The Implementation 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. Funding was provided during the FY2011-2012 biennium. For further information please contact Mark Martell at mmartell@audubon.org (651-739-9332).
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Why is a Blueprint for Minnesota Bird Conservation 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.

Blueprint’s Foundations

Data Sources

Scores of national, regional and state bird and habitat conservation plans that address Minnesota bird species and Minnesota landscapes were reviewed. A particular emphasis was placed on bird conservation documents developed by the North American Bird Conservation Initiative (NABCI). The latter includes national and regional conservation plans for waterfowl (North American Waterfowl plans), waterbirds (North American Waterbird plans), shorebirds (U.S. Shorebird Conservation plans) and landbirds (Partners in Flight plans).

Other data sources included the Minnesota Ornithologists Union, National Audubon, the U.S. Geological Survey, individual species conservation plans, Minnesota Forest Resources Council landscape plans, the Minnesota Statewide Conservation and Preservation Plan, Minnesota’s Comprehensive Wildlife Conservation Strategy (Tomorrow’s Habitat for the Wild and Rare), A Fifty Year Vision: Conservation for Minnesota’s Future, bird monitoring reports from the Superior and Chippewa National Forests, Minnesota’s Long-Range Duck Plan, Minnesota’s Aquatic Management Area Plan, Minnesota’s Wildlife Management Area Plan, plans prepared by the Minnesota Nature Conservancy, and bird conservation plans from a select number of other states. The primary resources used to develop Audubon Minnesota’s Implementation Blueprint for Minnesota Bird Conservation are listed in Appendix 1; the list is not exhaustive but focuses on the bird conservation resources utilized most frequently.

Databases

All the existing plans and documents that were reviewed contain a wealth of information about Minnesota birds, their distribution, breeding biology, vulnerability to climate change, population trends, habitat requirements and status at the global, federal and state level. Data compiled from all these sources 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 analyses summarized in this document. An additional document details the metadata for each field. Nothing similar to this has been compiled in Minnesota or elsewhere in the Great Lakes region. The database is available upon request from Audubon Minnesota.

An additional, smaller database was prepared that compiled the lists of all birds documented for each of Audubon Minnesota’s 54 Important Bird Areas (IBAs). Data sources included the nomination forms for each Important Bird Area and documented/published bird lists for managed areas located within the IBA boundaries. The latter included bird lists for Minnesota State Parks, Minnesota Scientific and Natural Areas, National Wildlife Refuges, data collected by the Minnesota Breeding Bird Atlas and, on occasion, data from the Minnesota Department of Natural Resources Rare Features Database.

**Bird Conservation Regions**

Because Minnesota’s landscape is so diverse, ranging from the native prairie and grasslands of western Minnesota to the boreal hardwood forests of northern Minnesota, the Blueprint for Minnesota Bird Conservation examined bird priorities for each of Minnesota’s ecological landscapes separately.

We began with the Bird Conservation Regions (BCRs) delineated at the national level by the North American Bird Conservation Initiative (NABCI). These regions were designed to guide bird planning efforts for all North American birds including waterfowl, waterbirds, shorebirds and landbirds. NABCI delineated bird conservation regions using the Commission for Environmental Cooperation’s (1997) hierarchical framework of nested ecological regions. A total of 67 bird conservation regions were delineated for North America, including Mexico and Hawaii (Figure 1). Minnesota includes portions of four of these regions: 1) the Boreal Hardwood Transition Region; 2) the Eastern Tallgrass Prairie Region; 3) the Prairie-Hardwood Transition Region; and 4) the Prairie Pothole Region. The majority of quantitative data available on North American birds have been delineated and summarized separately for each of these NABCI regions which is why these were used as a starting point.

In Minnesota, however, resource managers at all levels of government work with the ecological framework for identifying ecological landscapes and native vegetation known as Minnesota’s Ecological Classification System (ECS) (Minnesota Department of Natural Resources 2003, 2005a, 2005b). This system also delineates four ecological landscapes: 1) the Tallgrass Aspen Parklands; 2) the Prairie Parklands; 3) the Eastern Broadleaf Forest; and 4) the Laurentian Mixed Forest (Figure 2). Although the boundaries are similar to those delineated by NABCI they are not identical. The two most important differences are that the latter does not recognize the Aspen Parklands as a separate region (the vast majority of the parklands were included within the Prairie Potholes Bird Conservation Region and a very small portion is included in the Boreal Hardwood Transition Bird Conservation Region) and the Minnesota ECS does not separate out the Eastern Tallgrass Prairie (BCR22) as a separate province.

