

# CHAPTER NINE

## PLAN COORDINATION, IMPLEMENTATION AND REVIEW

### **Plan Coordination**

Consultation was held with numerous government and private conservation organizations in the development of the IWAP - directly through their participation in the planning or reviews process or indirectly through review of wildlife conservation plans they had developed that included Iowa's SGCN. A review of public participation was included in the *Planning Process* section in Chapter 1. Other governmental or NGO members of the Steering Committee are listed in Table 1-2; members of Working Groups in Table 1-3, and members of the Advisory Group in Appendix 2-1. Strategic and operational plans and websites of other organizations consulted are listed in Appendix 20.

Guidance on Plan content and preparation was received from the U.S. Fish and Wildlife Service, the International Association of Fish and Wildlife Agencies, and the National Advisory Acceptance Team (NAAT). National Plan coordination meetings were attended by Iowa DNR staff in 2003 (Mesa AZ and Madison WI). The *One Year Out* conference held in Nebraska in 2004 was especially helpful. An interstate coordination meeting between representatives from Iowa, Missouri and Kansas was held early in the planning process to help identify interstate implementation efforts. A Plan status meeting with USFWS staff in February of 2005 and an early review of a Plan draft by USFWS staff also helped focus development of the final Plan.

### **Plan Implementation**

*The discussion in this section assumes that full funding for the IWAP (see Chapter 10) will be available or at least substantial funding to accomplish the major conservation actions that are described.*

No single entity – government conservation agency, private conservation organization or research institution – can implement all conservation actions in this Plan even if full funding is achieved. To access all the energy, expertise and enthusiasm that will be needed an *IWAP Implementation Team* should be formed with representatives from all stakeholder organizations. Identifying an Implementation Team chairperson, solicitation of team members and coordination of its activities should be vested in IDNR as the statutory agency responsible for managing the state's wildlife resources. Team members should

represent state, Federal, county and local government wildlife and land management agencies and conservation organizations (see Interagency Cooperation below). Team members should have sufficient authority to speak for their agency or organization and be able to commit resources to carry out agreed-upon actions.

The purpose of the Implementation Team will be to coordinate to the extent possible the many actions of government agencies at all levels that impact wildlife and its habitats in Iowa. A list of those agencies that have had input into Plan development or should be included in Plan implementation is provided below. Creation of the Implementation Team is not intended to add another layer of bureaucracy or usurp the statutory authority, budget authority, or mission of any agency or NGO that seeks to improve the status of Iowa's wildlife. Cooperation with the IWCAP should be completely voluntary. Once formed, the Implementation Team should establish its own mission, operating procedures and schedules. The following is a suggestion for team members to consider as they decide how they will function.

The mission of the Implementation Team should be to identify common interests, solidify working agreements, and focus members on conservation actions that meet the goals of the IWAP in the most financially efficient and timely manner possible. The Implementation Team's responsibilities should include:

- Identify permanent or short term Working Teams to implement the vision elements and conservation actions outlined in this Plan;
- Develop general assignments for Working Teams, reporting procedures and schedules;
- Review recommendations and priorities established by Working Teams for conservation actions and funding;
- Coordinate activities of the Implementation Team members to accomplish agreed-upon conservation actions;
- Review progress toward IWAP visions, goals, and actions; identify barriers to progress and seek solutions that cross agency and organization lines. The Implementation Team may initially have to meet regularly; but after the desired level of cooperation and action is reached it should meet at least annually to review progress and solve problems that may arise.

*Working Teams* will provide the level of deliberation and expertise necessary to develop operational plans that will fulfill the goals and vision of the IWAP. Members should include wildlife, recreation and outdoor education scientists; land managers, and experts in implementing programs in these fields.

Working Team members should have the technical expertise to:

- Review and explore program and planning options;
- Develop conceptual operational plans for conservation agencies, NGOs and private citizens to participate in;
- Develop and critically review technical proposals;
- Provide peer review for cooperating agencies operating plans;
- Develop conservation action and funding priorities for the Implementation Team to consider;
- Identify strategic and operational Plan shortcomings and recommend improvements.

## **Interagency Cooperation**

Cooperation between agencies and organizations that manage public conservation lands in Iowa (IDNR, Iowa CCB's, USACOE and USFWS) will be essential to the successful implementation of IWAP. All have working relationships at both the state and local levels.

Many of the recommended conservation actions must be carried out on private land. NRCS provides technical assistance to landowners for land conservation projects and FSA provides funding. The IDNR director serves as Chair of the Farm Policy Committee of the International Association of Fish and Wildlife Agencies which advises NRCS and FSA on agriculture and wildlife policy issues and rule making procedures. IDNR has permanent positions on Iowa's USDA State Technical Committee and subcommittees that provide input into wildlife-friendly programs like WRP, CRP, EQUIP and WHIP. NRCS and IDNR cooperatively fund the DNR's Private Lands Program that uses USDA funding to establish wildlife habitat on private land. IDNR Wildlife Biologists are co-located in NRCS offices to promote close interaction between the DNR, NRCS staff and private landowners. All of these avenues will be utilized to promote the concepts and management recommendations identified in this Plan.

Iowa's eastern and western borders are defined by major river systems. IDNR fisheries and wildlife staff are heavily involved with cooperative projects that involve the border rivers - Upper Mississippi River Conservation Committee (UMRCC), UMRCC Fish Technical Committee, Mississippi Interstate Cooperative Resource Association (MICRA), MICRA Paddlefish/Sturgeon Recovery Work Group, Fish and Wildlife Work Group, Fish and Wildlife

Interagency Committee, Upper Mississippi River National Wildlife and Fish Refuge Master Planning, Environmental Management Program (EMP)/Long Term Resource Monitoring (LTRM) Analysis Team, EMP Habitat Rehabilitation and Enhancement Projects (HREP) planning and proposal review, EMP Coordinating Committee, EMP Water Level Management Task Force, Environmental Monitoring and Assessment Program for Great Rivers Ecosystems (EMAP-GRE), and Mississippi River Mussel Coordination Team.

IDNR fisheries personnel are involved with the Missouri River Natural Resources Committee (MRNRC), the MRNRC Fish Technical Committee, Missouri River Mitigation Committee, Master Manual Review Committee, MICRA, MICRA Paddlefish/Sturgeon Recovery Work Group, Missouri River Basin Association (MRBA), MRBA Roundtable, USFWS Fish Passage Grants, and Shallow Water Habitat Committee. They also coordinate fisheries issues with the eight MRB states to develop Missouri River recovery and ecosystem restoration plans

Northeast area Iowa DNR fisheries personnel are working through the Upper Iowa River Alliance to coordinate with the state of Minnesota to test water quality on the Upper Iowa River. Information from this project is used to prioritize Upper Iowa River tributaries for watershed management practices that address impairments discovered in the water testing.

Iowa DNR fisheries research personnel are coordinating shallow lakes management investigations with Minnesota DNR and Wisconsin DNR. Iowa DNR fisheries culture personnel work with drug (fish disease) issues with many state and federal agencies. Iowa DNR staff is represented on the Topeka shiner recovery team that includes representatives from the U.S. Fish and Wildlife Service, National Park Service, SDGFP, Kansas Department of Wildlife and Parks, Minnesota DNR, Missouri Department of Conservation, South Dakota State University, University of Minnesota, and private consultants. Fisheries biologists with Topeka shiner populations in their management areas in Iowa work with the USFWS on critical habitat and habitat restoration on private land.

Aquatic nuisance species (ANS) issues are addressed by Iowa DNR fisheries personnel with support from several partnerships including the Mississippi River Basin Panel on ANS, Asian Carp Management and Control Plan Work Group, Missouri River ANS Work Group, and Midwest Invasive Plant Network.

DNR staff also serves on a number of national and regional committees including the Prairie Pothole Joint Venture Technical Committee and Board, The Upper Mississippi River and Great Lakes Region Joint Venture Board, the Mississippi Flyway Council, Mississippi Flyway Council Technical Section, Midwest Deer and Turkey Study Group, Midwest Furbearer Workshop, Midwest Private Lands Working Group and Midwest Pheasant Council. All provide

opportunities for review of plan activities and integration of conservation actions in other wildlife programs.

Establishing formal communication through inter-state working groups similar to those that exist for many game species (discussed above) could greatly improve implementation of plans for states that have shared wildlife resources.

## IWAP Review

If the general outline of activities that is proposed in this Plan is followed, review of the IWAP will occur as follows:

- Achievements will be compiled and make available to the public as individual projects are completed (Chapter 7);
- Work Teams will review operational activities on a continual and ongoing basis;
- The Implementation Team will review activities at least annually;
- Review of the long term wildlife monitoring project will occur at least after 5 years when the initial inventory is complete.
- The Steering Committee recommends that a formal review of the entire IWAP should take place after no more than 10 years or oftener if desired by the Implementation Team.

The 10-year review should be a thorough as the original planning process. It should include a review of achievements, the status of all of Iowa's wildlife and its habitats, stresses that have been resolved or have intensified, the effectiveness of the IWAP in improving the status of Iowa's wildlife, and the public's acceptance of the Plan and its achievements. This review should strengthen the action plan and direct any changes needed to be sure that its visions are implemented in the 25-year time frame.



## Chapter Ten

### The Cost of Sustaining Iowa's Biodiversity

The costs of reaching the goals outlined in this Plan exceed the historic levels of conservation funding in Iowa. Hunters and anglers have funded most wildlife conservation. National and state trends indicate that the number of participants in hunting and fishing is declining. IDNR resident fishing and hunting license sales are decreasing about 1% a year. Approximately 45% fewer Iowans buy hunting licenses today than a generation ago. Total revenues to fund wildlife programs have increased recently because of the rapid increase in deer and wild turkey populations, but that trend is predicted to stabilize or decrease. To reach the goals established in this Plan a broader spectrum of Iowans must share in the funding burden. The Plan contains elements that should more than compensate Iowans for their support in the form of increased recreation, better health, improved quality of life, and improved economic vitality in rural Iowa.

The annual cost to double the amount of permanently protected wildlife habitat by 2030 is estimated to be \$48 million (Table 10-1). Currently \$29.6 million is available from a combination of hunter-angler licenses and excise taxes, Federal wildlife appropriations, Federal water quality appropriations, Federal farm programs, and NGO and CCB activities *if these funds were all dedicated to permanently protecting wildlife habitat.* It also assumes that Congress will fund SWG programs at the level anticipated by CARA and that state matching funds will be made available. That would leave a shortfall of \$18.4 million a year to be raised from other sources.

Additional costs to implement the Plan are listed in the right two columns of Table 10-1. Combining the habitat protection and habitat management, survey and science costs brings the total funding needed to approximately \$40 million annually. For purposes of reference only, the revenues raised from adding a 1/8% sales tax is \$44 million. Many other funding options are available.

**Table 6-1. Cost to Double the Amount of Permanently Protected Conservation Land in Iowa by 2030**

<b>Habitat Protection</b>		<b>Habitat Management &amp; Science</b>	
Acres in Iowa	36,000,000	Public Land Management	\$15,000,000
Acres Protected by 2030	1,250,000	Private Lands Assistance	\$6,000,000
Current Acres Protected	650,000	Education	\$1,500,000
Additional Acres Needed	600,000	Recreation	\$1,500,000
Cost/acre	\$2,000	Science & Monitoring	\$4,000,000
Total Cost	\$1,200,000,000		
<b>Cost/Year</b>	<b>\$48,000,000</b>		<b>\$28,000,000</b>
<b>Existing Sources of Funds</b>		<b>Existing Funds</b>	
<b>Dedicated Funds</b>		Land Management	\$6,000,000
Iowa Habitat Stamp	\$1,600,000	Private Lands Assistance	\$1,000,000
Iowa Migratory Bird Stamp	\$250,000	<b>Total Available</b>	<b>\$7,000,000</b>
REAP License Plates	\$400,000		
<b>Sub-total</b>	<b>\$2,250,000</b>	<b>Annual Shortfall</b>	<b>\$21,000,000</b>
<b>Appropriated Funds</b>			
Federal NAWCA/PPJV	\$2,000,000	<b>New Funds Needed</b>	
Federal NRCS - WRP	\$10,000,000	<b>Habitat Protection</b>	<b>\$18,375,000</b>
Federal SWG	\$375,000	<b>Habitat Manage/Science</b>	<b>\$21,000,000</b>
Federal EPA	\$5,000,000	<b>Total</b>	<b>\$39,375,000</b>
<b>Sub-total</b>	<b>\$17,375,000</b>		
<b>Non-State and Federal Donations</b>			
CCB's	\$2,000,000		
PF/DU/NWTF/TNC	\$2,000,000		
<b>Sub-total</b>	<b>\$4,000,000</b>		
<b>New Sources of Funds</b>			
Federal - New CARA	\$4,500,000		
State Matching	\$1,500,000		
<b>Sub-total</b>	<b>\$6,000,000</b>		
<b>Available Per Year</b>	<b>\$29,625,000</b>		
<b>Annual Shortfall</b>	<b>\$18,375,000</b>		

## **IOWA WILDLIFE ACTION PLAN**

### **APPENDIX 1 - APPENDIX 21**



# **APPENDIX 1. The ICWCP - A Plan to Plan**

## **Planning Schedule**

The target date for a final review draft of a State Comprehensive Wildlife Plan for Iowa is June 1, 2005. Meeting this deadline will allow for adequate review and approval by the Director and the Natural Resource Commission prior to the September 20, 2005 deadline. Developing a more detailed planning schedule will be one of the first tasks of the steering committee in coordination with the plan author.

## **Plan Contributors**

### Plan Director – Richard Bishop – Iowa DNR

#### Responsibilities

- 1) Participate in committee meetings
- 2) Review all drafts of the plan
- 3) Approve all press releases and plan marketing plans
- 4) Review and communicate progress to Division Administrator, Director and NRC commissioners

### Plan Coordinator – Terry Little, Iowa DNR

#### Responsibilities

- 1) Assemble Steering Committee
- 2) Participate in all committees
- 3) Identify and contract with a meeting facilitator
- 4) Identify and contract with plan author
- 5) Coordinate review and editing of all drafts of the plan
- 6) Coordinate all press releases and plan marketing
- 7) Report progress, problems and other developments to DNR administrators

### Steering Committee Chair – Doug Harr, Iowa DNR

#### Responsibilities

- 1) Convene and coordinate all steering committee meetings
- 2) Keep steering members and sub-committees focused, on task and on schedule
- 3) Consult with coordinator and committee members to solve problems
- 4) Plan, schedule and coordinate advisory committee meetings

### Steering Committee

#### Members – Key representatives from Iowa's conservation professionals

- 1) Dale Garner (DNR):
  - a. 2003-04: Coordination with Federal plans (PPJV, etc.)
  - b. 2004-05: plan Director
- 2) Kim Bogenschutz (DNR) – Aquatics (fish & invertebrates)

- 3) Dr. Erv Klaas (Iowa State University, retired) – Academia, GAP, Terrestrial invertebrates
- 4) Dr. James Dinsmore (Iowa State University retired) - Birds
- 5) Daryl Howell (DNR) – Threatened & endangered animals and plants, small mammals
- 6) Rick Zarwell (Audubon) – Birds, NGOs
- 7) Bruce Ehresman (DNR) – Birds, wildlife diversity programs
- 8) Marlene Ehresman (Iowa Natural Heritage Foundation) – Habitats and landscapes
- 9) Dave DeGeus (The Nature Conservancy) – NGOs, EarthTech, Inc.) – Herps
- 10) Angi Hanson (DNR) – Wildlife management, private lands program
- 11) Don Brazelton (Iowa Association of County Conservation Boards) – CCB issues, funding, legislative liaison
- 12) Todd Bishop (DNR) – Geographic Information Systems support
- 13) Barb Gigar (IDNR) - Education, Recreation

#### **Responsibilities**

- 1) Develop a “Plan to Plan”
  - a. Finalize a planning schedule
  - b. Identify Advisory Committee members
  - c. Give Advisory Committee direction and guidelines
    - i. Be strategic - Begin with the end in mind - Be bold, but realistic, 50 year horizon, 10 year focus?
- 2) Develop a meeting format for Advisory Committee meetings
  - a. “Status conference” – bring all advisory committee to same level of understanding of resource status
  - b. Professional meeting facilitator – someone with wildlife conservation background
  - c. Schedule for meetings – Number, timing, topics to cover
- 3) Assign preparatory tasks to committee members
  - a. Identify species and habitat experts to provide information
  - b. Develop teams for specific tasks
  - c. Prepare species and habitat status reports for Advisory Committee
- 4) Develop plan drafts
  - a. Review Advisory Committee recommendations and develop draft vision, goals, strategic objective statement and priorities
  - b. Work with plan coordinator and author to develop a draft plan outline
  - c. Review all drafts from author before going to wider review
  - d. Present draft plan to advisory committee for review, clarification and improvement
  - e. Prepare final draft of plan for DNR and NRC review and approval

Advisory Committee – Broad representation from the conservation community

Members – representatives from:

- 1) Iowa North American Bird Conservation Initiative (NABCI) committee
- 2) Resource Enhancement and Protection (REAP) coalition
- 3) DNR Wildlife Management
- 4) DNR Wildlife Research
- 5) DNR Forestry
- 6) DNR Fisheries
- 7) DNR Conservation Officers
- 8) Iowa Association of Naturalists (IAN)
- 9) Iowa Conservation Education Council (ICEC)
- 10) Iowa Natural History Federation
- 11) Natural Resource and Conservation Service (NRCS) Resource Conservation and Development (RC&D), Soil and Water Conservation Districts (SCWD)
- 12) Iowa Farm Bureau Federation
- 13) U.S. Congressional Aides
- 14) Governor's office
- 15) Natural Resource Commission commissioners
- 16) Iowa Herpetological Society
- 17) Iowa Sierra Club
- 18) Iowa Defenders of Wildlife
- 19) Others as identified by steering committee

Responsibilities

- 1) Review all status reports and papers
- 2) Recommend a vision for wildlife in Iowa
- 3) Recommend elements of a strategic vision
- 4) Recommend strategic goals and objectives
- 5) Recommend priorities for species and plant communities for action
- 6) Recommend strategic programs – what, where, how much

Plan Author (contractor)

Name: James Zohrer - E Resources Group

Responsibilities

- 1) Consult with the steering committee and IDNR Wildlife Diversity Program personnel to develop and update a working outline for the planning process so that all participants can stay apprised of progress and deadlines.
- 2) Meet with the IDNR's key project personnel, the steering committee or other appropriate staff at regular intervals, to review progress and update planning needs.
- 3) Work with the steering committee to identify work teams and products that will provide the author with information.

- 4) Review existing legislation, IDNR rules and other applicable regulations.
- 5) Working with planning teams, review existing databases and sources of information including, but not limited to, IDNR species management records or plans, Iowa GAP, GIS, heritage records, IDNR and other agencies' wildlife recovery plans, U.S. Fish and Wildlife Service Plans, and information from other state and federal agencies in Iowa having an interest in wildlife resource conservation such as DOT, DALS, USACOE, NPS, etc..
- 6) Review comprehensive plans of other states, agencies or partners for examples of considerations to include.
- 7) Develop a "status document" that summarizes information known on the status of wildlife species and their habitats in Iowa.
- 8) Working with the steering committee, identify stakeholders and partners, and arrange for public input meetings at which comments and suggestions are recorded.
- 9) Using the status information and suggestions from the advisory committee, work with the steering committee to identify and prioritize species in greatest need of conservation and conservation practices to benefit them.
- 10) Write an initial draft Plan for review and comment by the steering committee, advisory committee, IDNR and the public, and for evaluation for compliance with federal requirements.
- 11) Prepare and submit a final draft of the Plan incorporating comments as recommended by the steering committee to IDNR for final approval by Natural Resource Commission, key partners and the U.S. Fish and Wildlife Service by project completion date of May 31, 2005.

### **Milestones (Tentative)**

October 2003	Finalize steering committee membership. Develop a planning outline and schedule. Develop tentative steering committee meeting schedule.
January 2004	Identify work team leaders and tasks. Identify work team members.
March 2004	Review work team final products. Begin assembling and writing status report. Identify advisory committee members. Arrange for advisory committee time and place. Arrange for advisory committee meeting facilitator Develop advisory committee meeting format.
May 2004	Complete draft status report and distribute to steering committee and DNR for review and comment.

June 2004	Finalize draft status report and distribute to advisory committee.
July 2004	Advisory committee meeting to develop species and habitat priorities, a vision statement and major strategic objectives.
November 2004	Review advisory committee meeting products. Develop draft vision, goals and strategic objective statements. DNR review of plan to date.
February 2005	Advisory committee meeting to develop conservation actions that will implement strategies and determine conservation priorities. Steering committee review of conservation actions and priorities. Final decision on plan actions and contents. Begin writing first draft of final plan.
March 2005	First draft of plan to steering committee for review
May 2005	First draft finalized and sent for review and comment to the advisory committee, the public and U.S. Fish and Wildlife Service.
June 2005	Comments incorporated and final draft completed.



## **APPENDIX 2. State Advisory Group Meeting Summary**

### **2-1. Attendees at the ICWCP Advisory Group meeting.**

Name - Last	Name-First	Affiliation	Title	Address
Anderson-Cruz	Jennifer	Natural Resources Conservation Service	Biologist	Des Moines, IA
Andrews	Ron	Iowa DNR Wildlife	Furbearer Specialist & Wildlife Diversity Program	Clear Lake, IA
Bishop	Richard	Iowa DNR Wildlife	ex-Wildlife Bureau Chief	Des Moines, IA
Bogenschutz	Kim	Iowa DNR Fisheries	Aquatic Nuisance Species Coordinator	Boone, IA
Bonneau	Don	Iowa DNR Fisheries	Fisheries Research Supervisor	Moines, IA
Brandrup	Mike	Iowa DNR Cons & Rec.	Division Administrator	Des Moines, IA
Brown	Larry	Ruffed Grouse Society	Representative	Radcliffe IA
Bruce	Angi	Iowa DNR Wildlife	District Wildlife Supervisor	Lewis, IA
Burk	John	National Wild Turkey Federation	Biologist	Fulton, MO 65251
Cancilla	Jodeane	MacBride Raptor Center		Cedar Rapids, IA
Christiansen	Scott	Prairie Edge Sustainable Forestry Cooperative		Edgewood, IA
Clark	Jane	Sierra Club	Chair	Des Moines, IA
Conover	Marion	Iowa DNR Fisheries	Fisheries Bureau Chief	Des Moines, IA
Deaver	Steve	Linn County Conservation Bd.	Resource Technician	Marion, IA
DeGeus	Dave	The Nature Conservancy	Director of Conservation Programs	Des Moines, IA
Dinsmore	James	Iowa Audubon	Representative	Ames, IA

Dolan	Robert	Iowa DNR Wildlife	District Wildlife Supervisor	Manchester, IA
Downing	John	Iowa State University	Professor	Ames, IA
Ehresman	Marlene	IA Natural Heritage Foundation	Program Planning Associate	Des Moines, IA
Ehresman	Bruce	Iowa DNR Wildlife	Wildlife Diversity Program Biologist	Boone, IA
Farrar	Eugenia	EEOB Iowa State University	Professor	Ames, IA
Flynn	Chris	Iowa DNR	Conservation Officer	Birmingham, IA
Ford-Shivvers	Diane	Iowa DNR Cons & Rec.	Asst. Div. Administrator	Des Moines, IA
Francisco	Kim	Natural Resources Commission	Chair	Lucas, IA

Name - Last	Name-First	Affiliation	Title	Address
Fritzell	Peter	Iowa DNR Wildlife	Assistant Biometrician	Boone, IA
Garner	Dale	Iowa DNR Wildlife	Wildlife Bureau Chief	Des Moines, IA
Gengerke	Tom	Iowa DNR Fisheries	District Fisheries Supervisor	Spirit Lake, IA
Gilbertson	Nancy	US Fish & Wildlife Service	Biologist	Prairie City, IA
Gilliam	Jay	Iowa Ornithologist's Union	Conservation Committee Chair	
Gosselink	Todd	Iowa DNR Wildlife	Wild Turkey Biologist	Chariton, IA
Griffin	Mike	Iowa DNR Wildlife	Mississippi River Coordinator	Bellevue, IA
Gritters	Scott	American Fisheries Society	President	Guttenberg, IA
Hall	Jeff	Representative Boswell's Staff	Staff member	Des Moines, IA
Hansen	Steve	Iowa Woodland Owners Association		Des Moines, IA
Harr	Doug	Iowa DNR Wildlife	Wildlife Diversity Coordinator	Boone, IA
Harson	Greg	Iowa DNR Enforcement	Conservation Officer	Little Rock, IA
Heiser	Neil	Iowa DNR Wildlife	District Wildlife Supervisor	Spirit Lake, IA
Hendricks	Ace	Woodland Growers		Ackworth, IA
Hey	Jane	Morningside College		
Hill	Spencer	Iowa Trappers Association	President	Kanawha, IA
Holland	Steve	Iowa DOT		Ames, IA
Howell	Daryl	Iowa DNR Parks	Senior Environmental Specialist	Des Moines, IA
Hummel	Steve	Ida Co. Cons Bd	Board Member	Lake View, IA
Johnson	Ann	IA Odonata Society	Vice-Chair	Norwalk, IA
Johnson	Chuck	Loess Hills Audubon	Representative	Sioux City, IA
Kane	Kevin	Iowa State University	GIS Facility Director	Ames, IA
Klaas	Erv	Iowa State University (retired)	Professor Emeritus	Ames, IA

Kline	Don	Iowa DNR Fisheries	Natural Resource Biologist	Brighton, IA
Koenig	Darwin	Iowa Audubon		Ankeny IA
Koford	Rolf	Iowa Coop Unit	Professor	Ames, IA
Lamb	Inger	IA Prairie Network, IA Native Lands	President	

Name - Last	Name-First	Affiliation	Title	Address
Lampe	Richard	Biology Department Buena Vista University	Professor	Storm Lake, IA
Lancaster	Jennifer	Iowa DNR Enforcement	District Law Enforcement Supervisor	Manchester, IA
Larson	Chris	Iowa DNR Fisheries	Natural Resource Technician	Lewis, IA
LeClere	Jeff		Consultant	St Paul, MN
Leopold	Rich	Iowa Environmental Council	Chair	Des Moines, IA
Little	Terry	Iowa DNR Wildlife	Wildlife Research Supervisor Wildlife Diversity Supervisor	Des Moines, IA
MacInroy	Mark	Iowa DNR Wildlife	Wildlife Diversity Technician	Boone, IA
Major	Annabelle	Iowa State University	Grad Student	Ames, IA
Moritz	Bob	Loess Hills Alliance	Chair	Sioux City, IA
Neumann	Kay	Iowa Rehabilitator's Association	President	Dedham, IA
O'Brien	Jason	Iowa NatureMapping	Prog. Coord.	Ames, IA
Olsen	Frank			
Otis	Dave	Iowa Cooperative Fish & Wildlife Research Unit	Professor	Ames, IA
Parmalee	Jeff	Simpson College	Professor	Indianola, IA
Poole	Kelly	Iowa Department of Transportation	Aquatic Ecologist	Ames, IA
Roberts	Steve	Iowa DNR - Wildlife	Biometrician	Boone, IA
Robinson	Rick	Iowa Farm Bureau Federation	Environmental Coordinator	West Des Moines, IA
Rovang	Rodney	U.S. Park Service	Resource Manager	Harper's Ferry, IA
Sand	Duane	INHF		Norwalk, IA
Schlarbauer	Pat	Iowa DNR Wildlife	Wildlife Diversity Program Technician	Boone, IA
Schlict	Dennis		Biology Teacher	Center Point, IA

Name - Last	Name-First	Affiliation	Title	Address
Schwager	Marty	Iowa Pork Producer's Association	Executive Director	Clive, IA
Skibbe	Jessica	Iowa State University	grad student	Ames, IA
Skold	Steve	Safari Club International	Regional Rep.	West Des Moines, IA
Smith	Kelly	Iowa DNR Wildlife	Landowner Incentive Program Coordinator	Des Moines, IA
Sproul	Tim	Harrison CCB	Director	Woodbine, IA
Steffen	Chuck	The Wildlife Society	President	Ottumwa, IA
Suchy	Willie	Iowa DNR Wildlife	Deer Biologist	Chariton, IA
Sweet	Mike	US Fish & Wildlife Service	Biologist	Ft. Snelling MN
Sweet	Craig	Iowa Trappers Association		IA
Swinton	Rod	Iowa Tree Farm Committee		Waterloo, IA
Szcodronski	Kevin	Iowa DNR Parks	Bureau Chief	Des Moines, IA
VanDeWalle	Terry	EarthTech	Biologist	Waterloo, IA
VanWaus	Dave	Pheasants Forever	Regional Director	Colo, IA
Walkowiak	John	Iowa DNR Forestry	Bureau Chief	Des Moines, IA
Weedum	Joe	Hawkeye Flyfishing Association	President	Altoona, IA
Whittlesey	Dave	National Wild Turkey Federation	Supervisor	Woodburn, IA
Wooley	Jim	Pheasants Forever	State Director	Chariton, IA
Zarwell	Rick	Iowa Audubon	Important Bird Area Coordinator	Lansing, IA
Zenner	Guy	Iowa DNR - Wildlife	Waterfowl Biologist	Clear Lake, IA
Ziemer	Kathleen	Butterfliz of Iowa		Des Moines, IA
Zohrer	Jim	E Resources, Inc.	Private Consultant	West Des Moines, IA

## **2-2. Advisory Group Meeting Agenda**

### ***SECURING A FUTURE FOR FISH AND WILDLIFE: A Conservation Legacy for Iowans***

State Historical Museum  
Des Moines, IA  
July 17, 2004

<u>Time</u>	<u>Activity</u>
8:30 – 9:00 a.m.	Registration and Refreshments
9:00 - 9:30 a.m.	Welcome – <i>DNR Director Jeff Vонk</i>
	Introduction to the State Comprehensive Wildlife Conservation Plan (SCWCP) – <i>Terry Little, DNR Wildlife Research Supervisor,</i>
9:30 – 10:15 a.m.	Status Report on the Condition of Iowa's Wildlife – <i>Jim Zohrer, SCWCP author</i>
10:15 a.m. – Noon	Developing a Vision: Iowa's Fish and Wildlife in 2050 – Facilitated group activity
Noon – 1:00 p.m.	Lunch
1:00 – 1:15 p.m.	Vision Recap and Consensus – <i>Jim Zohrer</i>
1:15 – 3:45 p.m.	Implementing the Vision: Conservation strategies for the next 50 years – Facilitated group activity
3:45 – 4:00 p.m.	Next Steps: Developing and Accepting the Plan – <i>Jim Zohrer</i>

## **2-3. Status Document Summary**

**Introduction.** The Iowa Department of Natural Resources has the responsibility for preparing a comprehensive wildlife conservation plan by October of 2005. The plan will include eight required "elements". These elements are:

1. information on the distribution and abundance of species of wildlife;
2. descriptions of locations and conditions of key habitats and community types;
3. descriptions of problems which may adversely affect identified species;
4. descriptions of conservation actions necessary to conserve identified species;
5. plans for monitoring identified species and their habitats;
6. plan review procedures;
7. efforts for coordinating the plan with other land management agencies;
8. description of public participation.

The first step in the preparation of the plan involves the creation of a "Status Document" that includes the first, second and introduction to the third required elements as listed above.

**Procedures.** A Wildlife Plan Steering Committee was established in late 2003 to assist in the listing of species of conservation concern and to further guide in the writing of the conservation plan. The Steering Committee is made up of 16 individuals plus the Plan author. The members are experts in various wildlife related fields and represent a number of organizations including Iowa County Conservation Boards, Iowa State University, Iowa Department of Natural Resources, The Nature Conservancy, the Iowa Natural Heritage Foundation, the Audubon Society and private individuals. The committee decided that species to be included in the plan should be those for which the Department of Natural Resources has management authority by law (as listed in the Code of Iowa), those included on the state's endangered and Threatened species list, and other groups for which adequate distribution and abundance information is available. The Steering Committee prepared complete lists of all species of each group found in this state, reduced these lists to shorter lists of "species of conservation concern", and helped in the preparation and review of the Status Document.

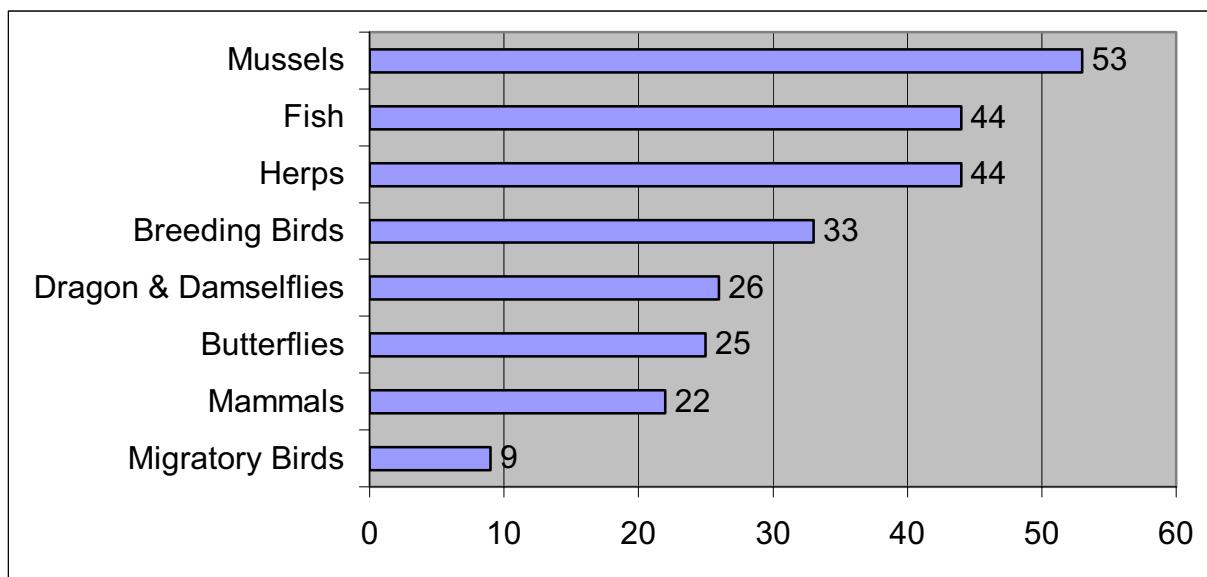
**Results.** Iowa is considered by many to be the most altered state in the nation. Prior to European settlement, Iowa was covered by tallgrass prairie, millions of acres of wetlands, wooded river corridors and forested hills in the Northeast part of the state. Today, 90% of the state has been converted for agricultural uses with only 43% of the historic forests, 5% of the wetlands and less than .1% of the original native prairie remaining. Wildlife species responded to the changing landscape, many declined while other flourished in the agricultural setting. Of the 999 species considered in the Plan, 30% are considered as being of the greatest conservation concern as shown in Table 12-2-1.

**Table 2-2-1. Percent of Species with the Greatest Conservation Concern**

Group	Total Iowa Species Considered	Number with Greatest Concern	Percent of Group Total
Breeding Birds	206	67	33
Migratory Birds	199	18	9
Mammals	82	18	22
Fish	153	67	44
Amphibians and Reptiles	71	31	44
Mussels	55	29	53
Land Snails	8*	8	100
Butterflies	119	30	25
Dragonflies and Damselflies	106	28	26
<b>TOTALS</b>	<b>999</b>	<b>296</b>	<b>30</b>

\*Only Iowa Endangered, or Threatened species listed.

Of the eight groups of animals considered in the plan (excluding land snails), those showing the highest percentage with species of conservation concern are primarily aquatic groups as shown in the graph below. This may indicate that aquatic habitats and communities may offer the biggest challenges in Iowa.

**Graph 2-2-1. Percent of Group of Conservation Concern**

An analysis of habitat use by species of conservation concern shows that the most used terrestrial habitats include wetlands and native prairie, while the most used aquatic habitats include rivers and lakes. (Table 12-2-2.)

**Table 2-2-2. Habitat Utilization by Species of Concern**

Land Cover Type	Number of Species Utilization
<b>Terrestrial Habitats</b>	
Herbaceous Wetland	62
Native Prairie	57
Forest	47
Agricultural Lands	46
Woodlands	41
Wet-forest/Woodlands	28
Savanna	20
Shrubland	16
Wet Shrubland	7
<b>Aquatic Habitats</b>	
Rivers	74
Lakes	38
Streams	30
Creek	30
Backwater	27
Impoundment	12

Of the terrestrial habitats, it is interesting that the most used habitats (wetlands and native prairie) are also those that have been the most reduced since presettlement times.

**Remaining Planning.** The status document will now be presented to a State Advisory Group made up of representatives from conservation agencies and organizations, commodity groups and private individuals. The Advisory Group will help develop a vision for the management of Iowa's fish and wildlife in the future and will help in identifying strategies for the implementation of species and habitat management practices. The remainder of the plan will focus on answering required elements three through eight as listed above. Additional coordination will be completed with agencies, organizations and individuals and comments on the Plan will be solicited from the public at various meeting throughout the state during the next twelve months. The final Plan will be a historic document that outlines the management of all species of fish and wildlife and their habitats in this state. For the next quarter century it will serve as a guide for fish and wildlife conservation efforts in Iowa.

## **2-4. Vision Statement Elements.**

The full advisory group broke into eight working groups to craft elements of a vision statement for Iowa wildlife in the year 2030 (a 25-year vision). Individuals were first asked to list their individual ideas on possible elements to be included in the vision statement. Individuals listed 256 possible vision elements. These ideas were shared with their small working group. Similar ideas were then combined and then prioritized into four vision statement elements. The 32 elements submitted by the 8 working groups are listed below in four priority groupings.

### **Priority One**

1. Habitat to maintain species throughout the state on public and private land through large habitat corridors.
2. Maintain viable populations of wildlife and plant communities in concert with the economic needs of Iowa.
3. 100% of agricultural land will be managed under approved conservation practices including permanent buffers on all waterways.
4. Connecting corridors between multiple representations of major protected ecosystem types.
5. Self-sustaining wildlife populations across the state with goal of minimizing the number of Threatened and Endangered species.
6. There is stable, permanent funding for Iowa's natural resources and environmental education.
7. By 2030, reverse watershed and hydrologic alterations to benefit all habitats.
8. Accelerated acquisition of critical habitats in the state (up to 10% of the land base).

### **Priority Two**

9. The general public understands ecological principles and respects and shares space with wildlife.
10. Optimize management for all native species utilizing key ecological management principles on all lands.
11. By 2030, all Iowa citizens contribute annually to fish and wildlife conservation at a level equal to the national average per capita.
12. The Threatened and Endangered Species list is no longer necessary - all have recovered.
13. Ensure healthy ecosystems that incorporate representative habitats connected through safe habitat corridors.
14. There is a 50% increase in participation in outdoor activities associated with fish and wildlife and their habitats with all Iowans having opportunities to participate in consumptive uses of natural resources.

15. Increase biodiversity and numbers within species of concern, and no loss of present abundant species.
16. Dependable and expanded source of conservation funding.

### **Priority Three**

17. All Iowans (including conservation groups and agencies) are engaged in funding and supporting the fish and wildlife and other natural resources of the state.
18. Landowners and conservationists work in harmony.
19. Establish a network of diverse habitats such that 10% of the state's land base is in public ownership and less than 10% of species remain on the list of conservation concern species.
20. Government conservation spending is dependable, secure and appreciated as a powerful economic investment.
21. 10% permanently protected, publically accessible land in each of Iowa's counties.
22. All Iowan's understand the state's natural resource issues and how they relate to the economy, quality of life, and quality of habitat.
23. Every Iowan will have a land and water ethic, and all are advocates for our natural resources.
24. Expanded knowledge of existing organisms in Iowa, and effective communication of this data.

### **Priority Four**

25. Iowans practice environmentally sustainable agriculture.
26. Create a comprehensive list and better data on populations and ecological processes of all species in Iowa.
27. All citizens understand the value of conservation (economics and biology) and have opportunities for both consumptive and non-consumptive use.
28. Maintain diverse opportunities for all people to enjoy and benefit from wildlife.
29. Mandated environmental education curriculum in K-12 classrooms.
30. Wildlife and fisheries management is based on science, not emotions or politics because political leaders are aware of the economic benefits and social values of Iowa's natural resources.
31. Restoration and protection of diverse and representative natural landscapes, large and small, public and private.
32. Increased wetland habitat by 500% over 2000 estimate, including ephemeral ponds and 25% of all potholes.

