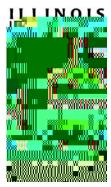
State of Illinois Rod R. Blagojevich, Governor

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Illinois Department of Natural Resources Office of Realty & Environmental Planning Office of Resource Conservation Private Lands Task Group Illinois Endangered Species Protection Board Illinois Environmental Protection Agency Illinois Farm Bureau Illinois Federation for Outdoor Resources Illinois Forestry Development Council Illinois-Indiana Sea Grant Program Illinois Nature Preserves Commission Illinois State Museum Illinois State University Department of Biological Sciences International Association of Fish & Wildlife Agencies Izaak Walton League Illinois Division Champaign County Chapter Jo Daviess Conservation Foundation Kankakee County Soil & Water **Conservation District** Lake County Forest Preserve District Lincoln Park Zoo Little John Conservation Club Macon County Conservation District McHenry County Conservation District

National Wild Turkey Federation Illinois Chapter Northern Illinois Anglers Association Northern Illinois Conservation Club Organization of Wildlife Planners Partners in Flight Peggy Notebaert Nature Museum Pheasants Forever Prairie Rivers Network Quail Unlimited Rocky Mountain Elk Foundation Sand Bluff Bird Observatory Shawnee Audubon Society Sierra Club Illinois Chapter Northwest Cook County Group Shawnee Group Southern Illinois University **Cooperative Wildlife Research** Laboratory Southwestern Illinois RC & D The Natural Lands Institute The Nature Conservancy The Ornithological Council The Wildlife Society Illinois Chapter Tri-County Regional Planning Commission Trout Unlimited Illinois Council Union County Farm Bureau United Bowhunters of Illinois

ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY
i. Partners in Plan/Strategy Development

Version 1.0

University of Illinois at Urbana-Champaign Department of Natural Resources & **Environmental Sciences** Urbana Park District Upper Des Plaines River Ecosystem Partnership Upper Mississippi River and Great Lakes Joint Venture US Army Corps of Engineers Rock Island District St. Louis District US Department of Agriculture Farm Service Agency Midewin National Tallgrass Prairie Natural Resources Conservation Service **Shawnee National Forest**

US Fish & Wildlife Service

Region 3 Development Assistance

Team

Chicago FieldiipxGce

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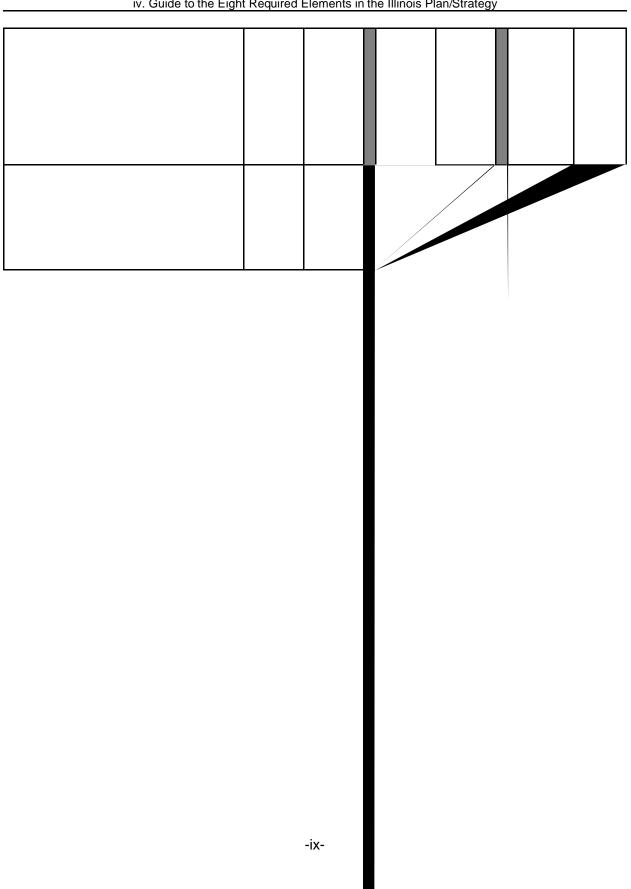
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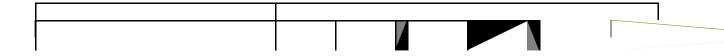
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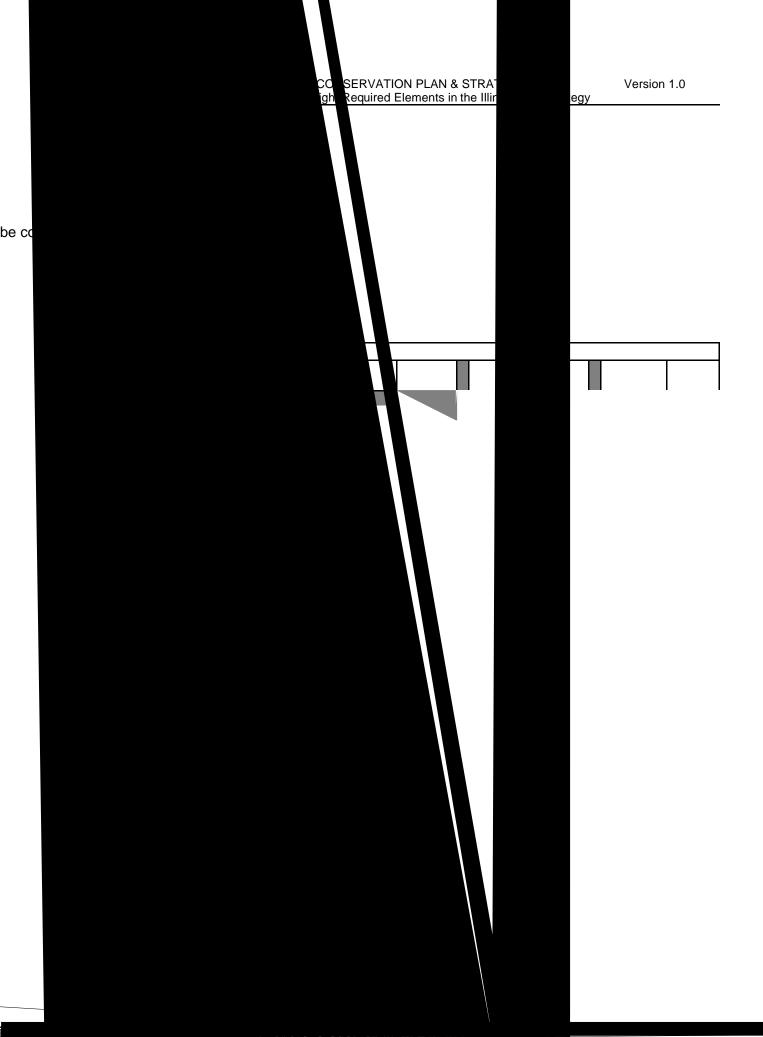
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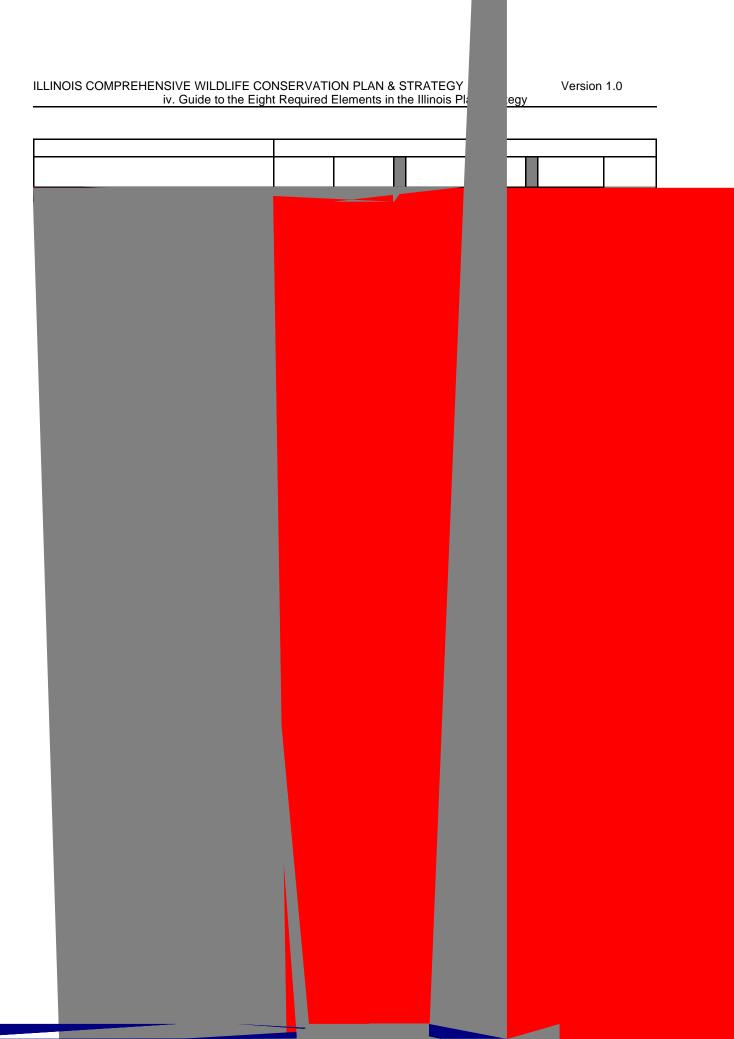


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Sect. IV							
accounts							
	See also Sect. IV	See also 119-246 Sect. IV	See also 119-246 III				





In development, review and revision of the Illinois plan/strategy, elements 7 and 8 were broadly considered in combination, rather than separately, for practical reasons. In Illinois, private organizations control significant land and water resources, and administer programs that affect species in greatest need of conservation and their habitats, and thus fit the spirit of element 7 even though they are not Federal, State, or local agencies. These groups also represent very important segments of the public, in particular those who most highly value wildlife and habitat resources for recreational and economic reasons. Involving nongovernmental organizatio comment for 60 days in the spring of 2005. Both documents were posted on the website (URL above), and provided free-of-charge, upon request, in hard copy and compact disc formats.

ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY	
Index to the Illinois Plan & Strategy	

Section

Page

B. Current Status of Illinois Wildlife & Habitat Resources	30
C. Desired Condition for Illinois Wildlife & Habitat Resources	40
D. Challenges for Illinois Wildlife & Habitat Resources	52
E. Priority Actions for Conserving Illinois Wildlife & Habitat Resources	59
Streams Campaign	60
Forests Campaign	66
Farmland & Prairies Campaign	71
Wetlands Campaign	77
Invasive Species Campaign	81
land & Water Stewardship Campaign	84
Green Cities Campaign	88
Priority Locations for Conserving Illinois' Species in Greatest Need of	
Conservation	92
F. Research, Monitoring & Evaluation	98
IV. NATURAL DIVISION ASSESSMENTS	119
A. Coastal Plain	121
B. Grand Prairie	130
C. Illinoi	

ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY Index to the Illinois Plan & Strategy

Section	Page
V. PLAN REVIEW & REVISION	247
VI. SUMMARY & BEGINNING IMPLEMENTATION	248
VII. REFERENCES & RESOURCES	250
VIII. TABLES	258
Table 1. Executive Staff in the Illinois Department of Natural Resources Officeof Resource Conservation during the planning process	258
Table 2. Composition of the Illinois Comprehensive Wildlife Conservation Plan/ Strategy Steering Committee	259
Table 3. Plans used to develop the Illinois Comprehensive Wildlife Conservation Plan/Strategy	260
Table 4. Criteria for Selecting Illinois' Species in Greatest Need of Conservation	262
Table 5. Habitat categories and definitions used in the Illinois Comprehensive Wildlife Conservation Plan/Strategy	263
Table 6. Stresses considered as potentially having adverse effects on Illinois' Species in Greatest Need of Conservation	266
Table 7. Step-down of statewide habitat objectives to the natural division level	268
Table 8. Conservation Opportunity Areas	270

LLINOIS COMPREHENSI	/E WILDLIFE CONSERVATION PLAN & STRATEGY Index to the Illinois Plan & Strategy	Version 1.0
Section		Page
Table 9. Expec	ted updates to the Comprehensive Wildlife Conservation	ation Plan
& Strate	egy, and their relative frequency	272
Table 10. Time	line and activities for 10-year revision to the Illinois C	Comprehensive
Wildlife	Conservation Plan & Strategy	274
X. FIGURES		275
Fig. 1 The Nat	ure Conservancy's Ecoregions in Illinois	275
Fig. 2 The No.	th American Bird Conservation Initiative's Bird Cons	ervation
Region	s in Illinois	276
Fig. 3 The Nat	ural Divisions of Illinois	277
Fig 1 The info	rmation on distribution, abundance, habitat associat	ion and

Fig. 4 The information on distribution, abundance, habitat association, and status avai.d4 Tw(staand 4v 0.20000 cm0a6000 0.00000 1.00001(tive's B)Tj35.40Tvt rgBTnc1

Section	Page
Fig. 7 The information on distribution, abundance, habitat association, natural history and status available for the crayfish frog in Phillips et al. (1999). Similar accounts in this source are available for all of Illinois' Amphibians and Reptiles in Greatest Need of Conservation.	281
Fig. 8 The information on distribution, abundance, habitat association, and status available for the bobolink in Kleen et al. (2004). Similar accounts in this source are available for all of Illinois' Birds in Greatest Need of Conservation that nest within Illinois.	on 282
Fig. 9 The information on distribution of the least weasel from the Illinois GAP Analysis Project (http://www.inhs.uiuc.edu/cwe/gap/). Similar maps from this project are available for all of Illinois' Amphibians, Reptiles, Birds and Mammals in Greatest Need of Conservation.	285
Fig. 10 The Land Cover of Illinois, based on 1999-2000 imagery data (Luman et al. 2004)	286
Fig. 11 Priority conservation areas identified by other conservation plans and other known resource locations.	287
Fig. 12 Ranking of upland forest habitat for Illinois' Species in Greatest Need of Conservation, based on forest size, diversity of Species in Greatest Need of Conservation predicted from GAP Analysis, known locations of endangered species, and Illinois Natural Areas Inventory forest communities.	288
Fig. 13 Ranking of prairie areas for Illinois' Species in Greatest Need of Conserva based on diversity of Species in Greatest Need of Conservation predicted from GAP Analysis, known locations of endangered species, railroad prairie remnants and Illinois Natural Areas Inventory prairie communities.	

Section

Page

- Fig. 14 Ranking of forested wetland habitat (bottomland forest and swamp) for Illinois' Species in Greatest Need of Conservation, based on wetland size, diversity of Species in Greatest Need of Conservation predicted from GAP Analysis, known locations of endangered species, and Illinois Natural Areas Inventory forested wetland communities.
- Fig. 15 Ranking of emergent and shallow water wetland habitat for Illinois' Species in Greatest Need of Conservation, based on wetland size, diversity of Species in Greatest Need of Conservation predicted from GAP Analysis, known locations of endangered species, and Illin@j&g(st \$pece)Tej31a0@00in0.000

I. INTRODUCTION

The Illinois Comprehensive Wildlife Conservation Plan/Strategy (or "Plan/Strategy") has been developed in cooperation with many agencies, organizations and individuals. As the State of Illinois' primary natural resources conservation agency, the Illinois Department of Natural Resources accepted responsibility for developing and implementing, by 1 October 2005, a comprehensive wildlife conservation plan/strategy as a condition of receiving Wildlife Conservation and Restoration Program and State Wildlife Grant Program funding.

Within the Illinois Department of Natural Resources, The Office of Resource Conservation is the unit directly charged with conservation of habitat, fisheries and wildlife. Comprised of the Divisions of Habitat Resources, Fisheries, Wildlife Resources and the Watershed Protection and Program Support Sections, the Office of Resource Conservation's vision, and primary challenges are:

<u>Vision</u>

Consistent with science-based natural resource management principles, to increase the amount and quality of habitat available to support Illinois' native plant and animal species and other game species; promote their population viability, and regulate the recreational, commercial, and scientific utilization of those species; to ensure their long-term persistence and abundance and provide for their appreciation and enjoyment by future generations of Illinoisans while also expanding the frontiers of natural resource management.

<u>Challenges</u>

1. Increase the percentage of Illinois' lands which are not plowed, paved, drained, or landscaped.

2. Increase the quality of Illinois' natural lands as measured by their ability to support robust (abundance and richness) communities of native plants and animals.

3. Improve the capacities of Illinois' agricultural and urban lands to support populations

of native fish and wildlife. Increase

I. A. The Need for a Comprehensive Wildlife Conservation Plan/Strategy

The Illinois landscape has changed dramatically since the time of European settlement with natural lands being manipulated and developed. Illinois has lost over 90% of its original wetlands, 99.99% of its original prairie, and currently has 424 state and 24 federally listed threatened and endangered species within it's boundaries. Over the past 30 years, populations of many wildlife species have fallen dramatically, and over the past decade, expenditures for the recovery of federally endangered species have increased more than 600%.

To prevent the need for listing more species, reduce the need for costly recovery efforts, and address a chronic shortage of funding for wildlife conservation efforts, the U. S. Congress has responded with a number of federaased 00 **vertyæ/fofast**en dramatical

I. B. Required Elements of a Comprehensive Wildlife Conservation Plan/Stratgy

Congress has identified eight required elements for each state's Comprehensive Wildlife Conservation Plan/Strategy through the Wildlife Conservation & Restoration Program and State and Wildlife Grants Program legislation. Plans must identify and provide for:

(i) Information on the distribution and abundance of species of wildlife, including low and Acciming populations as the State fish and wildlife agency deems appropriate, that are indicativ

The Illinois Department of Natural Resources will

I. D. Assumptions

Implicit in the Plan/Stra

II. APPROACH & METHODS

II. A. Organizational Structure

To develop the Plan/Strategy, the Illinois Natural History Survey, a scientific branch of the Illinois Department of Natural Resources, hired a Planning Coordinator to work closely with the Department of Natural Resources's Office of Resource Conservation. Direct oversight and guidance of the Planning Coordinator was provided by Office of Resource Conservation Executive Staff–division chiefs from Fisheries, Habitat Resources, Program Support, Watershed Protection, and Wildlife Resources, and the Office of Resource Conservation Office Director (Table 1).

A steering committee was formed, chaired by the Planning Coordinator, composed of Department of Natural Resources staff from the Offices of Resource Conservation, Realty and Environmental Planning, and Land Management and Education, and representatives from four external not-for-profit partner organizations (Ducks Unlimited, Illinois Audubon Society, National Wild Turkey Federation, and The Nature Conservancy; Table 2). The Office of Resource Conservation invited these groups to serve on the steering committee, based upon several factors, including: (1) a statewide presence of the groups, (2) a habitat-conservation mission, (3) a balance of traditionally sporting and environmentalU communicating with partner agencies and organizations, and facilitated public participation in the planning process through outreach to their constituents and broader audiences. The steering committee met on six (6) occasions between February 2003 and May 2005, plus eight (8) workshops for Department of Natural Resources staff and partner organizations in September and October of 2004 (see below). It is anticipated that the steering committee will be modified and expanded into a group providing broad oversight and coordination to implementation, evaluation and revision of the Plan/Strategy.

II. B. Public & Partner Involvement

A concerted effort was made to inform and involve the public throughout the planning process. D.J. Cases & Associates, with the Plan Coordinator, developed a strategy for public participation that outlined the expected audiences, public involvement objectives for each audience, and strategies for reaching those objectives (DJ Case & Assoc. 2004).

Print media - An article announcing the planning process appeared in the First Quarter 2004 issue of the newsletter "DNR Update," and provided contact information for the Planning Coordinator and a link to the Plan/Strategy website. The Spring/Summer issue of "The Conservation Communicator" (a Department of Natural Resources newsletter for the C2000 Ecosystems Program, EcoWatch Network, Critical Trends Assessment Program, and Illinois Natural Resources Information Network), discussed the planning process, introduced the steering committee, presented the eight 'required elements,' and provided a link to the Plan/Strategy website. In the November 2004 issue of *Outdoor Illinois* (the Department of Natural Resources' primary publication), the **Herristy Control of Strategy definition of the Plan/Strategy**, and encouraged readers to get involved by commenting on the Plan/Strategy and supporting organizations that develop and implement conservation TreoDm 0 **Tid(FaleRep**e4g org**dai)/TwtthesPtigt**#2#sas made 4nvo

II. D. Identifying Priorities, Problems & Actions

Identification of Illinois' Species Greatest Need of Conservation - In determining Illinois' Species in Greatest Need of Conservation, the state considered the description provided by Congress in required element 1, "...including low and declining populations..." and "...indicative of the diversity and health of the state's wildlife." From this, eight criteria were adopted for selecting the Species in Greatest Need of Conservation (Table 4). These criteria reflect the concepts of abundance (rarity), population trend, vulnerability, responsibility, usefulness as indicators, and lack of information. When determining the Species in Greatest Need of Conservation, scientists considered whether these eight criteria applied to a species at any life stage or in any portion of its range (e.g., many migratory birds are affected by habitat loss or degradation on wintering or breeding grounds outside of Illinois, but still considered Species in Greatest Need of Conservation).

The plan coordinator developed initial lists of Species in Greatest Need of Conservation for all taxonomic groups based

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Examination of Stresses to Illinois' Species and Habitats in Greatest Need of Conservation - Based on published literature and discussions with biologists, potential stresses to the Specij28nBased on

human resources are available, and where conservation is motivated by an agreed-upon conservation philosophy and set of objectives (Table 8, see also Sect. IV). In developing the Plan/Strategy, selection of Conservation Opportunity Areas was approached from a natural resources and human dimensions perspective.

To identify the most important locations for the Species in Greatest Need of Conservation, habitats were ranked in the categories of upland forest, grassland, wooded wetlands (swamp and floodplain forest), emergent/shallow water wetlands, and streams. For each of these habitat types (except streams), a Geographic Information System was used to rank the entire state on the basis of habitat patch size (larger patches ranked higher), designation as Illinois Natural Areas Inventory sites (from Biotics 4 database), known presence of one or more threatened or endangered wildlife species (since 1995; Biotics 4 database), and diversity of vertebrate Species in Greatest Need of Conservation associated with each habitat type, based upon modeled distribution maps (Illinois GAP Analysis Project). As the Critical Trends Assessment Program indicated, land cover representation of grassland does not reflect grassland functioning as wildlife habitat, so patch size was excluded as a ranking factor for grassland. Streams were ranked by their designation as Illinois Natural Areas Inventory sites (from Biotics 4 database), known presence of one or more threatened or endangered wildlife species (since 1995; Biotics 4 database), and diversity of fish and freshwater mussel Species in Greatest Need of Conservation known to occur in the stream, based upon Department of Natural Resources Fisheries basin surveys, ongoing mussel surveys, and the Illinois Natural History Survey mussel database.

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Participants in planning workshops helped identify Conservation Opportunity Areas by placing five markers per participant on maps of the State of Illinois. To assist in their decisionmaking, the habitat maps described above and maps of previously identified priority areas were made avail **fitebol** Td(divpeciesoc59998 Tda)Tj15.373.w Td(iden)Tj23hh-sma Td(maps of p)Turr8.129

II. E. Monitoring & Adaptive Management

The Plan/Strategy is designed to be used as a scientific process. Based on existing conditions (assumed to be changing) and existing knowledge (assumed to be imperfect and incomplete), various conservation actions have been hypothesized to address stresses affecting species and habitats, resulting in predicted outcomes or objectives. Maximizing conservation benefits and increasing efficiency requires an iterative process of planning (setting priorities and goals, selecting strategies), implementation (carrying out conservation actions, such as habitat restoration), and evaluation (monitoring results, measuring effectiveness).

Existing monitoring programs - On-going protocols for assessing the condition of wildlife and habitat resources at a statewide scale were considered for use in evaluating implementation of the Plan/Strategy. Biologists familiar with each program described the purpose of the monitoring effort, the parameters that are measured, the geographic scale of monitoring, and the history of the program (e.g., how long has data been collected and analyzed). Some of these programs have been recently evaluated for robustness of design, inference strength, usefulness/duplicity with other programs, and cost functions. Those findings have been summarized. Other programs are in need of evaluation to determine if it needs continuation, modification, and/or augmentation. Similarly, at regional and local scales, biologists were asked to identify on-going monitoring programs that can assess progress towards regional and local wildlife and habitat objectives. Few of these programs have been critically evaluated.

Augmenting monitoring programs - Using the methods described above to describe the status, stresses, and actions needed to conserve wildlife and habitats, a number of information gaps were identified for taxonomic groups, guilds, and habitat types (see Appendix II). Further, as conservation actions were related to stresses alleviated and species and habitats benefitted, performance indicators were identified. Not all performance indicators are currently measured.

Having identified these monitoring gaps, several programs have been proposed and can be implemented in the short-term if resources (especially trained personnel) are available. In

III. STATEWIDE OVERVIEW

III. A. Ecological Divisions of Illinois

Although there is less than 1,000 feet of elevation difference across the nearly 58,000 square miles of Illinois from 1,235-foot Charles Mound in northwestern Illinois, to 279 feet on the Mississippi River in southern Illinois, the state spans nearly 400 miles from north to south. Across that range of latitude, Illinois hosts a tremendous biological diversity. A number of classification schemes have been developed to help characterize areas with geological, climatological, and ecological similarities rather than by geopolitical borders. While these classifications, as described below, share many common features, the Illinois Natural Divisions classification is the most appropriate for recognizing disti**soutpertioner in** inoiearlysouthe5Tj62.5200 0.0000D

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ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY III. Statewide Overview, A. Ecological Divisions The Upper Mississippi River and Illinois River Bottomlands Natural Division of western and west-central Illinois encompasses the river and floodplains of the Mississippi River above the confluence with the Missouri River, and of the bottomlands and backwater lakes of the Illinois River and its major tributaries south of LaSalle. Much of the division was originally forested but prairie and marsh occurred. Agriculture is the primary land use in the floodplains today. The big rivers, their fish and mussel communities, and the backwater lakes of the Illinois River are distinctive.

The Illinois River and Mississippi River Sand Areas Natural Division are several discrete patches of sand areas and dunes in the bottomlands of the Illinois and Mississippi rivers, and 'perched dunes' atop bluffs near Hanover in JoDaviess County. Several relict western amphibians and reptiles are known only from these sand areas, including the plains hognose snake, Illinois mud turtle, and Illinois choru

heavily forested of Illinois' natural divisions. Like the Northeastern Morainal Natural Division, the Shawnee Hills hosts outstanding biodiversity.

The Coastal Plain Natural Division of extreme southern Illinois is a region of swampy forested bottomlands and low clay and gravel hills that is the northernmost extension of the Gulf of Mexico Plain Province of North America. Baldcypress-tupelo swamps are a unique feature of the natural division, as are many southern animals such as bird-voiced treefrog and cottonmouth. The floodplain at the confluence of the Mississippi and Ohio rivers and Cache and Ohio rivers host rich bottomland forests, while the "Cretaceous Hills" section is a steep to rolling area of unconsolidated sand, gravel and clay hosting Cretaceous period fossil beds.

