

State Wildlife Incentive Grant Program

State of Illinois

Final Report

PROJECT NUMBER: T-5-M-1

PROJECT TITLE: Public Land Native Wildlife Habitat Restoration Project

PURPOSE/NEED:

The State of Illinois contains over 36 million acres, including more than 26,000 miles of streams. Illinois is divided into 14 Natural Divisions that describe the different physiographic and biotic communities found across the state (Schwegman 1973).

While Illinois supports a wide diversity of floral and faunal species, the current landscape now supports only a small fraction of the biodiversity and tremendous plant and animal populations. The Illinois Critical Trends Assessment Project (1994) and the Department of Natural Resources (2001) concluded that the natural ecosystems of Illinois are rapidly declining as a result of fragmentation and continual stress. Most agricultural land is an intensive monoculture covering 77.5% of the total land area of the state. In contrast, native grassland has declined and less than 0.1% of the original tall grass prairie remains. Forested areas, while increasing, cover only 11% of the land area and wetlands that once occupied 25% of Illinois now occupy just 3% of the state's land area. Urban sprawl continues to threaten natural areas and other open spaces. Road construction, industrial discharges and the continued introduction of invasive exotic species, whether accidental or intentional, continue to cause stress on our natural systems. Due to these changes in the landscape, the diversity, abundance and distribution of Illinois' floral and faunal species have suffered and diminished.

The General Assembly defines IDNR's powers and duties in Article 805 of the Civil Administrative Code, 20 ILCS 805/805-1 et seq., which provides the framework for IDNR operations. Article 805 states that "the Department has the power to take all measures necessary for the conservation, preservation, distribution, introduction, propagation, and restoration of fish, mussels, frogs, turtles, game, wild animals, wild fowls and birds." (20 ILCS 805-805-100). Section 805-225 authorizes the conservation of natural and scenic areas, and Section 805-225 authorizes the development of recreational areas and facilities.

The following excerpts are from the goals and objectives of the IDNR's "*STRATEGIC PLAN 2003-08, Strategic Issue 1 Natural and Cultural Resource Protection*" at <http://163.191.195.105/StrategicPlan/resource.htm>. Goals 1.1.1 and 1.1.2 have been established to direct the Department in addressing the issue of achieving sustainable ecosystems while meeting the broad array of other functions and responsibilities that the Department must address.

"Challenge 1.1

How can IDNR best restore, enhance, and sustain Illinois' natural and cultural resources for present and future generations?

Illinois' ecosystems (forests, lakes, rivers, wetlands, grasslands, and coastal estuaries) are vulnerable to disturbance, pollution, degradation and destruction as a result of human activities. Land use development patterns are a major stressor of ecosystems. Road building, stream channelization, industrial discharges, farming, home building, and many other activities alter the natural environment. The introduction of exotic plant and animal species into the state also threatens native species and their ecosystems.

The impacts of change may be dramatic or subtle, abrupt or gradual. The cumulative impact from many small, unnoticed changes can result in habitat fragmentation and significantly diminish the capacity of ecosystems to renew themselves. Action needs to be taken to address these issues.

The IDNR has adopted an ecosystem-based strategy for managing the State's fish, wildlife, and plant resources. Management practices and methods that are the most effective in restoring ecosystem structure and function are being developed and implemented. Management activities include: prescribed burns of grasslands and forests, monitoring fish and wildlife populations utilizing a variety of surveys and census activities, protecting populations by establishing harvest and species protection regulations, and implementing population control efforts to address invasive/nuisance species. State-of-the-art information technologies are utilized to maintain resource databases to improve ecosystem management decision-making.

Goal 1.1.1 Protect and restore habitat.

The IDNR incorporates a diverse, broad approach to protect and restore a variety of habitat types. This approach embraces several strategies that address habitat protection and restoration on public and private lands, including land acquisition, conservation easements, formal dedications, and voluntary-incentive based programs. A secondary benefit of habitat restoration work is the sequestration of carbon from the atmosphere (CO₂) through photosynthesis..."

Expected Outcomes

- 1. Improved ecosystem health.*
- 2. Increased biodiversity.*
- 3. Increased carbon sequestration.*

Performance Measures

- 1. Number of acres enhanced on public lands for wildlife habitat.*
- 2. Carbon sequestration based on acres (tons).*
- 3. Number of acres protected as dedicated Nature Preserves.*

Objectives

Objective 1.1.1.1 Protect and maximize quality habitat for all wildlife species and maintain the integrity of sensitive, high quality natural communities.

Objective 1.1.1.2 Develop a process which incorporates ecosystem management principles that can be used at any level of landscape planning to target the restoration of specific natural resources.

Objective 1.1.1.3 Protect habitat using formal dedications, e.g., Natural Preserve, Land & Water designations, and Natural Heritage Landmarks.

Objective 1.1.1.4 Propagate trees, shrubs and prairie grass seed in our nurseries and make available for restoring quality habitats..."

Goal 1.1.2 Manage plant and animal communities using ecosystem management principles.

The state has approximately 2200 known native plant species, 15 percent of which are categorized as endangered or threatened, meaning some species are becoming increasingly rare or even face possible extinction within the state's ecosystems. Illinois

also has a diverse mix of animals including 59 types of native mammals, 196 species of fish, 297 kinds of birds, 61 species of reptiles, and 41 amphibian species.

The Illinois Endangered Species Protection Board (1999) lists 331 plants, 8 mammals, 32 fishes, 15 reptiles, and 52 invertebrates as either threatened or endangered in Illinois. The Board also maintains a “watch list”, which identifies another 43 species whose status is unknown or are of special concern.

The downward population trends for these species must be reversed. This can be done through the development of recovery plans for individual species or for groups of species with similar ecological requirements. It is also important for the Department to be committed to an aggressive, comprehensive prevention strategy to provide protection for all native species, using ecosystem management principles.

Expected Outcomes

- 1. Improved ecosystem health.*
- 2. Stabilized or increased biodiversity.*
- 3. Increased protection for endangered and threatened species.*

Performance Indicators

- 1. Number of surveys conducted for specific plant and animal species.*
- 2. Number of at risk species evaluated to determine population trends.*

Objectives

Objective 1.1.2.1 Establish plant and animal species harvest and protection regulations and administrative rules and measure harvests annually.

Objective 1.1.2.2 Conduct surveys and census activities for targeted plant and animal species.

Objective 1.1.2.3 Develop & implement recovery plans for targeted endangered and threatened species and protect and restore the range of these species.

Objective 1.1.2.4 Develop and implement strategies to control or reduce invasive species.

Objective 1.1.2.5 Conduct prescribed burns using state-of-the-art methods.

Objective 1.1.2.6 Utilize state-of-the-art Geographic Information System technologies and highly trained staff to maintain resource databases to improve ecosystem management decision-making.

Objective 1.1.2.7 Develop and document scientifically based ecosystem practices for general use and access...”

To address the objectives of Goals 1.1.1 and 1.1.2 above, the IDNR has put in place a number of comprehensive programs and initiatives to address the loss of habitat; the spread of invasive, exotic species; improving and expanding quality habitat; etc. The Illinois Natural Areas Inventory (INAI) identifies 363,284 acres as having significant natural communities that serve as habitat for a multitude of wildlife species, including endangered and threatened plants and animals. Much of this land is included in public ownership. The Illinois Nature Preserves Commission has dedicated 42,580 acres in 79 counties as Nature Preserves, and enrolled another 23,850 acres in 45 counties in the Land and Water Reserves Program, providing permanent

easements for conservation purposes. Approximately 720,000 acres of the total state land area is in public ownership devoted to natural resource management practices.

The need for restoration of these protected and/or public lands for wildlife habitat far exceeds available funding.

Funds approved through this grant were used to expand the restoration and stewardship of high quality wildlife habitats on public land. This project included species protection and recovery efforts for specific wildlife populations. Target species include endangered or threatened species in Illinois as well as species that have declined but are not yet listed. The management and restoration of rare habitat types that contain unique assemblages of wildlife were targeted. The Projects included habitat expansion, protection and stewardship, management for state and federal endangered and threatened species, and invasive species management.

OBJECTIVES:

At the end of the grant period of December 31, 2007, the following activities were accomplished:

- Controlled woody exotics on 21 acre Manito Prairie Nature Preserve, in Tazewell County by the removal of invasive and exotic woody species via physical, chemical and prescribed fire. This approach benefits continues to provide habitat for a unique assemblage of native flora and fauna including three endangered or threatened plant species as well as several rare insects. At Spring Lake State Fish and Wildlife 15 acres of hill prairie, sand savanna, and sand forest habitats were restored using the practices of invasive woody plant control and invasive exotic species control.
- Removed invasive and exotic species on the 235 acre Mineral Marsh Nature Preserve, Henry County.
- Removed woody native and exotic species from 75 acres of prairie and sedge meadow at Wilmington Shrub Prairie Nature Preserve, Will County. Achieved 90% control over this area.
- At Middle Fork Woods Nature Preserve, Vermillion County, the Illinois Department Natural Resources Office of Water Resources studied erosion of a ravine into the Middle Fork River. They determined that the erosion and slumping was more of a one time event and likely to stabilize. It should be monitored over the next decade. Therefore, no implementation funds were used for corrective action.
- Reforested 76 acres of former row crop adjacent to the 1500 acre Robert Allerton Park to reduce forest fragmentation. Maintained that reforestation through chemical applications to control competing weeds, periodic mowing, erecting tree protectors, and controlling Canada thistle. Woodland exotics (osage orange, oriental bittersweet, Japanese honeysuckle, multiflora rose, autumn olive bush honeysuckle and privet) were controlled in 240 acres of upland forest. Approximately 2,000 RPM oak and hickories were planted in upland forest where osage orange was controlled. Finally, Canada thistle was treated in 95 acres of ungrazed grassland.
- Restored 20 acres of sand savanna through native woody vegetation control and controlled 20 acres of exotic species in degraded portion of savanna immediately north of Henry Allen Gleason Nature Preserve, Sand Ridge State Forest, Mason County.
- Restored and maintained 3600 acres of grassland habitat at Prairie Ridge Sanctuary, Marion and Jasper Counties via the following approaches: prescribed fire (~1000 acres) rotary mowing (3800 acres), exotic and invasive woody species control, fescue conversion to warm and cool season grasses (835 acres), and erosion control in critical waterways.
- Eliminated ~75% of the exotics species on 221 acres at the Cache River State Natural Area's Boss Island Area, Johnson County.
- Restored 729 acres of ecologically important areas (oak/hickory timber, bluff areas and hill prairies) at Pere Marquette State Park, Jersey County, Illinois by controlling exotics and woody vegetation and prescribed burning (23 acres).
- Controlled autumn olive through exotic species control in 400 acres of core grassland at Pyramid State Park's Arkland complex in Perry County, Illinois. Any bare areas were leveled and planted to native grasses and forbs.

In sum, woody and herbaceous exotics were treated on 1951 acres, native woody vegetation was reduced on 56 acres, 1043 acres received prescribed fire, 76 acres were reforested, and 863 acres of fescue or former row crops were converted to warm and cool season grasses.

EXPECTED RESULTS OR BENEFITS:

Wildlife habitat in Illinois is fragmented into small tracts and subject to detrimental external pressures, such as non-compatible land use, pollution, invasive and exotic species, etc. These projects strived to improve this situation. The key benefit of these projects was the opportunity it afforded the IDNR to expand efforts currently under way to create, preserve and enhance Illinois' wildlife habitat on public lands.

The habitat restoration at state sites benefited increased wildlife habitat establishment and restoration on ten IDNR sites.

APPROACH:

The IDNR and non-governmental organizations directed habitat restoration efforts on 10 sites. Consulting and contractual services were needed on several projects. All activities for these projects were reviewed and approved through the IDNR's annual plan of work process. The following management techniques were included in these habitat restoration projects:

- Prescribed Fire

Details - Prescribed fire involves the planned application of fire to meet specific management goals. Prescribed fire may be used to control the invasion or spread of exotic invasive species, control succession, maintain herbaceous habitats including prairies and some wetlands, and promote the regeneration of some woodland species. The prescribed burning activities include planning, preparation, implementation and evaluation of the prescribed burn and its impacts. Planning includes the development of a written prescription by the IDNR's District Heritage Biologist in a form and format consistent with IDNR prescribed burning policy. Plans are reviewed and approved by the Regional Forester and submitted to the Illinois Environmental Protection Agency for air quality related open burning permits. Planners will acquire any other open burning permits or authorizations required within the jurisdiction appropriate to the site. Preparation includes the maintenance of fire equipment, assembly, training and briefing of crews, construction of control lines and notification of neighbors. Implementation includes all activities related to the actual burning of the site. Prescribed burns will be conducted by a district resource manager that meets the IDNR qualifications as a burn boss. Only persons who have received the minimum training standards under IDNR policy for participation prescribed burning will assist in conducting the burn. Evaluation includes the preparation of a burn report as per IDNR prescribed burning policy and procedures and any systematic review of impacts of the fire on a site. All prescribed fires will be approved through the annual site resource planning process and included on the site's annual plan of work.