In general, the 32 suggested vision statement elements fell under *habitat statements, wildlife statements, education statements, and management statements*. All 32-vision statement elements were combined and refined into four top priorities as listed below.

**Habitat-related Priority**

Adequate, diverse habitat (10% of land base), including habitat corridors, exist to serve the needs of fish and wildlife.

**Wildlife-related Priority**

Sustainable wildlife populations exist so that the Threatened and Endangered Species List is no longer needed.

**Education-related Priority**

General public understands ecological principles, respects wildlife, and participates in nature-based activities.

**Management-related Priority**

Optimize management for wildlife and plan communities using key ecological management principles and techniques on all lands.

A fifth frequently mentioned element related to securing an adequate and dependable source of conservation funding. It was determined that this is actually a conservation strategy and should be included there.

## **2-5. Conservation strategies to implement vision elements.**

The eight working groups reconvened to develop strategies that would implement each vision element.

### **Habitat related element- Adequate, diverse habitat (10% of land base), including habitat corridors, exist to serve the needs of fish and wildlife.**

1. Develop partnerships to provide adequate, sustained reliable funding to restore, protect and manage a diverse habitat base, with priority to identified habitats, (i.e. percentage of sales tax dedicated to fish and wildlife).
2. Develop tax incentives to encourage good land stewardship.
3. Use news media to tell "quality of life" stories of relationship of wildlife to economic vitality.
4. Educate Iowans on the value of wildlife and associated recreation.
5. Legislate meaningful, well-defined laws to protect wetlands, prairies, forests and other significant areas.
6. Strategize to get legislators and key decision makers "on our side".
7. Put \$20 million a year into land acquisition and long-term private land agreements for habitat establishment.
8. Increase research to evaluate the effects of land practices on various species.
9. Focus on species of concern.
10. Return rural right-of-ways to native species.
11. Set and fund annual land protection goals.
12. Develop targeted priority conservation areas.
13. Restore naturalized stream hydrology.
14. Develop statewide comprehensive hydrology model to identify priority conservation areas.
15. Identify and permanently protect landscape and biodiversity in regions of ecological importance.
16. Restore and protect at least two large tracts in every landform region.
17. Permanent protection and enhancement of existing riparian areas.
18. Promote federal farm programs that benefit wildlife and eliminate those that result in habitat loss.
19. Buffers riparian to all rivers and streams.
20. Create and implement watershed conservation plans for comprehensive systems/habitat conservation areas.
21. (Secure funding.) Full funding for REAP.
22. Identify and expand staff needs.
23. Determine costs to implement strategies.
24. Identify potential funding sources.
25. (Public Ownership) Acquire ownership/easements.
26. Identify where current habitat needs are.
27. Identify needed corridors among existing habitats.
28. Acquire, restore and manage large tracts of natural areas.
29. Promote ecotourism.

- 30. Streamline acquisition process.
- 31. Take advantage of key acquisition opportunities.
- 32. Promote greater public/private partnerships.
- 33. Develop/promote volunteer efforts to assist land management.
- 26. (Private Lands) Provide management assistance for private lands.
- 27. Increase/maintain incentives including property tax incentives.
- 28. Promote/expand continuation of long-term federal conservation programs.
- 29. Promote importance of economic benefits of wildlife.
- 30. Increase education for land stewardship.
- 31. (Research/Management) Determine additional habitat needs (greater than 10% of land area).
- 32. Identify needs of wildlife and restore forests, wetlands and prairies to meet those needs.
- 33. Cooperate with adjacent states, Federal and tribal landowners with habitat restoration and management.
- 34. Public ownership through aggressive acquisition program of 5% of land base.
- 35. Buffers riparian to all rivers and streams.
- 36. Return rural right-of ways to native species.
- 37. Set and fund land protection goals to meet habitat base in 10-20 years.
- 38. Promote federal farm programs that benefit wildlife and eliminate those that result in loss of wildlife habitat.
- 39. Develop targeted priority conservation areas.
- 40. Remove dams to modify for fish movement.
- 41. Restore naturalized stream hydrology.

**Wildlife related element- Sustainable wildlife populations exist so that the Threatened and Endangered Species List is no longer needed.**

- 42. (Policy) Dollar incentives to reward sound management practices.
- 43. Economic disincentives for bad management practices.
- 44. Institute statewide watershed policies and regulations.
- 45. Coordinate land management policy among all layers of government, expand to engage private sector partnerships.
- 46. Increase and stabilize state and federal funding for Threatened and endangered species focused on habitat.
- 47. Implement statewide land use plan to direct economic development while expanding fish and wildlife habitat.
- 48. Strong coalitions between DNR, federal government, environmental groups and landowner community (especially agricultural).
- 49. Better enforcement of existing regulations.
- 50. Delist species as soon as possible to demonstrate success and solidify landowner and political support.
- 51. Provide State Wildlife Grant funding to all DNR bureaus that manage public lands.

52. (Land Management) Conduct research on habitat requirements of Threatened and Endangered species, then restore habitats that meet those requirements.
53. Develop ecosystem based management plans that promote biodiversity.
54. Acquire, preserve and enlarge habitat tracts on which existing Threatened and Endangered populations occur.
55. Maintain predator-prey balance.
56. Implement baseline surveys and long-term monitoring of populations.
57. Informed reintroduction and relocation of Threatened and Endangered species.
58. Adequate control of exotic invasive species.
59. (Education) A well-informed and engaged political and administrative leadership.
60. Provide educational programs for landowners to understand sound management practices.
61. Increase public support for conservation programs through a marketing campaign, education, land stewardship, and citizen data collection.
62. Increase database/inventory of fish, wildlife and habitat.
63. Secure adequate and permanent funding.
64. Create partnerships among all entities.
65. Document relationships between water quality and sustainable wildlife.
66. Mandate curriculum in Iowa schools.
67. Educate all Iowans about issues in Iowa.
68. Prevent spread of invasive species.
69. Provide access (walk-in) areas to improve private habitat.
70. (Funding) Pursue a sales tax option.
70. Educate public elected officials about the need for this type of funding.
71. Institute a non-game user fee.
72. Institute an excise tax on products (i.e. Teaming With Wildlife).
73. Institute an access fee for state-owned public areas including parks.
74. Institute a vehicle, boat, ATV, motorcycle, watercraft fee.
75. Review other state's funding mechanisms.
76. Institute a dove stamp, butterfly stamp, etc..
77. Hold a dove season.
78. Promote ecotourism such as the monarch migration, Loess hills, pheasant hunting, pelican watches, winter bald eagles and Tundra Swans, dove season.
79. Concentrate management of communities and ecosystems instead of single species.
80. Create and implement watershed conservation plans for comprehensive systems for habitat conservation areas.

**Education related element- General public understands ecological principles, respects wildlife, and participates in nature-based activity.**

81. Develop and implement a comprehensive environmental education strategy for pre K-adult - with a required or reward system for pre K-12 classroom curriculum.
82. Expand public relations program to better market Iowa's natural resources - broad target audience (market research) - not just hunters and anglers - be pro active - buy TV time - including improvement of natural resource profession image through better customer relations and respect for the public.
83. Work with national agencies and organizations to help model public relations programs and other information.
84. Network - All conservation groups and agencies work together to collaborate efforts and funding.
85. Expand Master Conservationist Program.
86. Develop and implement residential programs by District - use existing nature areas - subsidized for families, adults and teachers.
87. Expand outdoor classrooms (staff people to coordinate this).
88. Integrate the management process by involving the public through monitoring wildlife and fish (citizen science programs) such as IOWATER and NatureMapping.
89. Conduct regional eco-fairs.
90. Create a DNR wildlife hotline.
91. Create a professional speakers database (including current research).
92. Institutionalize an improved fish and wildlife management curriculum specific to Iowa in K-12 schools.
93. Retrain teachers.
94. Get fish and wildlife management questions on standardized tests.
95. Engage ICEC, IAN, and AEAs.
96. Develop hands-on outdoor activities for schools.
97. Encourage physical education teachers to promote outdoor activities (hiking, fishing, hunting, trapping, birding, etc.).
98. Develop a sustainable, broad-based funding mechanism to support improved education efforts (such as 0.1 of 1% of sales tax, etc.).
99. Develop an Education Bureau within the DNR to: 1. develop a campaign that links quality of life, economics and fish and wildlife activities, 2. contract with a professional agency to develop a media campaign to raise awareness of the importance of fish and wildlife diversity and habitats, 3. coordinate with CCB's, NRCS, FSA, FWS, Extension, and NGO's to deliver a consistent fish and wildlife diversity message, particularly to Iowa's private landowners, 4. create urban fish and wildlife specialists to work in metropolitan areas, 5. create a wildlife diversity website, 6. expand hunter education classes in areas of fish and wildlife management and ethical use.

- 100. Provide abundant accessible public lands for a variety of recreational activities (such as hunting, fishing, hiking, birding, trapping, biking, etc.) proximate to populations centers.
- 101. Promote and improve outdoor education fairs, such as the hawk watch, bird festivals, eagle days, etc., with improved and expanded environmental education materials.
- 102. Develop a "Habitat Stewardship Certification".

**Management related element- Optimize management for wildlife and plant communities using key ecological management principles and techniques on all lands.**

- 103. Encourage, by law, good conservation stewardship and management on a watershed basis in the state through funding incentives, enforcement, and education
- 104. Create management teams for each of the watersheds.
- 105. Conduct biological surveys in each watershed, monitor key groups and determine best management practices for key habitats and species.
- 106. Develop new and more dependable sources of sustainable funding such as a percent of the state sales tax and prioritize existing funding and incentive programs to target critical habitats and species of concern.
- 107. Improve coordination and sharing of information between agencies, NGO's and private sector (such as a web-page for information).
- 108. Develop a statewide invasive species management plan.
- 109. Prevent development of agricultural confinement operations in historic flood plains.
- 110. Construct catch basins or buffer strips for wetlands and other protected ecosystems.
- 111. Work with policy makers on improving wildlife habitat within federal farm policy.
- 112. Utilize performance based land management on public and private land (measure outcomes to optimize management).
- 113. Provide adequate resources to monitor outcome and provide decision support models.
- 114. Institute performance based wildlife management, adequately fund diversity management of state lands so they can be a model of ecosystem management (before and after monitoring and implementation and tracking systems).
- 115. Use USDA and partnership dollars on large targeted landscapes.
- 116. Coordinate land management message to have a consistent voice among land management agencies/organizations.
- 117. Add wildlife biologist positions.
- 118. Utilize existing NRCS CSP and GRP for advancing rotational grazing and diverse crop rotations.
- 119. Start a DNR wetland banking program to restore critical habitat.

120. Reform property tax programs to reward protection and management of habitats.
121. Seek full mitigation funding from the road system.
122. Tie wildlife biologists salaries to wildlife conservation goals met (incentives).
123. Invest adequate resources into science and ecological planning to aid in setting focused effective goals (for example- understanding the impact of burns)(how much burning is enough).
124. Use Clean Water Act and dollars to address needs of aquatic species.  
There is a lack of political will to use Clean Water Act to protect aquatic species.
125. Increase education of private landowners through regional classes to show benefits to wildlife and the public.
126. All DNR Divisions work together in effective and efficient resource management. (All divisions and programs should be base funded.)
127. Develop a statewide monitoring program for all wildlife species.
128. Provide continued or additional technical assistance, cost-share funding etc. to aid landowners with land management.
129. Aggressive control of invasive species using early detection and effective strategies.

The Advisory Group decided that there was no need to reconvene for face-to-face meetings - future reviews of the Comprehensive Wildlife Plan should be by e-mail or hard copy. The results of this Advisory Group meeting were sent to participants and invitees that did not attend for review and final comment.

## **Attachment 2-6. Advisory Group Meeting Feedback Form**

### **Iowa Comprehensive Wildlife Conservation Plan Advisory Group Meeting - July 17, 2004**

Thank you for your interest in the Iowa Comprehensive Wildlife Conservation Plan that we call "SECURING A FUTURE FOR FISH AND WILDLIFE: A conservation Legacy for Iowans". The Advisory Group met in Des Moines on July 17th for an update on the status of wildlife in Iowa and to provide input for the vision of Iowa wildlife in the year 2030. A copy of the summary of that meeting is attached. Even if you did not attend the meeting, your input on the meeting results and the plan in general are welcomed. If you want to comment please complete this form and return it in the enclosed envelope.

1. NAME: \_\_\_\_\_  
AFFILIATION: \_\_\_\_\_

2. Did you attend the meeting? yes\_\_\_\_\_ no\_\_\_\_\_

3. Do you want to receive additional information on the plan and on future meetings?

yes\_\_\_\_\_ no\_\_\_\_\_. If yes, do you want information by mail or e-mail? \_\_\_\_\_

4. Comments on the Vision Statement Elements:

5. Comments on Conservation Strategies:

6. Comments on the Wildlife Conservation Plan in general:

7. Additional comments:

## APPENDIX 3. List of Iowa breeding birds considered by the ICWCP.

**Iowa Abundance:** A = abundant, C = common, CL = common locally, U = uncommon, R = rare, XS = extinct, X = extirpated, EX = exotic.

See Appendix 11 definitions of NatureServe Iowa and National Status rankings.

**Priority Status:** From 2002 Birds of Conservation Concern lists in Bird Conservation Regions 11 (Prairie Pothole), 22 (Eastern Tallgrass Prairie), 23 (Prairie Hardwood Transition), and 3 (FWS Region 3).

Common Name	Scientific Name	Iowa Abundance	Iowa Status	National Status	Priority Status*
Common loon	<i>Gavia immer</i>	X	SXB, S4N	N4B, N5N	
Pied-billed grebe	<i>Podilymbus podiceps</i>	C	S4B, S4N	N5B, N5N	11
Red-necked grebe	<i>Podiceps grisegena</i>	R	SAB, S2N	N5B, N5N	
Eared grebe	<i>Podiceps nigricollis</i>	R	SAB, S2N	N5B, N5N	
Western grebe	<i>Aechmophorus occidentalis</i>	R	SAB, S2N	N5B, N5N	
American white pelican	<i>Pelecanus erythrorhynchos</i>	C	S4N	N3B, N3N	
Double-crested cormorant	<i>Phalacrocorax auritus</i>	LC.	S3B, S5N	N5B, N5N	
American bittern	<i>Botaurus lentiginosus</i>	R	S2B	N4B, N4N	11,3
Least bittern	<i>Ixobrychus exilis</i>	U	S3B, S2N	N5B, N5N	
Great blue heron	<i>Ardea herodias</i>	LC	S3B	N5B, N5N	
Great egret	<i>Ardea albus</i>	U	S3B, S4N	N5B, N5N	
Little blue heron	<i>Egretta caerulea</i>	R	SAB, S2N	N5B, N5N	
Cattle egret	<i>Bubulcus ibis</i>	R	SAB, S4N	N5B, N5N	
Green heron	<i>Butorides virescens</i>	C	S3B	N5B, N5N	
Black-crowned night-heron	<i>Nycticorax nycticorax</i>	R	S3B, S3N	N5B, N5N	
Yellow-crowned night-heron	<i>Nyctanassa violacea</i>	R	S3B, S3N	N5B, N5N	
Turkey vulture	<i>Cathartes aura</i>	U	S4B, S5N	N5B, N5N	
White-faced ibis	<i>Plegadis chihi</i>	R	SAB	N4B, N4N	
Trumpeter swan	<i>Cygnus buccinator</i>	R	S2B	N4B, N4N	11
Mute swan	<i>Cygnus olor</i>	EX/R/	SE4	NE	
Canada goose	<i>Branta canadensis</i>	A	S5B, S5N	N5B, N5N	
Wood duck	<i>Aix sponsa</i>	A	S5B, S5N	N5B, N5N	
Green-winged teal	<i>Anas crecca</i>	R	S2B, S5N	N5B, N5N	
American black duck	<i>Anas rubripes</i>	R	SAB, SZN	N5B, N5N	
Mallard	<i>Anas platyrhynchos</i>	A	S5B, S5N	N5B, N5N	

Northern pintail	<i>Anas acuta</i>	R	S2B, S5N	N5B, N5N	
Common Name	Scientific Name	Iowa Abundance	Iowa Status	National Status	Priority Status*
Blue-winged teal	<i>Anas discors</i>	A	S4B, S5N	N5B, N5N	
Northern shoveler	<i>Anas clypeata</i>	U	S2B, S5N	N5B, N5N	
Gadwall	<i>Anas strepera</i>	U	SAB, S4N	N5B, N5N	
American wigeon	<i>Anas americana</i>	R	S2B, S5N	N5B, N5N	
Canvasback	<i>Aythya valisineria</i>	R	S2B, S4N	N5B, N5N	
Redhead	<i>Aythya americana</i>	U	S2B, S4N	N5B, N5N	
Ring-necked duck	<i>Aythya collaris</i>	R	SAB, S4N	N5B, N5N	
Lesser scaup	<i>Aythya affinis</i>	R	SAB, S5N	N5B, N5N	
Bufflehead	<i>Bucephala albeola</i>	R	SAB, S3N	N5B, N5N	
Hooded merganser	<i>Lophodytes cucullatus</i>	U	S2B, S3N	N5B, N5N	23,11
Ruddy duck	<i>Oxyura jamaicensis</i>	U	S2B, S4N	N5B, N5N	
Osprey	<i>Pandion haliaetus</i>	R	S1B, S3N	N5B, N4N	
Swallow-tailed kite	<i>Elanoides forficatus</i>	X	SXB	N3B	
Mississippi kite	<i>Ictinia mississippiensis</i>	R	SAB	N5B	
Bald eagle	<i>Haliaeetus leucocephalus</i>	Endangered R	S3B, S3N	N4B, N4N	23,11
Northern harrier	<i>Circus cyaneus</i>	Endangered R	S2B, S4N	N5B, N5N	11,22
Sharp-shinned hawk	<i>Accipiter striatus</i>	R	SAB, S3N	N5B, N5N	
Cooper's hawk	<i>Accipiter cooperii</i>	U	S3B	N5B, N5N	
Red-shouldered hawk	<i>Buteo lineatus</i>	Endangered U	S2B	N5B, N5N	23
Broad-winged hawk	<i>Buteo platypterus</i>	R	S3B	N5B	
Swainson's hawk	<i>Buteo swainsoni</i>	R	S3B, S3N	N5B	11,3
Red-tailed hawk	<i>Buteo jamaicensis</i>	A	S5B, S5N	N5B, N5N	
American kestrel	<i>Falco sparverius</i>	C	S5B, S5N	N5B, N5N	
Merlin	<i>Falco columbarius</i>	X	SXB	N4B, N4N	
Peregrine falcon	<i>Falco peregrinus</i>	Endangered R	S1B	N4B, N4N	11,22,23,3
Gray partridge	<i>Perdix perdix</i>	EX	SE4	NE	
Ring-necked pheasant	<i>Phasianus colchicus</i>	EX	SE5	NE5	
Ruffed grouse	<i>Bonasa umbellus</i>	U	S4B	N5	
Greater prairie-chicken	<i>Tympanuchus cupido</i>	R	S1B	N4	22,11
Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>	R	S1B	N4	
Wild turkey	<i>Meleagris gallopavo</i>	A	S5B	N5	
Northern bobwhite	<i>Colinus virginianus</i>	CL	S5B	N5	
King rail	<i>Rallus elegans</i>	Endangered U	SAB, S5N	N4B, N4N	23

Virginia rail	<i>Rallus limicola</i>	U	S3B, S3N	N5B, N5N	11
Common Name	Scientific Name	Iowa Abundance	Iowa Status	National Status	Priority Status*
Sora	<i>Porzana carolina</i>	U	S3B, S5N	N5B, N5N	11
Common moorhen	<i>Gallinula chloropus</i>	R	S2B, S2N	N5B, N5N	
American coot	<i>Fulica americana</i>	C	S5B, S5N	N5B, N5N	
Sandhill crane	<i>Grus canadensis</i>	R	S1B, S1N	N5B, N5N	23
Whooping crane	<i>Grus americana</i>	R	SXB	N1N	
Piping plover	<i>Charadrius melanotos</i>	Endangered R	S1B	N3B, N3N	
Killdeer	<i>Charadrius vociferus</i>	A	S5B, S5N	N5B, N5N	
Spotted sandpiper	<i>Actitis macularia</i>	C	S3B, S4N	N5B, N5N	
Upland sandpiper	<i>Bartramia longicauda</i>	U	S3B	N5B	11,22,23,3
Long-billed curlew	<i>Numenius americanus</i>	X	SXB	N5B, N5N	11
Marbled godwit	<i>Limosa Fedoa</i>	X	SXB	N5B, N5N	11,22,23,3
Wilson's snipe	<i>Gallinago delicata</i>	R	S3B	NPB, NAN	
Common snipe	<i>Gallinago gallinago</i>	R	S3B	NPB, NAN	
American woodcock	<i>Scolopax minor</i>	C	S4B, S5N	N5B, N5N	
Wilson's phalarope	<i>Phalaropus tricolor</i>	R	S3N	N5B	11,22,23,3
Franklin's gull	<i>Larus pipixcan</i>	R	SAB	N4B	11
Ring-billed gull	<i>Larus delawarensis</i>	R	S5N	N5B, N5N	
Forster's tern	<i>Sterna forsteri</i>	Special Concern U	S2B, S3N	N5B, N5N	11
Least tern	<i>Sterna antillarum</i>	Endangered R	S1B, S1N	N?	
Black tern	<i>Chlidonias niger</i>	Special Concern U	S1B, S4N	N4B	23,3,11
Rock pigeon	<i>Columba livia</i>	A	S5B, S5N	N5B, N5N	
Eurasian collared dove	<i>Columba livia</i>	EX	SNA	NNA	
Mourning dove	<i>Zenaida macroura</i>	A	S5B, S5N	N5	
Passenger pigeon	<i>Ectopistes migratorius</i>	XS	SX	NX	
Carolina parakeet	<i>Conuropsis carolinensis</i>	XS	SX	NX	
Black-billed cuckoo	<i>Coccyzus erythrophthalmus</i>	C	S3B	N5B	11,22,23,3
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	C	S3B	N5B	23,22
Barn owl	<i>Tyto alba</i>	Endangered R	S1B	N5	
Eastern screech-owl	<i>Otus asio</i>	C	S4B	N5	
Great horned owl	<i>Bubo virginianus</i>	C	S5B	N5	
Burrowing owl	<i>Speotyto cunicularia</i>	R	S1B	N4B, N4N	11
Barred owl	<i>Strix varia</i>	C	S5B	N5	
Long-eared owl	<i>Asio otus</i>	Threatened U	S2B, S3N	N5B, N5N	23,22
Short-eared owl	<i>Asio flammeus</i>	Endangered R	S1B, S2N	N5B, N5N	11,22,23,3
Common nighthawk	<i>Chordeiles minor</i>	C	S5B	N5B	
Chuck-will's-widow	<i>Caprimulgus carolinensis</i>	R	S3B	N5B	22,3

Common Name	Scientific Name	Iowa Abundance	Iowa Status	National Status	Priority Status*
Whip-poor-will	<i>Caprimulgus vociferus</i>	CL	S5B	N5B	22,23
Chimney swift	<i>Chaetura pelagica</i>	C	S5B	N5B	
Ruby-throated hummingbird	<i>Archilochus colubris</i>	C	S4B, S5N	N5B	22
Belted kingfisher	<i>Ceryle alcyon</i>	C	S4B	N5B, N5N	
Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	C	S5B	N5B, N5N	11,22,23,3
Red-bellied woodpecker	<i>Melanerpes carolinus</i>	CL	S5B	N5B, N5N	
Yellow-bellied sapsucker	<i>Sphyrapicus varius</i>	R, CL in NE	S1B, S3N	N5B, N5N	
Downy woodpecker	<i>Picoides pubescens</i>	C	S5B	N5	
Hairy woodpecker	<i>Picoides villosus</i>	C	S5B	N5	
Northern flicker	<i>Colaptes auratus</i>	C	S5B	N5B, N5N	22,11
Pileated woodpecker	<i>Dryocopus pileatus</i>	Endangered U, R in W	S3B	N5	
Eastern wood-peewee	<i>Contopus virens</i>	C	S4B, S4N	N5B	
Acadian flycatcher	<i>Empidonax virescens</i>	R	S3B, S3N	N5B	22,23,3
Willow flycatcher	<i>Empidonax traillii</i>	C	S4B, S4N	N5B	23,22
Least flycatcher	<i>Empidonax minimus</i>	R	S1B, S4N	N5B	
Eastern phoebe	<i>Sayornis phoebe</i>	C	S4B, S4N	N5B, N5N	
Say's phoebe	<i>Sayornis saya</i>	R	S2B, S3N	N4B, N5N	
Great crested flycatcher	<i>Myiarchus crinitus</i>	C	S4B, S4N	N5B	
Western kingbird	<i>Tyrannus verticalis</i>	R	S3B, S5N	N5B	
Eastern kingbird	<i>Tyrannus tyrannus</i>	A	S5B, S5N	N5B	22
Scissor-tailed flycatcher	<i>Tyrannus forficatus</i>	R	SAB	N5B	
Horned lark	<i>Eremophila alpestris</i>	C	S5B, S5N	N5B, N5N	
Purple martin	<i>Progne subis</i>	C	S5B, S5N	N5B	22
Tree swallow	<i>Tachycineta bicolor</i>	C	S5B, S5N	N5B	
N. Rough-winged swallow	<i>Stelgidopteryx serripennis</i>	C	S5B, S5N	N5B	
Bank swallow	<i>Riparia riparia</i>	C	S5B, S5N	N5B	
Cliff swallow	<i>Hirundo pyrrhonota</i>	C	S5B, S5N	N5B	
Barn swallow	<i>Hirundo rustica</i>	A	S5B, S5N	N5B	
Blue jay	<i>Cyanocitta cristata</i>	C	S5B, S5N	N5B, N5N	
Black-billed magpie	<i>Pica pica</i>	R	SAB	N5	
American crow	<i>Corvus brachyrhynchos</i>	A	S5B, S5N	N5B, N5N	
Black-capped chickadee	<i>Parus atricapillus</i>	A	S5B	N5	
Tufted titmouse	<i>Parus bicolor</i>	CL	S4B	N5	
Red-breasted nuthatch	<i>Sitta canadensis</i>	R	SAB, S3N	N5	
White-breasted	<i>Sitta carolinensis</i>	C	S5B	N5	

nuthatch					
Common Name	Scientific Name	Iowa Abundance	Iowa Status	National Status	Priority Status*
Brown creeper	<i>Certhia americana</i>	R	S3B	N5	
Rock wren	<i>Salpinctes obsoletus</i>	R	SA	N5	
Carolina wren	<i>Thryothorus ludovicianus</i>	U	S3B, S3N	N5	
Bewick's wren	<i>Thryomanes bewickii</i>	R	S2B, S2N	N5B	22,3
House wren	<i>Troglodytes aedon</i>	A	S5B, S5N	N5B	
Winter wren	<i>Troglodytes troglodytes</i>	R	SAB	N5	
Sedge wren	<i>Cistothorus platensis</i>	U	S4B, S4N	N4B, N5N	23,22,11
Marsh wren	<i>Cistothorus palustris</i>	CL	S3B	N5B, N5N	11
Blue-gray gnatcatcher	<i>Polioptila caerulea</i>	C except R in NW	S4B, S4N	N5B, N5N	
Eastern bluebird	<i>Sialia sialis</i>	C	S4B, S5N	N5B, N5N	
Veery	<i>Catharus fuscescens</i>	R	S2B, S3N	N5B	23
Wood thrush	<i>Hylocichla mustelina</i>	U	S4B, S4N	N5B	22,23,3
American robin	<i>Turdus migratorius</i>	A	S5B, S5N	N5	
Gray catbird	<i>Dumetella carolinensis</i>	C	S5B	N5B, N5N	
Northern mockingbird	<i>Mimus polyglottos</i>	R	S3B	N5	
Brown thrasher	<i>Toxostoma rufum</i>	A	S5B, S5N	N5	22
Cedar waxwing	<i>Bombycilla cedrorum</i>	C	S5B, S5N	N5	
Loggerhead shrike	<i>Lanius ludovicianus</i>	U	S3B, S3N	N4	11,22,23,3
European starling	<i>Sturnus vulgaris</i>	EX/A	SE5	NE5	
White-eyed vireo	<i>Vireo griseus</i>	R	S2B, S3N	N5B, N5N	
Bell's vireo	<i>Vireo bellii</i>	U	S3B, S4N	N4B	22,23,3
Yellow-throated vireo	<i>Vireo flavifrons</i>	C in E U in W	S4B, S4N	N5B, N4N	23
Warbling vireo	<i>Vireo gilvus</i>	C	S5B, S5N	N5B	
Red-eyed vireo	<i>Vireo olivaceus</i>	C	S5B, S5N	N5B	
Blue-winged warbler	<i>Vermivora pinus</i>	U in E R in W	S3B, S4N	N5B	22,23,3
Golden-winged warbler	<i>Vermivora chrysoptera</i>	U	S1B	N4B	23,3
Northern parula	<i>Parula americana</i>	R	S3B, S3N	N5B	22
Yellow warbler	<i>Dendroica petechia</i>	C	S4B	N5B, N5N	
Chestnut-sided warbler	<i>Dendroica pensylvanica</i>	R	S3B, S4N	N5B	23
Yellow-throated warbler	<i>Dendroica dominica</i>	R	S3B, S3N	N5B	
Prairie warbler	<i>Dendroica discolor</i>	R	SAB, S2N	N5B	3
Cerulean warbler	<i>Dendroica cerulea</i>	R	S2B, S3N	N4B	22,23,3
Black-and-white warbler	<i>Mniotilla varia</i>	R	S5N	N5B, N4N	
American redstart	<i>Setophaga ruticilla</i>	C	S4B, S4N	N5B	

Prothonotary warbler	<i>Protonotaria citrea</i>	R	S3B, S3N	N5B	22,23
Common Name	Scientific Name	Iowa Abundance	Iowa Status	National Status	Priority Status*
Worm-eating warbler	<i>Helminthorus vermivorus</i>	R	S2B, S2N	N5B	22,3,23
Ovenbird	<i>Seiurus aurocapillus</i>	U	S4B, S4N	N5B	
Louisiana waterthrush	<i>Seiurus motacilla</i>	R	S3B, S4N	N5B	22,3,23
Kentucky warbler	<i>Oporornis formosus</i>	R	S1B, S3N	N5B	22,23,3
Common yellowthroat	<i>Geothlypis trichas</i>	A	S5B, S5N	N5B	
Hooded warbler	<i>Wilsonia citrina</i>	R	S1B, S2N	N5B	23
Yellow-breasted chat	<i>Icteria virens</i>	R	S3B, S3N	N5B	22
Summer tanager	<i>Piranga rubra</i>	R	S3B, S3N	N5B	
Scarlet tanager	<i>Piranga olivacea</i>	U	S4B, S4N	N5B	
Northern cardinal	<i>Cardinalis cardinalis</i>	C	S5B	N5B	
Rose-breasted grosbeak	<i>Pheucticus ludovicianus</i>	C	S5B	N5B	
Blue grosbeak	<i>Guiraca caerulea</i>	CL	S3B, S3N	N5B	
Indigo bunting	<i>Passerina cyanea</i>	A	S5B, S5N	N5B	
Dickcissel	<i>Spiza americana</i>	A	S4B, S4N	N5B	22,23,3,11
Eastern towhee	<i>Pipilo erythrophthalmus</i>	CL	S4B, S4N	N5B	
Chipping sparrow	<i>Spizella passerina</i>	A	S5B, S5N	N5B, N5N	
Clay-colored sparrow	<i>Spizella pallida</i>	R	S2N	N4B, N4N	11
Field sparrow	<i>Spizella pusilla</i>	C	S5B, S5N	N5	22,23
Vesper sparrow	<i>Pooecetes gramineus</i>	C	S4B, S4N	N5B, N5N	11
Lark sparrow	<i>Chondestes grammacus</i>	CL	S4B	N5B	
Savannah sparrow	<i>Passerculus sandwichensis</i>	CL	S4B, S5N	N5B, N5N	
Grasshopper sparrow	<i>Ammodramus savannarum</i>	C	S4B, S4N	N5B, N5N	11,22,3,23
Henslow's sparrow	<i>Ammodramus henslowii</i>	Threatened R	S3B, S2N	N3B, N4N	11,22,23,3
Song sparrow	<i>Melospiza melodia</i>	C	S5B, S5N	N5B, N5N	
Swamp sparrow	<i>Melospiza georgiana</i>	U	S3B, S5N	N5B, N5N	
Bobolink	<i>Dolichonyx oryzivorus</i>	C	S4B	N5B	23,3,22,11
Red-winged blackbird	<i>Agelaius phoeniceus</i>	A	S5B, S5N	N5B, N5N	
Eastern meadowlark	<i>Sturnella magna</i>	C	S4B, S4N	N5	22
Western meadowlark	<i>Sturnella neglecta</i>	C	S4B, S4N	N5	
Yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>	CL	S3B, S4N	N5B, N5N	
Great-tailed grackle	<i>Quiscalus mexicanus</i>	R	S?	N5	
Common grackle	<i>Quiscalus quiscula</i>	A	S5B, S5N	N5	
Brown-headed cowbird	<i>Molothrus ater</i>	A	S5B, S5N	N5	
Orchard oriole	<i>Icterus spurius</i>	CL	S4B, S4N	N5B	22
Baltimore oriole	<i>Icterus galbula</i>	A	S5B, S5N	N5B	22,23
House finch	<i>Carpodacus mexicanus</i>	C	SE4	N5	

<b>Common Name</b>	<b>Scientific Name</b>	<b>Iowa Abundance</b>	<b>Iowa Status</b>	<b>National Status</b>	<b>Priority Status*</b>
Red crossbill	<i>Loxia curvirostra</i>	R	SAB, S2N	N5	
Pine siskin	<i>Carduelis pinus</i>	R	SAB, S5N	N5	
American goldfinch	<i>Carduelis tristis</i>	C	S5B, N5N	N5	
House sparrow	<i>Passer domesticus</i>	EX	SE5	NE5	
Eurasian tree sparrow	<i>Passer montanus</i>	R	SE	NE	



## APPENDIX 4. List of migratory birds considered by the ICWCP.

**Iowa Abundance:** R = regular, C = casual, A = accidental, X = extirpated.

**Priority status:** in Bird Conservation Regions 11 (Prairie Pothole), 22 (Eastern Tallgrass Prairie), 23 (Prairie to Hardwood Transition), and 3 (FWS Region 3).