Illinois Administrative Regions

The Illinois Department of Natural Resources divides the state into five administrative regions for fisheries, wildlife, forestry, and restoration ecologists. These regions are further divided into a total of 35 districts. It is generally at the district level that field staff interact with local landowners on private lands projects. The Illinois Nature Preserves Commission has field

ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY III. Statewide Overview, B. Current Status (see Figure 7 for an example, the crayfish frog, *Rana areolata*). The Illinois Breeding Bird Atlas (Kleen et al. 2004) documents the distribution and abundance of all bird species nesting in Illinois, and contains recent data from the North American Breeding Bird Survey (Sauer et al. 2004) (see Figure 8 for an example, the bobolink). The Illinois GAP Analysis Project created expected distribution maps for all terrestrial vertebrates (see Figure 9 for a mammalian example, the least weasel). Accounts for all of Illinois' Species in Greatest Need of Conservation from the above sources are provided on the accompanying disk, "Information on the Distribution and Abundanc00 0.0 (on from the)Tjies

Reptiles - Twenty-three of Illinois' 60 reptiles (37%) were selected as Species in Greatest Need of Conservation, 16 are threatened or endangered, and 1 has a Global Conservation Rank of G3. Like the fishes and amphibians, the reptilian Species in Greatest Need of Conservation list includes edge-of-range and poorly-known species. Diversity of reptiles is highest in southern Illinois. Species in Greatest Need of Conservation include prairie, savanna, marsh, swamp, and bluff species. The eastern massasauga is a candidate for federal protection under the Endangered Species Act.

Birds - Eighty-three bird species, about 28% of the state's avian diversity, met criteria as Species in Greatest Need of Conservation, 32 of which are threatened or endangered, and 1 species has a Global Conservation Rank of each G1 and G3. Relative to other groups, bird populations are the best-monitored. Many of the birds in greatest need of conservation are wetland, grassland, and long-distance migratory species, including king rails, greater prairiechickens, American golden plovers, and cerulean warblers.

Mammals - Twenty of Illinois' 59 mammals (34%) were identified as Species in Greatest Need of Conservation. Nine of these species are threatened or endangered, and four have a Global Conservation rank of G2 or G3. More information is needed on the status of some nocturnal or cryptic species. Bobcats and river otter are increasing and no longer listed as threatened species in Illinois. Reports of cougars, wolves and armadillos have also become more frequent. Black bears occur in southern Indiana, eastern Kentucky and central Wisconsin, and may be reported from Illinois. Elk are native to Illinois but were extirpated in the early 1800s. A study in the Shawnee Hills natural division indicated reintroduction was biologically feasible, though agricultural conflicts were likely (Buhnerkempe and Higgins 1997).

Harvested Wildlife Resources

Sport fishes and game animals are rRNd, Tj86.1600 0.0000 TD(ois. Elk are)Tj60.9600 0.0000 TD(nati

ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY III. Statewide Overview, B. C *Panfish* - Panfish are a group of highly sought-after, small sport fish, including bluegill and crappies. Panfish are managed via predator introduction (bass) and by angler harvest and creel limits. Current supply and demand are nearly equal, though demand exceeds supply in high-quality public fisheries.

White Bass, Striped Bass & Hybrids - These popular sportfish are available in many impoundments and streams. Demand exceeds supply.

Catfish - Channel, flathead, and blue catfish make up the majority of Illinois catfish. Natural reproduction is common in larger lakes and streams. Channel catfish do not reproduce well in smaller lakes, thus they are commonly stocked to produce quality fisheries. Current supply and demand are nearly equal.

Commercial fish - Commercial fish include buffaloes, carp, carpsuckers, and freshwater drum (and catfish as well). Asian carp have become a commercial resource, a tool that may aid in control of these invasive species. Supply far exceeds the demand for these fish generally found in abundance in Illinois' largest streams. Commercial harvest values for these fish in 2002 was estimated at nearly \$1.7 million.

<u>Herptiles</u>

Bullfrogs and common snapping turtles are the species most commonly harvested. Both species are common statewide in streams, impoundments, lakes, and ponds, and populations apparently are stable (Phillips et al. 1999).

<u>Birds</u>

Waterfowl - The Canada goose harvest is comprised primarily of birds from Illinois' giant Canada goose population and the migratory Mississippi Valley Population. Changing weather patterns and land uses are implicated in changing wintering distribution for geese in Illinois. Resident Canada geese are a local nuisance. Snow goose populations are at higher than desired levels and these birds have become common migrants in Illinois. Mallard, wood duck, gadwall, and green-winged teal are the species most commonly harvested in Illinois, and

crop/property damage and adverse effects of heavy browsing on natural areas are persistent issues, and herd size somewhat exceeds desired levels.

Rabbits & squirrels - Although cottontail and squirrel populations have been stable in recent years in Illinois, the harvest is shrinking as fewer hunters pursue them. Swamp rabbits are localized and uncommon in floodplain forests in southern Illinois.

Furbearers - Many furbearers are common to abundant in Illinois and harvest is limited by trapper/hunter effort rather than population size. Badgers are widespread. Abundance of red foxes may have decreased in recent decades due to interactions with coyotes and limited availability of grassland habitat. Declines in the gray fox population are suspected with unknown causes. While not legal to harvest at present, conservation efforts have recovered the bobcat and river otter in Illinois. Reports of otter damage to fisheries (particularly in small impoundments) are increas

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habitat in the plan/strategy unless otherwise specified (Table 5). About 14,000 acres (<0.3%) are high quality communities such as floodplain forest, upland forest, sand forest and flatwoods. Most of the present-day forests have been fragmented into small parcels of land, and the abundance of species that require large forested tracts to survive have declined. Small fragmented parcels are also more susceptible to intrusion by invasive species of plants and animals, such as garlic mustard and brown-headed cowbirds. Available evidence suggests no forests in Illinois are of sufficient size to reliably function as "sources" (i.e., recruitment exceeds mortality) for Neotropical migratory birds (Robinson et al. 1995), though small woodlots and riparian forests are important stopover habitat during migration. Upland forests were predominantly oak-hickory, and bottomland forests were predominantly ash-elm-maple. Because of historic grazing and poor forestry practices, many forests have lost valuable disturbance-sensitive plants, are dominated by introduced or invasive species, and contain undesirable canopy tree species. Several possible factors, including a decrease in timber harvest and fire suppression, are contributing to increases in sugar maples and other mesophytic trees in many oak-dominated forests. Between 1962 and 1985 sugar maples increased 41-fold while oaks were down 14%. In the shrub layer, bush honeysuckle, buckthorn (*Rhanmus* sp.) and other invasive species average more than 70% of all shrub stems counted.

Open Woodland/Savanna/Barren - Open woodlands, savannas, and barrens are communities with tree canopy cover intermediate of forest and prairie, and exist within a matrix of environmental factors related to fire, topography and soil type. In these distinct plant communities, slender glass lizard and red-headed woodpecker are among the characteristic wildlife. The extent and condition of savan(le oa)400 cm0,r maple0.0000 oyw0 TD(T1.00000 0.00000 0.000sat

Savanna remnants, associated with forests, prairie remnants and primary communities likely exist and can be prioritized for restoration and management.

Grassland - Native prairie covered 21 million acres of Illinois in the early 19th century. Less than 2,600 acres (<0.01%) of high-quality prairie remain. Although native prairie has been destroyed, 19.2% of the state is categorized as "grassland" habitat (Figure 10). More than 780,000 grassland acres (17%) are in temporary agricultural programs. Most grasslands have been plowed, heavily grazed, or frequently mowed. Few grasslands are large enough and unfragmented by woody vegetation and human structures to support area-sensitive species. Often dominated by planted introduced grasses, especially fescue, these grasslands do not resemble native prairies. Of the terrestrial habitats, grasslands are the most heavily dominated by introduced species. Most of Illinois' grasslands are planted in monocultures or are otherwise highly manicured. Far less than the 19.2% of the state's land cover that is classified as

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Shrub/successional - The extent and condition of shrub/successional habitats in Illinois

is poorly understood, though 1999-2000 land cover reported 615,000 acres of 'partial

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ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY

Fishes -

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6. Breeding population of Partners In Flight priority grassland species including upland sandpiper, loggerhead shrike, bobolink and grasshopper sparrow have doubled.

7. Use of grassland habitats by migratory grassland sparrows, bobolinks, and meadowlarks has increased by 20%.

8. The recovery of the recently-delisted bobcat and river otter are monitored.

Harvested Wildlife Resources

Only species or groups of species for which explicit population, harvest or habitat objectives have been established are discussed in this section. It is expected that improved habitat conditions will result in increased populations (that could support increased harvests) of sport fishes and game animals not specifi 3. Increase the supply of coolwater fish (walleye, sauger and hybrid striped bass) by 108,000 days in reservoirs.

Black bass -

January) on important waterfowl areas in the Illinois and Mississippi River valleys (an increase of 38.9 million duck use-days, or 147%). Assuming average weather conditions and continental duck populations at North American Waterfowl Management Plan levels, harvest could be 500,000 birds annually.

2. Manage migratory waterfowl in the Wabash River corridor.

3. Support breeding duck densities of 5.0 pairs/sq. km or annual breeding mallard population of 20,000 in the Glacial Lakes region of northeastern Illinois.

4. Maintain statewide nesting populations of wood ducks and other species.

5. Achieve and maintain 1991 through 1995 levels of migrant Canada goose populations as measured by U.S. Fish and Wildlife Service Midwinter Waterfowl Survey (an increase of 175,000 birds). With migratory and resident goose populations at target levels, harvest could be 150,000 geese annually.

6. Facilitate giant Canada goose conflict mitigation in areas where human-goose conflicts such as property damage, risks to human health/safety, and damage to crops exist.

Wild turkey -

1. Increase the current population of wild turkeys in Illinois by 20%. Increase the harvest of wild turkeys by 20%, to approximately 22,000 birds.

Upland gamebirds -

 Add about 124,000 coveys to the pre-hunt autumn population, estimated at 95,000 coveys in 1999 (Dimmick et al. 2002). This population could support an annual harvest of 876,000 birds.
 Increase the autumn pre-hunt flock of wild ring-necked pheasants to 2 million birds from an estimated current 800,000 birds.

Mammals

White-tailed deer -

1. Short-term: increase the deer harvest to reduce the overall pre-hunt herd size to about 700,000 animals (currently at 750,000 to 800,000).

2. Extent and condition of open woodland, savanna, and barrens habitats are known and monitoring can identify conservation needs.

3. Degraded habitats have been identified and restored as possible; small woodlots are managed as open woodlands/savannas as appropriate.

4. High-quality examples of all open woodland, savanna and barren communities, including all Grade A and B Illinois Natural Areas Inventory sites, are restored and managed within all natural divisions within which they occur.

Grassland -

1. An additional 1 million acres of grassland, emphasizing upland, treeless grasslands larger than 0.5 mile wide and ecological connectivity among grasslands and other habitat patches, are established and maintained.

2. Wildlife-value (structure, floral diversity, disturbance regimes) of 1 million existing acres of grassland are enhanced.

3. Five additional "ecological pattern" grassland Bird Conservation Areas (see Fitzgerald et al. 2000) have been established.

4. Three wet prairie areas of 1,000 to 2,000 acres, connected by dispersal corridors, are restored and managed in the Grand Prairie natural division.

5. At least 6 areas (300-500 acres each) of ephemeral wetlands and accompanying upland sand prairie habitat are restored and managed for Illinois chorus frogs in the inland sand areas.

6. High-quality examples of all prairie communities, including all Grade A and B Illinois Natural Areas Inventory sites, are restored and managed within all natural divisions within which they occur.

Shrub/successional -

1. Extent and condition of shrub/successional habitats are known and monitoring can identify conservation needs.

2. Additional habitat has been established and is being managed.

2. The supply of quality angling days is increased by 2.0 million by expanding and improving accessible impoundments.

3. Total sediment delivery to lakes and ponds is reduced.

4. Sediments are removed from lakes and ponds for beneficial uses.

5. Rapid Response plans are implemented for the Great Lakes basin and Mississippi River basin (covering all of Illinois). An aquatic nuisance species barrier protects the Great Lakes and Illinois River basin from biologica

18. Local residents in areas under high development pressure and/or within fragile geographic zones (i.e. karst terrain) are educated and manage lands and waters to maintain or improve water quality.

19. High-quality examples of all river and stream communities, including all Grade A and B Illinois Natural Areas Inventory sites, are restored and managed within all natural divisions within which they occur.

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ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY III. Statewide Overview, D. Challenges for Wildlife & Habitat Resources

Version 1.0

<u>Birds</u> All habitat issues (extent, composition and structure, fragmentation, disturbance regimes, and invasive plants) are and likely will continue to challenge the avian Species in Greatest Need of Conservation. Recruitment (relating to high predation rates of eggs and juveniles), mortality, and human structures and infrastructures (windows and wind turbines) are also of high concern for many of these species.

Matthews et al. (2004) modeled the effects of climate change on 150 species of birds in eastern United States. Generally, ranges are predicted to shift northward, with many species expected to become restricted in or extirpated from Illinois (e.g., red-headed woodpecker, bobolink). Other species are likely to expand their range or pioneer into Illinois (e.g., little blue heron, Bachman's sparrow).

<u>Mammals</u> The severity of challenges vary considerably among the mammal species in greatest need of conservation, though habitat extent and fragmentation are the most important for the group as a whole. High bat mortality at wind turbines has been reported in other states, and wind energy is a rapidly growing industry in Illinois. Disturbance of hibernacula is a serious potential stress to wintering bats.

Harvested Wildlife Resources

<u>Sportfishes</u> Recruitment is an on-going challenge for many native sport fish, which in many lakes and rivers are maintained by stocking (black bass, channel catfish, lake trout, sauger). Other stocked fishes (e.g., brook trout, muskellunge) seldom reproduce naturally in Illinois, but may when high-quality habitat and conditions (e.g., coolwater streams) are restored. Water quality and sedimentation, which also affect the composition and structure of aquatic habitats, are stressing some sport fisheries. Smallmouth bass are negatively affected by stream channelization and lack of riparian habitat. Invasive species, such as Asian carp, are a growing challenge.

Birds The major challenges to the game birds are habitat-a

-54-

disturbance patterns, invasive plants, and fragmentation are greater challenges than the current extent of habitat. Changing forest composition may affect wild turkey abundance in the future. Nearly all climate change models predict reduced soil moisture (strongly correlated with the abundance of small wetlands) for the Prairie Pothole region of the northern United States and southern Canada (Inkley et al. 2004), where most ducks harvested in Illinois are produced.

<u>Mammals</u> Relative to other groups, the furbearers and game mammals are perceived as secure in Illinois. While habitat quantity and quality are important, most of these species have proven adaptable to a wide range of habitat conditions. Chronic Wasting Disease, currently restricted to a few counties in northern Illinois, is a threat to the white-tailed deer herd.

<u>Habitats</u>

The following key statewide findings are from a report of the Critical Trends Assessment Program (2001), and highlight a number of the most significant challenges to the streams, wetlands, grasslands, and forests of Illinois:

• habitat fragmentation is a widespread problem that limits attempts to maintain and enhance biodiversity,

• habitat degradation is a widespread problem that could be slowed or minimized by simply removing the degradation factors, such as improper grazing,

• *if degradation is severe, restoration to predisturbance condition will likely require intensive vegetation management,*

• restoring native vegetation along streams would shade the streams, stabilize banks, and filter sediment and chemicals from runoff before they reached the streams, resulting in less siltation and desiccation and lower water temperatures, and

• setting prescribed fires in terrestrial ecosystems, such as prairies, marshes, savannas

ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY III. Statewide Overview, D. Challenges for Wildlife & Habitat Resources

Version 1.0

structure, disturbance regimes such as poorly-timed and unnecessary mowing, invasive species), severely limit the ability of existing grasslands to function as a natural community that provides suitable habitat for wildlife. Most remaining grasslands are too small to attract area-sensitive species, and the juxtaposition of grassland, relative to wetlands, savannas, shrub/successional habitat, and cropland are very important to many farmland species.

Climate change over the next century may make grassland habitat, and tallgrass prairie in particular, more difficult to maintain in Illinois. Simulated vegetation responses by 2100 to climate change models predict a shift from a savanna/woodland climate of present to a temperate deciduous forest and southeastern mixed forest climate. Atmospheric CO_2 enrichment further favors plants with C_3 photosynthesis (e.g., trees, shrubs and cool-season grasses) over the many tallgrass prairie species with C_4 photosynthesis physiology (see discussion in Inkley et al. 2004).

Shrub/successional - Though reliable knowledge is not available, anecdotal reports and population trends of certain species suggest concern for the extent and condition of shrubland and early successional habitats. Loss of pastures, old fields, idle areas and fence rows in agricultural areas and reduction of timber harvest and burning in woodlands have contributed to a decrease of this habitat type. Invasive shrub species are replacing native shrubs and increasing in forest understories, with unknown effects on shrubland wildlife.

Wetland - The quantity and quality (fragmentation, composition and structure, disturbance regimes, invasive species, pollution and sedimentation) of wetlands in Illinois are problematic. While conservation actions have led to localized increases in wetland acres and improvement in condition, the statewide trend is towards wetland loss and deterioration. Many restored wetlands are isolated, poorly managed after construction, and could be greatly improved for wildlife benefits (Phillips and Brown 2004).

Lake & pond - Volume loss to sedimentation is the primary stress for lake and pond habitat in Illinois. Invasive species, sedimentation, shoreline development, and boat traffic have

III. E. Priority Conservation Actions for Illinois Wildlife & Habitat R

Streams Campaign

<u>Issues</u>

Many problems with Illinois' streams originate on uplands and at headwaters. Waters from agricultural fields and urban areas carry nutrients (from natural sources and fertilizers) and other pollutants, contributing to eutrophication at locations far downstream. Retirement of environmentally-sensitive lands from rowcrop production and conservation tillage practices have greatly reduced the amount of silt that enters streams in recent decades. Tiling and channelization of headwater streams have increased the speed at which waters enter the state's river systems. In developed areas, waters accumulate high loads of nutrients and pollutants, and drain very rapidly from impervious surfaces. Wastewater treatment and reduction in industrial pollutants have significantly improved water quality downstream of urban centers.

Improved drainage on agricultural and developed lands, coupled with levee systems that disconnect rivers from floodplains, have altered the hydrologic patterns in Illinois' streams, with flooding becoming more frequent and more severe. High-energy drainage waters are contributing to gully, stream bank erosion and channel incision–important sources of sediment that add to the "legacy" sediments from uplands that are currently moving through Illinois' streams. The lack of riparian forests along many streams contributes to banks becoming unstable and for allowing direct sunlight to warm waters. In some locations, ground water supplies have become contaminated by pollutants, and water tables are being drawn down as a result of municipal, industrial and irrigation usage.

Dams on many of Illinois' rivers have created "silt traps" in impoundments and reservoirs. Lakes a00674dg069s0e000003309aign7id00 0.08.0349.060000003igschae0(TipZ7.6.90000.0.000000T,Dotsign

Invasive species, including zebra mussels and Asian carp, are particularly problematic in larger rivers in Illinois. Common carp have destroyed submersed and emergent aquatic vegetation in many rivers and backwaters. Several fishes and freshwater mussels have become extirpated within the past 200 years, and many more are endangered in the state. Only 200 acres of streams in Illinois are recognized as high-quality natural communities.

Actions

1. Develop and promote upland agricultural practices that decrease the energy, sediment load, temperature, and pollutant load of drainage waters

- a. establishment of native perennial vegetation on highly erodible soils
- b. use of buffer vegetation at land-water transitions
- c. wetland enhancement and restoration
- d. conservation tillage or no-tillage practices
- e. precision nutrient applications
- f. limiting livestock access to streams
- g. water control structures on subsurface tile drains for seasonal use
- h. continued protection of stream waters and groundwater from nitrates, bacteria and other contaminants derived from livestock waste

2. Develop and promote practices that decrease the energy, sediment load, temperature, and pollutant load of drainage waters from developed (urban, suburban) lands

a. wetland enhancement and restoration, and other tools for flood water retention; use retention facilities to hold floodwaters for an adequate length of time

b. minimizing impervious surfaces

c. zoning guidelines to promote smart growth and minimize effects on environmentallysensitive lands (e.g., highly erodible soils)

- d. maintenance and improvement of wastewater treatment facilities
- e. appropriate nutrient applications on landscaped vegetation
- Protect, restore and enhance near-stream and in-stream habitats and processes
 a. restore and manage grassy buffers, wetlands, riparian forests, and flood plains

j. restore and maintain side channel habitats

k. regulate reservoir releases to assure seasonal inundation of oxbows and backwaters and to maintain the integrity of floodplain forests

4. Restore populations of imperiled and extirpated aquatic animals

a. maintain populations at all currently-occupied locations and re-establish populations at 50% or more of historic locations where suitable habitat persists or can be restored. The recovery of aquatic endangered and threatened animals will depend on restoration and enhancement of existing aquatic habitats, such as pools, riffles, and lateral wetlands. It will be necessary to re-create wetland habitats for amphibians and dragonflies.

1. protect and enhance Round Pond for the river cooter and other reptile species

2. protect the Vermilion River (Illinois), lower Fox River and tributaries for benefit of listed redhorse species

3. restore the Saline River and its tributaries to benefit Ohio River drainage mussels and crayfish in the Shawnee Hills natural division

4. restore and protect Crane Creek (Sangamon River) and other groundwater fed, well-vegetated streams supporting unique fish communities

5. restore coolwater streams, particularly within the Apple and Rock River watersheds

b. reintroduce native species into stream habitat where decimating factors have been eliminated and natural recovery is unlikely

c. collaboration among the Illinois Endangered Species Pratievetis: #1.Bby204.3600 0.0000 1rb. reintroduce

ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY III. Statew

8. Coordinate stream and watershed conservation actions with other agencies, organizations and upstream and downstream states to meet system-wide objectives

9. Increase water quality education efforts in areas under high development pressure and/or within fragile geographic zones (i.e. karst terrain)

10. Marketing and technical assistance will be required for adoption and appropriate implementation of the streams campaign.

Forests Campaign

<u>Issues</u>

The quality of Illinois' wooded habitats–forest, open woodlands, savannas, barrens, and shrublands–is a major concern. Alteration of natural disturbance processes, including flooding regimes and suppression of fire, but also inappropriate timber harvest done without professional forestry assistance, are contributing to changing composition of forested habitats, notably the increas

of predation by generalist predators and parasitism of songbird nests by brown-headed cowbirds to undesirable levels. Fragmentation of forests continues from a variety of sources, with exurban development a noteworthy challenge.

Available information suggests populations of Neotropical migratory birds in most, if not all, of Illinois forests are "sinks" with low recruitment and sustained by immigration from forests beyond Illinois (Robinson et al. 1995). However, whether a specific forest patch is a "source" or "sink" is difficult to quantify with available methods, and likely varies among species and years. While value as nesting areas is debatable, isolated woodlots and forests along rivers and streams are important during spring and fall migration, though these benefits are also difficult to measure.

The white-tailed deer herd is very large in Illinois, as deer have proven highly adaptable to fragmented forests and tolerant of proximity to people, resulting in increasing deer-human conflicts (including automobile accidents and crop damage) and damage to natural community composition through intensive browsing. Hunter access to forests to control the deer herd is a growing concern, as an increasingly urbanized public has fewer ties to rural and agricultural landowners, landowners face increased demand for access and changing liability risks, and suburban and exurban development restricts the proportion of wooded habitats that can be hunted.

To aid private forest owners, the Illinois Department of Natural Resources administers the Illinois Forestry Development Act, a program for managing forests for wood products. Illinois Forestry Development Act offers reduced property tax liabilities, technical assistance, and state cost-sharing to achieve improved wildlife habitat, soil stabilization, and improved water quality.

<u>Actions</u>

- 1. Maintain and enhance the composition of Illinois' forested habitats
 - a. reintroduce natural disturbances or suitable substitutes on a large scale
 - 1. prescribed fire should be applied, where appropriate, to maintain or restore

-67-

open woodland habitats (e.g., savanna, barren), promote oak-hickory regeneration, stimulate the germination and production of native ground-layer plants and control invasive species

2. sustainable forestry practices will be necessary to restore and manage open forest habitat types in locations that have matured to closed forest or been invaded by undesirable woody species, to mimic natural processes in areas where fire is not an appropriate management tool, to supplement fire where undesirable trees have grown too large to be controlled safely with fire, and create diverse age classes of forest necessary to sustain wildlife species requiring various successional forest stages. The economic benefits of sustainable forestry practices provides an incentive for landowners to improve the quality of their forests.

b. edges of forested habitats should be widened to create broader transition areas from grassland, shrub/successional, savanna/open woodland, to closed forest, thus providing more and better habitat for most wildlife species in greatest need of conservation and slowing drainage waters from agricultural or developed lands prior to entering streams c. in regions of Illinois where upland forests are highly fragmented, management for shrub/successional, savanna/barren and open woodlands should be emphasized. While "interior" forest conditions are fully achieved for many species only in compact forests exceeding 50,000 acres (e.g., low brood parasitism rates of nests of Neotropical migratory songbirds), management of area-sensitive species is a high priority in forests >1,000 acres. In all cases, care should be taken to conserve and enhance high-quality Illinois Natural Areas Inventory communities.

d. continued removal and control (chemical, mechanical and biological) of invasive exotic plants, especially within high quality natural areas

e. reintroduce native species into forest habitat where decimating factors have been eliminated and natural recovery is unlikely

f. collaboration among the Illinois Endangered Species Protection Board, Illinois Department of Natural Resources, U.S. Fish & Wildlife Service and other agencies, organizations and institutions on recovery plans and actions for rare and declining species

Version 1.0

ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY III. Statewide Overview, E. P assistance, professional training, access to fire equipment, cooperation with fire protection districts, and reform or clarification of liability issues.

5. Local and state authorities, citizens and staekholders need to cooperate to develop zoning criteria and local greenway plans that protect important habitats and ensure "smart growth."

6. Fill information gaps and develop conservation actions to address stresses.

- a. a comprehensive program for preventing, eliminating and controlling invasive species is essential
- b. determine the extent and condition of open woodland, savanna, and barrens habitats
- c. determine the extent and condition of shrub/successional habitats
- d. degraded savannas and barrens are identified for restoration with cutting of undesirable plants, prescribed fire and invasive species control

7. Restore and manage high-quality examples of all forest, savanna and barrens communities, including all Grade A and B Illinois Natural Areas Inventory sites, in all natural divisions within which they occur.

Farmland & Prairie Campaign

Issues relating to farmland habitats and native tallgrass prairie remnants are distinct and described in separate sections, below. Actions are then discussed together, as most cropland occurs on areas that were formerly prairie, some agricultural uses of grasslands (e.g., light to moderate grazing) are desirable for maintaining wildlife habitat, and a number of farm programs and delivery systems have been developed that are useful tools for conserving habitats, including prairie restoration.