- Invasive Woody Plant Control

Details - Invasive woody plant control is the planned mechanical removal, elimination or thinning of woody plant material that has invaded a project area. Invasive woody plants may also be controlled by the use of prescribed fire (see above). Invasive woody plant control is used in prairies, particularly hill prairies where surrounding native woody vegetation is encroaching. In savanna and wetland habitats, woody vegetation control can be used to control shrubs and trees that have increased in density and are shading out rare species found in these habitats. It may also be used to restore upland forest habitats where native mesophytic vegetation (such as maple) is replacing upland forest vegetation due to a long history of fire suppression. Control methods will include removal or thinning of target invasive woody plants depending on the management goals. The control methods applied in a site shall be those that will be effective in meeting the desired goal, have a minimal adverse impact on non-target species, and are cost efficient. Those methods will include mechanical cutting or removal of brush with tractor mounted mowers,

bulldozer, hand operated brush cutters, and chainsaws, application of appropriate herbicides using cut stem, injection, basal bark and foliar methods, or a combination of methods. All methods of control of invasive woody plants will be done in ways consistent with methods described in the Illinois Nature Preserves Commission's Vegetation Management Guidelines. All activities, supplies and equipment needed to plan, implement and evaluate a woody plant control effort at a project site will be included. All invasive woody plant control will be approved through the annual site resource planning process and included on the site's annual plan of work.

- Invasive Exotic Species Control

Details - Invasive exotic species are species not native to a region which invade native habitats, disrupting the function of these habitats and causing the elimination of or stress to native species populations. Invasive exotic species control is the planned removal, elimination or reduction in these populations of invasive exotic species. Invasive exotic species include woody and herbaceous plants, and animals. The control methods applied in a project site shall be those that will be effective in meeting the desired goal, have a minimal adverse impact on non-target species, and are cost efficient. Invasive exotic woody plant species will be controlled using the methods outlined above for woody plant control. Herbaceous plant species will be controlled using mechanical methods such as pulling or mowing as appropriate, or by the application of herbicides in accordance with state and federal law by licensed applicators. Control of invasive exotic animal populations will include lethal methods such as: trapping; shooting; plus, trap & euthanasia. All methods of control of invasive exotic species will be done in ways consistent with methods described in the Illinois Nature Preserves Commission's Vegetation Management Guidelines. All activities, supplies and equipment needed to plan, implement and evaluate an invasive exotic species control effort at a project site will be included. All invasive exotic species control will be approved through the annual site resource planning process and included on the site's annual plan of work.

- Erosion/sedimentation control

Details - The control of erosion or sedimentation resulting from unnatural disturbances will be undertaken at some project sites. Erosion and sedimentation can lead to the direct elimination of habitat for at-risk species. The erosion control methods applied in a project site shall be those that will be effective in meeting the desired goal, have a minimal adverse impact on native species, and are cost efficient. Methods to be employed may include a combination of planting of native covers and installation of appropriate structures. Recommendations of the local NRCS personnel will be sought and considered for implementation. All appropriate local, state and federal laws will be followed. Erosion/sedimentation control projects will be evaluated at least one year after the installation. All activities and materials needed to plan, implement and evaluate erosion/sedimentation control projects may be included in this practice.

- Boundary Protection/Fence Repair

Details - Project sites may be impacted from external intrusions from people, off road vehicles and activities of adjacent land owners. These intrusions can cause direct harm to resources within a preserve or may result in increased erosion, or spread of exotic invasive species. Boundary protection includes the finding, delineating and marking of boundaries. Boundary protection may also include the construction or repair of a fence or barrier to prevent an illegal intrusion that damages natural resources. All activities and supplies needed to implement boundary protection may be included in this project. Land surveys will be conducted by licensed land surveyors.

- Habitat Creation/Restoration: Planting

Details - Native habitats required to support target species have been lost or degraded. By restoring and increasing the amount of habitat at a project site, we can improve the viability of

populations in those locations. In addition to the use of prescribed burns, woody plant control and invasive exotic species control mentioned above, planting is an effective way to restore habitats. Where elements of a particular native habitat exist, seeds may be collected on site and replanted within the project site. If there are sites with insufficient reproduction of desirable native species or where important species components are missing, then habitat may be recreated using plant material from off site. All habitat creation/restoration projects will comply with the IDNR, INPC and Endangered Species Protection Board joint policy on translocation of plant materials. Species planted shall be native to the region where the project site is located. Habitats should be established only on areas where there are appropriate soils. Existing high quality habitats shall not be adversely impacted by habitat creation projects. Collection for restorations shall be from sites where landowners have given their permission and there will be no adverse impact on native populations. Restorations for prairie habitats may include native grasses and forbs. Restorations for forest, savanna, and barren habitats may include appropriate native trees, shrubs, grasses and herbs. Restorations for wetland, riparian and aquatic habitats may include appropriate native trees, shrubs, grasses, herbs and aquatic plants. All activities included in planning, obtaining plant material, planting and evaluating the success of habitat creation/restoration: planting will be included in this practice. All invasive woody plant control will be approved through the annual site resource planning process and included on the site's annual plan of work. All planting projects will be approved through the annual site resource planning process and included on the site's annual plan of work.

- Hydrology Restoration

Details - Changes in hydrology can impact the viability of target species. Hydrology restoration in this project will be limited to the creation and restoration of small, isolated wetland habitat in suitable areas. No streams or other bodies of water will be impacted. All work will be done in hydrologically isolated areas or in such a way that they will not impact the movement of aquatic organisms. All hydrologic restorations will be done in accordance with local, state and federal laws and in consultation with the local NRCS office. All activities included in planning, implementing and evaluating the success of hydrology restoration projects will be included in this practice. All hydrologic restoration will be approved through the annual site resource planning process and included on the site's annual plan of work.

Wetland restoration will be limited to the removal of previously placed fill or drain tiles in existing wetland basins. The maximum surface area of disturbance for the restoration of a wetland will be less than 1 acre. There will be no more than 3 wetlands restored by the removal of fill at any project site.

Wetland creation will be limited to the creation of low berms or depressions designed to capture precipitation or groundwater. The wetlands constructed under this project will consist of an earthen berm with a maximum height of four (4) feet. The maximum surface area of disturbance for the construction of a wetland will be one-half (½) acre. There will be no more than 3 wetlands constructed at any project site.

LOCATION:

The Public Land Native Wildlife Habitat Restoration Project sites were statewide on public lands. Projects were conducted at Spring Lake State Fish and Wildlife Area including Manito Prairie Nature Preserve, Wilmington Shrub Prairie Nature Preserve, Middle Fork Woods Nature Preserve, Henry Allen Gleason Nature Preserve at Sand Ridge State Forest, Prairie Ridge State Natural Area, Mineral Marsh Nature Preserve, Upper Sangamon River Land and Water Reserve, Cache River State Natural Area, Pere Marquette State Park, and Pyramid State Park, Arklands Complex..

Specific locations are provided in Appendices A- J for all work locations. Detailed topographic maps are also provided to better illustrate the terrain at and near the project area. Appendix K outlines where the jobs are located within Illinois.

RELATED GRANTS

The following are related federal grant projects by location:

Middle Fork Woods Nature Preserve is located within Kickapoo State Recreation Area which is included in the W-76-D project. Since hunting is excluded from the Nature Preserve, the area of this grant is also excluded from the W-76-D project so there will be no conflict.

Cache River State Natural Area has the R-8-1 and W-76-D. Neither of these projects contains work related to this project.

Pere Marquette State Park has the W-76-D and R-6-1 programs. However, this project will not contain work related to the W-76 D project. The R- 6-1 project work is has been completed.

Pyramid State Park has a project that was funded through R-6-1. Although the work is similar, work under R-6-1 has been completed and that portion of R-6-1 has ended.

PERSONNEL:

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The District Heritage Biologists and/or the site manager were tasked with implementing and coordinating projects at the site level. Names of those job leaders are included in the Appendix A-J.

FINAL COSTS

Job	Work Location	Federal Share	State Share*	Project Total
1	Spring Lake State Fish and Wildlife Area: Manito Prairie Nature Preserve, Tazewell Co.	\$20,000.00	\$32,513.00	\$52,513.00
2	Mineral Marsh Nature Preserve, Henry Co.	\$17,360.00	\$6,283.00	\$23,643.00
3	Wilmington Shrub Prairie Nature Preserve, Will Co.	\$39,900.00	\$8,000.00	\$47,900.00
4	Middle Fork Woods Nature Preserve, Vermilion Co.	\$4,990.00	\$9,256.00	\$14,016.00
5	Upper Sangamon River Land and Water Reserve, Piatt Co	\$41,000.00	\$38,000.00	\$79,000.00
6	Henry Allen Gleason Nature Preserve, Sand Ridge State Forest, Mason co	\$35,485.00	\$6,339.24	\$41,987.24
7	Prairie Ridge State Natural Area, Marion and Jasper County	131,441.50	\$300,000.00	
8	Cache River State Natural Area, Johnson Co	\$20,500.00	\$5,500.00	\$26,000.00
9	Pere Marquette State Park, Jersey Co	\$13,750.00	\$10,989.00	\$24,739.00
10	Pyramid State Park, Perry County	\$19,995.00	\$19,975.00	\$39,970.00
	Project Totals	\$344,421.50	\$434,383.24	\$858,578.00

*State Share figures are approximations. In some instances herbicide for T-5-M-1 was purchased in bulk with costs spread across the project. Also, in-kind hours by individual biologists were tracked by federal aid personnel in Springfield, Illinois. Intern and volunteer hours were also tracked by federal aid personnel.

NEPA COMPLIANCE:

The IDNR used its CERP (Comprehensive Environmental Review Process) as a tool to aid the Department in meeting NEPA compliance for the projects outlined under this grant proposal. It is the Department's policy to require CERP applications for all land disturbing activities unless those activities are covered by CERP exemptions (see the enclosed Comprehensive Environmental Review Process documents).

All work identified in this proposal is believed to be addressed by several categorical exclusions (1.4A(3) & 1.4B(1-4), 516 DM 6Appendix 1) with no known exceptions to those categorical exclusions. If exceptions are identified or the scope of the work changes during the execution of the proposed projects, the Federal Aid Division of the USFWS will be contacted to determine if additional NEPA compliance actions are needed.

All planned activities will also be in compliance with the Endangered Species Act. All determinations and documentation will in accordance with the current established U. S. Fish and Wildlife Service protocols for Section 7.

All planned activities will be in compliance with the National Historic Preservation Act and the Council on Historic Preservation Act. All determinations and documentation will be in accordance with the terms of the Programmatic Agreement, as amended, effective September 23, 2002.

When applicable, those planned activities which involve a floodplain and/or jurisdiction wetlands will be done in accordance with Presidential Executive Orders 11988 and 11990.

When applicable, those planned activities which involve programs and/or site improvements will be done in accordance with Section 504 of the Rehabilitation Act and the Americans with Disabilities Act.

When applicable, those planned activities which involve the use of pesticides, herbicides or other comparable chemicals will be done in accordance with current state and federal regulations to assure the safe and legal application of those chemicals. All chemicals will be applied in accordance with label instructions. All persons applying chemicals will be licensed by the Illinois Department of Agriculture as a chemical operator along with a licensed applicator, in accordance with Illinois state law.

APPENDICES:

A.Spring Lake State Fish and Wildlife Area/ Manito Prairie Nature Preserve, Tazewell Co. Wetland and Prairie habitat restoration project.

B.Mineral Marsh Nature Preserve, Henry County exotic species and habitat restoration project.

C.Wilmington Shrub Prairie Nature Preserve, Will County prairie, wetland and savanna habitat restoration project.

D.Middle Fork Woods Nature Preserve, Vermillion County wetland and forest habitat restoration project.

E.Upper Sangamon River Land and Water Reserve, Piatt County forest habitat restoration project.

F.Henry Allen Gleason Nature Preserve, Sand Ridge State Forest, Mason County sand prairie habitat restoration project.

G.Prairie Ridge State Natural Area, Marion and Jasper Counties grassland habitat restoration project.

H.Cache River State Natural Area, Johnson County invasive exotic species management project.

I. Pere Marquette State Park, Jersey, County exotic species control and habitat restoration project.

J. Pryamid State Park – Arklands Complex, Perry County exotic species and habitat restoration project

Literature Cited

Illinois Department of Energy and Natural Resources 1994. *The Changing Illinois Environment: Critical Trends. Summary Report and Volumes 1-7 Technical Report.* Illinois Department of Energy and Natural Resources. Springfield. 242 p.