Because Minnesota’s Ecological Classification System boundaries have become a standard reference for land managers throughout the state, this document adopts those boundaries. They are similar enough to the NABCI boundaries to allow a reasonable extension of all the NABCI quantitative data to the respective ECS province. Specifically:

- **Bird Conservation Region 12**, the Boreal Hardwood Transition, is nearly identical to Minnesota’s Laurentian Mixed Forest Province.

- **Bird Conservation Region 23**, the Prairie Hardwood Transition, closely corresponds with Minnesota’s Eastern Broadleaf Forest Province; the exception is that the latter includes a small portion of Bird Conservation Region 22, the Eastern Tallgrass Prairie, in the southeast corner of
the state (Figure 1). An analysis of birds that occur in this portion of BCR22, along the Mississippi River, demonstrated that the avifauna was not unique from that found within BCR23 and justified combining the two BCRs for the purposes of Audubon’s conservation blueprint.

- Finally, Bird Conservation Region 11, the Prairie Potholes, roughly corresponds with Minnesota’s Prairie Parkland Province. The primary differences are two-fold: 1) the Aspen Parklands are not delineated separately and the Prairie Parkland includes a small portion of Bird Conservation Region 22, the Eastern Tallgrass Prairie, in the southwest corner of the state (Figure 1). The latter is so small and the area is not characterized by a distinct avifauna so it is reasonably included within the Prairie Parkland Province.

On the otherhand, an analysis of the birds that occur in the Prairie Parkland and Tallgrass Aspen Parklands clarified that the avifaunas of the two regions were distinct enough to warrant delineation of the Aspen Parklands as a separate bird region, thereby respecting the boundaries of Minnesota’s Ecological Classification System. Unfortunately, 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 the Prairie Potholes BCR can be reasonably extended to the Tallgrass Aspen Parklands region.

The Blueprint for Minnesota Bird Conservation therefore, adopts the ecological province boundaries of Minnesota’s Ecological Classification System. Audubon Minnesota staff, however, decided to adopt the following province names illustrated in Figure 3, i.e.

- Tallgrass Aspen Parklands Region (identical to the Tallgrass Aspen Parklands ECS Province)
- Prairie Parkland Region (identical to the Prairie Parkland ECS Province)
- Prairie Hardwood Transition Region (identical to the Eastern Broadleaf Forest ECS Province)
- Boreal Hardwood Transition Region (identical to the Laurentian Mixed Forest ECS Province)

**Species Priorities**
The large database that compiled all known data on Minnesota’s birds was integral to the Blueprint’s first task which was to assess the status of each species and delineate their relative priority. Following consultation with several key technical advisors, including personnel associated with the University of Minnesota, the U.S. Fish and Wildlife Service, and Hawk Ridge Bird Observatory, the database was used to develop a preliminary list of priority birds for each bird conservation region.

The preliminary list was presented to several stakeholders and, based on initial feedback, a second approach was designed to delineate species priorities. The first approach relied heavily on identifying species present in manageable numbers that were designated priorities by the National Bird Conservation Initiative (NABCI); the second approach relied more heavily on identifying species present in manageable numbers, with declining populations in Minnesota, and dependent on vulnerable habitats in
Figure 1. North American Bird Conservation Initiative Bird Conservation Regions

**Bird Conservation Regions (BCRs)**

*Delineated by the North American Bird Conservation Initiative*

Note: Hawaii (not shown) is **BCR 67**

Minnesota includes portions of 4 Bird Conservation Regions:

- BCR 11: Prairie Potholes
- BCR 12: Boreal Hardwood Transition
- BCR 22: Eastern Tallgrass Prairie
- BCR 23: Prairie Hardwood Transition
Figure 2. Ecological Provinces delineated by Minnesota’s Ecological Classification System

Figure 3. Bird Conservation Regions for the Blueprint for Minnesota Bird Conservation
Minnesota. The advantage of the first approach is that it relies on data compiled by a team of experts for each NABCI Bird Conservation Region; the advantage of the second approach is that it incorporates more data specific to the species population in Minnesota.

After the second prioritization approach was implemented, the results of the two approaches were compared and collectively used to identify three levels of priority birds in each of Minnesota’s four Bird Conservation Regions: Highest Priority; High Priority and Moderate Priority.