Farmland Issues

Agriculture is the largest industry in Illinois, and dominates the landscape. Society's demands of agriculture continue to change, from prairie conversion and wetland drainage in the 19th century, to government programs that encouraged maximized production in the second half of the 20th century, to shifts towards sustainability and resource conservation in the present. Important groups of wildlife, namely grassland birds and upland game, thrived in Illinois' farmlands for much of the 20th century. Grasslands, wetlands, shrub/successional area and woodlots were interspersed with cropland that provided waste grain, weed seeds and invertebrates as food for wildlife. Today, more than half of the State is planted to just two species of plants - corn and soybean. After World War II, acreage devoted to rowcrops increased, and small grains, hay and pasture acreage decreased. Concurrently, field size and farm size increased as the number of farms decreased. Cropping practices have become less physical (with reduced and no-tillage systems) leading to reductions in soil erosion from fields. The relative benefit of cropland to wildlife has decreased in Illinois as "clean" farming practices have resulted in less waste grain, weed seeds, and arthropods available to wildlife (Warner et al. 2005). Livestock populations have shifted from pasture to confinement operations.

These factors have all contributed to a decline in the amount and juxtaposition of grassland, early successional/shrub, and wetland habitats. As a result, wildlife populations, formerly considered common in Illinois' agricultural landscape, have declined precipitously, including economically important species such as northern bobwhite, ring-necked pheasant, and eastern cottontail. Grassland habitat is especially degraded in Illinois, with most areas

-71-

seeded to monocultures of introduced species. Tall fescue and reed canary grass–species commonly recommended for pasture and erosion control purposes–have little beneficial value for wildlife relative to other native and introduced grasses. Disturbance regimes in grassland habitat further limit wildlife values. Many pastures are over-grazed. Grass waterways, field borders, rural roadsides and some fields idled through farm programs are often mowed once or more annually, reducing standing vegetation that can serve as habitat, and destroying nesting wildlife when conducted from April to July. Other grasslands, idled through programs such as the Conservation Reserv

b. establish additional shrub/successional habitat with native species, and use prescribed fire and mechanical disturbance to manage habitats

c. work with conservation partners and private landowners statewide to enhance small

woodlots and forests with native shrub-dominated, early successional edges and

b. reintroduce native species into prairie habitat where decimating factors have been eliminated and natural recovery is unlikely

c. establish five additional "ecological pattern" grassland Bird Conservation Areas (see

Fitzgerald et al. 2000), each of >3,000 acres, in the Southern Till Plain (2) and Grand

Prairie (3) natural divisions (Midewin National Tallgrass Prairie, Prairie Ridge State

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6. Fill information gaps and develop conservation actions to address stresses.

a. a comprehensive program for preventing, eliminating and controlling invasive species is essential

b. determine the extent and condition of shrub/successional habitats

c. better quantify the extent and wildlife-value (floral diversity, nesting season

disturbance, winter cover, patch width and juxtaposition relative to other habitats) of grassland

7. At local, county and regional scales, involve stakeholders in discussions of long-term land use planning to meet agricultural, conservation, economic, residential and recreational needs.

8. Clarification or cgqcCie(is eficati)TbTD 8 al-aBT72.0000 46P0000 TDiTDtue(iscussi2) o

Wetlands Campaign

<u>Issues</u>

project in far southern Illinois, the Emiquon project on the middle Illinois River and the Hennepin & Hopper Lakes project on the upper Illinois River.

Actions

1. Improve the condition of existing natural and artificial wetlands.

- a. continued removal and control (chemical, mechanical and biological) of invasive exotic plants, especially within high quality natural areas
- b. manage water levels to enhance wetland condition and provide wildlife benefits
 - 1. adopt moist-soil management strategies on public waterfowl management areas and other sites that increase wading bird, waterfowl, shorebird, and other wildlife use
 - 2. maintain a

2. Develop and manage additional wetland habitat.

a. through incentives-based programs (suchease Conhancement

Program and Wetland Re1erve Program) and with technical assistance, establish or restore and manage wetland habitat with native vegetation on private lands b. recreate ephemeral and other fishless, semipermanent wetlands, including 10-15 per Illinois Department of Natural Re1ources rer year on public lands, for migratory shorebirds and other with initiall

Border, Coastal Plain, and Northeastern Morainal natural divisions to benefit amphibian Species in Greatest Need of Con1ervation

c. restore and manage at least 6 areas (of 300-500 acres each) of ephemeral wetlands
and accompanying upland sand prairie habitat in the inland sand areas
d. restore basin marshes in the Northeastern Morainal and Grand Prairie natural

divisions and streamilesoidplain areas

- 3. Fill information gaps and develop con1ervation actions to address stresses.
 - a. a comprehensive program for preventing, eliminating and controlling invasive species is essential
 - b. updated inventory of wetland habitat in Illinois
 - c. additional research is needed on the ecological aspects (such as quality, invasive species, and contaminants) of both restored and high-quality sites
 - d. evaluate the contribution of moist-soil management to wildlife objectives
 - e. status and distribution of amphibians, ires, migratory shorebirds

4. Inter-agency cooperation and coordination to ensure wetland programs do not have conflicting objectives.

5. Emphasize multiple-resource benefits of wetland con1ervation.

a. evaluate carbon budgets for wetlands, and promote actions that sequester atmospheric carbon

b. reduce total sediment delivery to rivers, streams, lakes and ponds

c. reduce flooding and extreme water level variation in rivers and streams

d. improve water quality

6. Increase water quality education efforts in areas under high development pressure and/or within fragile geographic zones (i.e. karst terrain)

Invasive Species Campaign

<u>Issues</u>

Species too numerous to mention have been introduced to Illinois, intentionally and by accident. Worldwide and within Illinois, invasive species are a primary threat to species of wildlife, the integrity of natural communities, and the quality of habitats. Invasive species are a tremendous economic problem as well, causing an estimated \$115 billion in economic loss nationwide each year (Pimentel et al. 2000).

Illinois is structured to promote biological invasions: international ports via air and water mean Illinois has been and should expect to continue to be a point-of-origin for biological invasions; the highly disturbed landscape of Illinois (developed and agricultural lands, fragmented and degraded natural areas) increases the probability of introduced species becoming established; and the state's massive transportation infrastructure facilitates the spread of established invasive species **W[apugad]**;**TjS00701**,**D**;**M000**, **T**;**W**;**400**,0082.32m482.7600 00 TD(spread)Tj33

control measures)

d. production of native cultivars to replace invasive species applications

e. model biological invasions that might be facilitated or caused by climate change

f. create "Invasive Species Center" at the Illinois Natural History Survey to coordinate research, knowledge sharing

3. Prioritize high-quality natural areas, large habitat patches, and other key locations for invasive species control.

a. improved surveillance for early detection and resources for rapid response to new invasions

b. maintain on-going control (chemical, mechanical and biological) of invasive species, until species are evaluated and prioritized for control and/or more effective techniques become available

4. Marketing, education, technical assistance, incentives and cost-sharing to prevent invasions, control invasive species (mechanical, chemical and biological), and restore natural disturbance regimes (e.g., fire) on private lands

ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY III. Statewide Overview, E. Priority Conservation Actions With a low ratio of public lands to citizens, tremendous demands are placed on Illinois' public lands for wildlife and habitat conservation and outdoor recreation-demands that sometimes conflict. For a variety of reasons including lack of funding, staff availability, and natural resources training for site staff, public fish and wildlife areas suffer from lack of appropriate management and could provide more wildlife benefits. While having more public land and water would alleviate some of these pressures, the limiting factor at present in most locations is the ability to manage existing properties effectively. Too often, actionable knowledge and effective tools do not exist for addressing rapidly degrading habitats due to changes in natural disturbance regimes and physical, chemical and biological pollution.

Taken as a whole, the extent and quality of habitat resources are too low to maintain functional natural systems and viable populations of many species now rare or declining, too low to support game populations that satisfy harvest demands, and too inaccessible to meet demands for outdoor recreation opportunity. Landowners may not understand their opportunities for habitat management, and the public does not appreciate land stewardship—in terms of ecological, environmental and economic costs that are being incurred, and ecological, environmental and economic benefits that could be gained.

<u>Actions</u>

1. Improve the stewardship of private land and water resources.

a. public programs for private land management must have clear objectives, adequate staffing, funding and tools to achieve the objectives, well-defined "lifespans," userfriendly enrollment and technical assistance features, and honest evaluation of the programs' results

b. provide technical assistance, cost-sharing and incentives for habitat restoration and management, invasive species control, use of prescribed fire and sustainable forestry techniques, and other forms of land stewardship on private lands
c. private lands technical assistance staff should be broadly-trained with local

experience and familiarity.

d. increase allocation of staff and funding for follow-up maintenance to habitats established on private lands

e. annually, offer habitat management workshops in each district of Illinois

2. Improve the stewardship of public land and water resources.

a. public sites should be managed with the best available science and tools, in a way that clearly demonstrates habitat restoration, maintenance of natural communities, forest management, grassland management, moist-soil management, and invasive species control

b. public lands should be managed with a clear indication of the relative importance of providing wildlife habitat and resource-compatible outdoor recreation at each site c. future public land protection (leases, easements, acquisitions) should be specifically targeted to achieve desired wildlife and habitat benefits, based on sound principles of reserve design, patch size, and long-term viability (of populations, communities and stewardship regimes)

d. at the time of lease, acquisition, or easement, funding should be allocated for initial restoration or enhancement, and an endowment for long-term stewardship

e. develop and maintain baseline information on wildlife and habitat resources of public

ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY

Version 1.0

3. monitor the condition of urban forests and offer technical assistance to communities

d. inter-agency coordination for addressing human-wildlife conflicts such as property damage, risks to human health/safety, and damage to crops

1. promote the use of non-lethal forms of damage abatement such as exclusion, scaring, and habitat modification to the maximum extent possible to alleviate human-wildlife conflicts

2. allow and encourage the use of hunting and trapping to the maximum extent possible as the first lethal control method considered to alleviate human conflicts with game species

3. allow the use of other lethal control methods as permitted by Federal and local authorities where the previous strategies have been unsuccessful, are impractical, and/or are unlikely to be successful

4. review and revise as necessary the licensing procedure for private animal control companies to perform permitted methods of control

3. Increase water quality education efforts in areas under high development pressure and/or within fragile geographic zones (i.e. karst terrain).

4. Make natural areas conservation, ecology and environmental education a mandatory part of school curricula.

5. Fill information gaps and develop conservation actions to address stresses.

a. better understand the rural-urban interface and improve actions with respect to deer, mesopredators (e.g., cats, raccoons), human-wildlife cones.er und

6. Increase access to open lands and waters within and ocRD4rds and w

Priority Locations for Conserving Illinois' Species in Greatest Need of Conservation

Determining the priority locations for conserving Species in Greatest Need of Conservation represents a blended strategic and opportunistic approach (see Sect. II, D). Strategically, data on wildlife and habitat were used to develop the priority areas identified earlier by other agencies and organizations, and in the current analysis focused on Species in Greatest Need of Conservation. By considering locations prioritized by other agencies and organizations, and selected by participants in planning workshops, the process was opportunistic in that there was general consensus for prioritizing a location. A potential weakness of this approach is that well-known locations with advanced conservation actions were identified, and priorities (and opportunities) for restoration remain under-represented.

Previously-Identified Priority Locations

A number of previous planning and analysis efforts have identified high-priority locations in Illinois for conservation (Figure 11). The primary information source

ILLINOIS COMPREHENSIVE WILDLIFE CONSERRS. TION PLAN & STRATEGY

The Inventory of Resource Rich Areas in Illinois is a product of the Critical Trends Assessment Project and the Ecosystems Program of the Illinois Department of Natural Resources (Suloway et al. 1996). Watersheds were evaluated using four equally-weighted variables: percent of the watershed in forest, percent of the watershed in wetland, total area of Illinois Natural Areas Inventory sites, and total length of Biologically Significant Streams. In total, Resource Rich Areas cover 19.8% of the state. While nearly half the area within the Resource Rich Areas is in agricultural production, less than 15% of the state's total cropland occurs in the **Resource** Ri Illinois (Figure 13). Prairie Ridge State Natural Area, while comprised of scattered, relatively small parcels of grassland, is significant, as is the large remnant sand prairie area at Lost Mound National Wildlife Refuge. Other small, but relatively high-ranking locations include Goose Lake Prairie, DesPlaines Conservation Area, Nachusa Grassland, Glacial Park, Iroquois County Conservation Area, and Sand Prairie-Scrub Oak Nature Preserve. (The high-ranking of Pine Hills Ecological Area is anomalous, due to its Illinois Natural Areas Inventory classification.) Improving the status of Illinois' grassland Species in Greatest Need of Conservation will be highly dependent upon augmentation of existing sites and large-scale restoration, such as is underway at Midewin National Tallgrass Prairie.

Wooded Wetlands - Highest-ranking wooded wetland areas (a combination of floodplain forest and swamp land cover categories) in Illinois are associated with large rivers, primarily in southern Illinois (Figure 14). The Cache River watershed and Oakwood Bottoms - LaRue 0.02cie Sj108. Swanop (cover afte) especially climportant (ctr/speciel in a Boearest (NEed of Conservation). The lower Kaskaskia River, middle Little Wabash River (Wayne County), Wabash-Ohio River confluence, Mark Twain National Wildlife Refuge, and Sanganois State Fish & Wildlife Area are also significant.

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ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY

appropriate natural division assessments (Section IV). Conservation Opportunity Areas have special importance in conserving Illinois' Species in Greatest Need of Conservation, but not all of these species occur within this set of locations, and restricting conservation actions to these areas will not necessarily maintain viable populations or meet the objectives outlined in the Plan/Strategy.

investments of funding and personnel time, but seldom have been approached to rank the effectiveness of alternatives and measure cost efficiency.

Evaluation is a retrospective examination of a broad class of actions (e.g., land conservancy, easements, riparian buffers, prescribed fire, stream bank stabilization) undertaken as larger programs (e.g., Conservation Reserve program, Conservation Reserve Enhancement Program, Acres for Wildlife). The purpose of evaluation is to determine whether the programs are performing as advertised and thereby worth continued investment. Such evaluations are often the least "scientific" looking and may be less amenable to rigorous analysis given the large number of variables affecting outcomes. Nonetheless, information from monitoring and research feeds into coarse-scale evaluations.

Institutions - Illinois has many institutions and organizations contributing to the scientific information base available to managers. First are the Illinois Scientific Surveys (Illinois Natural History Survey, Illinois State Water Survey, Illinois State Geological Survey, and the Illinois State Museum) of the Illinois Department of Natural Resources. The Illinois Natural History Survey, in particular, has a critical mass of expertise, infrastructure, and effort contributing to the state's living resource management mandate.

approximately 500 sites. Population abundance and diversity are compiled into the Index of Biotic Integrity metric. The Department of Natural Resources also samples fish communities at 21 sites on the Illinois River, and 118 sites on the Mississippi, Wabash, and Ohio Rivers annually. In cooperation with U.S. Fish & Wildlife Service, U.S. Geological Survey, and Illinois Department of Natural Resources, the Long-Term River Monitoring Program measures ecological parameters on the Illinois and Mississippi rivers. All known occurrences of threatened and endangered species are tracked in the Department of Natural Resources' Biotics 4 database. Propagation of threatened species (e.g., red-spotted sunfish), or surrogates, needs investigation as an effective conservation action. Some evidence indicates that aquatic life (mussels and fish) are affected by endocrine disrupting compounds in sewage effluent and other sources, though the magnitude of this effect in Illinois is unknown. The Biologically Significant Streams analysis, completed in 1992 (Page et al. 1992), has received extensive use from watershed groups, environmental interests, municipalities, consultants and state and federal agencies. However, much more recent data are available, and the classification needs to be updated.

Amphibians

ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY

shorebirds at Chautauqua National Wildlife Refuge, heron rookeries), but generally lack coordination and a central access structure. All known breeding season occurrences of threatened and endangered species are tracked in the Dep TDwaeatened and endan0000 7090 TD(of)TjETDI

widespread surveillance effort to confirm the limited distribution of Chronic Wasting Disease in Illinois.

Harvested Wildlife Resources

<u>Sportfishes</u>

The Illinois Department of Natural Resources' Division of Fisheries collects distribution, abundance, and angler satisfaction information for sportfish in rivers and streams, impoundments, and Illinois' portion of Lake Michigan. Streams are sampled through 5-year rotational basin surveys, at about 500 stream sites statewide. Additionally, sportfish are surveyed annually at 21 sites on the Illinois River, and 118 sites on the Mississippi, Wabash, and Ohio Rivers. Annual surveys on 259 state and public impoundments evaluate sportfish populations, angler effort and success, and identify management needs. Supplemental fish stocking evaluations are conducted in 32 state and public impoundments. In Lake Michigan, lake trout, yellow perch, and salmonid species are monitored annually to measure relative abundance, food habits and demographics. Spring fish stock assessment surveys are conducted between Chicago and Waukegan, and available stocks of non-salmonid sportfish within harbors and nearshore areas on Lake Michigan are estimated.

The Illinois Department of Natural Resources has Species Management Plans for several sportfishes, including crappie (black, white, hybrid), bluegill, redear sunfish, channel catfish, grass carp, largemouth and smallmouth bass, muskellunge, northern pike, tiger muskie, rainbow trout, sauger, walleye, yellow perch, and white, striped and hybrid striped bass. These e stocks of non-salmoniel strout/wite/r striped and hybriblattive50/2200058 arp, laass(at mD0.00003 TD(rainbow)Tj(c largely dependent on breeding habitat conditions outside of Illinois). Waterfowl harvest is estimated annually with surveys of a random sample of waterfowl hunters (Miller et al. 2004b), and the harvest of Canada geese in quota zones is monitored with a call-in reporting system.

<u>Mammals</u>

Distribution and abundance of game mammals are indexed with a number of tools in Illinois. The spotlight survey has been conducted by Department of Natural Resources staff since 1981 on spring nights along standardized 25-mile routes, and assists in setting furbearer hunting and trapping seasons. The target species are raccoon, white-tailed deer, eastern cottontail, domestic cats, opossums00 0teei1intrappi

or included in the original Illinois Natural Areas Inventory. The Illinois Natural Areas Inventory database is a valuable source of information on condition of the state's natural resources. A program to monitor the health of these sites over time is necessary to protect and preserve them.

Owned, Managed & Leased Properties Project - Comprehensive and reliable information on the Illinois Department of Natural Resources' land holdings is critical for conservation planning, implementation, and assessment. A spatial database with detailed information on boundaries, ownership, funding source, management practices and goals, activities, and restrictions on these lands has been started for many of the Department-owned, managed, or leased properties. A complete and centralized geographic information system database that includes all state parks, conservation areas, forests, and fish and wildlife areas would provide valuable information for conservation-related activities.

Conservation Reserve Enhancement Program - The Conservation Reserve Enhancement Program is a voluntary program to assist landowners in protecting environmentally sensitive land, decreasing erosion, restoring wildlife habitat, increasing populations of threatened and endangered species, and safeguarding ground and surface water. This U.S. Department of Agriculture program supports conservation practices such as filter strips and forested buffers to help protect streams, lakes, and rivers from sedimentation and agricultura Resources, U.S. Department of Agriculture, Illinois Environmental Protection Agency, and the University of Illinois Cooperative Extension Service, to map the location of various conservation practices, such as Conservation Reserve Program, Conservation Reserve Enhancement Program, and Wetland Reserve Program contracts. As funding and staffing are available, data from additional counties and watersheds are being added to the system. The system enables partner agencies to effectively focus conservation actions. The Illinois Department of Natural Resources, the Illinois Nature Preserves Commission, and the U.S. Forest Service are currently developing the MANAGE system to assist field staff in monitoring the locations of stewardship activities (e.g., prescribed fires, invasive species control). Future plans call for modules with wildlife and fisheries applications.

Land-Water Interface - With 26,000 miles of streams and 644,000 acres of surface water (excluding lake Michigan), the land-water interface is essential for conservation in Illinois. Yet, the relationships among soils, land use practices, nutrients, drainage waters, erosion, wetlands, streams and other habitats are often poorly understood.

Forest

The extent of various forest 8nities

ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY

Lake & Pond

Illinois Department of Natural Resources Fisheries biologists collect information on aquatic vegetation and water quality in conjunction with fish community sampling on the state's, lakes and ponds. These data are stored in the Fisheries Analysis System, maintained by the Illinois Natural History Survey. The system needs a comprehensive analysis, integration with other biological data sources, selected indicators of ecological integrity, and expansion to other taxa (invertebrates, phytoplankton, zooplankton). Inshore and offshore in southern Lake Michigan, water quality and habitat use/availability are also measured in conjunction with fish assemblage monitoring by the Illinois Department of Natural Resources, supported by Federal Aid (U.S. Fish & Wildlife Service) and the Great Lakes Fishery Commission. The program provides information on the status and trends of lake quality and fish ecological integrity, but could be improved with integration of other biological data sources and expanded effort.

<u>Stream</u>

Currently, conservation planning and implementation of stream habitat is hindered by the lack of a classification scheme for the diversity of stream types. An ecological classification of rivers in Illinois, Wisconsin, and Michigan is being developed to predict riverine site habitats and biological reference conditions from mapped landscape and local variables. These models will produce region-wide summaries of current ecological status, and coupled with a land transformation model, provide risk assessments for the river systems of the upper Midwest.

Habitat in Illinois' streams is characterized with the statewide Critical Trends Assessment Project. The Long-Term River Monitoring program also tracks aquatic vegetation and water quality in conjunction with fish and macroinvertebrate monitoring in the Illinois River (La Grange Reach) and Pool 26 of the Mississippi River. The Long-Term River Monitoring program provides status and trend data associated with operating the navigation system and ecosystem restoration efforts on the Mississippi and Illinois rivers. Field work is completed by the Illinois Natural History Survey's Illinois River Biological Station and Great Rivers Field Station, with support from the U.S. Army Corps of Engineers and the U.S. Geological Survey. Additional monitoring needs include enhanced floodplain assessments, integration with Conservation Reserve Enhancement Program, Wildlife Habitat Incentives Program, Conservation Reserve Program and other large scale programs, indicators of ecological integrity, and expansion to other taxa (invertebrates, phytoplankton, zooplankton).

Small, wadable streams, often with rocky substrates, host several of the aquatic Species in Greatest Need of Conservation, but are not covered by the Department of Natural Resources' traditional stream basin surveys. Information on historic and current coolwater stream habitat in Illinois is rare (Pickering 1950, Rudey 1999). Additional monitoring for fishes, mussels, other macroinvertebrates, zoo- and phytoplankton, water quality, and habitat structure in these habitats is needed to track the status and trends of these resources, and assess the stresses caused by pollutants, sediments, invasive species, and altered hydrology. When unnecessary dams are identified and removed in Illinois (e.g., Fox River), monitoring the responses of river fish and mussel communities, habitat availability and returning normalized hydrograph will be important to ev1.4400 0.0000 TD(to ev1.invasiveourified and r)Tp0nd removof 0 0.000(ed

<u>Cultural</u>

More information is necessary on many aspects of wildlife-agriculture interactions in Illinois. Waste grain is a particularly important source of energy for migratory, wintering and resident wildlife in the contemporary landscape of North America (Warner et al. 1989, Krapu et al. 2004). Efficiency of harvest has increased in recent decades, possibly reducing abundance of waste grain for wildlife (Krapu et al. 2004), while adoption of no-till and reduced-tillage methods may have offset this change. Additionally, genetically modified crop varieties are increasingly common in North America, but consequences to wildlife are largely unknown. Because much of Illinois' farmland is planted to grains annually, and myriad wildlife species use waste and natural plant seeds in harvested fields, current and precise estimates of waste grain abundance in the state are warranted. Crop damage, and wildlife control of agricultural pests, are certainly affected by the amount and relative positions of cropland and other habitats, but too poorly known to be effectively managed.

As developed areas expand in Illinois, the rural-urban interface and wildlife-human interactions are increasingly important. Strategies for conserving desirable species, managing deer and mesopredators (e.g., cats, raccoons), and minimizing human-wildlife conflicts need to be developed. Studying growth patterns and predicting future developments will help protect important habitats, viable populations, and valuable green infrastructure.

The fifteen natural divisions of Illinois, defined by biological and geological characteristics (Schwegman 1973), are a useful scale to consider wildlife and habitat conservation. A map accompanies each section, showing the relative location of the natural division within Illinois, land cover features, municipalities, and county lines. The following assessments of each natural division in

<u>Wetlands</u> - Protecting existing wetlands from drainage and clearing for conversion to agriculture or urban use; widespread implementation of Best Management Practices throughout the watershed to improve water quality entering existing wetlands; restoring and maintaining the flood regime responsible for the character and sustainability of individual wetlands; establishing wetland complexes intensively managed to provide habitat for migratory waterfowl and shorebirds.

<u>Lakes and Ponds</u> - Establishing and maintaining a flood regime that will restore and sustain the natural character and productivity of backwater areas (natural ponds, oxbows, sloughs) associated with major rivers and tributaries while minimizing conflicts with private landowners (agriculture, industry, private home/property damage); maintaining and improving the natural character and public values assigned/determined for aquatic resources.

<u>Streams</u> - Restoring and maintaining stream/river aquatic and terrestrial natural communities with minimal affects to private lands; eliminating stream bed and bank instability to improve water quality and aquatic habitat, and subsequently the health of receiving waters.

<u>Primary Communities</u> - Identifying and monitoring river sandbars utilized by Least Terns and protecting these sites from development and disturbance; monitoring known mussel beds and conducting additional monitoring to locate new beds (Ohio and Cache Rivers).

Opportunities

<u>Cache River Joint Venture Partnership:</u> Landscape-scale management and the restoration of ecological processes that will restore and sustain high quality aquatic and terrestrial natural communities is possible within land owned and managed by the Cache River Joint Venture Partnership (Illinois Department of Natural Resources, U.S. Fish and Wildlife Service, The Nature Conservancy, Ducks Unlimited).

<u>Wetland Reserve Program, Wildlife Habitat Incentive Program, Best Management Practices:</u> U.S. Department of Agriculture-Natural Resources Conservation Service programs can assist

ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY IV. Natural Division Assessments, A. The Coastal Plain designated Nature Preserve, and is managed to preserve and restore the forest community, with emphasis on the barrens and seep spring components.

