12. Total deer harvest in DPA 278, 2013-2023**
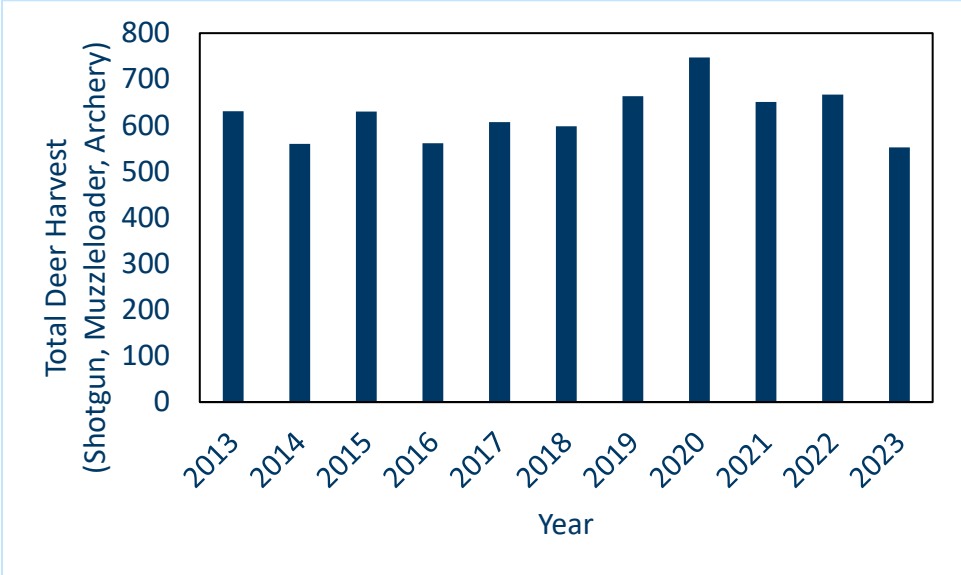


12

13

14 ***Pheasant Hunting***

15 Pheasant hunting is another popular hunting activity on Lac qui Parle WMA (Figure 13). Pheasant populations
16 are estimated using a relative abundance index to monitor long-term trends in regional and range-wide
17 populations. Since 1955, DNR wildlife and enforcement personnel have conducted the annual August Roadside
18 Survey to monitor annual fluctuations and longer-term population trends. Although harvest is not tracked yearly
19 on Lac qui Parle WMA, it is thought to be relatively high, especially in years which strong pheasant populations.
20 Historic opening day bag check data was usually around 0.5 birds per hunter. Lac qui Parle WMA is unique in
21 that the State Game Refuge, and historically the controlled hunt boundary, is closed to small game hunting
22 including pheasant until December 1st. The December 1st opener in the State Game Refuge has been extremely
23 popular with hunters hoping to harvest pheasants late in the season that haven't already experienced hunting
24 pressure. In 2023, 70 cars were counted in the refuge on December 1st.

1    **Figure 13. Pheasant opener car counts, 2013-2023**
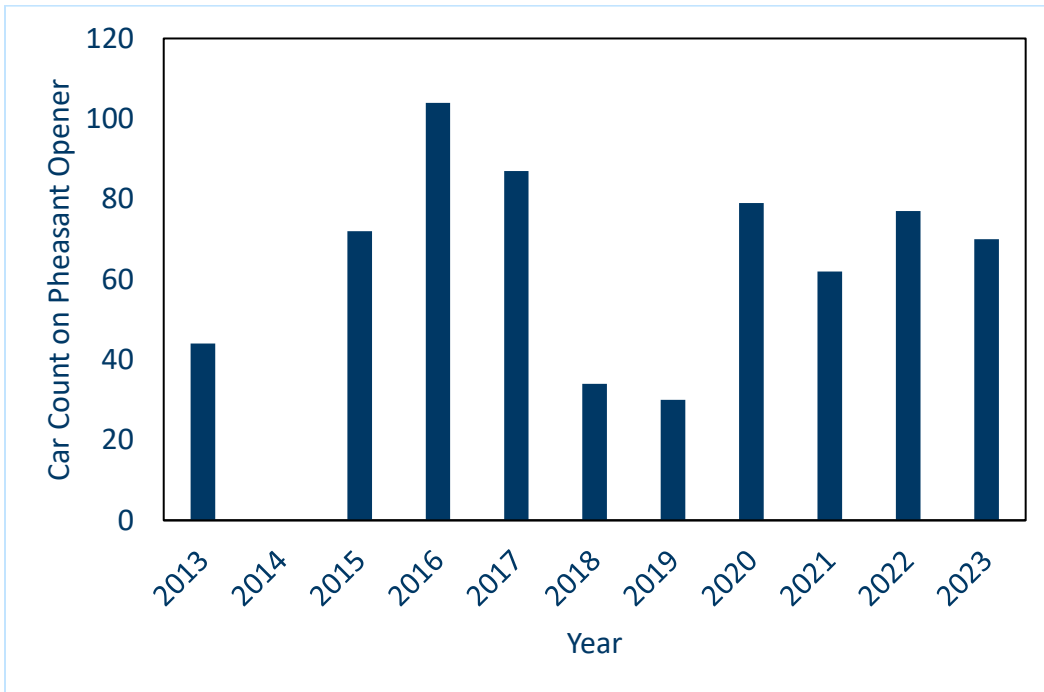


2

3    *Wild Turkey Hunting*

4    Spring turkey season is popular on Lac qui Parle WMA. The spring 2023 hunting season was open from April 12
5    through May 31. Hunters were limited to harvesting a single bird: a tom, jake or bearded hen. Firearm hunters
6    were restricted to hunting one of five week-long periods (A-E), in addition to the final two weeks of the season
7    (F), if they did not harvest a bird earlier. Archery and youth hunters could hunt the entire season. An unlimited
8    number of permits were available during all periods, except for three permit areas that maintained a lottery
9    during the A-C periods (511, 512) or A-B periods (502). All hunters declared a permit area at the time of license
10   purchase but could harvest a bird within any permit area. Lac qui Parle WMA lies within turkey Permit Area 505.
11   The spring wild turkey season in Area 505 had 700 archery permits, 1831 general permits, and 643 youth
12   permits declared, with a total harvest of 894 birds in 2023 (Figure 14).

1    **Figure 14. Turkey harvest in Area 505, 2013-2023**
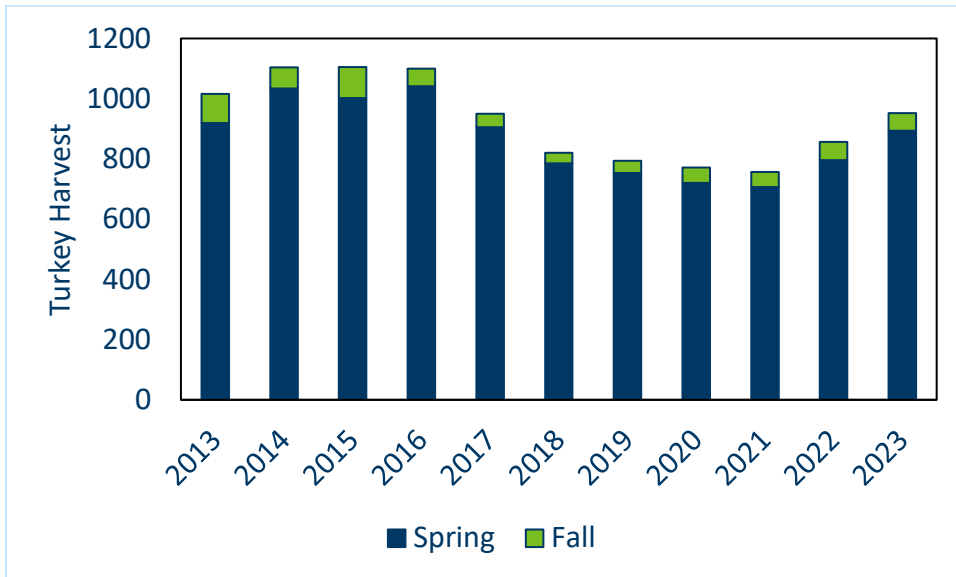


2

3    **Trapping**

4    All trappers at Lac qui Parle WMA are required to obtain a special use permit which allows managers the ability
5    to monitor trapping pressure and harvest. Over the last five years, four to eight trappers applied for special use
6    permits annually (Figure 15). From 1965 to 1975, an average of 31 permits were issues annually with a range
7    from 23 to 45 permits being issued. From 1994 to 1976, an average of 23 permits were issued annually with a
8    range from nine to 36 permits being issued.

9    Harvest data on 11 species is tracked at Lac qui Parle WMA: muskrat, raccoon, beaver, mink, skunk, opossum,
10   weasel, coyote, otter, badger and red fox. The species with the highest harvest totals from 2002 to 2022 are
11   muskrat, raccoon and beaver, respectively (Appendix K). This follows the pattern noted in the 1977 and 1997
12   management plans, except mink outnumbered beaver in harvest totals. Other noted changes include fewer red
13   foxes and badgers and more coyotes reported. Total muskrat and mink harvests have decreased; however, the
14   annual average harvest of beaver has increased. Otters and opossums have become more abundant. There was
15   no season for otters when previous plans were prepared, and they are now quite common. Fisher and bobcat
16   are now regularly reported in this part of the state and continue expanding their range in southern and west-
17   central MN where suitable habitat conditions are available. At least three confirmed fisher sightings on Lac qui
18   Parle WMA have occurred within the last five years.

1    **Figure 15. Number of registered fur trappers using Lac qui Parle WMA, 2002-2022**
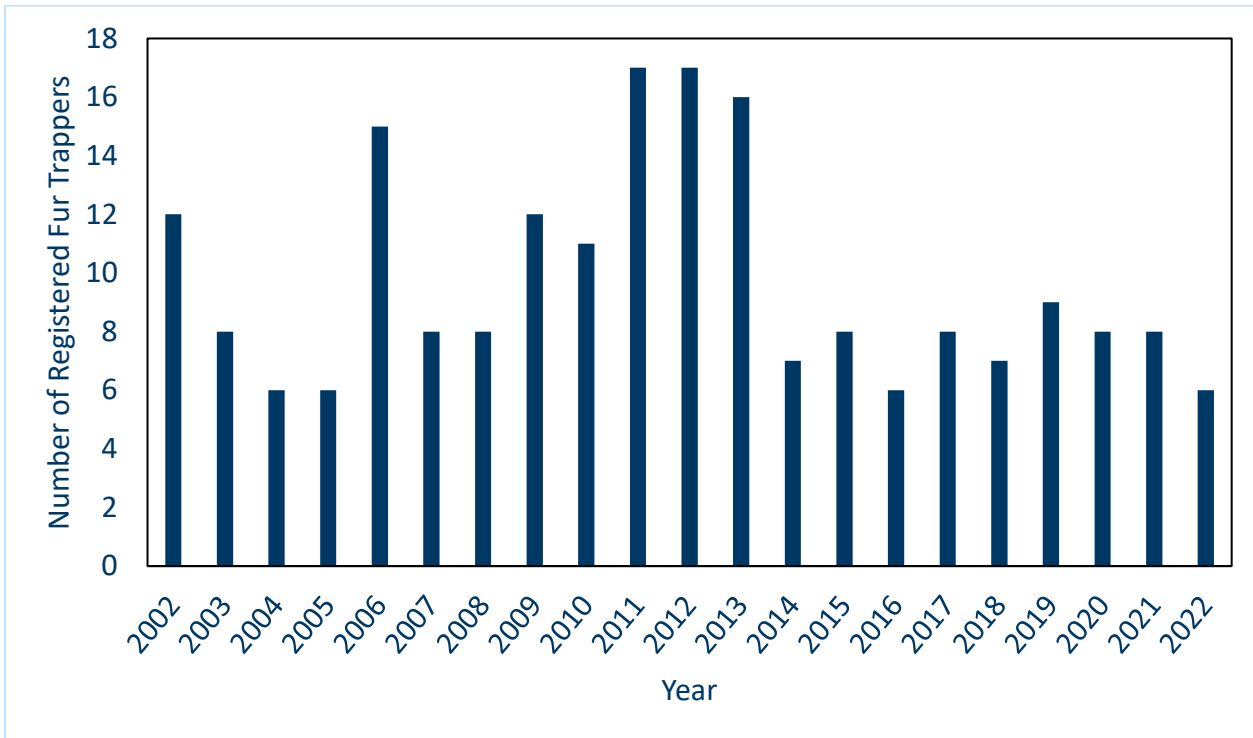


2

3

4    **Fishing**

5    Fishing destinations in Lac qui Parle WMA include Lac qui Parle and Marsh Lakes, as well as the Lac qui Parle,
6    Pomme de Terre, and Minnesota Rivers. Lac qui Parle Lake receives very high fishing pressure. When fishing is
7    good, the DNR has documented 150,000 angler hours in a year. Over 400 fish houses have been on the lake
8    during recent winters. Marsh Lake and the rivers experience low fishing pressure and can provide quieter
9    getaways for anglers seeking more remote experiences. Lac qui Parle WMA offers numerous shore angling
10   opportunities since most of the shoreline is publicly owned. All waters in Lac qui Parle WMA offer scenic fishing
11   experiences since the shorelines are almost completely undeveloped. The primary species anglers seek are black
12   crappie, walleye, northern pike, channel catfish, bluegill and white bass. Fishing for all these species can be very
13   good throughout Lac qui Parle WMA.

14   **Wildlife Observation**

15   Wildlife observation is a widespread activity, but it is often difficult to quantify. Nearly all visitors to Lac qui Parle
16   WMA are looking to observe wildlife, whether they are hunting or not. Wildlife observation is one of the fastest-
17   growing wildlife-related recreation activities in the United States, and as such, it has significant implications for
18   the work of wildlife agencies (Sinkular, et al., 2022).

Lac qui Parle WMA is an especially popular wildlife viewing destination for birdwatchers because of the diversity and expanse of the grassland and wetland habitats, as well as the excellent viewing opportunities at locations such as Marsh Lake Dam and Chippewa Prairie. Birders can see many species on a given day, especially given other prairie destinations such as Lac qui Parle State Park, Big Stone NWR, and Plover Prairie Preserve managed by TNC. This large network of birding hotspots draws many visitors. A key indicator of birding activity in this region is in data stored in eBird, a well-known website in the birding community where birders can store their observation data. As of March 2024, 600 birders entered birding data in eBird from Lac qui Parle County. Those birders have submitted over 4,800 checklists, which record the number and species of birds detected on an outing, and they have collectively observed 286 different bird species in Lac qui Parle County.

## Resource Gathering

Resource gathering, also known as foraging, is an activity where edible foods are harvested for personal use. No commercial harvest of any plants or animals is permitted on Lac qui Parle WMA. A variety of wild foods commonly collected for personal consumption include wild asparagus, morel and other mushrooms, fiddleheads, nettles and ramps (wild leeks). Minnesota Rule 6230.0250 Subp 20 states that the harvest of whole plants is not permitted on Lac qui Parle WMA. However, since the tops of leeks are edible, the top portion of the plant may be harvested; the bulb may not. Foraging is a growing activity in the area. DNR also issues special fuelwood permits to allow firewood harvest for personal use with a maximum volume of 12 cords. The number of permits given each year varies, but it is generally less than five permits.

# Strategic Considerations

## Climate, Extreme Weather, and Climate Change

The future climate of Lac qui Parle WMA is projected to be warmer and wetter than it is currently. From 1895 through 2023, average annual temperatures increased by 2.7°F, slightly below the statewide average temperature increase of 3.1°F during the same period. Observed changes to average temperatures at night and in the winter are happening more quickly that overall averages. These changes are markedly evident in the period since 1970, when daily minimum temperatures have risen about 50% faster than daily maximum temperatures, and average winter temperatures have risen nearly five times faster than average summer temperatures. In summary, daily low temperatures in winter have risen sharply, and extremes of winter cold are less frequent and less severe than in decades past.

In Milan, which has the nearest high-quality and long-term climate station to Lac qui Parle WMA, winter's lowest temperatures have increased by an average of 7.7°F since the 1890s. Milan experienced its warmest winter on record in 2023-24, with more highs of at least 50°F and fewer lows around 10°F or lower than any other winter in its recorded history (Figure 16).

