Chapter 3

Minnesota's Species in Greatest Conservation Need

At its base, *Tomorrow's Habitat for the Wild and Rare: An Action Plan for Minnesota Wildlife* (referred to in this document as Minnesota's Comprehensive Wildlife Conservation Strategy or CWCS) is a wildlife plan, and as such, the single most important step in the CWCS technical assessment was to develop the set of species in greatest conservation need (SGCN). The set serves as the reference point that guides all key habitat priorities articulated in this document.

Process for Identifying the Set of Species in Greatest Conservation Need

Minnesota's CWCS Technical Team and partners assessed all taxonomic groups of native terrestrial and aquatic wildlife, both vertebrate and invertebrate species. Addressing this full array of wildlife taxa meant considering the almost 1,200 animal species documented to occur in Minnesota. Further challenges arose since much more information is available for some taxonomic groups than others, birds versus spiders, for example.

To address these challenges, Minnesota used a multistep process to identify the set of SGCN (see Table 3.1). At the outset of this effort, the CWCS Technical Team (see <u>chapter 2</u>.) recognized that the development of the set of SGCN would be a dynamic process and that over time species would be added and removed as their status changed or more information became available. There was also recognition that although Minnesota's set of SGCN contains species that are regulated by state and federal laws, including a species in the set does not by itself provide regulatory protection.

Step	Description	Source(s)
1	Define species in greatest conservation need	CWCS Technical Team
2	Review existing species lists and assessments	Fed ETS*, MN ETS, PIF, etc.
3	Input from individual species experts	Variable
4	Technical Team review	CWCS Technical Team
5	Feedback Team review	90 individuals
6	Set finalized	CWCS Technical Team

Table 3.1. Overview of Process	for Developing the Set of SGCN
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* ETS = Endangered, threatened, special concern; PIF = Partners in Flight

The first step was to broadly define species in greatest conservation need as species that are rare, declining, or vulnerable in Minnesota (Table 3.2). Identification of such species was based on information about their abundance or population trends or on other factors, such as

dependence on threatened habitats, vulnerability to other specific threats, or certain characteristics that make them vulnerable. To the fullest extent possible, species were included in the set if they were declining and vulnerable in a major portion of their range, not just in Minnesota. This decision allowed for the inclusion of some species that are declining elsewhere but are stable in Minnesota.

Characteristics of SGCN	Criteria Used to Define SGCN
Species whose populations are <i>identified</i> as being rare, declining, or vulnerable in Minnesota	Existing, objective-based, peer-reviewed assessments or lists
Species at risk because they depend upon rare, declining, or vulnerable habitats	 <i>Examples</i> native prairies and grasslands lakeshores and riparian corridors wetlands shrublands, savannas, woodlands unimpounded river and stream channels unfragmented interior forest
Species subject to other specific threats that make them vulnerable	 Examples overexploitation invasive species disease contaminants lack of citizen understanding and stewardship (such as killing large snakes thought to be venomous) urban and residential development
Species with certain characteristics that make them vulnerable	 <i>Examples</i> require large home ranges/use multiple habitats depend on large habitat patch sizes depend on an ecological process (e.g., fire) that no longer operates within the natural range of variation are limited in their ability to recover on their own due to low dispersal ability or low reproductive rate have a highly localized or restricted distribution (endemics) concentrate their populations during some time of the year (such as bats clustering in hibernacula: bird migratory stopovers)
Species whose Minnesota populations are stable but are declining in a substantial part of their range outside of Minnesota	<i>Examples</i> - common loon - black tern

Table 3.2. Definition of the Species in Greatest Conservation Need

The second step was to determine those species that have already been identified as rare, declining, or vulnerable in an existing, objective-based, and peer-reviewed species assessment or list of Minnesota's native wildlife. A major part of this step was to develop criteria based on existing lists to determine whether these species should be included in the set of species in greatest conservation need (Table 3.3). Some general aspects of those criteria are listed below:

- Species with legal protection status were automatically included in the set. These were any federal or state endangered or threatened species.
- Global population status assessments were automatically included in the set for all species except birds. These were identified from Heritage Global Ranks (G1–G3), the Convention on International Trade in Endangered Species (CITES), and the World Conservation Union (IUCN) Red List of Threatened Species.
- Species identified by other regional processes were considered by the CWCS Technical Team to determine whether they met the definition and criteria. These processes included U.S. Fish and Wildlife Service Region 3 Species of Concern, species tracked in the Minnesota DNR Heritage database due to experts' concerns about their status, and the National Resources Research Institute (NRRI) Breeding Bird Monitoring program.
- For birds, other lists were available to determine their inclusion in the SGCN set and, with the exception of federal- and state-listed species, were given priority over other available information sources. These were the Partners in Flight Continental and Regional Plans for land birds, Regional Shorebird Conservation Plans, and Minnesota Waterbird Conservation Plans.
- Within each assessment process, criteria for selection were determined based on the scoring used in that particular process. For example, the Partners in Flight Landbird Conservation Plans score species in six tiers based on six criteria. Only those species that were Tier 1, 2A, or 2C were included in the SGCN set (Table 3.3).
- All species identified through the above assessment processes were reviewed by the CWCS Technical Team and removed if they met any of the criteria for removal (Table 3.4).

Table 3.3. Criteria for Including Species Identified from Other Assessment Processes in the SGCN Set *______

Assessment Process	Criteria
Federally listed species	All species automatically included unless they meet criteria
http://www.fws.gov/midwest/endangered/lists/minnesot	for excluding species (Table 3.4)
<u>-spp.html</u>	
Heritage Global Rank	Species ranked G1, G2, or G3 (excluding bird species)
http://www.natureserve.org/explorer/ranking.htm	
Minnesota's List of Endangered, Threatened, or	All species automatically included unless they meet criteria
Special Concern species	for excluding species (Table 3.4)
http://www.dnr.state.mn.us/ets/index.html	
Partners in Flight (PIF) Continental Watch List	Bird species that breed in Minnesota and do not meet the
	criteria for excluding species (Table 3.4)
Partners in Flight (PIF) Landbird Regional Plans	Tier 1, 2A, and 2C species in at least one physiographic area
http://www.partnersinflight.org/conservation_plans/def	that occurs in Minnesota (16, 20, 32, and 40) and breeds in
<u>ault.htm</u>	the state. (PA32 covers only a small portion of Minnesota,
	and species were individually reviewed to determine if they
	meet the SGCN definition.)
Regional Shorebird Conservation Plans	Species identified as Highly Imperiled (5) or High Concern
http://shorebirdplan.fws.gov	(4) in at least one of bird conservation regions that occur in
	Minnesota (11, 12, 22, 23) and either breed or are significant
	migrants in Minnesota
Minnesota Waterbird Conservation Plan	Species identified as high or moderate concern in at least one
http://www.waterbirdconservation.org	of bird conservation regions that occur in Minnesota (11, 12,
	22, 23) and breed in Minnesota
U.S. Fish and Wildlife Service Region 3 Species	Excluding bird species
of Concern	
http://www.fws.gov/midwest/eco_serv/soc/	
Species tracked in the MN DNR Heritage	Excluding bird species
Database	
Convention on International Trade in Endangered	Excluding bird species
Species (CITES)	
http://www.cites.org	
The World Conservation Union (IUCN) Red List	Excluding bird species
of Threatened Species	
http://www.iucn.org/	
Natural Resources Research Institute (NRRI)	Bird species showing significant ($P \le 0.05$) declines in all
Breeding Bird Monitoring Program	four sample areas (Superior, Chippewa, Chequamegon-
http://www.nrri.umn.edu/mnbirds/	Nicolet National Forests and the St. Croix Region of east-
	central Minnesota) as well as overall regionally, and are
	supported by corroborative information from other regional
	surveys (e.g. PIF regional or continental plans)

* For more detail on the individual species lists, visit the Web sites identified in this table.

