Community Assistantship Program
...a program of the Center for Urban and Regional Affairs (CURA)

The Tallgrass Aspen Parkland Birding Trail: The Stories of the Landscape

Prepared in partnership with
The Center for Changing Landscapes
and
The Northwest Regional Sustainable Development Partnership
and
The Middle-Snake-Tamarac Rivers Watershed District

Prepared by
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The Tallgrass Aspen Parkland Birding Trail

Introduction

The following report serves as a record of research and design work done during the fall of 2013 by the Center for Changing Landscapes and graduate student research assistant Erin Garnaas-Holmes to assist in the Tallgrass Aspen Parkland Birding Trail project. This project is part of a much broader community effort in northwestern Minnesota that seeks to both enhance economic development in the region by bringing more visitors to the area and also inform local residents of the power of their landscape.

The ecological biome of the Tallgrass Aspen Parkland is unique and rare in the United States, and the region attracts high concentrations of diverse migrating birds. Recent watershed management projects have formed large swaths of attractive habitat for both migratory and year-round birds. Meanwhile, at a time when the local economy is starting to grow, a tourist attraction like a birding trail could bring valuable business to local communities. According to the United States Fish and Wildlife Service, $38.4 billion was spent on wildlife watching activities in 2001. About 48 million Americans observed birds in 2006, and as the population ages that number is predicted to increase. Birding is a year-round activity and has “considerable expenditures” associated with it, including lodging, food and supplies.

The establishment of a birding trail is not only a way to attract new visitors to a region, but it also can be a way for current residents to enjoy their own landscape. Birding trail infrastructure can serve locals as much as visitors, and it can also present opportunities to celebrate the stories and legacies of the region. Birds, like all wildlife and plants, are part of a larger ecosystem that is connected to human history and our current ways of living. By drawing attention to where, how and why wildlife lives where it does, a birding trail can also illuminate how people relate to their landscape and their communities.

Erin’s contract with the University of Minnesota’s Center for Changing Landscapes and Northwest Regional Sustainable Development Partnership was facilitated through the Center for Urban and Regional Affairs Community Assistance Program and the Middle-Snake-Tamarac Rivers Watershed District.

2 USFWS.
The Tallgrass Aspen Parkland biome is one of Minnesota’s four ecological biomes and is home to a wide variety of birds. Hundreds of migratory species also pass over the Parkland each year, some of which can only be seen in this part of the country. This region of Northwest Minnesota is also rich in history, dating back not only hundreds of years to the time of European settlers but also millennia, to the time of glaciers. The Tallgrass Aspen Parkland Birding Trail provides an opportunity for visitors and local residents to discover evidence of ancient geological forces, learn about the history of people and the land, and capture exciting views of wildlife in this powerful landscape.

Recent watershed management projects have created large areas of attractive habitat for both migratory and year-round birds, making this region an even more exciting place for birding and wildlife viewing. Read ahead to learn more about how this landscape has been formed over time and what kind of experiences the Tallgrass Aspen Parkland Birding Trail has to offer.
The Story of the Tallgrass Aspen Parkland

The Legacy of Glacial Lake Agassiz

The Tallgrass Aspen Parkland is the smallest of Minnesota’s biomes, but perhaps one of the most unique. Northwestern Minnesota is the only place this biome can be found in the entire United States. It is an ecotone, or a transition zone, between the prairie to the west and the forests to the east. The story of the Tallgrass Aspen Parkland starts millennia ago with the movement of glaciers and the draining of the massive Glacial Lake Agassiz.

These maps show several ice advances and their associated end moraines that affected Minnesota in the Late Wisconsinan Age. Ice advances are arranged from oldest (top left) to youngest (bottom right). (Morey and Dahlberg, 23-24).