1    **Figure 16. Winter temperature changes observed at Milan, MN, 1895 - 2024.**



Lowest Lows of Winter, Milan (MN), 1895-2024
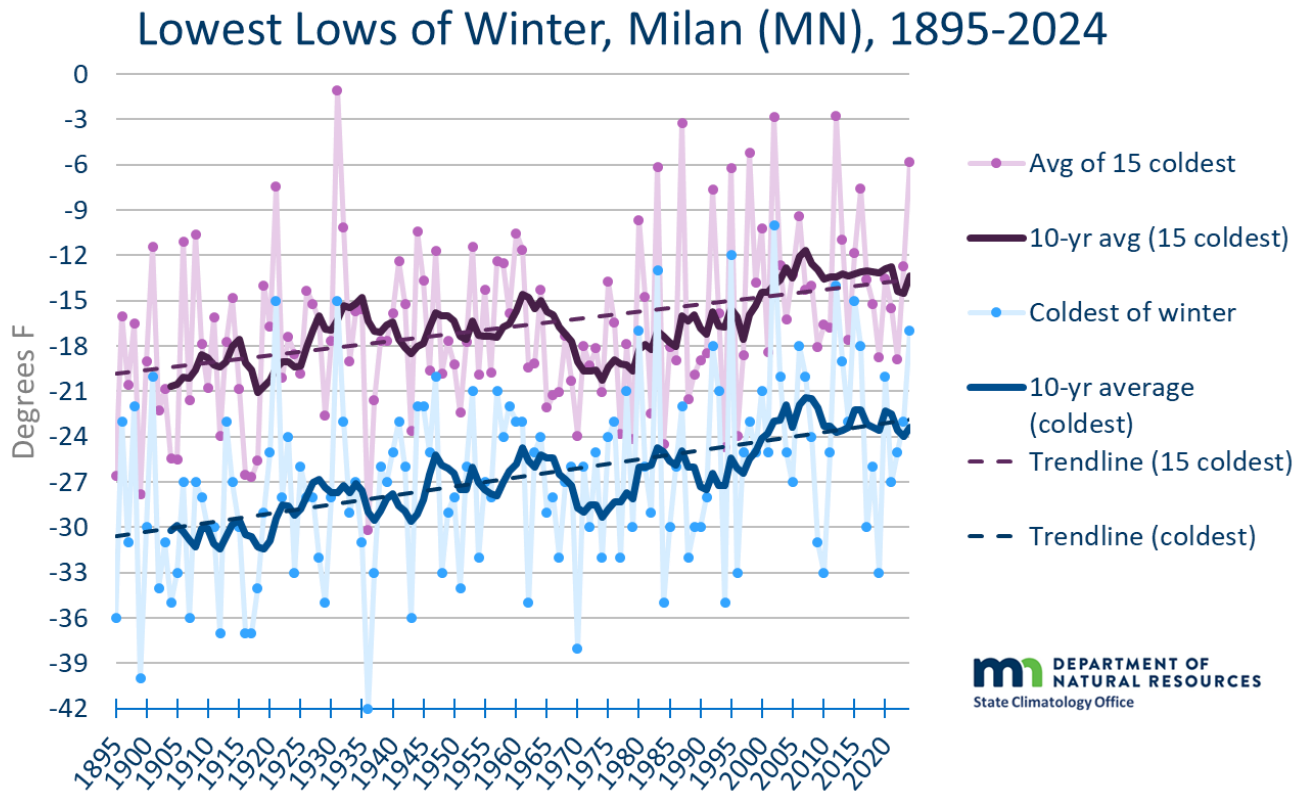
2

3    Annual precipitation has increased by 2.6 inches since 1895, and intense rainfall events producing daily totals of
4    more than 1, 2, and 3 inches have been more common in western Minnesota since 1990 than during any other
5    period on record.

6    Climate change results in more extreme weather, especially heat and precipitation, and frequency of extreme
7    weather events is increasing at Lac qui Parle WMA. It is in a part of the state that is especially prone to hot
8    weather extremes and can also experience intense summer thunderstorms. In May of 2022, several outbreaks
9    of extreme thunderstorms affected the area, with 90+ mph thunderstorm winds recorded near Lac qui Parle
10   WMA on May 12 and again on Memorial Day (Minnesota Department of Natural Resources, 2023; Minnesota
11   Department of Natural Resources, 2022).

12   Climate projections summarized in the 2014, 2017, 2018 and 2023 National Climate Assessments, and others
13   available for the state of Minnesota, predict Lac qui Parle WMA area will warm by an additional 2.5–4° F by
14   2070, while annual precipitation will increase by an additional 1–2.5 inches. Short-term variations can be
15   expected, leading to episodes of cooler conditions and drought, even as trends toward warmer and wetter
16   conditions continue (Pryor, et al., 2014; Vose, et al., 2017; Easterling, et al., 2017; Jay, et al., 2018; Marvel, et al.,
17   2023; Wilson, et al., 2023).

Appendix L contains the historical (1895-1969) and current (1991–2020) mean seasonal precipitation and temperature values, as well as projected end-of-century values under a moderate greenhouse gas emissions scenario. Annual precipitation is modeled to increase moderately. Temperature is projected to be warmer by the end of the century, with winter and spring experiencing the greatest temperature increases proportionally.

These climate changes affect fish, wildlife, and plant populations—altering behavior, distribution, development, reproduction and survival. Many changing climate factors and resultant habitat changes affect animals and plants, such as altered snow cover, shorter winters, shifts in dissolved oxygen regimes in lakes, and increasing stream temperatures. Some species may benefit from climate change, while many other native fish, wildlife, and plant populations will be negatively affected.

## Winter Severity

The temperature in the wintertime is predicted to increase more than any other seasonal temperature value. Days with snow coverage are also predicted to decrease (Liess, et al., 2022). These changes may benefit deer populations at Lac qui Parle WMA and certain plant species growing at the northern edge of their ranges. However, subtle changes to snow quality affected by warmer winter and early spring air temperatures can negatively affect wildlife. One example is freezing rain forming a hard, icy crust on the snow surface or the ground, which can prevent pheasants and deer from accessing certain food resources. The DNR measures snow depth and cold temperatures from November through May to calculate a winter severity index (WSI), which estimates winter weather impacts on deer survival. More days with extreme cold and deep snow result in a higher WSI, correlating to lower deer survival. Winter severity indices for Lac qui Parle WMA's DPA 278 were calculated back to the winter of 1981 – 82.

WSIs in DPA 278 are slightly trending downward (Figure 17), primarily due to fewer days with deep snow. The average WSI in this dataset for the first 20 years is 48.8, with one winter ranked as severe (WSI greater than 120). The winter with the greatest WSI was 1996-1997, with a WSI of 144. The average WSI for the last 20 years is 46.6, with zero winters ranked as severe.

1  **Figure 17. Winter severity index (WSI) for Lac qui Parle WMA, 1981 - 2023**



2
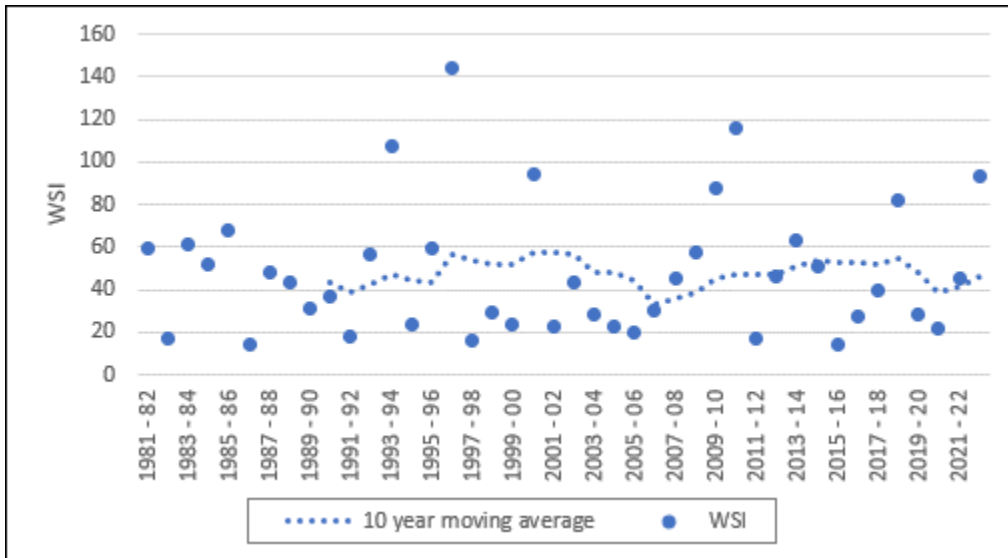
## Invasive Species

4  Invasive plants and animals pose management concerns because they can out compete native species for
5  sunlight, food, space and other resources. Based on DNR invasive species monitoring data, there are not many
6  invasive plant and animal species within and adjacent to Lac qui Parle WMA. However, some of those present
7  have a significant impact on habitat. Although the DNR's monitoring programs have increased recently, species
8  are likely underreported or unreported, and invasive plants and animals are likely more widespread than current
9  data indicate. In the future, the number and abundance of different invasive species will increase, and these
10 organisms will pose significant risks to native species. Educating users, early detection, and aggressive treatment
11 of invasive species can effectively minimize new introductions and their spread.

## Monitoring and Control

13 The DNR proactively uses tools to help prevent the introduction of new invasive species, including those
14 outlined in DNR Operational Order 113 Invasive Species Prevention and Management and FAW's guidelines on
15 Operational Order 113. These documents outline how staff are to minimize the spread of invasive species and
16 pathogens on state lands. Protocols include day-to-day guidelines on preventing the introduction or spread of
17 invasive species, monitoring, reporting, training, and incorporating invasive species spread prevention in
18 contracts and grants.

19 Staff report new infestations of invasive species to the DNR Invasive Species Program using the Early Detection
20 Distribution and Mapping System (EDDMapS) website or app, or the Invasive Species Reporting Form. DNR
21 invasive species specialists verify invasive species reports. With the help of these staff, fast action can be taken
22 for new invasive plants and animals found at Lac qui Parle WMA. New invasive discoveries on Lac qui Parle WMA
23 should be prioritized with the goal of eradication.

For invasive plants and animals already present at Lac qui Parle WMA, control of limited populations on higher-quality sites in larger project areas will be prioritized. Prioritizing these limited invasions will reduce their spread into uninvaded areas. Funding for future invasive species control should be identified and applied to multiple invasive species using multiple control tactics. Planned control measures and strategies to combat the introduction and spread of invasive species can be found starting on page 70 of this report.

The following paragraphs list plants and animal species in or near Lac qui Parle WMA. Species that could be potential invaders over the next ten years are also listed. Because of shortages in staff time to monitor invasive species populations, this is likely a partial list.

## Animals

### Terrestrial Animals

Several non-native terrestrial animals are well established in and around Lac qui Parle WMA and are not tracked in invasive species databases, including rock pigeons, European starlings, house sparrows, house mice, Norway rats, and invasive earthworms. These species are undesirable because they may spread diseases, impact habitat structure, and compete with native cavity-nesting birds. There is currently no cost-effective control method for these species.

### Aquatic Animals

Zebra mussels are known to occur in Lac qui Parle WMA. There is currently no effective management technique to control them. Any equipment used in waters where zebra mussels occur should follow the DNR's invasive species cleaning protocol to manage spread to other waters.

Common carp are a non-native species considered naturalized in Minnesota and known to occur in all lakes, rivers, streams and some wetlands on Lac qui Parle WMA. No specific effort has been made to survey for carp in the impoundments within Lac qui Parle WMA; however, it is known that common carp are present during certain times of the year, including spring spawn. Water drawdowns can be an effective tool for removing carp from shallow lakes. Fish barriers can be used in water control structures to help prevent common carp from entering upstream impoundments. Common carp can threaten fish and wildlife, especially in shallow lakes and wetlands, because of their impacts on water quality and aquatic vegetation.

### Terrestrial Plants

### Woody Plants

There are seven invasive woody species known to occur within Lac qui Parle WMA:

- European buckthorn (*Rhamnus cathartica*)
- Siberian elm (*Ulmus pumila*)
- Exotic honeysuckle (*Lonicera spp.*)
- Black locust (*Robinia pseudoacacia*)

1 - Siberian peashrub (*Caragana arborescens*)
2 - Russian olive (*Elaeagnus angustifolia*)
3 - Amur maple (*Acer ginnala*)

4 Buckthorn is pervasive on Lac qui Parle WMA and is found in almost all habitat types. Because buckthorn is
5 widespread on Lac qui Parle WMA, control is prioritized to larger project areas and high-quality, diverse sites
6 with limited invasion.

7 Siberian elm is pervasive on Lac qui Parle WMA. Where it occurs, it can overtake grasslands, form dense stands
8 over time, and significantly impact grassland nesting birds, including waterfowl and pheasants. It spreads readily
9 from seeds and regenerates from stump sprouts. Numerous areas across Lac qui Parle WMA must be treated,
10 including entire stands dominated by Siberian elm. This species represents a long-term management challenge
11 on Lac qui Parle WMA.

12 Amur maple was historically planted as a hedgerow in a few Lac qui Parle WMA locations. In the early 1990s,
13 this species was often included in shrub plantings. Amur maple has thrived in the hedgerows where it was
14 planted, but it does not appear to have widely spread.

15 Siberian peashrub occurs in a few locations on Lac qui Parle WMA. Where it occurs, it forms dense colonies that
16 preclude other species. It does not appear to spread widely from where it first takes root, but it poses an
17 invasive threat in other parts of the state. Small pockets will be identified and slated for treatment in the next
18 few years to prevent them from expanding.

19 Black locust is a species native to the United States, but not Minnesota. It is a clonal species, forming dense
20 colonies that preclude other tree and shrub species and can invade grasslands. It is a challenging species to
21 control due because of its vigor and ability to sucker. There are a handful of known locations on Lac qui Parle
22 WMA. These sites are monitored for spread. If there is no planned disturbance, in woods with black locusts, a
23 hands-off approach has been taken simply because the species is so challenging to treat. As control techniques
24 improve, control of this species will increase as staff and funding permit.

25 Other invasive species known to occur in low abundance on or near Lac qui Parle WMA include:

26 - Glossy buckthorn (*Frangula alnus*)

27 Over the next 10-20 years, the following invasive woody plants could arrive at Lac qui Parle WMA:

28 - Multiflora rose (*Rosa multiflora*)
29 - Oriental bittersweet (*Celastrus orbiculatus*)
30 - Japanese knotweed (*Polygonum cuspidatum*)

## Herbaceous Plants

32 There are many herbaceous invasive plant species on Lac qui Parle WMA. Many have been present for decades,
33 such as reed canary grass and brome. This plan does not address all known herbaceous invasives but will focus
34 on actively managed species, including:

- Birds foot trefoil (*Lotus corniculatus*)
- Bull thistle (*Cirsium vulgare*)
- Canada thistle (*Cirsium arvense*)
- Crown vetch (*Securigera varia*)
- Hoary alyssum (*Berteroa incana*)
- Leafy spurge (*Euphorbia esula*)
- Plumless thistle (*Carduus acanthoides*)
- Queen Anne's lace (*Daucus carota*)
- Smooth brome (*Bromus inermis*)
- Spotted knapweed (*Centaurea stoebe*)
- Wild parsnip (*Pastinaca sativa*)

Common control methods for these species are mechanical or chemical treatment, prescribed fire, and biocontrol (for example, leafy spurge using leafy spurge beetles).

Spotted knapweed is a perennial herbaceous plant typically found on sites with poor soil, such as sandy and rocky areas. This plant can spread quickly in disturbed areas and sandy habitats. Areas of Lac qui Parle WMA with poor soil should be monitored to allow for early detection and management. Construction areas and gravel parking lots should be monitored because spotted knapweed seeds can be transported through construction activities and movement of aggregate materials.

Over the lifespan of this plan, the following terrestrial invasive species could arrive at Lac qui Parle WMA:

- Garlic mustard (*Alliaria petiolata*)
- Poison hemlock (*Conium maculatum*)
- Amur silvergrass (*Miscanthus saccariflorus*)
- Oxeye daisy (*Leucanthemum vulgare*)

If any garlic mustard populations are found on the unit, they should be prioritized for treatment; new infestations increase dramatically in just a few years. It typically occurs in forested settings, particularly moist woods, but it can be found in various habitats. It is easily spread by wildlife and human footwear.

Poison hemlock is a relatively new invasive species in Minnesota. This plant is poisonous to humans and some wildlife if consumed. Control of this species should also be prioritized.

Amur silver grass is a warm-season ornamental grass used primarily in landscaping. This species spreads by rhizomes to form very dense pockets that preclude all other plants.

Oxeye daisy is a perennial plant that grows in disturbed, open areas. Oxeye daisy can spread by seed and can also spread vegetatively by rhizomes sending up plants nearby the parent plant.

