

Blueprint for Minnesota Bird Conservation

Recommendations for Minnesota's Tallgrass Aspen Parklands Region

Spring 2014



The *Blueprint for Minnesota Bird Conservation* is a project of Audubon Minnesota written by Lee A. Pfannmuller (leepfann@msn.com) and funded by the Environment and Natural Resources Trust Fund. For further information please contact Mark Martell at mmartell@audubon.org (651-739-9332).

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An Implementation Blueprint for Minnesota Bird Conservation

Why is a Conservation Blueprint Needed?

Numerous national, regional, and state conservation plans that broadly address Minnesota birds and the landscapes they inhabit have been produced over the past 10-15 years. Most of these plans are strategic in nature, establishing very broad conservation and management goals. Although they compile and summarize important resource information, they rarely provide managers with specific, on-the-ground targets and management tools. Most plans also address such a large number of species that it can be challenging to know which species are the highest priorities, which species, if targeted, can provide the most conservation benefits for other species, and which species can be addressed most effectively.

This effort is designed to build on these previous planning initiatives, not replace them. The goal is to achieve a common bird conservation agenda for Minnesota conservation organizations, agencies, and citizens by creating one clear *operational blueprint that provides specific guidance for Minnesota bird conservation*. It builds upon existing efforts by: identifying the highest priorities in each ecological region using select conservation focal species; synthesizing the best proven conservation practices for each species; establishing measurable goals for species' population targets; and identifying key sites for conservation work in the next decade.

Designed to push conservation beyond broad habitat protection goals, the blueprint will enable everyone interested in the conservation of Minnesota's avifauna to assess whether we are implementing the correct actions to sustain these species as integral components of Minnesota's landscape for years to come.

Data Sources

A wealth of information is available about Minnesota birds, their distribution, breeding biology, population trends, and habitat requirements. Primary data sources used for Audubon's initiative included the Minnesota Ornithologists' Union, the North American Bird Conservation Initiative, Joint Ventures, the Minnesota Department of Natural Resources, National Audubon and the U.S. Geological Survey. A list of primary data sources can be found at the end of the plan. After reviewing these documents, data were placed into an Excel database designed to summarize relevant information on all Minnesota birds, including 314 regular species, 42 casual species and 78 accidental species. Over 640 fields of data were compiled and provided the basis for all subsequent analysis summarized in this document. Copies of the database are available upon request from Audubon Minnesota.

Blueprint's Organization

This document, a *Conservation Blueprint* for Minnesota's Tallgrass Aspen Parklands Bird Conservation Region, represents one of four major products produced by Audubon's Conservation Blueprint:

1. A Brochure on Minnesota's Stewardship Species;
2. Species Accounts for 78 Priority Species;
3. Conservation Blueprints for nine Target Conservation Species; and
4. Conservation Blueprints for Minnesota's four Bird Conservation Regions

The Blueprint for the Tallgrass Aspen Parklands Region is not written like a typical planning document. Instead, it is designed to provide key information and tools that addresses three primary questions:

1. Which birds are we going to focus on?
2. How are we going to protect these species?
3. Where are we going to work?

Information is provided primarily in tables, brief descriptions about how priorities were selected and short vignettes that summarize species priorities and goals. The Blueprint includes the following:

- A descriptive overview of the region including its avifauna, landscape features, and management issues and opportunities;
- A list of Highest, High and Moderate Priority birds in the region;
- Identification of Target Conservation Species in the region;
- Identification of Stewardship Species that should be primary targets in the region;
- Assessment of monitoring efforts currently underway for the highest priority species and recommendations for future monitoring;
- Identification of priority habitats to focus conservation actions on;
- Identification of habitat protection and restoration goals in the region;
- Identification of habitat management considerations for the highest priority species; and
- Identification of Important Bird Areas that are a target for future work by Audubon and its conservation partners.

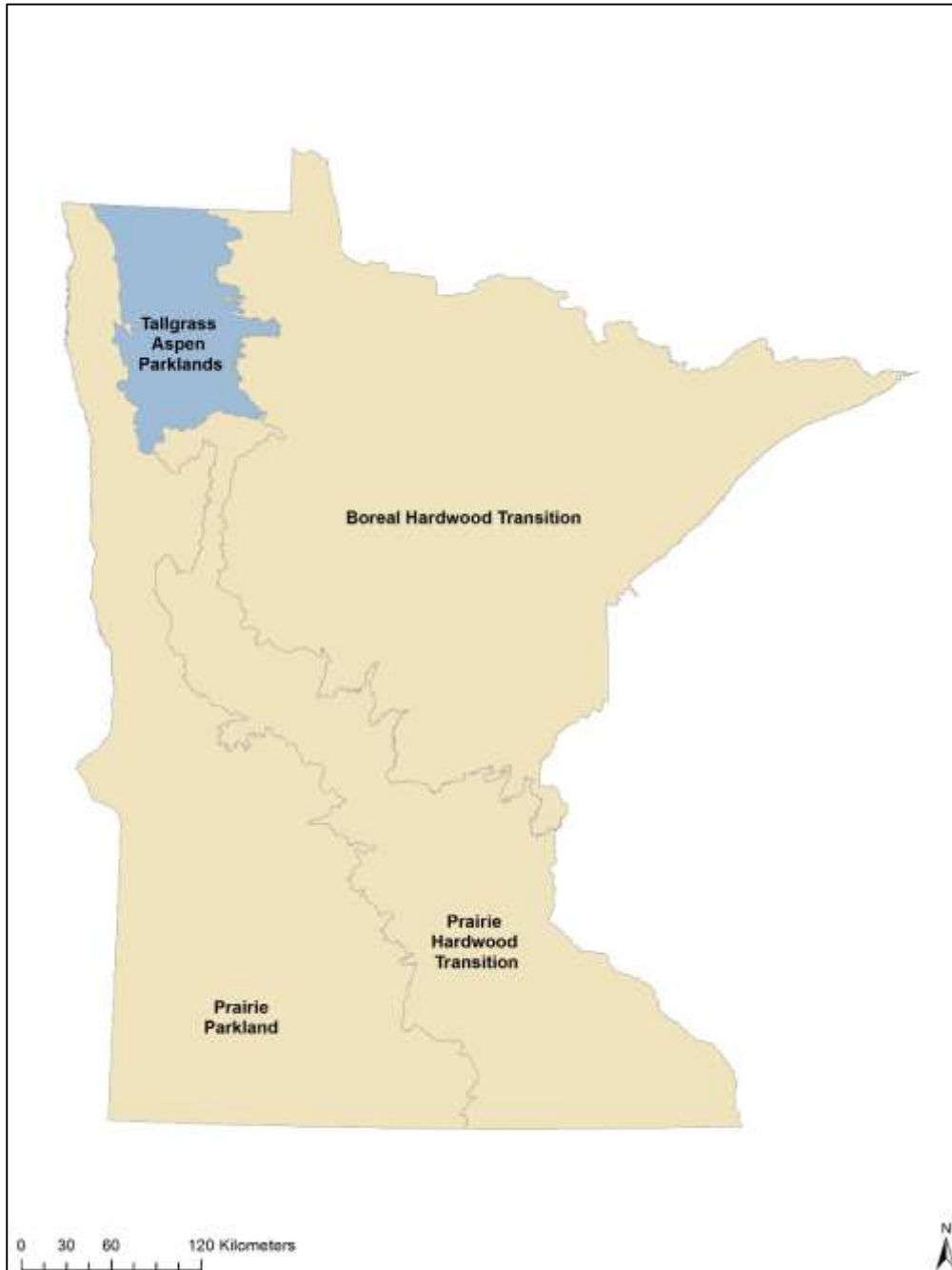
More detailed information on those species that were selected as Target Conservation Species is provided in conservation blueprints for each species. An Executive Summary also provides an overall description of the entire Implementation Blueprint. All these documents are available on the Audubon Minnesota website (mn.audubon.org).

The Tallgrass Aspen Parkland Region

Administrative Boundaries and Issues

The boundary of Audubon Minnesota's Tallgrass Aspen Parklands Bird Conservation Region is identical to the Ecological Classification System boundary for the Tallgrass Aspen Parkland Province in Minnesota (*Minnesota Department of Natural Resources 2005*) (Figure 1).

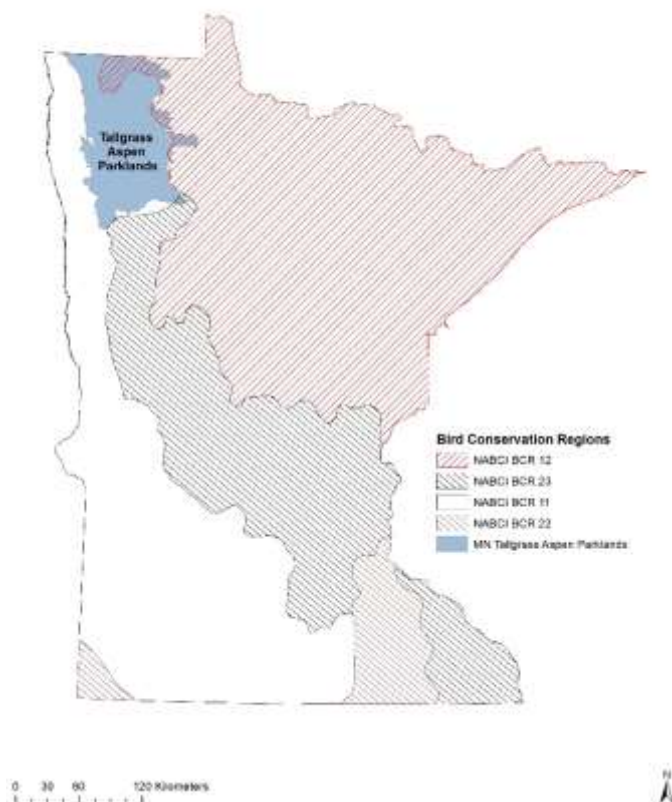
Figure 1. Audubon Minnesota's Tallgrass Aspen Parklands Region (from Minnesota's Ecological Classification System) and Important Bird Areas within the Region (shaded in green)



Nearly all the quantitative data for this document originate from an assortment of plans developed by partners working under the umbrella of the North American Bird Conservation Initiative (NABCI) (see Selected Resources). Specifically this includes the U.S. Shorebird Conservation Plan, the North American Waterfowl Management Plan, the North American Waterbird Conservation Plan and Partners in Flight, also known as the North American Landbird Conservation Plan. Minnesota also includes portions of two Joint Ventures, the Prairie Potholes and the Upper Mississippi River/Great Lakes. Each Joint Venture also has prepared conservation plans for waterfowl, waterbirds, landbirds and shorebirds and these documents were integral to Audubon’s *Conservation Blueprint*.

