Agassiz Lowlands Subsection Profile

Minnesota’s Comprehensive Wildlife Conservation Strategy
SUBSECTION OVERVIEW
The Agassiz Lowlands Subsection, located in extreme north-central Minnesota next to Canada, is a large, very flat, poorly drained area named after Glacial Lake Agassiz. The subsection’s three large lakes, Lower and Upper Red Lakes and Lake of the Woods, are remnants of this ancient water body. This area contains the Northwest Angle, the only part of Minnesota and the United States, with the exception of Alaska, that extends beyond the 49th Parallel. The Rainy River, the subsection’s largest river, forms the northern boundary of both the subsection and Minnesota. Much of the area is peatland, including forested peatland dominated by black spruce and tamarack in the canopy, and sedge-dominated fens. The uplands are primarily sand ridges left by the receding glacial lake and are dominated by aspen-birch and jack pine. Tracts of land in public and tribal ownership provide large blocks of undeveloped areas for wildlife.

Major land uses in the subsection include forestry and tourism. Most tourism involves hunting and fishing around the large lakes and in Beltrami Island and Pine Island state forests, and motorized recreation. The peatlands were extensively ditched, and some of the area was settled during the early 1900s for agriculture, but these attempts failed, and much of the subsection today remains uninhabited. A small amount of the peatlands in this subsection is mined for horticultural peat.

SPECIES IN GREATEST CONSERVATION NEED
88 Species in Greatest Conservation Need (SGCN) are known or predicted to occur within the Agassiz Lowlands. These SGCN include 28 species that are federal or state endangered, threatened, or of special concern. The table, SGCN by Taxonomic Group, displays by taxonomic group the number of SGCN that occur in the subsection, as well as the percentage of the total SGCN set represented by each taxon. For example, 7 mammal SGCN are known or predicted to occur in the Agassiz Lowlands, approximately 32% of all mammal SGCN in the state.

SGCN BY TAXONOMIC GROUP

<table>
<thead>
<tr>
<th>Taxa</th>
<th># of SGCN</th>
<th>Percentage of SGCN Set by Taxon</th>
<th>Examples of SGCN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amphibians</td>
<td>2</td>
<td>33.3</td>
<td>Common Mudpuppy</td>
</tr>
<tr>
<td>Birds</td>
<td>63</td>
<td>64.9</td>
<td>Connecticut warbler</td>
</tr>
<tr>
<td>Fish</td>
<td>3</td>
<td>6.4</td>
<td>Northern brook lamprey</td>
</tr>
<tr>
<td>Insects</td>
<td>9</td>
<td>16.1</td>
<td>Caddisfly (O. itascae)</td>
</tr>
<tr>
<td>Mammals</td>
<td>7</td>
<td>31.8</td>
<td>Northern bog lemming</td>
</tr>
<tr>
<td>Mollusks</td>
<td>3</td>
<td>7.7</td>
<td>Fluted-shell</td>
</tr>
<tr>
<td>Reptiles</td>
<td>1</td>
<td>5.9</td>
<td>Common Snapping Turtle</td>
</tr>
<tr>
<td>Spiders</td>
<td>0</td>
<td>0</td>
<td>NA</td>
</tr>
</tbody>
</table>

HIGHLIGHTS
- This subsection contains extensive peatland complexes, including much of the largest patterned peatland complex in the U.S.
- There is a diversity of northern wetland birds particularly associated with Lake of the Woods, including white pelicans, common terns, American bitterns, migratory waterfowl, migratory shorebirds, and an abundance of mammals like beaver and otter.
- Forest wildlife includes spruce grouse, great gray owls, short-eared owls, sharp-tailed grouse, and bog coppers.
- Areas important for SGCN include Lost River, Red Lake, Northwest Angle, and Beltrami Island SFs; Pine and Curry Island, Red Lake, Pine Creek, Luxemberg, Mulligan Lake, Norris Camp, Sprague Creek, and Winter Road Lake Peatland SNAs; Red Lake WMA; Hayes Lake and Zippel Bay SPs; and Big Bog State Recreation Area.

SPECIES SPOTLIGHT

Boreal chickadee (Poecile hudsonica)

**Distribution**
Limited mostly to spuce-fir forests of northern MN from northern Aitkin County north through the Arrowhead region, and northwest to Lake of the Woods.

**Abundance**
Rare and confined to northern boreal forest habitats. The rarity of this species prevents an adequate assessment of population trends.