## Aquatic Plants

There are three known invasive aquatic plant species occurring within or very near Lac qui Parle WMA:

1. • Purple loosestrife (*Lythrum salicaria*)
2. • Hybrid cattail (*Typha x glauca*)
3. • Reed canary grass (*Phalaris arundinacea*)

4. Purple loosestrife invades marshes and replaces native species such as sedges, broadleaf cattails, and other
5. wetland plants. It forms dense stands, and infested areas become unusable to native wetland animals, including
6. ducks, geese, rails, bitterns, muskrats, frogs, toads and turtles. Beetles used for biocontrol of purple loosestrife
7. have been released on Lac qui Parle WMA in the last 10-15 years. Hybrid cattail has existed around and within
8. Lac qui Parle WMA for decades. It forms dense stands and outcompetes native species. Aerial herbicide
9. treatment for reducing cattail encroachment into open water is planned to be used on Marsh Lake in 2024.
10. Aerial applications of herbicides on hybrid cattail have been used on other parts of Lac qui Parle WMA in the last
11. ten years and have proven effective. Reed canary grass is present in wet areas throughout Lac qui Parle WMA. It
12. is a major threat to wetland habitats as it often outcompetes native species by forming dense stands. Grazing
13. and prescribed burning provide temporary control of this species, although grazing appears to provide longer-
14. term benefits. Grazing allows other plant species to become established after it is grazed down, although reed
15. canary grass eventually becomes reestablished. Burning primarily removes dead plant material and reed canary
16. grass immediately grows back, with some other plant species growing depending on the time of year the site is
17. burned. Due to the lack of cost-effective, large-scale treatment options, specific management actions are
18. limited.

19. Other species not currently present at Lac qui Parle WMA but threatening include:

20. • European common reed (*Phragmites australis ssp. australis*)
21. • Eurasian watermilfoil *(Myriophyllum spicatum*)
22. • Curly-leaf pondweed (*Potamogeton crispus*)
23. • Flowering rush (*Butomus umbellatus*)

## Fish and Wildlife Diseases and Parasites

25. The diseases and parasites listed below can potentially impact fish and wildlife populations at Lac qui Parle
26. WMA. Responses to diseases and parasites will vary depending on the scale and causative agent. All actions will
27. be closely coordinated with other DNR divisions, FAW's Health Programs, and partners (i.e., state, federal, and
28. tribal agencies) as appropriate.

### Waterfowl Diseases

30. Waterfowl are susceptible to several infectious diseases that cause mortality including avian cholera, avian
31. botulism, avian tuberculosis, avian salmonellosis, chlamydiosis, duck plague, aspergillosis, and avian influenza.
32. Common denominators among outbreaks are a concentration of waterfowl and often poor water quality. Avian
33. salmonellosis and aspergillosis also infect songbirds, but the source of these outbreaks is usually moldy,
34. contaminated food at feeders.

**Chronic Wasting Disease**

Chronic wasting disease (CWD) is a contagious neurological disease affecting cervid species, including deer, elk, and moose. It causes a characteristic spongy degeneration of the brains of infected animals resulting in emaciation, abnormal behavior, loss of bodily functions, and death. As of March 2024, no CWD positive wild deer have been detected at Lac qui Parle WMA or its vicinity. See the following link for the current DNR CWD response plan.

**Epizootic Hemorrhagic Disease**

Epizootic hemorrhagic disease (EHD) is a naturally occurring viral disease that can spread to white-tailed deer by biting *Culicoides* midges. The disease can dramatically reduce a local deer population in the short-term but has a relatively small impact on the overall deer population. There are no management interventions available to combat the disease. EHD is seasonal and often occurs during drought-like conditions in the late summer and early fall. Frost will kill midge that carries the virus, ending the potential infection period. Finding multiple healthy-looking deer dead near water is typical of an EHD die-off. Fever drives the animals to seek water, and they die from internal lesions and hemorrhages. EHD has not been documented at or near Lac qui Parle WMA.

**Mange**

Mange, particularly sarcoptic mange, is a disease transmitted by mites and affects mainly canids (e.g., wolves, foxes and coyotes) but also bears, raccoons, porcupines, and some rabbits and squirrels. The mites are transferred from one individual to another through direct contact or transfer at den sites. The disease causes hair loss, and in some cases exposed skin becomes encrusted or oozes fluids, often resulting in death. Red foxes are particularly susceptible to mange, and thousands can die during an outbreak. Mange has been identified on Lac qui Parle WMA. Its abundance varies yearly and is seen primarily in coyotes.

**Canine Distemper**

Canine Distemper is a highly contagious disease caused by a paramyxovirus. It is a widespread disease affecting wild and domestic carnivores and primarily affects raccoons, grey foxes and skunks in the spring and fall. Transmission occurs from contact with infected saliva, urine, feces, or respiratory secretions. Animals can shed virus up to two weeks after they recover. The virus can survive long periods in the environment if the temperatures are below freezing. Distemper has been identified on Lac qui Parle WMA. Like mange, the occurrence of distemper varies from year to year. Raccoons appear to be the most impacted by this disease on Lac qui Parle WMA.

**Rabies**

Rabies is an acute infectious disease of the central nervous system caused by a virus transmitted in saliva through bites. Rabies is most common in raccoons, skunks, bats, and foxes, but can occur in any mammal. Once signs of the illness manifest themselves, rabies is 100% fatal. Rabies has not been documented on Lac qui Parle WMA; however, it has been documented in neighboring counties.

## Newcastle Disease

Virulent Newcastle disease is a contagious and fatal viral disease of birds affecting respiratory, nervous, and digestive systems. The disease is so virulent that many birds die without showing any clinical signs. In Minnesota, it has occurred periodically in colonial nesting waterbirds (e.g., pelicans, cormorants, gulls, terns, and herons). Waterbird colonies occur within Lac qui Parle WMA at Lac qui Parle Lake and Marsh Lake. Birds that die from Newcastle disease are collected from colonies and disposed of by incineration. There has been no recent documentation of Newcastle disease at Lac qui Parle WMA.

## West Nile Virus

West Nile Virus is a mosquito-borne virus that can kill some birds, particularly waterfowl, ruffed grouse, crows and jays, and mammals, including elk and moose. Lac qui Parle WMA is in a moderate to high-risk area for West Nile Virus. Incidence of infection vary by year with changes in wet and dry cycles and mosquito populations.

## Threats to Forest Tree Health

The most significant threats to forests, woodlands and savannas on Lac qui Parle WMA are floods, droughts, and native pests that take advantage of highly stressed trees. The frequency of excessively high amounts of seasonal spring, summer and fall precipitation stresses floodplain forests.

In the near future, emerald ash borer will likely start infesting ash on Lac qui Parle WMA. There also is a chance that oak wilt may someday threaten oaks on Lac qui Parle WMA.

## Oak Health

### Oak decline

Bur oaks are the predominant oak species on Lac qui Parle WMA. Denser forests comprised of older bur oaks are susceptible to decline. Opportunistic pests, namely two-lined chestnut borer and Armillaria root disease, attack stressed older oak trees and are the main contributors to oak decline in Minnesota. Typical symptoms of attack by two-lined chestnut borer are dead leaves that persist in the canopy for at least a couple of months in summer and fall. Dying trees in declining oak forests frequently are more abundant closer to wetlands and small ephemeral ponds due to limited rooting areas in anoxic soils. Decline and susceptibility to drought can be reduced by thinning forests, reducing tree density and removing weak and non-competitive trees. However, thinning should be avoided during drought and a couple of years following drought.

### Bur oak blight

Bur oak blight is a leaf disease of bur oak caused by the native fungus *Tubakia iowensis*. The disease creates wedge-shaped dead zones on leaves in late summer, particularly in the lower canopy, sometimes resulting in premature leaf drop and heavy defoliation. Bur oak blight becomes more abundant across the landscape as more early growing seasons with high levels of precipitation occur. Fortunately, bur oaks almost always recover

the following spring from this leaf disease, and there is no evidence as of 2024 that bur oak blight is a significant threat to healthy bur oaks.

### *Oak wilt*

Oak wilt is a serious non-native threat to forests with large proportions of red oaks. It can also create expanding mortality zones in forests dominated by bur oaks, and invasive plants frequently invade these openings in stands. As of March 2024, the nearest known oak wilt was about 80 miles from Lac qui Parle WMA. The most likely pathway for oak wilt to get to Lac qui Parle WMA is infected fresh red oak firewood brought to or near Lac qui Parle WMA by campers or nearby property owners.

Oak wilt on bur oak is very difficult to identify. They typically die one to seven years after infection. Symptoms and symptom progression on bur oaks resemble Armillaria root disease and two-lined chestnut borer. The most distinguishing feature of oak wilt is rapid leaf drop from symptomatic branches. More symptoms can be found at the DNR's oak wilt homepage and in DNR Forestry's oak wilt guide. If WMA managers are concerned about oak wilt present on Lac qui Parle WMA, they should consult the Forestry Division's Central Region Forest Health Specialist.

Oak wilt can be prevented by not wounding oaks from April through mid-July. Once oak wilt is known to be within 20 miles of an oak tree, the risk of contracting oak wilt through a fresh wound, including some fresh fire scars, becomes significant. The DNR's forest health team maintains a map of at-risk areas for oak wilt on the oak wilt webpage. These data are also available at the Minnesota Geospatial Commons.

## Floodplain Forests

### *Emerald ash borer*

Emerald ash borer (EAB), an invasive and deadly pest of ash trees, is a threat to ash on Lac qui Parle WMA and will reduce tree species diversity in floodplain forests. As of March 2024, the nearest known occurrence of EAB to Lac qui Parle WMA was about 40 miles away.

As scattered ash trees die from EAB, canopy gaps in intact forests will potentially be invaded by invasive plants. In addition, as ash stands die, it will create significant changes in habitat and produce increased heavy fuel loads on Lac qui Parle WMA with dead and down trees. Death of clusters of ash on the edge of riverbanks and lakeshores that could exacerbate bank erosion and instability.

## Human Activities

Lac qui Parle WMA is the fifth largest WMA in Minnesota and is part of one of the largest blocks of contiguous public land units in southwestern Minnesota. Based on the public scoping questionnaire completed in the fall of 2023 (Appendix B), most users come from the Montevideo and Appleton vicinities. Visitors also travel from the Saint Cloud and Cold Spring areas in Stearns County, Minnesota. In addition, visitors are coming from the Twin Cities metro area and other communities near Lac qui Parle WMA.

1  Lac qui Parle WMA will continue to support its mission of protecting and managing the land for wildlife
2  production and for hunting, fishing, and trapping opportunities. However, other recreational users may seek
3  additional uses or enhancements to the area to address other recreational activity interests or priorities. These
4  will be allowed or implemented when determined to be compatible with the primary purpose of Lac qui Parle
5  WMA.

6  Other nearby public lands may have the facilities or capacity to address these interests. For example, some
7  nearby lands have trails for off-highway vehicles and horseback trail riding facilities. Lac qui Parle State Park has
8  developed facilities for camping, hiking, and nature interpretation facilities and services. Bird watchers, hikers,
9  paddlers and outdoor enthusiasts can use Lac qui Parle WMA roads, public water access sites, parking lots and
10  other facilities for compatible uses.

11  Hunting, fishing, and trapping are regulated activities that do not threaten habitat or wildlife populations when
12  done in accordance with regulations. Taking animals or plants beyond the legal allowances could threaten
13  habitat and wildlife. Other compatible and non-compatible uses and activities at Lac qui Parle WMA are
14  regulated by Minnesota statute or administrative rule and generally do not threaten Lac qui Parle WMA.

15  **Neighboring Land Use**

16  The purchase, development, or fragmentation of private lands adjacent to Lac qui Parle WMA will challenge
17  WMA management activities, recreational use, and access. These challenges include impacts to water quality,
18  the introduction of invasive species, land use disturbances, pesticide drift, and increased human and wildlife
19  conflicts. As people migrate from population centers to rural areas around the state, changes in the use of
20  private lands may present challenges to existing land, resource, and infrastructure management activities within
21  Lac qui Parle WMA.

22  These concerns can be viewed as an opportunity for more coordinated land and management planning efforts
23  to ensure farming, natural resources and other public objectives are addressed. Efforts should identify areas
24  where development or fragmentation would have the most impact, and coordinate tools to address or limit this
25  impact. Local communication and coordination are key, working with other private and public land managers in
26  the area to maintain large areas of grassland habitats with travel corridors connecting them. Proper land
27  planning will enhance the value of these lands for wildlife, plants, residents, and visitors.

28  Examples of land planning tools include the following:

29  • Informing the public about the area's exceptional and diverse natural features, unique wildlife, and rare
30     plant communities.
31  • Engaging with neighboring private landowners in cooperative habitat and facility projects.
32  • Encouraging private landowners to protect rare features and associated habitats by enrolling in
33     conservation easements and programs.
34  • Working with local government units to promote conserving significant wildlife habitats.
35  • Working with local governments on zoning ordinances.

## Unit Access Limitations

In addition to public highways and roads that border the unit, Lac qui Parle WMA has a network of WMA roads to help maintain the unit, facilitate management activities, and provide public access. WMA staff maintain this internal road network. Maintenance needs must be prioritized and consistent sources of funding identified to ensure access is maintained for ongoing management and public recreation activities. Coordination with the Minnesota Department of Transportation (MnDOT), local units of government and private organizations on road and infrastructure projects will improve access opportunities for the public.

Frequent flooding presents a long-term challenge for maintaining roads in Lac qui Parle WMA and the public roads surrounding and serving Lac qui Parle WMA. Flooded roads need to be closed; when waters recede, the roads also need follow-up repairs to make them suitable and safe for public travel. These repairs take time and cost money.

Public water access for hunting and fishing must be updated to meet Americans with Disabilities Act standards. The present design of some facilities (e.g., placement of river rock in the center approach to docks) precludes people with mobility needs from using them. Options to improve access for people with disabilities to Marsh Lake and Upper Lac qui Parle Lake need to be evaluated as well; potential public water access sites that could be improved to increase access for people with disabilities are the Louisburg Grade, Correll Landing and Twin Bridges.

Water access can be improved by either removing cattail by mowing, crushing, or chemical application and changing the plant community from cattail to open water or a plant community that allows for easier access. Accesses that need this work are at Peterson, Nygard, Cabin Site, Killen, Correll and east of the triple culverts off the Louisburg Grade.

In addition, some areas within Marsh Lake are difficult to access because of cattails. Options will be considered to mechanically manipulate cattail by crushing or mowing or chemically applying herbicide to specific areas. The purpose of this would be to improve access to open areas in the lake that are difficult to access and create new open pockets within cattail areas.

## Technology

Changes in technology change how the public use Lac qui Parle WMA. New mapping applications that show public lands can improve the public's ability to use and appreciate Lac qui Parle WMA. The use of remote cameras, cell phones, drones, social media, portable structures, and other online information can impact resources and user experiences. Some of these technologies, like trail cameras and drones, are not legal to use on Lac qui Parle WMA. Although some of these technologies can improve the public's experience on Lac qui Parle WMA, they may make it easier to harvest fish and wildlife and put greater harvest pressure on populations. Increased use of Lac qui Parle WMA may impact infrastructure and ecosystem, including garbage and human waste pollution, and road damage.

## 1 Water Control Structures

2 Water control structures are important infrastructure and resource management components of Lac qui Parle
3 WMA. The water control structures present on Lac qui Parle WMA are described in Table 9.