**Stakeholder Input**
Nine workshops were held from September 2011 through December 2011 and reached over 250 individuals from the Minnesota Department of Natural Resources (Office of Budget and Management Services, Parks and Trails, Forestry, Fish and Wildlife, and Ecological and Water Resources), the U.S. Fish and Wildlife Service (Regional Office, National Wildlife Refuges, Wetland Districts), the National Park Service, the Nature Conservancy, the University of Minnesota, the U.S. Forest Service, conservation organizations, tribes, and county park districts. The workshops were as follows:

**Table 1. Conservation Blueprint Workshops**

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Geographic Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 28, 2011</td>
<td>St. Paul</td>
<td>Boreal Hardwood Transition and Prairie Hardwood Transition</td>
</tr>
<tr>
<td>November 1, 2011</td>
<td>Duluth</td>
<td>Boreal Hardwood Transition</td>
</tr>
<tr>
<td>November 7, 2011</td>
<td>New Ulm</td>
<td>Prairie Parkland</td>
</tr>
<tr>
<td>November 14, 2011</td>
<td>Brainerd</td>
<td>Prairie Hardwood Transition</td>
</tr>
<tr>
<td>November 16, 2011</td>
<td>St. Paul</td>
<td>Prairie Hardwood Transition</td>
</tr>
<tr>
<td>November 17, 2011</td>
<td>St. Paul</td>
<td>Statewide</td>
</tr>
<tr>
<td>November 21, 2011</td>
<td>Grand Rapids</td>
<td>Boreal Hardwood Transition</td>
</tr>
<tr>
<td>November 28, 2011</td>
<td>Bemidji</td>
<td>Prairie Parkland and Tallgrass Aspen Parklands</td>
</tr>
<tr>
<td>December 2, 2011</td>
<td>Minneapolis</td>
<td>Statewide</td>
</tr>
</tbody>
</table>

In addition to these workshops, eleven additional presentations were given to solicit further input, including: to the National Fish and Wildlife Foundation, regional staff of the National Audubon Society, to a statewide gathering of private land managers and to participants to the Department of Natural Resources Fish, Wildlife and Ecological Resources Roundtable.

**Blueprint’s Major Products**

**Minnesota Stewardship Species Brochure**
As part of the final Implementation Blueprint, Audubon identified Minnesota Stewardship Species. The term ‘stewardship’ is applied to species that reach their greatest abundance in a particular biome, resulting in the biome having a unique responsibility for ensuring the species long-term survival and sustainability. For example, the Greater Prairie Chicken is a stewardship species in North America’s Tallgrass Prairie Biome. The same concept can be applied at the state level. We identified two criteria for identifying Minnesota’s Stewardship Species: 1) ≥5% of the species North American breeding range occurs in Minnesota; and 2) ≥5% of the species global population occurs in Minnesota. Twelve species, listed in the following table, met these criteria.

**Table 2. Minnesota Stewardship Species**
Despite the low percentage of its total breeding range that occurs in Minnesota, the American White Pelican was included because such a significant percentage of its global population occurs here. As a colonial species the pelican’s population has a clumped North American distribution.

To further highlight the significance of these stewardship species, we prepared a 28 page booklet that brings attention to our global responsibility for these birds and provides information on each species distribution, description, habitat, threats/status and conservation.

**Figure 4. Audubon Minnesota’s Brochure on Stewardship Birds of Minnesota**

<table>
<thead>
<tr>
<th>Species</th>
<th>&gt;5% of Global Population in MN</th>
<th>&gt;5% of Breeding Range in MN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Golden-winged Warbler</td>
<td>42%</td>
<td>12%</td>
</tr>
<tr>
<td>Sedge Wren</td>
<td>33%</td>
<td>14%</td>
</tr>
<tr>
<td>American White Pelican</td>
<td>18%</td>
<td>1% *</td>
</tr>
<tr>
<td>Bobolink</td>
<td>13%</td>
<td>9%</td>
</tr>
<tr>
<td>Trumpeter Swan</td>
<td>12%</td>
<td>11%</td>
</tr>
<tr>
<td>Black-billed Cuckoo</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>American Woodcock</td>
<td>10%</td>
<td>6%</td>
</tr>
<tr>
<td>Rose-breasted Grosbeak</td>
<td>6%</td>
<td>10%</td>
</tr>
<tr>
<td>Chestnut-sided Warbler</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>Veery</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>Baltimore Oriole</td>
<td>5%</td>
<td>8%</td>
</tr>
<tr>
<td>Nashville Warbler</td>
<td>5%</td>
<td>5%</td>
</tr>
</tbody>
</table>

* *Despite the low percentage of its total breeding range that occurs in Minnesota, the American White Pelican was included because such a significant percentage of its global population occurs here. As a colonial species the pelican’s population has a clumped North American distribution.*
Species Accounts for Priority Species

Once the preliminary list of priority species was developed for each Bird Conservation Region, information on the habitat requirements and best management practices for all of the Highest and High Level Priority species in each region (66 species in total) was compiled into a species account; accounts for 6 additional Moderate Priority species were also prepared. Each account includes information on the species’ population size, status classifications, distribution, migration status, habitat requirements, climate change vulnerability, best management practices, conservation recommendations, and monitoring needs. These are available on the Audubon Minnesota website (http://mn.audubon.org/).