**Legal Status**
Federaally protected migratory bird.

**Comments**
Highly sought after by avid birders in areas like the Sax-Zim bog.
Tomorrow’s Habitat for the Wild and Rare: An Action Plan for Minnesota Wildlife

**SGCN ELEMENT OCCURRENCES BY TOWNSHIP**

This map depicts the number of validated records of species in greatest conservation need since 1990 per township and public land/conservancy land. It suggests relationships between known SGCN occurrences and conservation management lands. It also displays areas that have not been surveyed for rare animals by MCBS.

**SPECIES PROBLEM ANALYSIS**

The species problem analysis provides information on the factors influencing the vulnerability or decline of SGCN that are known or predicted to occur in the subsection. The table lists the nine problems, or factors, used in the analysis, and the percentage of SGCN in the subsection for which each factor influences species vulnerability or decline. The results of the species problem analysis indicate that habitat loss and degradation in the subsection are the most significant challenges facing SGCN populations.

**NOTE:** The inverse of the percentages for each problem does not necessarily represent the percentage of SGCN for which the factor is not a problem, but instead may indicate that there is not sufficient information available to determine the level of influence the factor has on SGCN in the subsection.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Percentage of SGCN in the Subsection for Which This Is a Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Habitat Loss in MN</td>
<td>83</td>
</tr>
<tr>
<td>Habitat Degradation in MN</td>
<td>90</td>
</tr>
<tr>
<td>Habitat Loss/Degradation Outside of MN</td>
<td>42</td>
</tr>
<tr>
<td>Invasive Species and Competition</td>
<td>25</td>
</tr>
<tr>
<td>Pollution</td>
<td>30</td>
</tr>
<tr>
<td>Social Tolerance/Persecution/Exploitation</td>
<td>23</td>
</tr>
<tr>
<td>Disease</td>
<td>3</td>
</tr>
<tr>
<td>Food Source Limitations</td>
<td>5</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
</tr>
</tbody>
</table>

*Sources: MN DNR Natural Heritage database, MN DNR County Biological Survey (MCBS), MN DNR Statewide Mussel Survey, MN DNR Fisheries Fish database. Areas with no MCBS animal surveys may have had mussel and fish surveys, as well as reports of other species occurrences recorded in the MN DNR Natural Heritage database.*
Agassiz Lowlands

KEY HABITATS - For Species in Greatest Conservation Need

The CWCS identified key habitats for SGCN within the subsection using a combination of five analyses, labeled A-E below. The table depicts the five analyses, and under which analyses the key habitats qualified. To qualify as a key habitat for the subsection, the habitat had to meet the criteria used in at least one of the five analyses, as specified in the descriptions to the right of the table. The graphs below depict results from four (A-D) of the five analyses used in determining key habitats. Those habitats that meet the criteria are highlighted in RED in the graph for that analysis. Those habitats that do not meet the criteria are shaded in GOLD. Analysis E is not represented by a graph; the results of this analysis are presented as a list of key rivers/streams in Appendix I. For a more detailed explanation of the five analyses used, see Chapter 7, Methods and Analyses.

### A/B – Terrestrial Habitat Use/Specialist Terrestrial Habitat Use

![Graph showing species distribution across different habitats]

<table>
<thead>
<tr>
<th>Species</th>
<th>Specialist</th>
</tr>
</thead>
<tbody>
<tr>
<td>#</td>
<td>%</td>
</tr>
<tr>
<td>38</td>
<td>39</td>
</tr>
<tr>
<td>28</td>
<td>4</td>
</tr>
<tr>
<td>27</td>
<td>22</td>
</tr>
<tr>
<td>21</td>
<td>0</td>
</tr>
<tr>
<td>16</td>
<td>69</td>
</tr>
<tr>
<td>8</td>
<td>0</td>
</tr>
</tbody>
</table>

### C – Terrestrial Habitat Change

![Graph showing habitat change percentage]

<table>
<thead>
<tr>
<th>Habitat</th>
<th>1990s</th>
<th>1990s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest-Upland Deciduous (Aspen)</td>
<td>19.4</td>
<td>13.7</td>
</tr>
<tr>
<td>Lowland Coniferous Forest/Shrubland</td>
<td>50.5</td>
<td>44.5</td>
</tr>
<tr>
<td>Wetland - Non-forest</td>
<td>7.8</td>
<td>9.7</td>
</tr>
<tr>
<td>Cropland</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>16.9</td>
<td>16.6</td>
</tr>
</tbody>
</table>

### D – Aquatic Habitat Use

![Graph showing aquatic habitat use]

### E – The Nature Conservancy/SGCN Occurrence

To reference the key rivers and streams for the subsection, see Appendix I.
This map depicts key habitats and the number of species of SGCN per township based on the sources listed below. It suggests there is often a relationship between key habitats and species richness (i.e., the variety of species of SGCN in a township).