4 **Table 9. Water control structures present on Lac qui Parle WMA**

| Name | County | Date built | Updated | Length of dikes (ft) | Type of control structure | Acres of wetland |
|---|---|---|---|---|---|---|
| Engebretson 1 | Chippewa | 1960 | | 900 | Vegetated spillway | 40 |
| Engebretson 2 | Chippewa | 1960 | | 190 | Tube overflow | 5 |
| Lillijord | Chippewa | 1965 | | 500 | Vegetated spillway | 30 |
| Marsh Lake Fish Pond | Lac qui Parle | 1965 | 2024 | 2850 | Concrete Stop-log | 10 |
| Avelsgard | Lac qui Parle | 1968 | 2022 | 850 | Vegetated spillway updated to Agri drain | 10 |
| Sotoberg 1 | Lac qui Parle | 1973 | | 1000 | Half riser | 100 |
| Sotoberg 2 | Lac qui Parle | 1973 | 2004 | 640 | Half riser | 80 |
| Sotoberg 3 | Lac qui Parle | 1976 | 2004 | 950 | Half riser | 80 |
| Big culvert | Chippewa | 1978 | | 1000 | Center riser | 80 |
| Mettlerkamp | Chippewa | 1979 | | 700 | Center riser | 40 |
| Beaver | Chippewa | 1982 | | 600 | Center riser | 80 |
| Williamson | Swift | 1982 | | 1250 | Center riser | 20 |
| Anderson 1 | Chippewa | 1988 | | 150 | Vegetated spillway | 2 |
| Anderson 2 | Chippewa | 1988 | | 150 | Vegetated spillway | 2 |
| Headquarters | Chippewa | 1991 | | 100 | Vegetated spillway | 3 |
| Killen MSU | Big Stone | 2005/ 2012 | | 15500 | Agri drain | 130 |
| Marsh Lake | Lac qui Parle | 2019 | | 10350 | Concrete with 12 Slide Gates | 6100 |

5 Water control structures are vulnerable to extreme precipitation events, deferred maintenance due to funding
6 limitations, and degradation over years of use. Periodic maintenance, repair, replacement, or removal of water
7 control structures is needed to ensure that surface water management is effective and resilient to future
8 weather events.

## Operational Context

### Administrative and Fiscal

Lac qui Parle WMA is managed by the Section of Wildlife within FAW, and is in the DNR's southern region, also known as Region 4. WMA operations are funded primarily through the GFF, supported by the sale of hunting, fishing, and trapping licenses and federal aid from surcharges on hunting and fishing equipment. GFF funding primarily covers salary and operational costs, such as maintenance. Some wildlife management projects at Lac qui Parle WMA are funded through dedicated wildlife accounts (e.g., deer, wild turkey, waterfowl, and pheasant stamp), and the majority of current project funding is through the OHF, or other grant funding, such as the Competitive State Wildlife Grant and LCCMR. Additional project funding is brought to Lac qui Parle WMA through partnerships with non-governmental organizations (NGOs) such as TNC, Ducks Unlimited, Pheasants Forever, National Wild Turkey Federation, Minnesota Sharp-tailed Grouse Society, and others. These organizations apply for grants and help administer habitat projects on Lac qui Parle WMA to achieve combined organizational and resource goals.

### Staffing

The Lac qui Parle WMA staff consists of the wildlife area supervisor, two assistant wildlife area managers, four seasonal staff classified as laborer, trades and equipment (LTE) and one office and administrative specialist intermediate (OASI) shared with DNR's Parks and Trails Division (PAT).

Staffing levels are an important factor in implementing plan strategies and priority work. The area supervisor is responsible for supervision, work planning, budgets and administrative tasks, and assists with habitat and facility projects as needed. Assistant wildlife area managers are responsible for implementing day to day operations and field project work. LTEs carry out various habitat and facility project work and maintain equipment. The OAS provides administrative support and allows all staff to stay engaged in high priority habitat and facility activities.

DNR staff manages Lac qui Parle WMA and coordinates daily work planning with three area offices to complete critical habitat and facility work across nine counties. This work is supplemented by the Region 4 Roving Crew (funded by the OHF) in Montevideo. The Roving Crew works across all 32 counties that comprise Region 4.

### Operational Orders, Policies, Guidelines, and Directives

The DNR has Operational Orders, which direct the internal management of the department. Policies, guidelines, and directives are the divisions' way of further defining the ways that specific work is undertaken on state lands. Periodic review and updating of existing guidance documents occur and new documents are developed as new policy needs are identified.

### Interdepartmental Coordination

The FAW Lac qui Parle WMA staff participate in bi-annual coordination meetings with the USFWS, TNC, USACE and EWR. In addition to these bi-annual meetings, Lac qui Parle WMA staff work in coordination with other

divisions and conservation partners continuously throughout the year. Lac qui Parle WMA staff also communicate with the DNR Regional Management Team on ongoing or emerging WMA issues.

# Desired Conditions

## Goal 1: Enhance fish and wildlife habitat and biodiversity.

### All Habitat Types

**1.1 Manage native and restored plant communities to ensure a sustainable landscape that supports healthy fish, wildlife, and plant populations.**
- Use site conditions (e.g., soil types, NPC, land management history) to guide specific management decisions.
- Conduct systematic surveys to update NPC designations and initial condition ranks that were determined over 20 years ago to inform future adaptive management decisions.
- Use NPC designations to inform prairie management, such as tree management/removal priorities, suitability for grazing, prescribed fire intervals, and similar actions.

**1.2 Maintain or increase rare NPCs, rare plants, rare animals, and their associated habitats.**
- Explore the feasibility of restoring bison to a portion of the wildlife area to aid in the genetic rescue of this iconic prairie species and to recouple the fire and grazing interaction that helped shape the tallgrass prairie. Bison can also serve as ambassadors for larger discussions on prairie conservation and as a tourist attraction for the area.
- Protect granite rock outcrops from disturbance due to grazing and vehicle traffic; assess for woody encroachment, primarily buckthorn, and remove as necessary.
- By spring of 2025, protect fens from disturbance in areas with grazing through fence installation.
- Consider rare plant and wildlife species guidance when proposing and implementing projects.
- Work with conservation partners on targeted acquisition to protect vulnerable plant and animal communities and to buffer and enhance existing plant communities necessary to maintain viable populations.
- Conduct spring prairie grouse surveys every year by checking previously used leks and surveying for any potential new booming and dancing grounds; coordinate efforts with the Minnesota Sharp-tailed Grouse Society, Big Stone NWR, the Marshall DNR Wildlife office, local Pheasants Forever chapters, and other organizations to incorporate citizen-science projects into WMA management.

**1.3 Encourage and accommodate monitoring and research to address management questions.**
- Support and maintain EWR long-term research and monitoring program at Chippewa Prairie to address conservation issues and to track management and environmental change.
- Assess expansion of adaptive monitoring of NPCs to other sites (e.g., south side of Marsh Lake, and Ripple, Storm, Moen, Sleeping Bison, and Peterson tracts) using photo points and monitoring plots (e.g., Grassland Monitoring Team) to assess change related to habitat management or climate change and to evaluate management success.

- Submit research ideas and/or monitoring protocols to assess the efficacy of management actions for protecting and enhancing wildlife populations.
- Collaborate with local schools and colleges, Pheasants Forever and Ducks Unlimited chapters, and similar organizations to incorporate citizen science into wildlife monitoring programs.
- Promote resource professional and citizen awareness and engagement through education, training, and field workshops. Working with conservation partners, aim to hold one field day for conservation professionals per year at Lac qui Parle WMA.
- Establish and document measurements of management actions to evaluate success or adjust future management actions.
- Establish strategically located photo points to provide a qualitative, visual measure of landscape and habitat conditions. Use these images and time series to communicate with the public, constituents, legislators, and others.

**1.4 Work towards improving existing hydrology and, where possible, manage for a more dynamic flow regime to support resilient wetlands and aquatic habitats and to help protect the watersheds.**
- Partner with the USACE to achieve a coordinated reservoir management approach across all water control structures, protecting fish and wildlife habitats and mimicking natural flow regimes.
- Maintain floodplain connections on Lac qui Parle WMA and support similar efforts on the Big Stone NWR.
- Take an active role in local watershed management planning efforts and actively support management strategies that promote additional water storage on the landscape to minimize the artificial delivery of water; restore all wetland types on future acquired lands.

**1.5 In response to Minnesota's changing climate, develop strategies to enhance ecosystem resiliency and mitigate impacts to WMA resources and infrastructure.**
- Support healthy and resilient watersheds, such as designing stream crossings according to geomorphic principles.
- Design both new and existing projects and infrastructure for sustainability and resiliency to handle increased flows.
- Increase plant species diversity in prairie reconstructions to build resilience and climate adaptations.
- Raise awareness on the role natural landscapes (e.g., forests, grasslands, and wetlands) play in flood mitigation, building climate resiliency, recharging aquifers, and storing carbon.

**1.6 Minimize the introduction, establishment, and spread of invasive species.**
- Prioritize control and early detection of new and emerging invasive species, such as wild parsnip and Queen Anne's lace, that can either be eradicated or significantly controlled.
- Work with BWSR and local SWCDs to reinvigorate funding for local county partnerships on invasive species prevention and control.
- Use DNR Best Management Practices to prevent the introduction of new invasive species.
- Continue to use proven biological, mechanical, and chemical control techniques appropriate for the site and species.
- Enter new and previously discovered locations of invasive species into EDDMapS.

## Grasslands

**1.7 Manage all remnant (i.e., never plowed) and restored prairie areas to enhance wildlife habitat and rare plant communities.**

- Enhance/manage an average of 25% of Lac qui Parle WMA's grasslands each year through a combination of prescribed fire, haying, tree removal, and grazing.
  - Assess each parcel for management needs by considering factors such as grassland condition and the presence, abundance, and potential for invasion of invasive and woody species. Some parcels may need annual work to reach desired conditions; other areas may not need to be managed as frequently.
- Promote plant community/habitat heterogeneity (i.e., short, mid, and tall plant heights) through prescribed burning, haying, grazing, and patch-burn grazing; rotate techniques at different temporal and spatial scales across Lac qui Parle WMA.
  - Increased landscape heterogeneity and patchiness drives biodiversity and provides the range of habitats required by most wildlife species, including game animals. Pheasants benefit as patchy habitats promote wildflowers and insects critical for chick survival and ease of travel. Some waterfowl species prefer short cover for nesting, while others prefer tall cover.
- Expand the window for prescribed burning.
  - Historically most fires were in the fall, which can be more effective for controlling woody species as energy reserves are above ground and not in the root system. Spring fires can prune and fertilize tree/shrub species, which may make woody species available and more palatable for browsing by deer and other wildlife species along with the nutritious grass regrowth. Management should include spring, late summer, and early fall fires to maximize diversity.
- Control native and invasive woody species invading remnant and restored prairie, primarily through mechanical removal, chemical treatment and prescribed burning. This will maintain the open landscapes required by prairie species, including some of Lac qui Parle WMA's more popular game species.

**1.8 Reconstruct prairie areas to enhance wildlife habitat.**

- Assess and target conversion on approximately 40 acres per year of degraded grassland areas, such as brome fields or native grass monocultures (e.g., early CRP plantings), to diverse plant communities.
- Develop a better understanding for the plant species, both native and invasive, that "explode" during the first three years after seeding, and apply management (mowing/spraying) only in specific locations where needed.
  - Annual native plants provide cover, abundant and nutritious seeds, and a plant structure that is preferred by many bird species. These new seedings offer excellent dove and pheasant hunting opportunities. In the past, entire sites were sprayed and mowed in the first 2-3 years as DNR staff incorrectly believed that all plant competition needed to be removed to have a successful prairie reconstruction; WMA staff have since learned those

efforts had the opposite effect. Moving forward, only apply spot spraying or mowing in very small areas with specific issues, such as extremely dense stands of thistles.

- Continue to work with the seed harvest consortium between DNR, USFWS, and TNC to harvest native seeds for prairie restorations.
- Increase the number of volunteers available to hand-harvest seeds and number of species harvested, focusing on early-season species.
    - o Explore reactivating the Friends of Lac qui Parle group to help with volunteer recruitment.

**1.9 Manage invasive and native tree and shrub encroachment to maintain open grassland habitat.**

- Prioritize removal of invasive species, such as Siberian elm, Russian olive and European buckthorn, to maintain open prairie areas required by prairie wildlife species.
- Reduce woody encroachment through prescribed burning, especially in the fall, and mechanical control in prairies and shoreland areas to maintain unique habitats, such as open water-grassland transition zones along Marsh Lake and Lac qui Parle Lake.

**1.10    Manage for plant diversity within grassland habitat communities to provide variety in habitat for all wildlife species dependent on grassland habitats, provide pollen and nectar resources for pollinators throughout the growing season, to provide increased numbers of insects, and to provide more suitable habitat for pheasant brood movement.**

- Develop seed mixes that will provide for seasonal variation in blooming times from early spring through late fall. Target at least 3 species blooming per season.
- Leave areas that do not burn during prescribed burns as reserve areas within the burn unit to provide patchiness.
- Use a variety of grazing techniques, including patch-burn grazing and seeding-grazing, on 1,400 acres annually, and expand seasons of grazing through the end of October to produce a variety of habitat structure.
- Use haying to discourage woody encroachment and produce heterogeneity in grasslands.

## Wetlands

**1.11    Manage and restore a range of wetland types critical for wetland dependent wildlife species.**

- Maintain all existing wetlands with a variety of management techniques including prescribed burning, grazing, woody removal, and others.
- Map areas suitable for potential wetland restorations in restored and remnant grasslands, with emphasis on identifying temporary and seasonal wetlands that have been overlooked in the past.
    - o Restore identified wetlands through scrape outs, tile breaks, and ditch plugs.
- Manage cattails and reed canary grass in Chippewa Prairie every three years, and Maynard, Szabo, Ripple, and Nygard tracts every five years using techniques such as prescribed burning, herbicide treatment, mechanical removal, and grazing to ensure basins stay open for waterfowl and other wetland dependent species.
- Enhance plant diversity through seeding and woody removal on 10 acres per year.

1   **1.12    Manage moist soil units to produce high energy food for waterfowl and waterbirds and provide a**
2        **secure staging location for migratory waterfowl.**
3            • Encourage the germination and growth of crops or native annual plant species through soil
4              disturbance practices on 130 acres.
5            • Actively manage water levels through flooding and draining to make food resources available to
6              waterfowl and other waterbirds.
7            • Maintain associated moist soil unit management facilities, including the high-capacity pump, dikes,
8              gates, and control structures.
9            • Plan moist soil unit management activities to adapt to changing seasonal temperatures and
10             migration patterns.

11  **1.13    Manage Lac qui Parle Lake to promote more clear water conditions and more diverse fish, wildlife,**
12       **and vegetative communities.**
13           • Support and encourage the USACE to update their Reservoir Operating Plan Evaluation plan for Lac
14             qui Parle and Chippewa Diversion Dam to identify a range of potential alternative strategies for
15             water level management that further enhance fish and wildlife populations, adapt to changing
16             climate and improve shoreline stability. Work with the USACE to explore these alternatives and
17             bring them into action.
18           • Coordinate with the USACE on project scoping initiatives across the wildlife area.

19  **1.14    Continue to manage Marsh Lake to maintain more clear water conditions to benefit diverse fish,**
20       **wildlife, and vegetative communities.**
21           • Continue to support adaptive management plan and active monitoring across agencies.
22           • Utilize both mechanical control and chemical control to manage 300 to 600 acres of cattails by 2034.
23           • Follow existing plan for management triggers and allow Marsh Lake to function under a natural
24             hydrologic regime.
25           • Reduce sediment transport, resuspension, and loading to improve water clarity and increase the
26             availability of waterfowl and fish habitat through emergent and submerged aquatic vegetation
27             enhancement.
28           • Maintain emergent vegetation coverage to 1,500 acres or approximately 30% of the basin.
29           • Increase submerged vegetation coverage to 60% of open water areas.
30           • Maintain and improve aquatic habitat connectivity with the Pomme de Terre River and Lac qui Parle
31             Lake.
32           • Increase the diversity and abundance of native fish by maintaining the fishway and longitudinal
33             connectivity.
34           • Reduce common carp abundance by maintaining a diverse and abundant native fish population to
35             provide competition for resources.
36           • Coordinate with Wildlife Health, the nongame program in EWR, Marsh Lake rookery banding groups,
37             and waterbird research to monitor waterbird populations, reproduction, and diseases on waterbird
38             islands in Marsh Lake. Evaluate efficacy of current waterbird monitoring efforts (i.e., banding).
39

1    **1.15    Improve the health and resiliency of rivers and streams.**

2    • Coordinate with local partners on stream restoration and stabilization projects, specifically those
3    identified in the applicable local comprehensive watershed management plan, also referred to as
4    One Watershed One Plan. In addition, work with other organizations to improve surface water
5    quality by reducing runoff and erosion and implementing best management practices in the
6    contributing watersheds.

7    • Monitor stream stability in Five Mile Creek, Emily Creek, and the Pomme de Terre River to prioritize
8    projects to reconnect incised streams and rivers to their floodplains by working with EWR clean
9    water staff.

10   • Maintain and protect Five Mile Creek as a quality fish habitat and follow the DNR Fish Management
11   Plan.

12   • When replacing culverts or other existing stream crossings, ensure culverts are replaced with
13   appropriate sizes, slopes, and elevations to provide connectivity for fish and wildlife passage and
14   support stream stability.

