

STATE AND TRIBAL WILDLIFE GRANT PROGRAM
State of Illinois
Grant Proposal

PROJECT TITLE: HABITAT ENHANCEMENT, MONITORING, AND MANAGEMENT
FOR CONSERVATION PRIORITY SPECIES

PROJECT NUMBER: T-10 P-1

NEED:

The Illinois Department of Natural Resources (DNR) has broad regulatory authority and responsibility for conservation of birds, mammals (520 Illinois Compiled Statutes 5/1.10), fishes, reptiles, amphibians, mollusks, crustaceans, aquatic invertebrates (515 Illinois Compiled Statutes 5/1-150) and endangered and threatened species (520 Illinois Compiled Statutes 10/11). More than 600 species, including more than 140 listed as state endangered or threatened, have been identified as species of conservation concern by Illinois' Comprehensive Wildlife Conservation Plan (CWCP). In most cases, species were identified by the CWCP because their numbers were low or declining. This project will assist in monitoring the distribution and status of selected species of conservation concern, implement and evaluate specialized habitat management practices that receive little consideration under current Departmental operations, and expand recovery efforts for state endangered and threatened species.

Illinois' landscape has been altered dramatically by humans. For example, agricultural land uses comprise >75% of the state's surface area (Illinois Department of Natural Resources 1996). Fewer than 3,000 acres of high-quality prairie remain in a state that once had 22 million acres (White 1978), and >90% of the state's wetlands have been destroyed (Suloway and Hubbell 1994).

Achieving goals of the CWCP will require efforts on many scales. Prioritizing and implementing large-scale projects to conserve critical habitats will provide the greatest benefits for the greatest number of species. These broad benefits can be enhanced by considering specialized needs of species or species assemblages. For example, an area converted from cropland to natural vegetation may fall short of its potential for conservation of reptiles and amphibians until by-products of past agricultural production, such as soil compaction, removal of woody vegetation, and altered hydrology are addressed. This project will implement and evaluate such strategies.

OBJECTIVES:

1. Monitor the distribution and status of selected species of conservation concern.
2. Implement and evaluate habitat management practices for selected species of conservation concern.
3. Implement and evaluate strategies for recovery of state endangered and threatened species.

EXPECTED RESULTS OR BENEFITS:

1. Monitoring the distribution and status of selected species of conservation concern will help to evaluate population responses to conservation programs, including activities endorsed by the CWCP and other conservation plans (e.g., Partners in Flight, Northern Bobwhite Conservation Initiative), evaluate management actions, and, in some cases, adopt appropriate restrictions on harvest or other direct impacts of humans. Data will also improve our ability to detect population declines and work pro-actively to reverse them. Training will improve staff expertise and awareness of species of conservation concern.
2. Implementing and evaluating specialized habitat management practices will provide direct but localized benefits to species of conservation concern. Projects will serve as “demonstration areas” to increase awareness and application of these methods on a larger scale by the Department and its partners.
3. Implementing and evaluating strategies for recovery of state endangered and threatened species will provide direct but localized benefits to species of conservation concern. This approach (i.e., testing recovery strategies, mainly through “pilot programs”) will allow the Department to operate efficaciously by identifying and expanding recovery efforts with the greatest potential for success. **Can this be expanded to tie it back into the goals and objective of the CWCP as was done in 1 above to justify 75% federal share?**

APPROACH:

Objective 1 will be conducted by Department staff (i.e., Office of Resource Conservation; Illinois Natural History Survey) with support from volunteers and not-for-profit organizations. Objectives 2 and 3 will be conducted by Department staff with support from corporations, research institutions, and not-for-profit organizations.

Cost: Segment 1 (FY05); \$25,600
Segment 2 (FY06); \$39,300
Segment 3 (FY07); \$39,300

Note: Studies 1 and 3 (**Segments 1 & 3**) qualify for a 75:25 federal:state share; study 2 (**Segment 2**), considered implementation of the CWCP, qualifies for a 50:50 share.

Study 1. Monitor the distribution and status of selected species of conservation concern.