Schwegman, J. E., G. B. Fell, M. Hutchison, W. M. Shepherd, G. Paulson, and J. White. 1973. *Comprehensive plan for the Illinois Nature Preserves System. Part 2, The Natural Divisions of Illinois.* Illinois Nature Preserves Commission. Rockford. 32 p + map.

Illinois Department of Natural Resources. 2001. *Critical Trends in Illinois Ecosystems.* Department of Natural Resources. Springfield. 112 p.

Appendix A

Job Title: Job 1: Spring Lake State Fish and Wildlife Area/ Manito Prairie Nature Preserve, Tazewell County wetland and prairie habitat restoration project.

Job Leader: Michelle Simone
Natural Heritage Biologist
Illinois Department of Natural Resources
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Purpose/need:

Spring Lake State Fish and Wildlife Area includes Spring Lake Seeps Natural Area, a steep sand and gravel terrace bluff above the Illinois River floodplain with rare seep and wetland communities at its base. This site supports a unique community of wetland, hill prairie and savanna. The site provides habitat for a unique assemblage of plants and animals including state threatened plant species (Table A). The site also includes unique seep habitat adjacent to the Spring Lake. Exotic Shrubs such as bush honeysuckle (*Lonicera spp.*) and autumn olive have become established through much of the bluff from plantings along the entrance road at the site.

Manito Prairie Nature Preserve is a satellite managed by the staff of the Spring Lake Fish and Wildlife Area. This nature preserve contains high quality gravel hill prairie and sand prairie located on a terrace above the Illinois River. The site contains a unique assemblage of native flora and fauna including three endangered or threatened species. A continuing problem at the site is the invasion of the site by woody species.

Objectives:

Restore and/or maintain rare seep, wetland and gravel hill and sand prairie habitats at the 2031 acre Spring Lake State Fish and Wildlife Area, and its satellite 21 acre Manito Prairie Nature Preserve, in Tazewell County by the removal of invasive and exotic woody species.

Final Project Status:

Woody invasive and exotic species were controlled on most of the 21 acre Manito Prairie Nature Preserve, restoring high quality gravel hill prairie and sand prairie habitat. A prescribed fire was completed on approximately 20 acres of the site. This site provides habitat for a unique assemblage of native flora and fauna including three endangered or threatened plant species. Woody and exotic species removal also benefited several rare insects known from the site.

At Spring Lake State Fish and Wildlife Area approximately 15 acres of hill prairie, sand savanna, and sand forest habitats were restored using the practices of invasive woody plant control and invasive exotic species control. We were not able to complete any management in the seep wetland due to a lack of funds. However, management of the hill prairie and savanna opened up the understory, thus increasing native groundcover. This will reduce bluff erosion and decrease sedimentation to roughly 10 acres of seep wetland below the bluff.

Budget:

Line Item	Federal Share	State Share	Project Total
Contractual	\$20,000.00	\$20,656.00	\$40,656.00
Commodities	\$0.00	\$3,857.50	\$3,857.50
Personnel	\$0.00	~\$8,000.00	~\$8,000.00
Total	\$20,000.00	\$32,513.50	~\$52,513.00

Table A. Endangered, threatened and rare species known to use Spring Lake State Fish and Wildlife Area and Manito Prairie Nature Preserve, Tazewell County

Common Name	Scientific Name	Status
Manito Prairie Nature Preserve		
Tennessee Milk Vetch	<i>Astragalus tennesseensis</i>	Illinois Endangered
Kittentails	<i>Besseya bullii</i>	Illinois Threatened
Lakeside Daisy	<i>Hymenoxys herbacea</i>	Federally Threatened
Prairie Froghopper	<i>Lepyronia gibbosa</i>	Highly Prairie Dependent
Prairie Leafhopper	<i>Flexamia prairiana</i>	Highly Prairie Dependent
Prairie Leafhopper	<i>Fexamia pectinata</i>	Highly Prairie Dependent
Leafhopper	<i>Polyamia caperata</i>	Prairie Dependent
Franklin's Ground Squirrel	<i>Spermophilus franklinii</i>	Grassland Dependent
Spring Lake State Fish and Wildlife Area		
Kittentails	<i>Besseya bullii</i>	Illinois Threatened
Forked Aster	<i>Aster furcatus</i>	Illinois Threatened
Pied-billed Grebe	<i>Podilymbus podiceps</i>	Illinois Threatened
Bald Eagle (wintering)	<i>Haliaeetus leucocephalis</i>	Federally Threatened
Least Bittern	<i>Ixobrychus exilis</i>	Illinois Threatened

Figure A1. Work locations at Spring Lake SFWA are highlighted in purple.

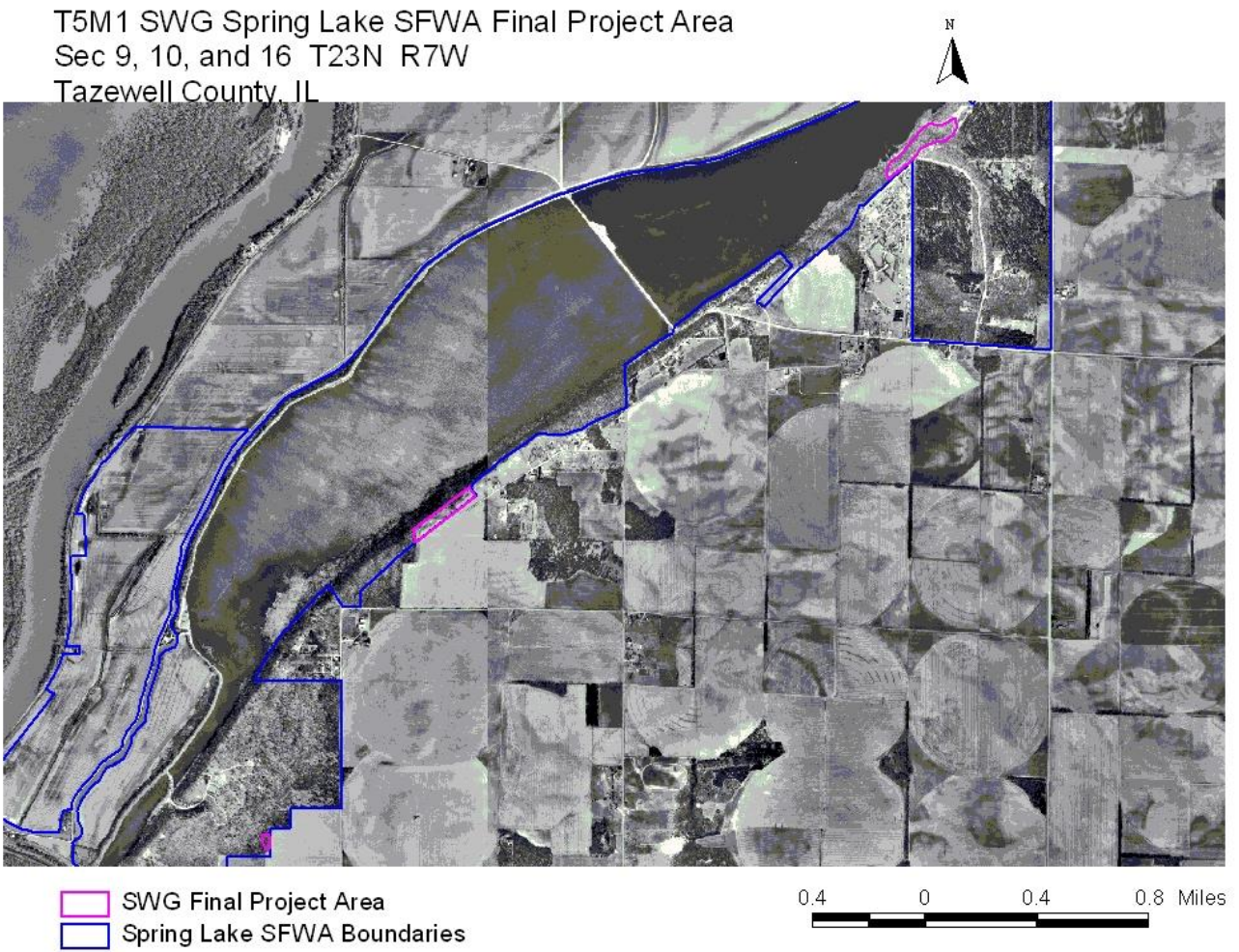


Figure A2. Brush and exotic species were controlled on most of the 21 acre Manito Prairie Nature Preserve, restoring high quality gravel hill prairie and sand prairie habitat.

T5M1 Final Project Area Manito Prairie Nature Preserve
Tazewell County
Sec 15 & 22 T24N R6W 3PM
SWG funds were spent on entire area



0.1 0 0.1 0.2 Miles

Appendix B

Job Title: Job 2: Mineral Marsh Nature Preserve, Henry County exotic species control and habitat restoration project.

Job Leader: Ed Anderson
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3159 Crim Road
Savanna, IL 61074
815-273-3184

Purpose/need:

Mineral Marsh Nature Preserve is a 235 acre nature preserve that contains sand prairie, sand savanna and marsh habitats. The site supports 12 Illinois endangered and threatened plant and animal species (Table B). In total the habitat supports 136 birds, 19 mammals, 9 reptiles, 7 amphibians and numerous invertebrates. Invasive woody and exotic species encroachment threatens the vegetative communities and animal habitat across the site. Species control concern include willow (*Salix* spp.), spotted knapweed (*Centaurea maculosa*), sweet clover (*Melilotus* spp.), Siberian elm (*Ulmus pumila*), mulberry (*Morus* spp.) and white poplar (*Populus alba*).

Objectives: Remove and reduce invasive species and restore and or maintain habitats for state endangered and threatened species, and other native wildlife species at the 235 acre Mineral Marsh Nature Preserve, Henry County.

Final Project Status:

The project has been completed and all identified invasive species were removed from the preserve. Federal funds were used to hire a contractor. Contractual work focused on control of exotic and invasive woody vegetation as well as the control of herbaceous exotic vegetation throughout the preserve. In-Kind match activities have included locating and mapping of exotic species, mowing and clearing of firebreaks, removal of interior fence materials, administration of contracts, and oversight of contractual work

Budget:

Line Item	Federal Share	State Share	Project Total
Contractual	\$17,360.00	\$0.00	\$17,360.00
Commodities	\$0.00	\$2,202.50	\$2,202.50
Personnel	\$0.00	\$4,081.00	\$4,081.00
Total	\$17,360.00	\$6,283.50	\$23,643.50

Table B. Endangered, threatened, and rare species at Mineral Marsh Nature Preserve

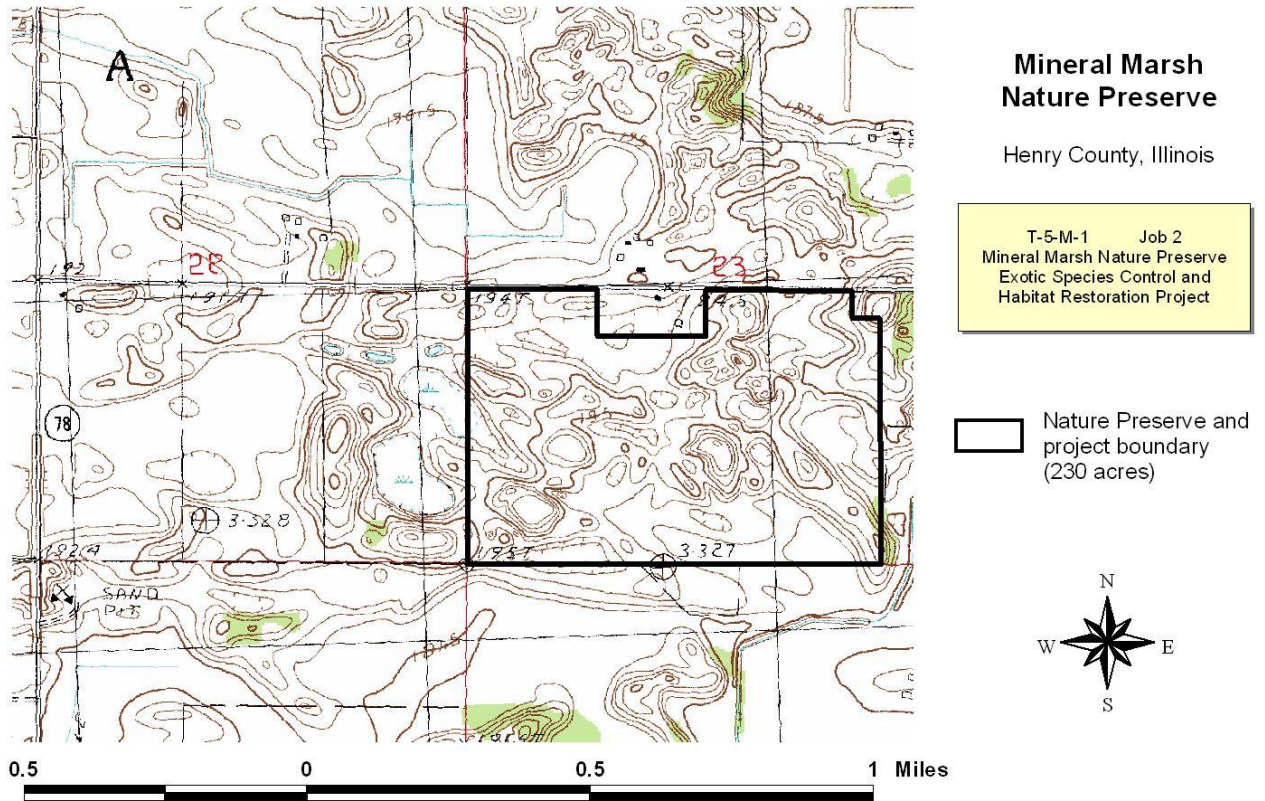
Common	Scientific	Status
Illinois mud turtle	<i>Kinosternun flavescens spooneri</i>	Illinois Endangered
Blanding's turtle	<i>Emydoidea blandingii</i>	Illinois Threatened
Western hognose snake	<i>Heterodon nasicus nasicus</i>	Illinois Threatened
Northern harrier	<i>Circus cyaneus</i>	Illinois Endangered
Short-eared owl	<i>Asio flammeus</i>	Illinois Endangered
Upland sandpiper	<i>Bartramia longicauda</i>	Illinois Endangered
Pied-billed grebe	<i>Podilymbus podiceps</i>	Illinois Threatened
Black rail	<i>Laterallus jamaicensis</i>	Illinois Endangered
Broomrape	<i>Orobanche ludoviciana</i>	Illinois Threatened
Hill's thistle	<i>Cirsium hillii</i>	Illinois Threatened

Other area sensitive grassland birds using Mineral Marsh Nature Preserve.