15   • Explore the potential for mussel reintroduction. Coordinate with the DNR's Center for Aquatic
16   Mollusk Programs (CAMP) to rebuild populations of threatened or endangered native mussel
17   species.

18   **1.16    Identify and protect rare wetland features, including calcareous fens and springs.**

19   • Support the installation of monitoring wells by EWR and install exclusion fencing where needed to
20   protect monitoring wells from disturbance due to grazing.

21   • Continue to identify and map locations of these rare resources. Engage regional ecologists prior to
22   management.

23   **1.17    Manage impoundments at optimal water levels to provide quality habitat for waterfowl, shorebirds,**
24   **and other wetland dependent species.**

25   • Evaluate all 15 impoundments every year to determine if rehabilitation or removal is appropriate.

26   • Actively monitor and manage water levels to achieve clear water and abundant submersed
27   vegetation critical for waterfowl use. During active management check weekly at a minimum to
28   monitor water levels and to keep intakes free of debris.

29   • Use two winter or summer drawdowns per year to eliminate undesirable fish species (e.g., carp,
30   fathead minnows) to maximize the productivity of these wetlands for wildlife.

31   **Forests**

32   **1.18    Maintain well established floodplain forests on the landscape.**

33   • Align management strategies with climate smart goals focusing on adaptive management,
34   diversification, and matching tree plantings to specific site conditions.

35   • Identify opportunities where streambank stabilization is appropriate and can be accomplished by
36   tree plantings or toe-wood installations.

37   • Identify and treat areas within floodplain forests that need invasive species management.

38   • Monitor for EAB in ash trees, report to EDDMapS if discovered, and act where appropriate.

1   **1.19    Maintain and enhance oak dominated forests (i.e., mesic hardwood and fire dependent).**
2        • Manage 30 acres of oak stands to maintain and/or expand this forest type as either an oak
3          woodland or oak savanna plant community (based on soils), particularly near the Pomme de Terre
4          River corridor. Complete an inventory with local DNR Forester.
5        • Maintain the health of these stands via both prescribed fire and with timber stand management to
6          encourage regrowth.
7        • Control and prevent invasive species in oak dominated forest near the Pomme de Terre River and at
8          the base of lower Lac qui Parle Lake.

9   **1.20    Manage woodlots and farm groves for wildlife species including white-tailed deer, squirrels, and**
10         **rabbits.**
11       • Explore opportunities for planting native shrubs around the perimeter of existing woodlots/farm
12         groves for resident wildlife and to reduce invasive species encroachment via plant competition.
13       • Plant native tree species, such as bur oak, silver maple, and basswood, that can withstand changing
14         climate conditions and emerging tree diseases and pests, such as EAB, and provide wildlife benefits.
15       • Conduct forest stand improvement through fuel wood sales and/or selective thinning to encourage
16         regeneration and browse.
17       • Where feasible (e.g., on sites with new introductions), use mechanical and chemical control
18         methods to reduce buckthorn.
19       • Monitor for EAB and educate WMA staff on how to identify EAB outbreaks.

20  **1.21    Manage woody cover plantings to provide winter shelter for resident wildlife species.**
21       • By 2034, evaluate the effectiveness and condition of all woody cover plantings considering the
22         surrounding landscape and habitat.
23       • Target new shrub plantings or direct hardwood seedings near core deer wintering areas adjacent to
24         or in floodplain forest on the wildlife area.
25       • Target regeneration of 40 acres per year of native shrub communities, including plum, willow, and
26         sumac, through dormant season mowing to regenerate browse for deer, maintain cover for
27         pheasants, and provide structure for reptiles, songbirds, small mammals, and insects.
28       • Regenerate planted shrub species through mechanical thinning and prescribed burning.
29       • Plant native trees and shrubs to increase diversity where ecologically appropriate.

30  **Agricultural Lands**

31  **1.22    Evaluate and assess food plots toward meeting intended purpose: to increase the carrying capacity of**
32         **resident wildlife, to provide a supplemental food source for migratory waterfowl, to keep wildlife in or**
33         **near secure winter cover, to reduce animal depredations on adjacent private lands, and to provide**
34         **outdoor recreation and wildlife viewing.**
35       • Continue to monitor the effectiveness and adjust management and/or location of food plots as
36         appropriate.
37       • Continue to plant diversified food plots in key deer and pheasant wintering areas that are difficult to
38         reach by cooperative farmers.

- Continue to diversify crop species planted by DNR staff or cooperators – forage and grain sorghum, buckwheat, small grains, alfalfa, pollinator and/or brood mixes, and cover crops inter-seeded into traditional corn and bean rotations as feasible.
- Select new cooperators that demonstrate a genuine interest in planting alternative crop types and interest in cover crops, small grains and alfalfa.
- Actively target small grains in traditional locations very popular with dove hunters (popular within the Hmong and Hispanic communities) and target same crop in areas popular or conducive for September goose hunting.
- By 2034, hold two workshops on alternative farming practices that provide soil health benefits by minimizing spring tillage, keeping the soil covered, use of cover crops and keeping living roots in the soil. Present on current management practices, soil health monitoring, and benefits to farmers.
- Enroll all WMA food plots in the Minnesota Agricultural Water Quality Certification Program by 2025; work with co-op farmers to enroll all agricultural lands in the program.
- Focus on soil heath and regenerative agricultural on all cropped lands by implementing established soil health principles.
- Every three years, monitor soil health on four co-operative farming plots and two WMA food plots by using phospholipid fatty acid (PLFA) analysis and Haney soil tests to ensure productivity of food plots and maintenance of healthy soils.

## Goal 2: Enhance public user facilities to deliver outdoor recreation opportunities to promote increased usage, to welcome new users, to maintain traditional users, and to increase user satisfaction.

**2.1 Enhance user facilities to support diverse quality hunting and trapping opportunities.**

- Partner with accessibility groups (e.g., Capable Partners) to prioritize accessibility projects; submit project proposals and engineering requisitions based on recommendations. By 2027, construct two WMA parking lots to ADA standards and re-design half of the deer blinds on Rosemoen Island to full ADA specifications.
- Promote Adopt-A-WMA Program and enroll organizations or volunteers in each of the four counties that encompass the wildlife area by 2025. Build and strengthen partnerships. Focus on facility, habitat, and boundary maintenance and improvement projects (e.g., parking lot mowing, posting of unit boundaries, old fence removal).
- Encourage township and county road authorities to submit projects for State Park Road Account consideration for the numerous roads that directly connect to the wildlife area and lakes; build partnerships with local road authorities on opportunities.
- Work with engineering staff as the Bahl and Howard Tract Road improvement projects progress through the Design and Construction Phase.
- Coordinate with PAT to improve and modernize Marsh Lake water access sites at Correll, Killen, Peterson, and Cabin Site landings. Work with PAT to formalize maintenance agreements for appropriate sites.
- Mow access trails, as necessary, through cattail stands in front of the major boat landings on Marsh Lake to reach open water to support waterfowl hunting and traditional boat use where site and seasonal conditions allow.

- Improve parking opportunities at the Louisburg Grade Bridge and West Pool, Marsh Lake.
- Annually prioritize road maintenance projects on the wildlife area via Game and Fish Fund dollars set aside for this work; submit project proposals for road projects requiring engineering and construction management.
- By 2027, work with FAW Information Technology staff to provide refuge and sanctuary boundaries as publicly available layers and maps, which is a critical step toward making data available for popular commercial hunting applications.
- Review county private land parcel data for accuracy regarding state boundaries and ownership; work with county assessors when discrepancies are found. This layer also informs commercial hunting apps.
- Install signage around public land boundaries in the State Game Refuge by 2025.

## 2.2 Provide quality fishing opportunities.

- Coordinate with PAT and Fisheries to develop a priority list of public water access sites to modernize on Lac qui Parle Lake. Build project list into annual work planning. Work with PAT to formalize maintenance agreements for appropriate sites.
- Work in partnership with local community leaders and state agencies to improve parking opportunities and accessible fishing opportunities along State Highway 119 near the Twin Bridges.
- Partner with Fisheries on exploring shore fishing opportunities on the wildlife area and at PAT administered water access sites. Work with PAT to formalize maintenance agreements for appropriate sites.
- Maintain access and encourage users, through informational signage, to protect and conserve the resources at Lac qui Parle WMA to provide quality ice fishing experiences. Collaborate with Lac qui Parle Lake Association on dumpster and portable toilet placement near lake accesses.

## 2.3 Enhance quality birding and wildlife observation opportunities.

- Provide a bird list for Lac qui Parle WMA by April 2025.
- Consider wildlife viewing values when improving parking opportunities, overlooks, and accesses.
- Maintain existing and explore opportunities for additional wildlife viewing sites, especially in grasslands, prairies, and wetlands.
- Develop a digital geo-referenced maps and other materials for auto tour birding routes to promote self-guided birding opportunities by April 2026.
- At least twice a year, update wildlife area information available on publicly accessible websites; use DNR social media twice a year to promote outdoor events and birding opportunities.
- Coordinate with Salt Lake WMA birding weekend to promote opportunities at Lac qui Parle WMA.

## 2.4 Promote other compatible recreational opportunities.

- Engage with PAT, USACE and local community leaders as we reevaluate the two bike trail alternatives initially outlined to reach the Marsh Lake day-use area. Evaluation to include the opportunities, challenges and administrative steps required to support a selected corridor.
- Submit engineering requisition to bring the trail spur to the state record cottonwood tree to modern trail standards. Incorporate signage and interpretation. Coordinate with PAT and other partners.

- Work with PAT to formalize and modernize the trail connecting the Upper Campground at Lac qui Parle State Park to the office/education center. This concept should also detail future desired habitat conditions and interpretation along the trail segment.
- Raise awareness and work with DNR outreach staff to promote dispersed recreational opportunities at Lac qui Parle WMA, including hiking, snowshoeing, cross country skiing, art and photography along with plant phenology.
- Continue to partner with the MN Master Naturalist program once a year to promote learning about prairie environments, plants and animals with educators; continue to host and encourage "Bioblitz" events on the wildlife area every two to three years.
- Work with Tribal Partners and PAT to develop environmental education, interpretation, cultural and natural history displays and programs.
- Promote dark sky experiences by identifying suitable locations and informing recreational users through the Lac qui Parle WMA website.
- Explore the concept of sustainable, non-motorized natural surface trails utilizing road right of way, federal lands, and Lac qui Parle WMA/State Park lands by building on partnerships with FAW, PAT, Minnesota Historical Society, USACE and local government units to provide connectivity to key focal points in the area such as: Upper Campground, Lac qui Parle Mission, natural areas, scenic viewsheds, Churchill Dam, and Lac qui Parle Headquarters.

# Implementation Process

## Operational Overview

The management objectives and strategies laid out in this plan describe the "what" and "why" for management intended to occur on Lac qui Parle WMA in the next 10 years, but specific operations at Lac qui Parle WMA are dependent on several factors, including weather conditions, funding, and changing priorities. To allow flexibility in the operational plan, the "who," "when," and "how" of specific work activities will be determined annually by unit staff in conjunction with division-wide annual work planning. Table 10 shows an overview of ongoing annual work activities that are performed at Lac qui Parle WMA in a typical year.

**Table 10. Overview of ongoing annual work activities performed at Lac qui Parle WMA in a typical year.**

| Activity/Task | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rx burn plans | Yes | Yes | Yes | | | | | | | | | Yes |
| Grazing agreements | | | | Yes | Yes | Yes | Yes | Yes | Yes | | | |
| Food plot prep and planting | | | Yes | Yes | Yes | Yes | Yes | Yes | | | | |
| Coop farming agreements | | Yes | Yes | | | | | | | | | |
| Rx burn equipment prep | | | Yes | Yes | Yes | | | | Yes | Yes | | |
| Rx burning | | | Yes | Yes | Yes | | | | Yes | Yes | | |
| Road repair/maintenance | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | | |

| Activity/Task | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Parking lot construction | | | | | | Yes | Yes | Yes | Yes | | | |
| WCS maintenance/monitoring | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | |
| Mow dikes | | | | | | Yes | Yes | Yes | Yes | | | |
| Repair dikes | | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | |
| Site clean-up/fence removal | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | |
| Native prairie reconstructions | Yes | Yes | Yes | | | | | | | Yes | Yes | Yes |
| New prairie seeding mowing | | | | | | Yes | Yes | Yes | Yes | Yes | | |
| Native seed harvest | | | | | | | | Yes | Yes | Yes | | |
| Mowing trails, roads, & parking lots | | | | | | | Yes | Yes | Yes | Yes | | |
| Mow firebreaks | Yes | Yes | Yes | Yes | | | | | | | Yes | Yes |
| Cattail spraying | | | | | | | Yes | Yes | Yes | | | |
| Invasive species control | | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | |
| Boundary posting | Yes | Yes | Yes | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Prairie grouse surveys | | | Yes | Yes | | | | | | | | |
| Waterfowl surveys | | | | | | | | | Yes | Yes | Yes | Yes |
| Roadside wildlife survey | | | | | | | | Yes | | | | |
| Predator scent post survey | | | | | | | | | Yes | | | |
| CWD check station | | | | | | | | | | | Yes | |
| Deer season management | Yes | | | | Yes | | | | | | Yes | Yes |
| Wood duck house maintenance | Yes | Yes | Yes | | | | | | | | | Yes |
| Tree removal projects | Yes | Yes | | | | | | Yes | Yes | Yes | Yes | Yes |
| Accomplishment reporting | | | | | | | Yes | | | | | Yes |
| Physical inventory | Yes | | | | | | | | | | | Yes |
| Furbearer registration | Yes | | | | | | | | | | Yes | Yes |
| Rosemoan island deer hunt | | | | | | | | | Yes | Yes | | |
| Land acquisition | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Professional training/development | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Headquarter operation | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Public information/outreach | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Inter/Intra agency tech guidance | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Animal disease management | | | | | | Yes | Yes | Yes | | Yes | Yes | Yes |
| Annual review of WMA plan | Yes | | | | | | | | | | | |

## Adaptive Management

Adaptive management incorporates new knowledge, techniques, or policy decisions into previously existing management actions. Many of these changes cannot be planned, but some can be anticipated. Adaptive management for Lac qui Parle WMA will include:

- Continuously review research and monitoring results and building off the results to improve habitat restoration and management techniques, maximize wildlife benefit, and increase user satisfaction.
- Collaborate with other divisions and partners to continue, improve, and expand research and monitoring projects.
- Monitor advances in climate change predictions and mitigation and implement management directions accordingly. Examples of sources of climate change and habitat management information might come from Northern Institute of Applied Climate Science (NIACS), Minnesota Forest Resources Council (MFRC) and various state universities.
- Modify management activities if new species are listed as state or federally threatened or endangered.

The management objectives and strategies set forth in this document will be reviewed annually by regional and area staff and adjusted, as necessary. This annual review will take place in January. A revision of the master plan is recommended after 10 years.

# Research and Monitoring

Current and future research and monitoring projects at Lac qui Parle WMA involve intra-agency cooperation between WMA staff and other DNR staff including, but not limited to, FAW Research program staff, FAW Populations & Regulations program staff, and EWR Nongame program staff. The DNR also collaborates with various other governmental organizations, academic institutions, and NGO partners.