Conservation Blueprints for Target Conservation Species

After identifying a list of Highest, High and Moderate Priority species for each of the four Bird Conservation Regions, the list of priorities was further downsized by identifying Target Conservation Species from among the list of species priorities. Target Conservation Species were selected for the most important key habitats in each of the four regions (as identified by the Comprehensive Wildlife Conservation Strategy for Minnesota: Tomorrow’s Habitat for the Wild and Rare, 2006). Six criteria (level of priority, ecological significance, management significance, cost effectiveness and feasibility of managing, sensitivity to climate change and percent of the species global breeding range in Minnesota) were used to help identify the most appropriate target species. Conservation Target Species selected for each Bird Conservation Region are listed in Table 3. Those that are highlighted in blue also were delineated as Highest Priority Species in the respective region.

<table>
<thead>
<tr>
<th>Tallgrass Aspen Parkland</th>
<th>Prairie Parkland</th>
<th>Prairie Hardwood Transition</th>
<th>Boreal Hardwood Transition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sharp-tailed Grouse</td>
<td>Blue-winged Teal</td>
<td>Forster’s Tern</td>
<td>Common Goldeneye</td>
</tr>
<tr>
<td>Upland Sandpiper¹</td>
<td>Upland Sandpiper</td>
<td>Wood Thrush</td>
<td>Boreal Owl</td>
</tr>
<tr>
<td>Franklin’s Gull</td>
<td>Black Tern</td>
<td>Red-headed Woodpecker</td>
<td>Red-breasted Merganser</td>
</tr>
<tr>
<td></td>
<td>Grasshopper</td>
<td>Louisiana Waterthrush</td>
<td>Common Loon</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prothonotary Warbler</td>
<td>Northern Goshawk</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cerulean Warbler</td>
<td>Common Tern</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Eastern Meadowlark</td>
<td>Belted Kingfisher</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yellow-headed Blackbird</td>
<td>Olive-sided Flycatcher</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prothonotary Warbler</td>
<td>Connecticut Warbler</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yellow-headed Blackbird</td>
<td>Spruce Grouse</td>
</tr>
</tbody>
</table>

¹ Species highlighted in Blue are classified as the Highest Priority Species in each respective Bird Conservation Region

A detailed Conservation Blueprint was prepared for nine of the ten Target Conservation Species listed in Table 3 that are identified as among the Highest Priority species in their respective Bird Conservation Region (i.e. the species highlighted in blue). A plan was not prepared for the Blue-winged Teal, a harvested waterfowl species, since it is the focus of significant conservation work by resource agencies. Each Blueprint is divided into two parts. The first provides background on the species, including its
status, distribution, habitat requirements and management needs. The second is a detailed conservation plan that outlines species management recommendations, including a population goal, objective and conservation actions to achieve those goals and objectives.

**Figure 5. Example of a Conservation Blueprint for Target Conservation Species**

Conservation Blueprints for Bird Conservation Regions

In addition to the Conservation Blueprints for the nine Target Conservation Species, a Conservation Blueprint was prepared for each of the four Bird Conservation Regions: the Tallgrass Aspen Parklands, the Prairie Parklands, the Boreal Hardwood Transition and the Prairie Hardwood Transition. These documents are not written like typical planning documents. Instead, they are designed to provide key information and tools that addresses three primary questions:

1. Which birds are we going to focus on in each region?
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. Each regional blueprint includes the following:

- Graphs and tables that summarize key characteristics of the avifauna in each ecological region.
- List of Highest, High and Moderate Priority birds in the region.
- Identification of priority habitats to focus conservation actions on.
- Identification of Stewardship Species that should be primary targets in the region.
- Assessment of the monitoring efforts currently underway for the highest priority species and recommendations for future monitoring.
• Identification of habitat protection and restoration efforts in the region; when available, specific habitat protection and restoration goals for each species are provided.
• Identification of habitat management considerations for the highest priority species.

More detailed information on those species that were selected as conservation target species is provided in conservation blueprints for those species.

Figure 6. Example of a Conservation Blueprint for one of four Bird Conservation Regions
Selected Resources for the Blueprint

The primary resources used to develop Audubon Minnesota’s Implementation Blueprint for Minnesota Bird Conservation are listed below; the list is not exhaustive but focuses on the bird conservation resources utilized most frequently.

NORTH AMERICAN BIRD CONSERVATION INITIATIVE

North American Waterfowl Management Plans


North American Waterbird Plans


U.S. Shorebird Conservation Plans


Partners in Flight Plans


JOINT VENTURES

Prairie Potholes Joint Venture Plans


**Upper Mississippi River/Great Lakes Joint Venture Plans**


**OTHER NATIONAL RESOURCES**


**PRIMARY MINNESOTA RESOURCES**


**OTHER**