For planning purposes, NABCI delineated bird conservation regions using the Commission for Environmental Cooperation’s (1997) hierarchical framework of nested ecological regions. Although the boundaries are very similar to the boundaries that have been delineated for Minnesota’s native vegetation, they are not identical. Indeed, the North American Bird Conservation Initiative did not recognize the Aspen Parklands as a separate region. Instead, the vast majority of the parklands were included within NABCI’s Prairie Potholes Bird Conservation Region and, a very small portion of the parklands is included in the NABCI’s Boreal Hardwood Transition Region (Figure 2).

Figure 2. NABCI boundaries for the Prairie Pothole BCR and the Boreal Hardwood Transition BCR compared to the boundaries of the Tallgrass Aspen Parklands Region



An analysis of the birds that occur in Audubon Minnesota’s Prairie Parkland Region and Tallgrass Aspen Parklands Region, conducted for Audubon’s *Conservation Blueprint*, clarified that the avifauna of the two regions were distinct enough to warrant delineation of the Aspen Parklands as a separate bird region. Furthermore, because Minnesota’s Ecological Classification System boundaries have become a standard reference for land managers throughout the state, Minnesota’s Bird Conservation Blueprint adopts those boundaries. Unfortunately, however, much of the quantitative bird population data for Minnesota has not been broken out for the aspen parklands. As a result, it is assumed that the status of birds in NABCI’s Prairie Potholes BCR can be reasonably extended to Minnesota’s Tallgrass Aspen Parklands region.

Vegetation/Landscape Features

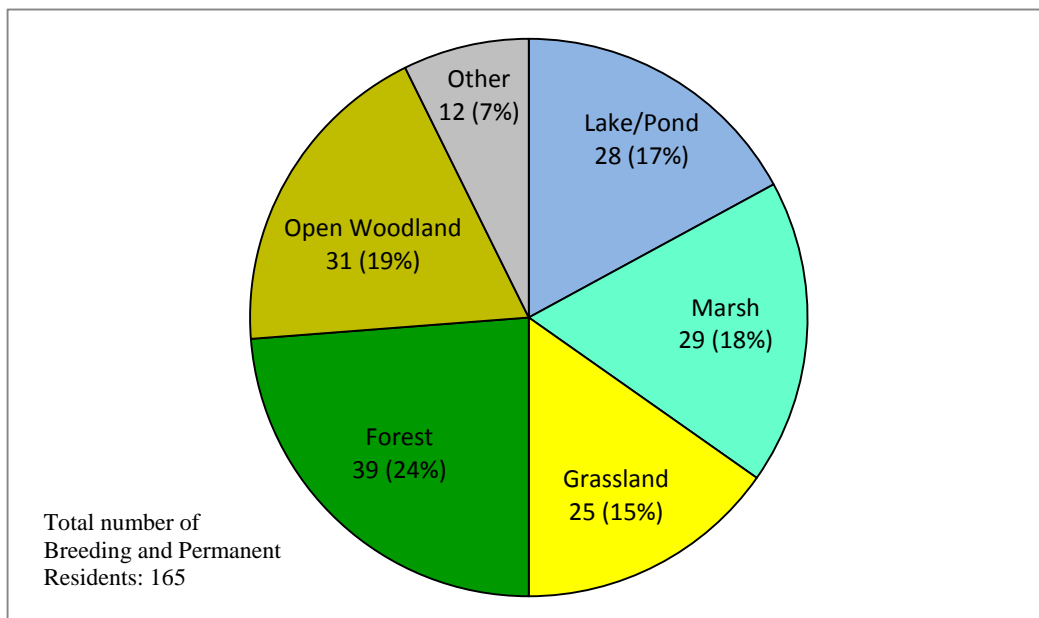
The Tallgrass Aspen Parklands Region is a transition between the prairie to the south and west and the forest to the east. Its flat terrain, originally the bed of Glacial Lake Agassiz, and its cold, dry climate, promotes fires and stresses the growth of trees and shrubs. The result is a landscape dominated by prairie and open woodlands. Today, approximately 64% of the landscape has been converted to row crops. Detailed descriptions of the region can be found in “A Field Guide to the Native Plant Communities of Minnesota: The Prairie Parkland and Tallgrass Aspen Parklands Regions” (*Minnesota Department of Natural Resources 2005*), in “Tomorrow’s Habitat for the Wild and Rare: An Action Plan for Minnesota Wildlife” (*Minnesota Department of Natural Resources 2006a*), and in “Minnesota’s Prairie Landscape Conservation Plan” (*Minnesota Prairie Plan Working Group 2010*).

Bird Community

The Tallgrass Aspen Parklands Region of Minnesota supports 143 regular breeding species, 22 permanent residents, and over 114 species that do not breed in the region but depend on critical habitats for migration or winter habitat.

The transitional nature of the Region is depicted by the broad representation of habitats that the 165 nesting species occupy (regular nesters and permanent residents). The species are relatively evenly distributed across wetland, grassland, woodland and forest habitats (Figure 3).

Figure 3. Number and Percentage of Breeding and Permanent Resident Birds in Major Habitats of the Aspen Tallgrass Parklands Region



Data from a variety of sources, including the federal Breeding Bird Survey (*Sauer et al. 2014*), the North American Bird Conservation Initiative (see Selected Resources) and the Minnesota Waterfowl Survey (*Dexter 2012*), were used to assess the population trend of all breeding species specifically within the Tallgrass Aspen Parklands Region (i.e. not their statewide trend). Status trend assessments are summarized in Figure 4. Population trends for birds in each major habitat are further depicted in Figure 5.

Figure 4. Population Trends of Breeding and Permanent Resident Birds in the Tallgrass Aspen Parklands Region

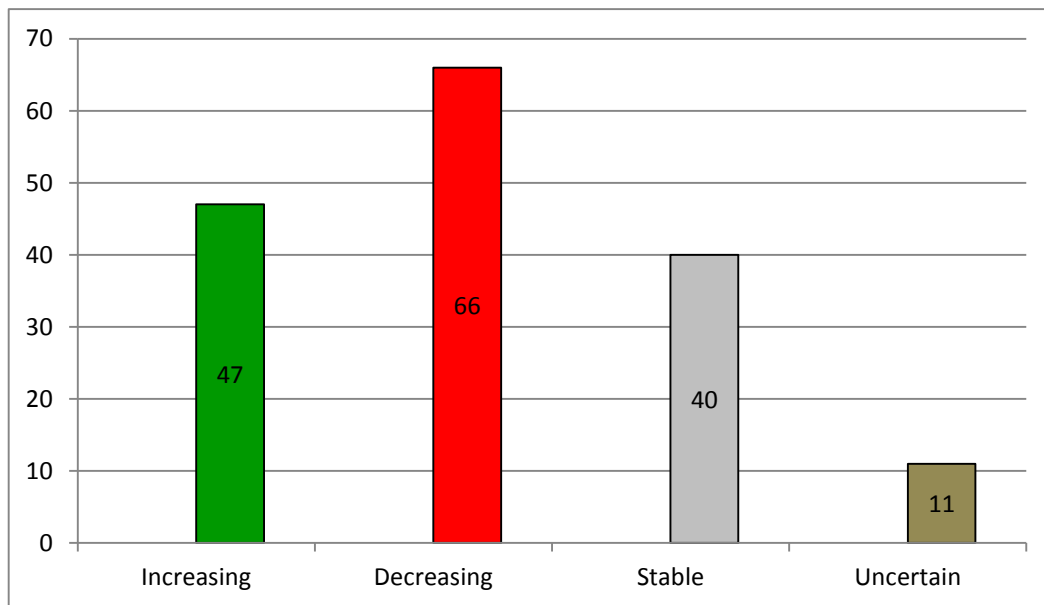
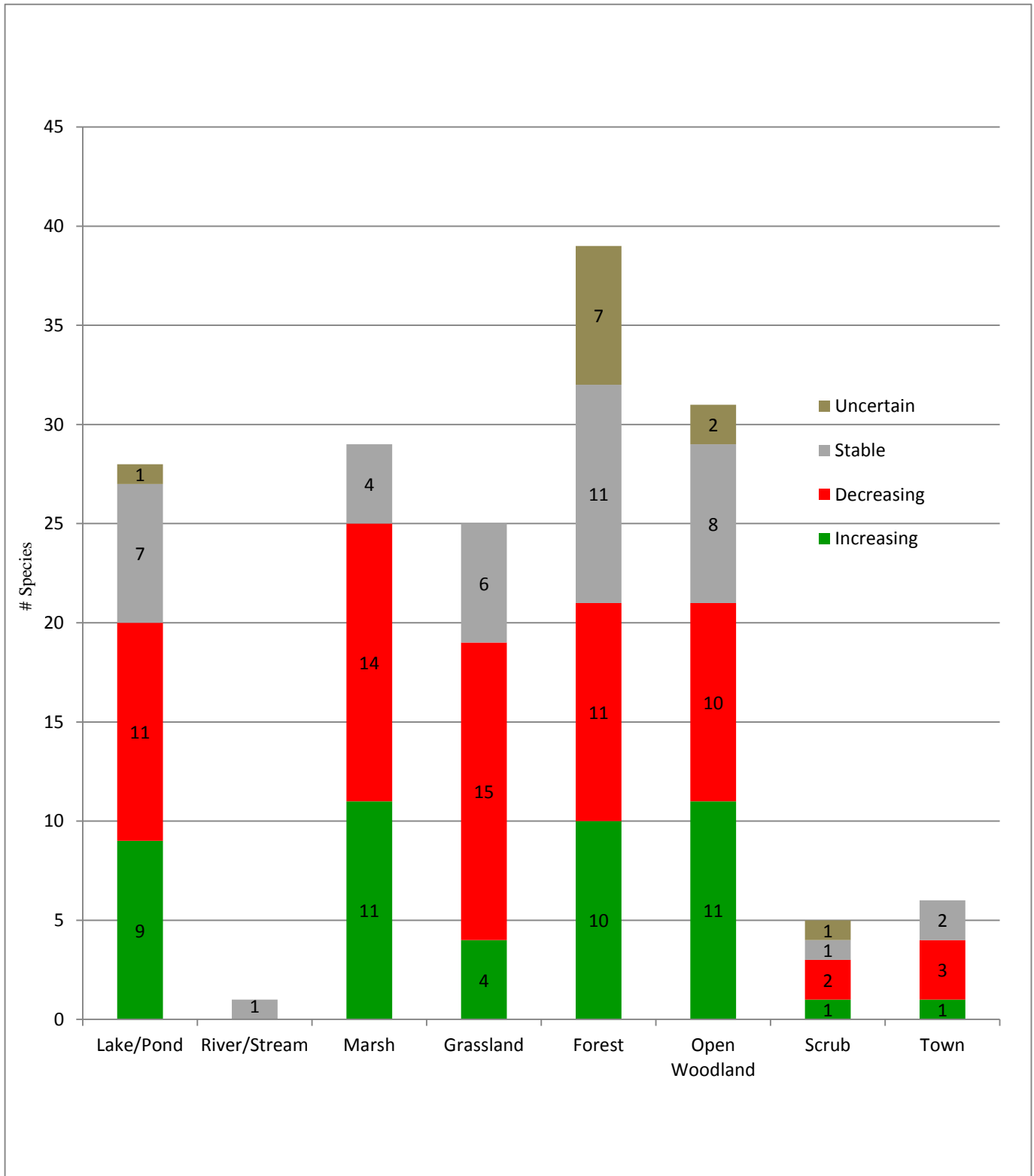