Common Name	Scientific Name	Iowa Abundance	Priority Status
Red-throated loon	<i>Gavia stellata</i>	R	
Pacific loon	<i>Gavia pacifica</i>	R	
Yellow-billed loon	<i>Gavia adamsii</i>	A	
Horned grebe	<i>Podiceps auritus</i>	R	
Clark's grebe	<i>Aechmophorus clarkii</i>	C	
Brown pelican	<i>Pelecanus occidentalis</i>	A	
Neotropic cormorant	<i>Phalacrocorax brasiliensis</i>	A	
Anhinga	<i>Anhinga anhinga</i>	A	
Magnificent frigatebird	<i>Fregata magnificens</i>	A	
Snowy egret	<i>Egretta thula</i>	R	
Tricolored heron	<i>Egretta tricolor</i>	A	
Reddish egret	<i>Egretta rufescens</i>	A	
White ibis	<i>Eudocimus albus</i>	A	
Glossy ibis	<i>Plegadis falcinellus</i>	A	
Roseate spoonbill	<i>Platalea ajaja</i>	A	
Wood stork	<i>Mycteria americana</i>	A	
Black vulture	<i>Coragyps atratus</i>	A	
Black-bellied whistling-duck	<i>Dendrocygna autumnalis</i>	A	
Bean goose	<i>Anser fabalis</i>	A	
Greater white-fronted goose	<i>Anser albifrons</i>	R	
Snow goose	<i>Anser caerulescens</i>	R	
Ross's goose	<i>Anser rossii</i>	R	
Brant	<i>Branta bernicla</i>	A	
Tundra swan	<i>Cygnus columbianus</i>	R	
Eurasian wigeon	<i>Anas penelope</i>	A	
Cinnamon teal	<i>Anas cyanoptera</i>	R	
Garganey	<i>Anas querquedula</i>	A	
Greater scaup	<i>Aythya marila</i>	R	
King eider	<i>Somateria spectabilis</i>	A	
Common eider	<i>Somateria mollissima</i>	A	
Harlequin duck	<i>Histrionicus histrionicus</i>	A	
Surf scoter	<i>Melanitta perspicillata</i>	R	
White-winged scoter	<i>Melanitta fusca</i>	R	
Black scoter	<i>Melanitta nigra</i>	R	
Long-tailed duck	<i>Clangula hyemalis</i>	R	
Common goldeneye	<i>Bucephala clangula</i>	R	
Barrow's goldeneye	<i>Bucephala islandica</i>	A	
Common merganser	<i>Mergus merganser</i>	R	
Red-breasted merganser	<i>Mergus serrator</i>	R	

Northern goshawk	<i>Accipiter gentilis</i>	R	
Common Name	Scientific Name	Iowa Abundance	Priority Status
Ferruginous hawk	<i>Buteo regalis</i>	A	11
Rough-legged hawk	<i>Buteo lagopus</i>	R	
Golden eagle	<i>Aquila chrysaetos</i>	R	
Gyrfalcon	<i>Falco rusticolus</i>	A	
Prairie falcon	<i>Falco mexicanus</i>	R	
Yellow rail	<i>Coturnicops noveboracensis</i>	R	11,3
Black rail	<i>Laterallus jamaicensis</i>	A	22,3
Purple gallinule	<i>Porphyrio martinica</i>	A	
Black-bellied plover	<i>Pluvialis squatarola</i>	R	
American golden-plover	<i>Pluvialis dominica</i>	U	
Snowy plover	<i>Charadrius alexandrinus</i>	A	
Semipalmated plover	<i>Charadrius semipalmatus</i>	R	
Black-necked stilt	<i>Himantopus mexicanus</i>	R	
American avocet	<i>Recurvirostra americana</i>	R	
Greater yellowlegs	<i>Tringa melanoleuca</i>	C	22,23
Lesser yellowlegs	<i>Tringa flavipes</i>	C	
Solitary sandpiper	<i>Tringa solitaria</i>	C	11
Willet	<i>Catoptrophorus semipalmatus</i>	R	11
Eskimo curlew	<i>Numenius borealis</i>	X	
Whimbrel	<i>Numenius phaeopus</i>	C	3
Hudsonian godwit	<i>Limosa haemastica</i>	U	11,22,23,3
Ruddy turnstone	<i>Arenaria interpres</i>	R	
Red knot	<i>Calidris canutus</i>	C	
Sanderling	<i>Calidris alba</i>	R	11
Semipalmated sandpiper	<i>Calidris pusilla</i>	R	
Western sandpiper	<i>Calidris mauri</i>	R	
Least sandpiper	<i>Calidris minutilla</i>	R	
White-rumped sandpiper	<i>Calidris fuscicollis</i>	R	11
Baird's sandpiper	<i>Calidris bairdii</i>	R	
Pectoral sandpiper	<i>Calidris melanotos</i>	R	
Sharp-tailed sandpiper	<i>Calidris acuminata</i>	A	
Dunlin	<i>Calidris alpina</i>	R	
Curlew sandpiper	<i>Calidris ferruginea</i>	A	
Stilt sandpiper	<i>Micropalama himantopus</i>	R	22,23,3
Buff-breasted sandpiper	<i>Tryngites subruficollis</i>	R	11,22,23,3
Ruff	<i>Philomachus pugnax</i>	A	
Short-billed dowitcher	<i>Limnodromus griseus</i>	U	22,23,3
Long-billed dowitcher	<i>Limnodromus scolopaceus</i>	R	
Wilson's snipe	<i>Gallinago delicata</i>	R	
Red-necked phalarope	<i>Phalaropus lobatus</i>	R	
Red phalarope	<i>Phalaropus fulicaria</i>	C	
Pomarine jaeger	<i>Stercorarius pomarinus</i>	A	
Parasitic jaeger	<i>Stercorarius parasiticus</i>	A	

Long-tailed jaeger	<i>Stercorarius longicaudus</i>	A	
Common Name	Scientific Name	Iowa Abundance	Priority Status
Laughing gull	<i>Larus atricilla</i>	C	
Little gull	<i>Larus minutus</i>	A	
Black-headed gull	<i>Larus ridibundus</i>	C	
Bonaparte's gull	<i>Larus philadelphia</i>	R	
Mew gull	<i>Larus canus</i>	C	
California gull	<i>Larus californicus</i>	C	
Herring gull	<i>Larus argentatus</i>	R	
Thayer's gull	<i>Larus thayeri</i>	R	
Iceland gull	<i>Larus glaucopterus</i>	C	
Lesser black-backed gull	<i>Larus fuscus</i>	R	
Slaty-backed gull	<i>Larus schistisagus</i>	A	
Glaucous gull	<i>Larus hyperboreus</i>	R	
Great black-backed gull	<i>Larus marinus</i>	R	
Sabine's gull	<i>Xema sabini</i>	R	
Black-legged kittiwake	<i>Rissa tridactyla</i>	C	
Ross's gull	<i>Rhodostethia rosea</i>	A	
Ivory gull	<i>Pagophila eburnea</i>	A	
Caspian tern	<i>Sterna caspia</i>	R	
Common tern	<i>Sterna hirundo</i>	R	22,23,3
Arctic tern	<i>Sterna paradisaea</i>	A	
Thick-billed murre	<i>Uria lomvia</i>	A	
Long-billed murrelet	<i>Brachyramphus perdix</i>	A	
Ancient murrelet	<i>Synthliboramphus antiquus</i>	A	
White-winged dove	<i>Zenaida asiatica</i>	A	
Common ground-dove	<i>Columbina passerina</i>	A	
Groove-billed ani	<i>Crotophaga sulcirostris</i>	A	
Snowy owl	<i>Nyctea scandiaca</i>	R	
Northern hawk owl	<i>Surnia ulula</i>	A	
Great gray owl	<i>Strix nebulosa</i>	A	
Northern saw-whet owl	<i>Aegolius acadicus</i>	R	
Rufous hummingbird	<i>Selasphorus rufus</i>	C	
Lewis's woodpecker	<i>Melanerpes lewis</i>	A	
Black-backed woodpecker	<i>Picoides arcticus</i>	A	
Olive-sided flycatcher	<i>Contopus cooperi</i>	R	
Western wood-peewee	<i>Contopus sordidulus</i>	A	
Yellow-bellied flycatcher	<i>Empidonax flaviventris</i>	R	
Alder Flycatcher	<i>Empidonax alnorum</i>	R	
Western flycatcher sp.	<i>Empidonax difficilis</i>	A	
Vermilion flycatcher	<i>Pyrocephalus rubinus</i>	A	
Northern shrike	<i>Lanius excubitor</i>	R	
Blue-headed vireo	<i>Vireo solitarius</i>	R	
Philadelphia vireo	<i>Vireo philadelphicus</i>	R	
Gray jay	<i>Perisoreus canadensis</i>	A	
Pinyon jay	<i>Gymnorhinus cyanocephalus</i>	A	

Clark's nutcracker	<i>Nucifraga columbiana</i>	A	
Common Name	Scientific Name	Iowa Abundance	Priority Status
Fish crow	<i>Corvus ossifragus</i>	A	
Common raven	<i>Corvus corax</i>	A	
Boreal chickadee	<i>Poecile hudsonica</i>	A	
Pygmy nuthatch	<i>Sitta pygmaea</i>	A	
Golden-crowned kinglet	<i>Regulus satrapa</i>	R	
Ruby-crowned kinglet	<i>Regulus calendula</i>	R	
Mountain bluebird	<i>Sialia currucoides</i>	C	
Townsend's solitaire	<i>Myadestes townsendi</i>	C	
Gray-cheeked thrush	<i>Catharus minimus</i>	R	
Swainson's thrush	<i>Catharus ustulatus</i>	R	
Hermit thrush	<i>Catharus guttatus</i>	R	
Varied thrush	<i>Zoothera naevia</i>	R	
Sage thrasher	<i>Oreoscoptes montanus</i>	A	
Curve-billed thrasher	<i>Toxostoma curvirostre</i>	A	
American pipit	<i>Anthus rubescens</i>	R	
Sprague's pipit	<i>Anthus spragueii</i>	A	11
Bohemian waxwing	<i>Bombycilla garrulus</i>	C	
Tennessee warbler	<i>Vermivora peregrina</i>	R	
Orange-crowned warbler	<i>Vermivora celata</i>	R	
Nashville warbler	<i>Vermivora ruficapilla</i>	R	
Magnolia warbler	<i>Dendroica magnolia</i>	R	
Cape may warbler	<i>Dendroica tigrina</i>	R	3
Black-throated blue warbler	<i>Dendroica caerulescens</i>	R	3
Yellow-rumped warbler	<i>Dendroica coronata</i>	R	
Black-throated gray warbler	<i>Dendroica nigrescens</i>	A	
Black-throated green warbler	<i>Dendroica virens</i>	R	
Townsend's warbler	<i>Dendroica townsendi</i>	A	
Blackburnian warbler	<i>Dendroica fusca</i>	R	
Pine warbler	<i>Dendroica pinus</i>	R	
Palm warbler	<i>Dendroica palmarum</i>	R	
Bay-breasted warbler	<i>Dendroica castanea</i>	R	
Blackpoll warbler	<i>Dendroica striata</i>	R	
Northern waterthrush	<i>Seiurus noveboracensis</i>	R	
Connecticut warbler	<i>Oporornis agilis</i>	R	3
Mourning warbler	<i>Oporornis philadelphica</i>	R	
Macgillivray's warbler	<i>Oporornis tolmiei</i>	A	
Wilson's warbler	<i>Wilsonia pusilla</i>	R	
Canada warbler	<i>Wilsonia canadensis</i>	U	3
Western tanager	<i>Piranga ludoviciana</i>	C	
Green-tailed towhee	<i>Pipilo chlorurus</i>	A	
Spotted towhee	<i>Pipilo maculatus</i>	R	
American tree sparrow	<i>Spizella arborea</i>	R	
Black-throated sparrow	<i>Amphispiza bilineata</i>	A	
Lark bunting	<i>Calamospiza melanocorys</i>	A	
Le conte's sparrow	<i>Ammodramus leconteii</i>	U	11,22,3

<b>Common Name</b>	<b>Scientific Name</b>	<b>Iowa Abundance</b>	<b>Priority Status</b>
Nelson's sharp-tailed sparrow	<i>Ammodramus nelsoni</i>	R	11,22,3
Fox sparrow	<i>Passerella iliaca</i>	R	
Lincoln's sparrow	<i>Melospiza lincolni</i>	R	
White-throated sparrow	<i>Zonotrichia albicollis</i>	R	
Harris's sparrow	<i>Zonotrichia querula</i>	R	
White-crowned sparrow	<i>Zonotrichia leucophrys</i>	R	
Golden-crowned sparrow	<i>Zonotrichia atricapilla</i>	A	
Dark-eyed junco	<i>Junco hyemalis</i>	R	
Lapland longspur	<i>Calcarius lapponicus</i>	R	
Smith's longspur	<i>Calcarius pictus</i>	R	22
Chestnut-collared longspur	<i>Calcarius ornatus</i>	A	11
Snow bunting	<i>Plectrophenax nivalis</i>	R	
Black-headed grosbeak	<i>Pheucticus melanocephalus</i>	A	
Lazuli bunting	<i>Passerina amoena</i>	C	
Painted bunting	<i>Passerina ciris</i>	A	
Rusty blackbird	<i>Euphagus carolinus</i>	U	3,22
Brewer's blackbird	<i>Euphagus cyanocephalus</i>	R	
Bullock's oriole	<i>Icterus bullockii</i>	A	
Gray-crowned rosy-finches	<i>Leucosticte tephrocotis</i>	A	
Pine grosbeak	<i>Pinicola enucleator</i>	C	
Purple finch	<i>Carpodacus purpureus</i>	R	
White-winged crossbill	<i>Loxia leucoptera</i>	R	
Common redpoll	<i>Carduelis flammea</i>	R	
Hoary redpoll	<i>Carduelis hornemannii</i>	A	
Lesser goldfinch	<i>Carduelis psaltria</i>	A	
Evening grosbeak	<i>Coccothraustes vespertinus</i>	C	



## APPENDIX 5. List of Iowa mammals considered by the ICWCP.

**Iowa Abundance:** A = abundant, CL = common locally, U = uncommon, R = rare, V = vagrant, X = extirpated, RI = re-introduced, I = introduced, D = domestic.

**Iowa Trend:** K = unknown, I = increasing, S = stable, D = decreasing, NA = not applicable, V = vagrant.

See Appendix 11 for definitions of NatureServe Iowa and National rankings

Common Name	Scientific Name	Iowa Abundance	Iowa Trend	Iowa Rank/Listing	National Rank
Virginia opossum	<i>Didelphis virginiana</i>	A	S	S5	N5
Hayden's shrew	<i>Sorex haydeni</i>	CL	K	S4	N4
Short-tailed shrew	<i>Blarina hylophaga</i>	CL	K	S4	?
Least shrew	<i>Cryptotis parva</i>	R	K	S3 Threatened	N5
Masked shrew	<i>Sorex cinereus</i>	CL	K	S4	N5
Northern short-tailed shrew	<i>Blarina brevicauda</i>	A	S	S5	N5
Pygmy shrew	<i>Sorex hoyi</i>	X	NA	SU	G5
Big brown bat	<i>Eptesicus fuscus</i>	CL	S	S4	N5
Eastern pipistrelle	<i>Pipistrellus subflavus</i>	CL	K	S4	N5
Evening bat	<i>Nycticeius humeralis</i>	CL	K	S3 Threatened	N5
Hoary bat	<i>Lasiurus cinereus</i>	A	S	S4	N5
Indiana bat	<i>Myotis sodalis</i>	R	K	S1 Endangered	N2
Little brown bat	<i>Myotis lucifugus</i>	CL	K	S4	N5
Northern myotis	<i>Myotis septentrionalis</i>	CL	K	S4	N4
Red bat	<i>Lasiurus borealis</i>	A	S	S4	N5
Silver-haired bat	<i>Lasionycteris noctivagans</i>	CL	S	S4	N5
Big freetail bat	<i>Nyctinomops macrotis</i>	R	V	SA	N3,N4
Mexican freetail bat	<i>Tadarida brasiliensis</i>	R	V	No	N5
Nine-banded armadillo	<i>Dasypus novemcinctus</i>	R	V	SA	N5
Eastern cottontail	<i>Sylvilagus floridanus</i>	A	V	S5	N5
White-tailed jackrabbit	<i>Lepus townsendii</i>	R	D	S3	N5
Nutria	<i>Myocaster coypus</i>	I	V	SE	NE
Black-tailed prairie dog	<i>Cynomys ludovicianus</i>	I-unsuccessful	NA	SZ	N5
Eastern chipmunk	<i>Tamias striatus</i>	A	S	S5	N5
Fox squirrel	<i>Sciurus niger</i>	A	S	S5	N5

<b>Common Name</b>	<b>Scientific Name</b>	<b>Iowa Abundance</b>	<b>Iowa Trend</b>	<b>Iowa Rank/ Listing</b>	<b>National Rank</b>
Franklin's ground squirrel	<i>Spermophilus franklinii</i>	R	D	S3	N5
Gray squirrel	<i>Sciurus carolinensis</i>	CL	S	S5	N5
Richardson's Ground Squirrel	<i>Sciurus richardsonii</i>	V	K	S2	N5
Red squirrel	<i>Tamiasciurus hudsonicus</i>	CL	S	S3	N5
Southern Flying Squirrel	<i>Glaucomys volans</i>	U	K	S4	N5
Thirteen-lined ground squirrel	<i>S. tridecemlineatus</i>	A	S	S5	N5
Woodchuck	<i>Marmota monax</i>	A	S	S5	N5
Eastern mole	<i>Scalopus aquaticus</i>	A	S	S5 S	N5
Plains pocket gopher	<i>Geomys bursarius</i>	A	S	S5	N5
Plains pocket mouse	<i>Perognathus flavescens</i>	R	K	S2	N5
Beaver	<i>Caster canadensis</i>	A	S	S5	N5
Deer mouse	<i>Peromyscus maniculatus</i>	A	S	S5	N5
Eastern woodrat	<i>Neotoma floridana</i>	X	NA	SX	N5
Hispid cotton rat	<i>Sigmodon hispidus</i>	R	V	SU	N5
House mouse	<i>Mus musculus</i>	I	S	SE	NE
Marsh rice rat	<i>Oryzomys palustris</i>	X	NA	No	N5
Meadow vole	<i>Microtus pennsylvanicus</i>	A	S	S5	N5
Muskrat	<i>Ondatra zibethicus</i>	A	S	S5	N5
Northern grasshopper mouse	<i>Onychomys leucogaster</i>	U	K	S3	N5
Norway rat	<i>Rattus norvegicus</i>	I	S	SE	NE
Prairie vole	<i>Microtus ochrogaster</i>	U	S	S3	N5
Red-backed vole	<i>Clethrionomys gapperi</i>	R	D	S2	N5
Southern bog lemming	<i>Synaptomys cooperi</i>	R	D	S3 Threatened	N5
Western harvest mouse	<i>Reithrodontomys megalotis</i>	A	S	S4	N5
White-footed mouse	<i>Peromyscus leucopus</i>	CL	S	S5	N5
Woodland vole	<i>Microtus pinetorum</i>	R	K	S3	N5
Meadow jumping mouse	<i>Zapus hudsonius</i>	CL	S	S4	N5
North American porcupine	<i>Erethizon dorsatum</i>	X	NA	SX	N5
Coyote	<i>Canis latrans</i>	A	S	S5	N5

Common Name	Scientific Name	Iowa Abundance	Iowa Trend	Iowa Rank/ Listing	National Rank
Gray fox	<i>Urocyon cinereoargenteus</i>	U	K	S4	N5
Gray wolf	<i>Canis lupus</i>	X	V	SX	N4
Red fox	<i>Vulpes vulpes</i>	A	S	S4	N5
Swift fox	<i>Vulpes velox</i>	X	NA	SX	N3
Feral dog	<i>Canis familiaris</i>	D	S	SE	NE
Black bear	<i>Ursus americanus</i>	X	V	SX	N5
Raccoon	<i>Procyon lotor</i>	A	S	S5	N5
Badger	<i>Taxidea taxus</i>	CL	S	S4	N5
Ermine	<i>Mustela erminea</i>	CL	K	S4	N5
Fisher	<i>Martes pennanti</i>	X	NA	SX	N5
Least weasel	<i>Mustela nivalis</i>	R	K	S4	N5
Long-tailed weasel	<i>Mustela frenata</i>	R	K	S4	N5
Marten	<i>Martes americana</i>	X	NA	SX	N5
Mink	<i>Mustela vison</i>	A	S	S4	N5
River otter	<i>Lutra canadensis</i>	RI	I	S3	N5
Spotted skunk	<i>Spilogale putorius</i>	R	D	S1 Endangered	N5
Striped skunk	<i>Mephitis mephitis</i>	A	S	S5	N5
Wolverine	<i>Gulo gulo</i>	X	NA	SX	N4
Canada lynx	<i>Lynx canadensis</i>	X	NA	SX	N5
Bobcat	<i>Lynx rufus</i>	U	I	S3	N5
Feral cat	<i>Felis catus</i>	D	S	SE	NE
Mountain lion	<i>Felis concolor</i>	X	V	SX	N5
Wapiti (elk)	<i>Cervus canadensis</i>	X	NA	SX	N5
Moose	<i>Alces alces</i>	X	NA	SZ	N5
White-tailed deer	<i>Odocoileus virginianus</i>	A	I	S5	N5
Mule deer	<i>Odocoileus hemionus</i>	R	V	SZ	N5
Pronghorn	<i>Antilocapra americana</i>	X	NA	SX	N5
Bison	<i>Bison bison</i>	X	NA	SX	N4



## APPENDIX 6. List of Iowa fish considered by the ICWCP.

Iowa Abundance: K = unknown, A = abundant, C = common locally, U = uncommon, R = rare, X = possibly extirpated.

Iowa trend: K = unknown, I = increasing, S = stable, D = decreasing.

See Appendix 11 for definitions of NatureServe Iowa and National rankings

Common Name	Scientific Name	Iowa Abundance	Iowa Trend	State Rank	National Rank
Chestnut lamprey	<i>Ichthyomyzon castaneus</i>	R	K	S2 Threatened	N4
Northern brook lamprey	<i>Ichthyomyzon fossor</i>	R	K	S?	N4
Silver lamprey	<i>Ichthyomyzon unicuspis</i>	U	K	S3	N5
American brook lamprey	<i>Lampetra appendix</i>	C	K	S3 Threatened	N4
Lake sturgeon	<i>Acipenser fulvescens</i>	R	K	S1 Endangered	N3N4
Pallid sturgeon	<i>Scaphirhynchus albus</i>	R	D	S1 Endangered	N1
Shovelnose sturgeon	<i>Scaphirhynchus platorynchus</i>	C	S	S4	N4
Paddlefish	<i>Polyodon spathula</i>	C	S	S3	N4
Bowfin	<i>Amia calva</i>	C	S	S3	N5
Shortnose gar	<i>Lepisosteus platostomus</i>	A	S	S4	N5
Longnose gar	<i>Lepisosteus osseus</i>	C	S	S3	N5
Spotted gar	<i>Lepisosteus oculatus</i>	K	K	S3	N5
American eel	<i>Anguilla rostrata</i>	R	D	S2	N5
Gizzard shad	<i>Dorosoma cepedianum</i>	A	I	S5	N5
Alabama shad	<i>Alosa alabamae</i>	X		SH	N3
Skipjack herring	<i>Alosa chrysocloris</i>	U	K	S3	N5
Mooneye	<i>Hiodon tergisus</i>	C	S	S4	N5
Goldeye	<i>Hiodon alosoides</i>	U	K	S3	N5
Rainbow trout	<i>Oncorhynchus mykiss</i>	C	S	SE	N5
Brown trout	<i>Salmo trutta</i>	C	S	SE	NE
Brook trout	<i>Salvelinus fontinalis</i>	U	S	S3	N5
Northern pike	<i>Esox lucius</i>	A	S	S5	N5
Muskellunge	<i>Esox masquinongy</i>	C	S	S5	N5
Grass pickerel	<i>Esox americanus</i>	U	S	S3 Threatened	N5
Central mudminnow	<i>Umbra limi</i>	U	S	S3	N5
Central stoneroller	<i>Campostoma anomalum</i>	C	S	S5	N5
Largescale stoneroller	<i>Campostoma oligolepis</i>	U	K	S3	N5
Goldfish	<i>Carassius auratus</i>	C	K	SE	NE
Grass Carp	<i>Ctenopharyngodon idella</i>	C	I	SE	NE
Common Carp	<i>Cyprinus carpio</i>	A	S	SE	NE
Bighead Carp	<i>Hypophthalmichthys nobilis</i>	C	I	SE	NE

Silver Carp	<i>Hypophthalmichthys molitrix</i>	C	I	SE	NE
Common Name	Scientific Name	Iowa Abundance	Iowa Trend	State Rank	National Rank
Suckermouth minnow	<i>Phenacobius mirabilis</i>	U	K	S4	N5
Bluntnose minnow	<i>Pimephales notatus</i>	A	S	S5	N5
Fathead minnow	<i>Pimephales promelas</i>	A	S	S5	N5
Bullhead minnow	<i>Pimephales vigilax</i>	C	K	S4	N5
Western silvery minnow	<i>Hybognathus argyritis</i>	K	K	S1	N4
Mississippi silvery minnow	<i>Hybognathus nuchalis</i>	C	K	S3	N5
Brassy minnow	<i>Hybognathus hankinsoni</i>	C	K	S5	N5
Plains minnow	<i>Hybognathus placitus</i>	C	S	S4	N4
Creek chub	<i>Semotilus atromaculatus</i>	C	S	S5	N5
Lake chub	<i>Couesius plumbeus</i>	X		SX	N5
Speckled chub	<i>Macrhybopsis aestivalis</i>	C	S	S3	N5
Sturgeon chub	<i>Macrhybopsis gelida</i>	R	K	SH	N3
Flathead chub	<i>Platygobio gracilis</i>	C	D	S3	N5
Sicklefin chub	<i>Macrhybopsis meeki</i>	R	K	S1?	N3
Silver chub	<i>Macrybopsis storeriana</i>	C	S	S5	N5
Gravel chub	<i>Erimyta x-punctatus</i>	U	K	S3	N4
Horneyhead chub	<i>Nocomis biguttatus</i>	U	K	S5	N5
Golden shiner	<i>Notemigonus crysoleucas</i>	C	S	S4	N5
Pallid shiner	<i>Hybopsis amnis</i>	R	D	S2	N4
Pugnose minnow	<i>Opsopoeodus emiliae</i>	U	K	S3	N5
Pugnose shiner	<i>Notropis anogenus</i>	R	K	S1 Endangered	N3
Emerald shiner	<i>Notropis atherinoides</i>	A	S	S5	N5
River shiner	<i>Notropis blennius</i>	A	S	S5	N5
Ghost shiner	<i>Notropis buchanani</i>	R	D	S2	N5
Ironcolor shiner	<i>Notropis chalybaeus</i>	X		SX	N4
Common shiner	<i>Luxilus cornutus</i>	A	S	S5	N5
Bigmouth shiner	<i>Notropis dorsalis</i>	A	S	S5	N5
Blackchin shiner	<i>Notropis heterodon</i>	X		SX	N5
Blacknose shiner	<i>Notropis heterolepis</i>	R	K	S2 Threatened	N4
Spottail shiner	<i>Notropis hudsonius</i>	C	S	S?	N5
Red shiner	<i>Cyprinella lutrensis</i>	A	S	S5	N5
Ozark minnow	<i>Notropis nubilus</i>	U	K	S3	N5
Rosyface shiner	<i>Notropis rubellus</i>	C	K	S5	N5
Silverband shiner	<i>Notropis shumardi</i>	X		SX	N5
Spotfin shiner	<i>Cyprinella spiloptera</i>	A	S	S5	N5
Sand shiner	<i>Notropis stramineus</i>	A	S	S5	S5
Weed shiner	<i>Notropis texanus</i>	R	D	S2 Endangered	N5
Topeka shiner	<i>Notropis topeka</i>	R	D	S3 Threatened	N3
Redfin shiner	<i>Lythrurus umbratilis</i>	U	D	S2	N5
Mimic shiner	<i>Notropis volucellus</i>	A	I	S4	N5
Channel shiner	<i>Notropis wickliffi</i>	U	K	S5	N5

Blacknose dace	<i>Rhinichthys atratulus</i>	C	K	S5	N5
Common Name	Scientific Name	Iowa Abundance	Iowa Trend	State Rank	National Rank
Longnose dace	<i>Rhinichthys cataractae</i>	C	K	S3	N5
Pearl dace	<i>Margariscus margarita</i>	X		S1 Endangered	N5
Southern redbelly dace	<i>Phoxinus erythrogaster</i>	C	D	S4	N5
Redside dace	<i>Clinostomus elongatus</i>	X		SX	N4
Blue sucker	<i>Cyclopterus elongatus</i>	C	D	S3	N3
Lake chubsucker	<i>Erimyzon suetta</i>	X		SX	N5
Bigmouth buffalo	<i>Ictiobus cyprinellus</i>	A	S	S5	N5
Smallmouth buffalo	<i>Ictiobus bubalus</i>	A	S	S5	N5
Black buffalo	<i>Ictiobus niger</i>	U	K	S3	N5
Quillback	<i>Carpioles cyprinus</i>	A	S	S5	N5
River carpsucker	<i>Carpioles carpio</i>	A	S	S5	N5
Highfin carpsucker	<i>Carpioles velifer</i>	C	K	S4	N4N5
				S3	
Black redhorse	<i>Moxostoma duquesnei</i>	U	S	Threatened	N5
Golden redhorse	<i>Moxostoma erythrurum</i>	C	S	S4	N5
Silver redhorse	<i>Moxostoma anisurum</i>	U	S	S4	N5
Shorthead redhorse	<i>Moxostoma macrolepidotum</i>	A	S	S5	N5
River redhorse	<i>Moxostoma carinatum</i>	R	K	S1	N4
Greater redhorse	<i>Moxostoma valencienesi</i>	X	K	SX	N4
Spotted sucker	<i>Minytrema melanops</i>	C	S	S3	N5
Northern hog sucker	<i>Hypentelium nigricans</i>	A	S	S4	N5
White sucker	<i>Catostomus commersoni</i>	A	S	S5	N5
Channel catfish	<i>Ictalurus punctatus</i>	A	S	S5	N5
Flathead catfish	<i>Pylodictus olivaris</i>	C	D	S4	N5
Blue catfish	<i>Ictalurus furcatus</i>	U	K	S3	N5
Black bullhead	<i>Ameiurus melas</i>	A	S	S5	N5
Yellow bullhead	<i>Ameiurus natalis</i>	C	K	S4	N5
Brown bullhead	<i>Ameiurus nebulosus</i>	R	D	S2	N5
Slender madtom	<i>Noturus exilis</i>	U	S	S3	N5
Tadpole madtom	<i>Noturus gyrinus</i>	U	D	S3	N5
Stonecat	<i>Noturus flavus</i>	C	S	S5	N5
				S2	
Freckled madtom	<i>Noturus nocturnus</i>	R	K	Endangered	N5
Pirate perch	<i>Aphredoderus sayanus</i>	R	D	S2	N5
Trout perch	<i>Percopsis omiscomaycus</i>	U	D	S3	N5
				S3	
Burbot	<i>Lota lota</i>	U	D	Threatened	N5
Banded killifish	<i>Fundulus diaphanus</i>	U	D	S2	N5
Blackstripe topminnow	<i>Fundulus notatus</i>	U	D	S3	N5
Starhead topminnow	<i>Fundulus dispar</i>	X		SX	N4
Plains topminnow	<i>Fundulus sciadicus</i>	R	K	SH	N4
Western mosquitofish	<i>Gambusia affinis</i>	C	K	SE	N5
Brook silverside	<i>Labidesthes sicculus</i>	C	K	S4	N5
Brook stickleback	<i>Culaea inconstans</i>	C	K	S4	N5
Mottled sculpin	<i>Cottus bairdi</i>	R	K	S2	N5

Slimy sculpin	<i>Cottus cognatus</i>	U	K	S3	N5
Common Name	Scientific Name	Iowa Abundance	Iowa Trend	State Rank	National Rank
White bass	<i>Morone chrysops</i>	A	S	S4	N5
Yellow bass	<i>Morone mississippiensis</i>	A	I	S4	N5
Striped bass	<i>Morone saxatilis</i>	K	K	SE	N5
Largemouth bass	<i>Micropterus salmoides</i>	A	S	S5	N5
Smallmouth bass	<i>Micropterus dolomieu</i>	C	S	S5	N5
Spotted bass	<i>Micropterus punctulatus</i>	C	K	SE	N5
White crappie	<i>Pomoxis annularis</i>	A	S	S5	N5
Black crappie	<i>Pomoxis nigromaculatus</i>	A	S	S5	N5
Rock Bass	<i>Ambloplites rupestris</i>	C	K	S4	N5
Bluegill	<i>Lepomis macrochirus</i>	A	S	S5	N5
Redear sunfish	<i>Lepomis microlophus</i>	C	S	SE	N5
Warmouth	<i>Lepomis gulosus</i>	C	K	S4	N5
Green sunfish	<i>Lepomis cyanellus</i>	C	S	S5	N5
Pumpkinseed	<i>Lepomis gibbosus</i>	C	K	S4	N5
Orangespotted sunfish	<i>Lepomis humilis</i>	C	K	S5	N5
Longear sunfish	<i>Lepomis megalotis</i>	X		SX	N5
Yellow perch	<i>Perca flavescens</i>	C	K	S5	N5
Walleye	<i>Sander vitreus</i>	A	S	S5	N5
Sauger	<i>Sander canadensis</i>	C	K	S4	N5
Slenderhead darter	<i>Percina phoxocephala</i>	U	K	S3	N5
Blackside darter	<i>Percina maculata</i>	C	D	S3	N5
Gilt darter	<i>Percina evides</i>	X		SX	N4
River darter	<i>Percina shumardi</i>	C	S	S3	N5
Northern logperch	<i>Percina caprodes</i>	C	S	S3	N5
Crystal darter	<i>Crystallaria asprella</i>	R	K	S1	N3
				S2	
Western sand darter	<i>Ammocrypta clara</i>	U	S	Threatened	N3
Banded darter	<i>Etheostoma zonale</i>	U	K	S3	N5
Johnny darter	<i>Etheostoma nigrum</i>	C	S	S5	N5
				S1	
Bluntnose darter	<i>Etheostoma chlorosomum</i>	R	K	Endangered	N5
Mud darter	<i>Etheostoma asprigene</i>	U	S	S3	N4N5
Rainbow darter	<i>Etheostoma caeruleum</i>	C	K	S4	N5
Iowa darter	<i>Etheostoma exile</i>	C	K	S4	N5
				S2	
Orangethroat darter	<i>Etheostoma spectabile</i>	U	K	Threatened	N5
Fantail darter	<i>Etheostoma flabellare</i>	C	K	S4	N5
				S1	
Least darter	<i>Etheostoma micropurca</i>	R	K	Endangered	N5
Freshwater drum	<i>Aplodinotus grunniens</i>	C	S	S5	N5

## APPENDIX 7. List of Iowa amphibians and reptiles considered by the ICWCP.

**Iowa Trend:** K = unknown, I = increasing, S = stable, D = decreasing

See Appendix 11 definitions of NatureServe Iowa and National Status rankings.

Common Name	Scientific Name	Iowa Status	Iowa Trend	State Rank	National Rank
Mudpuppy	<i>Necturus maculosus</i>	Threatened	D	S2	N5
Central Newt	<i>Notophthalmus viridescens</i>	Threatened	S	S2	N5
Tiger Salamander	<i>Ambystoma tigrinum</i>		D	S4	N5
Smallmouth Salamander	<i>Ambystoma texanum</i>		S	S3	N5
Blue-spotted Salamander	<i>Ambystoma laterale</i>	Endangered	S	S1	N5
Northern Leopard Frog	<i>Rana pipiens</i>		S	S5	N5
Plains Leopard Frog	<i>Rana blairi</i>		S	S5	N5
Southern Leopard Frog	<i>Rana sphenocephala</i>		S	S4	N5
Pickerel Frog	<i>Rana palustris</i>		S	S5	N5
Crawfish Frog	<i>Rana areolata</i>	Endangered	D	S1	N4
Green Frog	<i>Rana clamitans</i>		S	S5	N5
Bullfrog	<i>Rana catesbeiana</i>		I	S5	N5
Gray Treefrog	<i>Hyla versicolor</i>		S	S5	N5
Cope's Gray Treefrog	<i>Hyla chrysoscelis</i>		S	S5	N5
Spring Peeper	<i>Pseudacris crucifer</i>		S	S5	N5
Western Chorus Frog	<i>Pseudacris triseriata</i>		S	S5	N5
Cricket Frog	<i>Acris crepitans</i>		D	S3	N5
American Toad	<i>Bufo americanus</i>		I	S5	N5
Woodhouse's Toad	<i>Bufo woodhousei</i>				
Woodhouse's Toad	<i>woodhousei</i>		S	S4	N5
Fowler's Toad	<i>Bufo woodhousei fowleri</i>		S	S4	N5
Great Plains Toad	<i>Bufo cognatus</i>		D	S3	N5
Plains Spadefoot Toad	<i>Scaphiopus bombifrons</i>		S	S4	N5
Ornate Box Turtle	<i>Terrapene ornata</i>	Threatened	S	S2	N5
Western Painted Turtle	<i>Chrysemys picta bellii</i>		I	S5	N5
Red-eared Turtle	<i>Trachemys scripta</i>		S	S4	N5
Map Turtle	<i>Graptemys geographica</i>		S	S4	N5
False Map Turtle	<i>Graptemys pseudogeographica</i>		S	S4	N5
Blanding' Turtle	<i>Emydoidea blandingii</i>	Threatened	D	S2	N4
Wood Turtle	<i>Clemmys insculpta</i>	Endangered	K	S1	N4
Snapping Turtle	<i>Chelydra serpentina</i>		S	S5	N5
Alligator Snapping Turtle	<i>Macrochelys temmincki</i>		K	SU	N3, N4
Yellow Mud Turtle	<i>Kinosternon flavescens</i>	Endangered	D	S1	N5
Common Musk Turtle	<i>Sternotherus odoratus</i>	Threatened	D	S2	N5
Spiny Softshell Turtle	<i>Apalone spinifera</i>		D	S4	N5
Smooth Softshell Turtle	<i>Apalone mutica</i>		D	S4	N5
Slender Glass Lizard	<i>Ophisaurus attenuatus</i>	Threatened	D	S2	N5

Common Name	Scientific Name	Iowa Status	Iowa Trend	State Rank	National Rank
Six-Lined Racerunner	<i>Cnemidophorus sexlineatus</i>		D	S3	N5
Northern Prairie Skink	<i>Eumeces septentrionalis</i>		D	S3	N5
Five-Lined Skink	<i>Eumeces fasciatus</i>		S	S4	N5
Great Plains Skink	<i>Eumeces obsoletus</i>	Endangered	D	S1	N5
Northern Water Snake	<i>Nerodia sipedon</i>		D	S5	N5
Diamondback Water Snake	<i>Nerodia rhombifera</i>	Threatened	D	S2	N5
Yellowbelly Water Snake	<i>Nerodia erythrogaster flavigaster</i>		D	S1	N5
Copperbelly Water Snake	<i>Nerodia erythrogaster neglecta</i>	Endangered	D	S1	N5
Graham's Crayfish Snake	<i>Regina grahami</i>		D	S4	N5
Brown Snake	<i>Storeria dekayi</i>		S	S5	N5
Northern Redbelly Snake	<i>Storeria occipitomaculata</i>		S	S4	N5
Smooth Earth Snake	<i>Virginia valeriae</i>		S	S3	N5
Northern Lined Snake	<i>Tropidoclonion lineatum</i>		S	S4	N5
Eastern Garter Snake	<i>Thamnophis sirtalis sirtalis</i>		S	S5	N5
Red-Sided Garter Snake	<i>Thamnophis sirtalis parietalis</i>		S	S5	N5
Plains Garter Snake	<i>Thamnophis radix</i>		S	S5	N5
Western Ribbon Snake	<i>Thamnophis proximus</i>		S	S5	N5
Western Worm Snake	<i>Carpophis amoenus</i>	Threatened	D	S2	N5
Smooth Green Snake	<i>Opheodrys vernalis</i>	Special Concern	S	S3	N5
Rough Green Snake	<i>Opheodrys aestivus</i>		K	SR	N5
Prairie Ringneck Snake	<i>Diadophis punctatus</i>		D	S4	N5
Blue Racer	<i>Coluber constrictor foxi</i>		D	S4	N5
Eastern Yellowbelly Racer	<i>Coluber constrictor flaviventris</i>		D	S4	N5
Milk Snake	<i>Lampropeltis triangulum</i>		D	S4	N5
Prairie Kingsnake	<i>Lampropeltis calligaster</i>		D	S3	N5
Speckled Kingsnake	<i>Lampropeltis getulus</i>	Threatened	D	S1	N5
Bullssnake	<i>Pituophis catenifer sayi</i>	Special Concern	D	S3	N5
Fox Snake	<i>Elaphe vulpina</i>		S	S5	N5
Black Rat Snake	<i>Elaphe obsoleta</i>		S	S5	N5
Eastern Hognose Snake	<i>Heterodon platyrhinos</i>		S	S4	N5
Western Hognose Snake	<i>Heterodon nasicus</i>	Endangered	K	S1	N5
Eastern Massasauga Rattlesnake	<i>Sistrurus catenatus catenatus</i>	Endangered (Federal Candidate Sp.)	D	S1	N3, N4
Timber Rattlesnake	<i>Crotalus horridus</i>		D	S3	N5

<b>Common Name</b>	<b>Scientific Name</b>	<b>Iowa Status</b>	<b>Iowa Trend</b>	<b>State Rank</b>	<b>National Rank</b>
Prairie Rattlesnake	<i>Crotalus viridis</i>	Endangered	K	S1	N5
Copperhead	<i>Agkistrodon contortrix</i>	Endangered	D	S1	N5



## APPENDIX 8. List of Iowa mussels considered by the ICWCP.

**Listing:** N = not listed, S = special concern, T = Threatened, E = endangered, X = extirpated.

**Iowa Abundance:** A = abundant, C = common locally, U = uncommon, R = rare, K = unknown,  
X = possibly extirpated.

**Iowa Trend:** I = increasing, S = stable, D = decreasing, K = unknown.

See Appendix 11 definitions of NatureServe Iowa and National Status rankings.

Common Name	Scientific Name	Listing	Iowa Abundance	Iowa Trend	State Rank	National Rank
Mucket	<i>Actinonaias ligamentina</i>	N	U	D	S3	N5
Elktoe	<i>Alasmidonta marginata</i>	N	U	D	S3	N4
Slippershell	<i>Alasmidonta viridis</i>	E	R	D	S1	N4
Three ridge	<i>Amblema plicata</i>	N	C	D	S4	N5
Flat floater	<i>Anodonta suborbicularis</i>	N	R	D	S1	N5
	<i>Anodontoides ferussacianus</i>	T	R	D	S2	N5
Cylinder	<i>Arcidens confragosus</i>	N	U	D	S3	N4
Spectacle case	<i>Cumberlandia monodonta</i>	E	R	D	S1	N2N3
Purple pimpleback	<i>Cyclonaias tuberculata</i>	T	R/X?	D	S1	N5
Butterfly	<i>Ellipsaria lineolata</i>	T	U	K	S2S3	N4
Elephant ear	<i>Elliptio crassidens</i>	X	X		SX	N5
Spike	<i>Elliptio dilatata</i>	N	U	D	S2	N5
Snuffbox	<i>Epioblasma triquetra</i>	X	X		SX	N3
Ebonyshell	<i>Fusconaia ebena</i>	X	R	D	S1	N4N5
Wabash pigtoe	<i>Fusconaia flava</i>	N	U	D	S3	N5
Ozark pigtoe	<i>Fusconaia ozarkensis</i>	E	X		SX	N3
Plain pocketbook	<i>Lampsilis cardium</i>	N	C	D	S3	N5
Higgins' eye pearlymussel	<i>Lampsilis higginsi</i>	E	R	D	S1	N1
Fatmucket	<i>Lampsilis siliquoidea</i>	N	C	D	S3	N5
	<i>Lampsilis teres</i>					
Yellow sandshell	<i>anodontoides</i>	E	R	D	S1	N5
Slough sandshell	<i>Lampsilis teres teres</i>	E	R	D	S1	N5
White heelsplitter	<i>Lasmigona camplanata</i>	N	U	D	S3	N5
Creek heelsplitter	<i>Lasmigona compressa</i>	T	R	D	S1	N5
Fluted shell	<i>Lasmigona costata</i>	N	R	D	S2	N5
Fragile papershell	<i>Leptodea fragilis</i>	N	U	D	S3	N5
Scaleshell	<i>Leptodea leptodon</i>	X	X		SX	N1
Black sandshell	<i>Ligumia recta</i>	N	U	D	S3	N5
Pondmussel	<i>Ligumia subrostrata</i>	X	X		SX	N4N5
Washboard	<i>Megalonaia nervosa</i>	N	C	D	S3	N5
Threehorn wartyback	<i>Obliquaria reflexa</i>	N	U	D	S3	N5
Hickorynut	<i>Obovaria olivaria</i>	N	U	D	S3	N4

		E	R	D	S1	N3
Bullhead (Sheepnose)	<i>Plethobasus cyphus</i>	X	X		SX	N2N3
Common Name	Scientific Name	Listing	Iowa Abundance	Iowa Trend	State Rank	National Rank
Pyramid pigtoe	<i>Pleurobema rubrum</i>					
Round pigtoe	<i>Pleurobema sintoxia</i>	E	R	D	S2	N4
Pink heelsplitter	<i>Potamilus alatus</i>	N	U	D	S3	N5
Fat pocketbook	<i>Potamilus capax</i>	X	X		SX	N1
Pink papershell	<i>Potamilus ohiensis</i>	N	U	D	S3	N5
Giant floater	<i>Pyganodon grandis</i>	N	U	D	S3	N5
Winged mapleleaf	<i>Quadrula fragosa</i>	X	X		SX	N1
Monkeyface	<i>Quadrula metanerva</i>	N	U	D	S3	N4
Wartyback	<i>Quadrula nodulata</i>	N	U	D	S3	N4
Pimpleback	<i>Quadrula pustulosa</i>	N	U	D	S3	N5
Mapleleaf	<i>Quadrula quadrula</i>	N	U	D	S3	N5
Salamander mussel	<i>Simpsonaias ambigua</i>	X	X	K	SX	N3
Strange floater (Squawfoot)	<i>Strophitus undulatus</i>	T	R	D	S2	N5
Lilliput	<i>Toxolasma parvus</i>	N	R	D	S2	N5
Pistolgrip	<i>Tritogonia verrucosa</i>	E	R	D	S1	N4
Fawnsfoot	<i>Truncilla donaciformis</i>	N	R	D	S2	N5
Deertoe	<i>Truncilla truncata</i>	N	U	D	S3	N5
Pondhorn	<i>Uniomerus tetralasmus</i>	N	R	K	S1	N4
Paper pondshell	<i>Utterbackia imbecillis</i>	N	R	D	S2	N5
Ellipse	<i>Venustaconcha ellipsiformis</i>	T	R	D	S1	N?
Fingernail clams	<i>Spp.</i>	N			S?	
Asian clam	<i>Corbicula fluminea</i>	N			SE	NE
Zebra mussel	<i>Dreissena polymorpha</i>	N			SE	NE

## APPENDIX 9. List of Iowa butterflies considered by the ICWCP.

**Iowa Abundance:** C = common, LC = locally common, U = uncommon, R = rare.

**Iowa Trend:** K = unknown, S = stable, D = decreasing,

See Appendix 11 definitions of NatureServe Iowa and National Status rankings.