- Open Ponds and Emergent Marshes This community type occurs infrequently throughout the floodplain of the Cache River. Occurrences are small (often less than 1 acre), and created and maintained by natural disturbance (scouring during flood flows, beaver, wind, lightning). Permanent water greater than 18" but less than 48" also supports this community type.
- Thin Soil Oak Savannas/Barrens
- Shaded Rock Outcrops
- Canebrakes Canebrakes occur frequently throughout these macrosites. Although most are small in size (<1 acre), historic data suggests there were extensive areas (>10 acres) of this distinctive community type. Because of the abundance of existing stands within large tracts of public land, the restoration potential of canebrake **paets ra**(90.0000 Tt/ go0 TD(d and)Tj30

Refuge, Grassy Slough Preserve, Cypress Pond State Natural Area, Heron Pond-Little Black Slough Natural Area

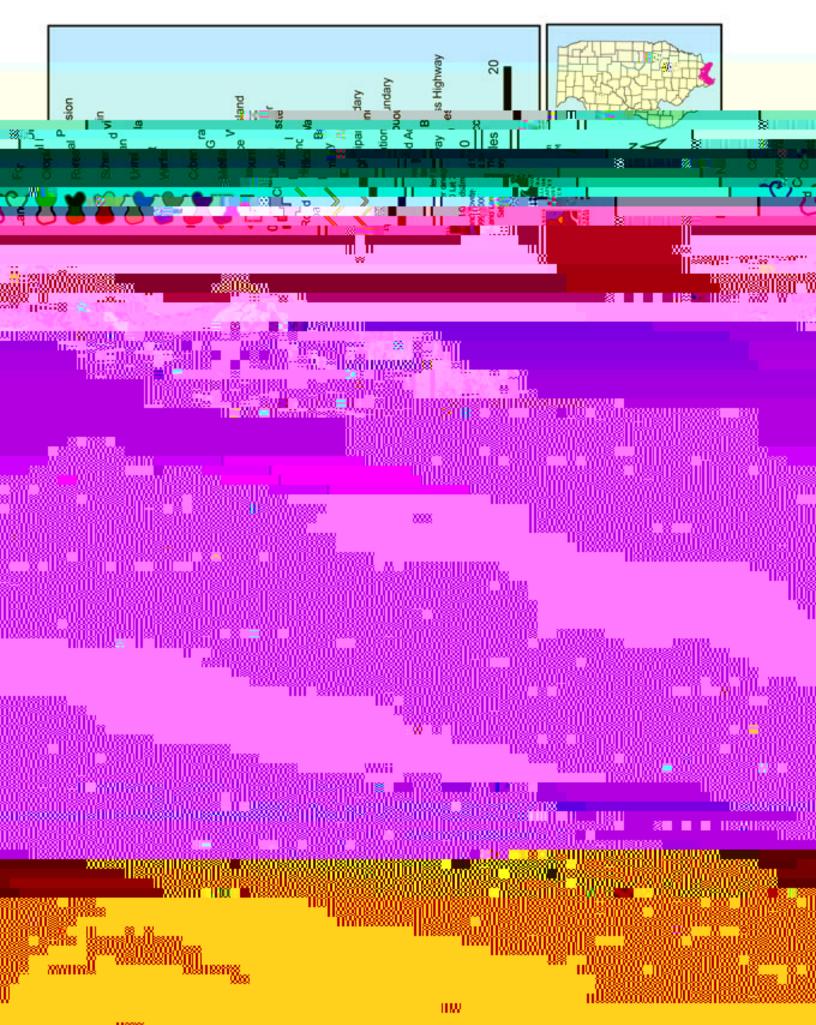
Priority Resources - Bottomland Hardwood forest, swamp forest, migratory waterfowl and shorebirds, Neotropical migratory songbirds

Conservation Philosophy - Restoration, preservation, and management of bottomland hardwood forests, swamp forests, and riparian aquatic habitat. Resource management will be guided by conditions that were present prior to human disturbance, and emphasis will be placed on restoration of ecological processes that will provide sustainability of all natural communities within the river continuum.

Wildlife Habitat Objectives - By 2020 increase land in public ownership within the project area to 60,000 acres; achieve partial reconnection of the Upper and Lower Segments of the Cache River by 2010; reduce peak flows in Big Creek by 25%

Key Actions - Land acquisition, partial reconnection of the Upper and Lower Segments of the Cache River, reforestation and wetland restoration

Partners - Illinois Department of Natural Resources, U.S. Fish & Wildlife Service, The Nature ConservNaturil@etl0.9800 Tf0.0.00 rg.4007uioi/i U0000 TD200 0.0000 TD(s c30600 TwWnd) Illi



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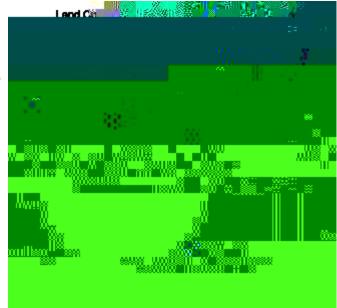
IV. B. The Grand Prairie Natural Division

Characteristics

The Grand Prairie Natural Division of central and east-central Illinois is a vast plain formerly occupied primarily by tallgrass prairie, now converted extensively to agriculture. Natural drainage of the fertile soils was poor, resulting in many marshes and potholes. Bison, Blanding's turtles, and Franklin's ground-squirrels are distinctive animals of the Grand Prairie, but are now extirpated or imperiled–as is the native prairie.

Major Habitats & Challenges

<u>Grasslands</u> - Much of the area that was historically prairie is presently in row crops. Most of the prairie remnants are small and do not provide many of the functions of a real prairie. Many prairie restorations



Mammals: American badger, gray bat, Indiana bat, Rafinesque's big-eared bat, red squirrel, Franklin's ground-squirrel

Emphasis Game Species

Fishes: northern pike, largemouth bass, smallmouth bass, spotted bass, warmouth, yellow bass, green sunfish, pumpkinseed, bluegill, longear sunfish, redear sunfish, rock bass, white crappie, black crappie, channel catfish, flathead catfish, black bullhead, yellow bullhead, brown bullhead, yellow perch, freshwater drum

Birds: ring-necked pheasant, wild turkey, mourning dove, American woodcock, Canada goose, wood duck, mallard

Mammals: white-tailed deer, eastern cottontail, fox squirrel, gray squirrel, coyote, raccoon, red fox, mink, beaver

Non-game Indicator Species

Open Woodland/Savanna - black rat snake, red-headed woodpecker, summer tanager, American robin, eastern kingbird, Baltimore oriole, white-footed mouse

Grasslands - prairie king snake, fox snake, common garter snake, bobolink, northern harrier, dickcissel, vesper sparrow, horned lark, eastern meadowlark, kestrel, song sparrow, American goldfinch, sedge wren, prairie vole

Forests - eastern box turtle, black rat snake, northern cardinal, black-capped chickadee, red-tailed hawk, wood thrush, tufted titmouse, Carolina wren, American redstart, Kentucky warbler, deer mouse

Wetlands - twelve spotted skimmer, chorus frog, spring peeper, painted turtle, northern water snake, great blue heron, river otter

Streams - sand shiner, bluntnosed minnow, spotfinned shiner, orange throated darter,

Conservation Opportunity Areas

Prairie & Grassland Restoration Areas (locations to be determined)

Protected lands - Establishment of 3 grassland Bird Conservation Areas (>3,000 acres of 'ecologically-patterned' grassland; see Fitzgerald et al. 2000) in the Grand Prairie Division will require restoration in areas where little habitat currently exists. Management of areas of this size will need to accommodate the conservation of grassland Species in Greatest Need of Conservation and provide recreational opportunities, including ring-necked pheasant hunting. Pheasant Habitat Areas, patches of 80-640 acres (typically <120 acres) managed by the Illinois Department of Natural Resources for public hunting, are sometimes the only significant habitat patch on the landscape. These locations may be a starting point for influencing grassland habitat on a landscape scale. Additional incentives for landowners adjacent to Pheasant Habitat Areas's may promote larger contiguous grassland habitat on private lands, particularly in areas with concentrations of highly-erodible soils.

Goal - Establish and manage grassland landscapes, as described above, for the benefit of grassland Species in Greatest Need of Conservation and offering compatible, highquality, wildlife-recreation opportunities

Key actions - identify locations with highest restoration potential; modify existing programs to encourage restoration of grassland on private lands

Partners - Illinois Department of Natural Resources, Pheasants Forever, U.S. Department of Agriculture (Natural Resources Conservation Service, Farm Service Agency), Grand Prairie Friends, C2000 Ecosystem Partnerships

Midewin - Des Plaines - Goose Lake Prairie Macrosite

Protected lands - Located in Will county, Midewin is the first tallgrass prairie to be established under federal control. Encompassing over 19,000 acres, it is the largest tallgrass prairie complex in the state, and is second only to Prairie Ridge State Natural

Area in the number of nesting area-sensitive grassland bird species. Goose Lake Prairie is the largest native tallgrass prairie remnant in Illinois. Des Plaines Conservation Area provides 2,000 acres of additional grassland habitat.

Key Actions - Restoration and management of tallgrass prairie vegetation are on-going; unnecessary legacy infrastructure (Midewin) and invasive woody vegetation are being removed. The surrounding landscape is vulnerable to exurban and suburban development because of its proximity to Chicago. Preserving open space would help ease the impact of land lost to development and increase an already ecologically important grassland ecosystem.

Partners - U.S. Forest Service, Illinois Department of Natural Resources, The Nature Conservancy

Kankakee Sands - Pembroke Savannas - Kankakee River - Momence Wetlands Area Protected Lands - Iroquois County State Fish & Wildlife Area, The Nature Conservancy properties

Objectives - Restore and manage an additional 10,000 acres of black oak sand savanna, sand prairie and sand flatwoods within the Kankakee Sands Section; restore and manage 2,000 acres in the Momence Wetlands; restore in-stream habitat and natural process in the Kankakee River in Illinois and Indiana, especially issues of sand bed and sediment load

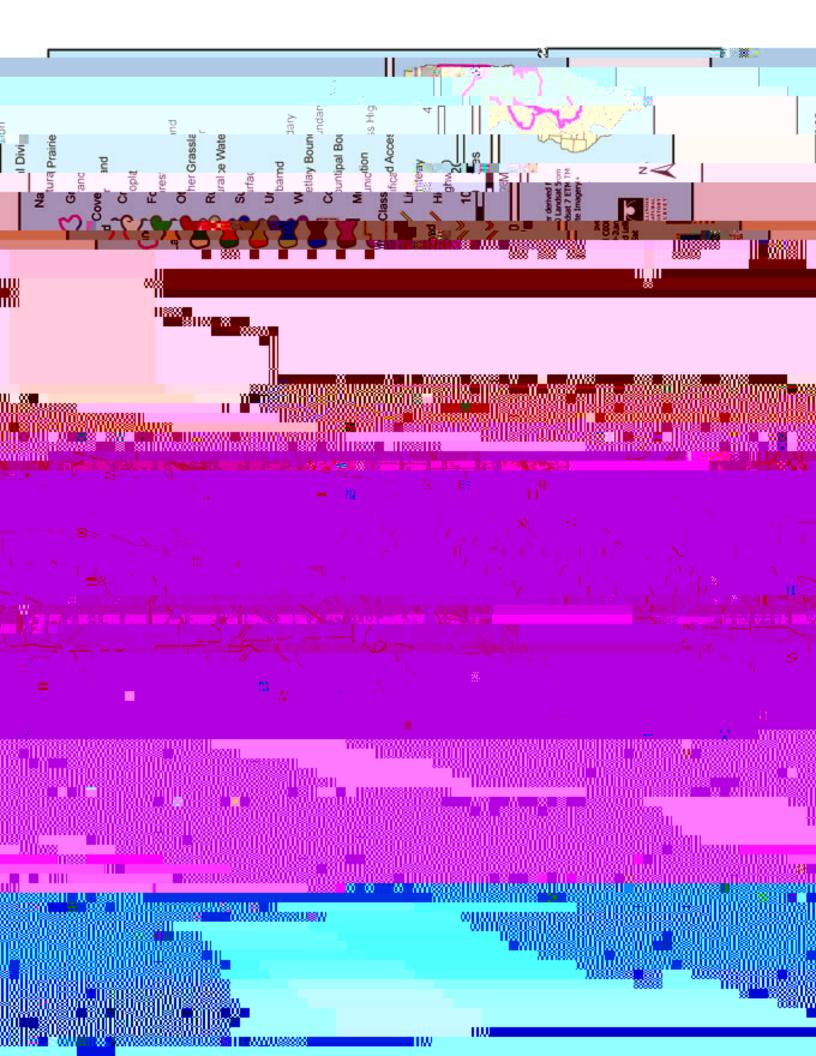
Key Actions - work across state boundaries to restore channelized streams, stabilize stream banks, manage drainage practices to moderate water flows, and develop minimum flow standards; protect and restore remnant savanna, sand prairie and wetland habitat

Partners - Illinois Department of Natural Resources, State of Indiana, The Nature Conservancy, Illinois Nature Preserves Commission, Northern Illinois Anglers Association

Green River

Lower Fox River

Contributors: Wade Louis, J. R. Black (Northern Illinois Anglers Association), Stan Etter, Tom Gargrave, Jay Hayek, Bob Massey, Dan Newhouse, Joe Rogus, Kim Roman, Eric Smith, Trent Thomas, and Mike Wefer



ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY IV. Natural Division Assessments, C. The Illinois River and Mississippi River Sand A

Version 1.0

State Natural Area, Matanzas Prairie State Natural Area, Barton Summer Timbers State Natural Area, and Clear Lake's open water

Priority Resources - sand prairie, sand savanna, ephemeral wetlands, sand-restricted wildlife, grassland and savanna Species in Greatest Need of Conservation

Lost Mound - Hanover Bluff - Mississippi Palisades

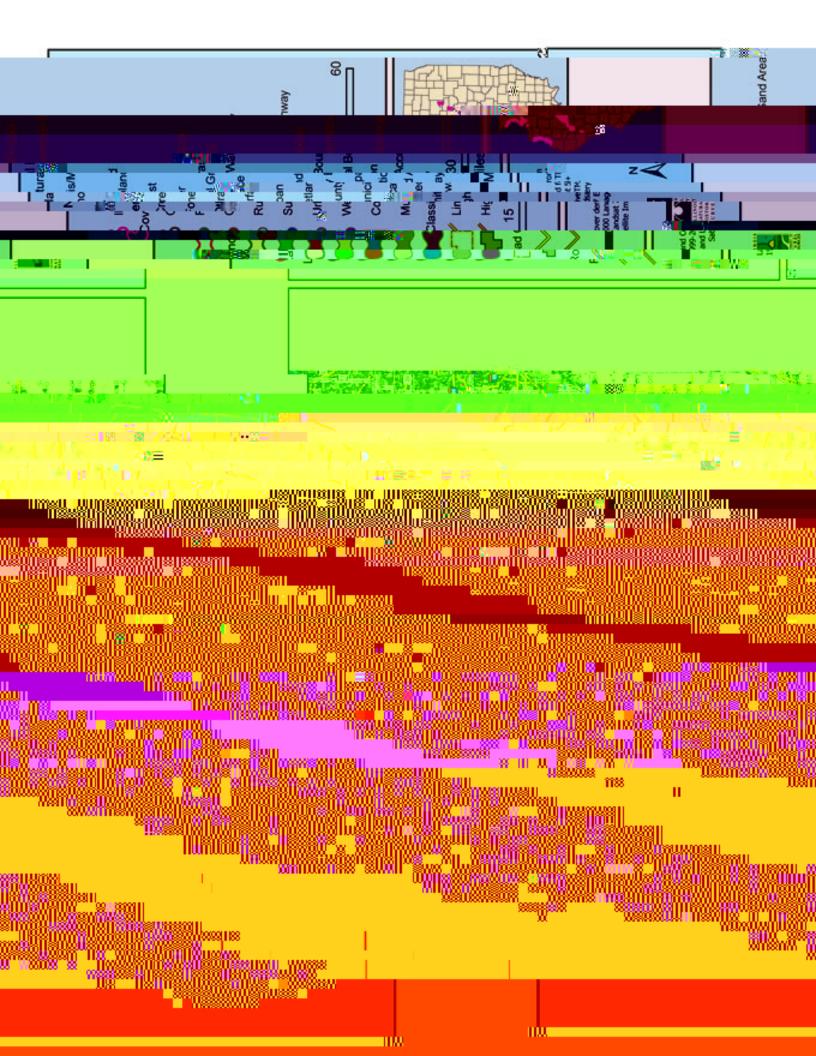
Protected Lands: Upper Mississippi River National Fish & Wildlife Refuge - Lost Mound unit, Hanover Bluff Nature Preserve, Falling Down Prairie Nature Preserve, Mississippi Palisades State Park

Conservation Philosophy: Restoration of the continuum of riverine (Mississippi River bottomlands), prairie (Lost Mound), and upland forest (Hanover Bluff, Mississippi Palisades) as an ecosystem landscape. At Lost Mound (within the Sands natural division), the objective is restoration of a sand prairie/sand savanna ecosystem capable of maintaining viable populations of grassland species, including both permanent residents and migratory species, with emphasis on declining grassland bird species and threatened and endangered species while allowing compatible recreational activities.

Partners: U.S. Fish & Wildlife Service, Illinois Department of Natural Resources, The Friends of the Depot, The Prairie Enthusiasts, The Nature Conservancy, Jo Daviess Natural Areas Guardians, Driftless Area Partnership, Natural Land Institute, Jo Daviess Conservation Foundation, Blufflands Alliance, National Wild Turkey Federation

* See also Upper Mississippi River and Illinois River Bottomlands and Wisconsin Driftless natural divisions

Contributor: Ed Anderson, Buck Cunningham



IV. D. The Lake Michigan Natural Division

Characteristics

Lake Michigan is a dynamic deepwater oligotrophic ecosystem that supports a diverse mix of native and non-native species. Although the watershed, weight def, awight def that drain into the open waters are comprised of a wide variety of habitat types critical to supporting its diverse biological community this section will focus on the o7ImTj12.10000 TD(ec)Tj11.6190000 0.00000 0.0000 ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY IV. Natural Division Assessments, D. Lake Michigan Community Objectives. Environmental Objectives are being developed to address the environmental and habitat issues that are impeding achievement of the Fish Community Objectives. Environmental issues in the Illinois waters are being addressed through the Waukegan Remedial Action Plan and the Lake Michigan Lakewide Management Plan.

Natural communities

Lake Michigan is a dynamic deepwater oligotrophic ecosystem. The present day fish community is a mix of native and nonnative species that comprise a heavily managed and unstable fishery. The historic fish community consisted of lake trout as the top predator preying upon whitefish, ciscoes, bloater chubs, sculpins, and yellow perch. By the early 1960s the historic fish community had collapsed from the combination of environmental abuse, unregulated harvest, and sea lamprey predation. The existing fishery consists of five salmonid predator species maintained by stocking and yellow perch, and a forage base primarily of alewives, rainbow smelt, and bloater chubs.

Critical speciesivi Tw (Cri)Tj 13.9200 0.0000 TD (ti)Tj 5.4000 0.0000 TD (cal s)Tj 22.5600 0.0000 TD (peci)Tj

Recreational Opportunities

The Illinois waters of Lake Michigan provide unique pedestrian and boat fishing opportunities for warm and cold water species. There is a spring and summer sport fishery for coho salmon, Chinook salmon, lake trout, rainbow trout and brown trout. Lower water temperatures near shore in early spring and late fall create trout and salmon fishing opportunities for shore fishermen. Yellow perch generally are caught throughout the year from shore, boats, and winter ice fishing. Smallmouth bass and largemouth bass are generally caught by boat fishermen in harbors and along nearshore structures. Shore fishermen also commonly catch several other species, such as rock bass, common carp, and blue gill.

Education/Interpretive

Chicago has several prominent museums. The Shedd Aquarium exhibits include species from the Great Lakes. The Department's Chicago Urban Fishing Program provides fishing clinics for teaching fishing to kids. The clinics are coordinated with the summer fishing programs sponsored by the Chicago Park District.

Natural Resource Commodities

Historically several fish species were commercially harvested by fishermen utilizing ports in Chicago and Waukegan. After the collapse of the lake trout fishery, two species (bloater chubs and yellow perch) were harvested commercially until 1996 when the commercial harvest of yellow perch was reduced to zero due to poor recruitment.

Key Actions

Achieve no net loss of the productive capacity of habitat supporting Lake Michigan's fish communities. High priority should be given to the restoration and enhancement of historic riverine spawning and nursery areas for anadromous species. Development of an accurate

Identify the most important and traditional zones for migratory and wintering waterbirds, and reduce harassment by recreational watercraft.

Contributor: Tom Trudeau

IV. E. The Lower Mississippi River Bottomlands Natural Division

Characteristics

The Lower Mississippi River Bottomlands Natural Division, including the Mississippi River and its floodplain from Alton to the Thebes Gorge in southwestern Illinois, is glaciated bottomland country that used to be mostly forested with numerous marshes, wet prairies, and oxbow sloughs scattered throughout it. It historically was the wide Mississippi River bed before channelization, and is divided into a northern and southern section. The northern part of the division is also known as the American Bottoms, and it was here that the wet prairies and marshes occurred. The southern part of the division was more heavily forested. Glacial flood waters created this vast floodplain ecosystem. The soils in this natural division are finely textured, with both sandy (well-drained) and clay (poorly drained) areas, all developed from alluvium. The Mississippi River, silt-laden below the confluence with the Missouri River, contains a distinctive fish assemblage of silt-tolerant plains species (plains minnow, sturgeon chub, flathead chub, sicklefin chub).

Presettlement condition of this division was mostly forested, with historic wet prairies and marshes in the Northern Section. Many of the wet prairies were drained and converted into agricultural fields. These were replaced by more vast forest and bottomland swamp tree species typical of the coastal plain in the Southern Section. Aquatic habitats of this division are represented by oxbow lakes and sloughs, marshes, and springfed swamps. Some unique fish species are found only in the springfed swamps, and Gulf Coastal Plain reptiles and amphibians reach the northern-most edge of their range.

Major Habitats & Challenges

<u>Forests</u> - irregular and unnatural flood regimes invoked by levees created to protect farm ground; overuse from recreational such as off-road vehicles and all-terrain vehicles; land clearing and fragmentation; invasion and seed deposition by exotic plants such as garlic

mustard and autumn olive; overgrazing by some livestock and abundant deer populations negatively affect forest composition and destroy rare plants.

<u>Grasslands (wet prairies)</u> - further destruction of wet prairies from draining for conversion to agricultural use; lack of fire to maintain fire-climax communities; invasion and seed deposition by exotic plants such as autumn olive and purple loosestrife; poor diversity and structure of cool-season grasslands

Wetlands (backwater sloughs and extricter poo



wildlife (i.e., deer and wild turkey). The Nature Conservancy's Upper Mississippi River Project works in close partnership with other organizations to conserve and restore the Mississippi River and its major tributaries by improving water quality, restoring healthy river flows, and reclaiming floodplains as natural habitat.

Management Guidelines

Landscapes

Forests - Increase forest cover by at least 10,800 acres. Inventory forested blocks at least 500 acres, and prioritize for addition on linkage with other blocks. Encourage sound management practices to promote healthy floodplain forests through landowner education and assistance, timber stand improvements, and exotics control (mechanical, chemical and fire). Controlling deer herds in bottomland forests needs to be addressed.

Grasslands - Increase grassland by at least 10,400 acres. In all remnant wet-mesic prairies, encourage sound management practices to maintain and increase their extent through prescribed burning, restoration with native cordgrass and stable water levels. Education of the public to the importance of wet prairies is necessary to gain support.

Wetlands - Increase wetlands by at least 4,000 acres. Recreating the historic meander scars and oxbow slough depressions may begin to restore wetlands on floodplain soils. Existing open wetlands need to be monitored and managed to prevent the encroachment of woody species such as willow. Establish buffer between wetlands and adjacent agricultural land to prevent herbicide runoff and sedimentation. Establishment of deeper and shallow wetlands is needed to increase amphibian breeding habitat, and help reduce harmful parasitic insect populations.

Streams - Encourage sound management practices to maintain and upgrade the quality of streams through landowner education and assistance, adjacent buffer and riparian corridors to filter herbicide runoff and avoid degradation by siltation and development, and discouraging destructive alteration by illegal off-road vehicle and all-terrain vehicle use.

-155-

Educational/Interpretive

The La Rue Swamp is a registered National Natural Landmark and also a federal Research Natural Area. Portions of the southern section are U.S. Forest Service, with some distinction between National Natural Landmarks and Research Natural Areas. State sites include Poag Chorus Frog Site, Horseshoe Lake State Park (Madison County), Frank Holten State Park, Kidd Lake Marsh Natural Area, Fort de Chartres Historic Site, Lovet's Pond Nature Preserve, and Union County Conservation Area.

Natural Resource Commodities

Forest products, commercial fisheries, hunting reserves/clubs, waterfowl clubs, naturebased tourism (scenic roadways, birdwatching, backpacking/hiking, and nature observation/recording)

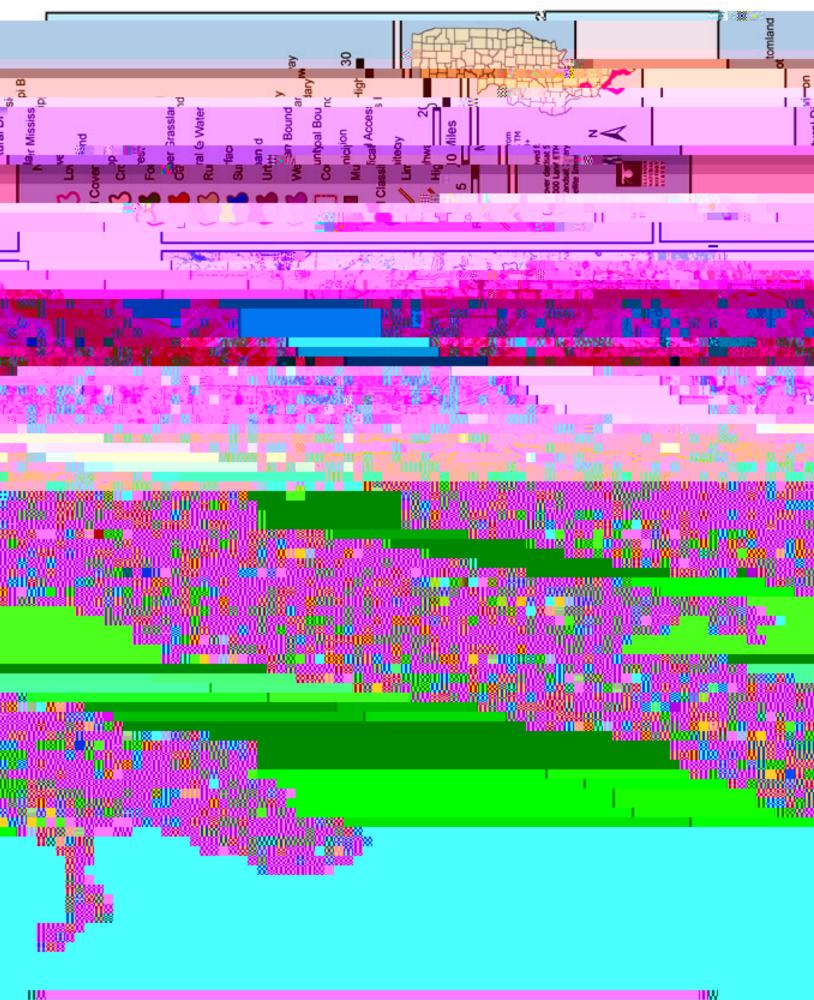
Conservation Opportunity Area

LaRue - Pine Hills - Western Shawnee - Trail of Tears

Protected lands - Pine Hills Ecological Area, LaRue Ecological Area, Ozark Hills Nature Preserve, Shawnee National Forest (including Oakwood Bottoms), Trail of Tears State Forest

Conservation philosophy - Maintain connectivity among Ozark, Shawnee Hills and Lower Mississippi River Bottomlands Natural Divisions with riverine, swamp, bottomland forest, bluff, and upland forest, glade and barrens communities. Protect and proactively manage for the unique flora and fauna native to these ecosystems. Use sound management decisions, with historical conditions as a guide.