Need: Concern about the status of reptiles and amphibians has increased with awareness of worldwide declines and extinctions of species in these groups. In Illinois, we lack data about the current distribution and status of most populations. For example, >50% of counties with records of occurrence for presumably common species such as smallmouth and tiger salamanders (*Ambystoma texanum* and *A. tigrinum*), brown snake (*Storeria dekayi*), and painted turtle (*Chrysemys picta*) are dated before 1980 (Phillips et al. 1999).

The North American Breeding Bird Survey (BBS) is a large-scale, long-term monitoring program designed to track the status and trends of North American avifauna. More than 80 BBS routes are completed annually in Illinois. Data are important for national, regional, and state conservation efforts (e.g., Partners in Flight, North American Bird Conservation Initiative). Under this project, we will contract the Department’s former (retired) Avian Program Manager to coordinate the BBS in Illinois,

ensuring continuity and quality of this vital monitoring tool. This action is needed because the position (for an avian program manager within the Department) was eliminated during recent budget cuts.

Procedures:

Job 1.1 Monitor reptiles and amphibians on state and federal properties.

Objective: Conduct surveys for the presence of reptiles and amphibians at ≥ 10 sites per fiscal year.

Schedule: During FY05, we will train ≥ 5 Department staff to conduct surveys. During FY06, staff trained during the past fiscal year will conduct surveys at selected state sites and we will train ≥ 5 additional staff. During FY06, staff trained during the past 2 fiscal years will conduct surveys and we will train ≥ 5 additional staff (i.e., at the conclusion of this project, ≥ 15 Department staff will be trained and actively collecting data from state and federal sites in their assigned work areas). Training and surveys will be conducted during times of the year when targeted species are active (e.g., late winter/early spring for salamanders, spring/summer for frogs, toads, and turtles).

Job Description: Staff will use standard techniques (e.g., Fellers and Drost 1994, Jung and Sauer 1997, Maerz 2001, Dodd 2003) to detect the presence of reptiles and amphibians. Specimens will be documented photographically and their locations determined with GPS. Records of Occurrence will be completed for state endangered and threatened species and submitted to the Biotics 4 database coordinator. All data will be submitted to the Illinois Natural History Survey, which maintains a database and corresponding website about the distribution of reptiles and amphibians in the state.

Personnel: Department staff (Robert Bluett, Joseph Kath, District Wildlife Biologists, Restoration Ecologists, Regional Wildlife Managers, Project Managers).

Job 1.2 Monitor non-game birds.

Objective: Coordinate data collection from ≥ 75 BBS routes annually.

Schedule: Recruitment of volunteers for BBS routes will occur year-round. Surveys will be conducted during the peak of the nesting season, primarily in June. Data will be collected from volunteers and submitted to the USGS Patuxent Wildlife Research Center in July and August.

Job Description: Activities include administering the program (i.e., recruiting, training, and testing volunteers; distributing data collection forms and instructions; retrieving data from participants, summarizing results) and conducting surveys (i.e., non-Departmental volunteers).

Each BBS route is 24.5 miles long, with a total of 50 stops located at 0.5-mile intervals along the route. A 3-minute point count is conducted at each stop, during which the observer records all birds heard or seen within 0.25 mile of the stop.

Personnel: A contractor will recruit qualified volunteers, coordinate completion of routes, and submit data to the USGS Patuxent Wildlife Research Center. Time of volunteers (non-Departmental) will be used as part of the state match on this project.

Job 1.3 Data analyses and reporting

Objective: To summarize and submit an annual report of accomplishments for Jobs 1.1 and 1.2.

Schedule: Data will be collected and analyzed from March through October; a report will be prepared during January and February.

Job Description: Data will be summarized and an annual report will be prepared.

Personnel: Joseph Kath, Robert Bluett.

Study 2. Implement and evaluate habitat management practices for selected species of conservation concern.