Common Name	Scientific Name	Iowa Abundance	Iowa Trend	Iowa Rank	National Rank
Hoary Edge	<i>Achalarus lyciades</i>	R	K	SNR	N5
Gulf Fritillary	<i>Agraulis vanillae</i>	R	K	SNA	N5
				S3 Special Concern	
Pepper and Salt Skipper	<i>Amblyscirtes hegon</i>	R	K		N5
Common Roadside-Skipper	<i>Amblyscirtes vialis</i>	LC	K	S3	N5
Goatweed Leafwing	<i>Anaea andria</i>	U	K	SNR	N5
Delaware Skipper	<i>Anatrytone logan</i>	LC	K	S5	N5
Least Skipper	<i>Ancyloxypha numitor</i>	C	K	S5	N5
Hackberry Emperor	<i>Asterocampa celtis</i>	C	K	S5	N5
Tawny Emporer	<i>Asterocampa clyton</i>	LC	K	S4	N5
Sachem	<i>Atalopedes campestris</i>	LC	K	SNA	N5
				S2 Special Concern	
Arogos Skipper	<i>Atrytone arogos</i>	R	D		N3
				S3 Special Concern	
Dusted Skipper	<i>Atrytonopsis hianna</i>	U	K		N4
				S3 Special Concern	
Pipevine Swallowtail	<i>Battus philenor</i>	U	K		N5
Meadow Fritillary	<i>Boloria bellona</i>	LC	K	S4	N5
Silver-bordered Fritillary	<i>Boloria selene</i>	LC	K	S4	N5
Swamp Metalmark	<i>Calephelis mutica</i>	R	K	SH	N3
Juniper Hairstreak	<i>Callophrys gryneus</i>	LC	K	S4	N5
Henry's Elfin	<i>Callophrys henrici</i>	LC	K	S4	N4
Summer Azure	<i>Celastrina neglecta</i>	C	K	SNR	N5
Common Wood Nymph	<i>Cercyonis pegala</i>	C	K	S5	N5
Gorgone Checkerspot	<i>Chlosyne gorgone</i>	LC	K	S4	N4
Silvery Checkerspot	<i>Chlosyne nycteis</i>	LC	K	S4	N5
				S1	
Common Ringlet	<i>Coenonympha tullia</i>	R	D	Endangered	N5
Orange Sulphur	<i>Colias eurytheme</i>	C	K	S5	N5
Clouded Sulphur	<i>Colias philodice</i>	C	K	S5	N5
Monarch	<i>Danaus plexippus</i>	C	K	S5	N5
Queen	<i>Danaus plexippus</i>	R	K	SNR	N5
Northern Pearly Eye	<i>Enodia anthedon</i>	LC	K	S3	N5

Silver-spotted Skipper	<i>Epargyreus clarus</i>	C	K	S4	N5
Common Name	Scientific Name	Iowa Abundance	Iowa Trend	Iowa Rank	National Rank
Wild Indigo Duskywing	<i>Erynnis baptisiae</i>	U	K	S3 Special Concern	N5
Sleepy Duskywing	<i>Erynnis brizo</i>	R	K	S3 Special Concern	N5
Horace's Duskywing	<i>Erynnis horatius</i>	LC	K	S4	N5
Dreamy Duskywing	<i>Erynnis icelus</i>	R	K	S3 Special Concern	N5
Juvenal's Duskywing	<i>Erynnis juvenalis</i>	U	K	S4	N5
Columbine Duskywing	<i>Erynnis lucilius</i>	R	K	S3 Special Concern	N4
Mottled Duskywing	<i>Erynnis maritialis</i>	LC	K	S3	N3
Persius Duskywing	<i>Erynnis persius</i>	R	K	SNR	N5
Olympia Marble	<i>Euchloe olympia</i>	U	K	S3 Special Concern	N4
Baltimore	<i>Ephydryas phaeton</i>	R	D	S2 Threatened	NNR
Two-spotted Skipper	<i>Euphyes bimacula</i>	R	K	S3 Special Concern	N4
Black Dash	<i>Euphyes conspicua</i>	LC	K	S4	N4
Dion Skipper	<i>Euphyes dion</i>	LC	K	S3 Special Concern	N4
Dun Skipper	<i>Euphyes vestris</i>	LC	K	S4	N5
Variegated Fritillary	<i>Euptoieta claudia</i>	LC	K	SNR	N5
Little Yellow	<i>Eurema lisa</i>	LC	K	SNR	N5
Sleepy Orange	<i>Eurema nicippe</i>	U	K	SNR	N5
Zebra Swallowtail	<i>Eurytides marcellus</i>	U	K	S1 Special Concern	N5
Eastern-tailed Blue	<i>Everes comyntas</i>	C	K	S5	N5
Harvester	<i>Feniseca tarquinius</i>	U	K	S2	N4
Silvery Blue	<i>Glaucopsyche lygdamus</i>	R	K	S3 Threatened	N3
Reakirt's Blue	<i>Hemiargus isola</i>	C	K	SNR	N5
Dakota Skipper	<i>Hesperia dacotae</i>	R	D	S1 Endangered	N2
Leonard's Skipper	<i>Hesperia leonardus</i>	R	K	S2 Special Concern	N4
Ottoe Skipper	<i>Hesperia ottoe</i>	U	K	S2 Special	N3

				Concern	
Common Name	Scientific Name	Iowa Abundance	Iowa Trend	Iowa Rank	National Rank
Uncas Skipper	<i>Hesperia uncas</i>	R	K	SNA	N4
Fiery Skipper	<i>Hylephila phyleus</i>	LC	K	SNR	N5
Common Buckeye	<i>Junonia coenia</i>	C	S	SNA	N5
Marine Blue	<i>Leptotes marina</i>	R	K	SNA	N5
Eufala Skipper	<i>Lerodea eufala</i>	LC	K	SNA	N5
American Snout	<i>Libytheana carinenta</i>	C	K	SNR	N5
Viceroy	<i>Limenitis archippus</i>	C	K	S4	N5
Red-spotted Purple	<i>Limenitis arthemis</i>	LC	K	S4	N5
Melissa Blue	<i>Lycaeides melissa</i>	LC	K	S3	N5
Gray Copper	<i>Lycaena dione</i>	LC	K	S4	N5
				S3 Special Concern	
Purplish Copper	<i>Lycaena helleoides</i>	U	K	Special Concern	N5
Bronze Copper	<i>Lycaena hyllus</i>	C	K	S5	N5
American Copper	<i>Lycaena phlaeas</i>	U	K	S4	N5
Little Wood Satyr	<i>Megisto cymela</i>	C	K	S4	N5
Dainty Orange	<i>Nathalis iole</i>	LC	K	SNR	N5
Mourning Cloak	<i>Nymphalis antiopa</i>	C	K	S4	N5
Milbert's Tortoiseshell	<i>Nymphalis milberti</i>	U	K	SNR	N5
Compton Tortoiseshell	<i>Nymphalis vaualbum</i>	U	K	SNR	N5
				S1	
Poweshiek Skipper	<i>Oarisma poweshiek</i>	R	D	Threatened	N2
Giant Swallowtail	<i>Papilio cresphontes</i>	U	K	S4	N5
Eastern Tiger Swallowtail	<i>Papilio glaucus</i>	C	S	S5	N5
Black Swallowtail	<i>Papilio polyxenes</i>	C	S	S5	N5
Spicebush Swallowtail	<i>Papilio troilus</i>	U	K	SNR	N5
White M Hairstreak	<i>Parrhasius m-album</i>	R	K	SNR	N5
Cloudless Sulphur	<i>Phoebis sennae</i>	LC	K	SNA	N5
Common Sootywing	<i>Pholisora catullus</i>	C	K	S5	N5
Tawny Crescent	<i>Phyciodes batesii</i>	R	K	SNR	N3
Pearl Crescent	<i>Phyciodes tharos</i>	C	K	S5	N5
Cabbage White	<i>Pieris rapae</i>	C	S	SNA	N5
Greenish Blue	<i>Plebeius saepiolus</i>	R	K	SNR	N5
Hobomok Skipper	<i>Poanes hobomok</i>	C	K	S4	N5
				S2	
Mulberry Wing	<i>Poanes massasoit</i>	R	D	Threatened	N4
				S3 Special Concern	
Broad-winged Skipper	<i>Poanes viator</i>	LC	K	Special Concern	N5
				S3 Special Concern	
Zabulon Skipper	<i>Poanes zabulon</i>	LC	K	Special Concern	N5
Long Dash	<i>Polites mystic</i>	LC	K	S4	N5
Crossline Skipper	<i>Polites origenes</i>	LC	K	S4	N5
Peck's Skipper	<i>Polites peckius</i>	LC	K	S5	N5
Tawny-edged Skipper	<i>Polites themistocles</i>	C	K	S5	N5

Eastern Comma	<i>Polygonia comma</i>	C	K	S5	N5
Common Name	Scientific Name	Iowa Abundance	Iowa Trend	Iowa Rank	National Rank
Question Mark	<i>Polygonia interrogationis</i>	C	K	S5	N5
Gray Comma	<i>Polygonia progne</i>	U	K	S3	N5
Little Glassywing	<i>Pompeius verna</i>	LC	K	S4	N5
Checkered White	<i>Pontia protodice</i>	C	K	S4	N4
Byssus Skipper	<i>Prolema byssus</i>	R	D	Threatened	N3
Common Checkered-Skipper	<i>Pyrgus communis</i>	LC	K	SNR	N5
Acadian Hairstreak	<i>Satyrium acadica</i>	LC	K	S3 Special Concern	N5
Banded Hairstreak	<i>Satyrium calanus</i>	LC	K	S3	N5
Hickory Hairstreak	<i>Satyrium caryaevorum</i>	R	K	S3 Special Concern	N4
Edward's Hairstreak	<i>Satyrium edwardsii</i>	U	K	S3 Special Concern	N5
Striped Hairstreak	<i>Satyrium liparops</i>	U	K	S3 Special Concern	N5
Coral Hairstreak	<i>Satyrium titus</i>	C	K	S4	N5
Eyed Brown	<i>Satyrone eurydice</i>	LC	K	S4	N4
Aphrodite Fritillary	<i>Speyeria aphrodite</i>	LC	K	S4	N5
Great Spangled Fritillary	<i>Speyeria cybele</i>	C	K	S4	N5
Regal Fritillary	<i>Speyeria idalia</i>	R	D	S2 Special Concern	N3
Hayhurst's Scallopwing	<i>Staphylus hayhurstii</i>	?	K	SNR	N5
Gray Hairstreak	<i>Strymon melinus</i>	C	K	S4	N5
Southern Cloudwing	<i>Thorybes bathyllus</i>	LC	K	S4	N5
Northern Cloudwing	<i>Thorybes pylades</i>	LC	K	S4	N5
European Skipper	<i>Thymelicus lineola</i>	U	K	SNA	NA
Red Admiral	<i>Vanessa atalanta</i>	C	S	S5	N5
Painted Lady	<i>Vanessa cardui</i>	C	S	S5	N5
American Lady	<i>Vanessa virginensis</i>	C	K	S5	N5
Northern Broken-Dash	<i>Wallengrenia egeremet</i>	LC	K	S4	N5
Southern Dogface	<i>Zerene cesonia</i>	LC	K	SNA	N5

## APPENDIX 10. List of Iowa dragonflies and damselflies considered by the ICWCP.

Iowa Abundance: C = common, U = uncommon, R = rare, ER = extremely rare.  
See Appendix 11 definitions of NatureServe Iowa and National Status rankings.

Common Name	Scientific Name	Abundance	Iowa Status	National Status
Canada Darner	<i>Aeshna canadensis</i>	R	S2	N5
Lance-tipped Darner	<i>Aeshna constricta</i>	U	S3	N5
Variable Darner	<i>Aeshna interrupta</i>	R	S2	N5
Blue-eyed Darner	<i>Aeshna multicolor</i>	R	S2	N5
Spatterdock Darner	<i>Aeshna mutata</i>	ER	S?	G3G4
Black-tipped Darner	<i>Aeshna tuberculifera</i>	ER	S?	N4
Shadow Darner	<i>Aeshna umbrosa</i>	C	S4	N5
Green-striped Darner	<i>Aeshna verticalis</i>	R	S2	N5
Common Green Darner	<i>Anax junius</i>	C	S5	N5
Fawn Darner	<i>Boyeria vinosa</i>	C	S4	N5
Swamp Darner	<i>Epiaschna heros</i>	ER	S?	N5
Cyrano Darner	<i>Nasiaeschna pentacantha</i>	R	S2	N5
Common Baskettail	<i>Epitheca cynosura</i>	C	S4	N5
Prince Baskettail	<i>Epitheca princeps</i>	C	S4	N5
Smoky Shadowdragon	<i>Neurocordulia molesta</i>	R	S2	N4
Stygian Shadowdragon	<i>Neurocordulia yamaskanensis</i>	ER	S1	S5
Plains Emerald	<i>Somatochlora ensigera</i>	U	S3	N3N4
Mocha Emerald	<i>Somatochlora linearis</i>	ER	S1	N5
Horned Clubtail	<i>Arigomphus cornutus</i>	U	S3	N4
Jade Clubtail	<i>Arigomphus submedianus</i>	C	S4	N5
Flag-tailed Spinyleg	<i>Dromogomphus spoliatus</i>	U	S3	N4N5
Plains Clubtail	<i>Gomphus externus</i>	C	S4	N5
Midland Clubtail	<i>Gomphus fraternus</i>	U	S3	N5
Pronghorn Clubtail	<i>Gomphus graslinellus</i>	U	S3	N5
Sulphur-tipped Clubtail	<i>Gomphus militaris</i>	ER	S1	N5
Rapids Clubtail	<i>Gomphus quadricolor</i>	ER	S1	N3N4
Cobra Clubtail	<i>Gomphus vastus</i>	U	S3	N5
Rusty Snaketail	<i>Ophiogomphus rupinsulensis</i>	ER	S1	N5
Sand Snaketail	<i>Ophiogomphus sp.</i>	ER	S1	not recorded
Common Sanddragon	<i>Progomphus obscurus</i>	C	S4	N5
Riverine Clubtail	<i>Stylurus amnicola</i>	U	S3	N4
Brimstone Clubtail	<i>Stylurus intricatus</i>	ER	S1	N4
Elusive Clubtail	<i>Stylurus notatus</i>	U	S3	N3
Russet-tipped Clubtail	<i>Stylurus plagiatus</i>	U	S3	N5
Arrow Clubtail	<i>Stylurus spiniceps</i>	ER	S?	N4
Calico Pennant	<i>Celithemis elisa</i>	U	S3	N5

Halloween Pennant	<i>Celithemis eponina</i>	C	S4	N5
Common Name	Scientific Name	Abundance	Iowa Status	National Status
Eastern Pondhawk	<i>Erythemis simplicicollis</i>	C	S5	N5
Dot-tailed Whiteface	<i>Leucorrhinia intacta</i>	C	S4	N5
Spangled Skimmer	<i>Libellula cyanea</i>	R	S1	N5
Slaty Skimmer	<i>Libellula incesta</i>	ER	S1	N5
Widow Skimmer	<i>Libellula luctuosa</i>	C	S5	N5
Common Whitetail	<i>Libellula lydia</i>	C	S5	N5
Twelve-spotted Skimmer	<i>Libellula pulchella</i>	C	S5	N5
Four-spotted Skimmer	<i>Libellula quadrimaculata</i>	R	S2	N5
Blue Dasher	<i>Pachydiplax longipennis</i>	C	S5	N5
Wandering Glider	<i>Pantala flavescens</i>	C	S4	N5
Spot-winged Glider	<i>Pantala hymenaea</i>	U	S3	N5
Eastern Amberwing	<i>Perithemis tenera</i>	C	S5	N5
Blue-faced Meadowhawk	<i>Sympetrum ambiguum</i>	ER	S1	N5
Variegated Meadowhawk	<i>Sympetrum corruptum</i>	C	S5	N5
Saffron-winged Meadowhawk	<i>Sympetrum costiferum</i>	U	S3	N5
Black Meadowhawk	<i>Sympetrum danae</i>	ER	S?	N5
Cherry-faced Meadowhawk	<i>Sympetrum internum</i>	U	S4	N5
White-faced Meadowhawk	<i>Sympetrum obtrusum</i>	C	S5	N5
Western Meadowhawk	<i>Sympetrum occidentale</i>	U	S4	N5
Ruby Meadowhawk	<i>Sympetrum rubicundulum</i>	C	S5	N5
Yellow-legged Meadowhawk	<i>Sympetrum vicinum</i>	U	S3	N5
Carolina Saddlebags	<i>Tramea carolina</i>	ER	S1	N5
Black Saddlebags	<i>Tramea lacerata</i>	C	S5	N5
Red Saddlebags	<i>Tramea onusta</i>	C	S5	N5
Illinois River Cruiser	<i>Macromia illinoiensis</i>	U	S3	N5
Royal River Cruiser	<i>Macromia taeniolata</i>	R	S2	N5
River Jewelwing	<i>Calopteryx aequabilis</i>	C	S5	N5
Ebony Jewelwing	<i>Calopteryx maculata</i>	C	S5	N5
Smoky Rubyspot	<i>Hetaerina titia</i>	U	S3	N5
American Rubyspot	<i>Hetaerina americana</i>	C	S5	N5
Eastern Red Damsel	<i>Amphiagrion saucium</i>	U	S3	N5
Paiute Dancer	<i>Argia alberta</i>	R	S2	N4
Blue-fronted Dancer	<i>Argia apicalis</i>	C	S5	N5
Emma's Dancer	<i>Argia emma</i>	ER	S1	N5
Variable Dancer	<i>Argia fumipennis</i>	C	S5	N5
Powdered Dancer	<i>Argia moesta</i>	U	S4	N5
Springwater Dancer	<i>Argia plana</i>	U	S3	N5
Blue-tipped Dancer	<i>Argia tibialis</i>	U	S4	N5
Prairie Bluet	<i>Coenagrion angulatum</i>	R	S2	N3?
Taiga Bluet	<i>Coenagrion resolutum</i>	U	S3	N4
River Bluet	<i>Enallagma anna</i>	C	S5	N5
Rainbow Bluet	<i>Enallagma antennatum</i>	C	S5	N5
Azure Bluet	<i>Enallagma aspersum</i>	C	S5	N5
Double-striped Bluet	<i>Enallagma basidens</i>	UC	S4	N5

Boreal Bluet	<i>Enallagma boreale</i>	R	S2	N5
Common Name	Scientific Name	Abundance	Iowa Status	National Status
Tule Bluet	<i>Enallagma carunculatum</i>	C	S5	N5
Familiar Bluet	<i>Enallagma civile</i>	C	S5	N5
Alkali Bluet	<i>Enallagma clausum</i>	R	S2	N5
Northern Bluet	<i>Enallagma cyathigerum</i>	UC	S3	N5
Marsh Bluet	<i>Enallagma ebrium</i>	UC	S3	N5
Stream Bluet	<i>Enallagma exsulans</i>	UC	S4	N5
Skimming Bluet	<i>Enallagma geminatum</i>	C	S4	N5
Hagen's Bluet	<i>Enallagma hageni</i>	C	S5	N5
Orange Bluet	<i>Enallagma signatum</i>	C	S4	N5
Slender Bluet	<i>Enallagma traviatum</i>	UC	S3	N5
Vesper Bluet	<i>Enallagma vesperum</i>	R	S2	N5
Citrine Forktail	<i>Ischnura hastata</i>	UC	S3	N5
Fragile Forktail	<i>Ischnura posita</i>	UC	S3	N5
Eastern Forktail	<i>Ischnura verticalis</i>	C	S5	N5
Sedge Sprite	<i>Nehalennia irene</i>	UC	S3	N5
Great Spreadwing	<i>Archilestes grandis</i>	UC	S3	N5
Spotted Spreadwing	<i>Lestes congener</i>	R	S2	N5
Common Spreadwing	<i>Lestes disjunctus</i>	UC	S3	N5
Emerald Spreadwing	<i>Lestes dryas</i>	UC	S3	N5
Amber-winged Spreadwing	<i>Lestes eurinus</i>	UC	S3	N4
Sweetflag Spreadwing	<i>Lestes forcipatus</i>	R	S2	N5
Elegant Spreadwing	<i>Lestes inaequalis</i>	ER	S1	N5
Slender Spreadwing	<i>Lestes rectangularis</i>	C	S4	N5
Lyre-tipped Spreadwing	<i>Lestes unguiculatus</i>	C	S5	N5



## APPENDIX 11. NatureServe National and Subnational (State) Heritage Status Rank Definitions.

(From [www.natureserve.org/explorer/](http://www.natureserve.org/explorer/) ranking.htm accessed June 23, 2005.)

Bird listings: B = Breeding, N = Non-breeding.

C = captive, extant only in captivity or as a reintroduced population not yet established.

? = Inexact numeric rank.

Status	Definition
NX SX	<b>Presumed Extirpated</b> —Species or community is believed to be extirpated from the nation or state/province. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.
NH SH	<b>Possibly Extirpated (Historical)</b> —Species or community occurred historically in the nation or state/province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years. A species or community could become NH or SH without such a 20-40 year delay if the only known occurrences in a nation or state/province were destroyed or if it had been extensively and unsuccessfully looked for. The NH or SH rank is reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences.
N1 S1	<b>Critically Imperiled</b> —Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.
N2 S2	<b>Imperiled</b> —Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.
N3 S3	<b>Vulnerable</b> —Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
N4 S4	<b>Apparently Secure</b> —Uncommon but not rare; some cause for long-term concern due to declines or other factors.
N5	<b>Secure</b> —Common, widespread, and abundant in the nation or

**S5**

state/province.

<b>NNR</b>	<b>Unranked</b> —Nation or state/province conservation status not yet assessed.
<b>NU</b>	<b>Unrankable</b> —Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
<b>NNA</b>	<b>Not Applicable</b> —A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
<b>N#N# S#S#</b>	<b>Range Rank</b> —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
<b>Not Provided</b>	Species is known to occur in this nation or state/province. Contact the relevant natural heritage program for assigned conservation status.



## **APPENDIX 12. Iowa animal Endangered, Threatened, or Species of Special Concern (from Iowa Code Chapter 77).**

### **Endangered animal species:**

#### **Mammals**

Indiana Bat	<i>Myotis sodalis</i>
Plains Pocket Mouse	<i>Perognathus flavescens</i>
Red-backed Vole	<i>Clethrionomys gapperi</i>
Spotted Skunk	<i>Spilogale putorius</i>

#### **Birds**

Red-shouldered Hawk	<i>Buteo lineatus</i>
Northern Harrier	<i>Circus cyaneus</i>
Peregrine Falcon	<i>Falco peregrinus</i>
Piping Plover	<i>Charadrius melanotos</i>
Common Barn Owl	<i>Tyto alba</i>
Least Tern	<i>Sterna antillarum</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>
King Rail	<i>Rallus elegans</i>
Short-eared Owl	<i>Asio flammeus</i>

#### **Fish**

Lake Sturgeon	<i>Acipenser fulvescens</i>
Pallid Sturgeon	<i>Scaphirhynchus albus</i>
Pugnose Shiner	<i>Notropis anogenus</i>
Weed Shiner	<i>Notropis texanus</i>
Pearl Dace	<i>Semotilus marginatus</i>
Freckled Madtom	<i>Noturus nocturnus</i>
Bluntnose Darter	<i>Etheostoma chlorosomum</i>
Least Darter	<i>Etheostoma microperca</i>

#### **Reptiles**

Yellow Mud Turtle	<i>Kinosternon flavescens</i>
Wood Turtle	<i>Clemmys insculpta</i>
Great Plains Skink	<i>Eumeces obsoletus</i>
Copperbelly Water Snake	<i>Nerodia erythrogaster neglecta</i>
Western Hognose Snake	<i>Heterodon nasicus</i>
Copperhead	<i>Agkistrodon contortrix</i>
Prairie Rattlesnake	<i>Crotalus viridis</i>
Massasauga Rattlesnake	<i>Sistrurus catenatus</i>

#### **Amphibians**

Blue-spotted Salamander  
*Ambystoma laterale*  
Crawfish Frog  
*Rana areolata*

### **Butterflies**

Dakota Skipper  
*Hesperia dacotae*  
Ringlet  
*Coenonympha tullia*

### **Land Snails**

Iowa Pleistocene Snail  
*Discus macclintocki*  
Minnesota Pleistocene Ambersnail  
*Novisuccinea new species A*  
Iowa Pleistocene Ambersnail  
*Novisuccinea new species B*  
Frigid Ambersnail  
*Catinella gelida*  
Briarton Pleistocene Vertigo  
*Vertigo briarensis*  
Bluff Vertigo  
*Vertigo meramecensis*  
Iowa Pleistocene Vertigo  
*Vertigo new species*

### **Fresh Water Mussels**

Spectacle Case  
*Cumberlandia monodonta*  
Slippershell  
*Alasmidonta viridis*  
Buckhorn  
*Tritogonia verrucosa*  
Ozark Pigtoe  
*Fusconaia ozarkensis*  
Bullhead  
*Plethobasus cyphyus*  
Ohio River Pigtoe  
*Pleurobema sintoxia*  
Slough Sandshell  
*Lampsilis teres teres*  
Yellow Sandshell  
*Lampsilis teres anodontoides*  
Higgin's-eye Pearly Mussel  
*Lampsilis higginsi*

### **Threatened animal species:**

#### **Mammals**

Least Shrew  
*Cryptotis parva*  
Southern Bog Lemming  
*Synaptomys cooperi*

#### **Birds**

Long-eared Owl  
*Asio otus*  
Henslow's Sparrow  
*Ammodramus henslowii*

#### **Fish**

Chestnut Lamprey  
*Ichthyomyzon castaneus*  
American Brook Lamprey  
*Lampetra appendix*  
Grass Pickerel  
*Esox americanus*  
Blacknose Shiner  
*Notropis heterolepis*  
Topeka Shiner  
*Notropis topeka*  
Western Sand Darter  
*Ammocrypta clara*  
Black Redhorse  
*Moxostoma duquesnei*

Burbot	<i>Lota lota</i>
Orangethroat Darter	<i>Etheostoma spectabile</i>

### **Reptiles**

Slender Glass Lizard	<i>Ophisaurus attenuatus</i>
Common Musk Turtle	<i>Sternotherus odoratus</i>
Blanding's Turtle	<i>Emydoidea blandingii</i>
Ornate Box Turtle	<i>Terrapene ornata</i>
Diamondback Water Snake	<i>Nerodia rhombifera</i>
Western Worm Snake	<i>Carpophis amoenus vermis</i>
Speckled Kingsnake	<i>Lampropeltis getulus</i>

### **Amphibians**

Mudpuppy	<i>Necturus maculosus</i>
Central Newt	<i>Notophthalmus viridescens</i>

### **Butterflies**

Powesheik Skipperling	<i>Oarisma powesheik</i>
Byssus Skipper	<i>Problema byssus</i>
Mulberry Wing	<i>Poanes massasoit</i>
Silvery Blue	<i>Glaucopsyche lygdamus</i>
Baltimore	<i>Euphydryas phaeton</i>

### **Snails**

Midwest Pleistocene	<i>Vertigo Vertigo hubrichti</i>
Occult Vertigo	<i>Vertigo occulta</i>

### **Fresh Water Mussels**

Cylinder	<i>Anodontoides ferussacianus</i>
Strange Floater	<i>Strophitus undulatus</i>
Creek Heelsplitter	<i>Lasmigona compressa</i>
Purple Pimpleback	<i>Cyclonaias tuberculata</i>
Butterfly	<i>Ellipsaria lineolata</i>
Ellipse	<i>Venustaconcha ellipsiformis</i>

### **Special concern animal species:**

#### **Mammals**

Southern Flying Squirrel	<i>Glaucomys volans</i>
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#### **Birds**

Forester's Tern	<i>Sterna forsteri</i>
Black Tern	<i>Chlidonias niger</i>

**Fish**

Pugnose Minnow  
Pirate Perch

*Notropis emiliae*  
*Aphredoderus sayanus*

**Reptiles**

Smooth Green Snake  
Bullsnaake

*Opheodrys vernalis*  
*Pituophis catenifer sayi*

**Butterflies**

Dreamy Duskywing  
Sleepy Duskywing  
Columbine Duskywing  
Wild Indigo Duskywing  
Ottoe Skipper  
Leonardus Skipper  
Pawnee Skipper  
Beardgrass Skipper  
Zabulon Skipper  
Broad-winged Skipper  
Sedge Skipper  
Two-spotted  
Dusted Skipper  
Salt-and-pepper  
Pipevine Swallowtail  
Zebra Swallowtail  
Olympia White  
Purplish Copper  
Acadian Hairstreak  
Edward's Hairstreak  
Hickory Hairstreak  
Striped Hairstreak  
Swamp Metalmark  
Regal Fritillary  
Baltimore

*Erynnis icelus*  
*Erynnis brizo*  
*Erynnis lucilius*  
*Erynnis baptisiae*  
*Hesperia ottoe*  
*Hesperia l. leonardus*  
*Hesperia leonardus pawnee*  
*Atrytone arogos*  
*Poanes zabulon*  
*Poanes viator*  
*Euphyes dion*  
*Skipper Euphyes bimacula*  
*Atrytonopsis hianna*  
*Skipper Amblyscirtes hegona*  
*Battus philenor*  
*Eurytides marcellus*  
*Euchloe olympia*  
*Lycaena heliooides*  
*Satyrium acadicum*  
*Satyrium edwardsii*  
*Satyrium caryaevorum*  
*Satyrium liparops*  
*Calephelis mutica*  
*Speyeria idalia*  
*Euphydryas phaeton ozarkae*

## APPENDIX 13. Terrestrial Habitat Classes Used In the ICWCP.

The nine habitat classes defined by Iowa GAP were used in the ICWCP. Habitat classes are made up of related vegetation alliances that can be identified from aerial photographs, have been entered into a Geographical Information System (GIS) data-bases and can be mapped.

**13-1. FOREST (Map13-1):** Generally, >60% canopy of tree species with crowns interlocking

Name	Description	Alliance
<b>Pine Forest</b>	Round-crowned temperate or subpolar needle-leaved evergreen forest.	<i>Pinus strobus</i>
<b>Eastern Red Cedar</b>	Conical-crowned temperate or subpolar needle-leaved evergreen forest.	<i>Juniperus virginiana</i>
<b>Evergreen</b>	Round-crowned and conical-crowned evergreen forest.	Not listed
<b>Upland Deciduous</b>	(1) Lowland or submontane cold-deciduous forest. (2) <i>Quercus rubra</i> - <i>Acer saccharum</i> - ( <i>Quercus spp.</i> )	(1) ( <i>Acer saccharum</i> ( <i>A. nigrum</i> ) - <i>Tilia</i> ) <i>americana</i> - ( <i>Quercus rubra</i> (3) ( <i>Fraxinus pennsylvanica</i> - <i>Ulmus americana</i> - ( <i>Juglans nigra</i> - <i>Celtis occidentalis</i> - <i>Robinia pseudoacacia</i> - <i>Acer negundo</i> - <i>Populus spp.</i> ) (4) <i>Quercus alba</i> ( <i>Quercus rubra</i> , <i>Carya spp.</i> ) (5) <i>Quercus macrocarpa</i> (6) <i>Quercus muehlenbergii</i> (7) <i>Quercus velutina</i> - ( <i>Quercus ellipsoidalis</i> ) (8) <i>Quercus imbricaria</i> <i>Populus tremuloides</i> ( <i>Populus grandidentata</i> )
	(2) Montane or boreal cold-deciduous forest.	(1) <i>Pinus strobus</i> - <i>Quercus spp.</i> (2) <i>Juniperus virginiana</i> - <i>Quercus spp.</i>
<b>Mixed Evergreen/ Deciduous</b>	Mixed needle-leaved evergreen - cold-deciduous forest	

**13-2: WET - FOREST/WOODLAND\_(Map 13-2):** Temporarily or seasonally flooded forest or woodland

Name	Description	Alliance
<b>Temporarily Flooded Forested Wetland</b>	Temporarily flooded cold-deciduous forest.	(1) <i>Acer saccharinum</i> (2) <i>Acer negundo</i> - ( <i>Gleditsia triacanthos</i> - <i>Crataegus</i> spp.) (3) <i>Betula nigra</i> - ( <i>Platanus occidentalis</i> ) (4) <i>Populus deltoides</i> (5) <i>Salix nigra</i> ( <i>S. amygdaloidea</i> ) (6) <i>Fraxinus macrocarpa</i> - <i>Quercus</i> <i>bicolor</i> - ( <i>Carya laciniosa</i> )
<b>Seasonally Flooded Forested Wetland</b>	Seasonally flooded cold-deciduous forest.	<i>Quercus palustris</i> - ( <i>Quercus</i> <i>bicolor</i> )
<b>Temporarily Flooded Deciduous Woodland</b>	Temporarily flooded cold-deciduous woodland.	<i>Populus deltoides</i>

**13-3: WOODLAND (Map13-3):** Open stands of tree species with 25-60% canopy cover

Name	Description	Alliance
<b>Eastern Red Cedar Woodland</b>	Conical-crowned temperate or subpolar needle-leaved evergreen woodland.	<i>Juniperus virginiana</i>
<b>Upland Deciduous Woodland</b>	Cold-deciduous woodland.	(1) <i>Quercus macrocarpa</i> - <i>Quercus</i> <i>(alba, velutina)</i> (2) <i>Quercus macrocarpa</i> (3) <i>Quercus muehlenbergii</i>
<b>Mixed Evergreen/ Deciduous Woodland</b>	Mixed needle-leaved evergreen -. Cold-deciduous woodland	<i>Juniperus virginiana</i>

**13-4, SHRUBLAND (Map 4-4):** Generally shrubs >0.5 m tall forming >25% cover with <25% tree cover

Name	Description	Alliance
<b>Upland Shrub</b>	Temperate cold-deciduous shrubland	<i>Cornus spp. - Rhus spp. - (Symporicarpos spp.)</i>

**13-5. WET SHRUBLAND (Map 4-5):** Temporarily, seasonally, semi-permanently flooded or saturated shrubland

Name	Description	Alliance
<b>Temporarily Flooded Shrubland</b>	Temporarily flooded shrubland	<i>Salix exigua (=S. interior)</i>
<b>Seasonally Flooded Shrub</b>	Seasonally flooded cold-deciduous shrubland.	(1) <i>Alnus incana</i> (2) <i>Cornus spp. - Salix spp.</i>
<b>Semi-permanently Flooded Shrub</b>	Semi-permanently flooded cold-deciduous shrubland	<i>Cephalanthus occidentalis</i>
<b>Saturated (Bog or Swamp) Shrub</b>	Saturated cold-deciduous shrubland.	<i>Betula pumila - (Salix spp.)</i>

**13-6: WARM SEASON HERBACEOUS VEGETATION (Map 13-6):** <25% canopy cover made up of trees or shrub species. Herbs form at least 25% of canopy cover.)

Name	Description	Alliance
<b>Warm Season Grass /Perennial Forb</b>	Tall sod temperate grassland.	1) <i>Andropogon gerardii - (Panicum virgatum (Sorghastrum nutan</i> (2) <i>Andropogon gerardii -</i> (3) <i>Andropogon gerardii - Schizachyrium scopariu</i>

**13-7. HERBACEOUS WETLANDS (Map 4-7):** Temporarily, seasonally, semi-permanently flooded and saturated herbaceous wetlands

Name	Description	Alliance
<b>Temporarily Flooded Wetland</b>	Temporarily flooded temperate or subpolar grassland.	(1) <i>Andropogon gerardii</i> - ( <i>Calamagrostis canadensis</i> , <i>Sorghastrum nutans</i> )
<b>Seasonally Flooded Wetland</b>	Seasonally flooded temperate or subpolar grassland.	(2) <i>Carex lanuginosa</i> (3) <i>Spartina pectinata</i> (1) <i>Calamagrostis canadensis</i> (2) <i>Carex atherodes</i> ( <i>Carex vesicaria</i> ) (3) <i>Carex lacustris</i> (4) <i>Carex (rostrata, utriculata)</i> (5) <i>Carex stricta</i> ( <i>Carex haydenii</i> ) (6) <i>Phalaris arundinacea</i> (7) <i>Scirpus fluviatilis</i> (8) <i>Typha spp.</i> ( <i>Scirpus spp. - Juncus spp.</i> )
<b>Semi-permanently Flooded Wetland</b>	Semi-permanently flooded temperate or subpolar grassland	(1) <i>Phragmites australis</i> (2) <i>Sagittaria latifolia</i> ( <i>S. rigida</i> ) (3) <i>Scirpus acutus</i> ( <i>S. fluviatilis</i> , <i>tabernaemontani</i> ) (4) <i>Typha (angustifolia, latifolia)</i> - ( <i>Scirpus spp.</i> ) (5) <i>Zizania (aquatica, palustris)</i>
<b>Saturated Wetland</b>	Saturated temperate or subpolar grassland.	(1) <i>Carex lanuginosa - Scirpus spp.</i> (2) <i>Carex stricta</i> (3) <i>Carex lasiocarpa</i> ( <i>Sphagnum spp.</i> ) (4) <i>Carex spp. - Typha spp.</i> (5) <i>Carex spp. - Rhynchospora capillacea</i>

**Permanently Flooded Wetland**

- Permanently flooded temperate or subpolar  
hydromorphic rooted vegetation.
- 
- (1) *Nuphar lutea* - *Nymphaea odorata*
  - (2) *Potamogeton* spp. - *Ceratophyllum*  
spp. - (*Myriophyllum* spp. - *Elodea* spp)
  - (3) *Ruppia maritima*
  - (4) *Vallisneria americana*

**13-8. SAVANNA (Map 4-8): Temperate grassland with sparse coniferous or cold-deciduous tree layer**

Name	Description	Alliance
<b>Grassland with sparse shrubs and trees</b>	Tall and medium-tall temperate grassland with sparse coniferous or mixed tree layer	(1) <i>Juniperus virginiana</i> (2) <i>Populus deltoides</i> (3) <i>Quercus macrocarpa</i> - ( <i>Quercus alba</i> ) (4) <i>Quercus velutina</i> - ( <i>Quercus ellipsoidalis</i> ) (5) <i>Schizachyrium scoparium</i> - <i>Bouteloua curtipendula</i> ( <i>Juniperus virginiana</i> - <i>Quercus spp.</i> )

**13-9. AGRICULTURAL LANDS (Map 13-9):** (Lands normally worked to produce a crop or grazed by livestock

Name	Description	Alliance
<b>Cool Season Grassland</b>	Cool season grassland (smooth brome, forage crops, pasture)	
<b>Cropland</b>	Worked land normally on an annual basis in corn, soybeans, sorghum, fallow fields or other crops.	