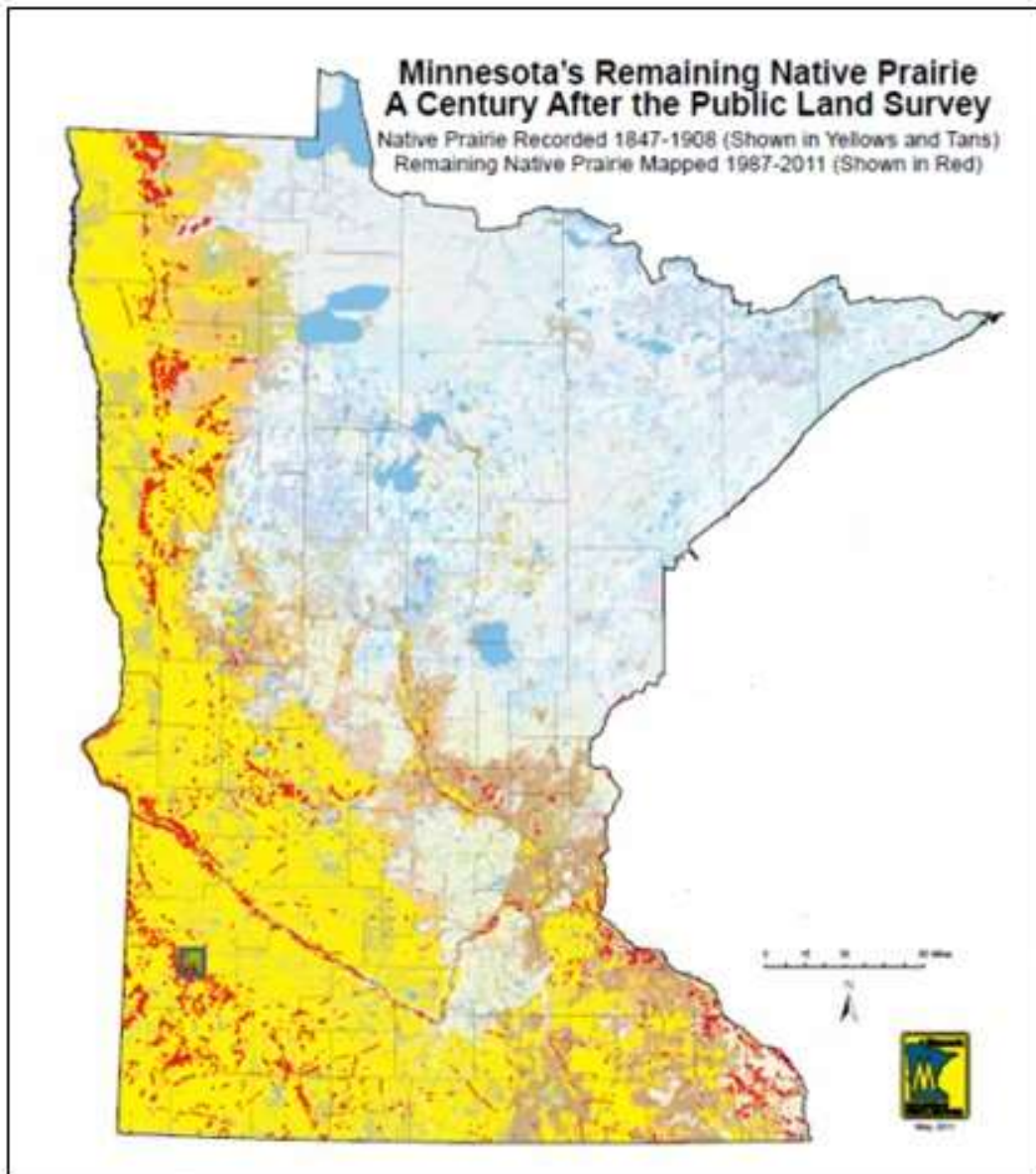
Figure 5. Population Trends of Breeding Birds in the Tallgrass Aspen Parklands Region by Major Habitat



Management Issues/Opportunities

Overall, the landscape of the Tallgrass Aspen Parklands was more diverse than that found further south in the Prairie Parkland. In addition to the grasslands and wetlands that historically dominated the Prairie Parkland Region, forests, open woodlands and brush prairies created an even broader range of habitats for birds in the Aspen Parklands. The changes that converted the Prairie Parkland Region to an agriculturally dominated landscape, however, have not left the Tallgrass Aspen Parklands Region unscathed. Native prairie that originally covered nearly 35% of the region's landscape only remains as small, scattered remnants (Figure 6) and the region's unique brush prairie has declined from 24% to just a little over 1%; wetlands have also declined by nearly two-thirds (*Minnesota Department of Natural Resources 2006a*). All this is reflected in Figure 5 which illustrates that the largest number of declining birds occurs in the region's grasslands and wetlands.

Figure 6. Minnesota's Remaining Native Prairie (Minnesota Biological Survey; areas in red are remaining native prairie)



Species that formerly occurred in the parklands that are now absent or extremely rare include the Lesser Scaup, Horned Grebe, Baird's Sparrow and Chestnut-collared Longspur. Other species that have declined significantly include the Northern Pintail, Yellow Rail and Grasshopper Sparrow.

Conservation programs that focused on protecting wetlands and adjacent grasslands, primarily for the benefit of nesting waterfowl, are active throughout the western counties, including in the far northwestern aspen parklands. The "Save the Wetlands" program initiated in 1951 grew to the present day Wildlife Management Area Program which now protects over 1.3 million acres of habitat in 1,440 Wildlife Management Areas (WMA) across the state. Many of these sites protect what remains of Minnesota's native prairie vegetation, or protect grasslands that have been restored on former agricultural lands. The WMA Program has been complemented by myriad other state and federal grassland and wetland conservation programs, including the Reinvest in Minnesota (RIM) Program, the Conservation Reserve Program (CRP), the Conservation Reserve Enhancement Program (CREP), the Wetland Reserve Program (WRP), the Grassland Reserve Program (GRP) and many others. Although all these efforts have made tremendous strides in protecting and restoring critical grasslands and wetlands throughout the Tallgrass Aspen Parkland Region, there remain significant challenges.

In earlier years some of the wetter brush habitats and shallower wetlands in the aspen parklands were spared from complete conversion to row crops because they proved too wet to yield productive crops on an annual basis and commodity prices were too low to justify the expense of tiling large acreages. Today, however, the high commodity prices for corn and soybeans have led farmers to put as much land into production as possible. Drainage tile is being laid in areas that were formerly considered too marginal to crop and former windrows and shelterbelts are being cut down to create even a few additional farm acres. Financial incentives provided by conservation programs such as CRP can no longer compete with the much higher commodity prices. The loss of 400,000 CRP acres in Minnesota from 2007 to 2012 has eliminated habitat for many grassland species (*McDonald 2013*). This loss is considered the biggest threat to grassland bird conservation throughout the Midwest and Great Plains. Fewer dollars also are available for conservation programs in lieu of federal budget cutbacks. Grasshopper Sparrows and Western Meadowlarks are not likely to benefit from these economic realities.

The dire status of Minnesota's native prairie was a call to action for conservation organizations, including Audubon Minnesota, when they prepared Minnesota's Prairie Landscape Conservation Plan in 2010 (*Minnesota Prairie Plan Working Group 2010*). The plan outlines a strategic approach to protecting the state's remaining prairie acres and establishing a sustainable grassland landscape amidst productive farmland in both the Prairie Parkland and the Tallgrass Aspen Parklands regions. The foundation of the plan is the delineation of three primary conservation approaches: 1) the identification of core prairie areas (see Figure 7); 2) the establishment of corridors that connect the cores; and 3) a goal to protect and restore wetlands and grasslands in the broader landscape surrounding the cores and corridors (i.e. the agricultural matrix). Specific protection and restoration goals have been established for each area. Throughout the prairie landscape, the plan's goal is to protect and restore a total of 204,000 acres of native prairie and 2.0 million acres of grassland and savanna along with a total of 1.3 million acres of wetlands and shallow lakes.