Common	Scientific	IL pop decline 1966-1991*
Bobolink	<i>Dolichonyx oryzivorus</i>	92%
Western Meadowlark	<i>Sturnella neglecta</i>	86%
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	85%
Eastern Meadowlark	<i>Sturnella magna</i>	61%
Field Sparrow	<i>Spizella pusilla</i>	58%

*- after Herkert, JR, RE Szafoni, VM Kleen, and JE Schwegman. 1993. Habitat establishment, enhancement, and management for forest and grassland birds in Illinois. Division of Natural Heritage, Illinois Department of Conservation, Springfield, Illinois. Natural Heritage Technical Publication #1. 20 pp.

Figure B. Exotic species were controlled over the entire site at Mineral Marsh Nature Preserve in Henry County.



Appendix C

Job Title: Job 3: Wilmington Shrub Prairie Nature Preserve, Will County, prairie, wetland and savanna habitat restoration project.

Job Leader: Dan Kirk
Natural Heritage Biologist
Silver Springs State park
13608 Fox River Road
Yorkville, IL 60560
630-553-1372

Purpose/need:

Wilmington Shrub Prairie is a 146 acre Nature Preserve owned by the Illinois Department of Natural Resources. The site consists of mesic sand prairie, wet-mesic prairie, dry-mesic sand savanna, sedge meadow, shrub prairie, marsh and successional field habitats. Wilmington Shrub Prairie supports a diverse assemblage of plants and animals including two state endangered plants (Table C).

Most of the Wilmington Shrub Prairie is recovering from past grazing by livestock, but approximately 60 acres of high quality vegetation still exists (41 percent of the site). Ditching during the 1930's lowered the water table allowing woody vegetation to invade the area. Non-native woody vegetation such as common buckthorn (*Rhamnus cathartica*), Amur honeysuckle (*Lonicera maackii*), multiflora Rose (*Rosa multiflora*), and autumn olive (*Elaeagnus umbellata*) along with the native red-osier dogwood (*Cornus stolonifera*) and silver maple (*Acer saccharinum*) are encroaching into much of the prairie and sedge meadow because of fire suppression. Woody vegetation control is needed in order to return the area's ecosystems to their former healthy condition. Prescribed burns have suppressed some small woody species but mechanical control is necessary to eliminate larger species.

Objective:

Restore and maintain high quality prairie, wetland and savanna habitat at the 146 acre Wilmington Shrub Prairie Nature Preserve, Will County, through control of invasive and/or exotic species.

Final Project Status: Seventy five acres of exotic woody vegetation was controlled. Some seedlings reestablished the following growing season but a maintenance herbicide program has been implemented to address the issue. Exotic woody vegetation has been reduced by approximately 90% in the project area. An aggressive burning program will keep woody vegetation in check until herbicide can be applied.

Budget:

Line Item	Federal Share	State Share	Project Total
Contractual	\$39,900.00	\$0.00	\$39,900.00
Commodities	\$0.00	\$5,500.00	\$5,500.00
Personnel	\$0.00	~ \$2,500.00	\$2,500.00
Total	\$39,900.00	~\$8,000.00	~\$47,900.00

C1: Illinois endangered and threatened species of Wilmington Shrub Prairie Nature Preserve, Will County

Common Name	Scientific Name
Running Ground Pine	<i>Lycopodium clavatum</i>
Bristly Blackberry	<i>Rubus setosus</i>
Regal fritillary	<i>Speyeria idalia</i>

Table C2: Prairie insects other than endangered and threatened species known to occur at Wilmington Shrub Prairie Nature Preserve.

Common Name	Species	Host Plant
Common roadside skipper	<i>Amblyscirtes vialis</i>	native grasses
Dion skipper	<i>Euphyes dion</i>	<i>Carex</i>
Black dash	<i>Euphyes conspicua</i>	<i>Carex</i>
Two-spotted skipper	<i>Euphyes bimacula</i>	<i>Carex</i>
Broad-winged skipper	<i>Poanes viator</i>	<i>Carex</i>
Byssus skipper	<i>Problema byssus</i>	<i>Andropogon</i>
Crossline skipper	<i>Polites origines</i>	native grasses
Dreamy duskywing	<i>Erynnis icelus</i>	<i>Salix</i>
Southern cloudwing	<i>Thorybes bathyllus</i>	legumes
Acadian hairstreak	<i>Satyrium acadica</i>	<i>Salix</i>
	<i>Lycaena thoe</i>	<i>Polygonum</i>
Purplish copper	<i>Lycaena helloides</i>	<i>Polygonum</i>
Silver bordered fritillary	<i>Boloria selene myrina</i>	<i>Viola spp</i>
Meadow fritillary	<i>Boloria bellona</i>	<i>Viola spp</i>
Regal fritillary	<i>Speyeria idalia</i>	<i>Viola spp</i>
	<i>Speyeria aphrodite</i>	<i>Viola spp</i>
	<i>Lethe eurydice</i>	<i>Carex</i>
moth	<i>Hydraecia stramentosa</i>	<i>Scophularia marilandica</i>
	<i>Oligia obtusa</i>	Sedges
Sensitive fern borer moth	<i>Papaipema inquaesita</i>	<i>Onoclea</i>
	<i>Papaipema silphii</i>	<i>Silphium</i>
Osunda borer moth	<i>Papaipema speciosissima</i>	<i>Osmunda</i>
Praeclara underwing	<i>Catocala praeclara</i>	<i>Pyrus</i>
Similar underwing	<i>Catocala similis</i>	<i>Quercus</i>
Goldenrod flower moth	<i>Schinia nundina</i>	<i>Solidago</i>

Figure C. Locations of exotic species control at Wilmington Shrub Prairie Nature Preserve, Will County.



Figure C2. A forestry mower type head was utilized to remove exotic and invasive species at Wilmington Shrub Prairie in Will County. Follow-up herbicide treatment was completed.



Appendix D

Job Title: Job 4: Middle Fork Woods Nature Preserve, Vermillion County wetland and forest habitat restoration project.

Job Leader: Bob Szafoni
Natural Heritage Biologist
Illinois Department of Natural Resources
1660 W. Polk,
Charleston, IL 61920
217-345-2420

Purpose/need:

The 79 acre Middle Fork Woods Nature Preserve and adjacent open fields and forest riparian zones along the Middle Fork Vermillion River provides wetland and forest habitats that support two threatened and endangered species and 5 species and habitats of regional significance (Table D). This area is a part of a National Scenic River Corridor for the Middle Fork River. Exotic and native invasive species, a lack of oak regeneration, stream entrenchment and lack of recovery of succession fields threaten the integrity of this nature preserve. Hydrological modifications have degraded or eliminated at least 2 wetlands that provide essential habitat for state-listed species as well as other wetland fauna.

Objectives: Restore 80 acres of forest, and 2 wetland ephemeral ponds in a 200 acre area that includes Middle Fork Woods Nature Preserve, Vermillion County and contains habitat that supports two Illinois endangered or threatened species and five species of regional concern.

Final Project Status:

Exotic woody plant control was completed on 10 acres of dense autumn olive, bush honeysuckle and multiflora rose. In addition, the Illinois Department Natural Resources Office of Water Resources studied erosion of a ravine into the Middle Fork River. They determined that the stream entrenchment that was causing erosion and slumping was more of a one time event and likely to stabilize. It should be monitored over the next decade. Therefore, no implementation funds were used for corrective action.

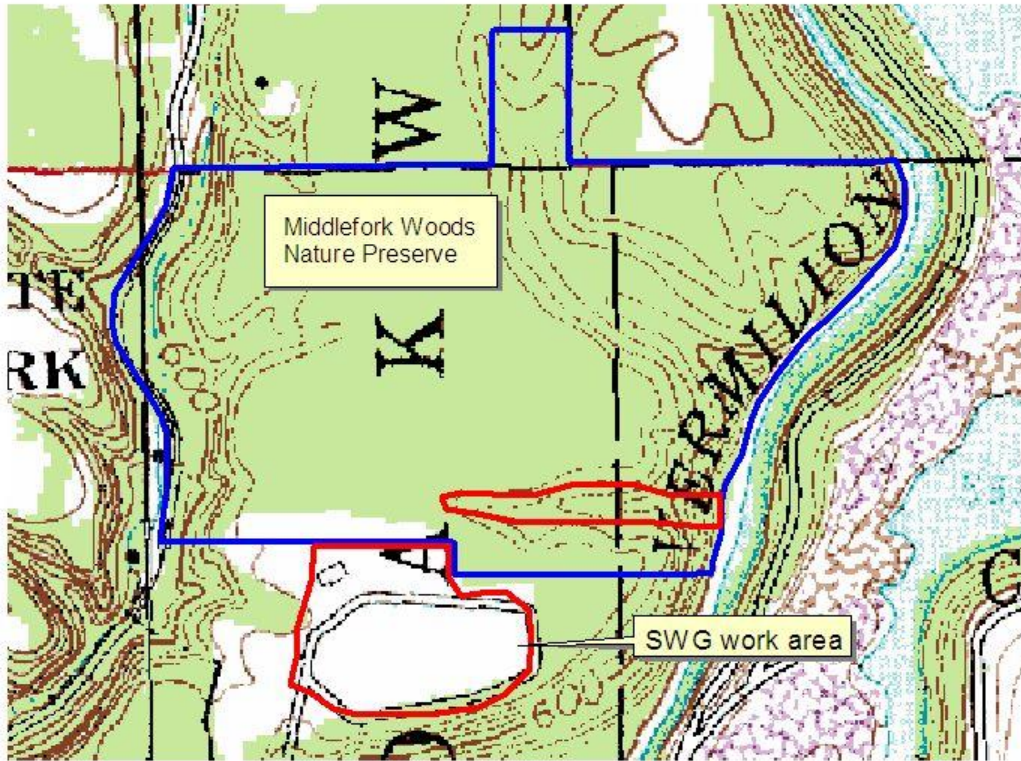
Budget:

Line Item	Federal Share	State Share	Project Total
Contractual	\$4,490.00	\$4,326.00	\$8,816.00
Commodities	\$0.00	\$0.00	\$0.00
Personnel	\$0.00	\$~5,200.00	\$5,200.00
Total	\$4,490.00	\$9,526.00	\$14,016.00

D: Species of concern supported by habitat in the Middle Fork Woods Nature Preserve, Vermillion County.

Common Name	Scientific Name
Endangered and Threatened Species	
Silvery Salamander	<i>Ambystoma platineum</i>
Fiberous-rooted Sedge	<i>Carex communis</i>
Species of Regional Concern	
American Beech	<i>Fagus grandifolia</i>
Yellow Lady's Slipper Orchid	<i>Cypripedium calceolus</i>
Red-backed salamander	<i>Plethodon cinereus</i>
Wood Frog	<i>Rana sylvatica</i>
Cerulean Warbler	

Figure D. The red highlights indicates the locations of exotic species control and hydrology restoration at Middle Fork Fish and Wildlife Area, Vermilion County.