# APPENDIX 14. HABITAT PREFERENCES FOR SPECIES COVERED BY THE ICWCP

## 14-1. Terrestrial Wildlife

**Table 14-1. Habitat preferences of SGCN - Breeding Birds**

**Habitat Class:** 1 = Forest, 2 = Wet Forest/Woodland, 3 = Woodland, 4 = Shrubland, 5 = Wet Shrubland, 6 = Warm Season Herbaceous, 7 = Herbaceous Wetland, 8 = savanna, 9 = Agricultural Land

Common Name	Scientific Name	Iowa Distribution	Habitat Class	Habitat Preference
American bittern	<i>Botaurus lentiginosus</i>	N 2/3	7	wetland
Least bittern	<i>Ixobrychus exilis</i>	Statewide	7	wetland
Black-crowned night-heron	<i>Nycticorax nycticorax</i>	N 2/3	5,7	wetland, wet shrubland
Yellow-crowned night-heron	<i>Nyctanassa violacea</i>	E 1/3	2,7	wetland, riparian forest
Trumpeter swan	<i>Cygnus buccinator</i>	Statewide*	7	wetland
Northern pintail	<i>Anas acuta</i>	N 1/2	6,7,9	wetland, grassland
Canvasback	<i>Aythya valisineria</i>	NW, N central	7	wetland
Redhead	<i>Aythya americana</i>	NW, N Central	7	wetland
Osprey	<i>Pandion haliaetus</i>	NW*, E 1/2	2,7	wetland, riparian forest
Bald eagle	<i>Haliaeetus leucocephalus</i>	Statewide	1,2	riparian forest, deciduous forest
Northern harrier	<i>Circus cyaneus</i>	Statewide	6,7,9	grassland, marsh
Red-shouldered hawk	<i>Buteo lineatus</i>	E 3/4	1,3	riparian forest
Broad-winged hawk	<i>Buteo platypterus</i>	Statewide	1	deciduous forest
Swainson's hawk	<i>Buteo swainsoni</i>	Statewide except SE	3,8	savanna, open woodland
Peregrine falcon	<i>Falco peregrinus</i>	E 1/2*	1, 2	riparian forest, deciduous forest
Ruffed grouse	<i>Bonasa umbellus</i>	NE, SE, S Central	1,3	dense forest, open woodland
Greater prairie-chicken	<i>Tympanuchus cupido</i>	SW*, S Central	6, 9	grassland
Sharp-tailed grouse	<i>Tympanuchus phasianellus</i>	W*	4,6, 9	grassland, shrubland
Northern bobwhite	<i>Colinus virginianus</i>	S 3/4	4,6,9	grassland, shrubland
King rail	<i>Rallus elegans</i>	E, N Central	7	wetland
Common moorhen	<i>Gallinula chloropus</i>	N, E, W	7	wetland

Common Name	Scientific Name	Iowa Distribution	Habitat Class	Habitat Preference
Sandhill crane	<i>Grus canadensis</i>	E 1/2	6,7,9	wetland, grassland
Piping plover	<i>Charadrius melanotos</i>	Missouri River	7	wetland
Upland sandpiper	<i>Bartramia longicauda</i>	Statewide	6,9	grassland
American woodcock	<i>Scolopax minor</i>	Statewide	1,2,3	deciduous forest, open woodland, riparian forest
Wilson's phalarope	<i>Phalaropus tricolor</i>	N 1/2	6,7,9	wetland, grassland
Forster's tern	<i>Sterna forsteri</i>	N Central, central, E	7	wetland
Least tern	<i>Sterna antillarum</i>	Missouri River	7	wetland
Black tern	<i>Chlidonias niger</i>	Statewide	7	wetland
Black-billed cuckoo	<i>Coccyzus erythrophthalmus</i>	Statewide	1,2,3,4	riparian and deciduous forest, open woodland, shrubland
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	Statewide	1,3,4	deciduous forest, shrubland, open woodland
Barn owl	<i>Tyto alba</i>	Statewide*	8	savanna
Burrowing owl	<i>Speotyto cunicularia</i>	NW, N Central	6,9	grassland
Long-eared owl	<i>Asio otus</i>	Statewide	2,3,8	open woodland, savanna, deciduous forest
Short-eared owl	<i>Asio flammeus</i>	Statewide	6,9	grassland
Common nighthawk	<i>Chordeiles minor</i>	Statewide	6,8,9	grassland, savanna
Whip-poor-will	<i>Caprimulgus vociferus</i>	Statewide	1,3	deciduous forest, open woodland
Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	Statewide	2,3,8	savanna, open woodland, deciduous forest
Acadian flycatcher	<i>Empidonax virescens</i>	E, S, Central	1,2	deciduous forest, riparian forest
Willow flycatcher	<i>Empidonax traillii</i>	Statewide	5	wet shrubland
Least flycatcher	<i>Empidonax minimus</i>	NE	1,3	deciduous forest, open woodland
Brown creeper	<i>Certhia americana</i>	NE	1,2	deciduous and riparian forest
Bewick's wren	<i>Thryomanes bewickii</i>	SE	3,4	open woodland, shrubland
Sedge wren	<i>Cistothorus platensis</i>	Statewide	6,7,9	grassland, wetland

<b>Common Name</b>	<b>Scientific Name</b>	<b>Distribution</b>	<b>Habitat Class</b>	<b>Habitat Preference</b>
Veery	<i>Catharus fuscescens</i>	E 3/4	1,2	riparian forest, deciduous forest
Wood thrush	<i>Hylocichla mustelina</i>	Statewide	1,2	deciduous forest, riparian forest
Northern mockingbird	<i>Mimus polyglottos</i>	S 3/4	3,4,8	open woodland, savanna, shrubland
Loggerhead shrike	<i>Lanius ludovicianus</i>	SW 2/3	4,8	savanna, shrubland
White-eyed vireo	<i>Vireo griseus</i>	Statewide	3,4	open woodland, shrubland
Bell's vireo	<i>Vireo bellii</i>	Statewide	4,5,8	shrubland, savanna
Blue-winged warbler	<i>Vermivora pinus</i>	E 2/3	1,3,4	deciduous forest, shrubland
Cerulean warbler	<i>Dendroica cerulea</i>	E, S, W Central	1,2	deciduous forest
Black-and-white warbler	<i>Mniotilla varia</i>	E,S	1	deciduous forest
Prothonotary warbler	<i>Protonotaria citrea</i>	NE 2/3	2	riparian forest
Worm-eating warbler	<i>Helmintheros vermivorus</i>	E	1	deciduous forest
Louisiana waterthrush	<i>Seiurus motacilla</i>	E,S,W Central	1,2	riparian and deciduous forest
Kentucky warbler	<i>Oporornis formosus</i>	E,S,W Central	1,2	deciduous and riparian forest
Hooded warbler	<i>Wilsonia citrina</i>	E,S,W Central	1	deciduous forest
Yellow-breasted chat	<i>Icteria virens</i>	E,S,W Central	3,4,8	open woodland, shrubland
Dickcissel	<i>Spiza americana</i>	Statewide	6,9	grassland
Eastern towhee	<i>Pipilo erythrophthalmus</i>	Statewide	3,4	open woodland, shrubland
Field sparrow	<i>Spizella pusilla</i>	Statewide	4,6,9	shrubland, grassland
Lark sparrow	<i>Chondestes grammacus</i>	S 3/4	6,8,9	grassland, shrubland, savanna
Grasshopper sparrow	<i>Ammodramus savannarum</i>	Statewide	6,9	grassland
Henslow's sparrow	<i>Ammodramus henslowii</i>	S 1/4	6,9	grassland
Bobolink	<i>Dolichonyx oryzivorus</i>	Statewide	6,9	grassland
Eastern meadowlark	<i>Sturnella magna</i>	Statewide	6,8,9	grassland, savanna

**Table 14-2. Habitat Preferences of SGCN - Migratory Birds**

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**Habitat Class:** 1 = Forest, 2 = Wet Forest/Woodland, 3 = Woodland, 4 = Shrubland, 5 = Wet Shrubland, 6 = Warm Season Herbaceous, 7 = Herbaceous Wetland, 8 = savanna, 9 = Agricultural Land

Common Name	Scientific Name	Distribution	Habitat Class	Habitat Preference
American white pelican	<i>Pelecanus erythrorhynchos</i>	N,Central	7	wetland
Yellow rail	<i>Coturnicops noveboracensis</i>	N,E,Central	6,7,9	wetland, grassland
Whooping crane	<i>Grus americana</i>	W, NE	6,7,9	wetland, grassland
American golden-plover	<i>Pluvialis dominica</i>	Statewide	7	wetland
American avocet	<i>Recurvirostra americana</i>	Statewide	7	wetland
Greater yellowlegs	<i>Tringa melanoleuca</i>	Statewide	7	wetland
Lesser yellowlegs	<i>Tringa flavipes</i>	Statewide	7	wetland
Solitary sandpiper	<i>Tringa solitaria</i>	Statewide	7	wetland
Hudsonian godwit	<i>Limosa haemastica</i>	Statewide	7	wetland
Marbled godwit	<i>Limosa fedoa</i>	W	7	wetland
Stilt sandpiper	<i>Micropalama himantopus</i>	Statewide	7	wetland
Buff-breasted sandpiper	<i>Tryngites subruficollis</i>	W	7,9	wetland, short grassland
Short-billed dowitcher	<i>Limnodromus griseus</i>	Statewide	7	wetland
Golden-winged warbler	<i>Vermivora chrysoptera</i>	E	1,3,4	deciduous forest, open woodland shrubland
Canada warbler	<i>Wilsonia canadensis</i>	Statewide	1	deciduous forest
Le Conte's sparrow	<i>Ammodramus leconteii</i>	Statewide	6,7,9	grassland
Nelson's sharp-tailed sparrow	<i>Ammodramus nelsoni</i>	Statewide	6,7,9	grassland, wetland
Rusty blackbird	<i>Euphagus carolinus</i>	Statewide	2,5,7	riparian forest, wetland, wet shrubland

**Table 14-3. Habitat Preferences of SGCN - Mammals**

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**Habitat Class:** 1 = Forest, 2 = Wet Forest/Woodland, 3 = Woodland, 4 = Shrubland, 5 = Wet Shrubland, 6 = Warm Season Herbaceous, 7 = Herbaceous Wetland, 8 = savanna, 9 = Agricultural Land

Common Name	Scientific Name	Distribution	Habitat Class	Habitat Preference
Hayden's shrew	<i>Sorex haydeni</i>	western one-third	1,2,3,6, R	grassland, woodland, riparian
Short-tailed shrew	<i>Blarina hylophaga</i>	extreme southwest	1,3,6,8	forest, woodland, savanna, grassland
Least shrew	<i>Cryptotis parva</i>	west	2,3,4,8, R	woodland, savanna, grassland, riparian
Evening bat	<i>Nycticeius humeralis</i>	southern half	1,2	forest, riparian
Indiana bat	<i>Myotis sodalis</i>	southeast two-thirds	1	forest, upland and riparian
Northern myotis	<i>Myotis septentrionalis</i>	state-wide	1	forest
White-tailed jackrabbit	<i>Lepus townsendii</i>	north-central	6,9	shortgrass prairie and pasture
Franklin's ground squirrel	<i>Spermophilus franklinii</i>	state-wide	6,9	tallgrass prairie, savanna and roadsides
Red squirrel	<i>Tamiasciurus hudsonicus</i>	northeast one-fourth	1	forests
Plains pocket mouse	<i>Perognathus flavescens</i>	west, disjunct in east	6	prairie, sand and loess
Prairie vole	<i>Microtus ochrogaster</i>	state-wide	6	upland prairie
Red-backed vole	<i>Clethrionomys gapperi</i>	north central	1	forest
Southern bog lemming	<i>Synaptomys cooperi</i>	state-wide	7	moist grassland
Woodland vole	<i>Microtus pinetorum</i>	east two-thirds	1	forest
River otter	<i>Lutra canadensis</i>	state-wide	1A,2A,6 A	rivers, streams and lakes
Spotted skunk	<i>Spilogale putorius</i>	state-wide	1,6,7	grassland, savanna, forest, and farmsteads
Bobcat	<i>Lynx rufus</i>	state-wide	1,3,4,6	forest, woodland, grassland

**Table 14-4. Habitat Preferences of SGCN - Butterflies**

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**Habitat Class:** 1 = Forest, 2 = Wet Forest/Woodland, 3 = Woodland, 4 = Shrubland, 5 = Wet Shrubland, 6 = Warm Season Herbaceous, 7 = Herbaceous Wetland, 8 = savanna, 9 = Agricultural Land

Common Name	Scientific Name	Habitat Preference	Habitat Class	Iowa Distribution
Pepper and Salt Skipper	<i>Amblyscirtes hegon</i>	Edge of woods & grass waterways	3,9	Scattered
Arogos Skipper	<i>Atrytone arogos</i>	Prairies and grasslands	6,9	W 1/2
Dusted Skipper	<i>Atrytonopsis hianna</i>	Bluestem grasslands & oldfields	6,9	Scattered
Pipevine Swallowtail	<i>Battus philenor</i>	Forest, open fields and roadsides	1,9	E 1/2
Swamp Metalmark	<i>Calephelis muticum</i>	Wet meadows & marshes	7	Linn Co.
Common Ringlet	<i>Coenonympha tullia</i>	Prairie and marsh edge	6,7	NW 1/8
Wild Indigo duskywing	<i>Erynnis baptisiae</i>	Roadsides, prairie	9	Scattered
Sleepy Duskywing	<i>Erynnis brizo</i>	Oak barrens sand or shale soils	*	Scattered
Dreamy Duskywing	<i>Erynnis icelus</i>	Woodland or edge	3,8	Scattered
Columbine Duskywing	<i>Erynnis lucilius</i>	Rocky wooded ravines	1,3	Scattered
Olympia Marble	<i>Euchloe olympia</i>	Open woods, river bluffs, poor soils and grasslands	3,6,8	W and NE
Baltimore Checkerspot	<i>Euphydryas phaeton</i>	Wetlands	7	E 1/2
Two-spotted Skipper	<i>Euphyes bimacula</i>	Sedge meadows & marshes	7	Scattered
Dion Skipper	<i>Euphyes dion</i>	Sedge wetlands	7	Scattered
Zebra Swallowtail	<i>Eurytides marcellus</i>	Woodland along rivers	3R	S 1/2
Silvery Blue	<i>Glaucopsyche lygdamus</i>	Open fields and woodland openings	3,9	N 1/2
Dakota Skipper	<i>Hesperia dacotae</i>	Prairie	6	Dickinson Co.
Leonard's Skipper	<i>Hesperia leonardus</i>	Open grassy areas	6,9	Scattered
Ottoe Skipper	<i>Hesperia ottoe</i>	Mid and tall grass prairie of high quality	6	Loess hills and NE
Purplish Copper	<i>Lycaena heliooides</i>	Moist or disturbed areas	9	Scattered
Powesheik Skipper	<i>Oarisma powesheik</i>	High quality tallgrass prairie	6	Scattered
Mulberry Wing	<i>Poanes massasoit</i>	Wetlands fens	7	Scattered
Broad-winged Skipper	<i>Poanes viator</i>	Wetlands fens	7	N 1/2

<b>Common Name</b>	<b>Scientific Name</b>	<b>Habitat Preference</b>	<b>Habitat Class</b>	<b>Iowa Distribution</b>
Zabulon Skipper	<i>Poanes zabulon</i>	Riparian, oldfield, and woodland edges	3,9	SE 1/4
Byssus Skipper	<i>Problema byssus</i>	Tallgrass prairie	6	Scattered
Acadian Hairstreak	<i>Satyrium acadica</i>	Riparian & oldfield	9R	Scattered
Hickory Hairstreak	<i>Satyrium caryaevorum</i>	Forest	1	Scattered
Edward's Hairstreak	<i>Satyrium edwardsii</i>	Woodlands, clearings, and areas of poor soil	3	Scattered
Striped Hairstreak	<i>Satyrium liparops</i>	Forest openings and edges, prairie streamside	3	Scattered
Regal Fritillary	<i>Speyeria idalia</i>	Prairie & open grassland	6,9	Statewide

**Table 14-5. Habitat Preferences of SGCN - Land Snails**

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**Habitat Class:** 1 = Forest, 2 = Wet Forest/Woodland, 3 = Woodland, 4 = Shrubland, 5 = Wet Shrubland, 6 = Warm Season Herbaceous, 7 = Herbaceous Wetland, 8 = savanna, 9 = Agricultural Land

Common Name	Scientific Name	Habitat Preference	Habitat Class	Iowa Distribution
Iowa Pleistocene Snail	<i>Discus macclintocki</i>	Algific slopes	1	NE
Frigid Ambersnail	<i>Catinella gelida</i>	Algific slopes	1	NE
Minnesota Pleistocene Succinea	<i>Novasuccinea n. sp. minnesota a</i>	Maderate cliffs	1	NE
Iowa Pleistocene Succinea	<i>Novasuccinea n. sp. Minnesota b</i>	Maderate cliffs	1	NE
Briarton Pleistocene Snail	<i>Vertigo brierensis</i>	Algific slopes	1	NE
Hubricht's Vertigo	<i>Vertigo hubrichti</i>	Algific slopes	1	NE
Iowa Pleistocene Vertigo	<i>Vertigo iowaensis</i>	Algific slopes	1	NE
Bluff Vertigo	<i>Vertigo meramecensis</i>	Limestone or dolomite cliffs & outcrops	1	NE

## 14-2: Semi-aquatic Wildlife

**Table 14-6. Habitat Preferences of SGCN - Reptiles and Amphibians**

**Habitat Class (terrestrial):** 1 = Forest, 2 = Wet Forest/Woodland, 3 = Woodland, 4 = Shrubland, 5 = Wet Shrubland, 6 = Warm Season Herbaceous, 7 = Herbaceous Wetland, 8 = savanna, 9 = Agricultural Land

**Habitat Class (aquatic):** 1A = River, 2A = Stream, 3A = Creek, 4A = Impoundment, 5A = Backwater, 5B = Oxbow, 6A = Lake, 7A = Pond

Common Name	Scientific Name	Habitat Preference	Habitat Class	Distribution
Mudpuppy	<i>Necturus maculosus</i>	Clean rivers, streams, lakes, reservoirs	1A,2A,4A, 6A	E
Central Newt	<i>Notophthalmus viridescens</i>	Vegetated woodland ponds, roadside flooded ditches & adjacent habitat	2,3,7	E, SE
Smallmouth Salamander	<i>Ambystoma texanum</i>	Woodland pools and open woods	2,3,7	S
Blue-spotted Salamander	<i>Ambystoma laterale</i>	Woodland pools & open woods	2,3	NE
Crawfish Frog	<i>Rana areolata</i>	Prairie marshes, ponds and river floodplains	2,6,7,9,7A	SE
Cricket Frog	<i>Acris crepitans</i>	Shallow wetlands and streams	1A,2A,3A,5A ,6A,7A,7	Statewide
Great Plains Toad	<i>Bufo cognatus</i>	Prairie, nonnative grassland	6,9	W
Ornate Box Turtle	<i>Terrapene ornata</i>	Sand/loess prairie, savanna	6,8,9	E,SW
Blanding' Turtle	<i>Emydoidea blandingii</i>	Shallow well vegetated wetlands	5A,7A,7	E, N Central
Wood Turtle	<i>Clemmys insculpta</i>	Floodplain forest, rivers	1A,2	N,N Central
Alligator Snapping Turtle	<i>Macroclemys temmincki</i>	Large Rivers	1A	SE
Yellow Mud Turtle	<i>Kinosternon flavescens</i>	Shallow, ephemeral pools adjacent nearly pure sand soils.	5A,6,7	SE
Common Musk Turtle	<i>Sternotherus odoratus</i>	Backwaters and spring fed ponds adjacent to sandy uplands	2A,5A,7A,7	E
Slender Glass Lizard	<i>Ophisaurus attenuatus</i>	Prairie, pastures, forest edge, savanna	3,6,8,9	S
Six-Lined Racerunner	<i>Cnemidophorus sexlineatus</i>	Sand/loess prairie, savanna	6,8,9	E,SW
Northern Prairie Skink	<i>Eumeces septentrionalis</i>	Sandy/loess prairie-forest edge, wetland edge	5,6,7	W,NE
Great Plains Skink	<i>Eumeces obsoletus</i>	Rocky/loess prairie and	6	

		forest edge		SW
Diamondback Water Snake	<i>Nerodia rhombifera</i>	Quiet pools and backwater sloughs	5A	SE
Yellowbelly Water Snake	<i>Nerodia erythrogaster flavigaster</i>	Backwater sloughs and forested wetlands	2,5A	SE
Copperbelly Water Snake	<i>Nerodia erythrogaster neglecta</i>	Backwater sloughs, Forested wetland	2,5A	SE
Smooth Earth Snake	<i>Virginia valeriae</i>	Rocky woodland	3	S
Western Worm Snake	<i>Carphophis amoenus</i>	Rocky woodlands	3	S
Smooth Green Snake	<i>Opheodrys vernalis</i>	Old field, savanna, wet prairie and marsh	5,6,7,8	E 3/4
Prairie Kingsnake	<i>Lampropeltis calligaster</i>	Woodland edge, open woodland, grassland, savanna	3,6,8,9	S
Speckled Kingsnake	<i>Lampropeltis getulus</i>	Prairie, woodland edge, savanna	3,6,8	S
Bullssnake	<i>Pituophis catenifer sayi</i>	Prairie, deciduous woodland edge, savanna	3,6,8,9	Statewide
Western Hognose Snake	<i>Heterodon nasicus</i>	Sand/loess prairie	6	SE, NW
Eastern Massasauga Rattlesnake	<i>Sistrurus catenatus catenatus</i>	Early successional wetland and upland grassland	5,6,7,9	E,S
Timber Rattlesnake	<i>Crotalus horridus</i>	Forested areas near rock outcrops, woodland, hill prairie	1,3,6	E,S
Prairie Rattlesnake	<i>Crotalus viridis</i>	Prairie	6	NW
Copperhead	<i>Agkistrodon contortrix</i>	Forested, rocky hillsides	1	SE

**Table 14-7. Habitat Preferences of SGCN - Dragonflies and Damselflies**

**Habitat Class:** 1A = River, 2A = Stream, 3A = Creek, 4A = Impoundment, 5A = Backwater,  
5B = Oxbow, 6A = Lake, 7A = Pond

Common Name	Scientific Name	Habitat Preference	Habitat Class	Distribution
Rapids Clubtail	<i>Gomphus quadricolor</i>	rocky creeks	3A	Fayette County
Spangled Skimmer	<i>Libellula cyanea</i>	artificial ponds, lakes	6A,7A	southern border
Slaty Skimmer	<i>Libellula incesta</i>	old river oxbow	5A	Wayne County
Stygian Shadowdragon	<i>Neurocordulia yamaskanensis</i>	Mississippi River	1A	extreme northeast
Rusty Snaketail	<i>Ophiogomphus rupinsulensis</i>	sandy, rocky creeks	3A	northeast one-fourth
Sand Snaketail	<i>Ophiogomphus sp.</i>	sand bottomed streams	2A	northeast one-fourth
Mocha Emerald	<i>Somatochlora linearis</i>	wooded edges	2A	Wayne and Madison Cos.
Brimstone Clubtail	<i>Stylurus intricatus</i>	sandy streams	2A	west one-fourth
Blue-faced Meadowhawk	<i>Sympetrum ambiguum</i>	temporary pools, oxbows	5A	southeast one-fourth
Carolina Saddlebags	<i>Tramea carolina</i>	marsh	7	Mahaska County
Emma's Dancer	<i>Argia emma</i>	small streams	2A	Crawford County
Alkali Bluet	<i>Enallagma clausum</i>	Pond edges without vegetation	7A	northwest one-fourth
Elegant Spreadwing	<i>Lestes inaequalis</i>	ponds	7A	northeast corner
Sulphur-tipped Clubtail	<i>Gomphus militaris</i>	artificial ponds, lakes	6A,7A	south and west
Canada Darner	<i>Aeshna canadensis</i>	marshes, pond edges	7A,7	northeast one-fourth
Variable Darner	<i>Aeshna interrupta</i>	lakes, ponds, streams	2A,6A, 7A	northwest one-fourth
Blue-eyed Darner	<i>Aeshna multicolor</i>	small lakes, ponds	6A,7A	west one-third
Green-striped Darner	<i>Aeshna verticalis</i>	marshes, pond edges	7A,7	east one-fourth
Four-spotted Skimmer	<i>Libellula quadrimaculata</i>	marshes, wooded ponds	7A,7	north one-half
Royal River Cruiser	<i>Macromia taeniolata</i>	lakes, rivers	1A,6A	eastern border
Cyrano Darner	<i>Nasiaeschna pentacantha</i>	shaded creeks, lakes, oxbows	3A,5A, 6A	southeast one-fourth
Smoky Shadowdragon	<i>Neurocordulia molesta</i>	large rivers	1A	statewide large rivers
Paiute Dancer	<i>Argia alberta</i>	small streams, road ditches	2A	west one-third
Prairie Bluet	<i>Coenagrion angulatum</i>	lakes, ponds	6A,7A	west one-third
Boreal Bluet	<i>Enallagma boreale</i>	marsh	7	north one-third
Vesper Bluet	<i>Enallagma vesperum</i>	deep lakes, ponds	6A,7A	southwest one-half

<b>Common Name</b>	<b>Scientific Name</b>	<b>Habitat Preference</b>	<b>Habitat Class</b>	<b>Distribution</b>
Spotted Spreadwing	<i>Lestes congener</i>	edges pools, marshes	5A,7	statewide
Sweetflag Spreadwing	<i>Lestes forcipatus</i>	marshes, pond edges	7A,7	northeast one-third

### 14-3. Aquatic Wildlife

**Table 14-8. Habitat Preferences of SGCN - Fish**

**Water Type:** C = creek, S = stream, R = river, B = backwater, P = pond, L= lake,  
I = impoundment (S = small, M = medium, L= large)

**Substrate:** M = muck, I = silt, S = sand, C = cobble, G = gravel, R = rock, B = bedrock

**Flow:** N = none, S = slow, M = moderate, F = fast

**Habitat Class:** 1A = River, 2A = Stream, 3A = Creek, 4A = Impoundment, 5A = Backwater,  
5B = Oxbow, 6A = Lake, 7A = Pond

Common Name	Scientific Name	Iowa Distribution	Habitat Class	Water Type	Substrate	Flow
Chestnut lamprey	<i>Ichthyomyzon castaneus</i>	Miss. River Chariton River	1A	MR, LR		
Northern brook lamprey	<i>Ichthyomyzon fossor</i>	NE 1/4	3A	S	M	M, F
Silver lamprey	<i>Ichthyomyzon unicuspis</i>	Miss. River	1A,4A,6 A	L, I, LR		
American brook lamprey	<i>Lampetra appendix</i>	NE 1/4	1A,3A	C, SR, MR		
Lake sturgeon	<i>Acipenser fulvescens</i>	Miss. River	1A,6A	LR, LL	S, G, R	
Pallid sturgeon	<i>Scaphirhynchus albus</i>	Mo. River	1A	LR; turbid	G, S	F
Shovelnose sturgeon	<i>Scaphirhynchus platorynchus</i>	Miss. Mo. Rivers	1A	LR; turbid		
Paddlefish	<i>Polyodon spathula</i>	Miss. Mo. Des Moines, Cedar, Iowa, Skunk Rivers	1A,4A, 5A	MR, LR, B, I		S
Bowfin	<i>Amia calva</i>	Miss. River	5A,6A	B, L		
Longnose gar	<i>Lepisosteus osseus</i>	Miss. Mo. and larger tributaries	4A,5A,6 A	L, I, B; veg		
Spotted gar	<i>Lepisosteus oculatus</i>	Miss. River	1A	MR, LR		M
American eel	<i>Anguilla rostrata</i>	Miss. Mo. and larger tributaries	2A,6A	LS, L		
Skipjack herring	<i>Alosa chrysochloris</i>	Miss. & Mo. Rivers	1A,4A	MR, LR, LI	S, G	
Goldeye	<i>Hiodon alosoides</i>	Mo. large streams in W, S and SE	1A,5A,6 A	MR,LR,B, L		
Brook Trout	<i>Salvelinus fontinalis</i>	NE corner	1A,3A	C ,S ,S R, cool	S,G,C,R	M, F
Grass pickerel	<i>Esox americanus</i>	Miss. River and tributaries	5A,6A,7 A	B, P, SL; veg		S

Central mudminnow	<i>Umbra limi</i>	N 1/3	2A, 5A	S, B; veg		S
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Common Name	Scientific Name	Iowa Distribution	Habitat Class	Water Type	Substrate	Flow
Largescale stoneroller	<i>Campostoma oligolepis</i>	NE 1/3	2A	MS, LS; clear	G	
Western silvery minnow	<i>Hybognathus argyritis</i>	Mo. drainage	5A	B	S, M	
Mississippi silvery minnow	<i>Hybognathus nuchalis</i>	E Miss. drainage	5A	B		S
Plains minnow	<i>Hybognathus placitus</i>	Mo. drainage	1A,2A	S, R	I	S
Speckled chub	<i>Macrhybopsis aestivalis</i>	Large interior rivers statewide	1A	R	S, I	S
Sturgeon chub	<i>Macrhybopsis gelida</i>	E 1/2, Mo. River	1A	Warm, turbid		
Flathead chub	<i>Platygobio gracilis</i>	Mo. drainage	1A	R; turbid		
Sicklefin chub	<i>Macrhybopsis meeki</i>	Mo. River	1A	LR; turbid	G, S	
Gravel chub	<i>Erimytag x-punctatus</i>	N 1/2	1A,3A	LC, R	G	
Pallid shiner	<i>Hybopsis amnis</i>	Upper. Miss.	1A	MR, LR	S, M	
Pugnose minnow	<i>Opsopoeodus emiliae</i>	Miss. River	1A,2A, 4A	L ,I ,S ;veg		S
Pugnose shiner	<i>Notropis anogenus</i>	W .Lake Okoboji	6A	L; clear, veg	I, S, G	
Ghost shiner	<i>Notropis buchanani</i>	Miss. River	1A,3A	LC, SR, MR		S
Blacknose shiner	<i>Notropis heterolepis</i>	NW	1A,3A, 6A	C, SR, L; cool,	S	
Spottail shiner	<i>Notropis hudsonius</i>	Natural lakes, Miss.	1A,6A	LR, L	S, R	
Ozark minnow	<i>Notropis nubilus</i>	NE 1/4	1A,3A	C, SR, MR	G, R	F
Weed shiner	<i>Notropis texanus</i>	Cedar and Miss. Rivers	1A,3A	C, SR, MR	S	
Topeka shiner	<i>Notropis topeka</i>	DM, Boone, Raccoon, Rock drainages	1A,3A, 5A	B ,C ,S R; clear)		S
Redfin shiner	<i>Lythrurus umbratilis</i>	NE 1/4	1A,2A, 3A			
Longnose dace	<i>Rhinichthys cataractae</i>	NE corner	1A	SR, MR; clear	G, R	F
Pearl dace	<i>Margariscus margarita</i>	Worth County	6A,7A	P, SL	S, G	
Southern redbelly dace	<i>Phoxinus erythrogaster</i>	NE 1/3, NW 1/4				
Blue sucker	<i>Cyclopterus elongatus</i>	Miss. Mo. and large tributaries	1A	LR		

Common Name	Scientific Name	Iowa Distribution	Habitat Class	Water Type	Substrate	Flow
Black buffalo	<i>Ictiobus niger</i>	Miss. and large tributaries	1A,4A, 5A	B, R, I		
Black redhorse	<i>Moxostoma duquesnei</i>	Turkey, Upper Iowa, Cedar, Wapsi drainages	1A,3A	C, SR, MR	G, R	
River redhorse	<i>Moxostoma carinatum</i>	Upper pools of Miss.	1A,3A,	LC, R; clear		
Greater redhorse	<i>Moxostoma valenciennei</i>	Upper Miss. River	1A	MR, LR	no silt	M, F
Spotted sucker	<i>Minytrema melanops</i>	Miss. River	1A	SR, MR	firm	S
Blue catfish	<i>Ictalurus furcatus</i>	Lower Miss and Mo. Rivers	1A, 5A			
Brown bullhead	<i>Ameiurus nebulosus</i>	N 1/3	2A,4A, 5A,6A, 7A	P, L, B, I, S		S
Slender madtom	<i>Noturus exilis</i>	Miss. River tributaries	1A,2A,	MS, LS, SR, MR		M, F
Tadpole madtom	<i>Noturus gyrinus</i>	Statewide	1A,3A, 4A,5A, 6A	L, I, B, C, R; veg	M	S
Freckled madtom	<i>Noturus nocturnus</i>	Miss. drainage	1A,3A	C, R		L, M
Pirate perch	<i>Aphredoderus sayanus</i>	Miss. and large tributaries	5A,6A, 7A	L, P, B; veg		
Trout perch	<i>Percopsis omiscomaycus</i>	NW 1/4, Upper Miss., Grand Chariton Rivers	1A, 2A	S, R	S	
Burbot	<i>Lota lota</i>	Mo and Miss. River and Miss. tributaries	1A,6A	L ,L R; deep, cold		
Banded killifish	<i>Fundulus diaphanus</i>	Natural lakes in NW, Mo. River	2A,6A, 7A	L, P, S		S
Blackstripe topminnow	<i>Fundulus notatus</i>	E 1/3	2A,5A	S, B; turbid		
Mottled sculpin	<i>Cottus bairdi</i>	Lower Bear Creek	2A,3A	C, SR; clear, cool	S, G, R	
Slimy sculpin	<i>Cottus cognatus</i>	NE corner	2A	S; cold	R	F

Common Name	Scientific Name	Iowa Distribution	Habitat Class	Water Type	Substrate	Flow
Slenderhead darter	<i>Percina phoxocephala</i>	Miss. drainage	1A,3A	C, SR, MR	C, G, B	M, F
Blackside darter	<i>Percina maculata</i>	N 2/3	1A,3A	C, SR, MR	S, G	S
River darter	<i>Percina shumardi</i>	Miss. River	1A	LR	G, R	F
		Miss. drainage, Clear Lake	1A,2A, 3A,4A, 6A	C, S, R, L, I	S, G	M, F
Northern logperch	<i>Percina caprodes</i>	Miss., Turkey Rivers	1A	SR, MR	S, G	F
Crystal darter	<i>Crystallaria asprella</i>	Miss. River	1A	MR, LR	S	S, M
Western sand darter	<i>Ammocrypta clara</i>	NE 1/4	1A,3A	R, LC	C, G	M
Banded darter	<i>Etheostoma zonale</i>	Miss. River	1A, 3A, 5A	SR, MR, C, B	S, M	S
Bluntnose darter	<i>Etheostoma chlorosomum</i>	Miss. River & tributaries	1A,5A	B, R	S, M	S
Mud darter	<i>Etheostoma asprigene</i>	SE 1/4	1A,3A	C, SR	S, C, G, B	M, F
Orangethroat darter	<i>Etheostoma spectabile</i>	Maquoketa, tributary to Otter Creek	3A	C; veg		S
Least darter	<i>Etheostoma micropurca</i>					

**Table 14-9. Habitat Preferences of SGCN - Mussels**

**Water:** C = creek, S = stream, R = river, B = backwater, P = pond, L = lake,  
I = impoundment (S = small, M = medium, L = large)

**Substrate:** M = muck, I = silt, S = sand, C = cobble, G = gravel, R = rock, B = bedrock

**Flow:** N = none, S = slow, M = moderate, F = fast

**Habitat Class:** 1A = River, 2A = Stream, 3A = Creek, 4A = Impoundment, 5A = Backwater,  
5B = Oxbow, 6A = Lake, 7A = Pond

Common Name	Scientific Name	Iowa Distribution	Habitat Class	Water	Substrate	Flow
Elktoe	<i>Alasmidonta marginata</i>	NE 3/4	2A	MS	S, G	M
Slippershell	<i>Alasmidonta viridis</i>	E	2A,3A	C, S	S, M	
Flat floater	<i>Anodonta suborbicularis</i>	Miss. Riv.	1A,6A,7A	P, L, R	M, I	N, S
Cylinder	<i>Anodontoides ferussacianus</i>	N Central	3A	SC	S, M	
Rock pocketbook	<i>Arcidens confragosus</i>	Miss. Riv.	1A	MR, LR	S, M	
Spectacle case	<i>Cumberlandia monodonta</i>	Miss. Riv.	1A	LR	S, M	F
Purple pimpleback	<i>Cyclonaias tuberculata</i>	SE	1A	MR, LR	G	
Butterfly	<i>Ellipsaria lineolata</i>	Miss. & Cedar Rvs.	1A	LR	S, G	
Spike	<i>Elliptio dilatata</i>	NE 3/4	2A,6A	S, L	S, G; firm	
Ebonyshell	<i>Fusconaia ebena</i>	Miss. Riv.	1A	LR; deep	S, G	
Ozark pigtoe	<i>Fusconaia ozarkensis</i>					
Higgins' eye pearlymussel	<i>Lampsilis higginsi</i>	Miss. Riv. & Tributaries	1A	LR	S, G	
Yellow sandshell	<i>Lampsilis teres</i>					
Yellow sandshell	<i>anodontoides</i>	NE 2/3	1A	MR, LR	S, G	
Slough sandshell	<i>Lampsilis teres teres</i>	NE 2/3	1A,5A	R, B	M	S
Creek heelsplitter	<i>Lasmigona compressa</i>	NE 2/3	2A,3A	C, S	S, G	
Fluted shell	<i>Lasmigona costata</i>	NE 3/4	1A	MR, LR	S, G, M	
Pondmussel	<i>Ligumia subrostrata</i>	DM & Iowa Rivers	3A,7A	SC, P	S, M	
Hickorynut	<i>Obovaria olivaria</i>	Miss. Riv.	1A	LR	S, G	
Bullhead (Sheepnose)	<i>Plethobasus cyphus</i>	Miss. & DM Rivers	1A	MR, LR	S, G	
Round pigtoe	<i>Pleurobema sintoxia</i>	NE 3/4	1A,2A	S, R	S, G; firm	
Monkeyface	<i>Quadrula metanervia</i>	E 2/3	1A	MR, LR	G	
Wartyback	<i>Quadrula nodulata</i>	Miss. Riv.	1A	LR	S, G	
Strange floater (Squawfoot)	<i>Strophitus undulatus</i>	NE 3/4	2A	SS, MS	S, G, M	
Lilliput	<i>Toxolasma parvus</i>	NE 2/3	1A,3A,6A,7A	P, L, C, R	S, G, M	

Pistolgrip	<i>Tritogonia verrucosa</i>	Miss., Iowa, DM Rivers	1A	MR, LR	S,G,M	
Fawnsfoot	<i>Truncilla donaciformis</i>	E	1A	MR, LR	S, G	
Common Name	Scientific Name	Iowa Distribution	Habitat Class	Water	Substrate	Flow
Pondhorn	<i>Uniomerus tetralasmus</i>	S Central	1A,2A,3A,7A	P,C,S,R	M,S	
Paper pondshell	<i>Utterbackia imbecillis</i>	NE 3/4	1A,6A,7A,4A	P, L, I, R	M	S
Ellipse	<i>Venustaconcha ellipsiformis</i>	E 2/3	2A	SS, MS	S, G	



# APPENDIX 15. SGCN GROUPED BY HABITAT CLASS

## 15-1. Terrestrial Habitat Classes

**Table 15-1. Habitat Preferences of SGCN - Forest Habitat**

Group	Common Name	Comments
<b>Birds</b>		
	Bald eagle	Prefers riparian forest
	Red-shouldered hawk	Prefers riparian forest
	Broad-winged hawk	Large contiguous forest
	Peregrine falcon	Nests in rocky cliffs along major rivers
	Ruffed grouse	Prefers large forests or woodlands containing areas of high stem density
	American woodcock	Prefers moist brushy woodlands w/openings
	Black-billed cuckoo	Prefers woodland thickets w/2' to 6' shrubs
	Yellow-billed cuckoo	Prefers woodland thickets w/4' to 8' shrubs
	Whip-poor-will	Prefers ungrazed forest w/open understory
	Acadian flycatcher	Prefers riparian areas of large unfragmented forests
	Least flycatcher	Prefers mature hardwoods, but frequents openings
	Brown creeper	Prefers riparian forest
	Veery	Prefers moist forests w/low tree & shrub understory
	Wood thrush	Prefers mature, moist forest w/closed canopy
	Blue-winged warbler	Uses overgrown brushy areas in forest clearings
	Golden-winged warbler	Prefers woodland openings w/brush and grass
	Canada warbler	Prefers mature forest w/shrubby undergrowth
	Cerulean warbler	Prefers large, mature, unfragmented forest
	Prothonotary warbler	Prefers swampy, mature riparian forest
	Worm eating warbler	Prefers large, unfragmented forests w/shrub understory
	Black & white warbler	Prefers large, mature, unfragmented forests
	Hooded warbler	Prefers large, mature, unfragmented forests
	Louisiana waterthrush	Prefers large, mature forests w/permanent streams
	Kentucky warbler	Prefers riparian, ravine areas within forest understory
<b>Mammals</b>		
	Hayden's shrew	Riparian areas