## Current Research and Monitoring

### Wildlife Monitoring

- Canada goose banding
- Mourning dove banding
- August roadside counts
- Predator scent post survey
- Prairie grouse lek surveys in cooperation with the Minnesota Sharp-tailed Grouse Society & Big Stone NWR
- Investigate CWD reports
- Monitor for waterfowl disease
- Nesting islands on Marsh Lake monitoring
- Weekly waterfowl counts/migration reports in fall
- Fish population monitoring in Lac qui Parle River and Pomme de Terre River

1 • Mussel population monitoring in Pomme de Terre River

2 • Macroinvertebrate monitoring in Pomme de Terre River

3 • Long-term prairie bird monitoring (since 2008) at Chippewa Prairie through the Sustaining Prairies in a

4 Changing Environment project

5 **Invasive Species Monitoring**

6 • Purple loosestrife monitoring

7 • Queen Anne's lace monitoring

8 • Siberian elm monitoring

9 • Buckthorn monitoring

10 • Wild parsnip monitoring

11 **Public Use Monitoring**

12 • Opening day bag check surveys

13 • Furbearer harvest reports

14 • Trapping permits

15 • Other special use permits

16 • Opening day car counts

17 • Fishing tournament permits

18 • Monitor condition of facilities

19 **Vegetation/Habitat Monitoring**

20 • Chippewa Prairie monitoring

21 • Marsh Lake habitat monitoring

22 • Muskrat habitat monitoring

23 • Shallow lake survey on Marsh Lake

24 **Hydrological Monitoring**

25 • Hydrological monitoring on the Pomme de Terre River and rock ramp fishway out of Marsh Lake

26 • Water surface and flow monitoring on Lac qui Parle Lake and Marsh Lake

27 **Research**

28 • Chippewa Prairie patch burning/grazing research

29 • Chippewa Prairie bird and invertebrate sampling

# Potential Research and Monitoring Projects

- More use of photo points and quantitative sampling around Lac qui Parle WMA that could be tied to WAHMA to assist with monitoring habitat conditions and changes over time.
- Fire effects from prescribed burning – are prescribed burn unit plans meeting objectives?
- Soil health conditions within agricultural areas.
- Increase monitoring of water quality on Marsh Lake (i.e., more frequent Secchi disk readings).
- Evaluate and monitor prairie reconstructions, including wildlife responses.
- Evaluate and monitor success of mowing shrubs for deer browse.
- Vegetation surveys of impoundments.
- Monitor how Lac qui Parle WMA use by the public is changing over time.
- Monitor technological changes associated with Lac qui Parle WMA public use.
- Evaluate accessibility of public use facilities.
- Identify and survey cultural/historic sites, working with DNR Tribal Relations staff, archeologists and local Dakota partners.
- Explore potential feasibility study for bison reintroduction.
- Research and evaluate potential for scattered shrub plantings or seedings interspersed in grassland habitat.
- Coordinate with EWR Nongame program staff to monitor waterbird populations on islands in Marsh Lake.

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23

24

# Appendix A. Lac qui Parle WMA planning team members

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| Name | Division | Position |
| --- | --- | --- |
| Kelly Straka | FAW | Wildlife Section Manager |
| Dave Trauba | FAW | Regional Wildlife Manager |
| Kelly Wilder | FAW | Policy and Planning Supervisor |
| Laurinda Brown | FAW | Strategic Planning Director |
| Greta Brandt | FAW | Policy and Planning Coordinator |
| Brooke Hacker | OSD | Regional Planner |
| Walt Gessler | FAW | Wildlife Area Manager |
| Nick Trauba | FAW | Assistant Wildlife Area Manager |
| Jake Arvidson | FAW | Assistant Wildlife Area Manager |
| Greg Hoch | FAW | Prairie Habitat Supervisor |
| Todd Call | FAW | Wildlife Lake Specialist |
| Chris Domeier | FAW | Area Fisheries Supervisor |
| Dustin Graham | EWR | Plant Ecologist |
| Michael Worland | EWR | Regional Nongame Wildlife Specialist |
| Ethan Jenzen | EWR | North District Manager |
| Terri Dinesen | PAT | Park Manager |
| Benjamin Schaefer | LAM | Southern Region Operations Coordinator |
| Mason Bulthuis | ENF | Conservation Officer |
| Brian Schwingle | FOR | Forest Health Program Coordinator |

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# Appendix B. Summary of public responses received during early project scoping

MNDNR conducted a public scoping questionnaire on the Lac qui Parle WMA from October 9 to November 8, 2023. The questionnaire was advertised via media, the MNDNR homepage, and printed flyers. It was voluntary, informal, and not randomized. There were 358 respondents.

Findings emerging from the survey included the following:

- 88% of respondents had used Lac qui Parle WMA, and 68% had used it within the past 2 years
- 86% of respondents who had used Lac qui Parle WMA participated in hunting activities at the unit
  - Pheasant hunting and waterfowl hunting were the most popular hunting activities reported
- 3% of respondents who had used Lac qui Parle WMA participated in trapping activities at the unit
  - The December-February trapping period was the most commonly reported period
  - 78% of respondents who trapped at Lac qui Parle WMA reported trapping 10 or more days per year
  - Muskrat, beaver, raccoon, and mink were the most common species reported to be trapped
- 54% of respondents who had used Lac qui Parle WMA participated in fishing activities at the unit
- Other popular activities enjoyed at Lac qui Parle WMA:
  - Enjoying solitude/relaxing in the outdoors
  - Viewing or photographing wildlife and/or nature
  - Boating, canoeing, and/or kayaking
  - Bird watching
  - Hiking
  - Deer shed hunting
  - Foraging
  - Outdoor cultural and/or spiritual activities
  - Skiing/snowshoeing
  - Naturalist program/citizen science
- 65% of respondents who had used Lac qui Parle WMA described the overall quality of their visit(s) as "good" or "very good"
- When asked what they liked most about their visit(s) to Lac qui Parle WMA, responses included:
  - Wildlife diversity
  - Wildlife abundance
  - Former goose hunting
  - Waterfowl hunting
  - Pheasant hunting
  - Deer hunting
  - Fishing
  - Bird watching
  - Recreation

| | | |
|---|---|---|
| 1 | o | Marsh Lake improvement |
| 2 | o | Natural beauty |
| 3 | o | Location |
| 4 | o | Size |
| 5 | o | Solitude |
| 6 | o | Habitat |
| 7 | o | Prairie |
| 8 | o | Access |

9 • When asked what could be done to improve the quality of their visits to Lac qui Parle WMA,
10 respondents mentioned the following themes:

| | | |
|---|---|---|
| 11 | o | Increase tree coverage |
| 12 | o | Improve access to Marsh Lake |
| 13 | o | Stop grazing/haying |
| 14 | o | More trails/fewer trails |
| 15 | o | Improved maps/signage |
| 16 | o | Changed or simplified hunting and fishing regulations |
| 17 | o | Marking/removal of hazards |
| 18 | o | Create more small wetlands |
| 19 | o | Change refuge boundaries/eliminate controlled hunting zone |
| 20 | o | Increase enforcement |
| 21 | o | Increase/maintain/decrease food plots |
| 22 | o | Invasive species management |
| 23 | o | Improve shore angling opportunities |
| 24 | o | Increase game abundance |
| 25 | o | Ban trapping |
| 26 | o | Allow camping |
| 27 | o | Allow motorized boat access |
| 28 | o | Add naturalist programs |
| 29 | o | Minimize use by guides |

30 • 82% of respondents reported they were "likely" or "very likely" to use Lac qui Parle WMA in the next
31 year
32 • 5% of respondents reported they were "very unlikely" to use Lac qui Parle WMA in the next year, with
33 overcrowding, distance, low game abundance, poor access, and other priorities as the main reasons
34 • Respondents ranked wildlife health, game species abundance, wetland development and management,
35 water quality and quantity, and fish health as the top 5 priorities for natural resource management at
36 Lac qui Parle WMA
37 • Respondents ranked bison reintroduction, ADA accessible hunting opportunities, and climate change
38 resilience as the bottom 3 priorities for natural resource management at Lac qui Parle WMA
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# Appendix C. Summary of responses received during public review

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# Appendix D. Acronyms used in Lac qui Parle WMA plan

| Acronym | Definition |
| --- | --- |
| ADA | Americans with Disabilities Act |
| BWSR | Minnesota Board of Water & Soil Resources |
| CAMP | Center for Aquatic Mollusk Programs |
| CRP | Conservation Reserve Program |
| CWD | Chronic wasting disease |
| DNR | Minnesota Department of Natural Resources |
| DPA | Deer Permit Area |
| EAB | Emerald ash borer |
| EDDMapS | Early Detection Distribution and Mapping System |
| EHD | Epizootic hemorrhagic disease |
| END | Endangered |
| EWR | Ecological and Water Resources Division |
| FAW | Fish and Wildlife Division |
| GFF | Game and Fish Fund |
| LCCMR | Legislative-Citizen Commission on Minnesota Resources |
| LTE | Laborer, Trades and Equipment |
| MBS | Minnesota Biological Survey |
| MFRC | Minnesota Forest Resources Council |
| MnDOT | Minnesota Department of Transportation |
| MNWAP | Minnesota's Wildlife Action Plan |
| NAWCA | North American Wetlands Conservation Act |
| NGO | Non-Governmental Organization |
| NIACS | Northern Institute of Applied Climate Science |
| NPC | Native Plant Community |
| NWR | National Wildlife Refuge |
| OAS | Office and Administrative Specialist |
| OASI | Office and Administrative Specialist Intermediate |
| OHF | Outdoor Heritage Fund |
| PAT | Parks and Trails Division |

| Acronym | Definition |
| --- | --- |
| PLFA | Phospholipids fatty acids |
| SGCN | Species of Greatest Conservation Need |
| SNA | Scientific and Natural Area |
| SPC | Special Concern |
| SWCD | Soil and Water Conservation District |
| THR | Threatened |
| TNC | The Nature Conservancy |
| USACE | United States Army Corps of Engineers |
| USFWS | United States Fish and Wildlife Service |
| WAHMA | Wildlife and Aquatic Habitat Management Application |
| WMA | Wildlife Management Area |
| WPA | Waterfowl Production Area |
| WSI | Winter Severity Index |

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1 # Appendix E. Conservation status ranks

| Rank Code | Rank Label | Rank Description |
|---|---|---|
| S1 | Critically Imperiled | At very high risk of extinction due to extreme rarity (often five or fewer populations), very steep declines, or other factors. |
| S2 | Imperiled | At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors. |
| S3 | Vulnerable | At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors. |
| S4 | Apparently Secure | Uncommon but not rare; some cause for long-term concern due to declines or other factors. |
| S5 | Secure | Common; widespread and abundant. |

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# Appendix F. Bird species know to occur at Lac qui Parle WMA

| Common Name | Scientific Name | Spring | Summer | Fall | Winter |
|---|---|---|---|---|---|
| Alder flycatcher | *Empidonax alnorum* | R | R | R | |
| American avocet | *Recurvirostra americana* | C | U | C | |
| American bittern | *Botaurus lentiginosus* | C | U | R | |
| American black duck | *Anas rubripes* | R | | R | |
| American coot | *Fulica americana* | A | C | C | |
| American crow | *Corvus brachyrhynchos* | A | C | C | A |
| American golden-plover | *Pluvialis dominica* | R | R | C | |
| American goldfinch | *Spinus tristis* | C | A | A | C |
| American goshawk | *Accipiter atricapillus* | R | | R | R |
| American kestrel | *Falco sparverius* | C | C | C | U |
| American pipit | *Anthus rubescens* | R | | U | |
| American redstart | *Setophaga ruticilla* | C | C | C | |
| American robin | *Turdus migratorius* | A | A | A | C |
| American tree sparrow | *Spizelloides arborea* | C | | C | A |
| American white pelican | *Pelecanus erythrorhynchos* | A | A | A | U |
| American wigeon | *Mareca americana* | A | R | C | U |
| American woodcock | *Scolopax minor* | U | | U | |
| Baird's sandpiper | *Calidris bairdii* | U | C | A | |
| Bald eagle | *Haliaeetus leucocephalus* | A | A | A | A |
| Baltimore oriole | *Icterus galbula* | C | C | C | |
| Bank swallow | *Riparia riparia* | C | C | C | |
| Barn swallow | *Hirundo rustica* | A | A | A | |
| Barred owl | *Strix varia* | R | R | R | U |
| Bay-breasted warbler | *Setophaga castanea* | R | | R | |
| Bell's vireo | *Vireo bellii* | Cas | | | |
| Belted kingfisher | *Megaceryle alcyon* | C | C | A | |
| Black scoter | *Melanitta americana* | Cas | | | |
| Black tern | *Chlidonias niger* | U | C | C | |
| Black-and-white warbler | *Mniotilta varia* | U | | U | |
| Black-bellied plover | *Pluvialis squatarola* | | R | U | |
| Black-billed cuckoo | *Coccyzus erythropthalmus* | R | U | R | |
| Blackburnian warbler | *Setophaga fusca* | R | | R | |
| Black-capped chickadee | *Poecile atricapillus* | A | C | A | A |
| Black-crowned night heron | *Nycticorax nycticorax* | R | U | R | |
| Black-necked stilt | *Himantopus mexicanus* | Cas | | | |
| Blackpoll warbler | *Setophaga striata* | C | | R | |
| Black-throated green warbler | *Setophaga virens* | R | | | |
| Blue grosbeak | *Passerina caerulea* | | Cas | | |

| Common Name | Scientific Name | Spring | Summer | Fall | Winter |
|---|---|---|---|---|---|
| Blue jay | *Cyanocitta cristata* | A | A | A | A |
| Blue-gray gnatcatcher | *Polioptila caerulea* | C | U | U | |
| Blue-headed vireo | *Vireo solitarius* | U | | U | |
| Blue-winged teal | *Spatula discors* | A | A | A | |
| Blue-winged warbler | *Vermivora cyanoptera* | | | Cas | |
| Bobolink | *Dolichonyx oryzivorus* | C | C | C | |
| Bohemian waxwing | *Bombycilla garrulus* | | | | R |
| Bonaparte's gull | *Chroicocephalus philadelphia* | C | R | R | |
| Brewer's blackbird | *Euphagus cyanocephalus* | U | C | U | |
| Broad-winged hawk | *Buteo platypterus* | C | | R | |
| Brown creeper | *Certhia americana* | C | | U | C |
| Brown thrasher | *Toxostoma rufum* | C | C | U | |
| Brown-headed cowbird | *Molothrus ater* | A | A | C | |
| Buff-breasted sandpiper | *Calidris subruficollis* | | R | U | |
| Bufflehead | *Bucephala albeola* | A | | R | U |
| Burrowing owl | *Athene cunicularia* | Cas | | | |
| Cackling goose | *Branta hutchinsii* | C | | U | C |
| Canada goose | *Branta canadensis* | A | A | A | A |
| Canada warbler | *Cardellina canadensis* | R | | U | |
| Canvasback | *Aythya valisineria* | C | R | U | R |
| Cape May warbler | *Setophaga tigrina* | R | | | |
| Caspian tern | *Hydroprogne caspia* | R | U | U | |
| Cedar waxwing | *Bombycilla cedrorum* | C | C | C | C |
| Chestnut-sided warbler | *Setophaga pensylvanica* | R | R | U | |
| Chimney swift | *Chaetura pelagica* | R | C | U | |
| Chipping sparrow | *Spizella passerina* | A | C | C | |
| Cinnamon teal | *Spatula cyanoptera* | R | | | |
| Clay-colored sparrow | *Spizella pallida* | A | A | C | |
| Cliff swallow | *Petrochelidon pyrrhonota* | C | A | C | |
| Common goldeneye | *Bucephala clangula* | A | | U | A |
| Common grackle | *Quiscalus quiscula* | A | A | A | U |
| Common loon | *Gavia immer* | R | R | U | |
| Common merganser | *Mergus merganser* | A | | R | A |
| Common nighthawk | *Chordeiles minor* | U | C | C | |
| Common redpoll | *Acanthis flammea* | U | | R | U |
| Common tern | *Sterna hirundo* | R | R | R | |
| Common yellowthroat | *Geothlypis trichas* | C | A | A | |
| Cooper's hawk | *Accipiter cooperii* | C | U | C | U |
| Curve-billed thrasher | *Toxostoma curvirostre* | R | | | |
| Dark-eyed junco | *Junco hyemalis* | A | | C | A |