1000 0 1000 2000 Feet



Appendix E

Job Title: Job 5: Upper Sangamon River Land and Water Reserve, Piatt County forest habitat restoration project.

Job Leader: Eric Smith
Natural Heritage Biologist
Illinois Department of Natural Resources
301 South Date Street
Gibson City, IL 60936
217-784-4730

Purpose/need:

The Upper Sangamon River Land and Water Reserve, Piatt County (USRLWR) is located adjacent to Robert Allerton Park. This University of Illinois owned site contains one of the largest and most significant forests in east-central Illinois. Allerton contains nearly 700 acres of dry-mesic and mesic upland forest as well as 400+ acres of flood plain forest. There is a block of timber greater than 500 acres and the site is registered as a National Natural Landmark. The bird community is rich and diverse with a mix of permanent residents, short-distance migrants, and long-distance neotropical migratory species. The 640 acre IDNR-owned USRLWR contains row crop agricultural land (76 acres), 200 acres of grassland and 350 acres of bottomland forest habitat. The area will be managed to decrease fragmentation of the grassland and forest habitat. A Memorandum of Understanding between the IDNR and the University of Illinois states that both parties will work toward increasing forest habitat along the Sangamon River corridor and reducing habitat fragmentation on this parcel. This project will specifically address the reforestation of row crop agriculture to minimize forest fragmentation and the maintenance of existing grassland areas.

Objectives: Restore, maintain and reduce fragmentation of 435 acres of dry-mesic and mesic upland forest and floodplain forest and maintain 200 acres of grassland habitat (including the reforestation of 76 acres of former cropland) in the Upper Sangamon River Land and Water Reserve next to Allerton Park in Piatt County.

Final Project Status:

Seventy six acres of former row crops were reforested to 7 species of upland hardwoods. This area will serve as a buffer to the 1500 forest at Robert Allerton Park. Countless hours and dollars have been spent to maintain this new planting, including weed control, installing tree protectors, planting new seedlings each year, and mowing. Invasive exotic species control was completed in 271 acres of upland forest. Up to 2000 RPM oak and hickory trees were added to the upland forest. Grasslands have been managed to maintain appropriate structure. Work has included planting, mowing and herbaceous exotic species control.

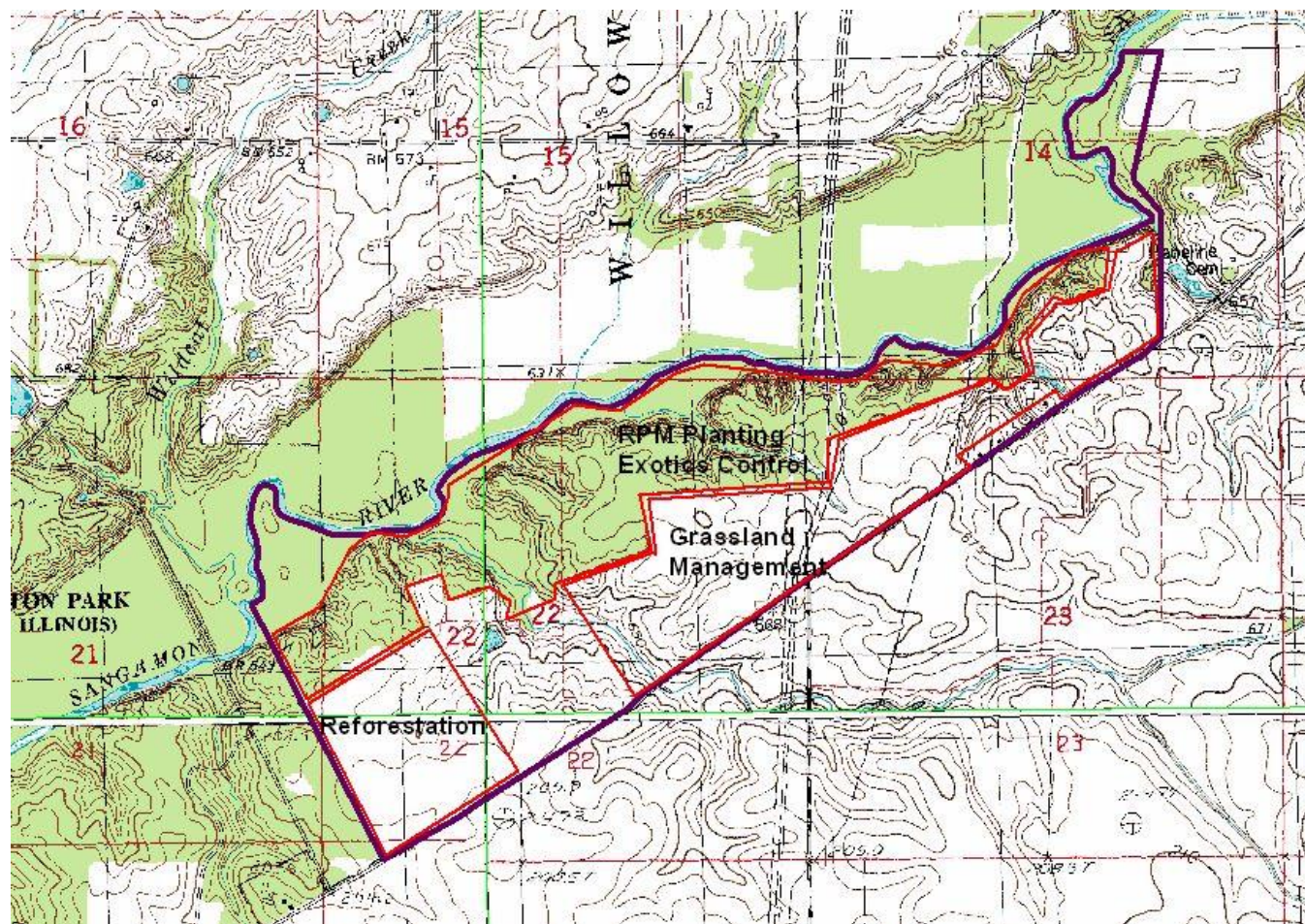
Budget:

Line Item	Federal Share	State Share	Project Total
Contractual	~\$33,100.00	~\$27,706.00	\$60,806.00
Commodities	~\$4,180.00	~\$5,787.00	\$9,967.00
Personnel	\$0.00	~\$8,000.00	\$8,000.00
Total	~\$37,284.00	~\$41,493.00	~\$78,777.00

Table E: Illinois endangered and threatened species of Robert Allerton Park and the Upper Sangamon River Land and Water Reserve, Piatt County.

Common Name	Scientific Name
Illinois Endangered or Threatened Species	
Red-shouldered Hawk	<i>Buteo lineatus</i>
Kirkland's Water snake	<i>Clonophis kirtlandi</i>
Loggerhead shrike	<i>Lanius ludovicianus</i>
Eastern Massasauga Rattlesnake	<i>Sistrurus catenatus catenatus</i>
Area Sensitive Species	
Grasshopper Sparrow	<i>Ammodramus savannarum</i>
Sedge Wren	<i>Cistothorus platensis</i>
Bobolink	<i>Dolichonyx oryzivorus</i>
Savannah Sparrow	<i>Passerculus sandwichensis</i>
Dickcissel	<i>Spiza americana</i>
Eastern Meadowlark	<i>Sturnella magna</i>

Figure E. Work was completed across the entire Upper Sangamon River Land and Water Reserve in Piatt County.



Appendix F

Job Title: Job 6: Henry Allen Gleason Nature Preserve, Sand Ridge State Forest, Mason County sand prairie habitat restoration project.

Job Leader: Tim Kelley
Natural Heritage Biologist
Illinois Department of Natural Resources
700 S. 10th St
Havana, IL 62644
309-543-3262

Purpose/need:

Sand Ridge State Forest, which includes Henry Allen Gleason Nature Preserve, encompasses 7,307.4 acres - 3,916 native oak- hickory forest, 2,492 acres of pine and the rest in open fields and sand prairies. Initially purchased by the state in 1939, this forest was to be managed as an experimental forest. The CCC planted pine trees to control wind erosion and demonstrate the viability of growing a commercial tree crop on sandy soil. Three State listed butterflies, one listed amphibian, one listed turtle, and three listed plants occur on site (Table F). The list of potential state endangered or threatened or regionally rare species at the Forest is extensive. The common feature for all of these species is that they require sand prairie or dry open sand forests. As part of a comprehensive conservation plan for the forest, it is desirable to restore sand prairie habitat where appropriate. According to the General Land Office survey notes, the immediate vicinity around Henry Allen Gleason Nature Preserve was historically sand prairie. The current condition of most of the surrounding area is pine plantation that was devastated by two separate tornadoes in 2003. Exotic species including pines (*Pinus* spp.), black locust (*Robinia pseudoacacia*) and invasive natives degrade these sand prairie areas.

Objectives:

The project has two main objectives, the creation of 20 acres of diverse sand savanna (work zone 1) in the area immediately north of the Henry Allen Gleason Nature Preserve through the removal of undesirable tree species and individual trees to reflect historical sand savanna composition and structure. Removal will be accomplished by a variety of mechanical means using heavy equipment. The seed bed will be prepared through usage of selective herbicide applications throughout the 07 growing season followed by a fall prescribed burn and frost seeding of appropriate seed in late November to early December 07. Roughly 15 acres within the Nature Preserve will be treated for exotic (black locust) and invasive (American plum, black walnut and oaks) species using a combination of mechanical removal in highly disturbed areas (work zone 2) and / or hand treating in higher quality areas of the preserve (work zone 3). Seeding will follow as above.

The creation of the diverse sand savanna will directly benefit the state listed butterfly species on the site by restoring pre-settlement conditions which will provide critical habitat in a large contiguous block next to existing habitat. Control of exotic and invasive species within the Nature Preserve will ensure the continued integrity of the preserve.

Final Project Status:

Work Zone 1: Savanna restoration - (approximately 20 acres)

The site was a former sand savanna which has undergone an increase in exotic and undesirable species. 1) grinding trees with a forestry mower, 2) hand-cutting trees that could not be cut with the forestry mower, and 3) applying appropriate herbicide to cut trees. Overall canopy cover was reduced within the entire 20 acres to less than 25%, exhibiting a clumped distribution pattern (few areas exhibit 100% coverage while other areas have 0% coverage). Desirable tree

species remaining include black oak, blackjack oak, black hickory, and black walnut. Within the desirable species, a suitable cross section of all size classes was retained. Following the activities completed by the contractor, the desired condition set out in the original project proposal (20 acres with less than 25% canopy coverage overall composed of desirable species of all size classes).

Work Zone 2: Exotic species and woody encroachment control - (approximately 10 acres)

This work zone occurs in a degraded portion of the Nature Preserve where woody removal of vegetation has occurred in the past. Within this zone, a contiguous growing stand of exotic and invasive woody species (black locust, American plum, and various hardwoods) was be treated with a forestry mowing. 1) grinding trees with a forestry mower, 2) hand-cutting trees that could not be cut with the forestry mower, and 3) applying appropriate herbicide to cut trees. The desired condition of the site upon completion of contractor activities was obtained.

Work Zone 3: Exotic species and woody encroachment control - (approximately 10 acres)

This work zone occurs within higher quality areas of the Nature Preserve where isolated areas of exotic and invasive woody species (black locust, American plum) of brush were treated. The desired condition of the site, post-treatment, as prescribed by the original proposal was obtained. This consisted of >80 % of stumps and/or stems within the treated area not producing re-sprouts.