	Short-tailed shrew	
	Evening bat	Riparian areas
	Indiana bat	Riparian areas
	Northern myotis	
	Red squirrel	
	Red-backed vole	
	Woodland vole	
	Spotted skunk	
	Bobcat	
<b>Reptiles and Amphibians</b>		
	Timber rattlesnake	Deciduous forest with limestone outcrops
	Copperhead	Rocky forested hillsides
<b>Butterflies</b>		
	Pipevine swallowtail	
	Columbine duskwing	Rocky wooded ravines
	Hickory hairstreak	
<b>Land Snails</b>		
	Iowa Pleistocene snail	Algific slopes
	Frigid ambershell	Algific slopes
	Minnesota Pleistocene snail	Moderate cliffs
	Iowa Pleistocene succinea	Moderate cliffs
	Briarton Pleistocene snail	Algific slopes
	Hubricht's vertigo	Algific slopes
	Iowa pleistocene vertigo	Algific slopes
	Bluff vertigo	Limestone and dolomite cliffs and outcrops

**Table 15-2. Habitat Preferences of SGCN - Wet Forest/Woodlands Habitat**

<b>Group</b>	<b>Common Name</b>	<b>Comments</b>
<b>Birds</b>		
	Yellow-crowned night-heron	Prefers mature lowland woods
	Osprey	Prefers riparian areas
	Bald eagle	Prefers riparian areas
	Red-shouldered hawk	Prefers riparian areas
	Peregrine falcon	Nests in rocky cliffs along major rivers
	American woodcock	Prefers damp, brushy woods w/grassy openings
	Black-billed cuckoo	Prefers woodland thickets w/2' to 6' shrubs
	Long-eared owl	Mixed conifer/deciduous woodland
	Red-headed woodpecker	Riparian woodland w/snags
	Brown creeper	Depend on extensive forests w/standing dead trees
	Acadian flycatcher	Prefers riparian areas of large, unfragmented forests
	Veery	Prefers moist forests w/low tree & shrub understory
	Wood thrush	Prefers mature, moist forest w/closed canopy
	Cerulean warbler	Prefers large, mature, unfragmented forest
	Pronothonotary warbler	Prefers swampy, mature riparian forest
	Louisiana waterthrush	Prefers large, mature forests w/permanent streams
	Kentucky warbler	Prefers riparian, ravine areas within forest understory
	Rusty blackbird	Prefers riparian areas
<b>Mammals</b>		
	Hayden's shrew	Riparian areas
	Least shrew	Riparian areas
	Evening bat	Riparian areas
<b>Reptiles and Amphibians</b>		
	Blue-spotted salamander	Woodland pools
	Central Newt	Well vegetated woodland pools
	Smallmouth salamander	Woodland pools
	Crawfish frog	Floodplain forests
	Wood turtle	Riparian habitats
	Yellowbelly water snake	Open canopy
	Copperbelly water snake	Open canopy

**Table 15-3. Habitat Preferences of SGCN - Woodland Habitat**

Group	Common Name	Comments
<b>Birds</b>		
	Bald eagle	Riparian area
	Red-shouldered hawk	Riparian area
	Swainson's hawk	Savanna or open woodland
	Ruffed grouse	Prefers large forests or woodlands containing areas of high stem density
	American woodcock	Moist brushy woodlands
	Black-billed cuckoo	Woodland thickets w/2'-6' shrubs
	Yellow-billed cuckoo	Prefers woodland thickets w/4' to 8' shrubs
	Long-eared owl	Mixed conifer/deciduous woodland
	Whip-poor-will	Prefers ungrazed forest
	Red-headed woodpecker	Prefers oak savanna w/snags
	Least flycatcher	Prefers mature hardwoods, but frequents openings
	Bewick's wren	Open woodlands & shrublands
	Northern mockingbird	Thickets of savanna or very open woodland
	White-eyed vireo	Woodland edge brushy habitat
	Blue-winged warbler	Uses overgrown brushy areas in forest clearings
	Golden-winged warbler	Prefers woodland openings w/brush and grass
	Yellow-breasted chat	Early successional woodland
	Eastern towhee	Brushy, wooded edges of woodland
<b>Mammals</b>		
	Hayden's shrew	<i>Riparian areas</i>
	Short-tailed shrew	<i>hylophaga sp.</i>
	Least shrew	Riparian areas
	Bobcat	
<b>Reptiles and Amphibians</b>		
	Central Newt	Vicinity of woodland pools
	Blue-spotted salamander	Vicinity of woodland pools
	Smallmouth salamander	Vicinity of woodland pools
	Slender glass lizard	Dry, open woodland and woodland edge
	Western worm snake	Rocky woodlands
	Prairie kingsnake	Open woodland and woodland edge
	Speckled kingsnake	Wooded hillsides, woodland edge
	Bullsnake	Deciduous woodland edge
	Smooth earth snake	Rocky, wooded deciduous hillsides; woodland edge
	Timber rattlesnake	Rocky, deciduous woodland
<b>Butterflies</b>		
	Pepper and salt skipper	Woodland edges
	Dreamy duskywing	Woodland openings or edges
	Columbine duskywing	Rocky wooded ravines

<b>Group</b>	<b>Common Name</b>	<b>Comments</b>
	Olympia marble	Open woodlands
	Zebra swallowtail	Riparian areas
	Silvery blue	Open woodlands
	Zabulon skipper	Brushy openings
	Edward's hairstreak	Forest edge or clearings
	Striped hairstreak	Forest openings and edges

**Table 15-4. Habitat Preferences of SGCN - Shrubland Habitat Class.**

Group	Common Name	Comments
<b>Birds</b>		
	Sharp-tailed grouse	Prefer grassland w/some shrubs
	Northern bobwhite	Combination of grassland, brush, open woods
	Black-billed cuckoo	Woodland thickets, esp. riparian
	Yellow-billed cuckoo	Woodland thickets, 4' to 8' shrubs
	Bewick's wren	Shrublands preferred near woodland
	Northern mockingbird	Shrublands of open country or savanna
	Loggerhead shrike	Thorny shrublands of open country or savanna
	White-eyed vireo	Shrubby habitat beside woodland
	Bell's vireo	Prefers brushy, tangled habitat often in savannas
	Blue-winged warbler	Wooded openings w/late succession and grasslands
	Golden-winged warbler	Shrubby grassland/woodland
	Yellow-breasted chat	Prefers dense overgrown, brushy pastures
	Eastern towhee	Inhabits brushy wooded edge
	Field sparrow	Favors brushy successional habitat
<b>Mammals</b>		
	Least shrew	Riparian areas
	Bobcat	

**Table 15-5. Habitat Preferences of SGCN - Wet Shrubland Habitat**

Group	Common Name	Special Needs
<b>Birds</b>		
	Black-crowned night heron	Wetlands ringed with shrubs
	Willow flycatcher	Prefers willow thickets on wetland edges
	Rusty blackbird	Shrubby wetlands
	Bell's vireo	Often shrubby riparian areas
<b>Reptiles and Amphibians</b>		
	Northern prairie skink	Open shrubland
	Smooth greek snake	Open shrubland
	Eastern massasauga rattlesnake	Spring and fall

**Table 15-6. Habitat Preferences of SGCN - Warm Season Herbaceous Habitat**

Group	Common Name	Comments
<b>Birds</b>		
	Northern pintail	Nests in grassland
	Northern harrier	Prefers large grassland tracts +100 acres
	Greater prairie-chicken	Prefers large grassland tracts +2,000 acres
	Sharp-tailed grouse	Open prairie w/patches of trees or shrubs
	Northern bobwhite	Prefers medium ht. grasslands w/shrubs & forbs
	Yellow rail	Wet meadows & fens w/sedges
	Whooping crane	Prefers large wetland complexes w/grasslands adjacent
	Sandhill crane	Prefers large wetland complexes w/grasslands adjacent
	Upland sandpiper	Prefers short-to-medium ht. grasslands w/forbs.
	Wilson's phalarope	Shallow marshes w/upland grass & forbs
	Burrowing owl	Prefers short height grasslands
	Short-eared owl	Prefers large grassland tracts +200 acres
	Common nighthawk	Grasslands w/bare areas for nesting
	Sedge wren	Prefers tall grass infrequently disturbed
	Dickcissel	Prefers medium high grass w/sparse forbs
	Field sparrow	Prefers old grassland fields w/shrubs
	Lark sparrow	Prefers sand prairie w/sparse vegetation
	Grasshopper sparrow	Prefers short grass w/forbs
	Henslow's sparrow	Prefers tall grass and infrequent disturbance; weedy
	Nelson's Sharp-tailed sparrow	Prefers rank grasslands on wetland edge
	Le Conte's sparrow	Prefers grassy meadows; marsh edges
	Bobolink	Prefers medium height grass w/forbs
	Eastern meadowlark	Prefers trees in grass landscape
<b>Mammals</b>		
	Hayden's shrew	Riparian areas
	Short tailed shrew	
	White-tailed jackrabbit	
	Franklin's ground squirrel	
	Plains pocket mouse	
	Prairie vole	
	Spotted skunk	
	Bobcat	
<b>Reptiles and Amphibians</b>		
	Crawfish frog	Vicinity of prairie marshes
	Great plains toad	Mixed and short grass prairie
	Ornate box turtle	Sand prairie

<b>Group</b>	<b>Common Name</b>	<b>Comments</b>
	Yellow mud turtle	Ephemeral wetlands in sand prairie
	Slender glass lizard	Prairie with sandy or loose soil
	Six-lined racerunner	Sand prairie
	Northern prairie skink	Prairie-forest edge
	Great plains skink	Rocky mixed and short grass prairie; prairie-forest edge
	Smooth green snake	Wet prairie; oldfield
	Prairie kingsnake	High quality prairie to oldfield
	Speckled kingsnake	Native prairie to oldfield
	Bullsnake	Native prairie to oldfield
	Western hognose snake	Sand prairie
	Eastern massasauga rattlesnake	Wet prairie, upland grassland adjacent to wetland
	Timber rattlesnake	Hill prairie
	Prairie rattlesnake	Mixed and short grass prairie
<hr/>		
<b>Butterflies</b>		
	Arogos skipper	Prairies and sand prairies
	Dusted skipper	Bluestem grasslands and oldfields
	Common ringlet	Prairies and open grassy areas
	Olympia marble	Prairies and grasslands
	Dakota skipper	Tall grass prairie
	Leonardus skipper	Open grassy areas
	Otoe skipper	Tallgrass prairie
	Poweshiek skipper	High quality prairie
	Byssus skipper	Tallgrass prairie
	Regal fritillary	Prairie and open grasslands

**Table 15-7. Habitat Preferences of SGCN - Herbaceous Wetlands Habitat**

<b>Group</b>	<b>Common name</b>	<b>Comments</b>
<b>Birds</b>		
	American white pelican	Riparian areas w/islands
	American bittern	Large prairie marshes w/upland grassland
	Least bittern	Prairie marshes w/emergent vegetation
	Black-crowned night-heron	Prairie marshes w/emergent veg. and/or shrubs/trees
	Yellow crowned night- heron	Wooded riparian areas w/sparse understory
	Trumpeter swan	Large prairie marshes w/emergent vegetation
	Northern pintail	Prairie marshes w/upland vegetation
	Canvasback	Bulrush & cattail prairie marsh
	Redhead	Cattail & bullrush hemi-marshes
	Northern harrier	Prairie/grasslands assoc. w/marshes
	Osprey	Lakes, reservoirs, rivers w/trees
	Yellow rail	Wet meadows & fens w/sedges
	King rail	Sedge meadow zones of wetland edges
	Common moorhen	Prairie hemi-marshes
	Whooping crane	Large wetland complex w/wet meadows/hay fields
	Sandhill crane	Large wetland complex w/wet meadows/hayfields
	Piping plover	Riparian open, sandy beaches & sandbars
	Wilson's phalarope	Shallow marshes w/upland grass & forbs
	Lesser yellowlegs	Shallow wetlands
	Greater yellowlegs	Shallow wetlands
	American golden plover	Mud flats, shallow wetlands
	Solitary sandpiper	Muddy, shallow wetlands
	Hudsonian godwit	Moderate vegetated shorelines of marsh
	American avocet	Shallow wetlands, mud flats
	Marbled godwit	Moderate vegetated shorelines of marsh
	Stilt sandpiper	Sheltered muddy wetland pools
	Buff-breasted sandpiper	Short-grass areas near water
	Short-tailed dowitcher	Mudflats & shallow ponds
	Forster's tern	Large prairie marsh w/emergent vegetation
	Least tern	Open sandy beaches, sandbars of riparian areas
	Black tern	Large prairie marsh w/emergent vegetation
	Sedge wren	Tall rank grassland ringing marsh
	Le Conte's sparrow	Prefers grassy meadows; marsh edges
	Nelson's sharp-tailed sparrow	Rank grasslands on wetland edge
	Rusty blackbird	Riparian areas w/trees or shrubs

<b>Group</b>	<b>Common name</b>	<b>Comments</b>
<b>Mammals</b>		
	Southern bog lemming	
	Spotted skunk	
<b>Reptiles and Amphibians</b>		
	Central newt	Well vegetated near woodland
	Smallmouth salamander	Near woodlands
	Crawfish frog	With abundant crayfish burrows
	Cricket frog	Mudflats near water
	Common musk turtle	Permanent, mud bottom
	Yellow mud turtle	Ephemeral with sandy soil
	Blanding's turtle	Wet vegetated
	Northern prairie skink	Wetland edge
	Diamondback water snake	Riparian
	Smooth green snake	Wetland edge
	Eastern massasauga rattlesnake	Sedge meadow, open marsh edge
<b>Butterflies</b>		
	Swamp metalmark	Wet meadows and marshes
	Common ringlet	
	Baltimore checkerspot	Fens, wet meadows and marshes
	Two-spotted skipper	Sedge meadows and marshes
	Dion skipper	Wetlands with sedges
	Mulberry wing	Marshes and fens
	Broad-winged skipper	Marshes and fens
<b>Dragonflies and Damselflies</b>		
	Carolina saddlebags	
	Canada darner	
	Green-striped darner	
	Four-spotted skimmer	
	Boreal bluet	
	Spotted spreadwing	
	Sweetflag spreadwing	

**Table 15-8. Habitat Preferences of SGCN - Savanna Habitat**

<b>Group</b>	<b>Common Name</b>	<b>Comments</b>
<b>Birds</b>		
	Swainson's hawk	Prefers savanna over woodland
	Barn owl	Prefers savanna over woodland
	Long-eared owl	Prefers areas of woodland-grassland interface
	Red-headed woodpecker	Oak savannas preferred
	Northern mockingbird	Shrubby habitat in savanna or woodland edge
	Loggerhead shrike	Thorny shrubs/trees in savanna/grasslands
	Bell's vireo	Thickets in savanna/grasslands
	Lark sparrow	Sandy grassland/savanna areas
	Eastern meadowlark	Prefers savanna over open grasslands
<b>Mammals</b>		
	Franklin's ground squirrel	
	Spotted skunk	
	Short-tailed shrew	
	Least shrew	Riparian areas
<b>Reptiles and Amphibians</b>		
	Six-lined racerunner	Sandy soil
	Slender glass lizard	Sandy or loose soil
	Ornate box turtle	Sandy soil
	Smooth green snake	Oak savanna
	Speckled kingsnake	Oak savanna
	Prairie kingsnake	Oak savanna
	Bullsnake	Oak savanna
<b>Butterflies</b>		
	Dreamy duskywing	
	Olympia marble	

**Table 15-9. Habitat Preferences of SGCN - Agricultural Lands Habitat**

Group	Common Name	Comments
<b>Birds</b>		
	Northern pintail	Nests in grassland
	Northern harrier	Prefers large grassland tracts +100 acres
	Greater prairie chicken	Prefers large grassland tracts +2,000 acres
	Sharp-tailed grouse	Open prairie w/patches of trees or shrubs
	Northern bobwhite	Prefers medium height grasslands w/shrubs & forbs
	Yellow rail	Wet meadows & fens w/sedges
	Whooping crane	Prefers large wetland complexes w/grasslands adjacent
	Sandhill crane	Prefers large wetland complexes w/grasslands adjacent
	Upland sandpiper	Prefers short-to-medium height grasslands w/forbs.
	Buff-breasted sandpiper	Short-grass areas near water
	Wilson's phalarope	Shallow marshes w/upland grass & forbs
	Burrowing owl	Prefers short height grasslands
	Short-eared owl	Prefers large grassland tracts +200 acres
	Common nighthawk	Grasslands w/bare areas for nesting
	Sedge wren	Prefers tall grass infrequently disturbed
	Dickcissel	Prefers medium high grass w/sparse forbs
	Field sparrow	Prefers old grassland fields w/shrubs
	Lark sparrow	Prefers sand prairie w/sparse vegetation
	Grasshopper sparrow	Prefers short grass w/forbs
	Henslow's sparrow	Prefers tall grass and infrequent disturbance; weedy
	Le Conte's sparrow	Prefers grassy meadows ;marsh edges
	Nelson's sharp-tailed sparrow	Prefers rank grasslands on wetland edge
	Bobolink	Prefers medium height grass w/forbs
	Eastern meadowlark	Prefers trees in grass landscape
<b>Mammals</b>		
	White-tailed jackrabbit	
	Franklin's ground squirrel	
	Spotted skunk	

<b>Group</b>	<b>Common Name</b>	<b>Comments</b>
<b>Reptiles and Amphibians</b>		
	Crasfish frog	Flooded fields
	Great plains toad	Pasture
	Ornate box turtle	Pasture and agricultural fields with sandy soil
<b>Group</b>	<b>Common Name</b>	<b>Comments</b>
	Six-lined racerunner	Sandy soil
	Slender glass lizard	Pasture
	Prairie kingsnake	Hayfields and field edges
	Bullsnae	Hayfields and pasture
	Eastern massasauga rattlesnake	Grassed waterways, field edges
<b>Butterflies</b>		
	Peper and salt skipper	Grassy waterways
	Arogos skipper	
	Dusted skipper	Oldfields
	Pipevine swallowtail	Roadsides
	Wild indigo swallowtail	Roadsides
	Silvery blue	Fields adjacent to woodlands
	Leonard's skipper	Open grassy areas
	Purplish copper	Open fields
	Zabulon skipper	
	Acadian hairstreak	Often riparian
	Regal fritillary	Open grasslands

## 15-2. Aquatic Habitat Classes

Species utilization of aquatic habitat sub-classes as used in other sections of this Plan are combined under major Class headings to simplify the grouping process.

**Table 5-10. Habitat Preferences of SGCN - River Habitat**

Group	Common Name	Comments
<b>Mammals</b>		
	River Otter	Riparian habitats
<b>Fish</b>		
	Chestnut lamprey	
	Silver lamprey	
	American brook lamprey	
	Lake sturgeon	Sand, cobble and rock substrate
	Palid sturgeon	Turbid waters with sand and gravel substrate
	Shovelnose sturgeon	Turbid waters
	Paddlefish	
	Skipjack herring	Sand and gravel substrate
	Spotted gar	
	Brook trout	Cool waters
	Plains minnow	Silt bottom
	Speckled chub	Sand and silt substrate
	Sicklefin chub	Turbid water with sand and gravel substrate
	Gravel chub	Gravel substrate
	Pallid shiner	Sand and muck bottom
	Pugnose minnow	Clear vegetated waters with silt, sand and gravel substrate
	Ghost shiner	
	Blacknose shiner	Cool vegetated waters with sand bottom
	Spottail shiner	Sand and rock substrate
	Ozark minnow	Gravel and rock substrate
	Weed shiner	Sand substrate
	Topeka shiner	Clear waters
	Redfin shiner	
	Longnose dace	Clear waters with gravel and rock substrate
	Blue sucker	
	Black redhorse	Gravel and rock substrate
	River redhorse	No silt
	Greater redhorse	
	Spotted sucker	Firm substrate
	Blue catfish	
	Slender madtom	
	Tadpole madtom	Muck substrate
	Freckled madtom	
	Trout perch	Sand substrate
	Burbot	

<b>Group</b>	<b>Common Name</b>	<b>Comments</b>
	Slenderhead darter	Cobble, gravel and bedrock substrate
	Blackside darter	Sand and gravel substrate
	River darter	Gravel and rock substrate
	Northern logperch	Sand and gravel substrate
	Crystal darter	Sand and gravel substrate
	Western sand darter	Sand substrate
	Banded darter	Cobble and gravel substrate
	Bluntnose darter	Sand, muck substrate
	Mud darter	Sand and muck substrate
	Orangthroat darter	Sand, cobble, gravel and bedrock substrate
<b>Reptiles and Amphibians</b>		
	Mudpuppy	Clean rivers
	Cricket frog	Mud banks
	Wood turtle	With adjacent floodplain forest
	Alligator snapping turtle	Large rivers
<b>Mussels</b>		
	Flat floater	Mud and silt substrate
	Rock pocketbook	Mud and sand substrate
	Spectacle case	Mud and sand substrate
	Purple pimpleback	Gravel substrate
	Butterfly	Sand and gravel substrate
	Ebonyshell	Sand and gravel substrate
	Higgins' eye pearlymussel	Sand and gravel substrate
	Yellow sandshell	Sand and gravel substrate
	Slough sandshell	Mud substrate
	Fluted sandshell	Mud sand and gravel substrate
	Hickorynut	Sand and gravel substrate
	Bullhead	Sand and gravel substrate
	Round pigtoe	Firm sand and gravel substrate
	Monkeyface	Gravel substrate
	Wartyback	Sand and gravel substrate
	Lilliput	Mud, sand and gravel substrate
	Pistolgrip	Mud, sand and gravel substrate
	Fawnsfoot	Sand and gravel substrate
	Pond papershell	Mud substrate
<b>Dragonflies and Damselflies</b>		
	Stygian shadowdragon	
	Royal river cruiser	
	Smoky shadowdragon	

**Table 15-11. Habitat Preferences of SGCN - Stream Habitat**

<b>Group</b>	<b>Common Name</b>	<b>Comments</b>
<b>Fish</b>		
	Northern brook lamprey	
	American eel	
	Central mudminnow	
	Largescale stoneroller	Gravel substrate
	Plains minnow	
	Pugnose minnow	
	Southern redbelly dace	
	Brown bullhead	
	Slender madtom	
	Trout perch	
	Western banded killifish	
	Blackstripe topminnow	
	Mottled sculpin	
	Slimy sculpin	Rock substrate
	Northern logperch	
<b>Reptiles and Amphibians</b>		
	Mudpuppy	Permanent with gravel bottoms
	Cricket frog	Mud banks
	Common musk turtle	Slow moving, mud bottom
<b>Dragonflies and Damselflies</b>		
	Sand snaketail	
	Brimstone clubtail	
	Emma's dancer	
	Variable darner	
	Paiute dancer	
<b>Mussels</b>		
	Elktoe	Sand and gravel substrate
	Slippershell	Mud and sand substrate
	Spike	Firm sand and gravel substrate
	Creek heelsplitter	Sand and gravel substrate
	Round pigtoe	
	Strange floater	Mud, sand and gravel substrate
	Ellipse	Sand and gravel substrate

**Table 15-12. Habitat Preferences of SGCN - Creek Habitat**

<b>Group</b>	<b>Common Name</b>	<b>Comments</b>
<b>Fish</b>		
	American brook lamprey	
	Brook trout	
	Gravel chub	
	Ghost shiner	
	Blacknose shiner	
	Ozark minnow	
	Weed shiner	
	Topeka shiner	
	Redfin shiner	
	Southern redbelly dace	
	Black redhorse	
	River redhorse	
	Tadpole madtom	
	Freckled madtom	
	Mottled sculpin	
	Slenderhead darter	
	Blackside darter	
	Northern logperch	
	Banded darter	
	Bluntnose darter	
	Orangthroat darter	
	Least darter	
<b>Reptiles and Amphibians</b>		
	Cricket frog	Mud banks
<b>Dragonflies and Damselflies</b>		
	Rapids clubtail	
	Rusty snaketail	
	Cyrano darner	
<b>Mussels</b>		
	Slippershell	
	Clylinder	Mud and sand substrate
	Creek heelsplitter	
	Pondmussel	
	Lilliput	

**Table 15-13. Habitat Preferences of SGCN - Impoundment Habitat**

<b>Group</b>	<b>Common Name</b>	<b>Comments</b>
<b>Fish</b>		
	Silver lamprey	
	Paddlefish	
	Longnose gar	
	Skipjack herring	
	Black buffalo	
	Brown bullhead	
	Tadpole madtom	
	Northern logperch	
	Pugnose shiner	
<b>Reptiles and Amphibians</b>		
	Mudpuppy	With gravel bars for reproduction
<b>Mussels</b>		
	Paper pondshell	

**Table 1 5-14. Habitat Preferences of SGCN - Backwater Habitat**

Group	Common Name	Comments
<b>Fish</b>		
	Paddlefish	
	Bowfin	
	Longnose gar	
	Goldeye	
	Grass pickerel	
	Central mudminnow	
	Western silvery minnow	
	Mississippi silvery minnow	
	Topeka shiner	
	Black buffalo	
	Blue catfish	
	Brown bullhead	
	Tadpole madtom	
	Pirate perch	
	Blackstripe topminnow	
	Bluntnose darter	
	Mud darter	
<b>Reptiles and Amphibians</b>		
	Cricket frog	Mud flats
	Yellow mud turtle	Adjacent to soils of nearly pure sand
	Common musk turtle	Mud bottom
	Blanding's turtle	Vegetated with open canopy
	Yellowbelly water snake	Quiet pools
	Copperbelly water snake	Quiet pools
	Diamondback water snake	With abundant basking sites
<b>Mussels</b>		
	Slough sandshell	
<b>Dragonflies and Damselflies</b>		
	Slaty skimmer	
	Blue-faced meadowhawk	
	Cyrano darner	

**Table 15-15. Habitat Preferences of SGCN - Lake Habitat (includes natural and man-made, shallow and deep water sub-classifications).**

Group	Common Name	Comments
<b>Fish</b>		
	Silver lamprey	
	Lake sturgeon	
	Bowfin	
	Longnose gar	
	American eel	
	Goldeye	
	Grass pickerel	
	Pugnose shiner	
	Blacknose shiner	
	Spottail shiner	
	Pearl dace	
	Brown bullhead	
	Tadpole madtom	
	Pirate perch	
	Burbot	
	Western banded killifish	
	Northern logperch	
<b>Reptiles and Amphibians</b>		
	Mudpuppy	With gravel bars for reproduction
	Cricket frog	Mud banks
<b>Dragonflies and Damselflies</b>		
	Spangled skimmer	
	Sulphur-tipped clubtail	
	Variable darner	
	Blue-eyed darner	
	Royal river cruiser	
	Cyrano darner	
	Prairie bluet	
	Vesper bluet	
<b>Mussels</b>		
	Flat floater	
	Spike	
	Lilliput	
	Paper pondshell	

**Table 15-16. Habitat Preferences of SGCN - Pond Habitat**

<b>Group</b>	<b>Common Name</b>	<b>Comments</b>
<b>Fish</b>		
	Grass pickerel	
	Pearl dace	
	Brown bullhead	
	Pirate perch	
	Western banded killifish	
<b>Reptiles and Amphibians</b>		
	Cricket frog	Mud banks
	Crawfish frog	With abundant crayfish
	Blanding's turtle	Limited use in Iowa
	Common musk turtle	Spring fed ponds
<b>Dragonflies and Damselflies</b>		
	Spangled skimmer	
	Mocha emerald	
	Alkali bluet	
	Elegant spreadwing	
	Sulphur-tipped clubtail	
	Canada darner	
	Variable darner	
	Blue-eyed darner	
	Green-striped darner	
	Four-spotted skimmer	
	Prairie bluet	
	Vesper bluet	
	Spotted spreadwing	
	Sweetflag spreadwing	
<b>Mussels</b>		
	Flat floater	
	Pondmussel	
	Lilliput	
	Paper pondshell	



# APPENDIX 16. Regional Stress Analysis Tables

## Terrestrial Habitats

### 16-1. Terrestrial Habitat Stresses by Region - General Habitat Stresses

#### Stress Key:

- |                                                |                                |
|------------------------------------------------|--------------------------------|
| 1 = Conversion to row crops species            | 11. = Invasion of non-native   |
| 2 = Conversion to non-native grasses           | 12. = Pesticide/herbicide use  |
| 3. = Conversion for residential use            | 13. = Drainage                 |
| 4. = Conversion for non-farming industrial use | 14. = Flooding caused by dams  |
| 5. = Excessive recreational use damage         | 15. = Disease/pathogens/insect |
| 6. = Improper grazing                          | 16. = Fragmentation            |
| 7. = Fire suppression                          | 17. = Loss of connectivity     |
| 8. = Fire use                                  | 18. = Climate change           |
| 9. = Road construction                         | 19. = Absence of habitat       |
| 10. = Timber harvest                           |                                |

**Stress Level:** 1 = Low; 2 = Moderate; 3 = High

**Table 16-1. Loess Hills - General Habitat Stresses**

Stress	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
1	1.50	1.00	1.50	1.50	1.00	2.20	2.00	2.50	1.00
2	2.00	1.00	1.50	2.00	.	2.00	.	2.00	1.50
3	2.20	1.00	2.33	2.33	1.00	2.75	2.00	2.33	1.75
4	1.50	1.00	1.50	1.00	1.00	2.00	1.00	2.00	1.00
5	1.33	1.00	1.67	1.33	1.00	2.33	1.00	2.00	1.00
6	2.00	1.00	2.33	2.00	1.00	2.50	2.00	2.25	2.33
7	2.50	1.00	2.50	1.50	1.00	2.75	1.00	2.67	1.50
8	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
9	1.50	1.00	1.50	1.50	1.00	1.50	1.00	1.33	1.33
10	1.00	.	1.00	1.00	1.00	1.50	1.00	1.50	1.00
11	2.50	1.00	2.50	1.50	1.00	1.50	2.00	2.00	1.50
12	2.33	1.00	2.33	1.67	1.00	2.25	2.00	1.50	2.00
13	1.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00	1.67
14	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
15	2.00	1.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
16	2.60	1.00	2.50	2.00	1.00	2.00	2.00	2.00	1.00
17	2.00	1.00	2.00	2.00	1.00	2.75	1.00	3.00	1.00
18	.	.	.	3.00	.	3.00	3.00	.	1.00
19	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MEAN	1.78	1.00	1.73	1.54	1.00	1.90	1.50	1.78	1.29

**Table 16-2. Mississippi Alluvial Plain - General Habitat Stresses**

<b>Stress</b>	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
<b>1</b>	1.40	1.40	1.50	1.75	1.00	2.40	2.25	1.50	1.00
<b>2</b>	1.20	1.20	1.40	1.50	1.25	1.80	2.25	1.50	2.00
<b>3</b>	2.00	1.20	2.20	1.50	1.00	1.80	1.25	2.50	2.00
<b>4</b>	1.80	1.40	1.60	1.50	1.00	2.00	1.25	1.75	1.67
<b>5</b>	1.40	1.20	1.60	1.25	1.25	1.80	1.75	1.75	1.25
<b>6</b>	2.40	2.20	2.20	2.00	1.75	2.00	2.25	2.50	2.00
<b>7</b>	1.60	1.40	2.00	1.50	1.50	2.00	2.00	2.25	1.00
<b>8</b>	1.40	1.20	1.20	1.25	1.00	1.40	1.50	1.75	1.50
<b>9</b>	1.60	1.60	1.80	1.50	1.25	1.40	1.25	1.50	2.00
<b>10</b>	1.80	1.80	2.00	1.33	1.25	1.00	1.33	1.67	1.33
<b>11</b>	1.80	1.80	2.00	1.67	1.67	1.75	2.33	1.75	1.00
<b>12</b>	1.60	1.80	1.25	1.25	1.25	1.80	1.75	2.00	2.00
<b>13</b>	1.00	1.75	1.25	1.00	2.00	1.20	2.33	1.50	2.00
<b>14</b>	1.80	1.80	1.75	1.75	2.00	1.40	2.00	1.33	1.50
<b>15</b>	2.00	1.80	2.25	1.50	1.25	1.20	1.50	1.67	1.50
<b>16</b>	2.60	2.40	2.75	2.00	1.75	1.80	1.75	2.50	1.00
<b>17</b>	2.40	2.20	2.50	2.25	2.25	2.20	2.67	2.25	2.00
<b>18</b>	2.00	1.80	1.33	1.33	1.25	1.25	2.00	1.25	1.50
<b>19</b>	1.67	1.67	2.00	2.50	2.50	2.33	2.50	2.33	1.00

**Table 16-3. Missouri Alluvial Plain - General Habitat Stresses**

<b>Stress</b>	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
<b>1</b>	2.50	2.50	2.50	3.00	2.50	.	3.00	.	.
<b>2</b>	.	.	.	.	.	.	.	.	.
<b>3</b>	.	.	.	.	.	.	.	.	1.00
<b>4</b>	.	.	.	.	.	.	.	.	1.00
<b>5</b>	.	1.00	1.00	2.00	1.00	.	1.00	.	.
<b>6</b>	.	.	.	.	.	.	.	.	.
<b>7</b>	.	.	2.00	.	.	.	1.00	.	.
<b>8</b>	1.00	.	.	.	.	.	.	.	.
<b>9</b>	.	1.00	1.00	1.00	1.00	.	1.00	.	.
<b>10</b>	1.00	2.00	1.50	.	.	.	.	.	.
<b>11</b>	2.00	1.50	1.00	1.00	1.50	.	2.00	.	.
<b>12</b>	.	2.00	2.00	2.00	2.00	.	2.00	.	2.00
<b>13</b>	.	3.00	3.00	3.00	3.00	.	2.33	.	.
<b>14</b>	.	1.00	1.00	1.00	1.00	.	1.00	.	.
<b>15</b>	.	1.00	1.00	1.00	1.00	.	2.00	.	.
<b>16</b>	2.00	3.00	2.50	3.00	3.00	.	3.00	.	.
<b>17</b>	3.00	3.00	3.00	3.00	3.00	.	2.67	.	.
<b>18</b>	.	.	.	.	.	.	.	.	.
<b>19</b>	3.00	3.00	.	.	3.00	.	3.00	.	.