Sources:
- Major River Centerline Traces in Minnesota, 1984
- MN DNR 24K Rivers and Streams, 2005
- MN DNR County Biological Survey (MCBS), 2005
- MN DNR Fish database, 2005
- MN DNR Natural Heritage database, 2005
- MN DNR Statewide Mussel Survey, 2005
- MN GAP Landcover, 1993
- The Nature Conservancy Rivers and Streams combined dataset, 2005

For more information on how this map was constructed, please see the Subsection Profile Overview in Chapter 5.

### Agassiz Lowlands

**DISTRIBUTION OF KEY HABITATS AND SPECIES RICHNESS BY TOWNSHIP**

![Map of key habitats and species richness by township for Agassiz Lowlands.]

**SUBSECTION HABITAT PERCENTAGES AND HABITAT USE BY SGCN TAXA**

This table presents information on the percentages for each habitat in the subsection (showing changes in coverage between the mid-to late 1800s and the 1990s), as well as habitat use by SGCN taxonomic group. Habitats are listed in ranked order for percent coverage within the subsection in the 1990s. Key habitats for the subsection (as identified on previous page) are listed in BOLD. SGCN habitat use is broken down by taxonomic group, with a total number of species for all taxonomic groups listed at the far right of the table.

<table>
<thead>
<tr>
<th>HABITAT</th>
<th>Percentage of Subsection (1890s)</th>
<th>Percentage of Subsection (1990s)</th>
<th>Amphibians</th>
<th>Birds</th>
<th>Fish</th>
<th>Insects</th>
<th>Mammals</th>
<th>Mollusks</th>
<th>Reptiles</th>
<th>Spiders</th>
<th>Total Number of Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest-Lowland Coniferous</td>
<td>50.5</td>
<td>44.5</td>
<td>22</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>27</td>
</tr>
<tr>
<td>Lake-Deep</td>
<td>N/A</td>
<td>14.3</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Forest-Upland Deciduous (Aspen)</td>
<td>19.4</td>
<td>19.7</td>
<td>1</td>
<td>16</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td>21</td>
</tr>
<tr>
<td>Wetland-Nonforest</td>
<td>7.8</td>
<td>9.7</td>
<td>32</td>
<td>5</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>38</td>
</tr>
<tr>
<td>Cropland</td>
<td>N/A</td>
<td>8.0</td>
<td>5</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Grassland</td>
<td>N/A</td>
<td>4.2</td>
<td>15</td>
<td></td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>Lake-Shallow</td>
<td>N/A</td>
<td>2.3</td>
<td>10</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Forest-Upland Coniferous</td>
<td>0.2</td>
<td>1.1</td>
<td>1</td>
<td>22</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>31</td>
</tr>
<tr>
<td>Forest-Lowland Deciduous</td>
<td>0.5</td>
<td>0.8</td>
<td>12</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>Forest-Upland Deciduous (Hardwood)</td>
<td>0.3</td>
<td>0.8</td>
<td>1</td>
<td>14</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>19</td>
</tr>
<tr>
<td>Shrub/Woodland-Upland</td>
<td>3.9</td>
<td>0.6</td>
<td>14</td>
<td></td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>23</td>
</tr>
<tr>
<td>Developed</td>
<td>N/A</td>
<td>0.0</td>
<td>4</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Prairie</td>
<td>0.3</td>
<td>0.0</td>
<td>12</td>
<td></td>
<td>1</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>Shoreline-dunes-cliff/talus (Lake of the Woods)</td>
<td>N/A</td>
<td>N/A</td>
<td>13</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>Shrub-Lowland</td>
<td>N/A</td>
<td>N/A</td>
<td>21</td>
<td></td>
<td>1</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>28</td>
</tr>
<tr>
<td>River-Headwater to Large</td>
<td>N/A</td>
<td>N/A</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>River-Very Large</td>
<td>N/A</td>
<td>N/A</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
</tr>
</tbody>
</table>

N/A: Insufficient data available to determine percent coverage within subsection. We have no data to indicate the existence of cropland, grassland, or developed land prior to settlement by people of European descent, although these land uses likely did occur at very low levels. NOTE: 0.0 indicates less than 0.05 percent coverage.
Ten-Year Goals, Management Challenges, Strategies, and Priority Conservation Actions

Goal I: Stabilize and increase SGCN populations
Management Challenge 1 – There has been significant loss and degradation of SGCN habitat
Strategy I A – Identify key SGCN habitats and focus management efforts on them