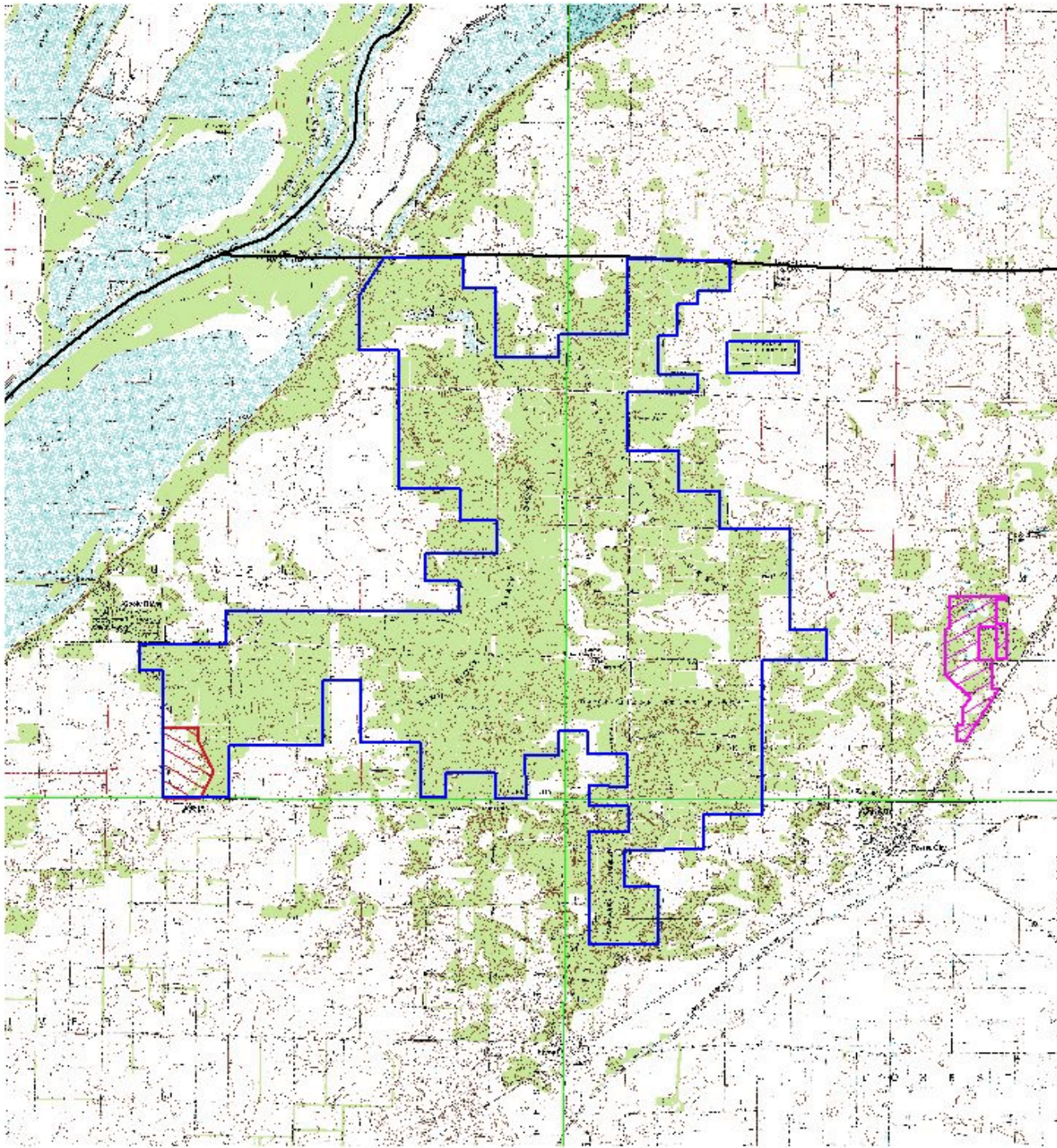
Budget:




Line Item	Federal Share	State Share	Project Total
Contractual	\$35,648.00	\$0.00	\$35,648.00
Commodities	0.00	\$4,166.24	\$4,166.24
Personnel	0.00	\$2,173.00	\$2,173.00
	\$35,648.00	\$6,339.24	\$41,987.24

Table F1: Illinois endangered and threatened species of Henry Allen Gleason Nature Preserve and/or Sand Ridge State Forest.

Common Name	Scientific Name
Illinois Chorus Frog	<i>Pseudacris streckeri illinoensis</i>
Illinois Mud Turtle	<i>Kinosternon flavescens</i>
Ottoo Skipper	<i>Hesperia ottoe</i>
Cobweb Skipper	<i>Hesperia metea</i>
Regal fritillary	<i>Speyeria idalia</i>
Umbrella Sedge	<i>Cyperus grayoides</i>
Prairie Broomrape	<i>Orobanche ludoviciana</i>
Silvery Bladderpod	<i>Lesquerella ludoviciana</i>

Figure F1. Location of Henry Allen Gleason Nature Preserve, Mason County.

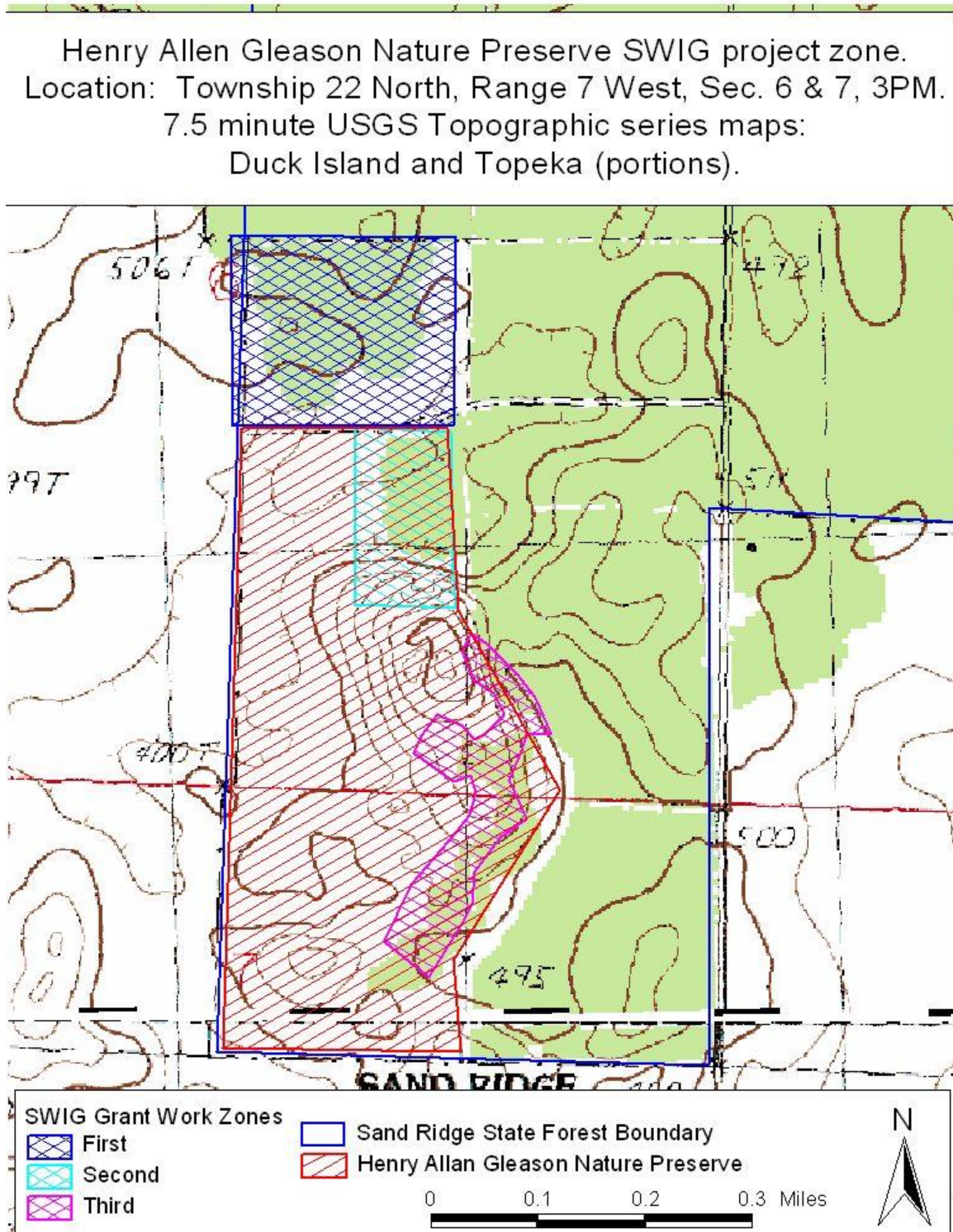


-  Sand Ridge State Forest Boundary
-  Sand Ridge State Forest Preserves
-  Henry Allan Gleason Nature Preserve
-  Sparks Pond Land and Water Reserve

0.8 0 0.8 1.6 Miles



Figure F2. The locations of sand prairie and savanna restoration, within the three work zones, at Henry Allen Gleason Nature Preserve, Mason County.



Appendix G

Job Title: Job 7: Prairie Ridge State Natural Area, Marion and Jasper Counties grassland habitat restoration project.

Job Leader: Scott Simpson
Site Manger
Prairie Ridge State Natural Area
4295 North 100th Street
Newton, IL 62448
618-783-2685

Purpose/need:

Prairie Ridge State Natural Area consists of Approximately 3600 acres of grassland and wetlands that provide habitats for 36 species of special concern. These include 17 state endangered , 8 state threatened, 6 watch list species and 5 area sensitive species (Table G). Among these are 14 breeding populations of state endangered or threatened species. Of special importance to this site is that Prairie Ridge hosts the State of Illinois's only known breeding population of Greater Prairie Chicken and the State's largest known breeding populations of Northern Harrier Short-eared Owls.

Exotic plant populations, such as tall fescue, decreases the value of nest cover for Greater Prairie Chickens and other grassland birds. Left unchecked, tall fescue will dominate the landscape and degrade critical habitat. Woody vegetation also has deleterious effects on the occurrence, density and/or nesting success of grassland nesting birds. An active program of land acquisition and partnering with neighbors continues to increase the need to implement management practices on newly acquired lands. Also the routine upkeep of these habitats limits the amount of staff and other resources to manage this important grassland site.

Objectives:

Provide, restore and maintain 3600 acres of grassland habitat at Prairie Ridge Sanctuary, Marion and Jasper Counties that provide habitat to 26 state endangered species, 5 watch list species and 5 area sensitive grassland species.

Final Project Status:

09/16/04 \$16,000.00 Contractor spent 128 hours with heavy equipment brush grinder removing invasive woody plants that have a deleterious effect on the occurrence, density and /or nesting success of grassland nesting birds. The remaining and visible stumps were treated with Garlon 4 herbicide per label instructions by site staff.

10/04 \$4153.75 Herbicides were purchased and a contractor was hired to spray 100 acres of fescue. Native grass will be restored in the spring of 2005 on 37 acres and the remaining 63 acres will be converted to desirable grasses during August 2006. This project will habitat restoration on 100 acres of critical grassland habitat for threatened and endangered grassland birds.

06/02/05 \$16,700.00 Contractor spent 167 hours removing invasive woody plants that have a deleterious effect on the occurrence, density and/or nesting success of grassland nesting birds. The disturbed site was then tilled and planted to grass by site staff.

10/03/05 \$3100.00 Contractor provided 31 hours of heavy equipment work to correct a severe erosion problem per NRCS specifications. The erosion area was re-shaped into a waterway,

fabric checks and rock chutes were installed. The area was then seeded with grasses, mulched, and fertilized to enhance the critical area seeding.

02/01/06 - 11/30/06 \$30,000.00 Habitat Restoration Services were provided to Prairie Ridge State Natural Area through a contract with the **Illinois Audubon Society**. The following services were provided between **February 1, 2006 and November 30, 2006**. Approximately 479 acres were seeded to nest or brood cover (warm and cool season grasses/legumes) for grassland birds. This involved converting tall fescue by herbicide, tilling and re seeding, seeding new acquisition's and tilling brood cover fields. 1800 acres were rotary mowed high to provide proper vegetative structure for nest/roost cover for endangered and threatened grassland birds as well as provide a "grasslands disturbance factor" to prevent for woody plant succession. Development of 25 miles of roto-tilled firebreaks for prescribed burning and provide assistance with annual prescribed burning of 500 acres at Prairie Ridge. Maintain 6 miles of prairie pasture fencing, 50 miles of refuge boundary signs/invasive brush, annual control of exotic/invasive species at the site's 12 wetlands. Hand collection of native prairie forb and wetland seed located on the site and control of invasive brush and exotic species using chain saws, brush cutters and herbicides.

08/28/06 (\$11,000.00) Contractor with heavy equipment brush grinder spent 79 hours removing invasive woody plants that have a deleterious effect on the occurrence, density and/or nesting success of grassland nesting birds.

02/01/07 - 11/30/07 (\$49,487.75) Habitat Restoration Services were provided to Prairie Ridge State Natural Area through a contract with the **Illinois Audubon Society**. The following services were provided between **February 1, 2007 and November 30, 2007**. Approximately 256 acres were seeded to nest or brood cover (warm and cool season grasses/legumes) for grassland birds. This involved converting tall fescue by herbicide, tilling and re seeding, seeding new acquisition's and tilling brood cover fields. 2000 acres were rotary mowed high to provide proper vegetative structure for nest/roost cover for endangered and threatened grassland birds as well as provide a "grasslands disturbance factor" to prevent for woody plant succession. Development of 25 miles of roto-tilled firebreaks for prescribed burning and provide assistance with annual prescribed burning of 500 acres at Prairie Ridge. Maintain 6 miles of prairie pasture fencing, 50 miles of refuge boundary signs/invasive brush, annual control of exotic/invasive species at the site's 12 wetlands. Hand collection of native prairie forb and wetland seed located on the site and control of invasive brush and exotic species using chain saws, brush cutters and herbicides.