The Minnesota Prairie Landscape Conservation Plan provides a needed framework to guide the conservation actions of resource agencies and conservation organizations in their efforts to maximize the outcomes of their respective programs to ensure that Minnesota's grassland wildlife have a sustainable future. The new infusion of dollars through the Minnesota Clean Water, Land and Legacy Amendment provides the financial means to help accomplish this goal.

Figure 7. Prairie Core Areas, Corridors and Agricultural Matrix from Minnesota’s Prairie Landscape Conservation Plan



The opportunities that exist in the Tallgrass Aspen Parklands for implementing the Minnesota Prairie Landscape Conservation Plan are evident in Figure 8; green areas are grasslands while yellow, orange and red depict the density of native prairies. Produced by The Nature Conservancy, the map targets the importance of this region in two critical ways:

1. There is a concentration of remaining native prairie in the region.

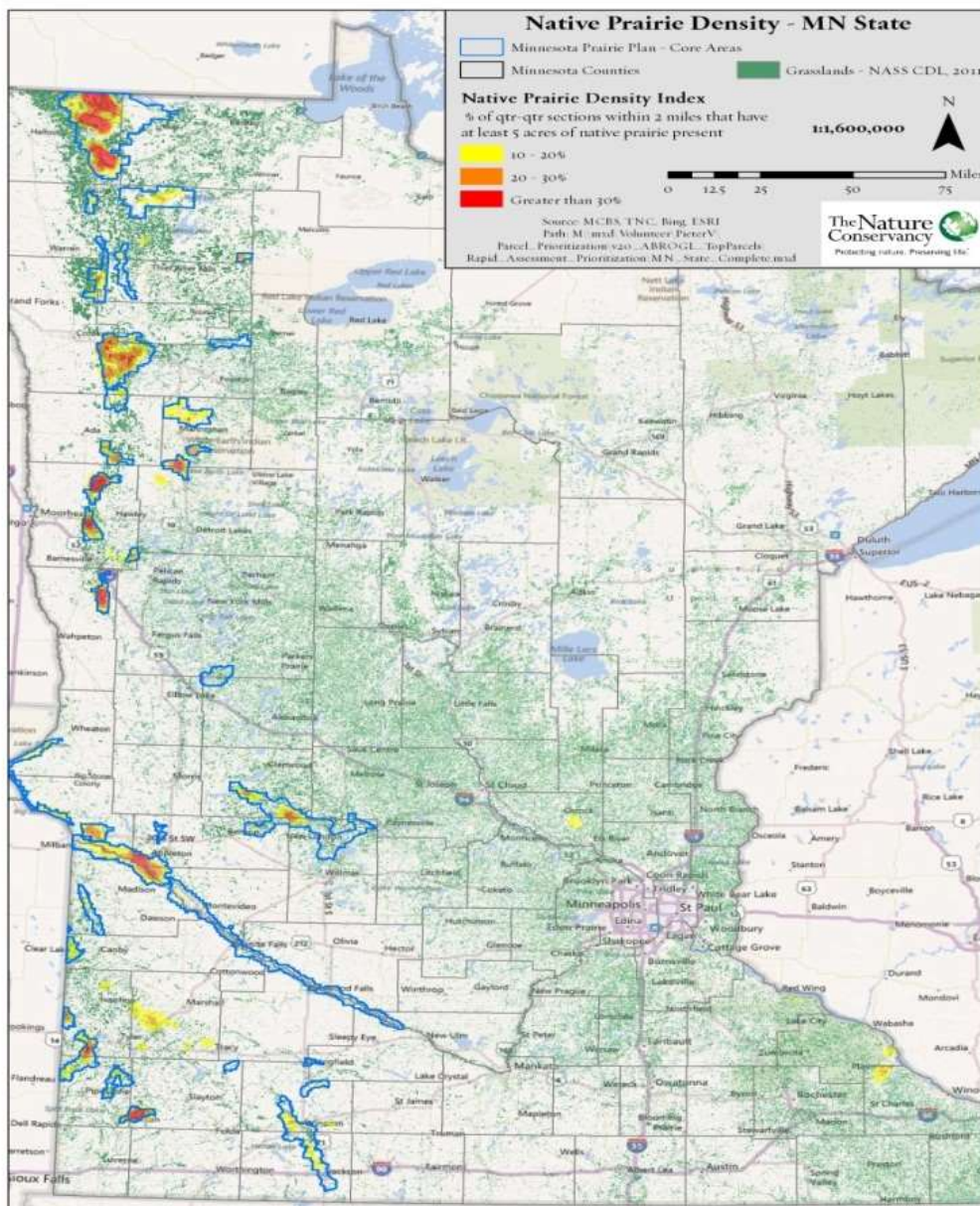
Figure 8 maps the percentage of quarter-quarter sections located within two miles that have at least 5 acres of native prairie present. Several large areas are located within Core Prairie Areas in northwestern Minnesota (outlined in blue).

2. There is a large concentration of grass cover in the region.

Figure 8 also illustrates the distribution and density of grass cover in Minnesota in 2011. The amount of grass cover in the prairie-forest transition region is surprising but the percent cover in the Tallgrass Aspen Parklands is higher than anywhere else in the state.

The opportunities for large-scale, landscape conservation in the Tallgrass Aspen Parklands that will benefit the array of birds dependent on this region, from spring migration to the winter season, is clear.

Figure 8. Native Prairie Density in Minnesota, Minnesota Nature Conservancy 2011



What birds are we going to focus on?

Priority Breeding Species

Identification of Priority Breeding Species

The purpose of the accompanying table is to provide resource professionals with a rank order of breeding species priorities in the Tallgrass Aspen Parklands Region. It does not include **all** breeding bird species that are declining but rather focuses on those that have experienced significant declines in the region, are dependent on vulnerable habitat, and have been recognized as priorities by various resource agencies (see Appendix 1 for details on selection of priority species). Because the number of species in each category is still relatively large, and the purpose of this document is to be strategic about identifying a small number of species that should be the focus of conservation efforts in the short term, this plan goes further in identifying a select number of Target Conservation Species (shown in red). The process for selecting these species is summarized in Appendix 2.

Table 1. Priority Breeding Species in the Tallgrass Aspen Parklands Region

Breeding Species in the Tallgrass Aspen Parklands Region			
Very Rare	Highest Level: I	High Level: II	Moderate Level: III
Green-winged Teal ¹	Northern Pintail ^{1,3}	American Wigeon	Trumpeter Swan ^{1,2}
Lesser Scaup ¹	American Bittern ¹	Redhead	Gadwall ³
Horned Grebe ^{1,2}	Least Bittern ¹	Ruddy Duck	Mallard ³
American Avocet ^{1,3}	Northern Harrier ¹	Sharp-tailed Grouse ^{1,3}	Northern Shoveler ³
Chestnut-collared Longspur ^{1,2,3}	Yellow Rail ^{1,2}	Greater Prairie-Chicken ^{1,2,3}	Pied-billed Grebe
Baird's Sparrow ^{1,2,3}	Upland Sandpiper ^{1,3}	Black-crowned Night-Heron ¹	Western Grebe
	Wilson's Phalarope ^{1,2,3}	American Woodcock ^{1,3}	Virginia Rail ¹
	Franklin's Gull ^{1,2}	Black-billed Cuckoo ¹	Sora
	Black Tern ¹	Red-headed Woodpecker ^{1,3}	Sandhill Crane
	Short-eared Owl ^{1,2,3}	Northern Flicker	Marbled Godwit ^{1,2,3}
	Grasshopper Sparrow ¹	Brown Thrasher ¹	Yellow-billed Cuckoo
		Clay-colored Sparrow	Purple Martin
		Nelson's Sparrow ^{1,2,3}	Chestnut-sided Warbler
		Western Meadowlark	Connecticut Warbler ¹
			Vesper Sparrow
			Le Conte's Sparrow ¹
			Dickcissel ¹
			Bobolink ¹
			Yellow-headed Blackbird
			Purple Finch

Note: Species in bold **Red** are Target Conservation Species in the Tallgrass Aspen Parklands Region (see Appendix 2)

¹ Minnesota Species in Greatest Conservation Need (*Minnesota Department of Natural Resources 2006a*).

² Minnesota State Listed Species (*Minnesota Administrative Rules, Chapter. 6134.0200, Subpart 2(B)*).

³ Prairie Pothole Joint Venture Region Focal Species (<http://ppjv.org/resources/implementation-plan/2005-implementation-plan>)

Target Conservation Species

Identification of Target Conservation Species in the Tallgrass Aspen Parkland Region

Species that Audubon Minnesota will highlight as Target Conservation Species in the Tallgrass Aspen Parklands Region depend on three key habitats: brush prairie, wetlands and prairies/grasslands.