Need: Agricultural land uses occupy >77% of the state's area, including 54% dedicated to production of row crops (Illinois Department of Natural Resources 1996). Converting cropland to natural vegetation provides obvious and almost immediate benefits for many kinds of wildlife. However, impacts of farming extend below the soil surface. Decades of tilling, compaction, and erosion have reduced availability of subterranean hibernacula for snakes. The same might be true for highly disturbed areas such as reclaimed surface mines, which comprise a small percentage of Illinois' land area but a large percentage of recent land acquisitions by the Department.

Ephemeral wetlands include vernal pools, floodplain pools, prairie potholes, limestone sinks, and other shallow depressions that tend to hold water during spring but dry out during most summers (Partners in Amphibian and Reptile Conservation 2002). Extensive ditching, draining, and tiling of the land for agricultural and residential development have greatly reduced availability of these features, which are integral to the life cycles of many reptiles and amphibians (Phillips et al. 1999, Partners in Amphibian and Reptile Conservation 2002). Breeding sites that ensure successful reproduction are the most critical habitat need for amphibians in Illinois (Szafoni et al. 2002).

The osprey (*Pandion haliaetus*) is a large, fish-eating raptor. In the mid-20th century, populations of this species fell dramatically due to a combination of factors including egg-shell thinning, caused by DDT bioaccumulation, and electrocution, as ospreys often attempt to use utility transmission structures as nesting platforms. Banning of DDT, improved water quality, and placement of artificial nesting structures allowed populations to increase dramatically after the early 1970s. However, the osprey's recovery has not been uniform. Illinois' rivers and impoundments attract a growing number migrants, but the osprey remains a very rare breeding species and is listed as state endangered. Successful recovery programs in nearby states suggest that providing nest platforms will encourage ospreys to breed and raise young in Illinois (Herkert 1992).

Procedures:

Job 2.1 Construct and evaluate use of artificial (man-made) hibernacula.

Objective: Construct ≥ 4 hibernacula per fiscal year and determine their use by snakes.

Schedule: Sites will be evaluated and hibernacula will be constructed during spring and summer. Use by snakes will be determined during fall and winter.

Job Description: Activities include site inspections to determine prospective locations of hibernacula, collaboration with partners, preparation of forms required by the Comprehensive Environmental Review Process if hibernacula are constructed on state sites, contracting earth work, purchasing construction materials, and monitoring use of hibernacula by snakes and other wildlife.

Working cooperatively with Unimin Corporation and other partners, we will locate sites with suitable habitat for timber rattlesnakes (*Crotalus horridus*) and other species, particularly those where past

occurrences have been documented. If necessary (i.e., if sites occur on Department properties), we will complete a Comprehensive Environmental Review Process and, upon approval, attempt to provide suitable microclimates for hibernating snakes by building artificial structures to accepted standards (e.g., Payne and Bryant 1994). Occupancy will be verified by radiotelemetry and/or remote camera.

Personnel: Department staff (Robert Bluett, Joseph Kath, District Wildlife Biologists, Restoration Ecologists, Regional Wildlife Managers, Project Managers); corporate staff; volunteers from not-for-profit organizations.

Job 2.2 Construct and evaluate use of ephemeral wetlands.

Objective: Construct ≥ 20 ephemeral wetlands per fiscal year and evaluate their use by reptiles and amphibians.

Schedule: Sites will be evaluated and wetlands will be constructed during spring, summer or fall. Use by reptiles and amphibians will be determined when targeted species are active (e.g., late winter/early spring for salamanders, spring/summer for frogs, toads, and turtles).

Job Description: Activities include site inspections to determine prospective locations of wetlands, collaboration with partners, preparation of forms required by the Comprehensive Environmental Review Process if wetlands are constructed on state sites, contracting earth work, purchasing construction materials, and monitoring use of hibernacula by snakes and other wildlife.

We will locate sites with suitable soil types, hydrology, and other characteristics important for wetland construction. If necessary (i.e., if sites occur on Department properties), we will complete a Comprehensive Environmental Review Process and, upon approval, construct ephemeral wetlands to accepted standards (e.g., Biebighauser 2002).

Occupancy will be verified by visual inspection.