Budget:

Line Item	Federal Share	State Share	Project Total
Contractual			
Commodities	\$0.00		
Personnel	\$0.00		

Table G1: Species of Special Concern Prairie Ridge State Natural Area, Jasper and Marion Counties,

COMMON NAME	SCIENTIFIC NAME	STATUS
American Bittern	<i>Botaurus lentiginosus</i>	Endangered
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Threatened/FT
Bell's vireo	<i>Vireo bellii</i>	Watch list
Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>	Endangered
Black Tern	<i>Childonias niger</i>	Endangered
Bobolink	<i>Dolichonyx oryzivorus</i>	Area Sensitive
Brown Creeper	<i>Certhia americana</i>	Threatened
Common Barn-Owl	<i>Tyto alba</i>	Endangered
Common Snipe	<i>Gallinago gallinago</i>	Watch list
Eastern Meadowlark	<i>Sturnella magna</i>	Area Sensitive
Golden-winged warbler	<i>Vermivora chrysoptera</i>	Watch list
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	Area Sensitive
Greater Prairie-Chicken	<i>Tympanuchus cupido</i>	Endangered/Area Sensitive
Henslow's Sparrow	<i>Ammodramus henslowii</i>	Endangered/Area Sensitive
King Rail	<i>Rallus elegans</i>	Endangered
Least Bittern	<i>Ixobrychus exilis</i>	Threatened
Little Blue Heron	<i>Egretta caerulea</i>	Endangered
Loggerhead Shrike	<i>Lanis ludovicianus</i>	Threatened
Northern Harrier	<i>Circus cyaneus</i>	Endangered/Area Sensitive
Osprey	<i>Pandion haliaetus</i>	Endangered
Peregrine Falcon	<i>Falco peregrinus</i>	Endangered/FE
Sandhill Crane	<i>Grus canadensis</i>	Threatened
Savannah Sparrow	<i>Passerculus sandwichensis</i>	Area Sensitive
Sedge Wren	<i>Cistothorus platensis</i>	Area Sensitive
Short-eared Owl	<i>Asio flammeus</i>	Endangered
Sora Rail	<i>Porzana carolina</i>	Watch list
Upland Sandpiper	<i>Bartramia longicauda</i>	Endangered/Area Sensitive
Virginia Rail	<i>Rallus limicola</i>	Watch list

Western Meadowlark	<i>Sturnella neglecta</i>	Area Sensitive
Wilson's Phalarope	<i>Phalaropus tricolor</i>	Endangered
Yellow-crowned Night-Heron	<i>Nyctanassa violacea</i>	Endangered

REPTILES

Blandings Turtle	<i>Emydoidea blandingii</i>	Threatened
Kirtland's Snake	<i>Clonophis kirtlandii</i>	Threatened

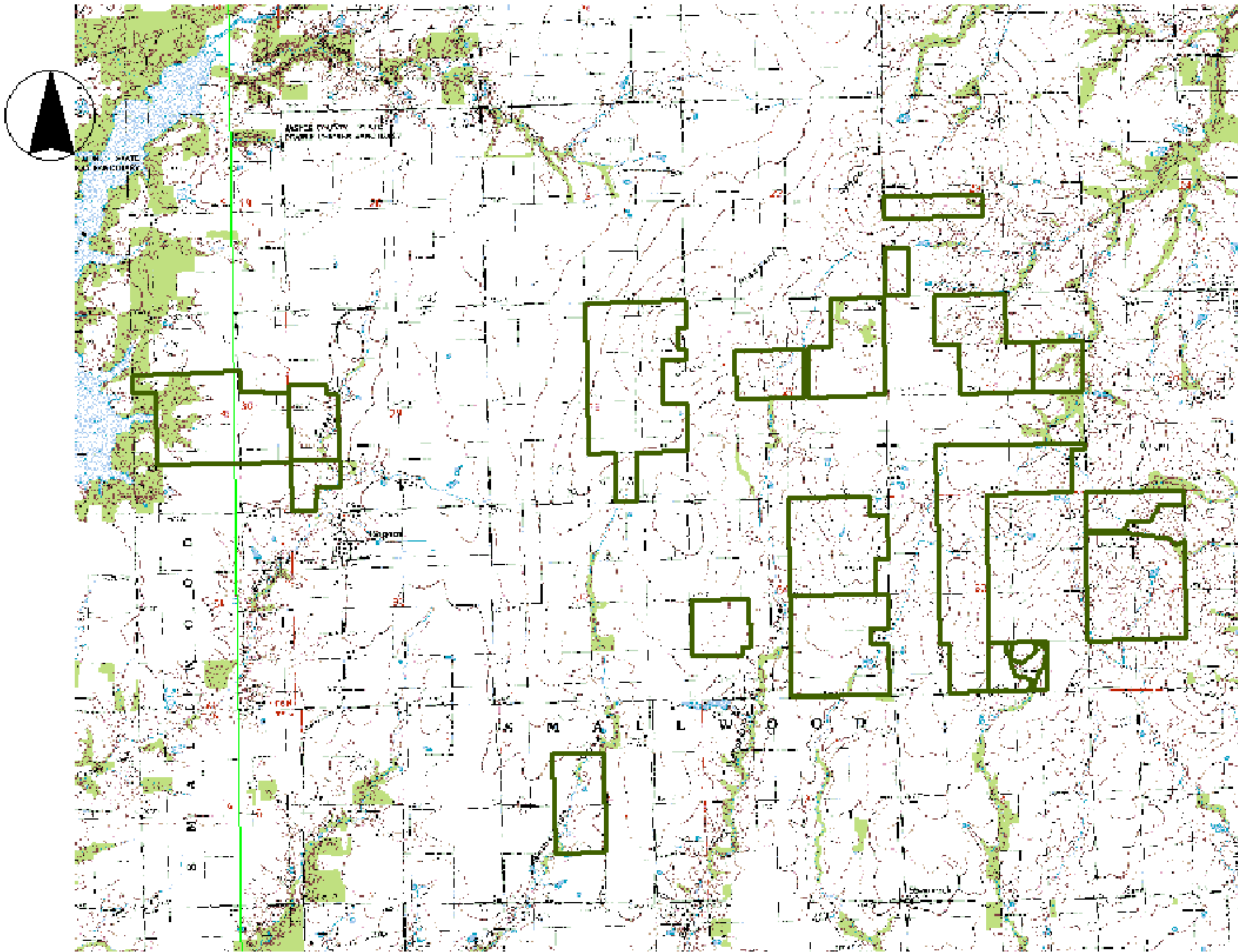
PLANTS

Blazing Star	<i>Liatris scariosa var</i>	Threatened
Prairie Rose Gentian	<i>Sebatia campestris</i>	Endangered
Royal Catchfly	<i>Silene regia</i>	Endangered

Endangered = Illinois Endangered Species
 Threatened = Illinois Threatened Species
 Watch List = Illinois Watch List Species
 Area Sensitive = Illinois Area Sensitive Species
 FE = Federally Endangered Species
 FT= Federally Threatened Species

Figure G1. Sites at the Prairie Ridge State Natural Area, Jasper County, Illinois.

Prairie Ridge Sanctuary



Appendix H

Job Title: Job 8: Cache River State Natural Area, Johnson County invasive exotic species management project.

Job Leader: Mark Guetersloh
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Purpose/need:

The Cache River State Natural Area contains critical habitat for eight Illinois threatened or endangered species and two federal endangered species. Other rare or uncommon species that occur within the area are generally associated with wetlands of the deep south or prairie species associated with the till plain region located north of the Shawnee Hills Natural Division. Boss island has portions that are old field and pine plantations. These areas fragment and act as seed sources for invasive species within the Natural Area.

Objectives:

Implement an exotic invasive species management program at Cache River State Natural Area, Johnson County by controlling exotic invasives, primarily autumn olive (*Eleagnus angustifolia*), on a 332 acre portion of Boss Island.

Final Project Status

All activity within the project area 22 March 2006. Funded actions included foliar, basal-bark and cut-stump herbicide application (glyphosate, triclopyr, Garlon 3A) to initiate the eradication of autumn/Russian olive and bush honeysuckle and control spread of these invasive pests to adjacent areas within the SNA. Treatment was completed on approximately 2/3rds of the project area (221 acres treated within the 321 acre project area). Failure to achieve treatment of the entire project area was the result of the level of infestation. Complete coverage within treated areas was determined to be more important than partial treatment of the entire project area. Although treatment was not completed on the entire project area, the most severe infestations were targeted and it is estimated (observational estimate) that 75% of the infestation was eliminated.

Budget:

Line Item	Federal Share	State Share	Project Total
Contractual	\$20,468.0		\$20,500.00
Commodities	\$0.00	\$1,500.00	\$1,500.00
Personnel	\$0.00	\$4,000.00	\$4,000.00
Total	\$20,468.00	\$5,500.00	\$25,968.00

Table G. State and federal endangered and threatened species of Cache River State Natural Areas, Johnson County.

Common Name	Scientific Name
Virginia snakeroot	<i>Aristolochia serpentaria</i>
Red-shouldered hawk	<i>Buteo lineatus</i>
Swollen sedge	<i>Carex intumescens</i>
Sharp-scaled sedge	<i>Carex oxylepis</i>
Brown creeper	<i>Certhia americana</i>
Leatherflower	<i>Clematis viorna</i>
Rafinesque's big-eared bat	<i>Corynorhinus rafinesquii</i>
Timber rattlesnake	<i>Crotalus horridus</i>
Log fern	<i>Dryopteris celsa</i>
American strawberry bush	<i>Euonymus americanus</i>
Bald eagle	<i>Haliaeetus leucocephalus</i>
Cypress minnow	<i>Hybognathus hayi</i>
Bird-voiced treefrog	<i>Hyla avivoca</i>
Mississippi kite	<i>Ictinia mississippiensis</i>
Redspotted sunfish	<i>Lepomis ministus</i>
Bantam sunfish	<i>Lepomis symmetricus</i>
Swainson's warbler	<i>Limnothlypis swainsonii</i>
River otter	<i>Lontra canadensis</i>
Creeping loosestrife	<i>Lysimachia radicans</i>
Southeastern myotis	<i>Myotis austroriparius</i>
Gray bat	<i>Myotis grisescens</i>
Indiana bat	<i>Myotis sodalis</i>
Copperbelly water snake	<i>Nerodia erythrogaster neglecta</i>
Golden mouse	<i>Ochrotomys nuttalli</i>
Panic grass	<i>Panicum jooi</i>
Water elm	<i>Planera aquatica</i>
Tuberclad orchid	<i>Platanthera flava</i> var. <i>flava</i>
Nuttall's oak	<i>Quercus nuttallii</i>
Willow oak	<i>Quercus phellos</i>
Blue sage	<i>Salvia azurea</i> var. <i>pitcherii</i>

Grass-leaved lily

Storax

Eastern ribbon snake

Bewick's wren

Barn owl

Stenanthium gramineum

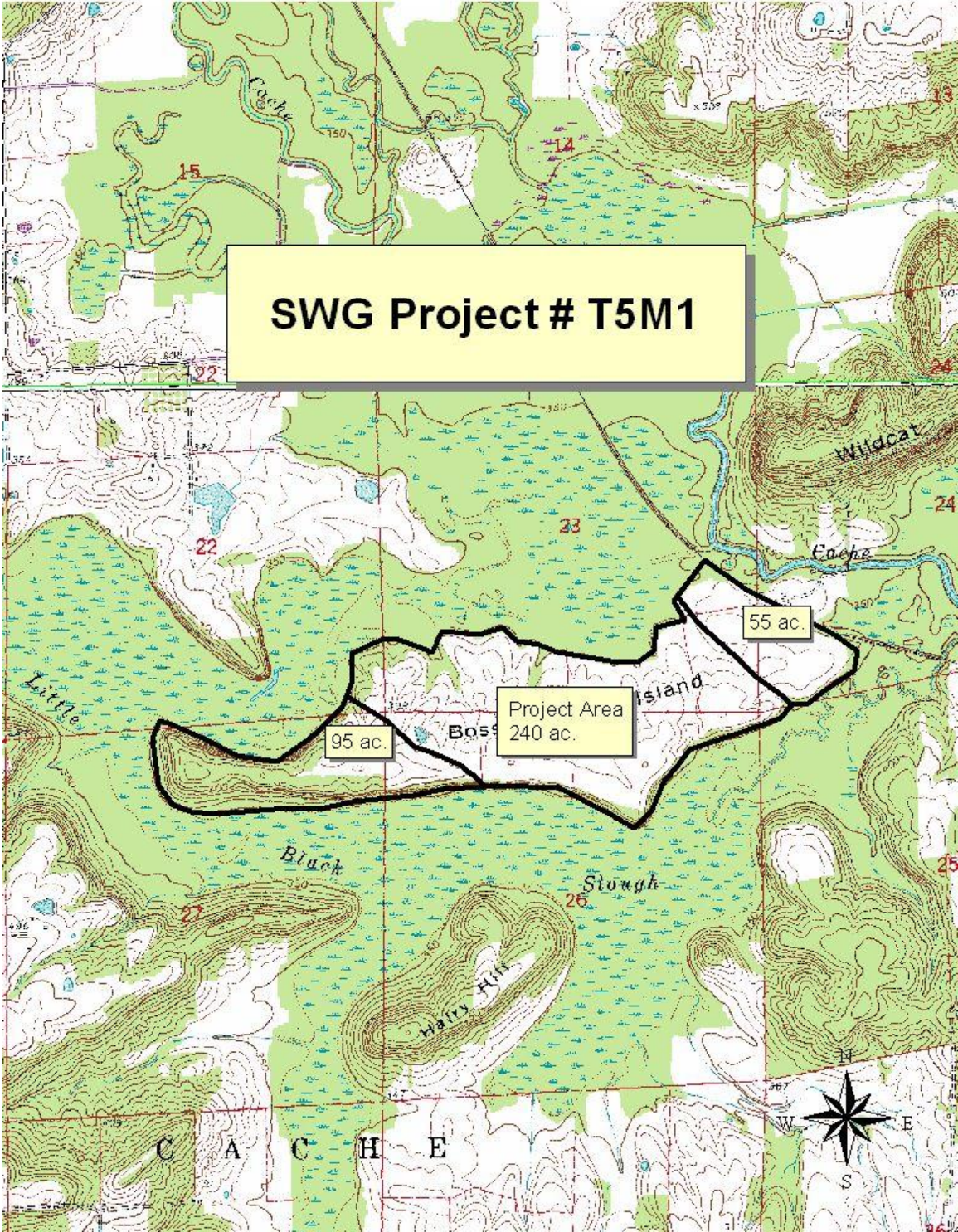
Styrax americanum

Thamnophis sauritus

Thryomanes bewickii

Tyto alba

Figure H1. Exotic species were treated on nearly two-thirds of Boss Island, a portion of the Cache River State Natural Area.