- ❖ **Sharp-tailed Grouse***: The Sharp-tailed Grouse is a Target Conservation Species for brush prairie; protecting its habitat will provide suitable habitat for some of the following species:

Northern Harrier	Yellow-billed Cuckoo	Clay-colored Sparrow
Yellow Rail	Short-eared Owl	Nelson's Sparrow
Sandhill Crane	Brown Thrasher	

- ❖ **Upland Sandpiper***: The Upland Sandpiper is a Target Conservation Species for native prairies and grasslands; protecting its habitat will provide suitable habitat for some of the following grassland species:

Greater Prairie-Chicken	Chestnut-collared Longspur	LeConte's Sparrow	Western Meadowlark
Northern Harrier	Clay-colored Sparrow	Baird's Sparrow	
Sandhill Crane	Vesper Sparrow	Dickcissel	
Marbled Godwit	Grasshopper Sparrow	Bobolink	
Short-eared Owl	Henslow's Sparrow	Eastern Meadowlark	

- ❖ **Franklin's Gull***: The Franklin's Gull is a Target Conservation Species for non-forested wetlands; protecting its habitat will provide suitable habitat for some of the following wetland species:

Trumpeter Swan	Redhead	Least Bittern	American Avocet
Gadwall	Lesser Scaup	Black-crowned Night-Heron	Wilson's Phalarope
American Wigeon	Ruddy Duck	Northern Harrier	Black Tern
Mallard	Pied-billed Grebe	Yellow Rail	Nelson's Sparrow
Northern Shoveler	Horned Grebe	Virginia Rail	Yellow-headed Blackbird
Northern Pintail	Western Grebe	Sora	
Green-winged Teal	American Bittern	Sandhill Crane	

* The Sharp-tailed Grouse and Upland Sandpiper also are focal species in the Prairie Pothole Joint Venture Region

Minnesota Goals and Objectives for Target Conservation Species

1. Sharp-tailed Grouse

Minnesota Conservation Goal: Maintain and enhance Minnesota's population of Sharp-tailed Grouse so that we ensure a sustainable population.

Minnesota Conservation Objective: Designate 44 Land Type Associations (LTAs) across the forest and transition zones of Minnesota as priority open landscape areas during the Minnesota Department of Natural Resources Subsection Forest Resources Management Plan development process.

Background: Brushlands, which provide critical wildlife habitat for species such as the Sharp-tailed Grouse, were once a conspicuous feature of Minnesota. At the time of European settlement, up to 11.3 million acres of the state's forest and transition areas were vegetated with brushy prairie, oak openings and barrens, jack pine barrens and openings, conifer bogs and swamps, and open muskeg. During settlement, agriculture and logging created additional brushland habitat. Since then, however, brushlands have declined in quantity and quality and wildlife populations that depend on them have declined as well.

The conservation objective is taken from the Minnesota Department of Natural Resources (DNR) Strategic Conservation Agenda: 2009-2013 (*Minnesota Department of Natural Resources 2010a*). Brushland habitat conservation was one of the Conservation Agenda's key measures for their goal to conserve and enhance Minnesota's natural lands. The specific indicator is the number of landscapes designated as priority open landscape areas; the target was the designation of 44 Land Type Associations as Priority Open Landscapes as part of the Department's Subsection Forest Resources Management Plan development process. As of 2013 this conservation objective had been reached with the designation of 45 LTAs as Priority Open Landscapes.

In the Tallgrass Aspen Parklands Region, 18 areas have been identified as Priority Open Landscapes as part of the Aspen Parkland Subsection Forest Resource Management Plan. However, most of the land designated for open lands management is privately owned. When landowners within one of these priority landscapes requests assistance in managing their land, they will be advised of the opportunities for brushland management.

The continent-wide sharp-tailed grouse population is estimated at 1,200,000. In Minnesota, in 2012, a total of 1,404 birds were observed at 156 dancing grounds with ≥ 2 male grouse (*Dexter 2012*).

2. Franklin's Gull

Minnesota Conservation Goal: Maintain a statewide population of at least 50,000 breeding pairs of Franklin's Gulls.

Minnesota Conservation Objective: Protect and maintain a minimum of three nesting colonies in Minnesota.

Background: A detailed Minnesota Conservation Plan for the Franklin's Gull was prepared as part of the Audubon Minnesota *Implementation Blueprint for Minnesota Bird Conservation* and is available on the Audubon Minnesota website (<http://mnaudubon.org>).

3. Upland Sandpiper

Minnesota Conservation Goal: Halt the decline of Minnesota's Upland Sandpiper population and increase the population by approximately 35%.

Minnesota Conservation Objective: Initiate conservation actions designed to stop the decline of Minnesota's Upland Sandpiper population and work to increase it approximately 2.3% per year as monitored by the Federal Breeding Bird Survey in Minnesota in the next 15 years.

Background: A detailed Minnesota Conservation Plan for the Upland Sandpiper was prepared as part of the Audubon Minnesota *Implementation Blueprint for Minnesota Bird Conservation* and is available on the Audubon Minnesota website (<http://mnaudubon.org>).

Minnesota Stewardship Species

Minnesota Stewardship Species Present in the Tallgrass Aspen Parklands Region

Bird conservation plans typically focus on identifying species that are declining and facing significant threats and then delineating conservation actions to halt those declines. Audubon Minnesota’s *Implementation Blueprint for Minnesota Bird Conservation* follows that framework. However, as part of the process for identifying priority species it became clear that there are several species that reach exceptionally high abundance in Minnesota due to the quantity of quality habitat that meets their needs during the breeding season. The Golden-winged Warbler and Sedge Wren are outstanding examples; Minnesota supports 42% and 33% of their global populations respectively. Their future survival may well depend on how well Minnesota protects and manages their key habitats. Although no other species reach the level of significance globally that these two species do, there are several that reach very high levels of abundance in the state. For example, although the percentage of their population in Minnesota seems low the Veery, Chestnut-sided Warbler and Nashville Warbler, reach their highest abundance south of Canada in the forests of Minnesota.

A total of 12 species that breed in Minnesota have been designated as Minnesota’s Stewardship Species. These species had to meet two criteria: 1) >5% of their global population occurs in Minnesota; and 2) >5% of their North American breeding range occurs in Minnesota. Because of the number of birds that our state supports we have a unique responsibility to ensure that we maintain suitable habitat to sustain their robust populations. The percent of each Stewardship Species population that occurs in the Tallgrass Aspen Parklands Region is shown in Table 2.

Table 2. Minnesota Stewardship Species and the Percentage of their Population that occurs in the Tallgrass Aspen Parklands Region

* Stewardship Species	Percentage of Global Population in the Aspen Parklands Region of Minnesota*	Percentage of Global Population in Minnesota
Trumpeter Swan	State population is about 10-15% of global population; % in Aspen Parklands is likely <1%	12%
American White Pelican	0.0%	18%
American Woodcock	Not detected by BBS	10%
Black-billed Cuckoo	0.6%	10%
Sedge Wren	1.6%	33%
Veery	0.03%	6%
Golden-winged Warbler	0.02%	42%
Nashville Warbler	0.0%	5%
Chestnut-sided Warbler	0.02%	6%
Bobolink	1.2%	13%
Rose-breasted Grosbeak	0.18%	6%
Baltimore Oriole	0.3%	5%

Note: A dot grid was used to delineate the percentage of NABCI’s BCR11 region that lies in Minnesota’s Tallgrass Aspen Parklands Region. The percent of each species population that occurs in NABCI’s BCR11 was obtained from http://rmbo.org/pif_db/lape/; the percentage of the Tallgrass Aspen Parklands Region that occurs in BCR11 was then used to adjust the population estimates for the region.

Recommendations for Stewardship Species

Because the Tallgrass Aspen Parklands Region is relatively small none of Minnesota’s Stewardship Species reach any level of significance in the region. No particular actions are recommended other than to continue to monitor the status of each of these species using the Federal Breeding Bird Survey.

Migrant Species

Importance of the Region for Migrant Species

In addition to its importance for waterfowl migration, the Tallgrass Aspen Parklands Region provides very important habitat to 14 migrating waterfowl species and 24 migrating shorebird species (Table 3). Several of the migrant shorebirds travel hundreds to thousands of additional miles north after stopping to rest in Minnesota’s wetlands and grasslands. Very little data is available on the significance of particular sites in the region to the array of shorebird species that pass through. A surprisingly large number of forest songbirds also migrate through Minnesota’s grassland region including 15 warbler species (Table 3). These numbers highlight the importance of small woodlots, shrublands, forested ravines and forested floodplains throughout the region.

Table 3. Selection of Migrants in the Tallgrass Aspen Parklands Region

Migrant Waterfowl	Migrant Shorebirds	Migrant Warblers
Greater White-fronted Goose	Black-bellied Plover	Golden-winged Warbler
Snow Goose	American Golden Plover	Tennessee Warbler
Ross’s Goose	Semipalmated Plover	Orange-crowned Warbler
Cackling Goose	Piping Plover	Northern Parula
Tundra Swan	Solitary Sandpiper	Magnolia Warbler
American Black Duck	Greater Yellowlegs	Cape May Warbler
Cinnamon Teal	Willet	Black-throated Blue Warbler
Greater Scaup	Lesser Yellowlegs	Black-throated Green Warbler
Surf Scoter (Rare)	Whimbrel	Blackburnian Warbler
White-winged Scoter (Rare)	Hudsonian Godwit	Pine Warbler
Black Scoter (Rare)	Ruddy Turnstone	Bay-breasted Warbler
Long-tailed Duck (Rare)	Red Knot	Blackpoll Warbler
Common Merganser	Sanderling	Northern Waterthrush
Red-breasted Merganser	Semipalmated Sandpiper	Wilson’s Warbler
	Least Sandpiper	Canada Warbler
	White-rumped Sandpiper	
	Baird’s Sandpiper	
	Pectoral Sandpiper	
	Dunlin	
	Stilt Sandpiper	
	Buff-breasted Sandpiper	
	Short-billed Dowitcher	
	Long-billed Dowitcher	
	Red-necked Phalarope	

Recommendations for Migrants in the Tallgrass Aspen Parklands Region

1. Place a primary focus on improving our understanding of the use of wetlands and grasslands in the Tallgrass Aspen Parklands Region by shorebirds, which have received very little conservation attention in Minnesota directed at their habitat protection, restoration and management, or at the need to monitor their populations.
2. Continue Audubon Minnesota’s cooperative work with watershed districts in the Tallgrass Aspen Parkland Region to improve our understanding of the use of newly constructed flood water damage reduction impoundments by migrating shorebirds.