Priority resources (LaRue Swamp) - swamp, sloughs of the Big Muddy River, high diversity of reptiles and amphibians



IV. F. The Middle Mississippi Border Natural Division

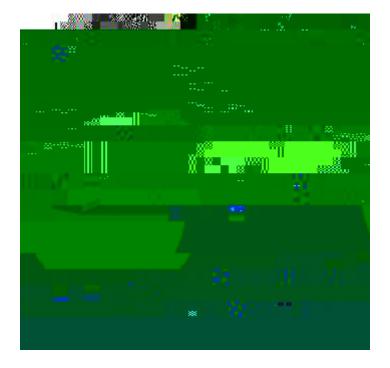
Characteristics

The Middle Mississippi Border Natural Division of west-central Illinois consists of a relatively narrow band of river bluffs and rugged terrain bordering the Mississippi River floodplain from Rock Island County to St. Clair County and the lower Illinois floodplain. Forest is the predominate vegetation with interspersed hill prairies common on west-facing bluffs. Limestone cliffs are common features, and the dark-sided salamander and western worm snake are restricted to this division. Forests of this division, close to river foraging areas, are important winter roosting sites for significant concentrations of bald eagles.

Major Habitats & Challenges

<u>Forests</u> - invasive exotic plants (bush honeysuckle), increase of less desirable species (black locust, maple, sassafras), deer browsing, lack of management and poor forestry practices, soil erosion as streams traverse bluff lines and subsequent sedimentation of the river bottomlands are problematic

<u>Open Woodland/Savanna/Barren</u> invasion by exotic species, lack of management



<u>Grassland</u> - dominance by fescue and other exotic plants, succession to forests, lack of fire/management; conversion to cropland

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Encourage sound management practices to promote healthy upland forests through landowner education/assistance, prescribed burning, timber stand improvements, and exotics control (mechanical, chemical, or fire). Forests should grade into open woodland or savanna habitats on adjacent uplands.

Open Woodland/Savanna/Barrens - Increase open woodland, savanna, & barrens by at least 7,500 acres. Pro-actively manage existing habitat that is not already in a management agreement or long term protection program. Encourage sound management practices to maintain and increase the extent of natural savannas and barrens through landowner education and assistance, prescribed burning, selective woody encroachment removal and exotics control (mechanical, chemical, or fire). Savanna or open woodland habitats should be encouraged in isolated woodland blocks under 15 acres in size.

Grasslands - Increase grassland habitat by 31,000 acres. Encourage sound management practices to maintain and increase the extent of hill prairies and other grasslands through landowner education and assistance, prescribed burning, selective woody encroachment removal and exotics control (mechanical, chemical, or fire).

Streams - Encourage sound management practices to maintain and upgrade the quality of streams through landowner education and assistance, adjacent buffer and riparian corridors to filter herbicide runoff, and correcting degradation caused by sedimentation and development.

Natural communities

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Emphasis Game Species 13 10.9800 Tf0.1200 Tw()TjET1.00000 0.00000 0.00000 1.00000 0.00000 0.00000

Natural Resource Commodities

Timber, trapping, ginseng and other marketable roots, hunting (especially white-tailed deer and turkey), commercial fishing

Conservation Opportunity Area

Pere Marquette State Park



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IV. Natural Division Assessments, G. The Northeastern Morainal Natural Division

from developments, too little oak regeneration due to lack of fire and other factors, lack of other

timber management and improvements, sugar maple infestation, buckthorn, other woody

exotics, exotic insect pests (European ash borer, gypsy moth, Dutch elm disease), excessive

deer browse, other nuisance animals such as feral cats, raccoons, cowbirds, drainage diversion

ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY

Open Woodland/Savanna - fragmentation, lack of fire, past over-grazing, buckthorn and other woody exotic invasion, no seed bank, lack of mature, cavity-producing timber, excessive deer browse

Grassland - Less than 245,000 acres remain. Fragmentation, dominance by exotic and invasive species, woody species invasion or natural succession to forest, nuisance animals including feral and domesticated cats

Wetland - Historically, more than 568,000 acres occurred, but less than 72,000 acres at present. Drainage issues including de-watering, impounding water too long, urban run-off, increased salinity, nutrient overload, filling, sedimentation, exotic species including reed canary grass, phragmites, purple loosestrife, carp and mute swans, and nuisance native animals such as beaver and Canada goose

Lakes and Ponds - Lake County has 10,000 acres of large glacial lakes including Fox Chain, Loon, Deep, Diamond, Bangs, Lake Zurich, Timber, Turner, Little Silver, Long, and others. Sediment and shoreline erosion from heavy boating, invasive exotics (e.g., curlyleaf pondweed, water milfoil, zebra mussel), increased turbidity from agricultural and urban runoff and pollutants, loss of vegetative habitat due to excessive removal treatments of submersed aquatic vegetation, municipal wastewater discharge, road salt for de-icing, storm-water discharge and impermeable surfaces severely impacting water quality, nutrient input and eutrophication,



City of Chicago and a multitude of Park Districts sponsor major events and provide urban volunteer projects in environmental stewardship.

Natural Resource Commodities

Guided waterfowl hunting, especially for Canada geese

Conservation Opportunity Areas

Crow's Foot Marsh - Coon Creek - Kishwaukee River

In 2002, The Boone County and the McHenry County Conservation Districts formed a partnership with the Illinois Department of Natural Resources to develop a conservation initiative aimed at pre

and the Wisconsin Department of Natural Resources. Potential exists for a larger agreement to manage critical beach, dune, swale habitat across state lines with Illinois Department of Natural Resources at Illinois Beach State Park and Lake County Forest Preserve District at Spring Bluff and Lyons Woods Nature Preserves. The District Restoration Ecologist has initiated contact with the Wisconsin partners. Reintroductions of rare insects and management of federally endangered species exist.

Lake-McHenry County Wetland Complex

Protected lands - Redwing Slough, Black Crown-Marsh, Chain O' Lakes, Moraine Hills, Volo Bog, Marl Flat, Sun Lake, Nippersink, Grant Woods, Gavin Bog & Prairie, Wauconda Bog Nature Preserve, Broberg Marsh, Airstrip Marsh, Schreiber Lake Bog, Bangs Lake, Fairfield Road South Marsh, Fourth Lake Nature Preserve, Rollins Savanna and McDonald Woods Marsh

Priority resources - several rare wetland types including fens and bogs, rare wetland and grassland species—some not found elsewhere in Illinois; several hundred recently-protected acres are slated for wetland, prairie and savanna restoration

Partners - Illinois Department of Natural Resources, Forest Preserve District of Lake County, McHenry County Conservation District

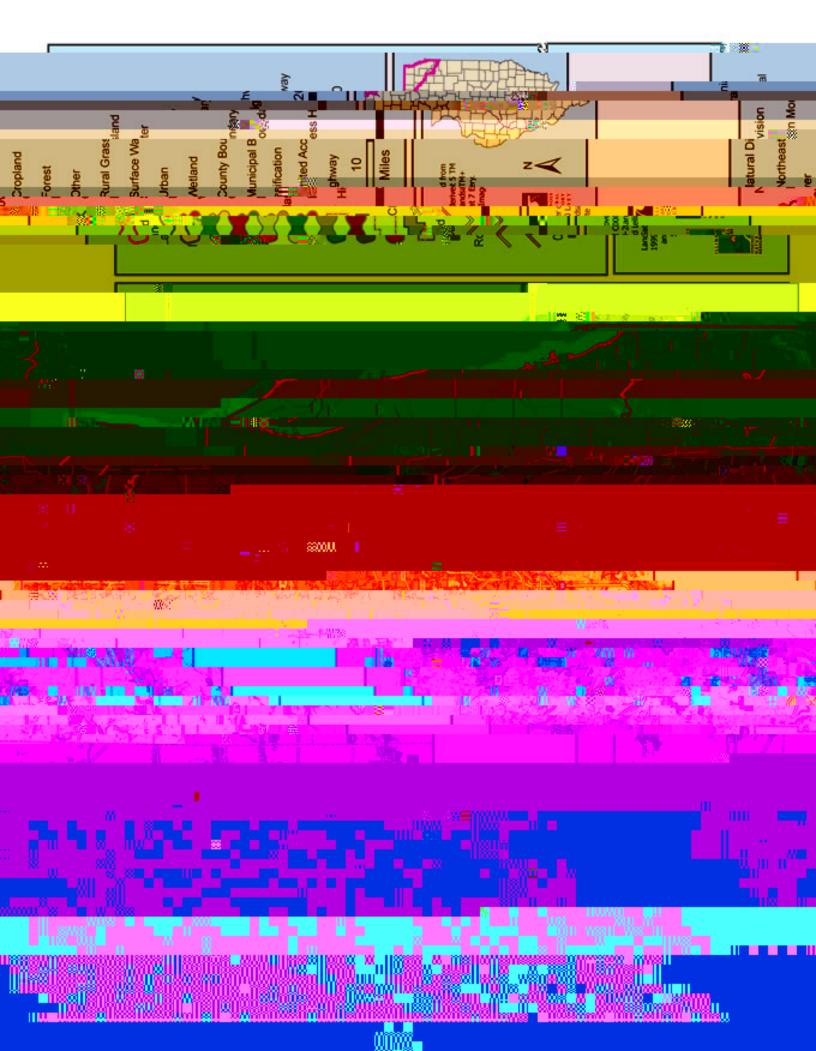
Upper Des Plaines River Corridor

Protected lands: Van Patten Woods, Wadsworth Savanna Nature Preserve, Wetlands Demonstration Site, Gurnee Woods

Priority resources - Des Plaines River, wetland, sedge meadow, and savanna habitat; several threatened/endangered species, migratory birds

Conservation opportunities - Large areas are available for wetland, savanna, sedge meadow and floodplain forest restoration occur within this complex.

Contributors: Maggie Col



IV. H. The Ozark Natural Division

Characteristics

The Ozark Natural Division, the part of the Ozark upl

olive, lack of fire to scarify hardwood nuts and prevent invasi



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ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY IV. Natural Division Assessments, H. The Ozark Natural Large areas of dry upland and mesic upland forest exist atop the Mississippi River bluffs and along the backside of the loess hill prairies, limestone ledges, and glades/barrens within the Ozark Division. Illinois Nature Preserves Commission and Illinois Department of Natural Resources staff are working to reduce fragmentation, and surrounding private forest is being included in large management areas to facilitate management with prescribed fire.

Various state and federal programs assist landowners in protecting caves (sinkholes) from sedimentation and pollution, improving timber stands, retiring environmentally-sensitive croplands, and restoring and managing grasslands. Lease-hunting may prevent or delay residential development, but complicates access issues.

Management Guidelines

Landscapes

Forests - Increase forest cover by at least 10,800 acres. Forested blocks of at least 500 acres should be inventoried and prioritized for addition or linking to other forests blocks. Encourage sound management practices to promote healthy upland forests through landowner education/assistance, prescribed burning, timber stand improvements, and exotics control (mechanical, chemical, or fire). Controlling deer herds in upland forests is an issue to address.

Open Woodland/Savanna/Barrens - Increase open woodland, savanna, & barrens by at least 7,500 acres. Pro-actively manage existing habitat that is not already in a management agreement or long term protection program – several blufftop glades and barrens could be targeted. Encourage sound management practices to maintain and increase the extent of natural savannas and barrens through landowner education and assistance, prescribed burning, selective woody encroachment removal and exotics control (mechanical, chemical, or fire). Law enforcement assistance should be given to landowners who wish to curb illegal all-terrain/off-road vehicle use in these shallow soil areas.

Grasslands - Encourage sound management practices to maintain and increase the extent of hill prairies to historic boundaries through landowner education and assistance,

prescribed burning, selective woody encroachment removal and exotics control (mechanical, chemical, or fire). As with savannas and barrens, illegal all-terrain/off-road vehicle use in these shallow soil, steep aspect areas should be discouraged, and law enforcement assistance given to landowners who wish to

steep aspect areas should be discouraged and law enforcement assistance given to landowners who wish to have it. Equestrian use of these areas should also be discouraged to avoid more erosion. As with caves, work with quarrying companies to enroll their property in long term protection plans and publicly promote their stewardship efforts.

Natural Communities

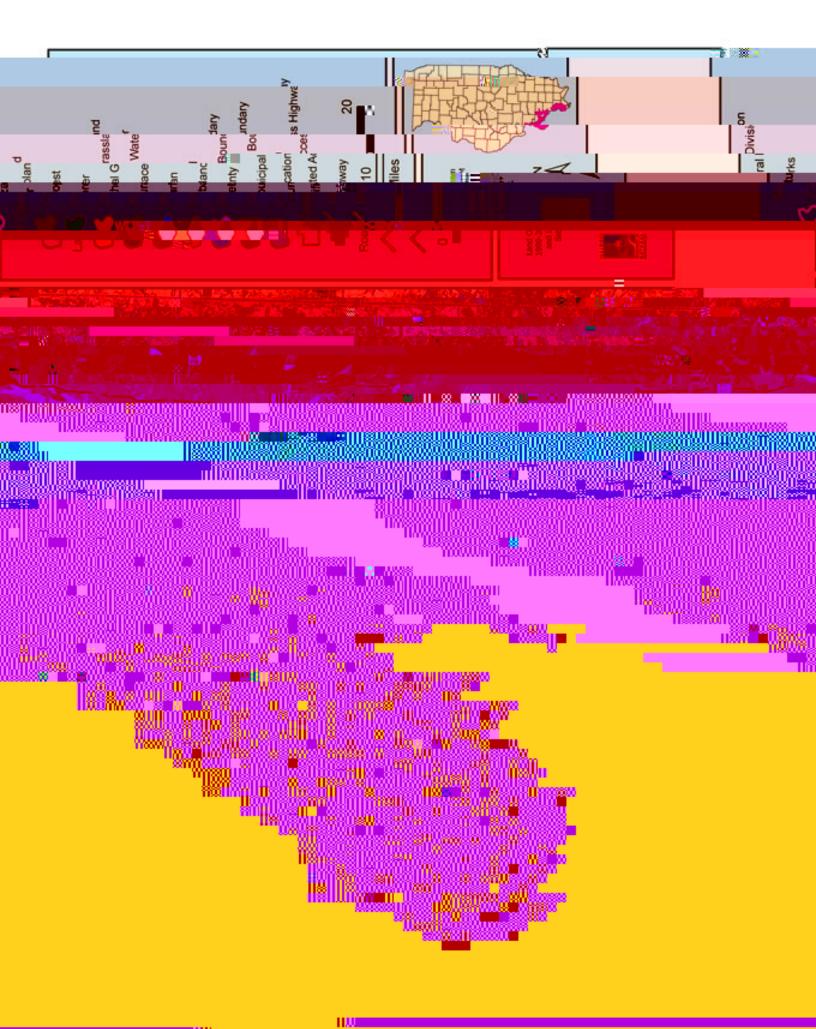
Dry upland forest, mesic upland forest, floodplain forest, loess hill prairie, sinkhole ponds, terrestrial and subterranean caves, bluffs, cliffs, limestone glades, and sandstone glades

Critical Species

Illinois cave amphipod, plains scorpion, spring cavefish, northern blacktail shiner, eastern narrowmouth toad, eastern coachwhip, Great Plains rat snake, flathead snake, scarlet snake, timber rattlesnake, hooded warbler, ovenbird, worm-eating warbler, and Indiana bat. Distinctive plant species include reticulate-seeded spurge, stiff bedstraw, Missouri black-eyed k-eyed **pro**

ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY

ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY IV. Natural Division Assessments, H. The Ozark Natural Division





Open Woodland/Savanna/Barrens - Increase by about 15,000 acres. Pro-actively manage existing habitat and restore degraded habitats with prescribed

Open Woodland/Savanna - tufted titmouse, great crested flycatcher, red-headed woodpecker, Cooper's hawk

Grassland - western meadowlark

Wetland - willow flycatcher

Streams - spotted sandpiper, mussels

Recreational Opportunities

Hunting (forest game, upland game, furbearers), trapping, fishing (including native and naturalized trout), hiking, wildlife viewing

Educational / Interpretive

Burpee Natural History Museum, Camp Benson, Boy/Girl Scout Camps, Park District & Forest Preserve District sites, Jane Addams Land Foundation/Parkland Trail, Audubon Societies, Prairie Preservation Society of Ogle County, Sand Bluff Bird Observatory, Wildflower Walkabouts, numerous nature centers

Natural Resource Commodities

Forest products, hunting/fishing opportunities, nature-based tourism

Conservation Opportunity Areas

Sugar-Pecatonica River

Protected lands - Winnebago County forest preserves, Rock Cut State Park

Priority resources - high quality stream, wetlands

Partners - Winnebago County Forest Preserve District, Sugar-Pecatonica Ecosystem Partnership, The Natural Land Institute, Illinois Department of Natural Resources

Nachusa-Franklin Creek-Castle Rock-Lowden Miller

Protected lands - Nachusa Grassland, Franklin Creek Natural Area, Castle Rock State Park, Lowden-Miller State Forest, White Pines Forest

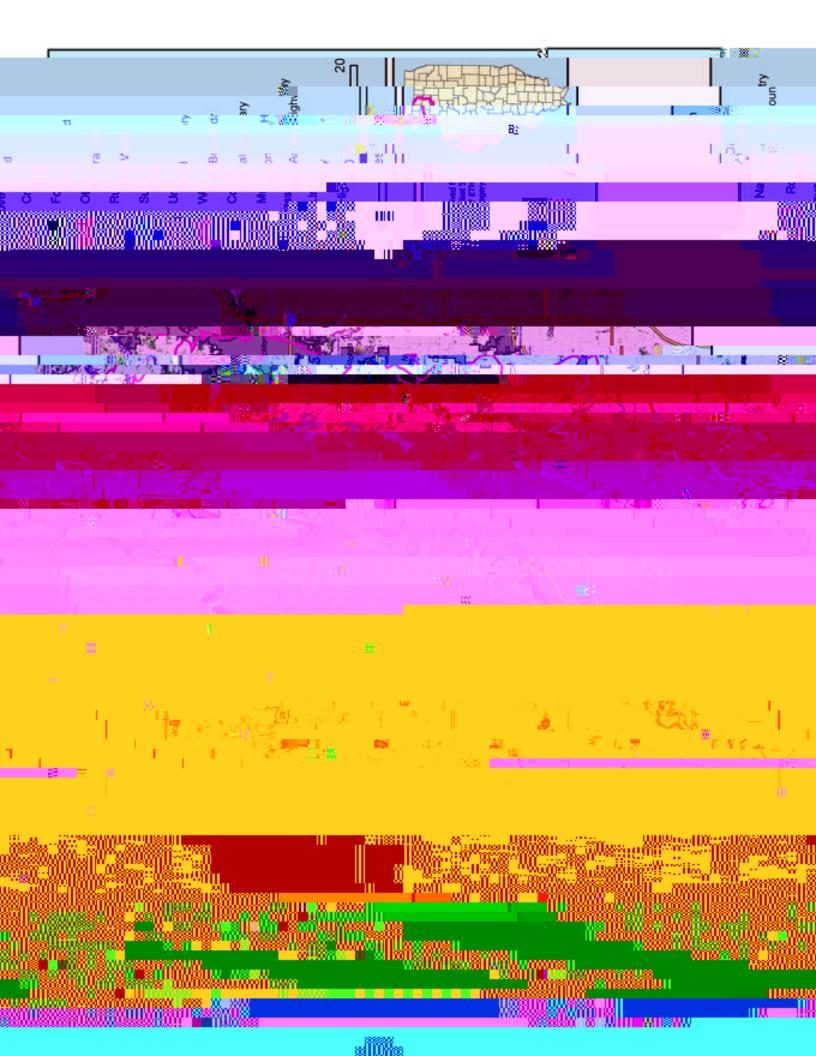
Priority resources - Nachusa Grasslands, over 2,500 acres of prairie remnants and restorations, is one of the largest remaining prairie landscapes in Illinois. The forested area along the Rock River at Castle Rock and Lowden Miller is the largest forest in the region, and hosts a highly diverse nesting community of Neotropical migratory birds.

Partners - The Nature Conservancy, Illinois Department of Natural Resources

Rock River

Priority resources - high quality stream

Contributors: Rick Lawrence, Jerry Paulsen



IV. J. Regional Assessment of the Shawnee Hills Natural Division

Characteristics

The Shawnee Hills Natural Division in the southern tip of Illinois is unglaciated hill



Grassland - Improve by encouraging conversion from fescue to warm season grasses, discouraging overgrazing and providing education and assistance for landowners.

Wetlands - Construct 2-3 ephemeral wetlands on public sites each year. Inventory croplands on state sites to identify lands marginal for cultivation and begin by converting these first. Begin a program to encourage landowners to construct and maintain "fishless" impoundments to benefit amphibians and dragonflies. Set a goal for 15-25 new impoundments per year on private lands.

Lakes & Ponds - Promote sound management of water, by producing educational materials for landowners which would cover runoff, pollution and siltation threats to impoundments.

Streams - Increase education efforts in areas of high development or karst topography. Widen and protect riparian areas along high quality streams. Begin restoration efforts on the Saline River and its tributaries.

Caves - Work with landowners and local volunteer groups (grotto's, etc.) to locate and map all caves and sinkholes in the division. Provide technical support and incentives for protection at biologically significant caves. Protect all significant bat hibernacula with preservation agreements and/or gating projects. Maintain 30 m vegetated buffer around caves, sinkholes, and springs. Gate appropriate bat hibernacula (caves, mine entrances), and create Indiana bat winter hibernacula in southern Illinois by op**erimite around area**.000 0.00 rgBT72.0000 2

Primary Communities - Complete inventory of cliff and s

and Edwardsville campuses), Southwest Illinois College, and the Illinois Natural History Survey

* See also Ozark and Lower Mississippi River Bottomlands natural divisions

Eastern Shawnee

Protected lands - Shawnee National Forest

Priority resources - high-quality streams, glades, barrens, large oak-hickory forest tracts, Neotropical migratory birds

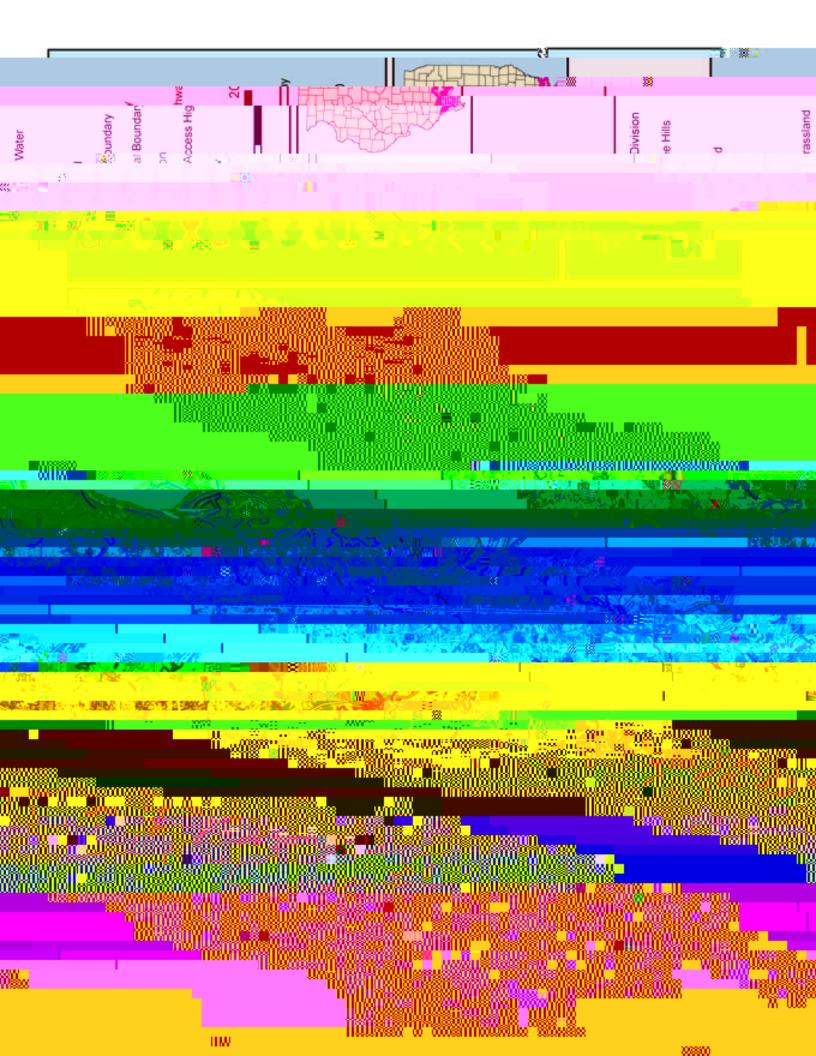
Objectives - restoration and management of a forest >50,000 acres; proactively manage natural communities

Priority actions - use prescribed fire to manage fire climax communities of glades, barrens, and upland forests; permanent protection of land parcels with high quality community types; reforestation to create larger patches

Partners - U.S. Forest Service, Illinois Department of Natural Resources, Illinois Nature Preserves Commission

Research, monitoring & evaluation - research and management can be conducted by the Illinois Department of Natural Resources, Southern Illinois University-Carbondale, and the Illinois Natural History Survey

Contributors: David Allen, Jody Shimp, Bob Lindsay



ILLINOIS COMPREHENSIVE WILDLIFE CONSEMe50 >>Bs6ON PLAN & STRATEGY

Management Guidelines

Landscapes

Grasslands: Grassland management landscapes larger than 10,000 acres in the Southern Till Plain Natural Division should contain at least 40% grassland land cover (over 50% in patches larger than 160 acres) and less than 10% combined wooded and urban land covers. At least two additional Bird Conservation Areas (grasslands >3,000 acres; see Fitzgerald et al. 2000) should be established in addition to Prairie Ridge State Natural Area (both units require augmentation; see Walk 2004), and Pyramid State Park (needs management plan). An increase of 240,000 acres of grassland will support wildlife objectives. Grasslands should be managed for diverse structure and vegetation composition across the landscape with prescribed fire, proper grazing, soil disturbance, and invasive species control (mechanical, chemical). Open, treeless, upland grasslands more than 0.5 mile wide are especially important to Species in Greatest Need of Conservation.