Table 3.4. Criteria to Exclude Species from the Set of Minnesota Species in Greatest Conservation Need

- 1. Species does not meet the definition of species in greatest conservation need (Table 3.2).
- 2. Species has not been documented to occur in Minnesota.
- 3. Species is presumed extirpated from Minnesota, with no expectation of it returning as a resident in the next 10 years.
- 4. Species is abundant in Minnesota and regionally, nationally, or globally.
- 5. Species occurrence in Minnesota is occasional due to wandering individuals, *and* no resident populations are, or are likely to become, established in the next 10 years. Regularly migrating shorebirds that depend on habitat within Minnesota are *not* included in this group, but other migrant birds are.

The third step was to consult with individual taxa experts to obtain input about groups of species for which formalized species lists were lacking. This was done in particular for fish and aquatic insects, but some input was also sought for all other taxa.

Fourth, using the broad definition developed in step 1 (Table 3.2), the CWCS Technical Team reviewed all remaining species that occur in Minnesota to determine additional species that met the definition for inclusion.

Finally, after completion of the previous steps, all the species included in the set were sent out to the Feedback Teams (see <u>chapter 2</u>) for review, resulting in further additions to and removals from the set.

All told, 292 species in greatest conservation need in Minnesota were identified. This set is intended to be adaptive and change as new information about species status becomes available.

Species in Greatest Conservation Need

Minnesota's 292 species in greatest conservation need include species from all major taxonomic groups (see Figure 3.1 below; <u>Appendix B</u>). Birds have the greatest number of species, which reflects the fact that much more information is available about this group and that among vertebrates, birds have the most species. Thirty-one percent of birds are SGCN, compared to 26 percent of mammals, 43 percent of herptiles, 32 percent of fish, and 33 percent of mollusks. With the exception of mussels, which are relatively well studied, invertebrate species are most certainly underrepresented in the set. Thirteen percent of insects and 40 percent of spiders are identified as SGCN, but currently our documentation of the total number of insect and spider species that occur in Minnesota is probably one or more orders of magnitude less than what actually lives here, and we have little understanding of those that are rare, declining, or vulnerable. Research is clearly needed in this area.

The species in greatest conservation need include both nongame and game species (Table 3.5). While game species may be managed differently than nongame, they were identified as having conservation need through an objective and comprehensive process independent of game status.

Birds	Anas acuta Anas rubripes Avthya affinis	Northern pintail American black duck
	Ayinya ajjinis Falcinennis canadensis	Spruce grouse
	Gallinula chloropus	Common moorhen
	Rallus limicola	Virginia rail
	Scolopax minor	American woodcock
	Tympanuchus cupido	Greater prairie chicken
	Tympanuchus phasianellus	Sharp-tailed grouse
Fish	Acipenser fulvescens Ictiobus niger Lepomis gulosus Lepomis megalotis Moxostoma carinatum Moxostoma duquesnei Moxostoma valenciennesi Scaphirhynchus platorynchus	Lake sturgeon Black buffalo Warmouth Longear sunfish River redhorse Black redhorse Greater redhorse Shovelnose sturgeon
Reptiles	Chelydra serpentina	Common snapping turtle

Table	3.5. Species in G	reatest Conservation Need	That Are Hunted or Fish	ed
Taxa	Scientific Name	Common Name		

Minnesota's SGCN are distributed across the state and use a variety of habitats. Results of the species-distribution and species-habitat relationships reveal some patterns, however (see <u>chapter 7</u>, Methods and Analyses, for a description of the processes.) In general, more SGCN occur in the southeastern and central portions of the state (Figure 3.2; Table 3.6 a). The Blufflands and St. Paul-Baldwin Plains Subsections in particular have the most SGCN. The Blufflands Subsection also has the highest number of SGCN unique to any subsection within the Eastern Broadleaf Forest Province (Table 3.6 a). The Mississippi River and its corridor support a large diversity of species. In addition, many of the habitats most critical for SGCN have been greatly reduced or are no longer present in these subsections (see also <u>Appendix E</u>, Species Occurrence by Subsection, for detailed information on known occurrences of species since 1990.)