| Common Name | Scientific Name | Spring | Summer | Fall | Winter |
|---|---|---|---|---|---|
| Dickcissel | *Spiza americana* | R | C | U | |
| Double-crested cormorant | *Nannopterum auritum* | A | A | A | |
| Downy woodpecker | *Dryobates pubescens* | A | C | A | A |
| Dunlin | *Calidris alpina* | U | R | R | |
| Eared grebe | *Podiceps nigricollis* | R | R | | |
| Eastern bluebird | *Sialia sialis* | C | C | C | |
| Eastern kingbird | *Tyrannus tyrannus* | C | A | A | |
| Eastern meadowlark | *Sturnella magna* | U | R | R | |
| Eastern phoebe | *Sayornis phoebe* | C | C | C | |
| Eastern towhee | *Pipilo erythrophthalmus* | R | R | | |
| Eastern whip-poor-will | *Antrostomus vociferus* | R | | | |
| Eastern wood-pewee | *Contopus virens* | R | C | A | |
| Eurasian collared-dove | *Streptopelia decaocto* | C | C | C | U |
| European starling | *Sturnus vulgaris* | A | C | C | C |
| Evening grosbeak | *Coccothraustes vespertinus* | R | | | |
| Field sparrow | *Spizella pusilla* | C | C | C | |
| Forster's tern | *Sterna forsteri* | C | C | C | |
| Fox sparrow | *Passerella iliaca* | C | | U | |
| Franklin's gull | *Leucophaeus pipixcan* | C | C | C | |
| Gadwall | *Mareca strepera* | A | U | U | U |
| Golden eagle | *Aquila chrysaetos* | R | | | R |
| Golden-crowned kinglet | *Regulus satrapa* | C | | U | U |
| Golden-winged warbler | *Vermivora chrysoptera* | R | | R | |
| Grasshopper sparrow | *Ammodramus savannarum* | U | C | U | |
| Gray catbird | *Dumetella carolinensis* | C | A | A | |
| Gray partridge | *Perdix perdix* | R | | R | R |
| Gray-cheeked thrush | *Catharus minimus* | U | | | |
| Great blue heron | *Ardea herodias* | C | A | A | R |
| Great crested flycatcher | *Myiarchus crinitus* | C | C | C | |
| Great egret | *Ardea alba* | C | A | A | |
| Great horned owl | *Bubo virginianus* | C | U | C | C |
| Greater prairie-chicken | *Tympanuchus cupido* | R | R | R | R |
| Greater scaup | *Aythya marila* | U | | | |
| Greater white-fronted goose | *Anser albifrons* | A | | | C |
| Greater yellowlegs | *Tringa melanoleuca* | C | C | A | |
| Green heron | *Butorides virescens* | U | C | U | |
| Green-winged teal | *Anas crecca* | A | R | C | R |
| Hairy woodpecker | *Dryobates villosus* | C | C | C | A |
| Harris's sparrow | *Zonotrichia querula* | C | | C | R |
| Henslow's sparrow | *Centronyx henslowii* | R | U | R | |

| Common Name | Scientific Name | Spring | Summer | Fall | Winter |
|---|---|---|---|---|---|
| Hermit thrush | *Catharus guttatus* | U | | R | |
| Herring gull | *Larus argentatus* | C | U | | |
| Hoary redpoll | *Acanthis hornemanni* | | | | R |
| Hooded merganser | *Lophodytes cucullatus* | A | U | C | U |
| Horned grebe | *Podiceps auritus* | C | | | |
| Horned lark | *Eremophila alpestris* | A | C | U | C |
| House finch | *Haemorhous mexicanus* | C | C | U | U |
| House sparrow | *Passer domesticus* | C | C | C | C |
| House wren | *Troglodytes aedon* | C | A | A | |
| Hudsonian godwit | *Limosa haemastica* | U | R | R | |
| Indigo bunting | *Passerina cyanea* | R | C | C | |
| Killdeer | *Charadrius vociferus* | A | A | A | |
| Lapland longspur | *Calcarius lapponicus* | C | | U | R |
| Lark sparrow | *Chondestes grammacus* | R | U | R | |
| Least bittern | *Ixobrychus exilis* | R | U | | |
| Least flycatcher | *Empidonax minimus* | C | C | C | |
| Least sandpiper | *Calidris minutilla* | C | A | A | |
| LeConte's sparrow | *Ammospiza leconteii* | R | U | U | |
| Lesser black-backed gull | *Larus fuscus* | Cas | | | |
| Lesser scaup | *Aythya affinis* | A | | C | U |
| Lesser yellowlegs | *Tringa flavipes* | A | A | A | |
| Lincoln's sparrow | *Melospiza lincolnii* | C | | C | |
| Loggerhead shrike | *Lanius ludovicianus* | R | R | R | |
| Long-billed dowitcher | *Limnodromus scolopaceus* | U | R | U | |
| Louisiana waterthrush | *Parkesia motacilla* | Cas | | | |
| Magnolia warbler | *Setophaga magnolia* | U | | R | |
| Mallard | *Anas platyrhynchos* | A | A | A | A |
| Marbled godwit | *Limosa fedoa* | C | C | C | |
| Marsh wren | *Cistothorus palustris* | C | A | C | |
| Merlin | *Falco columbarius* | R | | U | R |
| Mourning dove | *Zenaida macroura* | A | A | A | R |
| Mourning warbler | *Geothlypis philadelphia* | R | R | R | |
| Nashville warbler | *Leiothlypis ruficapilla* | U | | C | |
| Nelson's sparrow | *Ammospiza nelsoni* | | | R | |
| Northern cardinal | *Cardinalis cardinalis* | A | C | C | A |
| Northern flicker | *Colaptes auratus* | A | C | A | U |
| Northern harrier | *Circus hudsonius* | A | C | C | C |
| Northern parula | *Setophaga americana* | R | | R | |
| Northern pintail | *Anas acuta* | A | U | U | U |
| Northern rough-winged swallow | *Stelgidopteryx serripennis* | C | C | C | |

| Common Name | Scientific Name | Spring | Summer | Fall | Winter |
|---|---|---|---|---|---|
| Northern saw-whet owl | *Aegolius acadicus* | | | | R |
| Northern shoveler | *Spatula clypeata* | A | C | C | R |
| Northern shrike | *Lanius borealis* | U | | U | C |
| Northern waterthrush | *Parkesia noveboracensis* | C | | U | |
| Olive-sided flycatcher | *Contopus cooperi* | R | | R | |
| Orange-crowned warbler | *Leiothlypis celata* | C | | C | |
| Orchard oriole | *Icterus spurius* | U | C | U | |
| Osprey | *Pandion haliaetus* | U | R | U | |
| Ovenbird | *Seiurus aurocapilla* | C | R | C | |
| Palm warbler | *Setophaga palmarum* | C | | U | |
| Pectoral sandpiper | *Calidris melanotos* | C | C | A | |
| Peregrine falcon | *Falco peregrinus* | U | | U | |
| Philadelphia vireo | *Vireo philadelphicus* | R | | R | |
| Pied-billed grebe | *Podilymbus podiceps* | A | C | C | |
| Pileated woodpecker | *Dryocopus pileatus* | C | C | C | C |
| Pine siskin | *Spinus pinus* | R | | U | |
| Piping plover | *Charadrius melodus* | Cas | | | |
| Prairie falcon | *Falco mexicanus* | | Cas | Cas | |
| Prothonotary warbler | *Protonotaria citrea* | R | R | | |
| Purple finch | *Haemorhous purpureus* | U | | U | U |
| Purple martin | *Progne subis* | U | C | C | |
| Red crossbill | *Loxia curvirostra* | | | R | R |
| Red knot | *Calidris canutus* | | Cas | Cas | |
| Red-bellied woodpecker | *Melanerpes carolinus* | A | C | A | C |
| Red-breasted merganser | *Mergus serrator* | U | | R | |
| Red-breasted nuthatch | *Sitta canadensis* | | | U | U |
| Red-eyed vireo | *Vireo olivaceus* | C | C | C | |
| Redhead | *Aythya americana* | A | U | C | U |
| Red-headed woodpecker | *Melanerpes erythrocephalus* | R | U | U | |
| Red-necked grebe | *Podiceps grisegena* | R | R | R | |
| Red-necked phalarope | *Phalaropus lobatus* | R | U | U | |
| Red-shouldered hawk | *Buteo lineatus* | R | R | | |
| Red-tailed hawk | *Buteo jamaicensis* | A | A | A | C |
| Red-winged blackbird | *Agelaius phoeniceus* | A | A | A | C |
| Ring-billed gull | *Larus delawarensis* | A | A | A | U |
| Ring-necked duck | *Aythya collaris* | A | | C | U |
| Ring-necked pheasant | *Phasianus colchicus* | A | A | A | A |
| Rock pigeon | *Columba livia* | C | C | C | C |
| Rose-breasted grosbeak | *Pheucticus ludovicianus* | C | C | C | |
| Ross's goose | *Anser rossii* | C | | R | R |

| Common Name | Scientific Name | Spring | Summer | Fall | Winter |
|---|---|---|---|---|---|
| Rough-legged hawk | *Buteo lagopus* | C | | U | A |
| Ruby-crowned kinglet | *Corthylio calendula* | C | | C | |
| Ruby-throated hummingbird | *Archilochus colubris* | R | C | C | |
| Ruddy duck | *Oxyura jamaicensis* | C | U | U | R |
| Ruddy turnstone | *Arenaria interpres* | R | R | R | |
| Ruff | *Calidris pugnax* | | Cas | | |
| Rusty blackbird | *Euphagus carolinus* | C | | U | |
| Sanderling | *Calidris alba* | R | U | C | |
| Sandhill crane | *Antigone canadensis* | C | U | R | |
| Savannah sparrow | *Passerculus sandwichensis* | C | C | C | |
| Say's phoebe | *Sayornis saya* | R | | | |
| Scarlet tanager | *Piranga olivacea* | R | R | R | |
| Sedge wren | *Cistothorus stellaris* | C | A | C | |
| Semipalmated plover | *Charadrius semipalmatus* | U | C | C | |
| Semipalmated sandpiper | *Calidris pusilla* | C | C | A | |
| Sharp-shinned hawk | *Accipiter striatus* | C | | U | U |
| Sharp-tailed grouse | *Tympanuchus phasianellus* | R | R | R | |
| Short-billed dowitcher | *Limnodromus griseus* | U | C | C | |
| Short-eared owl | *Asio flammeus* | R | R | R | R |
| Smith's longspur | *Calcarius pictus* | Cas | | | |
| Snow bunting | *Plectrophenax nivalis* | R | | R | U |
| Snow goose | *Anser caerulescens* | C | | U | U |
| Snowy egret | *Egretta thula* | R | R | U | |
| Snowy owl | *Bubo scandiacus* | R | | R | R |
| Snowy plover | *Anarhynchus nivosus* | | R | | |
| Solitary sandpiper | *Tringa solitaria* | C | C | C | |
| Song sparrow | *Melospiza melodia* | A | A | A | |
| Sora | *Porzana carolina* | C | C | C | |
| Spotted sandpiper | *Actitis macularius* | C | A | A | |
| Spotted towhee | *Pipilo maculatus* | | | Cas | R |
| Stilt sandpiper | *Calidris himantopus* | R | C | C | |
| Surf scoter | *Melanitta perspicillata* | Cas | | | |
| Swainson's hawk | *Buteo swainsoni* | U | U | U | |
| Swainson's thrush | *Catharus ustulatus* | C | | R | |
| Swamp sparrow | *Melospiza georgiana* | C | C | C | |
| Tennessee warbler | *Leiothlypis peregrina* | C | R | U | |
| Townsend's solitaire | *Myadestes townsendi* | | | | U |
| Townsend's warbler | *Setophaga townsendi* | Cas | | | |
| Tree swallow | *Tachycineta bicolor* | A | A | A | |
| Trumpeter swan | *Cygnus buccinator* | C | C | U | C |

| Common Name | Scientific Name | Spring | Summer | Fall | Winter |
|---|---|---|---|---|---|
| Tundra swan | *Cygnus columbianus* | C | | C | |
| Turkey vulture | *Cathartes aura* | A | C | C | |
| Upland sandpiper | *Bartramia longicauda* | U | U | U | |
| Veery | *Catharus fuscescens* | R | R | | |
| Vesper sparrow | *Pooecetes gramineus* | C | C | U | |
| Virginia rail | *Rallus limicola* | U | U | U | |
| Warbling vireo | *Vireo gilvus* | C | A | C | |
| Western cattle egret | *Bubulcus ibis* | R | R | R | |
| Western grebe | *Aechmophorus occidentalis* | C | U | U | |
| Western kingbird | *Tyrannus verticalis* | R | C | U | |
| Western meadowlark | *Sturnella neglecta* | A | A | C | |
| White-breasted nuthatch | *Sitta carolinensis* | A | C | A | A |
| White-crowned sparrow | *Zonotrichia leucophrys* | C | | U | |
| White-faced ibis | *Plegadis chihi* | U | R | R | |
| White-rumped sandpiper | *Calidris fuscicollis* | U | R | R | |
| White-throated sparrow | *Zonotrichia albicollis* | C | | C | |
| Wild turkey | *Meleagris gallopavo* | C | C | C | U |
| Willet | *Tringa semipalmata* | U | U | | |
| Willow flycatcher | *Empidonax traillii* | R | C | U | |
| Wilson's phalarope | *Phalaropus tricolor* | U | U | U | |
| Wilson's snipe | *Gallinago delicata* | C | C | C | |
| Wilson's warbler | *Cardellina pusilla* | R | | U | |
| Winter wren | *Troglodytes hiemalis* | R | | R | |
| Wood duck | *Aix sponsa* | A | C | A | R |
| Wood thrush | *Hylocichla mustelina* | R | U | | |
| Yellow rail | *Coturnicops noveboracensis* | | Cas | | |
| Yellow warbler | *Setophaga petechia* | A | A | C | |
| Yellow-bellied flycatcher | *Empidonax flaviventris* | | | R | |
| Yellow-bellied sapsucker | *Sphyrapicus varius* | C | C | C | |
| Yellow-billed cuckoo | *Coccyzus americanus* | | R | R | |
| Yellow-headed blackbird | *Xanthocephalus xanthocephalus* | A | A | C | |
| Yellow-rumped warbler | *Setophaga coronata* | A | | C | |
| Yellow-throated vireo | *Vireo flavifrons* | C | C | C | |

1

2    A = abundant, C = common, U = uncommon, R = rare, Cas = casual or very rare

1 **Bird Species of Greatest Conservation Need found at or near Lac qui Parle WMA.**

| Common Name | Scientific Name | Habitat | State Status | Federal Status |
|---|---|---|---|---|
| American bittern | *Botaurus lentiginosus* | W | SGCN | |
| American black duck | *Anas rubripes* | W | SGCN | |
| American kestrel | *Falco sparverius* | G, F | SGCN | |
| American white pelican | *Pelecanus erythrorhynchos* | W | SPC | |
| American woodcock | *Scolopax minor* | F | SGCN | |
| Bay-breasted warbler | *Setophaga castanea* | F | SGCN | |
| Bell's vireo | *Vireo bellii* | F | SPC | |
| Belted kingfisher | *Megaceryle alcyon* | B, F | SGCN | |
| Black tern | *Chlidonias niger* | W | SGCN | |
| Black-billed cuckoo | *Coccyzus erythropthalmus* | B, F | SGCN | |
| Black-crowned night-heron | *Nycticorax nycticorax* | W | SGCN | |
| Bobolink | *Dolichonyx oryzivorus* | G | SGCN | |
| Brown thrasher | *Toxostoma rufum* | B, F | SGCN | |
| Cape May warbler | *Setophaga tigrina* | F | SGCN | |
| Chimney swift | *Chaetura pelagica* | | SGCN | |
| Common loon | *Gavia immer* | W | SGCN | |
| Common merganser | *Mergus merganser* | W | SGCN | |
| Common nighthawk | *Chordeiles minor* | G | SGCN | |
| Dickcissel | *Spiza americana* | G | SGCN | |
| Eared grebe | *Podiceps nigricollis* | W | SGCN | |
| Eastern meadowlark | *Sturnella magna* | G | SGCN | |
| Eastern towhee | *Pipilo erythrophthalmus* | F | SGCN | |
| Eastern whip-poor-will | *Antrostomus vociferus* | B, G | SGCN | |
| Field sparrow | *Spizella pusilla* | G | SGCN | |
| Foster's tern | *Sterna forsteri* | W | SPC | |
| Franklin's gull | *Leucophaeus pipixcan* | W | SPC | |
| Golden-winged warbler | *Vermivora chrysoptera* | B | SGCN | |
| Grasshopper sparrow | *Ammodramus savannarum* | G | SGCN | |

| Common Name | Scientific Name | Habitat | State Status | Federal Status |
|---|---|---|---|---|
| Greater yellowlegs | *Tringa melanoleuca* | W | SGCN | |
| Henslow's sparrow | *Ammodramus henslowii* | G | END | |
| Horned grebe | *Podiceps auritus* | W | END | |
| Hudsonian godwit | *Limosa haemastica* | G, W | SGCN | |
| Lark sparrow | *Chondestes grammacus* | G | SPC | |
| LeConte's sparrow | *Ammodramus leconteii* | G | SGCN | |
| Least bittern | *Ixobrychus exilis* | W | SGCN | |
| Lesser scaup | *Aythya affinis* | W | SGCN | |
| Loggerheaded shrike | *Lanius ludovicianus* | B, G | END | |
| Marbled godwit | *Limosa fedoa* | G, W | SPC | |
| Northern harrier | *Circus cyaneus* | G, W | SGCN | |
| Northern pintail | *Anas acuta* | G, W | SGCN | |
| Northern rough-winged swallow | *Stelgidopteryx serripennis* | F, W | SGCN | |
| Olive-sided flycatcher | *Contopus cooperi* | F | SGCN | |
| Peregrine falcon | *Falco peregrinus* | | SPC | |
| Philadelphia vireo | *Vireo philadelphicus* | F | SGCN | |
| Piping plover | *Charadrius melodus* | W | END | END |
| Prothonotary warbler | *Protonotaria citrea* | F | SGCN | |
| Purple finch | *Haemorhous purpureus* | B, F | SGCN | |
| Purple martin | *Progne subis* | | SPC | |
| Red-headed woodpecker | *Melanerpes erythrocephalus* | F, G | SGCN | |
| Red-necked grebe | *Podiceps grisegena* | W | SGCN | |
| Red-shouldered hawk | *Buteo lineatus* | F | SPC | |
| Rufa red knot | *Calidris canutus rufa* | W | SGCN | THR |
| Sedge wren | *Cistothorus platensis* | W | SGCN | |
| Semipalmated sandpiper | *Calidris pusilla* | W | SGCN | |
| Sharp-tailed grouse | *Tympanuchus phasianellus* | B, G | SGCN | |
| Short-billed dowitcher | *Limnodromus griseus* | G, W | SGCN | |
| Short-eared owl | *Asio flammeus* | G, W | SPC | |
| Swainson's hawk | *Buteo swainsoni* | F, G | SGCN | |

| Common Name | Scientific Name | Habitat | State Status | Federal Status |
|---|---|---|---|---|
| Trumpeter swan | *Cygnus buccinator* | W | SPC | |
| Upland sandpiper | *Bartramia longicauda* | G, W | SGCN | |
| Veery | *Catharus fuscescens* | B, G | SGCN | |
| Virginia rail | *Rallus limicola* | W | SGCN | |
| Western grebe | *Aechmophorus occidentalis* | W | SGCN | |
| Western kingbird | *Tyrannus verticalis* | G | SGCN | |
| Western meadowlark | *Sturnella neglecta* | G | SGCN | |
| Wilson's phalarope | *Phalaropus tricolor* | W | THR | |
| Wood thrush | *Hylocichla mustelina* | F | SGCN | |
| Yellow rail | *Coturnicops noveboracensis* | W | SPC | |
| Yellow-billed cuckoo | *Coccyzus americanus* | B, F | SGCN | |
| Yellow-headed blackbird | *Xanthocephalus xanthocephalus* | W | SGCN | |