Priority Conservation Actions to Maintain, Enhance, and Protect the Key Habitats
1. **Lowland coniferous forest habitats**, actions include:
   a. Incorporate SGCN habitat concerns in forest management planning
   b. Provide technical assistance and protection opportunities to interested individuals and organizations
2. **Nonforested wetlands**, actions include:
   a. Enforce the Wetlands Conservation Act
   b. Manage habitats adjacent to wetlands to enhance SGCN values
   c. Provide technical assistance and protection opportunities to interested individuals and organizations
3. **Shoreline habitats of Lake of the Woods**, actions include:
   a. Support the protection of shoreline habitats from damaging development
   b. Provide technical assistance and protection opportunities to interested individuals and organizations
   c. Enhance SGCN habitat along the shoreline
4. **Stream habitats**, actions include:
   a. Maintain good water quality, hydrology, geomorphology, and connectivity in priority stream reaches
   b. Maintain and enhance riparian areas along priority stream reaches
   c. Provide technical assistance and protection opportunities to interested individuals and organizations

Management Challenge 2 – Some SGCN populations require specific management actions
Strategy I B – Manage federal and state listed species effectively

Priority Conservation Actions for Specific SGCN
1. Implement existing federal recovery plans
2. Develop and implement additional recovery plans
3. Provide technical assistance to managers, officials, and interested individuals related to listed species
4. Enforce federal and state endangered species laws, as well as other wildlife laws and regulations

Strategy I C – Manage emerging issues affecting specific SGCN populations

Priority Conservation Actions for Specific SGCN
1. Work with partners to effectively address emerging issues affecting SGCN populations
2. Enforce federal and state wildlife laws and regulations

Goal II: Improve knowledge about SGCN
Management Challenge 1 – More information about SGCN and SGCN management is needed
Strategy II A – Survey SGCN populations and habitats

Priority Conservation Actions for Surveys
1. Survey SGCN populations within the subsection, actions include:
   a. Continue MCBS rare animal surveys
   b. Survey SGCN populations related to key habitats
   c. Survey wildlife taxa underrepresented by MCBS animal surveys
2. Survey SGCN habitats within the subsection, actions include:
   a. Assess the amount and quality of key habitats and map their locations

Strategy II B – Research populations, habitats, and human attitudes/activities

Priority Conservation Actions for Research
1. Research important aspects of species populations within the subsection, actions include:
   a. Better understand the life history and habitat requirements of important SGCN
2. Research important aspects of SGCN habitats within the subsection, actions include:
   a. Identify best management practices for maintaining and enhancing key habitats
   b. Identify important patterns and distributions of key habitats to better support SGCN populations
   c. Identify important functional components within key habitats to support specific SGCN
   d. Explore important, emerging SGCN habitat management issues
Priority Conservation Actions for Research (continued)
3. Research important aspects of people’s understanding of SGCN within the subsection, actions include:
   a. Identify people’s attitudes and values regarding SGCN
   b. Identify places and ways people can enjoy and appreciate SGCN

Strategy II C – Monitor long-term changes in SGCN populations and habitats
Priority Conservation Actions for Monitoring
1. Monitor long-term trends in SGCN populations, actions include:
   a. Continue existing population monitoring activities
   b. Develop additional monitoring activities for specific SGCN populations
2. Monitor long-term trends in SGCN habitats, actions include:
   a. Develop long-term monitoring activities for important SGCN habitats

Strategy II D – Create performance measures and maintain information systems
Priority Conservation Actions for Performance Measures and Information Systems
1. Create and use performance measures to evaluate management actions, actions include:
   a. Develop partner-specific performance measures within the subsection
   b. Develop project-specific performance measures for SWG-funded projects
   c. Incorporate monitoring and performance measure information to enhance adaptive management
2. Maintain and update information management systems

Goal III: Enhance people’s appreciation and enjoyment of SGCN
Management Challenge 1 – Need for greater appreciation of SGCN by people
Strategy III A – Develop outreach and recreation actions
Priority Conservation Actions for Outreach and Recreation
1. Create new information and communicate with people to enhance their appreciation of SGCN
2. Create opportunities for people to appropriately enjoy SGCN-based recreation
How to use this subsection profile

Intended audience: Natural resource professionals and interested stakeholders

Identify how the priority conservation actions and key habitats intersect and inform your current and future priorities.

Using your additional insights and local knowledge, “step-down” the priority conservation actions into more detailed actions and practical on-ground tasks.

Use it to understand species in greatest conservation need priorities and tell a story about the subsection (its history, biology, ecology, demography) to other natural resource professionals, managers, decision makers and land owners.

Visit our website, or give us a call, and tell us how you’re using it, how others are using it, and ideas that “step-down” the priority conservation actions.

Website:
www.dnr.state.mn.us/cwcs

For more information, please contact:

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