Personnel: Department staff (Robert Bluett, Joseph Kath, District Wildlife Biologists, Restoration Ecologists, Regional Wildlife Managers, Project Managers); corporate staff; volunteers from not-for-profit organizations.

Job 2.3 Construct and evaluate use of nest platforms by ospreys.

Objective: Construct ≥ 5 nest platforms per fiscal year and evaluate their use by ospreys.

Schedule: Nest platforms will be constructed and installed when weather conditions allow (i.e., water levels and soil moisture will limit access at some sites). Occupancy will be determined during spring or early summer. If structures are installed after the nesting season, we will not be able to evaluate occupancy until the following segment/fiscal year.

Job Description: Activities include site inspections to determine prospective locations of nest platforms, collaboration with partners, preparation of forms required by the Comprehensive Environmental Review Process if structures are erected on state sites, contracting for construction and installation of platforms, purchasing construction materials, and monitoring use of platforms by ospreys.

Working cooperatively with Ameren-CILCO and other partners, we will locate sites with suitable habitat for ospreys, particularly those where past occurrences have been documented. If necessary

(i.e., if sites occur on Department properties), we will complete a Comprehensive Environmental Review Process and, upon approval, build artificial nest structures to accepted standards (e.g., Schemnitz 1980). Occupancy will be verified by visual inspection.

Personnel: Department staff (Robert Bluett, Joseph Kath, District Wildlife Biologists, Restoration Ecologists, Regional Wildlife Managers, Project Managers), corporate staff; volunteers from not-for-profit organizations.

Job 2.4 Data analyses and reporting

Objective: To prepare and submit an annual report of accomplishments for Jobs 2.1-2.3.

Schedule: Accomplishments will be documented during March through December; a report will be prepared during January and February.

Job Description: Accomplishments will be documented verbally and/or photographically; an annual report will be prepared.

Personnel: Joseph Kath, Robert Bluett.

Study 3. Implement and evaluate strategies for recovery of state endangered and threatened species.

Need: DNR has broad regulatory authority and responsibility for conservation of endangered and threatened species (520 Illinois Compiled Statutes 10/11).

The barn owl (*Tyto alba*) is listed as an endangered species in Illinois and 6 other Midwestern states. Past efforts to establish wild populations by releasing captive-raised birds failed because of high rates of predation caused by great-horned owls (*Bubo virginianus*), possibly exacerbated by study protocols (e.g., heavy backpack style transmitters) (Ehresman 1994, Ehresman et al. 1998, McCracken 1998). Springbrook Nature Center, a world-class wildlife rehabilitation and educational facility, possesses several pairs of barn owls in their collection. During this pilot study, offspring will be conditioned for release by minimizing interactions with humans, encouraging natural hunting behaviors, and conducting predator-avoidance training programs.

Forster's terns once were a common and locally abundant breeding species in the wetlands of northeastern Illinois. Common terns, which were also numerous and nested in suitable habitat along much of the Lake Michigan shoreline, have experienced one of the greatest declines (-90.6%) of any North American species monitored adequately by the Breeding Bird Survey from 1966-2003. Both species have unique foraging requirements and are dependent upon specific nesting habitat, most of which has been lost to development and heavy recreational use. The breeding population of Forster's tern was extirpated from Illinois by 1999. Common terns have nested successfully in Illinois in only 5 of the last 29 years, and are known from only a single location. Both species are listed as state endangered.

In 2003, a breeding colony of approximately 130 adult Forster's terns was successfully reestablished at the Chain O'Lakes State Park using intensive management of nesting sites and conspecific attraction (i.e., resin models and vocalizations of breeding adults to attract migrants). Common terns also inhabited the artificial island created in Grass Lake cooperatively by the DNR, Fox Waterway Agency, U.S. Fish and Wildlife Service, and U.S. Army Corps of Engineers.

Job 3.1 Evaluate release of captive-raised barn owls to establish local populations.

Objective: Release ≥ 8 captive-raised barn owls in suitable habitat and monitor their survival.

Schedule: Owls will be hatched, raised, and trained to avoid predators during spring and early summer. They will be released and monitored using radiotelemetry during late summer or early fall.