Forest, Open Woodland, Savanna and Barren: Restore and manage broad transitions (at least 50 m) from cropland and grassland to closed upland forests using mechanical disturbances and prescribed fire. Identify degraded open woodlands, barrens and savannas, and restore with mechanical removal of undesirable vegetation, and manage with prescribed fire and proper grazing. Inventory, restore and manage all tracts of southern flatwoods of Illinois Natural Areas Inventory grade C or higher, with at least one tract >1,000 acres and at least one tract >500 acres in each the Effingham and Mt. Vernon sections. Restore and manage a bottomland forest tract of >10,000 acres in the Kaskaskia River watershed; restore and manage at least one bottomland forest tract >1,000 in the other major watersheds. Riparian wetlands and bottomland forests should be restored and managed to increase ecological connectivity and decrease fragmentation of patches larger than 500 acres, respectively. A net increase of 65,000 acres of forest and 75,000 acres of open woodland/savanna/barrens is needed to meet wildlife objectives.

Wetland: Restore 3,800 acres of backwater and wetland habitats. Ephemeral and semipermanent (fishless) wetlands associated with grasslands, flatwoods and bottomland

-205-

migratory waterfowl, wild turkey, northern bobwhite, white-tailed deer, eastern cottontail, swamp rabbit, beaver, fox squirrel

Nongame Indicator Species

Forest - eastern box turtle, red-eyed vireo, American redstart

Open Woodland/Savanna/Barren - red-headed woodpecker, eastern kingbird, Baltimore oriole, great crested flycatcher

Grasslands - prairie kingsnake, dickcissel, grasshopper sparrow, eastern meadowlark, field sparrow (shrub-grassland), southern bog lemming, *Microtus* species

Wetlands - willow flycatcher, migratory shorebirds, southern leopard frog, cricket frog, chorus frog, spring peeper, smallmouth salamander

Streams - paddlefish, freckled madtom, shorthead redhorse, flier, pugnose minnow, slenderhead darter, smooth softshell turtle

Recreational Opportunities

Fishing on major reservoirs (Rend, Carlyle), impoundments (Newton, Coffeen, others) and streams; waterfowl hunting (especially at Rend and Carlyle); white-tailed deer, wild turkey, northern bobwhite and mourning dove hunting; furbearer trapping & hunting; Prairie Ridge State Natural Area, Carlyle Lake, and Rend Lake are "destination" birding sites for Illinois within the natural division; large multiple-use recreation facilities at Carlyle Lake, Rend Lake, Pyramid State Park, and Ten-Mile Creek State Fish & Wildlife Area; water sport recreation on Carlyle Lake, Rend Lake; canoeing on streams & rivers; morel and ginseng hunting

ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY

Version 1.0

grassland birds, mesopredators, reptiles, and prairie restorations (Illinois Department of Natural Resources, Illinois Natural History Survey, Eastern Illinois University, University of Illinois)

Pyramid - Arkland Landscape

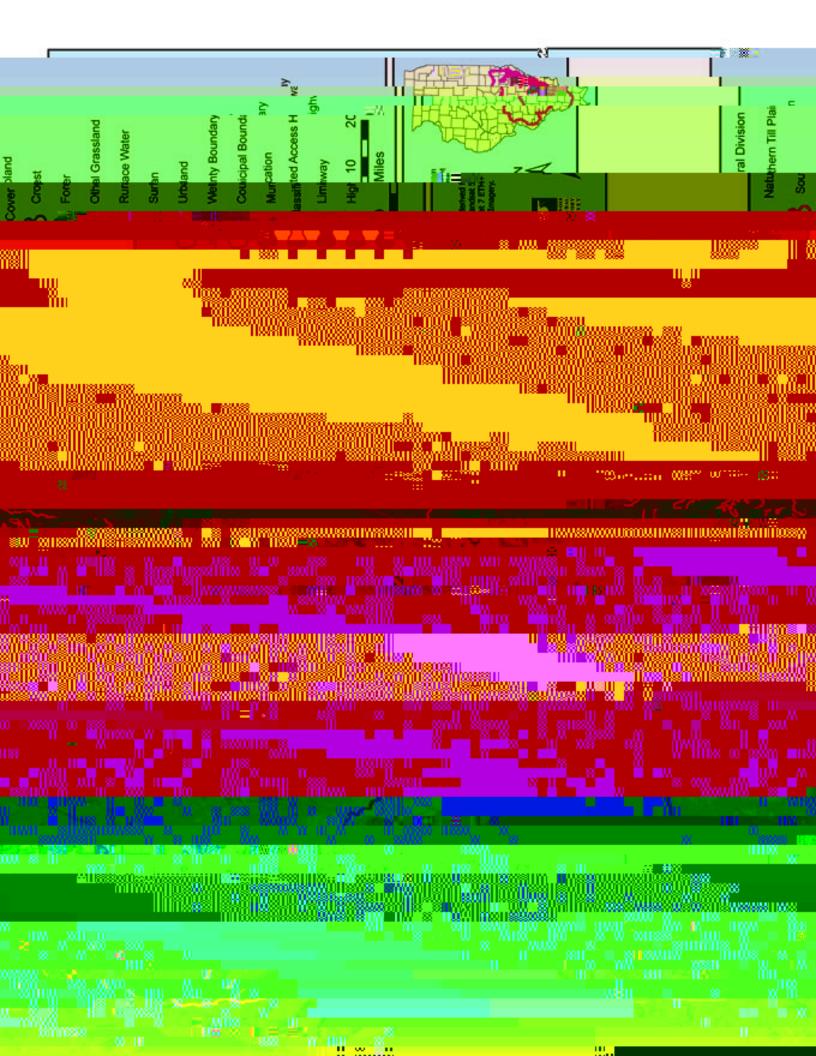
Protected lands - Pyramid State Park

Priority resources - grassland, shrubland and wetland wildlife; Henslow's sparrow, northern harrier, short-eared owl, Bell's vireo, loggerhead shrike, northern bobwhite, migratory waterfowl, least bittern; potential landscape for greater prairie-chicken re-introduction

Conservation philosophy - Maintain shrub, marsh and lake habitats in an open grassland matrix to manage priority wildlife resources, while providing high-quality resource-compatible recreation opportunities.

Key Actions - Continually addressi

Contributors: Terry Esker, Marty Kemper, Randy Sauer, Trent Thomas, Jeff Walk, Kevin Woods



ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY IV. Natural Division Assessments, L. The Upper Mississippi R

by improving water quality, restoring healthy river flows, and reclaiming floodplains as natural habitat.

Leveed cropland has been (and can be) protected from silt deposition and flooding; the infrastructure of levee districts allows for wetland restoration efforts. Wet prairie restoration is feasible along and within drainage ditches and other wet areas. Many privately-held tracts of land in the floodplain are large, and attractive for large-scale restoration and management. Many private duck clubs adjacent to the Illinois and Mississippi Rivers are managed as moist soil habitat. Some of the Illinois' tributary streams (i.e. both Crow Creeks, Big Sandy Creek) are less flood prone than the River. Adjacent fields with low levees provide ideal locations for reforestation or wetland development.

Management Guidelines

fox. The Illinois River Valley, and Chautauqua National Wildlife Refuge in particular, is a shorebird concentration area of international importance.

Emphasis Game Species

White-tailed deer, wild turkey, waterfowl (mallard, wood duck), furbearers (muskrat, beaver, raccoon, mink, muskrat, red fox), northern bobwhite, bullfrog, snapping turtle, crappie, bass, channel catfish

Non-game Indicator Species

Wetland - spring peepers, gray tree frogs, red-eared slider, northern water snake, great blue heron, great egret, migratory shorebirds, prothonotary warbler, Baltimore oriole, spotted sandpiper

Forest - red-headed woodpecker, bats

Grassland - common yellowthroat

Recreational Opportunities

Deer, turkey, furbearer, and waterfowl hunting, fishing, trapping, boating, camping, birding/wildlife viewing for American white pelicans, shorebirds, wading birds, waterfowl, bald eagles and others at numerous outstanding sites, including Hennepin-Hopper Lakes and Chautauqua National Wildlife Refuge

Educational/Interpretive

Pere Marquette State Park Visitor Center, Two Rivers National Wildlife Refuge Visitor Center, Bald Eagle Appreciation Days, Big River Days

Natural Resource Commodities

Forest products, commercial fisheries, tree nurseries, trapping, hunting opportunity (white-tailed deer, waterfowl)

Conservation Opportunity Areas

Middle Illinois River

Protected lands - Woodford State Fish & Wildlife Area, Marshall State Fish & Wildlife Area, Illinois River National Wildlife Refuges, Donnelly State Fish & Wildlife Area, and DePue State Fish & Wildlife Area, Hennepin-Hopper Lakes, Sanganois State Fish & Wildlife Area, Anderson Lake State Fish & Wildlife Area, Rice Lake State Fish & Wildlife Area, Spring Lake State Fish & Wildlife Area, Banner Marsh State Fish & Wildlife Area, Pekin Lake State Fish & Wildlife Area, numerous Conservation Reserve Enhancement Program, Conservation Reserve Program, and Wetland Reserve Program enrollments

Priority Resources - emergent/moist soil/submergent wetlands, bottomland forest, deepwater habitat, backwater lakes, fish and mussel communities, migratory birds

Conservation philosophy - Promote wetland habitat in backwaters that support viable fish populations and migrating o45un322.2000 0.0000 TD(anws)Tj21.9600 0.0000 TDnwatiat

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Version 1.

Contributors: Ed Anderson, Dean Corgiat, Jon Handel, and Mike Wefer



<u>Open Woodland/Savanna/Barren</u> - scarcity, succession to closed forest, exotic species (especially autumn olive)

<u>Grasslands</u> - fragmentation (small tract size); exotic species (especially tall fescue, autumn olive); succession to shrubland/secondary growth; lack of management (burning, discing); termination of Conservation Reserve Program contracts; recreational mowing of idle acres

<u>Wetlands (including wet prairie, canebreaks, mudflats, and meander scars)</u> - drainage, levees and ditches, exotic species (e.g., reed canary grass and *Phragmites*), increased tiling of cropland

<u>Lakes & Ponds</u> - sedimentation and nutrient loading, drainage of oxbow and backwater lakes, pesticide runoff

<u>Streams (including Wabash River)</u> - sedimentation, channelization, impoundments, levees, hydrologic modification, low quality riparian buffers and lack of habitat connectivity along riparian zones

Primary Communities (scattered sandstone outcrops supporting relict northern plants) - unknown

Opportunities:

The Wabash Border Natural Division supports a high proportion of geographically restricted plants and animals more typical of the eastern deciduous forest (e.g., American beech, mussels, fishes, amphibians and reptiles). Landscape-scale management is facilitated by large public ownership in the Vermilion River Section of this Natural Division (Kickapoo State Park, Middle Fork State Fish and Wildlife Area, Woodyard State Natural Area, Forest Glen County Park, Kennekuk Cove County Park).

fescue conversion, improved grazing practices, prescribed fire, soil disturbance and other techniques. The objective is a net increase of 41,600 acres by 2025.

Open Woodland/Savanna/Barrens - Open woodland, savanna and barren focus areas should be at least 320 acres and consist of a minimum 30-40% savanna, barrens, or open woodland, 20% grassland, and 10% forest. Additionally, savanna, barrens, or open woodland habitats should be encouraged in all isolated woodlots under 15 acres in size. The objective is a net increase of 11,200 acres by 2025.

Wetland - Wetland complexes in the Wabash Border Natural Division should be at least 160 acres in size with 6-10 units 500-1,000 acres in size, and one complex >3,000 acres. Wabash River bottom wetlands should be approximately 40% wetland, wet prairie, and/or canebrake, and at least 10% gravel prairie, sand barrens, and open woodland. Other wetlands should be approximately 40% wetland with upland buffer equal to or greater than the wetland areas, or o The eastern deciduous forests of North America reach their westmost extent in the Wabash River Natural Division. These forests, dominated by beech-maple-yellow poplar and associated animals, are of limited extent in Illinois and warrant restoration and management. Ephemeral woodland ponds host rare amphibians not found elsewhere in Illinois.

Sandstone cliffs include unique assemblages of relict northern plants.

Critical Species

Invertebrates: clubshell, rabbitsfoot, little spectacle case, wavy-rayed lampmussel, purple lilliput, rainbow, fat pocketbook, Indiana crayfish

Fishes: eastern sand darter, gravel chub, bluebreast darter, Iowa darter, harlequin darter, starhead topminnow, bigeye chub, redspotted sunfish, bantam sunfish, river redhorse, river chub, bigeye shiner, blacknose shiner, weed shiner, northern madtom

Amphibians: Jefferson's salamander, silvery salamander, hellbender, four-toed salamander, mudpuppy, wood frog

Reptiles: river cooter, smooth softshell turtle, copperbelly watersnake, eastern ribbon snake, alligator snapping turtle

Birds: American black duck, red-shouldered hawk, interior least tern, northern harrier, least bittern, American bittern, loggerhead shrike, hooded merganser, osprey, king rail

Mammals: river otter, bobcat, Indiana bat, swamp rabbit, gray fox

Emphasis Game Species

Largemouth bass, smallmouth bass, spotted bass, warmouth, yellow bass, green sunfish, bluegill, longear sunfish, redear sunfish, rock bass, white crappie, black crappie, blue catfish, channel catfish, flathead catfish, black bullhead, yellow bullhead, sauger, walleye, freshwater drum, northern bobwhite, wild turkey, American woodcock, ringneck pheasant (Vermilion River Section only), white-tailed deer, eastern cottontail, swamp rabbit, fox and gray squirrels

Nongame Indicator Species

Upland Forest - wood frog, red-backed salamander, Acadian flycatcher, wood thrush, redshouldered hawk, Louisiana waterthrush

Bottomland Forest - brown creeper, barred owl, pileated woodpecker, northern parula, yellow-throated warbler, prothonotary warbler

Open Woodland, Savanna, Barren - eastern spadefoot toad, red-headed woodpecker, Carolina wren, blue-winged warbler, mockingbird, yellow-breasted chat, lark sparrow

Grasslands - eastern meadowlark

Wetlands (including wet prairie, canebreaks, mudflats, and meander scars) - blacknecked stilt, swamp sparrow, sedge wren

Streams (including Wabash River) - Wabash-endemic crayfish, American eel, highfin carpsucker, blue sucker, banded pygmy sunfish, bluntnose darter, lake chubsucker, spottail darter, silver lamprey, ribbon shiner, ghost shiner, rosyface shiner, silverband shiner, pugnose minnow, mountain madtom, southern redbelly dace, paddlefish, blacknose dace, shovelnose sturgeon, central mudminnow, black redhorse, queen snake

Primary Communities - black rat snake (hibernacula)

Recreational Opportunities

Fishing (especially stream fishing), trapping, upland game hunting, forest game hunting, furbearer hunting, waterfowl hunting, canoeing, wildlife watching

Educational/Interpretive

Beall Woods State Park & Natural Area, Vermilion County Conservation District, Eastern Illinois University, Indiana State University, Vincennes University, Robeson Hills Nature Preserve, New Harmony Historic Site (Indiana)

Natural Resource Commodities

Forest products (ginseng and seeds), commercial fishing, native plant seed collection, outdoor recreation/nature-based tourism

Conservation Opportunity Areas

Vermilion River (Middle Fork, North Fork and Salt Fork) & Little Vermilion River

Protected Lands - Kickapoo State Recreation Area, Middle Fork State Fish & Wildlife Area, Kennekuk Cove County Park, Woodyard State Natural Area, Fleirman's River Nature Preserve

Priority Resolutions the and a contraction of the and a contract of the analytic and contract of the analytic and a contract

Conservation Philosophy



IV. N. The Western Forest-Prairie Natural Division

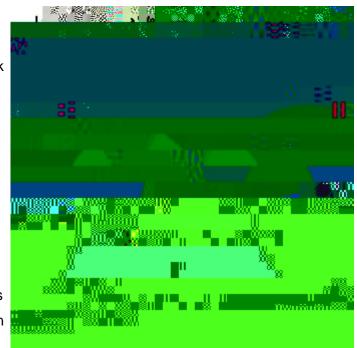
Characteristics

The Western Forest-Prairie Natural Division of west-central Illinois is a strongly dissected glacial till plain of Illinoisan and Kansan age. Open woodland was the predominant vegetation, with considerable prairie on the level uplands. This character is reflected today with forests in riparian zones and on steep hillsides, and agriculture and rural grasslands in upland areas. This division has a well-developed natural drainage system with major streams having significant flood plains. Land use patterns of this division and the Southern Till Plain are similar, and five-lined skink, ground skink and ornate box turtle are animals characteristic of these two divisions.

Major Habitats & Challenges

<u>Forests</u> – destruction by bulldozing/brush clearing, excessive deer browsing, livestock grazing has degraded structure and floral diversity, invasive species, lack of proper timber management and fire are reducing oak-hickory and open forests; gully erosion on steeply sloped forest lands is problematic

<u>Open Woodland/Barren/Savanna</u> succession to closed forest; other problems in these habitats are similar to challenges in forest of the division; poor management



has diminished the abundance and quality of savanna-type habitats

<u>Grasslands</u> - scarcity due to conversion to cropland; destruction of prairies occurred so long ago, there is little awareness or motivation to restore this ecosystem; pastures are monotypic cool-season grasses and have little structural diversity; dominance by tall fescue and exotic plants; several thousand acres of Conservation Reserve Program grasslands lack management exclusive of compliance mandated periodic mowing–these grasslands have poor structure and plant diversity

burning, selective woody encroachment removal and exotics control (mechanical, chemical, or fire).

Grassland

ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY IV. Natural Division Assessments, N. The Western Forest-Prairie

Key Actions - Determine appropriate extent of grassland, open woodland and forest; restore open woodlands and savannas

Partners - Illinois Department of Natural Resources, Natural Resources Conservation Service, Quail Unlimited, National Wild Turkey Federation

Implementation resources - Conservation Reserve Program, Conservation Reserve Enhancement Program, Forestry Incentive Program, Supplemental Incentive Program, Forestry Development Act, Private Land Incentive Program, Acres for Wildlife Program

Contributors: Kent Boyles, Doug Carney, Mark Phipps, Brad Poulter



IV. O. Regional Assessment of the Wisconsin Driftless Natural Division

Characteristics

The Wisconsin Driftless Natural Division is part of an area extending from the northwestern corner of Illinois into Iowa, Wisconsin and Minnesota that apparently escaped Pleistocene glaciation. Bordered by the Mississippi River Bottomlands on the west and characterized by rugged terrain that was originally mostly forested with some prairie, the division contains northern and pre-Ice Age relict species (e.g., Iowa Pleistocene snail), dolomite outcrops, hill prairies, extensive savannas, coolwater streams and caves. The Driftless area is so named because it has little or no "drift" - the sediments deposited across the remainder of northern and central Illinois by glaciers that bypassed this corner of the state. The rough, unglaciated terrain features wooded uplands, rolling hills, narrow valleys, numerous streams, springs, and cliffs and bluffs.

Major Habitat Types & Challenges

<u>Streams (Galena, Plum and Apple River</u> <u>Systems)</u>: siltation, excessive nutrient loads, impacts from grazing, thermal degradation of coolwater streams; the Galena River below the city of Galena suffers from excessive erosion due to the channelization of the stream; increases in boat traffic, particularly jet skis, in narrow, highly erodible streams may be problematic

<u>Forest</u> - fragmentation and loss of forests from developments (e.g., subdivisions and houses) and other disturbances, insufficient oak



Management Guidelines

Landscapes

Forest - A net increase of 11,000 acres will achieve wildlife objectives. Riparian forests should be at least 2 times as wide as the adjacent stream for all drainages. Forests should grade into open woodland or savanna habitats on adjacent uplands. Forested blocks of at least 500 acres should be inventoried and prioritized for addition or linking to other forests blocks. Encourage sound management practices to promote healthy upland forests through landowner education/assistance, prescribed burning, timber stand improvements, and exotics control (mechanical, chemical, or fire).

Open Woodland, Savanna - Increase by 4,000 acres. Savanna or open woodland habitats should be encouraged in isolated woodlots under 15 acres in size. Encourage sound management practices to promote healthy upland forests through landowner education/assistance, prescribed burning, timber stand improvements, and exotics control (mechanical, chemical, or fire).

Grassland - On highly erodible farm land, terraces should be encouraged, and grass waterways planted in the valleys. Enhance the quality of existing pastures and idle grasslands with fescue conversion, improved grazing practices, prescribed fire, soil disturbance and other techniques. Protect, restore and encourage sound management to maintain and increase the extent of prairie remnants and hill prairies to historic boundaries through landowner education and assistance, prescribed burning, selective woody vegetation removal and invasive species control (mechanical, chemical, or fire).

Streams - Livestock should be fenced away from the stream, and should be watered using single, small "cattle crossings" or alternate water sources. Riparian habitat (forest, open woodland or grassland, as site-appropriate) should be at least 2 times as wide as the adjacent stream for all drainages.

Caves - Protect and manage forest and savanna habitat in cave recharge areas.

Natural communities

High-gradient coolwater streams, upland forest, sand prairie, dolomite prairie, loess hill prairie, sand hill prairie, savanna, sand savanna, sedge meadow, spring seepages, dolomite cliff, cave, algific slope

Critical species

Insects - Gorgone checkerspot (*Chlosyne gorgone*), prairie walking stick (*Diapheromera velii*), leafhopper (*Polyamia herbida*), leafhopper (*Polyamia obtecta*), Edward's hairstreak (*Satyrium edwardsii*), leafhopper (*Scaphytopius cinereus*), lead plant flower moth (*Schinia lucens*), regal fritillary (*Speyeria idalia*)

Crustaceans - Iowa Pleistocene snail, Iowa amphipod

Mussels - slippershell mussel, black sandshell

Fish - longnose dace, largescale stoneroller, Ozark minnow, brook trout

Amphibians - four-toed salamander

Reptiles - timber rattlesnake, lined snake

Birds - upland sandpiper, loggerhead shrike, cerulean warbler

Mammals - bobcat

Emphasis Game Species

Smallmouth bass, brown trout, walleye, white-tailed deer, wild turkey

Nongame Indicator Species

Stream: northern hogsucker, southern redbelly dace, horneyhead chub, suckermouth minnow, northern hogsucker, spotted sucker

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to protect the streams. White-tailed deer and wild turkey hunting opportunities are important, as are forest products.

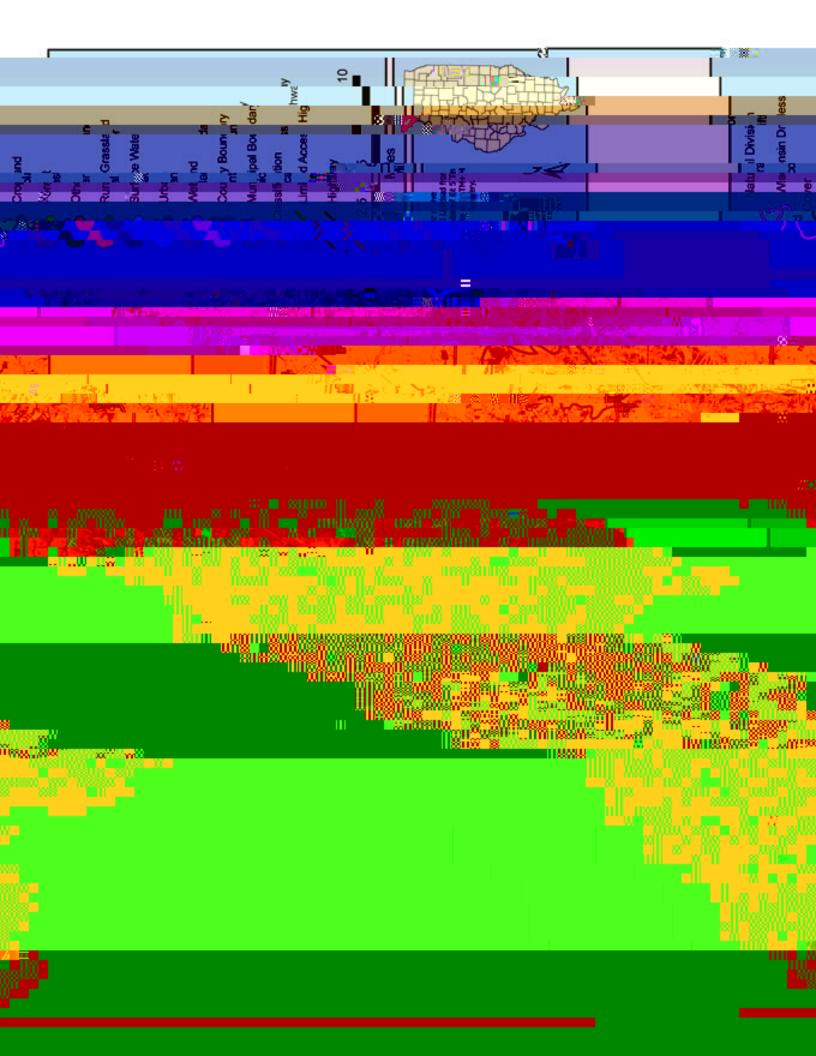
Conservation Opportunity Areas

Lost Mound - Hanove

Partners: Illinois Department of Natural Resources, National Wild Turkey Federation, Jo Daviess Natural Areas Guardians, The Prairie Enthusiasts, Jo Daviess Natural Areas Guardians, Driftless Area Partnership, Natural Land Institute, Jo Daviess Conservation Foundation, Blufflands Alliance, The Nature Conservancy

Apple River

Protected Lands: Apple River Canyon O o0O0iMAlli



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Table 2. Composition of the Illinois Comprehensive Wildlife Conservation Plan/Strategy

 Steering Committee.

Table 3. Plans used to develop the Illinois Comprehensive Wildlife Conservation Plan/Strategy.

Table 5, continued.

Idle-Introduced, meadow dominated by introduced grass species and not hayed or

grazed

Early successional, young herbaceous habitats ranging from bare soils to 'old fields' with <30% woody cover

Wetland (9 categories; hydric habitats with water depths <5 feet)

Marsh, graminoid-dominated wetland with water at or above the soil surface most of the year

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Table 5, continued.