1  Habitat Key: B = Brushlands, F = Forests, G = Grasslands, W = Wetlands

2  END = endangered, THR = threatened, SPC = special concern, SGCN = Species of Greatest Conservation Need; all

3  state-listed species and federally listed species that occur in Minnesota are SGCN, those listed as SGCN in the

4  table are species not on Minnesota's endangered, threatened, and special concern list.

5

# Appendix G. Mammal species are known to occur at Lac qui Parle WMA

| Common Name | Scientific Name | Game Species | State Status | Federal Status | Occurrence in WMA |
|---|---|---|---|---|---|
| American badger | *Taxidea taxus* | X | SGCN | | |
| Beaver | *Castor canadensis* | X | | | |
| Big brown bat | *Eptesicus fuscus* | | SPC | | |
| Black bear | *Ursus americanus* | X | | | Rare transient |
| Bobcat | *Lynx rufus* | X | | | |
| Coyote | *Canis latrans* | | | | |
| Deer mouse | *Peromyscus maniculatus* | | | | |
| Eastern cottontail | *Sylvilagus floridanus* | X | | | |
| Eastern mole | *Scalopus aquaticus* | | | | |
| Eastern spotted skunk | *Spilogale putorius* | | THR | | |
| Elk | *Cervus elaphus* | | SPC | | Rare transient |
| Fisher | *Pekania pennanti* | X | | | |
| Fox squirrel | *Sciurus niger* | X | | | |
| Franklin's ground squirrel | *Poliocitellus franklinii* | | SGCN | | |
| Gray fox | *Urocyon cinereoargenteus* | X | | | |
| Gray squirrel | *Sciurus carolinensis* | X | | | |
| Gray wolf | *Canis lupus* | | | THR | Rare transient |
| Hoary bat | *Lasiurus cinereus* | | SGCN | | |
| House mouse | *Mus musculus* | | | | |
| Keen's myotis | *Myotis keenii* | | | | |
| Least weasel | *Mustela nivalis* | | SPC | | |
| Little brown myotis | *Myotis lucifugus* | | SPC | | |
| Long-tailed weasel | *Mustela frenata* | X | | | |
| Masked shrew | *Sorex cinereus* | | | | |
| Meadow jumping mouse | *Zapus hudsonius* | | | | |
| Meadow vole | *Microtus pennsylvanicus* | | | | |

| Common Name | Scientific Name | Game Species | State Status | Federal Status | Occurrence in WMA |
|---|---|---|---|---|---|
| Mink | *Neovison vison* | X | | | |
| Moose | *Alces alces* | | SPC | | Rare transient |
| Mountain lion | *Felis concolor* | | SPC | | Rare transient |
| Mule deer | *Odocoileus hemionus* | | | | Rare transient |
| Muskrat | *Ondatra zibethicus* | X | | | |
| Northern grasshopper mouse | *Onychomys leucogaster* | | SPC | | |
| Norway rat | *Rattus norvegicus* | | | | |
| Plains pocket gopher | *Geomys bursarius* | | | | |
| Plains pocket mouse | *Perognathus flavescens* | | SPC | | |
| Prairie vole | *Microtus ochrogaster* | | SPC | | |
| Pronghorn | *Antilocapra americana* | | | | Rare transient |
| Raccoon | *Procyon lotor* | X | | | |
| Red bat | *Lasiurus borealis* | | SGCN | | |
| Red fox | *Vulpes vulpes* | X | | | |
| Red squirrel | *Tamiasciurus hudsonicus* | | | | |
| Richardson's ground squirrel | *Urocitellus richardsonii* | | SPC | | |
| River otter | *Lontra canadensis* | X | | | |
| Short-tailed shrew | *Blarina brevicauda* | | | | |
| Short-tailed weasel | *Mustela erminea* | X | | | |
| Silver-haired bat | *Lasionycteris noctivagans* | | SGCN | | |
| Southern flying squirrel | *Glaucomys volans* | | | | |
| Southern red-backed vole | *Clethrionomys gapperi* | | | | |
| Striped skunk | *Mephitis mephitis* | | | | |
| Thirteen-lined ground squirrel | *Ictidomys tridecemlineatus* | | | | |
| Virginia opossum | *Didelphis virginiana* | X | | | |
| Western harvest mouse | *Reithrodontomys megalotis* | | SPC | | |
| White-footed mouse | *Peromyscus leucopus* | | | | |

| Common Name | Scientific Name | Game Species | State Status | Federal Status | Occurrence in WMA |
|---|---|---|---|---|---|
| White-tailed deer | *Odocoileus virginianus* | X | | | |
| White-tailed jackrabbit | *Lepus townsendii* | X | SGCN | | |
| Woodchuck | *Marmota monax* | | | | |

1  Game species may be taken only under DNR regulations.

2  THR = threatened, SPC = special concern, SGCN = Species of Greatest Conservation Need; all state-listed species

3  and federally listed species that occur in Minnesota are SGCN, those listed as SGCN in the table are species not

4  on Minnesota's endangered, threatened, and special concern list.

# Appendix H. Fish species known to occur at Lac qui Parle WMA

| Common Name | Scientific Name | Status |
|---|---|---|
| American eel | *Anguilla rostrata* | SPC |
| Bigmouth buffalo | *Ictiobus cyprinellus* | |
| Black bullhead | *Ameiurus melas* | |
| Black crappie | *Pomoxis nigromaculatus* | |
| Blackside darter | *Percina maculata* | |
| Bluegill | *Lepomis macrochirus* | |
| Bluntnose minnow | *Pimephales notatus* | |
| Bowfin | *Amia calva* | |
| Brassy minnow | *Hybognathus hankinsoni* | |
| Brook stickleback | *Culaea inconstans* | |
| Brown bullhead | *Ameiurus nebulosus* | |
| Carmine shiner | *Notropis percobromus* | |
| Channel catfish | *Ictalurus punctatus* | |
| Common carp | *Cyprinus carpio* | |
| Common shiner | *Luxilus cornutus* | |
| Creek chub | *Semotilus atromaculatus* | |
| Emerald shiner | *Notropis atherinoides* | |
| Fathead minnow | *Pimephales promelas* | |
| Freshwater drum | *Aplodinotus grunniens* | |
| Golden redhorse | *Moxostoma erythrurum* | |
| Golden shiner | *Notemigonus crysoleucas* | |
| Greater redhorse | *Moxostoma valenciennesi* | |
| Green sunfish | *Lepomis cyanellus* | |
| Iowa darter | *Etheostoma exile* | |
| Johnny darter | *Etheostoma nigrum* | |
| Lake sturgeon | *Acipenser fulvescens* | SPC |
| Largemouth bass | *Micropterus salmoides* | |
| Logperch | *Percina caprodes* | |
| Longnose gar | *Lepisosteus osseus* | |

| Common Name | Scientific Name | Status |
|---|---|---|
| Northern pike | *Esox lucius* | |
| Orangespotted sunfish | *Lepomis humilis* | |
| Quillback | *Carpiodes cyprinus* | |
| Rock bass | *Ambloplites rupestris* | |
| Sand shiner | *Notropis stramineus* | |
| Shorthead redhorse | *Moxostoma macrolepidotum* | |
| Silver redhorse | *Moxostoma anisurum* | |
| Slenderhead darter | *Percina phoxocephala* | |
| Spotfin shiner | *Cyprinella spiloptera* | |
| Spottail shiner | *Notropis hudsonius* | |
| Tadpole madtom | *Noturus gyrinus* | |
| Walleye | *Sander vitreus* | |
| White bass | *Morone chrysops* | |
| White crappie | *Pomoxis annularis* | |
| White sucker | *Catostomus commersonii* | |
| Yellow bullhead | *Ameiurus natalis* | |
| Yellow perch | *Perca flavescens* | |

1    SPC = special concern; all of Minnesota's endangered, threatened, and special concern species are also Species
2    of Greatest Conservation Need (SGCN).

3

# Appendix I. Amphibian and reptile species known to occur at Lac qui Parle WMA.

| Taxa | Common Name | Scientific Name | State Status |
|---|---|---|---|
| Amphibian | Western tiger salamander | *Ambystoma mavortium* | |
| Amphibian | Eastern tiger salamander | *Ambystoma tigrinum* | |
| Amphibian | Mudpuppy | *Necturus maculosus* | SPC |
| Amphibian | American toad | *Anaxyrus americanus* | |
| Amphibian | Great Plains toad | *Anaxyrus cognatus* | SPC |
| Amphibian | Canadian toad | *Anaxyrus hemiophrys* | |
| Amphibian | Boreal chorus frog | *Pseudacris maculata* | |
| Amphibian | Northern leopard frog | *Lithobates pipiens* | |
| Amphibian | Wood frog | *Lithobates sylvaticus* | |
| Reptile | Spiny softshell | *Apalone spinifera* | |
| Reptile | Snapping turtle | *Chelydra serpentina* | |
| Reptile | Painted turtle | *Chrysemys picta* | |
| Reptile | Prairie skink | *Plestiodon septentrionalis* | |
| Reptile | Plains hog-nosed snake | *Heterodon nasicus* | SPC |
| Reptile | Smooth greensnake | *Opheodrys vernalis* | SGCN |
| Reptile | Red-bellied snake | *Storeria occipitomaculata* | |
| Reptile | Plains gartersnake | *Thamnophis radix* | |
| Reptile | Common gartersnake | *Thamnophis sirtalis* | |

SPC = special concern, SGCN = Species of Greatest Conservation Need; all of Minnesota's endangered, threatened, and special concern species are SGCN, those listed as SGCN in the table are species not on the Minnesota's endangered, threatened, and special concern list.

# Appendix J. Mussel species known to occur at Lac qui Parle WMA

| Common Name | Scientific Name | State Status |
|---|---|---|
| Elktoe | *Alasmidonta marginata* | THR |
| Spike | *Eurynia dilatata* | THR |
| Lilliput | *Toxolasma parvum* | |
| Cylindrical Papershell | *Anodontoides ferussacianus* | |
| Mapleleaf | *Quadrula quadrula* | |
| Black Sandshell | *Ligumia recta* | SPC |
| Creeper | *Strophitus undulatus* | |
| Pink Heelsplitter | *Potamilus alatus* | |
| Fragile Papershell | *Potamilus fragilis* | |
| Wabash Pigtoe | *Fusconaia flava* | |
| White Heelsplitter | *Lasmigona complanata* | |
| Giant Floater | *Pyganodon grandis* | |
| Plain Pocketbook | *Lampsilis cardium* | |
| Deertoe | *Truncilla truncata* | |
| Threeridge | *Amblema plicata* | |
| Fatmucket | *Lampsilis siliquoidea* | |

THR = threatened, SPC = special concern; all of Minnesota's endangered, threatened, and special concern species are also Species of Greatest Conservation Need (SGCN).

# Appendix K. Fur harvest on Lac qui Parle WMA, 2002-2022

1

| Year | Muskrat | Mink | Weasel | Raccoon | Fox | Coyote | Beaver | Otter | Skunk | Badger | Opossum |
|------|---------|------|--------|---------|-----|--------|--------|-------|-------|--------|---------|
| 2002 | 107 | 15 | 4 | 59 | 2 | 3 | 114 | | 1 | | |
| 2003 | 231 | 12 | 6 | 107 | | | 91 | | 19 | | 15 |
| 2004 | 38 | 19 | 6 | 97 | | | 89 | 1 | 19 | | 28 |
| 2005 | 83 | 9 | 20 | 273 | | | 87 | | 4 | | 19 |
| 2006 | 260 | 26 | | 264 | | | 203 | 1 | 10 | | 36 |
| 2007 | 158 | 11 | 22 | 114 | | 10 | 25 | | 6 | 2 | 14 |
| 2008 | 133 | 16 | 7 | 230 | | 2 | 4 | | 26 | | 18 |
| 2009 | 210 | 6 | 8 | 67 | | 1 | 69 | | 3 | | 10 |
| 2010 | 151 | 9 | 5 | 52 | | | 35 | 1 | 15 | | 4 |
| 2011 | 293 | 16 | 5 | 95 | | 1 | 115 | 6 | 17 | | 6 |
| 2012 | 69 | 20 | 3 | 33 | | 1 | 23 | 5 | 11 | | 1 |
| 2013 | 86 | 17 | 5 | 158 | | 3 | 36 | 2 | 29 | | 7 |
| 2014 | 74 | 3 | | 25 | | | 33 | 7 | | | |
| 2015 | 25 | 7 | 4 | 94 | | | 33 | | 6 | | 7 |
| 2016 | 84 | 4 | | 7 | | | 17 | | 2 | | |
| 2017 | 54 | 5 | 6 | 76 | | 1 | 22 | 3 | 8 | | 14 |
| 2018 | 70 | 13 | | 34 | | | 30 | 2 | | | |
| 2019 | 39 | 11 | 7 | 27 | | 13 | 33 | 2 | 2 | 1 | |
| 2020 | 27 | 4 | | 16 | | 4 | 5 | 1 | 7 | | 1 |
| 2021 | 114 | 2 | 1 | 7 | | | 17 | 4 | 2 | | 2 |
| 2022 | 13 | 1 | 5 | 1 | | | 29 | | 3 | | |

2

3

# Appendix L. Climate Data for Lac qui Parle WMA

**Precipitation by season for Lac qui Parle WMA (Minnesota Climate Explorer 2024).**

| Season | 1895–1969 mean (inches) | 1991–2023 mean (inches) | 2080–2099 (inches) (modeled mean under a moderate emissions scenario) |
|---|---|---|---|
| Winter (December–February) | 2.08 | 2.03 | 2.16 |
| Spring (March-May) | 6.35 | 6.84 | 6.14 |
| Summer (June–August) | 10.18 | 10.93 | 9.62 |
| Fall (September–November) | 4.74 | 6.19 | 8.04 |

**Temperature by season for Lac qui Parle WMA (Minnesota Climate Explorer 2024).**

| Season | 1895–1969 mean (°F) | 1991–2023 mean (°F) | 2080–2099 (°F) (modeled mean under moderate emissions scenario) |
|---|---|---|---|
| Winter (December–February) | 13.31 | 16.08 | 22.13 |
| Spring (March–May) | 42.69 | 44.14 | 51.04 |
| Summer (June–August) | 69.12 | 70.09 | 75.17 |
| Fall (September–November) | 45.76 | 47.26 | 51.63 |