Job Description: Approximately 4-5 juveniles will be released at each of 2 sites with suitable habitat (Pratt's Wayne Woods, a 4,000-acre property managed by DuPage County Forest Preserve with >1,000 acres of mesic prairie, and Songbird Slough, a 400-acre property with >50 acres of wet prairie; both sites have old barns that will be employed for soft release methods). Staff from Northeastern Illinois University will monitor survival using radiotelemetry.

Personnel: Department staff (Robert Bluett, Joseph Kath, District Wildlife Biologists, Restoration Ecologists, Regional Wildlife Managers, Project Managers); staff from the DuPage County Forest Preserve District; researchers from Northeastern Illinois University.

Job 3.2. Evaluate and apply methods to establish nesting colonies of common, Forster's and least terns.

Objective: Monitor demographics of the Grass Lake population of Forster's tern and, during the 3-year project, attempt to establish ≥ 1 additional breeding colony of Forster's, common, or least terns by applying methods evaluated at Grass Lake.

Schedule: Activities will occur year-round (e.g., collaboration with partners, data analyses), with field work occurring mostly during the spring.

Job Description: Working cooperatively with research institutions, we will monitor the Grass Lake population of Forster's tern to determine numbers of adults, nests, and fledglings; annual survival, return rates, and nest site fidelity; and efficacy of predator management (e.g., fences, selective removal). During the 3-year period, we will attempt to establish ≥ 1 additional breeding colony of Forster's, common, or least terns by using intensive management of nesting sites and conspecific attraction.

Personnel: Department staff (Robert Bluett, Joseph Kath, District Wildlife Biologists, Restoration Ecologists, Regional Wildlife Managers, Project Managers); researchers from the University of Illinois.

Job 3.3 Data analyses and reporting

Objective: To prepare and submit an annual report of accomplishments for Jobs 3.1 and 3.2.

Schedule: Data will be collected and analyzed from March through December; a report will be prepared during January and February.

Job Description: Accomplishments will be documented verbally and/or photographically; an annual report will be prepared.

Personnel: Joseph Kath, Robert Bluett.

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ANNUAL WORK PLAN - SEGMENT 1

Project Number: TBA

Project Title: HABITAT ENHANCEMENT, MONITORING, AND MANAGEMENT FOR CONSERVATION PRIORITY SPECIES

Cost: 25,600

Study 1. Monitor the distribution and status of selected species of conservation concern.

Objective: Monitor the distribution and status of selected species of conservation concern.

Job 1.1. Monitor reptiles and amphibians on state and federal properties.

Objective: Conduct surveys for the presence of reptiles and amphibians at ≥ 10 sites per fiscal year.

Job 1.2 Monitor non-game birds.

Objective: Coordinate data collection from ≥ 75 BBS routes annually.

Job 1.3 Data analyses and reporting

Objective: To summarize and submit an annual report of accomplishments for Jobs 1.1 and 1.2.

Study 2. Implement and evaluate habitat management practices for selected species of conservation concern.

Job 2.1 Construct and evaluate use of artificial (man-made) hibernacula.

Objective: Construct ≥ 4 hibernacula per fiscal year and determine their use by snakes.

Job 2.2 Construct and evaluate use of ephemeral wetlands.

Objective: Construct ≥ 20 ephemeral wetlands per fiscal year and evaluate their use by reptiles and amphibians.

Job 2.3 Construct and evaluate use of nest platforms by ospreys.

Objective: Construct ≥ 5 nest platforms per fiscal year and evaluate their use by ospreys.

Job 2.4 Data analyses and reporting

Objective: To prepare and submit an annual report of accomplishments for Jobs 2.1-2.3.

Study 3. Implement and evaluate strategies for recovery of state endangered and threatened species.

Job 3.1 Evaluate release of captive-raised barn owls to establish local populations.

Objective: Release ≥ 8 captive-raised barn owls in suitable habitat and monitor their survival.

Job 3.3 Data analyses and reporting

Objective: To prepare and submit an annual report of accomplishments for Job 3.1.