Warm-water stream, <200 sq. mile watershed stream with max. water temperatures above 65 F River, >200 sq. mile watershed stream Major River Channel, main channel of the Mississippi, Illinois, Wabash and Ohio Rivers Major River Side-Channel Backwater, area of little or no current, connected to the river during flood events

Primary (3 categories; habitats with little or no soil and maintained in the early stages of primary succession)

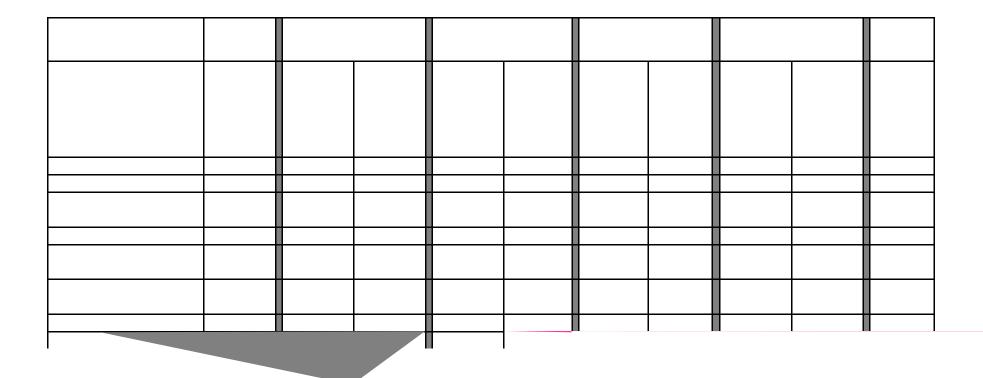
Glade, a forest opening caused by bedrock at or near the surface Bluff & Cliff, vertical exposures of bedrock and unconsolidated material Lakes ts, IET de00 0.0990 TD(no so)Tjosi.120s107.00000 0.00000 0.00000 1.00000 0.0000 cr

ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY

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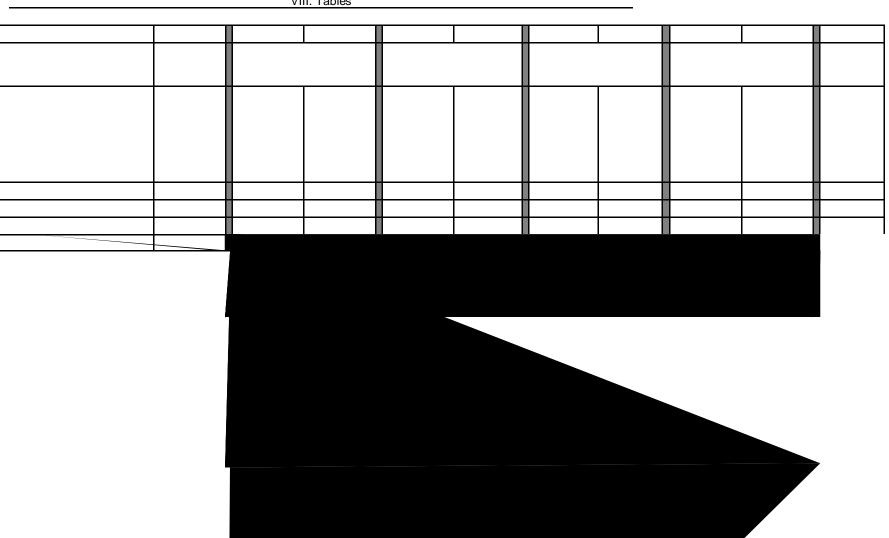


-268-Table 7. Step-down of statewide habitat objectives to the natu

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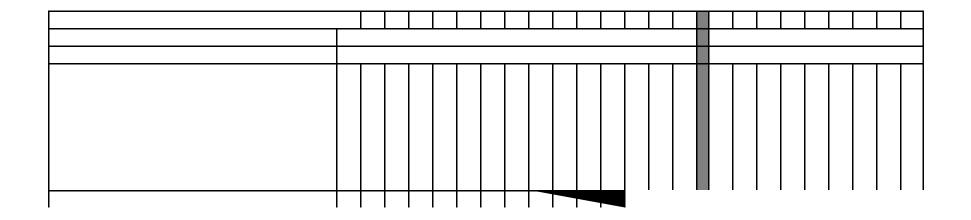
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VIII. Tables



ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY VIII. Tables

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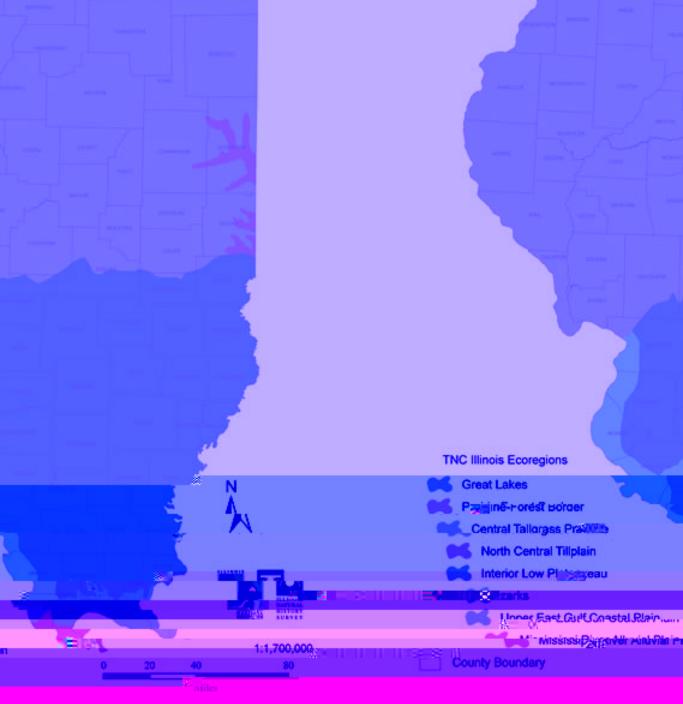
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Table 9, continued

- Identify priority survey and research efforts to determine status, assist in restoration, and improve conservation of wildlife and habitat resources.

Table 10. Timeline and activities for 10-year revision to the Illinois Comprehensive WildlifeConservation Plan & Strategy.

Time to Due Date	Activity
-24 months	Select revision team (coordination, information management, and
	partner/public contact)
-23 months	Form steering committee of internal and external partners to guide
	process
-22 months	Revision team reviews plan/strategy, existing databases, and
	other conservation plans
-20 months	Based on current conditions, revision team refines process
	outlined here
-18 months	Revision team identifies than assists experts in performing status
	and stress assessment for Species in Greatest Need of
	Conservation and habitats
-16 months	Illinois Department of Natural Resources and partners revise
	wildlife and habitat goals
-12 months	Regional planning workshops to identify issues, revise
	conservation strategies, and modify Conservation Opportunity
	Areas
-10 months	Revision team develops draft document
-4 months	.00 3200 0.0000 TD(and partners rev)Tj80.4000 0.0000 TD(ise)TjET1.00000 0.0



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Figure 1 The Nature Con



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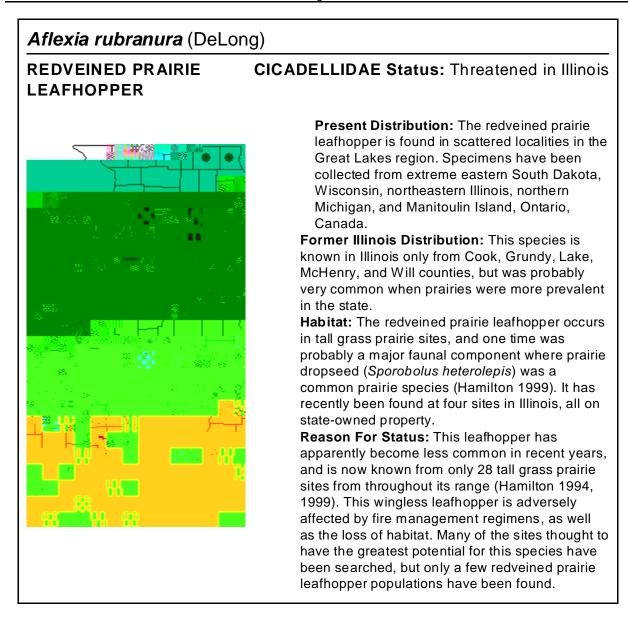


Figure 4. The information on distribution, abundance, habitat association, and status available for the red-veined prairie leafhopper in Nyboer et al. (2004). Similar accounts in this source are available for all of Illinois' Threatened and Endangered Species. The Illinois Department of Natural Resources' Biotics 4 database is the primary source for current distribution information in the state. All of these accounts are on the accompanying "Information on the Distribution and Abundance of Illinois' Species in Greatest Need of Conservation" disk.

ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY IX. Figures

Figure 5. The information on distribution and abundance available for the ellipse, a freshwater mussel, in the Illinois Natural History Survey's mussel database. Red dots indicate points where the species has been recorded since 1980, brown dots indicate all sample locations since 1980. The database includes location data, survey dates and personnel, and the number and size classes of all live, dead and relict individuals of all species on each survey date. Similar accounts in this source are available for all of Illinois' Mussels in Greatest Need of Conservation. Similar maps for all of these species are on the accompanying "Information on the Distribution and Abundance of Illinois' Species in Greatest Need of Conservation" disk.

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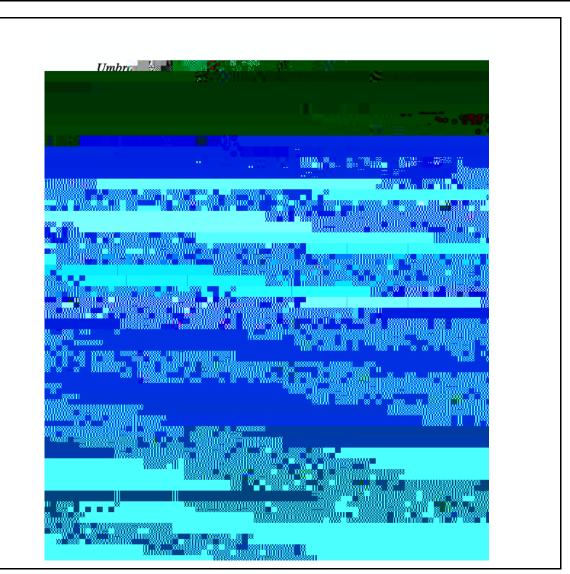
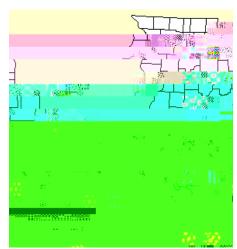


Figure 6. The information on distribution and abundance available for the central mudminnow, *Umbra limi*, in the Illinois Natural History Survey's fish collections database. Closed dots indicate points where the species has been recorded since 1980, open dots indicate collections in 1979 or earlier. The database includes location data, survey dates and personnel, and the number



Rana areolata

Crayfish Frog

Purple shade indicates vouchered specimens. Light blue (cyan) shade indicates photographic records. Yellow shade indicates verified sighting.

Slanted hatch indicates pre-1980 records only

NOTE: Not all specimens upon which these maps are based have been verified.

Key Characters: Large head; mottled upper jaws; distinctively humped lower back when at rest; dark spots on back crowded together and encircled by light borders.

Similar Species: Northern leopard frog, pickerel frog, plains leopard frog, southern leopard frog.

Subspecies: Northern crawfish frog, R. a. circulosa.

Description: Large (6.6-11 cm SVL) spotted frog with dorsolateral fold along each side of body. Entire belly unspotted white. Snout cone-shaped. Male has paired vocal pouches, at corners of jaw, and enlarged thumbs used for holding onto female during amplexus.

Habitat: Prairies, woodlands, and brushy fields in hardpan clay soils in low, wet areas. Common breeding sites include flooded fields, fish-free farm ponds, and small lakes in pastures or on golf courses.

Natural History: Lives underground most of year in mammal burrows, storm drains, and abandoned crayfish burrows. Known to eat crayfish and small amphibians and reptiles, mostly at burrow entrances. Adults breed in pools during March-April, sometimes in large numbers. Breeding call is a loud, deep snore. Female lays 3,000-7,000 eggs. Tadpoles transform in midsummer.

Status: Formerly widespread in southern half of state. Uncommon and declining in some areas where breeding habitats have been drained or stocke

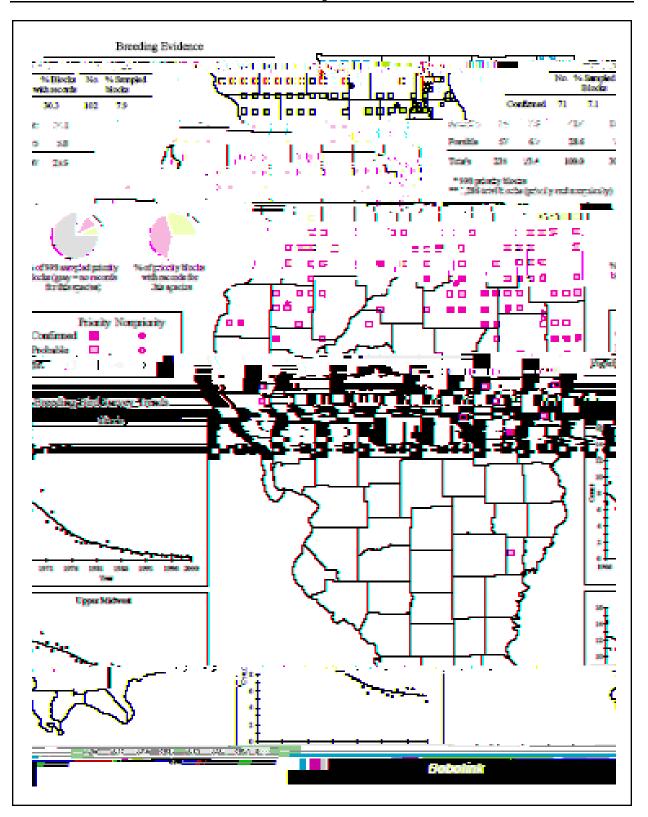
Figure 8 (*following two pages*). The information on distribution, abundance, habitat association, and status available for the bobolink in Kleen et al. (2004). Similar accounts in this source are available for all of Illinois' Birds in Greatest Need of Conservation that nest within Illinois. Accounts for all of these species are on the accompanying "Information on the Distribution and Abundance of Illinois' Species in Greatest Need of Conservation" disk.

Bobolink

Dolichonyx oryzivorus



ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY IX. Figures



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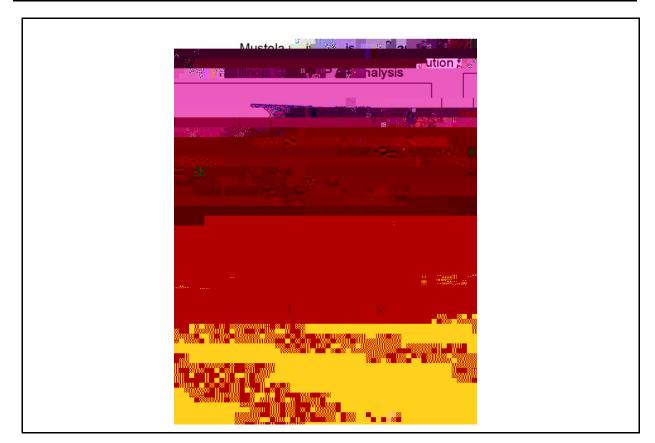
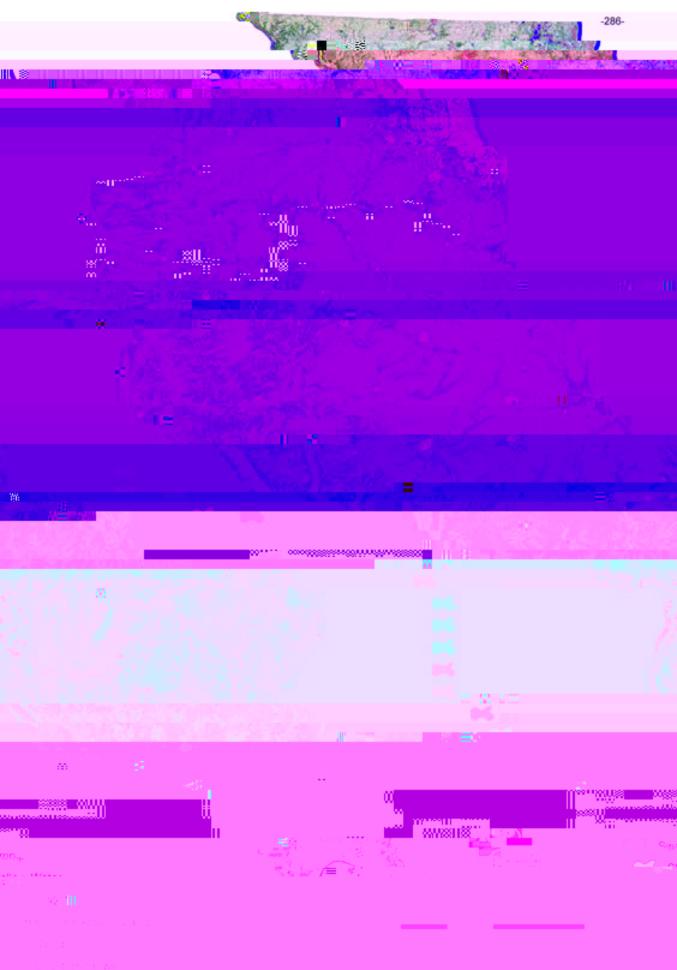


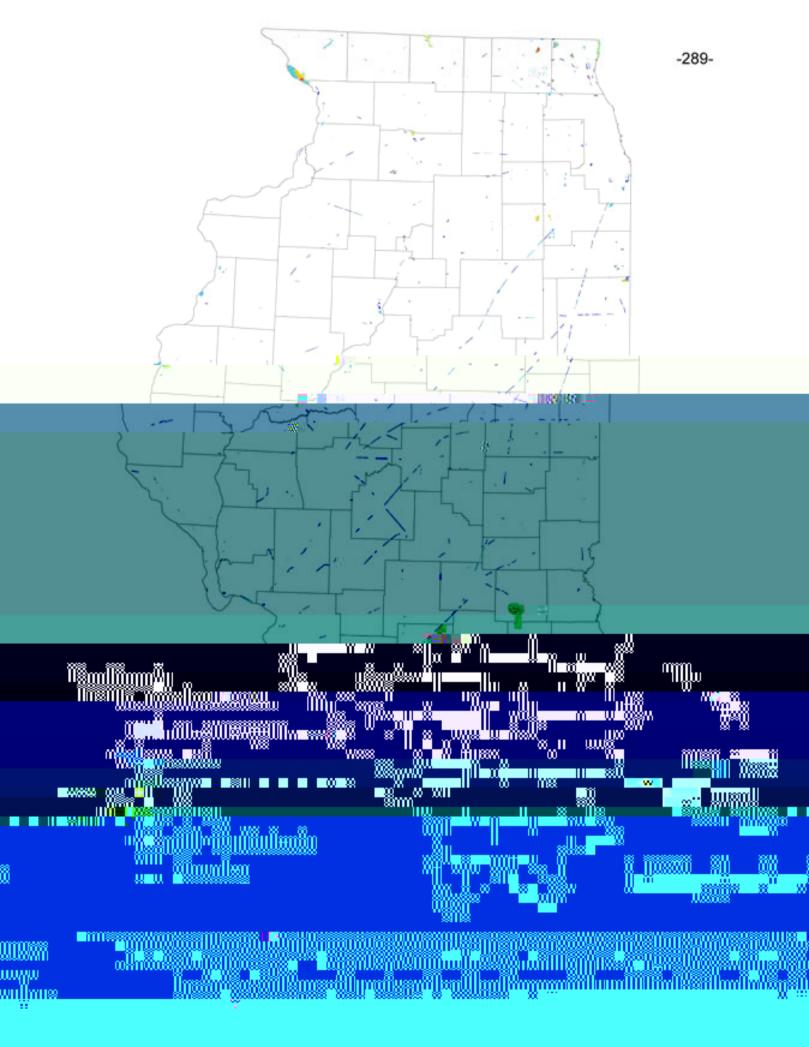
Figure 9. The information on distribution of the least weasel from the Illinois GAP Analysis Project (http://www.inhs.uiuc.edu/cwe/gap/). Similar maps from this project are available for all of Illinois' Amphibians, Reptiles, Birds and Mammals in Greatest Need of Conservation. All of these maps for amphibians, reptiles, migrant-only birds, and mammals are on the accompanying "Information on the Distribution and Abundance of Illinois' Species in Greatest Need of Conservation" disk.



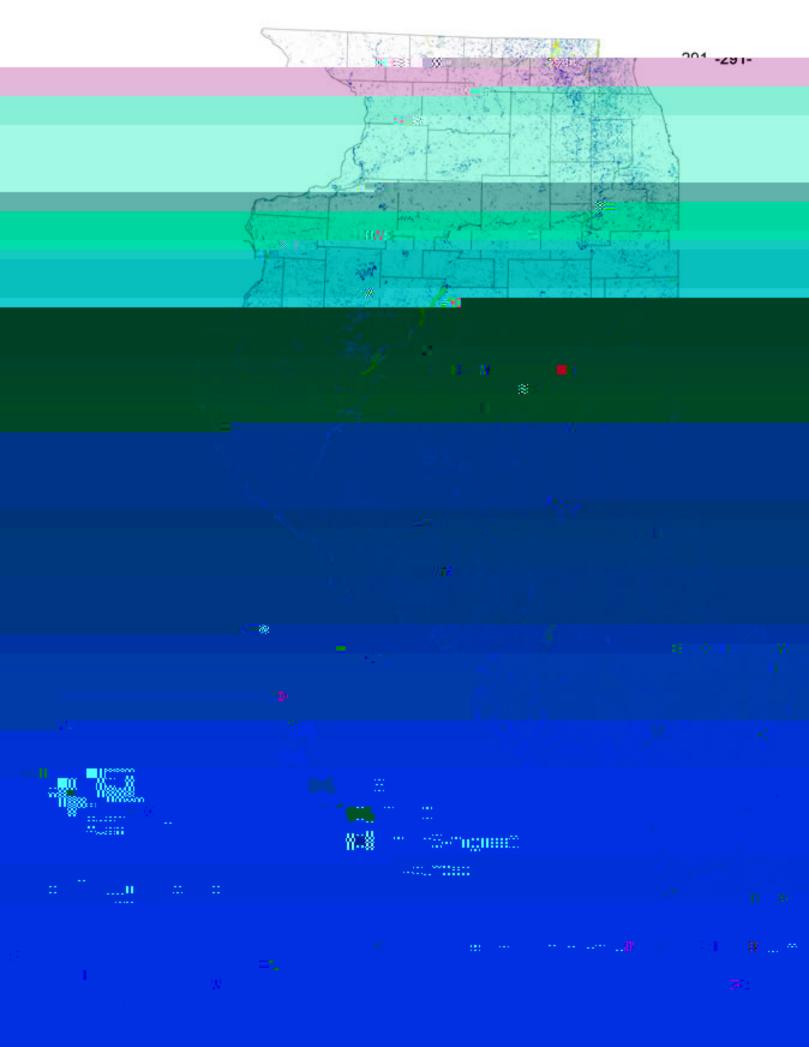
Ergure 10. The Land Cover of Illinois, based on 1999-2000 independent of Lundar et al. 2004).















Appendix I. Species in Greatest Need of Conservation for Illinois as identified by eight criteria.

<u>Abbreviations used:</u> **FE** - Federally Endangered; **FT** - Federally Threatened; **FC** - Federal candidate for listing under the Endangered Species Act; **XN** - experimental, nonessential population of a federally-listed species; **SE** - State Endangered; **ST** - State Threatened; **RR** - recent recovery/delisted within 10 years; **G1**, **G2**, **G3** - Global C

1. All species listed as threatened or endangered in Illinois, including federally listed species that occur within the State.

2. Species with a global conservation rank indicator of G1, G2, or G3.

3. Species is rare (small or low population size, density or range) or has significantly declined in abundance or distribution from historical levels.

4. Species is dependent upon a rare or vulnerable habitat for one or more life history needs (breeding, migration, wintering).

5. Species is endemic to Illinois, or the Illinois population is disjunct from the rest of the species' range.

6. Illinois' population of a species represents a significant proportion of the species' global population.

7. Spe

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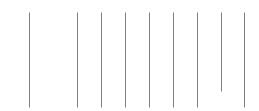
ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY X. Appendices - Appendix I

ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRAT	EGY
X. Appendices - Appendix I	

FISHES, continued		Criteria							
Name	Habitat Association	1	2	3	4	5	6	7	8
Micropterus dolomieu (smallmouth bass)	cool streams, rivers over gravel, rock	0	2 0 0	0		0	0	1	0
Micropterus punctulatus (spotted bass)	streams, rivers over gravel, rock	0	õ	0	0 0	Ő	Ő	1	õ
Moxostoma carinatum (river redhorse)	high-gradient rivers over rocky	ST	Õ	1	1	1	0	1	1
Moxostoma duquesnei (black redhorse)	streams over sand, rock	0	0	1			-		
Mxostoma valenciennesi (greater redhorse)	rivers over gravel, rock	SE	0 0	1	1	0	0	0	1
Myoxocephalus quadricornis (fourhorn sculpin)	5 /	0	0						
Nocomis micropogon (river chub)	streams, rivers over gravel, rock	SE	0	1	1	0	0	1	1
Notropis anogenus (pugnose shiner)	vegetated glacial lakes, streams	SE	G3	1	1	0	0	1	0
Notropis boops (bigeye shiner)	streams over sand, gravel	SE	0	1	1	0	0	1	1
Notropis buchanani (ghost shiner)	large turbid rivers	0	0	1	1	0	0	0	1
Notropis chalybaeus (ironcolor shiner)	vegetated low-gradient streams over sand	ST	0	1	1	1	0	1	1
Notropis heterodon (blackchin shiner)	vegetated low-gradient streams over sand	ST	0	1	1	0	0	1	0
Notropis heterolepis (blacknose shiner)	vegetated cool streams, lakes over	SE	0	1	1	0	0	1	1

APPENDIX I, CONTINUED.

BIRDS Name Ammodramus henslowii (Henslow's sparrow) Ammodramus leconteii (LeConte's sparrow) ¹ Ammodramus nelsoni (N	Habitat Association Grassland Grassland, marsh	Criteria 1 ST 0	2 0 0	3 4 1 1 1 1	0	6 0 0	7 0 0	8 0 0



APPENDIX II. Status, Objectives, and Stresses to Illinois' Wildlife & Habitat Resources.

Definitions & Methods.