At the province level, the Eastern Broadleaf Forest Province contains both the most SGCN and the greatest number of SGCN unique to that province, while the Laurentian Mixed Forest Province has the highest percentage of unique species (Table 3.6 b.). Somewhat surprisingly, the prairie provinces contain both the fewest number of total and unique SGCN. This pattern holds true when the Tallgrass Aspen Parklands, which has only a small portion in Minnesota and is considerably smaller than the other provinces, is combined with the Prairie Parkland Province. The lower number of unique species in these provinces in part reflects that grassland habitats and their species are found in most subsections of the state, and are an important component in several of the subsections in the Eastern Broadleaf Forest Province.

Table 3.6. Species in Greatest Conservation Need Summary

a. The number of species in greatest conservation need for each subsection within the province, and the number of species unique to each subsection within the province

Province	Subsection	# Species	# Unique
Eastern Broadleaf Forest	Blufflands	156	14
	St. Paul-Baldwin Plains	149	1
	Big Woods	121	1
	Anoka Sand Plain	97	1
	Rochester Plateau	94	0
	Oak Savanna	93	1
	Hardwood Hills	85	1
Laurentian Mixed Forest	Mille Lacs Uplands	128	6
	Pine Moraines and Outwash Plains	89	1
	Agassiz Lowlands	88	1
	North Shore Highlands	84	6
	Chippewa Plains	83	1
	St. Louis Moraines	74	0
	Tamarack Lowlands	69	0
	Border Lakes	69	2
	Littlefork-Vermilion Uplands	67	0
	Nashwauk Uplands	60	0
	Laurentian Uplands	58	0
	Glacial Lake Superior Plain	55	0
	Toimi Uplands	52	0
Prairie Parkland	Minnesota River Prairie	116	1
	Red River Prairie	83	4
	Inner Coteau	78	1
	Coteau Moraines	78	0
Tallgrass Aspen Parklands Aspen Parklands		85	2

b. The number of species in greatest conservation need in each province, and the number and percentage of species found only in that province (unique)

Province	# Species	# Unique	% Unique
Eastern Broadleaf Forest	205	51	25
Laurentian Mixed Forest	171	47	27
Prairie Parkland	139	13	9.3
Tallgrass Aspen Parklands	85	2	2.3
Prairie Parkland and Tallgrass Aspen Parklands combined	147	20	14

A look at statewide distributions by individual taxonomic groups also reveals that different parts of the state may be important for different taxa (Figure 3.3). For example, the greatest number of SGCN reptiles, fish, and mollusks are in the subsections in the southeastern part of Minnesota, while more SGCN birds occur in the northwest subsections and in the Minnesota River Prairie subsection.

A statewide look at the species-habitat relationships shows that prairies, rivers, and wetlands are the three habitats used by the most SGCN (Figure 3.4). These are the habitats that have also experienced some of the greatest loss and degradation in the state.

This information on the distribution and habitat use by Minnesota's species in greatest conservation need helps us prioritize, at multiple spatial scales, conservation actions designed to sustain these species' populations. Figures 3.2 to 3.3 suggest areas in the state on which to focus conservation actions, and Figure 3.4 identifies certain habitats that may be more important for species in greatest conservation need. Further analyses of species distribution and habitat use are explained in <u>chapter 7</u> and have been used to craft the conservation actions in <u>chapter 5</u>, the subsection profiles.





Source: MN DNR, 2004





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Figure 3.3. Number of Species in Greatest Conservation Need by ECS Subsection in Minnesota by Taxonomic Group: Mammal, Bird, Reptile, Amphibian, Fish, Arthropod, Mollusk



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Figure 3.3, cont. Number of Species in Greatest Conservation Need by ECS Subsection in Minnesota by Taxonomic Group: Mammal, Bird, Reptile, Amphibian, Fish, Arthropod, Mollusk







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Figure 3.4. Statewide Number of Species in Greatest Conservation Need by Habitat



* Shrub/woodland-Upland includes oak savanna, jack pine woodland, and brush prairie.