Monitoring

Monitoring species population trends is the key to assessing their long-term status and determining whether conservation actions are having an impact on the species distribution and abundance. Audubon's *Conservation Blueprint* makes the following recommendations for monitoring the highest priority and Target Conservation Species in the Tallgrass Aspen Parklands. Table 4 summarizes current monitoring that occurs for these species and assesses additional needs.

Recommendations for Species Monitoring

1. Investigate the establishment of a statewide marsh bird monitoring program
 - Assess whether the newly developed Marsh Bird Monitoring Program initiated by the USFWS and promoted by the Midwest Avian Partnership has applicability in Minnesota.
 - Ensure that the program is designed to provide significant information on hard-to-detect marsh birds, such as Yellow Rails and Least Bitterns.
 - Investigate opportunities to collaborate with the Minnesota Department of Natural Resources' new statewide, statistically designed, wetland monitoring program as an alternative approach to the USFWS's Marsh Bird Monitoring Program.
 - Investigate opportunities to collaborate with the newly proposed Sentinel Wetlands Program that will be administered by the MNDNR.
2. Franklin's Gull
 - Annually monitor the two known colonies in the Tallgrass Aspen Parklands Region at Agassiz National Wildlife Refuge and Thief Lake State Wildlife Management Area.
 - Work with the USFWS's new Integrated Monitoring Program to ensure that high priority species are monitored on the National Wildlife Refuges (i.e. Franklin's Gulls and other species on Minnesota's high priority list that nest on the refuge).
 - Regularly monitor other known colony sites that are used less consistently in other bird conservation regions, e.g. at Heron Lake and Lake Osakis
3. Sharp-tailed Grouse:
 - Monitor the status of the population with the Minnesota Department of Natural Resources Lek Survey
4. Sandhill Crane:
 - Keep abreast of the implementation actions for the newly prepared Sandhill Crane Management Plan developed by the Minnesota Department of Natural Resources in 2012.
 - Ensure that monitoring the northwest population of cranes is a critical component of the plan
5. Upland Sandpiper:
 - Assess the presence of Upland Sandpipers (and other highest priority species) on two key Important Bird Areas in the region: Agassiz National Wildlife Refuge and Goose Lake Swamp.

Table 4. Status of Current Monitoring Efforts on Top Priority Species and an Assessment of Additional Needs

Tallgrass Aspen Parklands Region	Habitat	Status of Current Monitoring Efforts for Priority Species in the Tallgrass Aspen Parklands Region				New Monitoring Efforts Needed		
Highest Priority Species and Target Conservation Species (in Red)		Minnesota DNR Waterfowl Surveys (in collaboration with the USFWS Mid-Continental Waterfowl Survey), Woodcock Singing Ground Survey or Loon Survey	USGS Breeding Bird Survey ¹				Warrants individual site monitoring	New statewide monitoring effort needed
			Moderate	Deficient	Important Deficiency	No Data		
			Regional Credibility	Precision of Data				
Waterfowl								
Northern Pintail	Wetlands	MNDNR Waterfowl Survey		MN BBS Data has an important deficiency	Continue to rely on DNR survey			
Waterbirds								
American Bittern	Wetland			MN BBS Data has a deficiency	Assess status on priority IBAs ²	Yes		
Least Bittern	Wetland			MN BBS Data has an important deficiency	Assess status on priority IBAs ²	Yes		
Yellow Rail	Wetland			Not detected by BBS	Assess status on priority IBAs ²	Yes		
Franklin's Gull	Shallow Lakes			MN BBS Data has an important deficiency	See Species Conservation Plan	Yes		
Black Tern	Wetland			MN BBS Data of moderate precision	See Species Conservation Plan	Yes		
Shorebirds								
Upland Sandpiper	Grasslands			MN BBS Data has a deficiency	See Species Conservation Plan			
Wilson's Phalarope	Wetlands			MN BBS Data has an important deficiency	Assess status on priority IBAs ²	Yes		
Landbirds								
Northern Harrier	Grasslands			MN BBS Data has a deficiency	Assess status on priority IBAs ²			
Short-eared Owl	Grasslands			MN BBS data has an important deficiency	Assess status on priority IBAs ²			
Grasshopper Sparrow	Grasslands			MN BBS Data of moderate precision	See Species Conservation Plan			
Additional Target Species								
Sharp-tailed Grouse	Grasslands and Upland Brush	MN DNR Lek Survey		MN BBS Data have an important deficiency	Continue to rely on DNR survey			

¹ Categories listed depict the credibility of the Breeding Bird Survey data for each species. Precise definitions can be found at: <http://www.mbr-pwrc.usgs.gov/bbs/credhm09.html>. Briefly data with moderate precision reflects data with at least 14 samples in the long term, of moderate precision. A Yellow level of credibility means the data have a deficiency because of the species low abundance (<1.0 birds/route), a small sample size (< 14 routes), or the results cannot detect a 3% per year population change over time. Data with an important deficiency means the species has a low abundance (<0.1 birds/route), small sample size (< 5 routes), and/or the results cannot detect a 5% per year change in population.

²Initial focus should be on the region's priority IBAs (see "Where will we work?"); then, if resources are available, identify select IBAs that are most important for the individuals species.

Habitat Protection, Restoration and Management

The key to focused habitat protection is identifying which habitats are most critical to those species in need of conservation attention. Audubon’s *Conservation Blueprint* relies on the analysis conducted by *Tomorrow’s Habitat for the Wild and Rare: Minnesota’s Comprehensive Conservation Strategy (Minnesota Department of Natural Resources 2006a)*. Table 5 lists all habitats present in the Tallgrass Aspen Parkland Region. Habitats shaded in **RED** are identified as key habitats (see footnotes below) for Species in Greatest Conservation Need in a particular ecological subsection. Target Conservation Species for the region were selected to represent three of the key habitats: Shrub Woodland/Upland - Brush Prairie, Grassland/Native Prairie, and Wetland: Nonforested. (see Appendix 2). Table 6 lists the habitat associations for each of the region’s highest priority and Target Conservation species.

Table 5. Key Habitats in the Tallgrass Aspen Parkland Region

Tallgrass Aspen Parklands Region	Habitats¹	Key Habitats² in each Ecological Subsection within the Tallgrass Aspen Parklands Region (Percent of habitat present in the subsection in the 1990s)
Forest	Forest Lowland Deciduous	0.1
	Forest Lowland Coniferous	5.8
	Forest Upland Coniferous	0.0
	Forest Upland Deciduous Aspen-Oak	7.9
	Forest Upland Deciduous Hardwood	2.5
	Open	Shoreline-Dunes-Cliff/Talus
	Shrub Lowland	N/A
	Shrub/Woodland-Upland	Brush Prairie: 1.3
	Native Prairie	0.0
	Surrogate Grassland	7.5
	Cropland	65.6
	Developed	0.3
	Wetland Nonforested	Wet Prairie: 8.5
Aquatic	Lake Shallow	0.5
	River Headwater to Large	N/A
	River Very Large	N/A

¹Background on Habitat Classification:

- Many different classifications have been used in Minnesota to classify bird habitats. These classifications range from a simple classification of cover types to more complex classifications that incorporate age and structural features of the habitats. One of the principal challenges is that classifications that focus on the plant community rarely incorporate the stand and landscape level features that are important to birds when they select a site(s) for nesting. In addition, the habitats birds use may vary throughout the breeding season, from courtship to nesting to brood rearing.
- For the sake of simplicity, we have used the habitat classification that was developed for Minnesota’s Comprehensive Wildlife Conservation Strategy (CWCS): “Tomorrow’s Habitat for the Wild and Rare: An Action Plan for Minnesota Wildlife” (*Minnesota Department of Natural Resources 2006*). The advantages are that the CWCS is widely available, the habitat classification was developed in consultation with Minnesota County Biological Survey plant community ecologists, it has been cross-walked with Minnesota’s Native Plant Community Types, and it incorporates seral stages of plant community succession (e.g. the Shrub Upland Habitat includes plant communities that are successional stages of upland forest communities).

²Background on Key Habitat Analysis:

- Key habitats were identified by the Minnesota Comprehensive Wildlife Conservation Strategy. Five different analyses were developed to identify key habitats in each ecological subsection. A prime factor in all five analyses was the use of the habitat by the plan’s designated Species in Greatest Conservation Need (SGCN), many of which are also priority species in this plan. Data shown above only includes those key habitats that supported SGCN birds.

Table 6. Habitat Associations of Highest Priority and Conservation Target Species in the Tallgrass Aspen Parkland Region

Tallgrass Aspen Parklands Region	Habitats							
	Forest	Open Landscapes						Aquatic
Species	Lowland Coniferous	Shrub Lowland	Shrub Upland	Surrogate Grassland	Native Prairie	Cropland	Wetland Nonforested	Shallow Lake
Highest Priority								
Northern Pintail								
American Bittern								
Least Bittern								
Northern Harrier								
Yellow Rail	Sedge Meadow							
Upland Sandpiper								
Wilson’s Phalarope								
Franklin’s Gull								
Black Tern								
Short-eared Owl								
Grasshopper Sparrow								
Additional Focal Species								
Sharp-tailed Grouse								

Recommendations for Habitat Protection, Restoration and Management for Breeding Species in the Tallgrass Aspen Parkland Region

- Significant habitat protection, restoration and management efforts currently underway

Numerous habitat protection initiatives are underway in the Tallgrass Aspen Parklands that are part of broader statewide efforts to protect grasslands and wetlands at both the federal and state level. Long-standing habitat protection efforts (including fee title acquisition, permanent easements and temporary easements) by the USFWS and Minnesota DNR as well as other smaller programs (The Nature Conservancy, Scientific and Natural Areas, Native Prairie Bank, etc.) have resulted in a patchwork of protected wetlands and grasslands. The Conservation Reserve Program also has had a significant impact on the landscape by encouraging farmers to convert highly erodible cropland and/or other environmentally sensitive acreage to vegetative cover. However, as noted earlier, statewide nearly 400,000 of the 1.8 million CRP acres that were protected in Minnesota in 2007 have been converted because of high commodity prices. More recent efforts, such as the Minnesota Prairie Landscape Conservation Plan have taken a broad, landscape level approach in an effort to address the need for large, interconnected mosaics of wetland and grassland complexes.