**Table 16-4. Prairie Hardwood Transition - General Habitat Stresses**

Stress	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
1	2.67	1.67	2.67	2.33	1.00	3.00	1.50	1.33	.
2	1.33	1.00	1.33	2.33	1.00	2.50	2.00	1.67	3.00
3	3.00	1.00	3.00	2.33	1.00	1.50	1.00	2.00	2.00
4	1.50	1.00	1.50	1.50	1.00	1.50	1.00	1.50	1.00
5	1.33	1.50	1.67	1.50	1.50	1.50	1.67	1.50	1.00
6	3.00	2.00	3.00	2.00	1.67	2.33	2.00	2.00	1.00
7	2.50	1.00	1.50	2.00	1.00	2.50	2.00	2.67	1.00
8	1.50	1.00	1.00	1.50	1.00	1.00	1.00	1.00	1.00
9	1.67	1.50	1.67	1.50	1.00	1.50	1.00	1.67	1.00
10	2.33	1.67	2.33	1.00	3.00	1.00	1.00	1.67	.
11	2.33	2.50	2.33	2.50	2.33	2.50	2.00	1.50	1.00
12	2.00	1.50	1.50	1.50	1.50	2.00	2.00	1.00	3.00
13	1.00	1.33	1.50	1.00	1.67	1.00	2.67	1.00	3.00
14	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
15	3.00	2.50	3.00	1.67	2.00	1.00	1.00	2.00	3.00
16	3.00	2.00	3.00	1.67	1.67	2.00	2.00	2.33	1.00
17	2.67	1.67	2.67	2.00	1.67	2.50	1.67	2.33	1.00
18	.	.	.	.	.	.	.	.	.
19	2.00	2.00	2.00	3.00	3.00	3.00	2.00	3.00	1.00

**Table 16-5. Prairie Pothole - General Habitat Stresses**

Stress	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
1	1.22	1.33	1.50	1.60	1.89	2.42	2.83	1.78	2.00
2	1.22	1.00	1.20	1.44	1.43	2.17	1.64	1.78	1.22
3	2.55	1.22	2.46	1.92	1.44	2.00	1.30	2.20	1.55
4	1.50	1.33	1.67	1.45	1.33	1.42	1.55	1.70	1.45
5	1.78	1.44	1.55	1.40	1.00	1.27	1.50	1.44	1.00
6	2.56	2.33	2.25	2.10	1.50	2.36	2.00	2.89	2.00
7	1.33	1.29	1.38	1.50	1.43	2.67	1.40	2.67	1.00
8	1.00	1.00	1.11	1.33	1.29	1.30	1.00	1.13	1.00
9	1.22	1.00	1.18	1.10	1.13	1.18	1.20	1.33	1.44
10	1.44	1.56	1.60	1.43	1.00	1.00	1.25	1.50	1.00
11	2.22	2.00	1.82	1.67	1.57	2.44	2.40	2.50	1.89
12	1.11	1.00	1.30	1.22	1.44	2.25	2.17	2.00	2.50
13	1.00	1.63	1.13	1.13	1.50	1.40	2.67	1.25	2.30
14	1.22	1.13	1.22	1.11	1.56	1.33	1.55	1.25	1.10
15	1.90	1.88	1.78	1.89	1.57	1.44	1.22	1.75	2.00
16	2.60	2.70	2.64	2.50	2.63	2.92	2.60	2.78	1.43
17	2.78	2.56	2.64	2.60	2.88	2.92	2.82	2.78	1.14
18	1.29	1.50	1.33	1.38	1.50	1.67	1.78	1.71	1.33
19	2.29	2.00	2.33	2.00	2.00	3.00	3.00	2.50	2.50

**Table 16-6. Tallgrass Prairie Southern Iowa - General Habitat Stresses**

Stress	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
1	2.07	1.91	2.23	2.55	1.88	2.58	2.25	2.44	2.50
2	1.73	1.64	1.91	2.18	1.67	2.23	2.09	2.11	2.29
3	2.62	1.22	2.67	2.00	1.14	1.92	1.33	2.50	1.63
4	1.75	1.40	1.58	1.50	1.29	1.73	1.40	1.88	1.75
5	1.75	1.73	1.60	1.44	1.14	1.67	1.60	1.71	1.00
6	2.50	2.42	2.63	2.50	2.33	2.47	2.08	2.75	2.29
7	2.17	2.00	2.42	2.27	1.63	2.86	1.89	2.91	1.83
8	1.20	1.14	1.13	1.14	1.00	1.11	1.00	1.00	1.50
9	1.46	1.22	1.36	1.30	1.00	1.27	1.11	1.13	1.29
10	2.00	2.23	1.86	1.11	1.14	1.00	1.00	1.89	1.20
11	2.38	2.60	2.50	2.11	2.22	2.07	2.42	2.43	2.00
12	1.45	1.50	1.45	1.64	1.63	1.87	1.92	1.88	2.67
13	1.00	1.90	1.00	1.00	2.56	1.30	2.50	1.17	2.33
14	1.27	1.38	1.30	1.22	1.43	1.11	1.56	1.00	1.00
15	2.27	1.88	2.11	1.57	1.83	1.29	1.63	2.00	1.83
16	2.57	2.42	2.45	2.27	1.75	2.50	2.38	2.38	1.60
17	2.54	2.22	2.58	2.22	2.00	2.33	2.50	2.25	1.60
18	1.67	2.00	1.67	1.60	2.20	1.57	2.14	1.80	1.25
19	2.25	2.50	2.50	3.00	3.00	2.50	2.83	3.00	1.00

**Table 16-7. Tallgrass Prairie Iowan Surface- General Habitat Stresses**

Stress	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
1	1.67	2.00	2.67	2.50	1.33	3.00	2.25	2.50	.
2	1.67	1.67	2.00	2.00	2.00	1.67	2.33	2.00	1.67
3	3.00	1.67	3.00	1.50	1.00	2.00	1.00	2.67	2.33
4	1.67	1.67	1.67	1.50	1.50	1.67	1.67	1.50	2.00
5	2.33	2.00	2.00	1.50	1.00	1.67	1.00	2.00	1.00
6	2.25	2.00	2.25	2.50	2.50	2.75	2.00	3.00	1.67
7	2.50	2.33	2.25	2.50	2.67	2.75	2.00	2.67	1.00
8	1.50	1.50	1.50	1.00	1.00	1.00	1.00	1.00	1.00
9	2.00	1.33	1.67	1.00	1.00	1.33	1.33	1.00	1.00
10	2.25	2.50	2.00	1.50	1.00	1.33	1.00	1.50	1.00
11	2.33	2.00	2.25	2.00	2.00	2.25	2.50	1.50	1.25
12	1.00	1.00	1.00	1.00	1.50	1.75	2.00	1.50	2.00
13	1.00	2.00	1.00	1.00	2.33	1.00	3.00	1.00	1.33
14	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.00	1.00
15	2.00	1.50	2.00	1.00	1.50	1.00	1.00	1.00	1.67
16	3.00	2.50	3.00	3.00	3.00	3.00	2.67	3.00	1.00
17	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	1.00
18	1.00	1.00	1.00	1.00	1.00	1.67	1.00	1.00	1.00
19	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	1.00

**Table 16-8. Tallgrass Prairie Northwest Iowa Plains - General Habitat Stresses**

Stress	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
1	1.50	1.50	1.50	1.50	2.00	3.00	3.00	3.00	3.00
2	1.00	1.00	1.00	1.00	.	2.50	1.50	1.00	2.00
3	2.50	1.00	2.50	2.00	.	2.00	1.00	3.00	1.50
4	1.50	2.00	2.00	2.00	3.00	1.00	2.00	1.00	1.00
5	2.50	2.00	2.00	2.00	2.00	1.50	1.50	1.00	1.00
6	3.00	3.00	3.00	3.00	3.00	2.50	1.50	2.00	3.00
7	1.00	2.00	2.00	2.00	3.00	2.50	1.50	2.00	1.00
8	1.00	1.00	1.00	1.00	1.00	2.00	1.00	2.00	1.00
9	1.00	1.00	1.00	1.00	1.00	1.50	1.50	1.00	1.00
10	2.00	1.50	1.50	1.50	1.00	1.00	2.00	.	1.00
11	2.50	2.00	2.00	2.00	2.00	2.00	3.00	1.00	1.00
12	1.00	2.00	2.00	2.00	3.00	2.00	1.50	1.00	2.00
13	1.00	1.00	1.00	1.00	1.00	1.50	2.50	2.00	1.00
14	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00
15	3.00	1.50	2.00	2.00	1.00	1.00	1.00	.	1.00
16	2.50	2.00	2.00	2.00	.	3.00	3.00	.	2.00
17	2.50	2.50	2.50	2.50	3.00	3.00	2.00	2.00	2.00
18	1.00	2.00	2.00	2.00	3.00	2.00	1.00	2.00	1.00
19	3.00	2.00	2.00	2.00	1.00	2.00	2.00	1.00	3.00

## 16-2. Terrestrial Stresses by Region - Birds

### Stress Key:

- |                                                |                                |
|------------------------------------------------|--------------------------------|
| 1 = Conversion to row crops species            | 11. = Invasion of non-native   |
| 2 = Conversion to non-native grasses           | 12. = Pesticide/herbicide use  |
| 3. = Conversion for residential use            | 13. = Drainage                 |
| 4. = Conversion for non-farming industrial use | 14. = Flooding caused by dams  |
| 5. = Excessive recreational use damage         | 15. = Disease/pathogens/insect |
| 6. = Improper grazing                          | 16. = Fragmentation            |
| 7. = Fire suppression                          | 17. = Loss of connectivity     |
| 8. = Fire use                                  | 18. = Climate change           |
| 9. = Road construction                         | 19. = Absence of habitat       |
| 10. = Timber harvest                           |                                |

**Stress Level:** 1 = Low; 2 = Moderate; 3 = High

**Table 16-9. Loess Hills -Birds**

Stress	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
1	1.00	1.00	2.00	2.00	2.00	3.00	2.00	3.00	1.00
2	1.00	1.50	2.50	2.50	2.00	3.00	2.50	3.00	1.00
3	2.00	1.50	2.00	2.00	1.00	2.00	1.00	1.50	1.00
4	1.00	1.00	2.00	2.00	1.00	2.00	1.00	1.50	1.00
5	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00
6	2.00	2.00	3.00	2.50	2.00	3.00	2.00	3.00	3.00
7	2.00	1.50	3.00	2.00	1.50	3.00	1.00	2.00	1.00
8	1.50	1.00	2.00	3.00	1.00	1.00	1.00	1.00	.
9	2.00	1.00	2.00	2.00	1.00	2.00	1.00	1.50	1.00
10	1.50	1.00	2.00	1.00	1.00	1.00	1.00	1.50	.
11	1.50	2.50	3.00	2.50	3.00	3.00	3.00	2.50	3.00
12	1.00	1.50	1.00	1.50	1.50	3.00	2.50	3.00	3.00
13	1.00	3.00	1.00	1.00	3.00	1.00	3.00	1.00	.
14	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00	.
15	1.50	2.00	2.00	1.50	1.00	1.50	1.50	2.00	1.00
16	2.00	3.00	3.00	2.50	2.50	3.00	3.00	2.00	2.00
17	2.00	3.00	3.00	2.50	2.50	3.00	3.00	2.00	2.00
18	2.00	2.00	2.00	2.00	2.50	2.00	2.00	1.50	1.00
19	1.00	2.00	2.00	2.00	3.00	3.00	3.00	3.00	1.00

**Table 16-10. Mississippi Alluvial Plain - Birds**

Stress	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
1	3.00	2.50	3.00	3.00	2.50	3.00	2.00	2.50	3.00
2	1.50	1.50	2.50	2.50	2.00	3.00	2.50	3.00	3.00
3	2.00	1.00	3.00	2.00	1.00	3.00	1.00	3.00	2.00
4	1.50	1.50	2.50	2.00	1.00	2.50	1.00	2.50	2.00
5	2.50	2.00	2.50	2.00	1.50	2.00	1.50	2.50	1.00
6	2.00	2.50	3.00	3.00	2.00	2.50	2.00	3.00	3.00
7	1.50	1.00	3.00	2.50	1.00	3.00	1.00	3.00	1.00
8	1.00	1.00	3.00	3.00	1.00	1.00	1.00	2.00	1.00
9	2.00	1.00	2.00	2.00	1.00	2.00	1.00	2.00	1.50
10	3.00	2.50	3.00	1.00	1.00	1.00	1.00	2.50	1.00
11	2.50	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.50
12	1.50	2.00	2.00	3.00	2.50	3.00	2.50	2.50	3.00
13	1.00	3.00	1.00	1.00	3.00	1.00	3.00	1.00	1.00
14	2.00	3.00	2.00	2.00	3.00	2.00	3.00	2.00	2.00
15	1.50	2.00	2.50	1.50	1.50	1.50	1.50	2.00	2.00
16	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00
17	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00
18	2.50	2.50	2.00	2.00	2.00	1.50	2.00	2.00	1.50
19	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00

**Table 16-11. Missouri Alluvial Plain - Birds**

Stress	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
1	2.00	3.00	2.00	3.00	3.00	3.00	3.00	2.00	3.00
2	1.00	1.00	1.50	3.00	2.00	3.00	2.50	2.00	3.00
3	1.50	1.00	2.00	1.50	1.00	2.00	1.00	2.00	1.50
4	1.50	1.50	2.00	2.00	1.00	2.00	1.00	2.00	1.50
5	2.00	2.00	2.00	2.00	1.50	2.00	1.50	2.00	1.00
6	1.00	2.00	2.50	2.00	1.00	2.50	2.00	2.50	3.00
7	1.50	1.00	3.00	2.00	1.00	3.00	1.00	3.00	1.00
8	1.00	1.00	3.00	3.00	1.00	1.00	1.00	2.00	1.00
9	2.00	1.50	2.00	2.00	1.00	2.00	1.00	2.00	1.50
10	2.00	2.00	2.50	1.00	1.00	1.00	1.00	2.50	1.00
11	1.50	3.00	3.00	2.50	3.00	3.00	3.00	3.00	2.50
12	1.50	2.50	2.50	3.00	2.00	3.00	2.50	3.00	3.00
13	1.00	3.00	1.00	1.00	3.00	1.00	3.00	1.00	1.00
14	1.00	1.50	1.00	1.00	1.50	1.00	1.50	1.00	1.00
15	1.50	2.00	2.00	1.50	1.50	1.50	1.50	1.50	2.00
16	2.00	3.00	2.50	2.50	3.00	3.00	3.00	3.00	2.00
17	2.00	3.00	2.50	2.50	3.00	3.00	3.00	3.00	2.00
18	2.00	2.50	2.00	2.00	2.00	1.50	2.00	2.00	1.50
19	1.00	3.00	2.00	2.00	3.00	3.00	3.00	3.00	1.00

**Table 16-12. Prairie to Hardwood Transition - Birds**

Stress	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
1	2.00	2.00	2.50	3.00	2.00	3.00	2.00	3.00	3.00
2	1.00	1.00	2.00	2.50	2.00	3.00	2.50	3.00	3.00
3	3.00	1.50	3.00	2.50	1.00	2.50	1.00	3.00	2.50
4	1.00	1.00	1.50	2.00	1.00	2.00	1.00	2.00	1.50
5	2.50	2.50	2.50	2.00	2.00	2.00	2.00	2.50	1.00
6	2.50	2.50	3.00	3.00	2.00	3.00	2.00	3.00	3.00
7	1.50	1.00	3.00	3.00	1.00	3.00	1.50	3.00	1.50
8	1.00	1.00	2.00	3.00	1.00	1.00	1.00	1.00	1.00
9	2.00	1.50	2.00	2.00	1.50	2.00	1.00	2.00	1.50
10	3.00	3.00	3.00	1.00	1.00	1.00	1.00	2.50	1.00
11	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.50
12	1.50	2.00	2.00	3.00	3.00	3.00	2.50	3.00	3.00
13	1.00	3.00	1.00	1.00	3.00	1.00	3.00	1.00	1.00
14	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00	2.00
15	3.00	3.00	3.00	2.00	2.00	2.00	1.50	2.50	2.00
16	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00
17	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00
18	2.50	2.50	2.00	2.00	2.50	2.00	2.00	2.00	1.50
19	3.00	3.00	3.00	3.00	3.00	3.00	2.00	3.00	1.00

**Table 16-13. Prairie Pothole - Birds**

Stress	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
1	2.00	2.00	2.00	2.50	3.00	3.00	2.50	2.50	3.00
2	1.50	1.00	2.50	2.50	1.00	2.50	2.00	2.50	3.00
3	2.00	1.00	3.00	2.00	1.00	2.50	1.00	3.00	2.00
4	1.00	1.00	1.00	1.50	1.00	2.00	1.00	1.50	1.50
5	2.00	2.50	2.50	1.50	1.00	2.00	2.00	2.00	1.00
6	2.00	3.00	3.00	2.50	2.00	3.00	2.00	3.00	3.00
7	1.50	1.00	3.00	2.50	1.00	3.00	1.00	3.00	1.50
8	1.00	1.00	1.00	3.00	1.00	1.00	1.00	1.00	1.00
9	2.00	1.00	2.00	2.00	1.00	2.00	1.00	2.00	1.50
10	2.00	2.00	2.50	1.00	1.00	1.00	1.00	2.00	1.00
11	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.50
12	1.50	1.50	2.00	3.00	2.50	3.00	2.00	3.00	3.00
13	1.00	3.00	1.00	1.00	2.50	2.00	3.00	2.00	3.00
14	1.00	2.00	1.00	1.00	2.00	2.00	1.50	1.00	1.00
15	1.50	2.00	1.50	1.50	2.00	1.50	1.50	1.50	2.00
16	2.50	3.00	3.00	3.00	3.00	3.00	2.50	3.00	2.00
17	2.50	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00
18	2.50	2.50	2.00	1.50	2.00	2.00	2.00	2.00	1.50
19	2.00	3.00	2.00	3.00	3.00	2.00	3.00	3.00	1.00

**Table 16-14. Tallgrass Prairie Southern Iowa Drift Plain - Birds**

Stress	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
1	2.00	2.00	2.50	3.00	2.00	3.00	2.00	3.00	3.00
2	1.50	1.50	2.50	2.00	2.50	3.00	3.00	3.00	3.00
3	2.50	1.50	3.00	2.50	1.00	2.50	1.00	3.00	2.00
4	1.50	1.00	2.00	2.00	1.00	2.00	1.00	2.00	1.50
5	2.50	1.50	2.50	2.00	1.50	2.00	1.00	2.50	1.00
6	2.50	2.50	3.00	3.00	2.50	3.00	2.00	3.00	3.00
7	1.50	1.00	3.00	3.00	1.00	2.00	1.00	3.00	1.00
8	1.00	1.00	2.00	3.00	1.00	1.00	1.00	2.00	1.00
9	2.00	1.00	2.00	2.00	1.00	2.00	1.00	2.00	1.50
10	3.00	2.50	3.00	1.00	1.00	1.00	1.00	2.50	1.00
11	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.50
12	1.00	1.50	2.00	3.00	2.50	3.00	2.50	2.50	3.00
13	1.00	2.00	1.00	1.00	2.00	1.00	3.00	1.00	1.00
14	1.00	2.00	1.00	1.00	2.00	1.00	2.00	1.00	2.00
15	2.00	2.50	2.50	1.50	1.50	1.50	1.50	2.50	2.00
16	3.00	3.00	3.00	3.00	2.50	3.00	2.50	3.00	2.00
17	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00
18	2.50	2.50	2.00	1.50	2.00	1.50	2.50	1.50	1.50
19	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00

**Table 16-15. Tallgrass Prairie Iowan Surface - Birds**

Stress	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
1	2.00	2.00	2.00	2.50	2.50	3.00	3.00	2.50	2.50
2	1.00	1.00	2.00	2.00	2.00	3.00	3.00	2.50	3.00
3	3.00	1.00	3.00	2.50	1.00	2.50	1.00	3.00	2.00
4	1.50	1.00	1.50	2.00	1.00	2.00	1.00	2.00	1.50
5	2.50	2.50	2.50	2.00	1.50	2.00	2.00	2.00	1.00
6	2.50	2.50	3.00	3.00	2.00	3.00	2.50	3.00	2.00
7	1.50	1.00	3.00	2.50	1.00	3.00	1.00	3.00	1.50
8	1.00	1.00	1.00	3.00	1.00	1.00	1.00	2.00	1.00
9	2.00	1.00	2.00	2.00	1.00	2.00	1.00	2.00	1.50
10	2.50	2.00	2.50	1.00	1.00	1.00	1.00	2.50	1.00
11	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.50
12	1.50	1.50	2.00	3.00	2.50	3.00	3.00	3.00	3.00
13	1.00	2.50	1.00	1.00	2.50	1.00	3.00	1.00	3.00
14	1.00	2.00	1.00	1.00	2.00	1.00	1.50	1.00	2.00
15	1.50	2.00	1.50	1.50	2.00	1.50	1.50	1.50	2.00
16	3.00	3.00	3.00	3.00	3.00	3.00	2.50	3.00	3.00
17	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
18	2.50	2.50	2.00	1.50	2.00	2.00	2.00	1.50	1.50
19	2.00	3.00	3.00	3.00	3.00	2.00	3.00	3.00	1.00

**Table 16-16. Tallgrass Prairie Northwest Iowa Plains - Birds**

<b>Stress</b>	<b>FRST</b>	<b>WET FRST</b>	<b>WD LND</b>	<b>SHRB</b>	<b>WET SHRB</b>	<b>WARM HERB</b>	<b>HERB WET</b>	<b>SVAN</b>	<b>AG</b>
<b>1</b>	1.00	1.50	1.50	1.50	1.50	3.00	2.50	2.50	2.50
<b>2</b>	1.00	1.00	1.50	1.50	2.00	3.00	3.00	2.50	3.00
<b>3</b>	2.00	1.00	2.00	2.00	1.00	2.00	1.00	3.00	1.50
<b>4</b>	1.00	1.00	1.50	1.50	1.00	1.50	1.00	1.50	1.50
<b>5</b>	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00
<b>6</b>	1.50	2.50	2.50	2.00	1.50	3.00	2.50	3.00	3.00
<b>7</b>	1.00	1.00	3.00	2.00	1.00	3.00	1.00	3.00	1.00
<b>8</b>	1.00	1.00	1.00	3.00	1.00	3.00	1.00	3.00	1.00
<b>9</b>	2.00	1.00	2.00	2.00	1.50	2.00	1.00	2.00	1.50
<b>10</b>	1.00	1.50	2.50	1.00	1.00	1.00	1.00	2.50	1.00
<b>11</b>	1.50	2.50	2.50	2.00	1.50	3.00	2.50	3.00	2.50
<b>12</b>	1.00	1.50	2.00	2.50	2.50	3.00	2.50	3.00	3.00
<b>13</b>	1.00	2.00	1.00	1.00	3.00	2.00	3.00	1.00	1.00
<b>14</b>	1.00	1.00	1.00	1.00	2.00	1.00	2.00	1.00	1.00
<b>15</b>	1.50	2.00	1.50	1.50	1.50	1.50	1.50	1.50	2.00
<b>16</b>	2.00	3.00	3.00	2.50	2.50	3.00	3.00	3.00	2.00
<b>17</b>	2.00	3.00	3.00	2.50	2.50	3.00	3.00	3.00	2.00
<b>18</b>	2.00	2.50	2.00	2.00	2.50	1.50	1.50	1.50	1.50
<b>19</b>	1.00	2.00	2.00	2.00	2.00	3.00	3.00	3.00	1.00

### 16-3 Terrestrial Stresses by Region - Mammals

#### Stress Key:

- |                                                |                                |
|------------------------------------------------|--------------------------------|
| 1 = Conversion to row crops species            | 11. = Invasion of non-native   |
| 2 = Conversion to non-native grasses           | 12. = Pesticide/herbicide use  |
| 3. = Conversion for residential use            | 13. = Drainage                 |
| 4. = Conversion for non-farming industrial use | 14. = Flooding caused by dams  |
| 5. = Excessive recreational use damage         | 15. = Disease/pathogens/insect |
| 6. = Improper grazing                          | 16. = Fragmentation            |
| 7. = Fire suppression                          | 17. = Loss of connectivity     |
| 8. = Fire use                                  | 18. = Climate change           |
| 9. = Road construction                         | 19. = Absence of habitat       |
| 10. = Timber harvest                           |                                |

**Stress Level:** 1 = Low; 2 = Moderate; 3 = High

**Table 16-17. Loess Hills - Mammals**

Stress	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
1	1.50	2.00	1.50	1.50	2.00	2.50	2.50	2.00	3.00
2	1.50	2.00	2.00	2.50	2.00	2.50	2.50	2.50	3.00
3	3.00	1.50	3.00	3.00	1.50	3.00	1.50	3.00	3.00
4	2.00	1.50	2.00	2.00	2.50	2.00	2.50	2.50	2.50
5	3.00	2.50	3.00	3.00	2.50	2.00	2.00	2.50	3.00
6	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
7	2.00	1.50	2.50	3.00	1.50	3.00	1.50	3.00	3.00
8	3.00	2.00	3.00	3.00	2.00	3.00	2.00	3.00	3.00
9	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
10	1.50	1.50	1.50	1.00	1.00	1.00	1.00	1.50	2.00
11	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
12	1.00	1.00	1.00	1.50	1.50	2.00	2.00	1.50	3.00
13	1.00	2.50	1.00	1.00	2.50	2.00	3.00	1.00	2.50
14	1.00	1.50	1.00	1.00	1.50	1.00	2.00	1.00	1.50
15	1.50	1.50	1.50	1.00	1.00	1.50	1.50	1.50	2.00
16	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	1.00
17	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	1.00
18	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
19	1.50	2.00	2.00	2.00	3.00	2.00	3.00	3.00	1.00

**Table 16-18. Mississippi Alluvial Plain - Mammals**

<b>Stress</b>	<b>FRST</b>	<b>WET FRST</b>	<b>WD LND</b>	<b>SHRB</b>	<b>WET SHRB</b>	<b>WARM HERB</b>	<b>HERB WET</b>	<b>SVAN</b>	<b>AG</b>
<b>1</b>	2.00	2.00	2.00	2.00	2.00	3.00	2.50	2.50	2.00
<b>2</b>	1.50	1.50	1.50	1.50	1.50	2.50	2.00	2.50	2.50
<b>3</b>	2.00	1.50	3.00	2.50	1.50	3.00	1.50	3.00	2.50
<b>4</b>	3.00	2.00	3.00	2.50	2.00	3.00	2.50	3.00	2.00
<b>5</b>	3.00	2.50	3.00	3.00	2.50	2.00	2.00	2.50	2.00
<b>6</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
<b>7</b>	1.00	1.00	1.50	2.50	1.00	3.00	1.00	3.00	2.00
<b>8</b>	1.00	1.00	1.00	2.00	1.00	3.00	1.00	3.00	2.00
<b>9</b>	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
<b>10</b>	3.00	2.50	3.00	1.00	1.00	1.00	1.00	2.00	1.00
<b>11</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
<b>12</b>	1.50	1.50	1.50	2.00	1.50	2.00	2.00	2.00	3.00
<b>13</b>	2.00	2.50	2.00	2.00	2.50	3.00	3.00	2.00	3.00
<b>14</b>	2.00	2.50	2.00	2.00	2.50	3.00	2.50	2.00	2.00
<b>15</b>	2.00	1.50	2.00	1.50	1.50	2.00	1.50	2.00	1.50
<b>16</b>	2.50	2.50	3.00	3.00	3.00	3.00	3.00	3.00	1.00
<b>17</b>	2.50	2.50	2.50	3.00	3.00	3.00	3.00	3.00	1.00
<b>18</b>	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
<b>19</b>	2.00	2.00	2.50	2.00	3.00	2.50	2.50	3.00	1.00

**Table 16-19. Missouri Alluvial Plain - Mammals**

<b>Stress</b>	<b>FRST</b>	<b>WET FRST</b>	<b>WD LND</b>	<b>SHRB</b>	<b>WET SHRB</b>	<b>WARM HERB</b>	<b>HERB WET</b>	<b>SVAN</b>	<b>AG</b>
<b>1</b>	2.00	2.00	2.00	2.00	2.00	3.00	2.50	2.50	2.00
<b>2</b>	1.50	1.50	1.50	1.50	1.50	2.50	2.50	2.00	2.50
<b>3</b>	1.50	1.00	2.50	2.50	1.00	2.50	1.00	2.50	2.00
<b>4</b>	2.50	2.00	2.50	2.50	2.00	2.50	2.50	2.50	2.00
<b>5</b>	3.00	2.50	3.00	3.00	2.50	2.00	2.00	2.50	3.00
<b>6</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
<b>7</b>	2.00	2.00	2.50	3.00	2.00	3.00	2.00	3.00	2.00
<b>8</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00
<b>9</b>	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
<b>10</b>	1.50	1.50	1.50	1.00	1.00	1.00	1.00	1.50	1.00
<b>11</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
<b>12</b>	1.50	1.50	1.50	2.00	2.00	2.00	2.00	1.50	3.00
<b>13</b>	3.00	2.50	3.00	3.00	2.50	3.00	3.00	3.00	3.00
<b>14</b>	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.50
<b>15</b>	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
<b>16</b>	2.00	2.00	2.50	3.00	3.00	3.00	3.00	3.00	1.00
<b>17</b>	2.50	2.50	2.50	3.00	3.00	3.00	3.00	3.00	1.00
<b>18</b>	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
<b>19</b>	2.00	2.00	2.50	2.50	3.00	2.50	2.50	3.00	1.00

**Table 16-20. Prairie to Hardwood Transition - Mammals**

<b>Stress</b>	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
<b>1</b>	1.50	2.00	2.00	2.00	2.00	2.50	2.00	2.00	2.00
<b>2</b>	1.50	1.50	1.50	2.00	1.50	2.50	2.50	2.50	2.50
<b>3</b>	3.00	1.50	3.00	2.50	1.00	3.00	1.00	3.00	2.50
<b>4</b>	1.50	1.50	1.50	1.50	1.00	1.50	1.00	2.00	2.00
<b>5</b>	3.00	3.00	3.00	3.00	2.00	2.00	1.50	2.50	2.00
<b>6</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
<b>7</b>	2.00	1.00	2.00	2.00	1.00	3.00	1.00	2.50	1.00
<b>8</b>	1.00	1.00	1.00	2.00	1.00	3.00	2.00	3.00	1.00
<b>9</b>	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
<b>10</b>	2.50	2.50	2.50	1.00	1.00	1.00	1.00	1.50	1.00
<b>11</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
<b>12</b>	1.50	1.50	1.00	1.50	1.50	2.50	2.50	2.00	3.00
<b>13</b>	2.00	2.00	1.00	1.00	2.00	2.00	3.00	1.50	2.50
<b>14</b>	1.00	1.50	1.00	1.00	1.50	1.00	1.50	1.00	1.50
<b>15</b>	1.50	1.50	1.50	1.50	1.00	1.00	1.00	1.50	1.00
<b>16</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	1.00
<b>17</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	1.00
<b>18</b>	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
<b>19</b>	2.50	3.00	2.50	2.50	3.00	3.00	3.00	3.00	1.00

**Table 16-21. Prairie Pothole - Mammals**

<b>Stress</b>	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
<b>1</b>	2.00	2.00	3.00	2.50	2.00	3.00	3.00	3.00	3.00
<b>2</b>	1.50	1.50	2.00	3.00	2.00	3.00	3.00	2.50	2.50
<b>3</b>	2.50	1.00	2.50	2.00	1.00	1.50	1.00	2.50	2.50
<b>4</b>	1.50	1.00	1.50	1.00	1.00	1.00	1.00	2.00	2.00
<b>5</b>	3.00	2.50	3.00	3.00	2.50	2.00	2.00	2.50	1.00
<b>6</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.50
<b>7</b>	2.00	1.00	2.00	2.50	1.00	3.00	1.00	3.00	1.00
<b>8</b>	1.00	1.00	1.00	2.00	1.00	3.00	1.00	3.00	1.00
<b>9</b>	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
<b>10</b>	2.50	2.50	2.50	1.00	1.00	1.00	1.00	1.50	1.00
<b>11</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.50
<b>12</b>	1.50	1.50	1.50	2.00	1.50	2.50	2.50	1.50	2.50
<b>13</b>	3.00	2.50	3.00	3.00	2.50	2.00	3.00	2.00	3.00
<b>14</b>	1.50	2.50	1.50	1.50	2.50	2.00	2.50	1.50	1.50
<b>15</b>	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.50	1.50
<b>16</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	1.00
<b>17</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	1.00
<b>18</b>	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
<b>19</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	1.00

**Table 16-22. Tallgrass Prairie Southern Iowa Drift Plain - Mammals**

Stress	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
1	2.00	2.00	2.00	2.00	2.00	2.50	2.50	2.50	2.50
2	2.00	2.00	2.00	2.50	2.00	2.50	2.50	2.50	3.00
3	3.00	1.50	2.50	2.50	1.50	3.00	1.50	3.00	2.50
4	1.50	1.50	1.50	1.50	1.50	1.50	1.50	2.00	2.00
5	3.00	2.50	3.00	3.00	2.50	2.00	2.00	2.50	2.00
6	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.50
7	2.00	1.00	2.00	2.50	1.00	3.00	1.50	2.00	1.00
8	1.00	1.00	1.00	2.00	1.00	2.00	1.00	1.00	1.00
9	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
10	3.00	2.50	3.00	1.00	1.00	1.00	1.00	2.00	2.00
11	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
12	1.00	1.00	1.00	1.50	1.00	2.00	1.50	1.00	2.50
13	1.00	2.00	1.00	1.00	2.00	2.00	3.00	1.00	2.50
14	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
15	2.00	1.50	2.00	1.50	1.50	1.50	1.50	1.50	1.50
16	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	1.00
17	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
18	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
19	2.50	3.00	2.50	2.50	3.00	3.00	3.00	3.00	1.00

**Table 16-23. Tallgrass Prairie Iowan Surface - Mammals**

Stress	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
1	2.00	2.00	2.00	2.00	2.00	2.50	2.50	2.50	3.00
2	2.00	2.00	1.50	2.50	2.00	2.50	2.50	2.50	2.50
3	2.50	1.50	3.00	3.00	1.00	3.00	1.00	3.00	2.50
4	1.50	1.50	2.00	2.00	1.00	2.00	1.00	2.50	2.00
5	3.00	2.50	3.00	3.00	2.50	2.00	2.00	2.50	2.00
6	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.50
7	2.00	1.00	2.00	2.00	1.00	2.50	1.00	2.50	1.00
8	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
9	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
10	2.50	2.50	2.50	1.00	1.00	1.00	1.00	1.50	1.00
11	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
12	2.00	2.00	2.00	2.00	2.00	2.50	2.50	2.00	3.00
13	3.00	2.50	3.00	3.00	2.50	2.00	3.00	2.00	3.00
14	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
15	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
16	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	1.00
17	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	1.00
18	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
19	2.50	3.00	3.00	3.00	3.00	3.00	3.00	3.00	1.00

**Table 16-24. Tallgrass Prairie Northwest Iowa Plains - Mammals**

<b>Stress</b>	<b>FRST</b>	<b>WET FRST</b>	<b>WD LND</b>	<b>SHRB</b>	<b>WET SHRB</b>	<b>WARM HERB</b>	<b>HERB WET</b>	<b>SVAN</b>	<b>AG</b>
<b>1</b>	2.00	2.00	2.00	2.00	2.00	2.50	2.50	2.50	3.00
<b>2</b>	1.50	1.50	1.50	2.50	1.50	2.50	2.00	2.50	2.50
<b>3</b>	2.50	1.00	2.50	2.00	1.00	2.50	1.00	2.50	2.50
<b>4</b>	1.50	1.00	1.50	1.00	1.00	1.50	1.00	2.00	2.00
<b>5</b>	3.00	2.50	3.00	3.00	2.50	2.00	2.00	2.50	2.00
<b>6</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.50
<b>7</b>	2.00	1.00	2.00	2.50	1.50	3.00	2.00	3.00	2.00
<b>8</b>	1.00	1.00	1.00	2.00	2.00	3.00	3.00	3.00	1.50
<b>9</b>	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
<b>10</b>	2.50	2.50	2.50	1.00	1.00	1.00	1.00	1.50	1.00
<b>11</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
<b>12</b>	2.00	2.00	2.00	2.00	2.00	2.50	2.50	2.00	3.00
<b>13</b>	3.00	2.50	3.00	3.00	2.50	2.00	3.00	2.00	2.50
<b>14</b>	1.50	2.00	1.50	1.50	2.00	1.50	2.00	1.50	1.50
<b>15</b>	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
<b>16</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	1.00
<b>17</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	1.00
<b>18</b>	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
<b>19</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	1.00

## 16-4 Terrestrial Stresses by Region - Reptiles and Amphibians (Herps)

### Stress Key:

- |                                                |                                |
|------------------------------------------------|--------------------------------|
| 1 = Conversion to row crops species            | 11. = Invasion of non-native   |
| 2 = Conversion to non-native grasses           | 12. = Pesticide/herbicide use  |
| 3. = Conversion for residential use            | 13. = Drainage                 |
| 4. = Conversion for non-farming industrial use | 14. = Flooding caused by dams  |
| 5. = Excessive recreational use damage         | 15. = Disease/pathogens/insect |
| 6. = Improper grazing                          | 16. = Fragmentation            |
| 7. = Fire suppression                          | 17. = Loss of connectivity     |
| 8. = Fire use                                  | 18. = Climate change           |
| 9. = Road construction                         | 19. = Absence of habitat       |
| 10. = Timber harvest                           |                                |

**Stress Level:** 1 = Low; 2 = Moderate; 3 = High

**Table 16-25. Loess Hills - Herps**

Stress	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
1	.	.	3.00	.	.	3.00	3.00	3.00	.
2	.	.	.	.	.	1.00	1.00	.	.
3	.	.	3.00	.	.	3.00	3.00	3.00	2.00
4	.	.	1.00	.	.	1.00	1.00	1.00	1.00
5	.	.	.	.	.	.	.	.	.
6	.	.	1.00	.	.	1.00	1.00	1.00	1.00
7	.	.	.	.	.	3.00	3.00	3.00	.
8	.	.	1.00	.	.	2.00	2.00	2.00	2.00
9	.	.	3.00	.	.	3.00	3.00	3.00	3.00
10	.	.	1.00	.	.	.	.	.	.
11	.	.	.	.	.	.	.	.	.
12	.	.	3.00	.	.	3.00	3.00	3.00	3.00
13	.	.	.	.	.	.	3.00	.	3.00
14	.	.	.	.	.	.	.	.	.
15	.	.	1.00	.	.	1.00	1.00	1.00	1.00
16	.	.	3.00	.	.	3.00	3.00	3.00	3.00
17	.	.	3.00	.	.	3.00	3.00	2.00	2.00
18	.	.	1.00	.	.	1.00	1.00	1.00	1.00
19	.	.	3.00	.	.	3.00	3.00	3.00	3.00

**Table 16-26. Mississippi and Missouri Alluvial Plains - Herps**

Stress	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
1	.	3.00	.	.	3.00	3.00	3.00	.	.
2	.	.	.	.	.	1.00	1.00	.	.
3	.	3.00	.	.	.	3.00	3.00	.	2.00
4	.	.	.	.	.	1.00	1.00	.	1.00
5	.	.	.	.	.	.	.	.	.
6	.	1.00	.	.	1.00	1.00	1.00	.	1.00
7	.	.	.	.	.	3.00	3.00	.	.
8	.	1.00	.	.	2.00	2.00	2.00	.	2.00
9	.	3.00	.	.	3.00	3.00	3.00	.	3.00
10	.	1.00	.	.	.	.	.	.	.
11	.	.	.	.	.	.	.	.	.
12	.	3.00	.	.	3.00	3.00	3.00	.	3.00
13	.	3.00	.	.	3.00	.	3.00	.	3.00
14	.	1.00	.	.	1.00	.	1.00	.	.
15	.	1.00	.	.	1.00	1.00	1.00	.	1.00
16	.	3.00	.	.	3.00	3.00	3.00	.	3.00
17	.	3.00	.	.	3.00	3.00	3.00	.	2.00
18	.	1.00	.	.	1.00	1.00	1.00	.	1.00
19	.	3.00	.	.	3.00	3.00	3.00	.	3.00

**Table 16-27. Prairie to Hardwood Transition - Herps**

Stress	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
1	3.00	.	3.00	.	3.00	3.00	3.00	3.00	.
2	.	.	.	.	.	1.00	1.00	.	.
3	3.00	.	3.00	.	.	3.00	3.00	3.00	2.00
4	1.00	.	1.00	.	.	1.00	1.00	1.00	1.00
5	.	.	.	.	.	.	.	.	.
6	1.00	.	1.00	.	1.00	1.00	1.00	1.00	1.00
7	.	.	.	.	.	3.00	3.00	3.00	.
8	1.00	.	1.00	.	2.00	2.00	2.00	2.00	2.00
9	3.00	.	3.00	.	3.00	3.00	3.00	3.00	3.00
10	1.00	.	1.00	.	.	.	.	.	.
11	.	.	.	.	.	.	.	.	.
12	3.00	.	3.00	.	3.00	3.00	3.00	3.00	3.00
13	.	.	.	.	3.00	.	3.00	.	3.00
14	.	.	.	.	.	.	.	.	.
15	1.00	.	1.00	.	1.00	1.00	1.00	1.00	1.00
16	3.00	.	3.00	.	3.00	3.00	3.00	3.00	3.00
17	3.00	.	3.00	.	3.00	3.00	3.00	2.00	2.00
18	1.00	.	1.00	.	1.00	1.00	1.00	1.00	1.00
19	3.00	.	3.00	.	3.00	3.00	3.00	3.00	3.00

**Table 16-28. Prairie Pothole - Herps**

Stress	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
1	.	3.00	.	.	.	3.00	3.00	.	.
2	.	.	.	.	.	1.00	1.00	.	.
3	.	3.00	.	.	.	3.00	3.00	.	2.00
4	.	.	.	.	.	1.00	1.00	.	1.00
5	.	.	.	.	.	.	.	.	.
6	.	1.00	.	.	.	1.00	1.00	.	1.00
7	.	.	.	.	.	3.00	3.00	.	.
8	.	1.00	.	.	.	2.00	2.00	.	2.00
9	.	3.00	.	.	.	3.00	3.00	.	3.00
10	.	1.00	.	.	.	.	.	.	.
11	.	.	.	.	.	.	.	.	.
12	.	3.00	.	.	.	3.00	3.00	.	3.00
13	.	3.00	.	.	.	.	3.00	.	3.00
14	.	.	.	.	.	.	.	.	.
15	.	1.00	.	.	.	1.00	1.00	.	1.00
16	.	3.00	.	.	.	3.00	3.00	.	3.00
17	.	3.00	.	.	.	3.00	3.00	.	2.00
18	.	1.00	.	.	.	1.00	1.00	.	1.00
19	.	3.00	.	.	.	3.00	3.00	.	3.00

**Table 16-29. Tallgrass Prairie Southern Iowa Drift Plain - Herps**

Stress	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
1	3.00	3.00	3.00	.	3.00	3.00	3.00	3.00	.
2	.	.	.	.	.	1.00	1.00	.	.
3	3.00	3.00	3.00	.	.	3.00	3.00	3.00	2.00
4	1.00	.	1.00	.	.	1.00	1.00	1.00	1.00
5	.	.	.	.	.	.	.	.	.
6	1.00	1.00	1.00	.	1.00	1.00	1.00	1.00	1.00
7	.	.	.	.	.	3.00	3.00	3.00	.
8	1.00	1.00	1.00	.	2.00	2.00	2.00	2.00	2.00
9	3.00	3.00	3.00	.	3.00	3.00	3.00	3.00	3.00
10	1.00	1.00	1.00	.	.	.	.	.	.
11	.	.	.	.	.	.	.	.	.
12	3.00	3.00	3.00	.	3.00	3.00	3.00	3.00	3.00
13	.	3.00	.	.	3.00	.	3.00	.	3.00
14	.	.	.	.	.	.	.	.	.
15	1.00	1.00	1.00	.	1.00	1.00	1.00	1.00	1.00
16	3.00	3.00	3.00	.	3.00	3.00	3.00	3.00	3.00
17	3.00	3.00	3.00	.	3.00	3.00	3.00	2.00	2.00
18	1.00	1.00	1.00	.	1.00	1.00	1.00	1.00	1.00
19	3.00	3.00	3.00	.	3.00	3.00	3.00	3.00	3.00

**Table 16-30. Tallgrass Prairie Iowan Surface - Herps**

Stress	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
1	3.00	3.00	3.00	.	3.00	3.00	3.00	3.00	.
2	.	.	.	.	.	1.00	1.00	.	.
3	3.00	3.00	3.00	.	.	3.00	3.00	3.00	2.00
4	1.00	.	1.00	.	.	1.00	1.00	1.00	1.00
5	.	.	.	.	.	.	.	.	.
6	1.00	1.00	1.00	.	1.00	1.00	1.00	1.00	1.00
7	.	.	.	.	.	3.00	3.00	3.00	.
8	1.00	1.00	1.00	.	2.00	2.00	2.00	2.00	2.00
9	3.00	3.00	3.00	.	3.00	3.00	3.00	3.00	3.00
10	1.00	1.00	1.00	.	.	.	.	.	.
11	.	.	.	.	.	.	.	.	.
12	3.00	3.00	3.00	.	3.00	3.00	3.00	3.00	3.00
13	.	3.00	.	.	3.00	.	3.00	.	3.00
14	.	.	.	.	.	.	.	.	.
15	1.00	1.00	1.00	.	1.00	1.00	1.00	1.00	1.00
16	3.00	3.00	3.00	.	3.00	3.00	3.00	3.00	3.00
17	3.00	3.00	3.00	.	3.00	3.00	3.00	2.00	2.00
18	1.00	1.00	1.00	.	1.00	1.00	1.00	1.00	1.00
19	3.00	3.00	3.00	.	3.00	3.00	3.00	3.00	3.00