As the Laurentide Ice Sheet—a massive, mile-high glacier—began to recede by slowly melting away, its drainage patterns formed many of the landscapes we are familiar with in Minnesota today. An ice dam at its southern tip pooled glacial waters to create the Glacial Lake Agassiz, an enormous lake bigger than all of the Great Lakes combined, extending north to the current Hudson Bay. The southern tip of Glacial Lake Agassiz reached into present-day Minnesota and North Dakota.

As the lake retreated, its edge created a series of beaches, ridges of sand that still exist today. Sediment and nutrients settled to the bottom of the lake.

Over thousands of years, the lake began to drain away into other water bodies, creating a huge glacial river. As it drained north it left a vast, flat landscape with the small rivet that is now the Red River valley.

Over time, prairies and stands of aspen grew in the rich soils left behind by Glacial Lake Agassiz. Wetlands and prairie potholes, formed by the receding lake, dotted the landscape. Streams meandered through the landscape down to the river valley.

When snow melted in the spring and April showers fell, the river flooded over large portions of the flat landscape.

As European Americans settled the landscape, they took advantage of the fertile soil in the former lake bed. The gravelly soils of the beach ridges proved less suitable for farming.

The Red River still overflows in the spring, but now it floods farmlands, homes and towns.
The Nature of Flooding

As Minnesota was settled along with other parts of the United States and Canada after the Revolutionary War, the Public Land Survey was a tool that the government used to define tracts of land that could eventually be sold for private use. Each “section” of the PLS was intended to be enough land, about the size of a city block, for one farmer to sustain his or her family. A township was made up of 36 of these sections (shown in white on the image to the right). This grid of townships was laid over the geography of Minnesota (without much heed to geological or hydrological characteristics, like watershed boundaries).

As farmers began to manipulate the landscape they formed it into the most efficient conditions for growing the food that sustains our nation. Agricultural efficiency drove landowner’s decisions and problems created by regional hydrological patterns were less extreme as they are today. In order to grow more food, wetlands were filled and lands that were too wet were drained through tile systems. A series of ditches were dug to quickly channel water from farmland downstream to the Red River. The drain tile and ditch system effectively replaced small stream systems and wetlands, causing water to flow faster towards the river than in pre-settlement times, increasing the peak flow rate of the river after a rain storm event.

Pre-Settlement

Post-Settlement

Ditch

Drain tile

The drain tile and ditch system sends water from farmland downstream as efficiently as possible in order to support the growing of food crops that do not tolerate wet conditions.

Post-settlement water flow rate after a storm peaks higher and faster than a pre-settlement rate.
The Watershed Management Areas

Flooding has always been a part of life in the Red River Valley. The city of Warren documented extreme flooding events in 1896 and as recently as 1996 and 1997. Watershed Districts are government agencies tasked with managing water resources with the drainage areas of rivers and streams. They work along with other organizations and agencies to protect residents from the hazards of flooding. One way that Watershed Districts have approached the challenge of managing flood hazards in a region where the topography is very flat is to create large impoundment areas where flood water can be held during spring and summer and released to recharge streams and rivers later in the year. Several watershed districts in the region have implemented this strategy in addition to other projects like stream bed restoration. By creating a series of these management areas, the ultimate goal of the watershed districts will be to reduce flooding in the river valley and to protect communities and landowners.

HOW AN IMPOUNDMENT WORKS:

These diagrams show how rainfall and snowmelt slowly fill the impoundment area, allowing the water to be released at a controlled rate and preventing overflowing of water bodies downstream.
Changing Habitat

An unintended consequence, but a benefit, of the watershed management projects is that they have begun to attract impressive amounts of birds. By temporarily holding water at different elevations throughout the seasons, the impoundments serve a similar function as ecological habitat that temporal wetlands and ponds once did in Minnesota.

Northwestern Minnesota is located along several migratory bird flyways, including the Mississippi Flyway and the Central Flyway. This means that millions of birds fly over the region each year as they migrate north or south with the changing seasons. As birds fly over the landscape, they look for places to rest, find food, or to breed. The water management areas provide vast areas for many migrating species.