- Recommendations for Habitat Protection

1. The *Conservation Blueprint* will focus on three Key Habitats within the Tallgrass Aspen Parklands Region: Shrub Woodland/Upland - Brush Prairie, Grassland/Native Prairie, and Wetland: Nonforested.

Background:

- Although the Tallgrass Aspen Parklands Region is a relatively small component of Minnesota's landscape, it is the southernmost section of a far more extensive landscape region that extends north into Canada. Much of the natural landscape has been converted to agriculture but the natural habitat that remains is dominated by large shallow lakes and wetlands and a mosaic of prairies, brushland and forest.
 - The primary management concern is to maintain, through protection and active management, the original parklands landscape in areas that haven't yet been converted to farming and to protect the quantity and quality of wetlands. The Department of Natural Resources' focus on designating and managing brushlands by delineating Priority Open Landscapes is a significant contribution to brushland protection for species like the Sharp-tailed Grouse.
 - Nine of the 12 Highest Priority Species and Target Conservation Species utilize native prairie habitat and 8 of the 12 utilize surrogate grasslands; 9 utilize non-forested wetlands; and 9 utilize shrub uplands and/or shrub lowlands (brush prairie) (Table 6).
 - The only Highest Priority Species in the Region that does not utilize these habitats is Wilson's Phalarope, which, as a shallow lake species, will use habitat similar to that of the Franklin's Gull.
2. Support the habitat protection goals of Minnesota's Prairie Landscape Conservation Plan (*Minnesota Prairie Working Group 2010*).
 - Protect 17,985 acres of native prairie, 18,570 acres of grasslands and 189 acres of wetlands within the core areas located in the Tallgrass Aspen Parklands Region identified by the Minnesota Prairie Landscape Plan (Table 7).
 - Support the Prairie Plan's protection goals for native prairie, grasslands and wetlands within the corridors and agricultural matrix of the Tallgrass Aspen Parklands.
 - Ensure that habitat protection efforts meet the habitat requirements of priority species.

Table 7. Habitat Protection Goals for the Core Areas in the Tallgrass Aspen Parklands Region delineated by the Minnesota Prairie Landscape Conservation Plan

Tallgrass Aspen Parkland Core Areas	Native Prairie Protection Goals (acres)	Grassland Protection Goals (acres)	Wetland Protection Goals (acres)
Aspen Parkland	12,786	0	0
Thief Lake	848	10,338	0
Espelie	548	0	0
Florion	582	771	16
New Solum Prairie	1,180	3,341	71
Pembina Prairie	2,041	4,120	101
TOTAL	17,985	18,570	189

3. Support implementation of Minnesota’s Long Range Duck Recovery Plan (*Minnesota Department of Natural Resources 2006b*)
 - Protect and restore 2 million additional acres of habitat (30% wetland, 70% grassland) in wetland/grassland habitat complexes. Assuming no net loss to the existing habitat base, Minnesota will need to protect and restore an average of approximately 40,000 additional acres of habitat per year.
4. Habitat protection efforts should meet the minimum habitat size requirements for the region’s highest priority species and Target Conservation species (Table 8).

Table 8. Minimum Habitat Requirements for the Highest Priority Species within the Tallgrass Aspen Parklands Region

<u>Minimum Habitat Area*</u>	Wetlands	Grasslands	Sedge Meadows	Shallow Lakes
>10 ha	American Bittern		Yellow Rail	
	Least Bittern			
>20ha	Black Tern			
>30ha		Grasshopper Sparrow		
>100 ha	Wilson’s Phalarope	Upland Sandpiper		
		Northern Harrier		
		Short-eared Owl		
>500 ha		Sharp-tailed Grouse		
Hundreds of ha	Franklin’s Gull			Franklins’ Gull

***Note:** Minimum habitat needed for the Northern Pintail is not available. All those species with a minimum area requirement of ≤ 100 ha would do best in habitats that are 100-250 ha in size. The Grassland Bird Conservation Area (GBCA) model recommends a core of at least 800 ha of grasslands and wetlands to meet the needs of most grassland/wetland species. For further details see the Partners in Flight Plan for Physiographic Region 40 (http://www.partnersinflight.org/bcps/plan/pl_40all.pdf). Data for most species comes from *Effects of Management Practices on Grassland and Wetland Species*, led by D. Johnson, PhD. USGS (Johnson et al. 2004).

- **Recommendations for Habitat Restoration**

1. Engage in partnerships that support the restoration goals of Minnesota's Prairie Landscape Conservation Plan.
 - Restore 10,389 acres of grassland and 3,888 acres of wetlands within the core areas located in the Tallgrass Aspen Parklands Region identified by the Minnesota Prairie Landscape Plan (Table 9).
 - Support the Prairie Plan's protection goals for native prairie, grasslands and wetlands within the corridors and agricultural matrix of the Tallgrass Aspen Parklands.
 - Ensure that habitat protection efforts meet the habitat requirements of priority species.

Table 9. Habitat Restoration Goals for the Core Areas delineated by the Minnesota Prairie Landscape Conservation Plan

Tallgrass Aspen Parkland Core Areas	Grassland Restoration Goals (acres)	Wetland Restoration Goals (acres)
Aspen Parkland	0	0
Thief Lake	9,258	0
Espelie	0	0
Florian	0	471
New Solum Prairie	1,130	0
Pembina Prairie	0	3,417
TOTAL	10,389	3,888

2. Engage in partnerships that support the habitat restoration goals of Minnesota's Long Range Duck Recovery Plan (Minnesota Department of Natural Resources)
 - Protect and restore 2 million additional acres of habitat (30% wetland, 70% grassland) in wetland/grassland habitat complexes. Assuming no net loss to the existing habitat base, Minnesota will need to protect and restore an average of approximately 40,000 additional acres of habitat per year.
 - Continue the ongoing management of 1800 shallow lakes across Minnesota which provide habitat for many high priority wetland birds (*Minnesota Department of Natural Resources 2010b*).
3. Support continuation of the Wetland Reserve Program, the Conservation Reserve Program, the Conservation Reserve Enhancement Program, the Grassland Reserve Program and the Reinvest in Minnesota Reserve Program, which provide thousands of acres of wetland and grassland habitat for high priority species in Minnesota. Support continued funding for all federal and state grassland and wetland restoration programs.

- Recommendations for Habitat Management

Table 10. Management Recommendations for Highest Priority and Conservation Target Species

Note: This table includes specific habitat parameters to include in managing habitat for the Highest Priority and Target Conservation Species. Water depth information comes from various accounts; most data comes from the series, *Effects of Management Practices on Grassland and Wetland Species*, led by D. Johnson, PhD. USGS (*Johnson et al. 2002, Johnson et al. 2004*); data on minimum size requirements comes from Table 8.

Species	Minimum Area	Vegetation height (cm)	Visual obstruction reading (Robel pole)	Grass cover (%)	Forb cover (%)	Shrub cover (%)	Bare ground cover (%)	Litter cover (%)	Litter depth (%)	Wetland Drawdowns	Grassland Disturbance (burning, mowing, grazing)	Water depth
Wetland Species											Note: all disturbances need to leave some areas untreated	
Northern Pintail	Unknown	-	-	-	-	-	-	-	-	Periodic	Periodic	-
American Bittern	>10 ha	30-203	44-49	-	-	-	-	-	-	-	Not more often than 2-5 yr	<61cm
Least Bittern	>10 ha	-	-	-	-	-	-	-	-	-	-	>30cm
Yellow Rail	>10 ha	-	-	-	-	-	-	-	-	-	Periodic burning	3-4cm
Wilson's Phalarope	> 100 ha	17-32	8-12	-	-	-	-	-	<3		Periodic burning	-
Franklin's Gull	Hundreds of ha	-	-	-	-	-	-	-	-	Drawdowns unsuitable	-	15-180cm
Black Tern	>20 ha	-	-	-	-	-	-	-	-	-	Remove woody vegetation along wetland margin	>30cm
Grassland Species												
Sharp-tailed Grouse	> 500 ha	Nests: ≥30	-	-	-	Lek: 0%	-	-	-	-	Every 5-10 years once brush exceeds 7-8 feet	-
Northern Harrier	> 100 ha	15-82	7-54	33-53	18-25	<2	3-5	12-30	2-6	-	Not more often than 2-5 yr	-
Upland Sandpiper	> 100 ha	<82	5-20	>33	<50	<13	3-12	11-30	≤9	-	Every 2-4 years	-
Short-eared Owl	> 100 ha	30-90	21-47	85	8	-	-	-	-	-	Every 2-5 years	-
Grasshopper Sparrow	>30 Ha	<134	6-40	33-95	4-33	<35	≤35	6-61	≤9		Every 2-4 years	-

Where are we going to work?

Breeding Grounds

Important Bird Areas to Focus on in Minnesota's Tallgrass Aspen Parklands Region

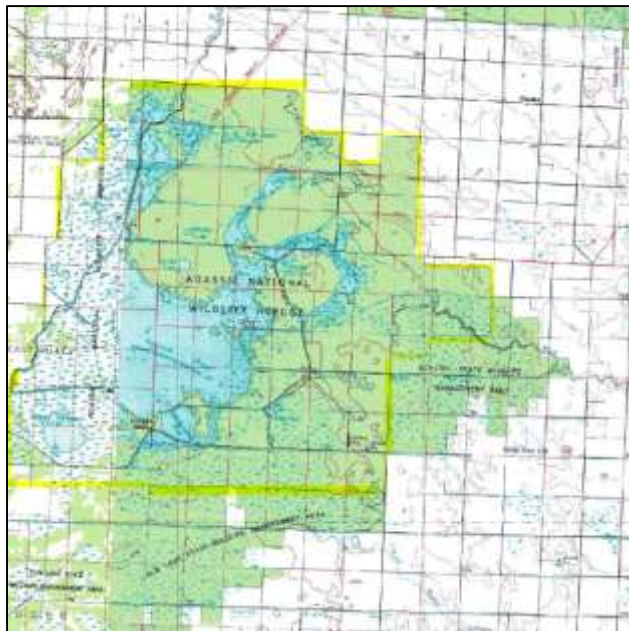
- Significant IBAs to focus efforts on for Priority Species

A broad analysis of the IBAs in Minnesota's Tallgrass Aspen Parklands Region was conducted to assess their relative importance using the following criteria:

1. Presence of priority species
2. Threats to the site
3. Need to act
4. Ability to acquire funding
5. IBA aligns with partner priorities
6. Bird Life ranking
7. Audubon Minnesota capabilities/capacity

Following this analysis, a more detailed analysis of the sites importance to the priority species was conducted. The result was the identification of two IBAs where more focused work is warranted at this time.