<u>Resource - Species</u>: Species in Greatest Need of Conservation, species meeting one or more of the eight criteria used in the selection of species in greatest need of conservation; there is overlap with Game Species, below *Game species*, species or groups of species that may be legally harvested for recreation; there is overlap with Species in Greatest Need of Conservation, above

<u>Status (3 columns):</u> *N*, a population estimator, if available *Trend*, population trend scored from -2 (strongly decreasing) to +2 (strongly increasing) *Listing*, if a species is listed as threatened or endangered

Objectives (3 columns): N, targeted population for 2025

Trend, trend required for targeted resource level by 2025 *Listing*, targeted resource status for 2025

Habitat Stresses (6 columns): Extent, the gross amount of habitat

Fragmentation, includes the effects of isolation (the physical separation of habitat patches), juxtaposition (the relative position of habitat types), patch size (the size of individual habitat patches) and edge effects (phenomena of ecotones and patch edges, such as increased mortality)

Composition-Structure, the biological and physical attributes of habitat within a patch

Disturbance/Hydrology, disturbance regimes are the frequency, timing and intensity of disturbances such as fire, and hydrology relates to patterns in water level and availability

Invasives/Exotics, novel species that are changing a habitat (will overlap one or more habitat stress category)

Pollution - Sediment, abnormal inputs of chemical or physical materials or heat

Community Stresses (7 columns): Competitors, individuals of same or other species vying for shared resources

Predators, animals that kill and consume other (typically smaller) animals

Parasites-Disease, organisms (typically small) that consume part of, weaken and/or kill, animals

Prey-Food, organisms, their parts or products consumed for energy by an animal

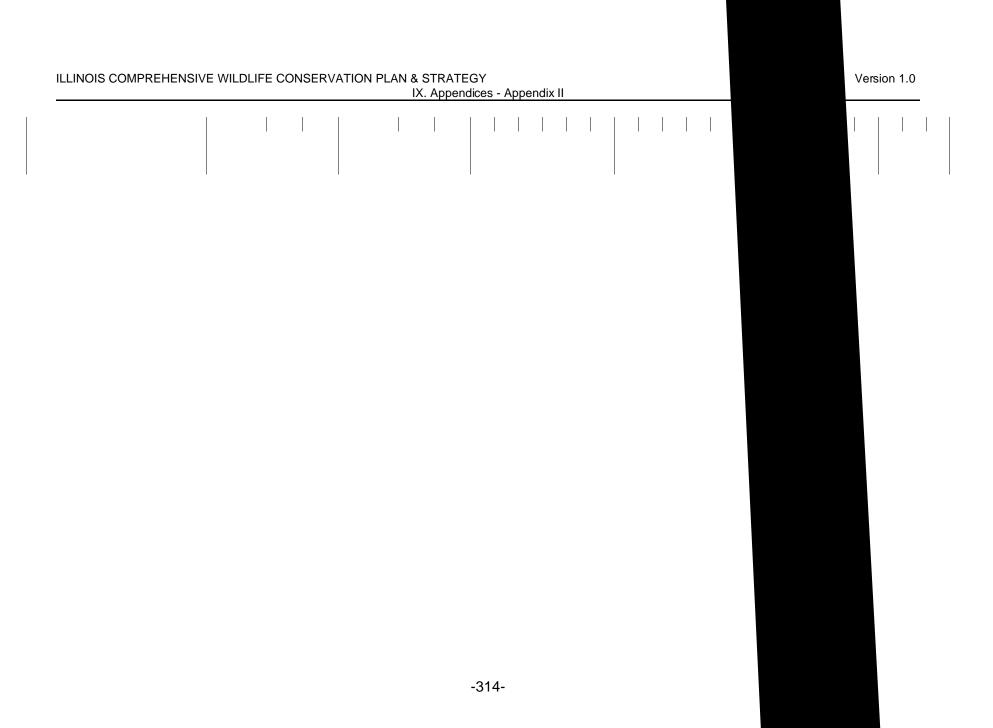
Hosts, an organism necessary for supporting some life history stage of an animal (e.g, plants for larval insects, fishes for larval mussels)

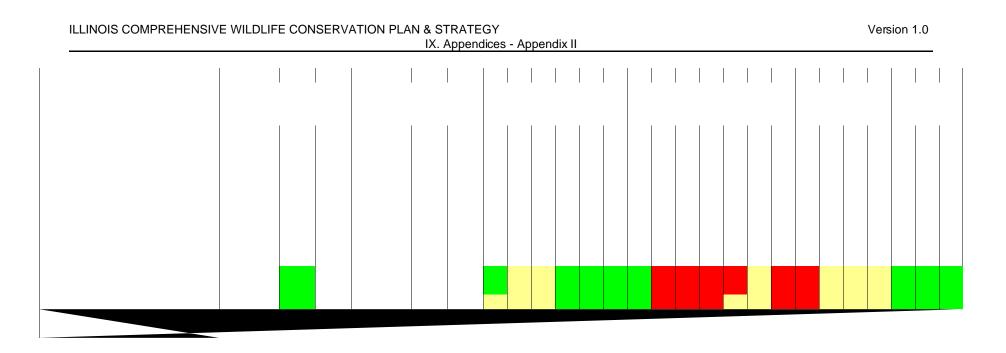
Invasives/Exotics, novel animals functioning as competitors, predators, parasites, etc. (overlaps one or more community stress category)

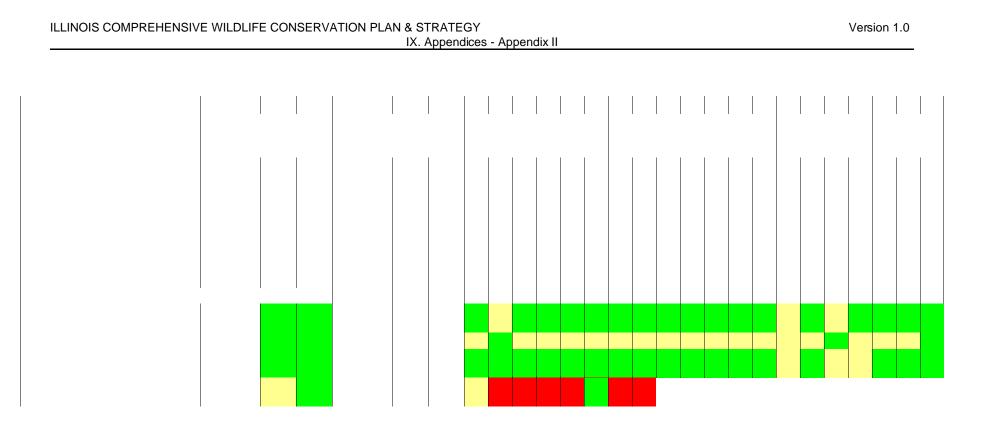
Other Symbionts, other organisms necessary for a beneficial ecological relationship

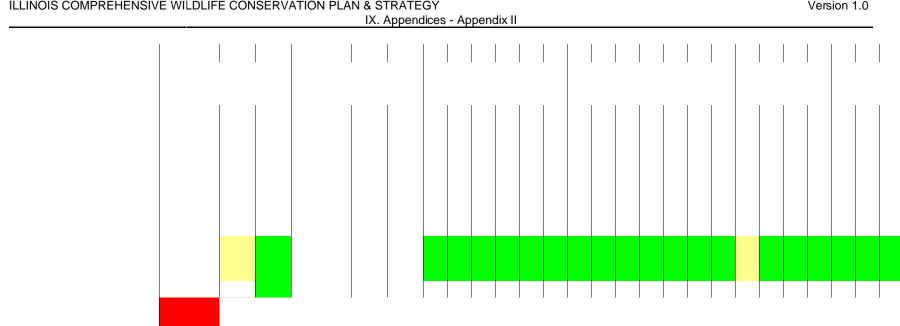
Population Stresses (4 columns): Genetics, genetic constraints such as inbreeding, outbreeding depression

Dispersal, movement of individuals among habitat patches and/or subpopulations *Recruitment*, entry of new individuals into a breeding population, the product of birth rate and juvenile survival *Mortality*, death rate for a population



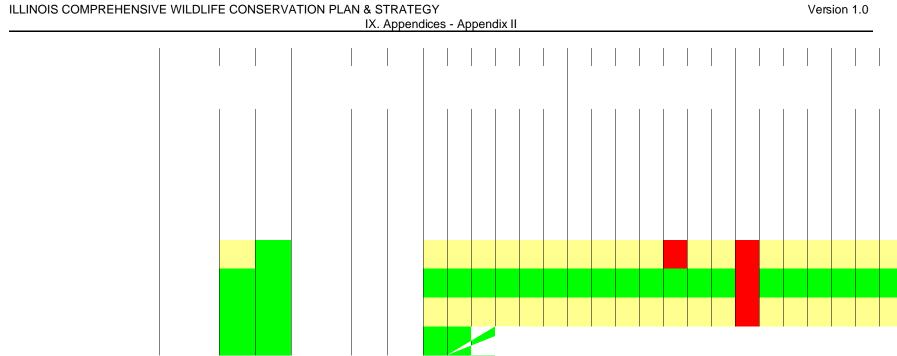




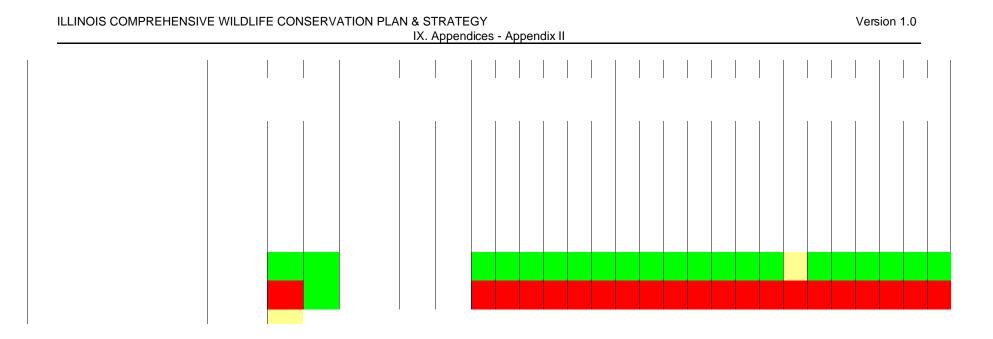


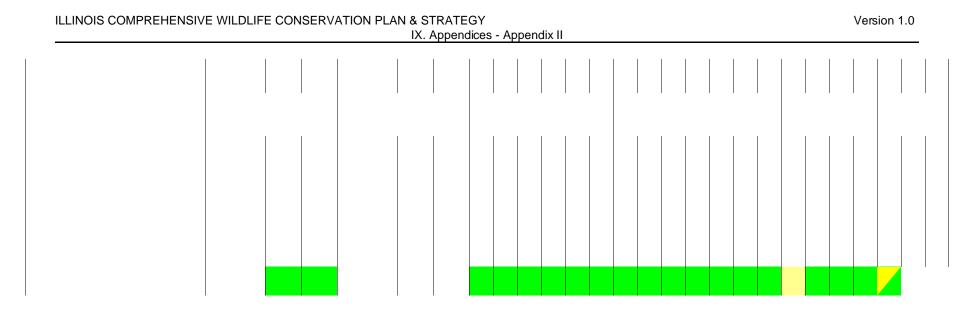
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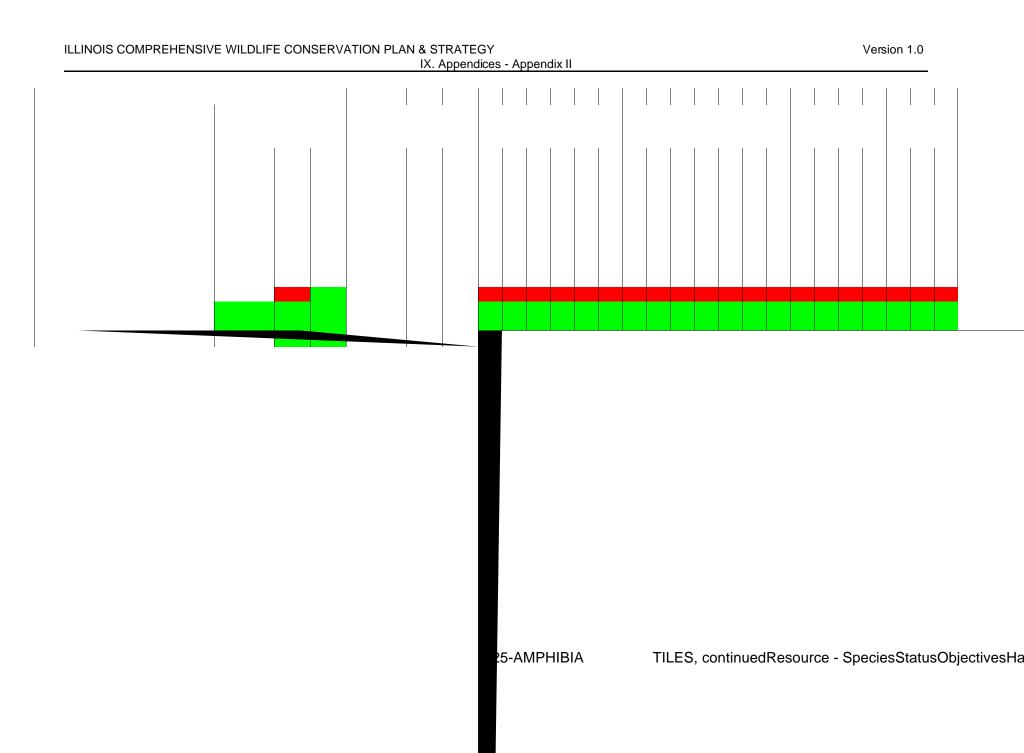


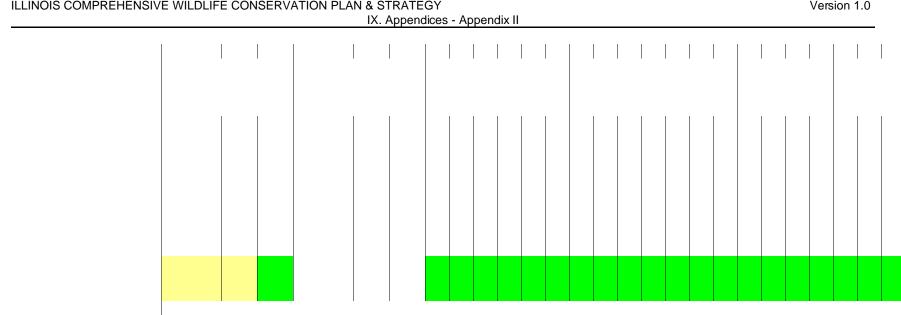
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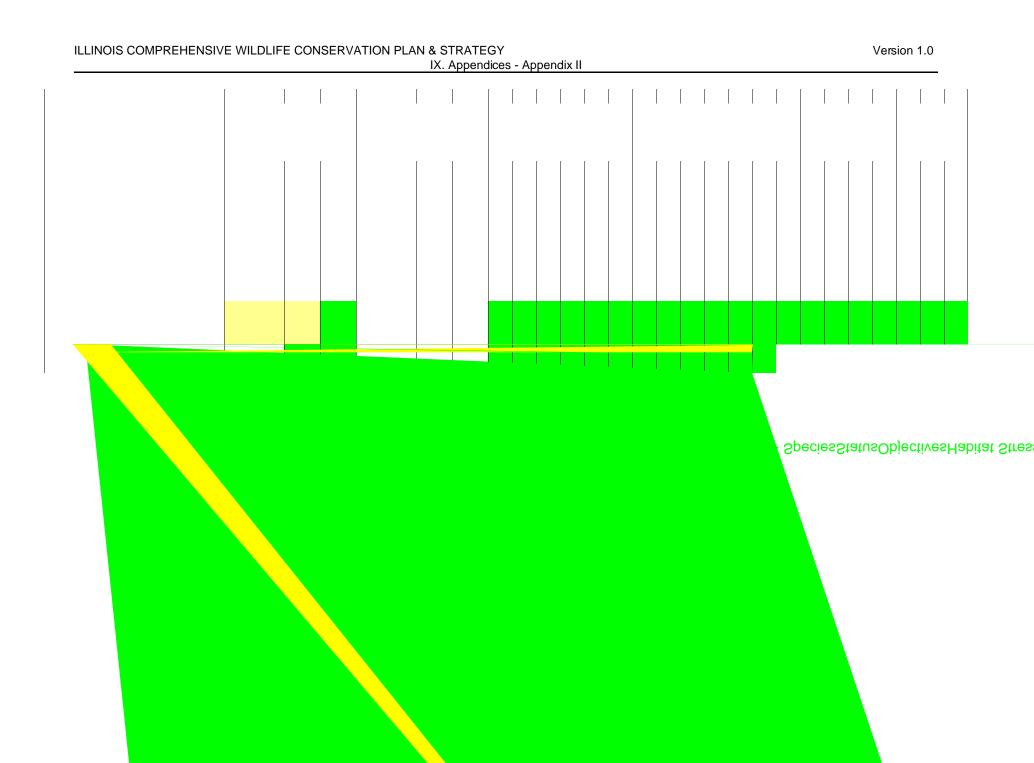
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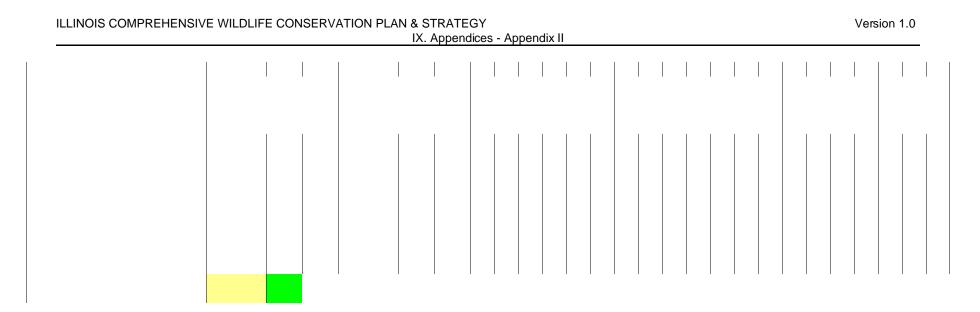


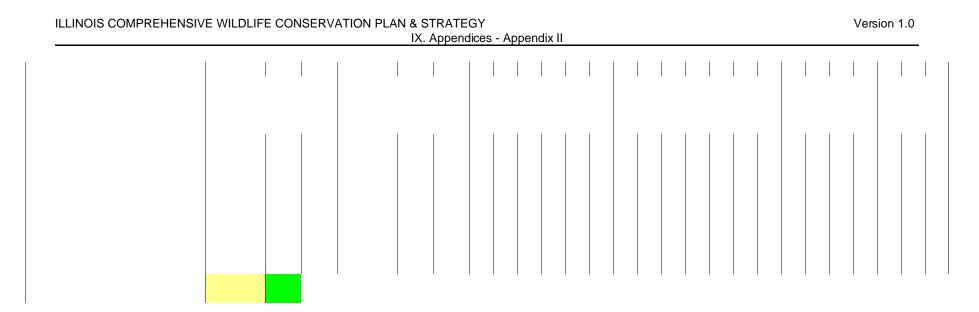


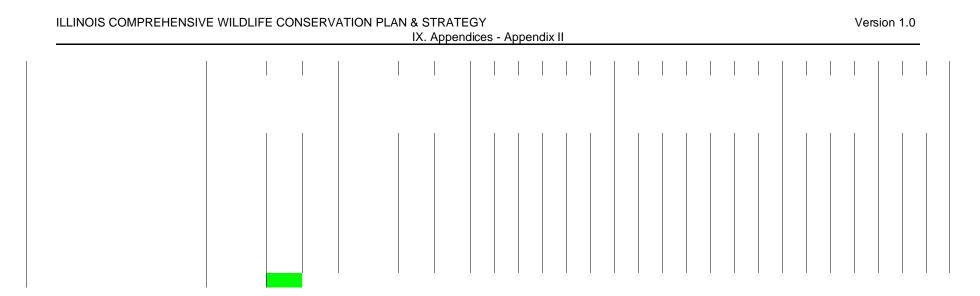
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Appendix II (Birds), continued.

Sources consulted:

Rosenberg 2004. Partners in Flight objectives for Illinois.

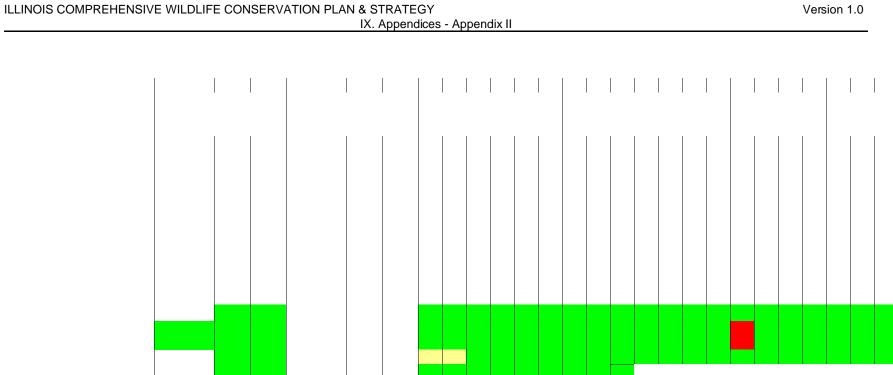
Illinois Department of Natural Resources, Biotics 4 database (T. Kieninger, manager).

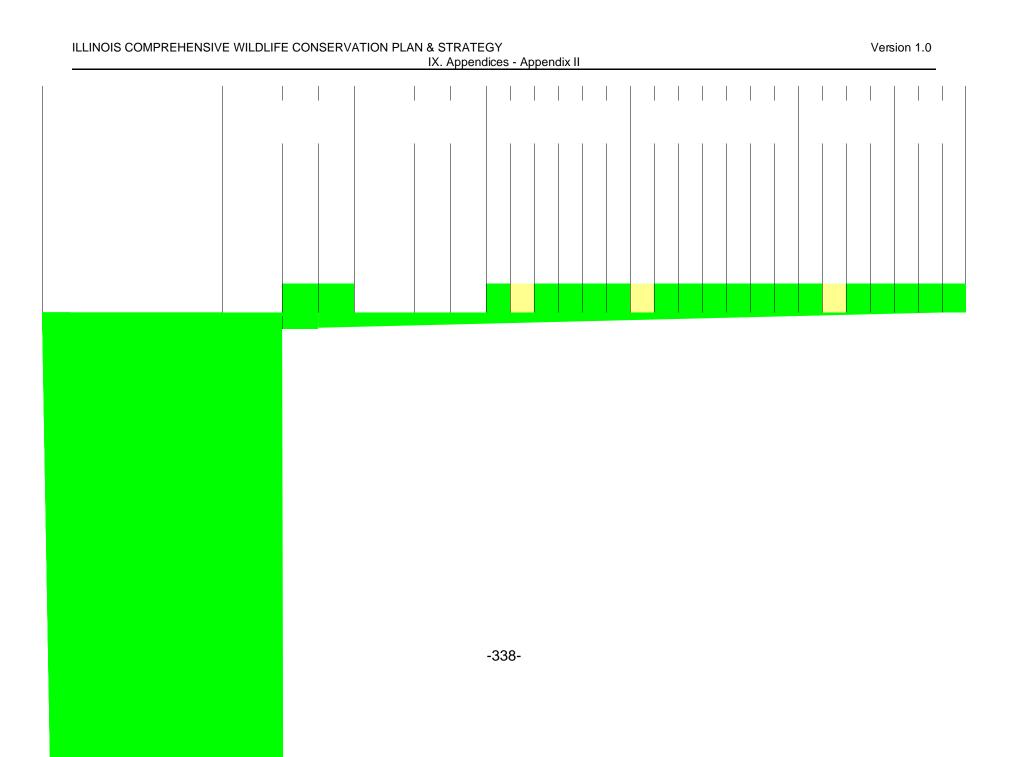
Kleen et al. 2004. The Illinois Breeding Bird Atlas.

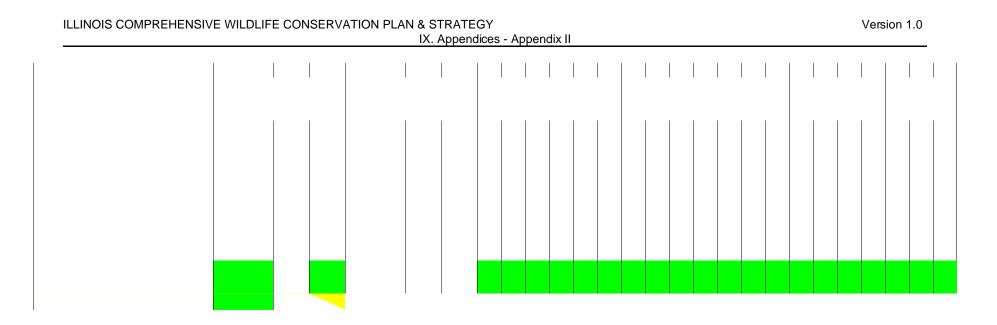
Bohlen 1989. Birds of Illinois.

Sauer et al. 2004. The North American Breeding Bird Survey, Results and Analysis 1966 - 2003.

The Meadowlark: a

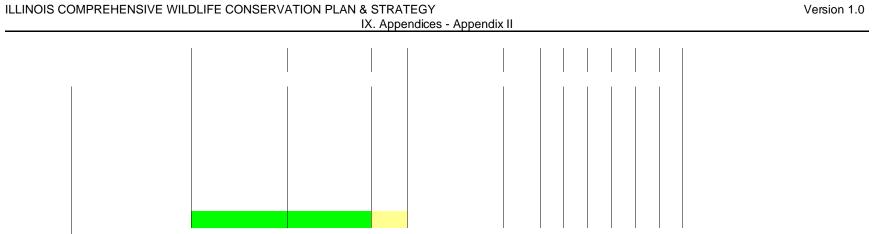






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ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY

Appendix II (Habitats), continued.

¹ Land Cover of Illinois Statistical Summary 1999-2000. http://www.agr.state.il.us/gis/stats/landcover/mainpages/stats_statewide.htm. Accessed 7 July 2004.

² Illinois Natural Areas Inventory, fide R. Collins, Natural Areas Tracking System, July 04

³ Combined forest types, excluding floodplain forest, coniferous plantation and open woodland/savanna/partial canopy, from Land Cover 1999-2000

⁴ Open woodland/savanna/partial canopy category from Land Cover 1999-2000 likely includes successional areas

⁵ Rural grassland category from Land Cover 1999-2000; an estimated 781,465 acres are enrolled in the Conservation Reserve Program (from grassland conservation practices; http://www.fs.usda.gov. Accessed 12 August 2004.).

⁶ Marsh and swamp categories likely include other scarce wetland types

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			1	Version 1.0	
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ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY	Version 1.0
IX. Appendices - Appendix III	

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Version 1.0

ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY

IX. Appendices - Appendix III

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WETLANDS CAMPAIGN						
Actions	Stresses Addressed	Habitats Improved	Priority Locations	Performance Measuremen	t Options	
		Primary (Secondary)	1	Outputs	Outcomes	
1. improve natural, artificial wetland condition		Wetland, lake & pond, streams, cave (grassland, riparian forest)	divisions	acres protected, enhanced, restored; number of reintroductions	acres of INAI wetlands, lakes and ponds; plant diversity (CTAP), bird diversity (CTAP); T/E delistings, changes in status; frog/toad abundance, watefowl use days, sportfish supplies	
2. develop add'l wetland	habitat extent	Wetland, lake & pond,	NE Moraine, da 20000000	SCERED A CONCERNMENT (CONCERNMENT)	ENERGY (CERTICLE DAD CONDITION OF CONDITION OF CONTRACT OF CONDITION OF CONTRACT OF CONDITION OF CONTRACT OF CONTRACT	70020100000000 00
habitat		streams, cave	divisions, Grd Prairi55(pc	n)Tj19.3200 0.0000 TD(ds; p)	Tj21.6000 0.0000 TD(div)Tj12.6	000 0.0000 TI

ILLINOIS COMPREHENSIVE WILDLIFE CONSERVATION PLAN & STRATEGY

IX. Appendices - Appendix III

APPENDIX III. Stresses a	ddressed, habitats	improved, priority	locations and perfo	rmance measures for key conserv	vation actions.
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