Even though only a few of the water management areas feature native plant species primarily, they do provide habitat value for native bird species, and non-native species as well. The deep water borrow pits of the impoundments, holes in the landscape dug to hold water, provide pond homes for waterfowl like swans, grebes, and ducks. The wetlands provide marshy grassland homes for birds like American Bittern. Shorebirds like Greater Yellowlegs can be seen on the levee and upland species like Sharp-tailed Grouse, sparrows and birds of prey can also be spotted nearby.
Wildlife of the Tallgrass Aspen Parkland

Natural Habitat

Although much of the landscape has changed dramatically from its form hundreds of years ago, there are many opportunities along the Tallgrass Aspen Parkland Birding Trail to find wildlife and native species, including many parks, wildlife refuges and natural areas. Moose, elk, foxes and birds can be found in reserves like the Agassiz National Wildlife Refuge or Lake Bronson State Park.

Sometimes wildlife can even be seen along roads, ditches, windbreak plantings or in fields of crops. Snowy Owls, Great-Horned Owls and Golden Eagles can be seen perched on power lines and fence posts in the winter. Kingbirds, blackbirds, swans and Sandhill Cranes can be spotted on roadsides and in fields of crops.

Visitor Infrastructure

Visitor Center

In order to accommodate future visitors along the Birding Trail, a central LEED certified Visitor Center will be designed and constructed on the beach ridge at the Agassiz Valley Water Management Area.

Information Kiosks

Some of the first pieces of visitor infrastructure to be constructed could be informational kiosks that inform readers about the stories of the landscape, the birds and wildlife they may see, maps of the region and entire Trail, and information about specific locations. These kiosks could be designed so that they also function as Chimney Swift towers.

Toilets

Toilets will need to be constructed in some areas where facilities are far or few between. One option for restroom infrastructure is to use composting toilets made from sustainable materials that use less chemicals than standard toilets, and that can be constructed to reflect a desired aesthetic.
At the Bottom of a Glacial Lake

As it's name suggests, the edge retains a state of aquatic vegetation and grasses that have not been broken down before erosion.

Over thousands of years the ice began to thin and the water started to cover the area. The ice was pushed to the ocean and along the way, it covered the land and formed the Great Lakes.

One major ecosystem that was formed as the ice melted was the wetlands. These areas were formed by the flow of water from the lakes and rivers. The wetlands were home to a variety of wildlife, including birds, fish, and other animals.

A History of Flooding

A Minnesota wetland along the Mississippi River has been flooded for millions of years. The river flows through the area and creates a wetland ecosystem. The flooding occurs regularly, typically once every ten years, and helps to maintain the ecosystem.

Native Wildlife

The Tallgrass Aspen Parkland is home to a variety of native wildlife, including prairie dogs, deer, and turkeys. Many birds also reside in the area, including sandhill cranes, sage thrashers, and varied sparrows.

Natural Areas of the Tallgrass Aspen Parkland

Although the majority of the Tallgrass Aspen Parkland has been converted to farmland, there are still areas that are protected. These areas are home to a variety of wildlife and are important for preserving biodiversity.

Wildlife of the Tallgrass Aspen Parkland

A Sample of Species

The Tallgrass Aspen Parkland is home to a variety of wildlife, including birds, mammals, and reptiles. Some of the most common species include

- Sandhill Crane
- Cactus Wren
- Sage Thrasher
- Vesper Sparrow
- Prairie Chicken
- Mule Deer
- Black-Tailed Prairie Dog
- Eastern Coyote
- Platte River striped skunk
- Western Diamondback Rattlesnake

A Stop Along the Flyway

Minnesota's birding trails are open to the public, allowing birders to observe a variety of species in their natural habitats. The trails are well-marked and provide access to a wide range of birding opportunities.

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TALLGRASS ASPEN PARKLAND BIRDING TRAIL

Tallgrass Aspen Parkland Province

Land Cover and Prairie Conservation Areas

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