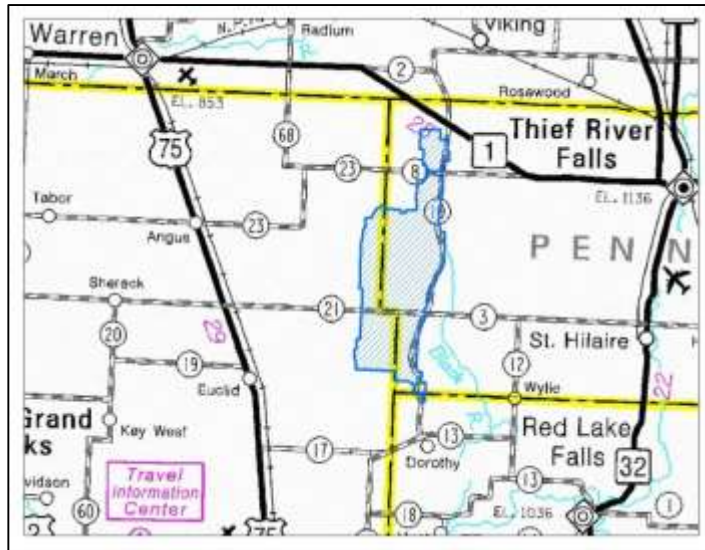
Agassiz National Wildlife Refuge Important Bird Area



Agassiz National Wildlife Refuge Recommendations:

1. Collaborate with the USFWS Integrated Monitoring Program for national wildlife refuges to ensure that the highest priority species and conservation target species are regularly monitored on the refuge. A special emphasis should be placed on the Franklin's Gull, since this site has one of the few remaining colonies in the state.

Goose Lake Swamp Important Bird Area



Goose Lake Swamp Recommendations:

1. Conduct an updated baseline assessment of the breeding birds utilizing the Goose Lake Swamp Important Bird Area
2. Assess the potential for establishing a baseline monitoring program for the target conservation species and a select number of other priority species.
3. Work with the Minnesota Department of Natural Resources to provide support and assistance in efforts to restore the aspen parkland, native prairie, and sedge meadow wetlands on the IBA.

Migration Stopovers

Important Migrant Shorebird Habitats

Shorebirds that depend on wetland habitats for migration usually require shallow waters that vary from damp mudflats to waters that are up to 6 inches deep. Vegetative cover is generally minimal (<25%). The most important criteria is the abundance of invertebrates (insects, crustaceans, worms and spiders) to help refresh depleted fat reserves from their long flights from the wintering grounds and to provide additional fuel for the remaining journey north.

- Recommendations for Shorebird Migrant Habitat
 1. Support the establishment of moist-soil management units that create shorebird habitat:
 - Seek cooperative projects with the Prairie Pothole Joint Venture, USFWS, and MNDNR to develop moist-soil management units for temporary water retention and shorebirds.
 - Document the value of these new sites to migrating shorebirds, with an initial emphasis on spring migrants.
 2. Assess the contribution of Flood Water Damage Reduction Impoundments to providing migratory shorebird habitat.

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Appendix 1. Process for Selecting Priority Breeding Species in the Tallgrass Aspen Parklands Region

- **Very Rare and Known to be Declining**

All of these species have historically been a component of Minnesota's Tallgrass Aspen Parkland Region avifauna but are extremely rare and have experienced documented declines in abundance and/or distribution. These species are considered too rare and/or sporadic in their occurrence to justify focused conservation efforts.

- **Highest Priority Level**

Two approaches were used to identify priority species in each ecological region. The first approach relied heavily on assessments compiled by a team of experts for each Bird Conservation Region delineated by the North American Bird Conservation Initiative; the second approach incorporates more data specific to the species population in Minnesota. The Highest Priority Level was determined as follows:

1. Landbirds

Landbird species that had the highest Partners in Flight (PIF) Regional Combined Assessment Scores ($RCSb \geq 14$ and $Ptr \geq 4$ and $TB \geq 4$; <http://www.rmbo.org/pif/scores/scores.html>) **and** which were declining in the BCR (Prairie Potholes Region) in Minnesota and were dependent on vulnerable habitat in Minnesota were classified as the Highest Priority Level species.

2. Waterbirds

Waterbird species that were rated "High Concern" in the Northern Prairie and Parkland Region by the North American Waterbird Conservation Plan (<http://www.pwrc.usgs.gov/naewcp/pdfs/regional/NPPTText.pdf>) **and** which were declining in Minnesota and were dependent on vulnerable habitat in Minnesota were classified as the Highest Priority Level species.

3. Shorebirds

Shorebird species that were rated "Highly Imperiled", "High Concern" or "Moderate Concern" in the Northern Plains and Prairie Region by the U.S. Shorebird Conservation Plan (<http://www.fws.gov/shorebirdplan/RegionalShorebird/downloads/NORPLPP2.pdf>), where the prairie region was rated as very important for either migration or breeding for the species, **and** the species were declining in Minnesota and were dependent on vulnerable habitat in Minnesota, were classified as the Highest Priority Level species.

4. Waterfowl

Waterfowl species that were rated "Highest" in the North American Waterfowl Management Plan 2004 Implementation Framework in the Prairie Region (<http://www.fws.gov/birdhabitat/nawmp/files/ImplementationFramework.pdf>) **and** which were declining in Minnesota and were dependent on vulnerable habitat in Minnesota were classified as the Highest Priority Level species.

- **High Priority Level**

1. Landbirds

Landbirds that had a high PIF Regional Combined Assessment Score ($RCSb \geq 14$ and $Ptr + TB \geq 7$) **and** which were declining in the BCR in Minnesota and were dependent on vulnerable habitat in Minnesota were classified as the High Priority Level species. Occasionally a species that met only one of these criteria was added if it was also recognized as a Priority species by other initiatives.

2. Waterbirds

Waterbird species that were rated "Moderate Concern" in the Northern Prairie and Parkland Region by the North American Waterbird Conservation Plan **and** which were declining in Minnesota and were dependent on vulnerable habitat in Minnesota were classified as the High Priority Level species. Occasionally a species that met only one of these criteria was added if it was also recognized as a Priority species by other initiatives.

3. Shorebirds
Shorebird species that were rated “High Concern” or “Moderate Concern” in the Northern Plains and Prairie Region by the U.S. Shorebird Conservation Plan, regardless of whether the prairie region was rated as very important for migration or breeding, **and** the species were declining in Minnesota and were dependent on vulnerable habitat in Minnesota were classified as the High Priority Level species. Occasionally a species that met only one of these criteria was added if it was also recognized as a Priority species by other initiatives.
 4. Waterfowl
Waterfowl species that were rated “High” or “Moderately High” in the North American Waterfowl Management Plan 2004 Implementation Framework in the Prairie Region (<http://www.fws.gov/birdhabitat/nawmp/files/ImplementationFramework.pdf>) **and** which were declining in Minnesota and were dependent on vulnerable habitat in Minnesota were classified as the High Priority Level species. Occasionally a species that met only one of these criteria was added if it was also recognized as a Priority species by other initiatives.
- **Moderate Priority Level**
Species that met the criteria listed above by their respective North American Bird Conservation Plan as High Level Species, which were declining in Minnesota and were dependent on vulnerable habitat in Minnesota, **or** were also recognized by other initiatives as priority species (e.g. Joint Venture Focal Species, state listed species, PIF Continental Concern Species, PIF Stewardship Species) were classified as Moderate Level Priorities.

Appendix 2. Process for Selecting Conservation Target Species in the Tallgrass Aspen Parklands Region

Conservation Target Species have been defined by various initiatives. In this plan the concept mirrors that of the U.S. Forest Service and the North American Joint Ventures. A target species is essentially a species “whose status and trends are likely to be responsive to changes in ecological conditions, permit inference to the integrity of the overall ecosystem and provide meaningful information regarding the effectiveness of the plan” (*U.S. Forest Service 2012*).

Using this definition, the key habitats present in each Ecological Region, as delineated by “*Tomorrow’s Habitat for the Wild and Rare: An Action Plan for Minnesota*” (*Minnesota Department of Natural Resources 2006a*), were identified (see Table 5). One or more conservation target species was then selected from amongst the pool of priority species shown in Table 1, for the most important key habitats in the region.

In Minnesota’s Tallgrass Aspen Parklands Region the following habitats were identified as “Key Habitats”:

Shrub Woodland/Upland: Brush Prairie	Lake: Shallow
Grassland/Native Prairie	River: Headwaters to Large
Wetland: Nonforested	

These five key habitats were focused down to three key components of the parkland landscape: Brush Prairie, Grasslands, and Wetlands.

To help guide the decision about which species to select as the Target Conservation Species a prioritization matrix was established that assessed species using the following criteria:

1. Species Level of Priority
2. Species Ecological Significance
3. Species Management Significance
4. Cost Effectiveness and Feasibility of Managing
5. Species Sensitivity to Climate Change
6. Percent of the Species Global Breeding Range that occurs in Minnesota

The priority was to select a target species from the Highest Priority category of species that was ranked high with the above criteria. When that was not feasible, species were selected from the other priority categories.