**Table 16-31. Tallgrass Prairie Northwest Iowa Plains - Herps**

Stress	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
1	.	.	3.00	.	.	3.00	3.00	.	.
2	.	.	.	.	.	1.00	1.00	.	.
3	.	.	3.00	.	.	3.00	3.00	.	2.00
4	.	.	1.00	.	.	1.00	1.00	.	1.00
5	.	.	.	.	.	.	.	.	.
6	.	.	1.00	.	.	1.00	1.00	.	1.00
7	.	.	.	.	.	3.00	3.00	.	.
8	.	.	1.00	.	.	2.00	2.00	.	2.00
9	.	.	3.00	.	.	3.00	3.00	.	3.00
10	.	.	1.00	.	.	.	.	.	.
11	.	.	.	.	.	.	.	.	.
12	.	.	3.00	.	.	3.00	3.00	.	3.00
13	.	.	.	.	.	.	3.00	.	3.00
14	.	.	.	.	.	.	.	.	.
15	.	.	1.00	.	.	1.00	1.00	.	1.00
16	.	.	3.00	.	.	.	3.00	.	3.00
17	.	.	3.00	.	.	3.00	3.00	.	2.00
18	.	.	1.00	.	.	1.00	1.00	.	1.00
19	.	.	3.00	.	.	3.00	3.00	.	3.00

## 16-5 Terrestrial Stresses by Region - Land Snails (Prairie to Hardwood Transition Region Only)

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### **Stress Key:**

- |                                                |                                |
|------------------------------------------------|--------------------------------|
| 1 = Conversion to row crops species            | 11. = Invasion of non-native   |
| 2 = Conversion to non-native grasses           | 12. = Pesticide/herbicide use  |
| 3. = Conversion for residential use            | 13. = Drainage                 |
| 4. = Conversion for non-farming industrial use | 14. = Flooding caused by dams  |
| 5. = Excessive recreational use damage         | 15. = Disease/pathogens/insect |
| 6. = Improper grazing                          | 16. = Fragmentation            |
| 7. = Fire suppression                          | 17. = Loss of connectivity     |
| 8. = Fire use                                  | 18. = Climate change           |
| 9. = Road construction                         | 19. = Absence of habitat       |
| 10. = Timber harvest                           |                                |

**Stress Level:** 1 = Low; 2 = Moderate; 3 = High

**Table 16-32. Prairie to Hardwood Transition - Land Snails**

Stress	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
<b>1</b>	1.00	.	1.00	.	.	.	.	.	3.00
<b>2</b>	1.00	.	1.00	.	.	.	.	.	3.00
<b>3</b>	1.50	.	2.00	.	.	.	.	.	3.00
<b>4</b>	1.00	.	1.00	.	.	.	.	.	1.50
<b>5</b>	3.00	.	3.00	.	.	.	.	.	3.00
<b>6</b>	3.00	.	3.00	.	.	.	.	.	3.00
<b>7</b>	1.50	.	1.00	.	.	.	.	.	1.50
<b>8</b>	1.00	.	1.00	.	.	.	.	.	1.00
<b>9</b>	2.00	.	2.00	.	.	.	.	.	3.00
<b>10</b>	1.50	.	2.00	.	.	.	.	.	2.00
<b>11</b>	2.50	.	3.00	.	.	.	.	.	3.00
<b>12</b>	1.50	.	1.00	.	.	.	.	.	3.00
<b>13</b>	2.00	.	3.00	.	.	.	.	.	1.50
<b>14</b>	1.50	.	1.00	.	.	.	.	.	2.00
<b>15</b>	1.00	.	1.00	.	.	.	.	.	2.00
<b>16</b>	3.00	.	3.00	.	.	.	.	.	3.00
<b>17</b>	3.00	.	3.00	.	.	.	.	.	3.00
<b>18</b>	3.00	.	3.00	.	.	.	.	.	3.00
<b>19</b>	2.50	.	3.00	.	.	.	.	.	3.00
<b>20*</b>	3.00	.	3.00	.	.	.	.	.	3.00
<b>21*</b>	2.00	.	2.00	.	.	.	.	.	3.00

\*Stress 20 - damage to sinkholes through siltation, Stress 21 - damage to sinkholes through contaminants

## 16-6. Terrestrial Stresses by Region - Butterflies

### Stress Key:

- |                                                |                                       |
|------------------------------------------------|---------------------------------------|
| 1 = Conversion to row crops                    | 11. = Invasion of non-native species  |
| 2 = Conversion to non-native grasses           | 12. = Pesticide/herbicide use         |
| 3. = Conversion for residential use            | 13. = Drainage                        |
| 4. = Conversion for non-farming industrial use | 14. = Flooding caused by dams         |
| 5. = Excessive recreational use                | 15. = Disease/pathogens/insect damage |
| 6. = Improper grazing                          | 16. = Fragmentation                   |
| 7. = Fire suppression                          | 17. = Loss of connectivity            |
| 8. = Fire use                                  | 18. = Climate change                  |
| 9. = Road construction                         | 19. = Absence of habitat              |
| 10. = Timber harvest                           |                                       |

**Stress Level:** 1 = Low; 2 = Moderate; 3 = High

**Table 16-33. Loess Hills - Butterflies**

Stress	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
1	2.00	2.00	2.00	2.00	2.00	3.00	2.00	3.00	2.00
2	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
3	3.00	1.00	3.00	3.00	1.00	3.00	1.00	3.00	3.00
4	2.00	1.00	2.00	2.00	1.00	1.50	1.00	2.00	1.50
5	3.00	2.00	3.00	3.00	2.00	2.00	2.00	3.00	2.00
6	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
7	2.00	1.00	2.00	2.00	2.00	3.00	2.00	3.00	2.50
8	2.00	1.00	2.00	2.00	2.00	3.00	2.00	3.00	2.00
9	2.00	2.00	2.00	2.00	2.00	1.50	2.00	2.00	1.50
10	2.00	1.00	2.00	1.00	1.00	1.00	1.00	2.00	1.00
11	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
12	2.00	2.00	2.00	2.00	2.00	3.00	3.00	3.00	3.00
13	1.00	2.00	1.00	1.00	2.00	1.00	2.00	1.00	1.50
14	1.00	2.00	1.00	1.00	2.00	1.50	2.00	1.00	1.00
15	1.00	1.00	1.00	1.00	1.00	1.50	1.00	1.00	1.50
16	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00
17	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00
18	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
19	2.00	3.00	2.00	1.00	3.00	3.00	3.00	3.00	2.00

**Table 16-34. Mississippi Alluvial Plain - Butterflies**

Stress	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
1	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00
2	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
3	2.00	1.00	2.00	2.00	1.00	2.00	2.00	2.00	2.00
4	2.00	1.00	2.00	2.00	1.00	2.00	2.00	2.00	2.00
5	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
6	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
7	1.00	1.00	1.00	2.00	1.00	3.00	1.00	3.00	1.00
8	2.00	2.00	2.00	2.00	2.00	3.00	2.00	2.00	2.00
9	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
10	3.00	3.00	3.00	1.00	1.00	1.00	1.00	2.00	1.00
11	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
12	1.00	1.00	1.00	2.00	2.00	3.00	3.00	3.00	3.00
13	2.00	3.00	2.00	2.00	3.00	3.00	3.00	2.00	2.00
14	2.00	2.00	2.00	2.00	2.00	2.00	3.00	2.00	2.00
15	3.00	3.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00
16	3.00	3.00	3.00	3.00	1.00	3.00	3.00	3.00	1.00
17	3.00	3.00	3.00	3.00	1.00	3.00	3.00	3.00	1.00
18	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
19	2.00	3.00	2.00	2.00	3.00	3.00	3.00	3.00	1.00

**Table 16-35. Missouri Alluvial Plain - Butterflies**

Stress	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
1	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00
2	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
3	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
4	2.00	1.00	2.00	2.00	1.00	2.00	1.00	2.00	2.00
5	3.00	2.00	3.00	2.00	2.00	2.00	2.00	3.00	2.00
6	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
7	2.00	1.00	2.00	2.00	1.00	3.00	2.00	3.00	2.00
8	2.00	1.00	2.00	3.00	1.00	3.00	2.00	3.00	2.00
9	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
10	2.00	1.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
11	3.00	3.00	3.00	3.00	.	3.00	3.00	3.00	3.00
12	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
13	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00
14	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
15	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
16	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	1.00
17	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	1.00
18	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
19	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	1.00

**Table 16-36. Prairie to Hardwood Transition - Butterflies**

Stress	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
1	2.00	2.00	2.00	2.00	2.00	2.00	3.00	3.00	2.00
2	2.00	2.00	2.00	2.00	2.00	3.00	2.00	3.00	2.00
3	2.00	1.00	2.00	2.00	1.00	2.00	1.00	2.00	2.00
4	1.00	1.00	1.00	2.00	1.00	2.00	1.00	2.00	1.00
5	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
6	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
7	2.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
8	2.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
9	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
11	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
12	2.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00	3.00
13	1.00	2.00	1.00	2.00	3.00	1.00	3.00	1.00	1.00
14	1.00	1.00	1.00	1.00	2.00	1.00	2.00	1.00	1.00
15	2.00	1.00	2.00	1.00	1.00	1.00	1.00	1.00	2.00
16	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00
17	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00
18	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
19	2.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	1.00

**Table 16-37. Prairie Pothole - Butterflies**

	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
1	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
2	1.00	1.00	1.00	2.00	1.00	2.00	2.00	2.00	2.00
3	2.00	1.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
4	1.00	2.00	2.00	2.00	1.00	1.50	1.00	1.00	1.00
5	3.00	2.00	3.00	2.00	2.00	1.50	2.00	2.00	2.00
6	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
7	1.00	1.00	1.00	2.00	1.00	3.00	2.00	3.00	1.00
8	1.00	1.00	2.00	2.00	1.00	3.00	2.00	3.00	1.00
9	2.00	2.00	2.00	2.00	2.00	2.50	2.00	2.00	2.00
10	2.00	1.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
11	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
12	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
13	3.00	3.00	3.00	3.00	3.00	2.00	3.00	2.00	2.00
14	2.00	3.00	2.00	2.00	3.00	2.00	3.00	2.00	2.00
15	2.00	2.00	2.00	1.00	1.00	1.50	1.00	2.00	2.00
16	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
17	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
18	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
19	2.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00	1.00

**Table 16-38. Tallgrass Prairie Southern Iowa Drift Plain - Butterflies**

Stress	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
1	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00
2	3.00	2.00	3.00	3.00	2.00	3.00	2.00	3.00	2.00
3	2.00	1.00	2.00	1.00	1.00	2.00	1.00	2.00	2.00
4	2.00	1.00	2.00	2.00	1.00	2.00	1.00	2.00	2.00
5	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
6	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
7	2.00	2.00	2.00	3.00	2.00	3.00	2.00	3.00	3.00
8	2.00	2.00	2.00	2.00	1.00	2.00	1.00	2.00	2.00
9	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
10	3.00	2.00	3.00	1.00	1.00	1.00	1.00	3.00	1.00
11	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
12	1.00	1.00	1.00	3.00	2.00	3.00	3.00	3.00	3.00
13	1.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
14	2.00	3.00	2.00	2.00	3.00	2.00	3.00	2.00	2.00
15	3.00	3.00	3.00	2.00	2.00	2.00	2.00	3.00	2.00
16	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00
17	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	1.00
18	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
19	2.00	3.00	2.00	2.00	3.00	3.00	3.00	3.00	1.00

**Table 16-39. Tallgrass Prairie Iowan Surface - Butterflies**

Stress	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
1	2.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00
2	2.00	2.00	2.00	2.00	2.00	3.00	2.00	3.00	3.00
3	1.00	2.00	2.00	2.00	1.00	2.00	1.00	2.00	3.00
4	1.00	2.00	2.00	2.00	1.00	2.00	1.00	2.00	3.00
5	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00
6	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
7	2.00	2.00	2.00	2.00	2.00	3.00	2.00	3.00	3.00
8	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
9	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
10	2.00	2.00	2.00	1.00	1.00	1.00	1.00	2.00	1.00
11	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
12	2.00	2.00	2.00	2.00	2.00	3.00	2.00	3.00	3.00
13	1.00	3.00	1.00	2.00	3.00	3.00	3.00	2.00	3.00
14	1.00	2.00	1.00	1.00	3.00	2.00	3.00	1.00	2.00
15	2.00	2.00	2.00	2.00	1.00	2.00	2.00	2.00	3.00
16	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	1.00
17	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	1.00
18	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
19	2.00	2.00	2.00	2.00	2.00	3.00	3.00	3.00	1.00

**Table 16-40. Tallgrass Prairie Northwest Iowa Plains - Butterflies**

<b>Stress</b>	FRST	WET FRST	WD LND	SHRB	WET SHRB	WARM HERB	HERB WET	SVAN	AG
<b>1</b>	2.00	2.00	2.00	3.00	2.00	3.00	2.00	3.00	2.00
<b>2</b>	2.00	2.00	2.00	3.00	2.00	3.00	3.00	3.00	3.00
<b>3</b>	2.00	1.00	2.00	1.00	1.00	2.00	1.00	2.00	2.00
<b>4</b>	2.00	1.00	2.00	1.00	1.00	2.00	1.00	2.00	2.00
<b>5</b>	2.00	2.00	2.00	2.00	1.00	2.00	1.00	2.00	2.00
<b>6</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
<b>7</b>	2.00	1.00	2.00	2.00	2.00	2.50	2.00	3.00	2.00
<b>8</b>	2.00	1.00	2.00	3.00	2.00	3.00	2.00	3.00	2.00
<b>9</b>	2.00	2.00	2.00	2.00	2.00	2.50	2.00	2.00	2.00
<b>10</b>	2.00	1.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
<b>11</b>	3.00	3.00	3.00	3.00	3.00	2.50	3.00	3.00	3.00
<b>12</b>	2.00	2.00	2.00	2.00	2.00	3.00	2.00	3.00	3.00
<b>13</b>	2.00	3.00	2.00	2.00	3.00	2.00	3.00	3.00	3.00
<b>14</b>	1.00	1.00	1.00	1.00	2.00	1.50	2.00	2.00	1.00
<b>15</b>	1.00	1.00	1.00	1.00	1.00	1.50	1.00	1.00	1.00
<b>16</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	1.00
<b>17</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	1.00
<b>18</b>	1.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
<b>19</b>	1.00	3.00	2.00	2.00	3.00	3.00	3.00	3.00	1.00



# APPENDIX 17. Aquatic Habitat Stresses by Region

## 17-1 Aquatic Stresses by Region - Fish and Mussels

### Stress Key:

- |                                          |                                          |
|------------------------------------------|------------------------------------------|
| 1. = Siltation                           | 10. = Disease/pathogens                  |
| 2. = Chemical pollution                  | 11. = Excessive recreational use         |
| 3. = Accelerated eutrophication          | 12. = Climate change                     |
| 4. = Channelization                      | 13. = Loss of riparian habitat           |
| 5. = Man-made dams                       | 14. = Loss of shoreline vegetation       |
| 6. = Permanent drainage                  | 15. = Loss of submergent/emergent plants |
| 7. = Artificial water level manipulation | 16. = Shoreline/bank erosion             |
| 8. = Shoreline alteration                | 17. = Streambed degradation              |
| 9. = Invasive/non-native species         |                                          |

**Stress Level:** 1 = Low; 2 = Moderate; 3 = High

**Table 17-1. Loess Hills -Fish and Mussels**

STRESS	RIVER	STREAM	CREEK	IMPOUND	BACK WATER	OXBOW	NAT LAKE	CON LAKE	POND
1	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.67
2	2.00	2.00	2.00	2.00	1.50	1.00	1.00	1.00	1.33
3	2.67	2.67	2.67	3.00	3.00	3.00	3.00	3.00	2.67
4	2.33	2.67	3.00	2.00	3.00	2.00	1.00	1.00	1.00
5	2.00	2.33	2.67	3.00	1.50	1.00	3.00	1.00	1.00
6	1.67	1.67	2.33	2.50	3.00	3.00	1.00	2.00	1.00
7	1.67	1.67	1.67	1.50	1.50	1.50	1.00	1.50	1.00
8	3.00	3.00	3.00	2.50	2.50	2.50	2.00	2.00	1.67
9	3.00	2.33	2.00	2.50	2.50	2.00	3.00	2.50	2.33
10	1.33	1.00	1.33	1.50	1.50	1.50	2.00	1.50	1.33
11	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.33
12	1.33	1.33	1.33	1.00	1.50	1.50	1.00	1.00	1.33
13	2.33	2.67	2.67	3.00	3.00	2.50	3.00	2.50	2.00
14	3.00	3.00	3.00	3.00	2.50	2.50	2.00	2.00	1.33
15	2.33	2.67	2.67	3.00	2.50	2.00	2.00	1.50	1.00
16	3.00	3.00	3.00	2.50	2.50	2.00	2.00	2.00	1.33
17	3.00	3.00	3.00	3.00	3.00	3.00	1.00	1.00	1.00

**Table 17-2. Mississippi Alluvial Plain - Fish and Mussels**

<b>Stress</b>	RIVER	STREAM	CREEK	IMPOUND	BACK WATER	OXBOW	NAT LAKE	CON LAKE	POND
<b>1</b>	3.00	3.00	3.00	3.00	3.00	2.67	.	.	.
<b>2</b>	2.00	2.00	2.00	2.50	2.00	2.00	.	.	.
<b>3</b>	2.50	2.50	2.50	3.00	2.50	2.50	.	.	.
<b>4</b>	2.33	2.67	2.67	3.00	.	.	.	.	.
<b>5</b>	2.33	3.00	2.67	3.00	.	.	.	.	.
<b>6</b>	1.50	2.50	3.00	3.00	1.00	2.00	.	.	.
<b>7</b>	3.00	2.00	2.00	3.00	3.00	3.00	.	.	.
<b>8</b>	2.33	2.33	2.33	3.00	2.00	2.50	.	.	.
<b>9</b>	3.00	3.00	2.67	3.00	3.00	3.00	.	.	.
<b>10</b>	1.33	1.33	1.33	2.00	1.33	1.33	.	.	.
<b>11</b>	1.33	1.33	1.00	2.50	1.67	1.33	.	.	.
<b>12</b>	1.00	1.00	1.00	2.00	1.00	1.00	.	.	.
<b>13</b>	2.00	2.33	2.33	2.50	2.00	1.67	.	.	.
<b>14</b>	1.00	1.50	1.50	2.00	1.33	1.33	.	.	.
<b>15</b>	2.50	2.00	2.00	3.00	2.33	2.00	.	.	.
<b>16</b>	2.00	2.33	2.67	3.00	1.50	2.00	.	.	.
<b>17</b>	2.00	2.33	2.33	3.00	1.00	1.00	.	.	.

**Table 17-3. Missouri Alluvial Plain - Fish and Mussels**

<b>Stress</b>	RIVER	STREAM	CREEK	IMPOUND	BACK WATER	OXBOW	NAT LAKE	CON LAKE	POND
<b>1</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
<b>2</b>	2.50	2.00	2.00	2.00	2.00	1.50	1.00	1.50	1.50
<b>3</b>	2.00	2.00	2.00	2.50	3.00	3.00	3.00	3.00	3.00
<b>4</b>	3.00	3.00	3.00	2.00	3.00	2.00	1.00	1.00	1.00
<b>5</b>	1.50	2.00	2.00	1.50	2.00	1.50	3.00	1.50	1.50
<b>6</b>	2.00	2.00	2.50	2.50	3.00	3.00	1.00	1.50	1.00
<b>7</b>	3.00	3.00	3.00	2.50	3.00	3.00	1.00	1.50	1.00
<b>8</b>	3.00	3.00	3.00	3.00	2.50	3.00	2.00	2.00	1.50
<b>9</b>	3.00	2.50	2.50	2.00	2.50	2.50	3.00	2.50	1.50
<b>10</b>	2.00	1.50	1.50	1.50	1.50	1.50	2.00	1.50	1.50
<b>11</b>	1.50	1.00	1.00	1.00	1.00	1.00	2.00	1.50	1.50
<b>12</b>	1.00	1.00	1.00	1.00	1.50	1.50	1.00	1.00	1.00
<b>13</b>	3.00	3.00	3.00	2.50	2.50	2.50	3.00	2.00	2.00
<b>14</b>	3.00	3.00	3.00	2.50	2.50	2.50	2.00	1.50	1.50
<b>15</b>	3.00	3.00	3.00	3.00	3.00	3.00	2.00	1.50	1.00
<b>16</b>	3.00	3.00	3.00	3.00	2.50	2.00	2.00	2.00	2.00
<b>17</b>	3.00	3.00	3.00	3.00	3.00	3.00	1.00	1.00	1.00

**Table 17-4. Prairie to Hardwood Transition - Fish and Mussels**

Stress	RIVER	STREAM	CREEK	IMPOUND	BACK WATER	OXBOW	NAT LAKE	CON LAKE	POND
1	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
2	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.50	1.50
3	2.33	2.50	2.50	2.67	3.00	3.00	3.00	3.00	3.00
4	2.33	2.50	3.00	1.67	2.00	2.00	1.00	1.00	1.00
5	2.67	2.00	1.00	2.67	1.50	1.50	1.00	1.00	1.00
6	2.00	2.00	2.00	1.33	3.00	2.50	2.00	1.50	1.50
7	2.00	2.00	2.00	2.33	2.00	2.50	2.00	1.50	1.50
8	2.67	2.50	2.00	2.33	1.50	2.00	1.00	1.00	1.00
9	3.00	2.00	1.00	2.67	2.50	2.50	2.00	2.00	2.00
10	1.67	1.50	1.00	1.33	1.50	1.50	1.00	1.00	1.00
11	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
12	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
13	2.67	3.00	3.00	2.67	2.00	2.50	2.00	1.50	1.50
14	2.67	3.00	3.00	2.33	2.00	1.50	2.00	1.50	1.50
15	1.67	2.00	2.00	2.00	2.00	1.50	1.00	1.50	1.50
16	2.67	3.00	3.00	2.00	1.00	1.00	2.00	1.00	1.00
17	2.00	2.00	2.00	1.33	1.50	1.50	1.00	1.00	1.00

**Table 17-5. Prairie Pothole - Fish and Mussels**

Stress	RIVER	STREAM	CREEK	IMPOUND	BACK WATER	OXBOW	NAT LAKE	CON LAKE	POND
1	2.75	3.00	3.00	3.00	2.50	.	2.33	2.67	2.25
2	1.50	1.75	1.75	1.67	2.00	.	1.33	1.33	1.75
3	1.75	1.75	2.00	2.33	2.00	.	2.67	2.33	2.00
4	1.25	2.50	2.50	1.50	.	.	1.00	1.00	1.00
5	1.50	1.25	1.50	1.50	1.00	.	1.00	1.00	1.00
6	1.75	1.75	1.75	1.33	1.50	.	1.00	1.00	1.00
7	1.00	1.00	1.00	1.00	1.00	.	1.00	1.00	1.00
8	1.67	1.67	2.33	1.67	2.50	.	2.33	1.67	1.25
9	1.75	1.75	1.50	1.67	1.50	.	2.00	2.33	2.00
10	1.00	1.00	1.00	1.33	1.00	.	1.00	1.67	1.25
11	1.00	1.25	1.00	1.33	1.00	.	2.67	1.67	1.25
12	1.33	1.33	1.67	1.00	1.00	.	1.33	1.00	1.33
13	2.50	2.75	2.75	2.33	1.50	.	2.00	1.33	1.25
14	2.00	2.33	2.67	1.67	2.00	.	2.67	1.67	1.25
15	1.50	1.75	2.00	2.00	1.50	.	2.67	1.00	1.00
16	2.50	2.75	2.50	2.00	1.00	.	1.67	2.33	1.50
17	2.00	2.00	2.25	1.00	1.00	.	1.00	1.00	1.00

**Table 17-6. Tallgrass Prairie Southern Iowa Drift Plain - Fish and Mussels**

<b>Stress</b>	RIVER	STREAM	CREEK	IMPOUND	BACK WATER	OXBOW	NAT LAKE	CON LAKE	POND
<b>1</b>	2.57	2.67	2.50	3.00	2.67	3.00	3.00	2.75	2.67
<b>2</b>	1.71	1.83	1.83	1.67	2.00	2.00	1.00	1.25	1.67
<b>3</b>	2.14	2.33	2.33	2.67	3.00	3.00	3.00	2.50	2.33
<b>4</b>	1.86	2.67	2.67	1.50	3.00	2.50	1.00	1.00	1.00
<b>5</b>	1.57	1.67	1.83	2.25	2.00	1.50	3.00	1.00	1.00
<b>6</b>	1.71	1.67	1.83	1.40	3.00	3.00	1.00	1.00	1.00
<b>7</b>	1.83	1.40	1.40	1.67	2.33	2.75	1.00	1.00	1.00
<b>8</b>	2.50	2.40	2.40	2.17	2.33	2.25	2.00	2.00	1.83
<b>9</b>	2.43	2.17	2.00	2.50	3.00	2.75	3.00	2.50	1.83
<b>10</b>	1.29	1.17	1.17	1.33	1.67	1.50	2.00	1.25	1.17
<b>11</b>	1.00	1.00	1.00	1.17	1.00	1.00	2.00	1.50	1.17
<b>12</b>	1.17	1.20	1.20	1.00	1.33	1.25	1.00	1.00	1.20
<b>13</b>	2.00	2.67	2.83	2.00	2.33	2.00	3.00	1.75	1.67
<b>14</b>	2.17	2.40	2.40	2.00	2.33	1.75	2.00	1.75	1.67
<b>15</b>	1.86	1.83	1.67	2.50	2.33	2.00	2.00	1.50	1.33
<b>16</b>	2.43	2.67	2.83	2.33	2.00	1.50	2.00	2.25	1.83
<b>17</b>	2.14	2.50	2.33	2.00	2.50	2.00	1.00	1.00	1.00

**Table 17-7. Tallgrass Prairie Iowan Surface - Fish and Mussels**

<b>Stress</b>	RIVER	STREAM	CREEK	IMPOUND	BACK WATER	OXBOW	NAT LAKE	CON LAKE	POND
<b>1</b>	2.75	2.67	2.67	3.00	3.00	3.00	.	2.67	2.67
<b>2</b>	1.75	1.67	1.67	1.50	1.67	1.67	.	1.33	1.33
<b>3</b>	2.25	2.33	2.33	2.75	3.00	3.00	3.00	2.67	2.67
<b>4</b>	2.00	2.00	2.33	2.00	2.67	2.50	.	1.00	1.00
<b>5</b>	2.50	2.33	1.00	2.00	1.50	1.50	.	1.00	1.00
<b>6</b>	2.00	2.33	2.33	1.33	3.00	3.00	.	1.00	1.00
<b>7</b>	1.67	1.00	1.00	2.00	1.50	2.00	.	1.00	1.00
<b>8</b>	2.00	1.50	1.50	2.00	2.00	2.50	.	1.00	1.00
<b>9</b>	2.50	2.00	1.67	2.75	2.67	2.67	.	2.33	2.00
<b>10</b>	1.25	1.00	1.00	1.25	1.33	1.33	.	1.00	1.00
<b>11</b>	1.00	1.00	1.00	1.00	1.00	1.00	.	1.00	1.00
<b>12</b>	1.00	1.00	1.00	1.00	1.00	1.00	.	1.00	1.00
<b>13</b>	2.50	2.67	2.67	2.50	2.67	2.67	.	1.33	1.33
<b>14</b>	2.25	2.33	2.33	2.50	2.67	2.33	.	1.67	1.67
<b>15</b>	1.25	1.00	1.00	1.75	2.33	2.33	.	1.67	1.00
<b>16</b>	2.50	2.67	2.67	2.00	1.33	1.33	.	2.00	1.67
<b>17</b>	1.75	1.67	1.67	1.50	1.50	1.50	.	1.00	1.00

**Table 17-8. Tallgrass Prairie Northwest Iowa - Fish and Mussels**

STRESS	RIVER	STREAM	CREEK	IMPOUND	BACK WATER	OXBOW	NAT LAKE	CON LAKE	POND
1	2.50	2.00	2.00	2.50	2.50	2.00	3.00	2.50	2.50
2	2.50	2.50	2.50	1.50	1.50	1.00	2.00	2.00	2.00
3	1.50	1.50	1.50	2.00	2.00	3.00	3.00	2.50	2.50
4	2.50	3.00	3.00	1.00	.	.	.	.	.
5	1.00	1.50	1.50	1.00	.	.	.	1.00	1.00
6	2.00	2.00	2.50	1.00	2.00	.	.	1.00	1.00
7	2.00	1.00	1.00	1.00	1.00	3.00	1.00	1.50	1.00
8	3.00	2.00	1.00	1.50	2.50	2.00	3.00	1.00	1.00
9	3.00	2.50	2.00	2.50	2.00	2.00	3.00	2.50	2.00
10	1.50	1.50	1.50	1.00	1.00	1.00	1.00	1.00	1.00
11	1.50	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00
12	1.50	1.50	2.00	1.50	1.00	1.00	1.00	1.50	1.50
13	2.50	3.00	3.00	1.50	2.50	3.00	3.00	2.00	1.00
14	3.00	3.00	2.00	1.00	2.00	2.00	3.00	1.50	1.00
15	1.50	2.00	1.50	1.50	2.00	2.00	3.00	1.50	1.00
16	3.00	3.00	2.50	2.00	1.50	2.00	2.00	2.00	1.50
17	2.50	1.50	2.00	1.00	1.00	.	.	.	.

## 17-2. Aquatic Stresses by Region - Dragonfly and Damselfly

### Stress Key:

- |                                          |                                          |
|------------------------------------------|------------------------------------------|
| 1. = Siltation                           | 10. = Disease/pathogens                  |
| 2. = Chemical pollution                  | 11. = Excessive recreational use         |
| 3. = Accelerated eutrophication          | 12. = Climate change                     |
| 4. = Channelization                      | 13. = Loss of riparian habitat           |
| 5. = Man-made dams                       | 14. = Loss of shoreline vegetation       |
| 6. = Permanent drainage                  | 15. = Loss of submergent/emergent plants |
| 7. = Artificial water level manipulation | 16. = Shoreline/bank erosion             |
| 8. = Shoreline alteration                | 17. = Streambed degradation              |
| 9. = Invasive/non-native species         |                                          |

**Stress Level:** 1 = Low; 2 = Moderate; 3 = High

**Table 17-9. Loess Hills - Dragonfly and Damselfly**

Stress	RIVER	STREAM	CREEK	IMPOUND	BACKWTR	LAKE	POND
<b>1</b>	3.00	3.00	3.00	3.00	3.00	.	3.00
<b>2</b>	2.00	2.00	2.00	2.00	2.00	.	2.00
<b>3</b>	1.00	2.00	2.00	2.00	2.00	.	2.00
<b>4</b>	2.00	2.00	2.00	.	.	.	.
<b>5</b>	1.00	2.00	2.00	.	.	.	.
<b>6</b>	.	.	.	.	.	.	3.00
<b>7</b>	.	.	.	.	.	.	2.00
<b>8</b>	1.00	1.00	1.00	.	.	.	.
<b>9</b>	1.00	1.00	1.00	1.00	2.00	.	3.00
<b>10</b>	1.00	1.00	1.00	1.00	1.00	.	1.00
<b>11</b>	1.00	1.00	1.00	2.00	1.00	.	1.00
<b>12</b>	1.00	1.00	1.00	1.00	1.00	.	1.00
<b>13</b>	2.00	2.00	2.00	.	1.00	.	1.00
<b>14</b>	2.00	2.00	2.00	1.00	1.00	.	3.00
<b>15</b>	3.00	3.00	3.00	3.00	3.00	.	3.00
<b>16</b>	3.00	3.00	3.00	2.00	1.00	.	1.00
<b>17</b>	3.00	3.00	3.00	3.00	3.00	.	3.00

**Table 17-10. Mississippi Alluvial Plain - Dragonfly and Damselfly**

STRESS	RIVER	STREAM	CREEK	IMPOUND	BACKWTR	LAKE	POND
1	3.00	3.00	3.00	3.00	3.00	.	3.00
2	3.00	3.00	3.00	3.00	3.00	.	3.00
3	2.00	2.00	2.00	2.00	3.00	.	3.00
4	2.00	2.00	2.00	.	.	.	.
5	.	.	.	.	.	.	.
6	.	.	.	.	.	.	3.00
7	.	.	.	2.00	.	.	2.00
8	3.00	2.00	2.00	.	.	.	.
9	3.00	3.00	3.00	3.00	3.00	.	3.00
10	1.00	1.00	1.00	1.00	1.00	.	1.00
11	3.00	1.00	1.00	2.00	1.00	.	1.00
12	1.00	1.00	1.00	1.00	1.00	.	1.00
13	2.00	2.00	2.00	.	1.00	.	1.00
14	2.00	2.00	2.00	1.00	1.00	.	3.00
15	3.00	3.00	3.00	3.00	3.00	.	3.00
16	3.00	3.00	3.00	2.00	1.00	.	1.00
17	3.00	3.00	3.00	3.00	3.00	.	3.00

**Table 17-11. Missouri Alluvial Plain - Dragonfly and Damselfly**

STRESS	RIVER	STREAM	CREEK	IMPOUND	BACKWTR	LAKE	POND
1	3.00	3.00	3.00	3.00	3.00	.	3.00
2	3.00	3.00	3.00	3.00	3.00	.	3.00
3	2.00	2.00	2.00	2.00	3.00	.	3.00
4	2.00	2.00	2.00	.	.	.	.
5	.	.	.	.	.	.	.
6	.	.	.	.	.	.	3.00
7	3.00	.	.	2.00	.	.	2.00
8	3.00	2.00	2.00	.	.	.	.
9	3.00	3.00	3.00	3.00	3.00	.	3.00
10	1.00	1.00	1.00	1.00	1.00	.	1.00
11	3.00	1.00	1.00	2.00	2.00	.	1.00
12	1.00	1.00	1.00	1.00	1.00	.	1.00
13	2.00	2.00	2.00	.	1.00	.	1.00
14	2.00	2.00	2.00	1.00	1.00	.	3.00
15	3.00	3.00	3.00	3.00	3.00	.	3.00
16	3.00	3.00	3.00	2.00	1.00	.	1.00
17	3.00	3.00	3.00	3.00	3.00	.	3.00

**Table 17-12. Prairie to Hardwood Transition - Dragonfly and Damselfly**

<b>Stress</b>	RIVER	STREAM	CREEK	IMPOUND	BACKWTR	LAKE	POND
<b>1</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00
<b>2</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00
<b>3</b>	1.00	2.00	2.00	2.00	2.00	2.00	2.00
<b>4</b>	1.00	1.00	1.00	.	.	.	.
<b>5</b>	.	1.00	1.00	.	.	.	.
<b>6</b>	.	.	.	.	.	.	3.00
<b>7</b>	.	.	.	1.00	.	.	2.00
<b>8</b>	1.00	1.00	1.00	.	.	3.00	.
<b>9</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00
<b>10</b>	1.00	1.00	1.00	1.00	1.00	1.00	1.00
<b>11</b>	3.00	3.00	2.00	3.00	1.00	3.00	1.00
<b>12</b>	1.00	1.00	1.00	1.00	1.00	1.00	1.00
<b>13</b>	2.00	2.00	2.00	1.00	1.00	1.00	1.00
<b>14</b>	1.00	1.00	1.00	1.00	1.00	2.00	3.00
<b>15</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00
<b>16</b>	3.00	3.00	3.00	2.00	1.00	2.00	1.00
<b>17</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00

**Table 17-13. Prairie Pothole - Dragonfly and Damselfly**

<b>Stress</b>	RIVER	STREAM	CREEK	IMPOUND	BACKWTR	LAKE	POND
<b>1</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00
<b>2</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00
<b>3</b>	1.00	2.00	2.00	2.00	2.00	2.00	2.00
<b>4</b>	3.00	3.00	3.00	.	.	.	.
<b>5</b>	.	1.00	1.00	.	.	.	.
<b>6</b>	.	.	.	.	.	.	3.00
<b>7</b>	.	.	.	1.00	.	.	2.00
<b>8</b>	3.00	3.00	3.00	.	.	3.00	.
<b>9</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00
<b>10</b>	1.00	1.00	1.00	1.00	1.00	1.00	1.00
<b>11</b>	3.00	1.00	1.00	3.00	1.00	3.00	1.00
<b>12</b>	1.00	1.00	1.00	1.00	1.00	1.00	1.00
<b>13</b>	3.00	3.00	3.00	2.00	3.00	2.00	1.00
<b>14</b>	3.00	3.00	3.00	2.00	2.00	2.00	3.00
<b>15</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00
<b>16</b>	3.00	3.00	3.00	2.00	1.00	2.00	1.00
<b>17</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00

**Table 17-14. Tallgrass Prairie Iowan Surface - Dragonfly and Damselfly**

STRESS	RIVER	STREAM	CREEK	IMPOUND	BACKWTR	LAKE	POND
1	3.00	3.00	3.00	3.00	3.00	3.00	3.00
2	3.00	3.00	3.00	3.00	3.00	3.00	3.00
3	1.00	2.00	2.00	2.00	2.00	2.00	2.00
4	2.00	2.00	2.00	.	.	.	.
5	.	1.00	1.00	.	.	.	.
6	.	.	.	.	.	.	3.00
7	.	.	.	1.00	.	.	2.00
8	1.00	1.00	1.00	.	.	3.00	.
9	3.00	3.00	3.00	3.00	3.00	3.00	3.00
10	1.00	1.00	1.00	1.00	1.00	1.00	1.00
11	1.00	1.00	1.00	3.00	1.00	3.00	1.00
12	1.00	1.00	1.00	1.00	1.00	1.00	1.00
13	2.00	2.00	2.00	1.00	1.00	1.00	1.00
14	2.00	2.00	2.00	1.00	1.00	3.00	3.00
15	3.00	3.00	3.00	3.00	3.00	3.00	3.00
16	3.00	3.00	3.00	2.00	1.00	2.00	1.00
17	3.00	3.00	3.00	3.00	3.00	3.00	3.00

**Table 17-15. Tallgrass Prairie Southern Iowa Drift Plain - Dragonfly and Damselfly**

STRESS	RIVER	STREAM	CREEK	IMPOUND	BACKWTR	LAKE	POND
1	3.00	3.00	3.00	3.00	3.00	3.00	3.00
2	3.00	3.00	3.00	3.00	3.00	3.00	3.00
3	1.00	2.00	2.00	2.00	2.00	2.00	2.00
4	2.00	2.00	2.00	.	.	.	.
5	1.00	2.00	2.00	.	.	.	.
6	.	.	.	.	.	.	3.00
7	.	.	.	2.00	.	.	2.00
8	1.00	1.00	1.00	.	.	3.00	.
9	3.00	3.00	3.00	3.00	3.00	3.00	3.00
10	1.00	1.00	1.00	1.00	1.00	1.00	1.00
11	1.00	1.00	1.00	3.00	1.00	3.00	1.00
12	1.00	1.00	1.00	1.00	1.00	1.00	1.00
13	2.00	2.00	2.00	1.00	1.00	1.00	1.00
14	2.00	2.00	2.00	1.00	1.00	3.00	3.00
15	3.00	3.00	3.00	3.00	3.00	3.00	3.00
16	3.00	3.00	3.00	2.00	1.00	2.00	1.00
17	3.00	3.00	3.00	3.00	3.00	3.00	3.00

**Table 17-16. Tallgrass Prairie Northwest Iowa Plains - Dragonfly and Damselfly**

STRESS	RIVER	STREAM	CREEK	IMPOUND	BACKWTR	LAKE	POND
1	3.00	3.00	3.00	3.00	3.00	3.00	3.00
2	3.00	3.00	3.00	3.00	3.00	3.00	3.00
3	1.00	2.00	2.00	1.00	2.00	2.00	2.00
4	2.00	2.00	2.00	.	.	.	.
5	.	1.00	1.00	.	.	.	.
6	.	.	.	.	.	.	3.00
7	.	.	.	1.00	.	.	2.00
8	1.00	1.00	1.00	.	.	3.00	.
9	3.00	3.00	3.00	3.00	3.00	3.00	3.00
10	1.00	1.00	1.00	1.00	1.00	1.00	1.00
11	1.00	1.00	1.00	3.00	1.00	3.00	1.00
12	1.00	1.00	1.00	1.00	1.00	1.00	1.00
13	2.00	2.00	2.00	1.00	1.00	1.00	1.00
14	2.00	2.00	2.00	1.00	1.00	3.00	3.00
15	3.00	3.00	3.00	3.00	3.00	3.00	3.00
16	3.00	3.00	3.00	2.00	1.00	2.00	1.00
17	3.00	3.00	3.00	3.00	3.00	3.00	3.00