Appendix I

Job Title: Job 9: Pere Marquette State Park, Jersey County Exotic Species Control and Habitat Restoration

Job Leader: Dean A. Corgiat, Restoration Ecologist
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Purpose/Need:

Pere Marquette State Park is comprised of 8,050 acres of oak/hickory timber, bluff areas and hill prairies, adjacent to the Illinois River. This site contains a 300 acre nature preserve that is comprised of high quality dry mesic forest and hill prairie. An Illinois Natural Area Inventory Site encompasses a significant eagle roost and hill prairie within the park. Several state listed species and even more conservation priority species can be found within Pere Marquette's boundaries. (Table A). Non-native and invasive plant species have encroached upon habitats within the park. Hill prairies, bluff systems, and oak/hickory forests that are critical to the survival of the species are becoming degraded to the point that they can no longer support such animals. Significant control measures is required if these habitats are expected to remain functioning. The primary threats needing control include but are not limited to bush honeysuckle, autumn olive, multiflora rose, dogwood sp., sumac sp., and black locust.

Objective: Control invasive/non-native plant species populations from critical areas of the park and begin restoration and maintenance within Pere Marquette State Park.

Final Project Status:

Exotic species were treated on approximately 729 acres. Eradication was focused on honeysuckle, tree-of-heaven, and other exotic and native woody species invading in and around high quality hill prairie sites. Contractors also installed firebreaks around several hill prairies.

Budget:

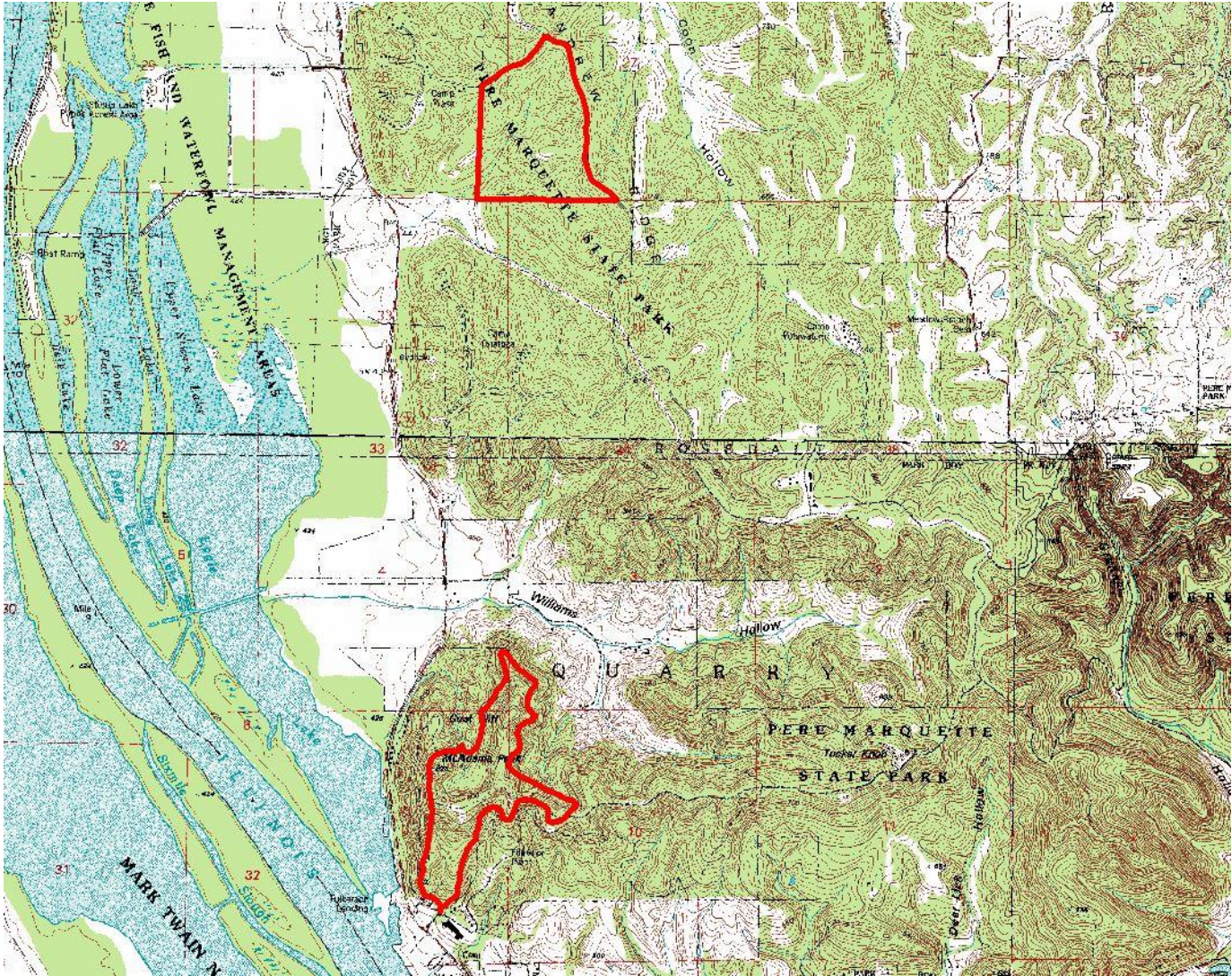
Line Item	Federal Share	State Share	Project Total
Contractual	\$13,750.00	\$5,000.00	\$18,750.00
Commodities	\$0.00	\$0.00	\$0.00
Personnel	\$0.00	~\$5,989.00	\$5,989.00
Total	\$13,750.00	\$10,989.00	\$24,739.00

Table II. Endangered (E), Threatened (T), and Conservation Priority Species (CP) (as listed in the CWCP) of Pere Marquette State Park.

COMMON NAME	SCIENTIFIC NAME	STATUS (as listed in IL.)
Bald Eagle	<i>Haliaeetus leucocephalus</i>	T*
Timber Rattlesnake	<i>Crotalus horridus</i>	T
Bobcat	<i>Lynx rufus</i>	CP
Four-toed Salamander	<i>Hemidactylium scutatum</i>	T
Broad-winged Hawk	<i>Buteo platypterus</i>	CP
Ovenbird	<i>Seiurus aurocapillus</i>	CP
Cerulean Warbler	<i>Dendroica cerulea</i>	T
Indiana Bat	<i>Myotis sodalis</i>	E*
Gray Fox	<i>Urocyon cinereoargenteus</i>	CP
Pickerel frog	<i>Rana palustris</i>	CP
Whip-poor-will	<i>Caprimulgus vociferus</i>	CP
Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	CP
American Woodcock	<i>Scolopax minor</i>	CP

* indicates a federally listed species

Figure II. Exotic and native woody species control focused around several several hill prairie at Pere Marquette State Park, Jersey County.



Appendix J

Job Title: Job 10: Autumn Olive Control at Pyramid State Park - Arkland Complex

Job Leader: Terry L. Esker
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Purpose: Pyramid State Park's Arkland complex in Perry County (Figure J1) is one of the largest expanses of contiguous grassland in the state. Its capacity to support threatened and endangered species, most particularly grassland birds is significant in Illinois. All of these species are associated with the grassland, shrubland and/or wetland communities. Provides habitat for 39 Conservation Priority Species identified in the Comprehensive Wildlife Conservation Plan for Illinois. Including 16 state listed species, 2 federally listed species, 8 area sensitive grassland species, 20 partners in flight species of concern, 18 USFWS Regional Conservation Concern Species, 12 National Audubon Watch List Species and 11 Regional Forester Sensitive Animals (Table J1). Exotic and invasive plant species pose the greatest single threat to the restoration and management of this grassland and wetland complex. If left unchecked, these exotic species will dominate the landscape and reduce critical grassland & wetland habitat. Autumn olive (*Elaeagnus umbellata*) has been identified as the single greatest threat to the grassland communities on this complex. Autumn olive control efforts will concentrate on areas that will provide the most benefit to grassland birds.

Objectives: Implement an exotic invasive species management program at Pyramid State Park - Arkland Complex by controlling primarily autumn olive (*Eleagnus angustifolia*), on approximately 400 acres of the site. These grasslands are located within the core area of the Pyramid State Park Complex and will provide critical grassland wildlife breeding, brood rearing, resting and foraging habitats

Final Status Report:

Through exotic species control, autumn olive was removed from approximately 400 acres of grassland habitat on the Pyramid State Park complex. Autumn olive was removed in the following areas on Pyramid State Park: T 6 S - R 3 W Sections 5, 6, 7; T 5 S - R 3 W Section 31, T 6 S - R 4 W Sections 26, 27, 34, 35. Any removal that resulted in bare soils were smoothed, leveled, disked and then seeded to native grass and forb seed mix.

Budget:

Line Item	Federal Share	State Share	Project Total
Contractual	\$19,995.00	\$19,975.00	\$39,970.00
Commodities	\$0	\$0	\$0
Personnel	\$0	\$0	\$0
Total	\$19,995.00	\$19,975.00	\$39,970.00

Table J1. Species of Special Concern documented at Pyramid State Park - Arkland Complex, Perry County, Illinois.

Species		State Status	Documented
<i>Ammodramus henslowii</i>	Henslow's Sparrow	Endangered	Breeding
<i>Asio flammeus</i>	Short eared owl	Endangered	Breeding
<i>Bartramia longicauda</i>	Upland Sandpiper	Endangered	Breeding
<i>Circus cyaneus</i>	Northern Harrier	Endangered	Breeding
<i>Egretta thula</i>	Little Blue Heron	Endangered	Foraging
<i>Pandion haliaetus</i>	Osprey	Endangered	Migration
<i>Rallus elegans</i>	King Rail	Endangered	Breeding
<i>Tyto alba</i>	Common Barn Owl	Endangered	Breeding
<i>Falco peregrinus</i>	Peregrine Falcon	Threatened	Migration
<i>Gallinula chloropus</i>	Common Moorhen	Threatened	Breeding
<i>Grus canadensis</i>	Sandhill Crane	Threatened	Migration
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Threatened	Breeding
<i>Ixobrychus exilis</i>	Least Bittern	Threatened	Breeding
<i>Lanius ludovicianus</i>	Loggerhead Shrike	Threatened	Breeding
<i>Oryzomys palustris</i>	Rice Rat	Threatened	Breeding

Area Sensitive Species: bobolink, savanna sparrow, eastern meadowlark, grasshopper sparrow, and sedge wren in addition to those listed above

Species included in Illinois' Comprehensive Wildlife Conservation Plan: LeConte's sparrow, grasshopper sparrow, American black duck, great egret, short-eared owl, chimney swift, yellow-billed cuckoo, northern bobwhite, willow flycatcher, Wilson's snipe, orchard oriole, Baltimore oriole, yellow-breasted chat, least bittern, hooded merganser, red-headed woodpecker, yellow-crowned night heron, double-crested cormorant, pied billed grebe, American woodcock, dickcissel, field sparrow, brown thrasher, greater yellowlegs, and Bell's vireo in addition to some of those listed above .

Figure J1. Exotics species, primarily autumn olive, were treated in three units totaling 400 acres at Pyramid State Park in Perry County.

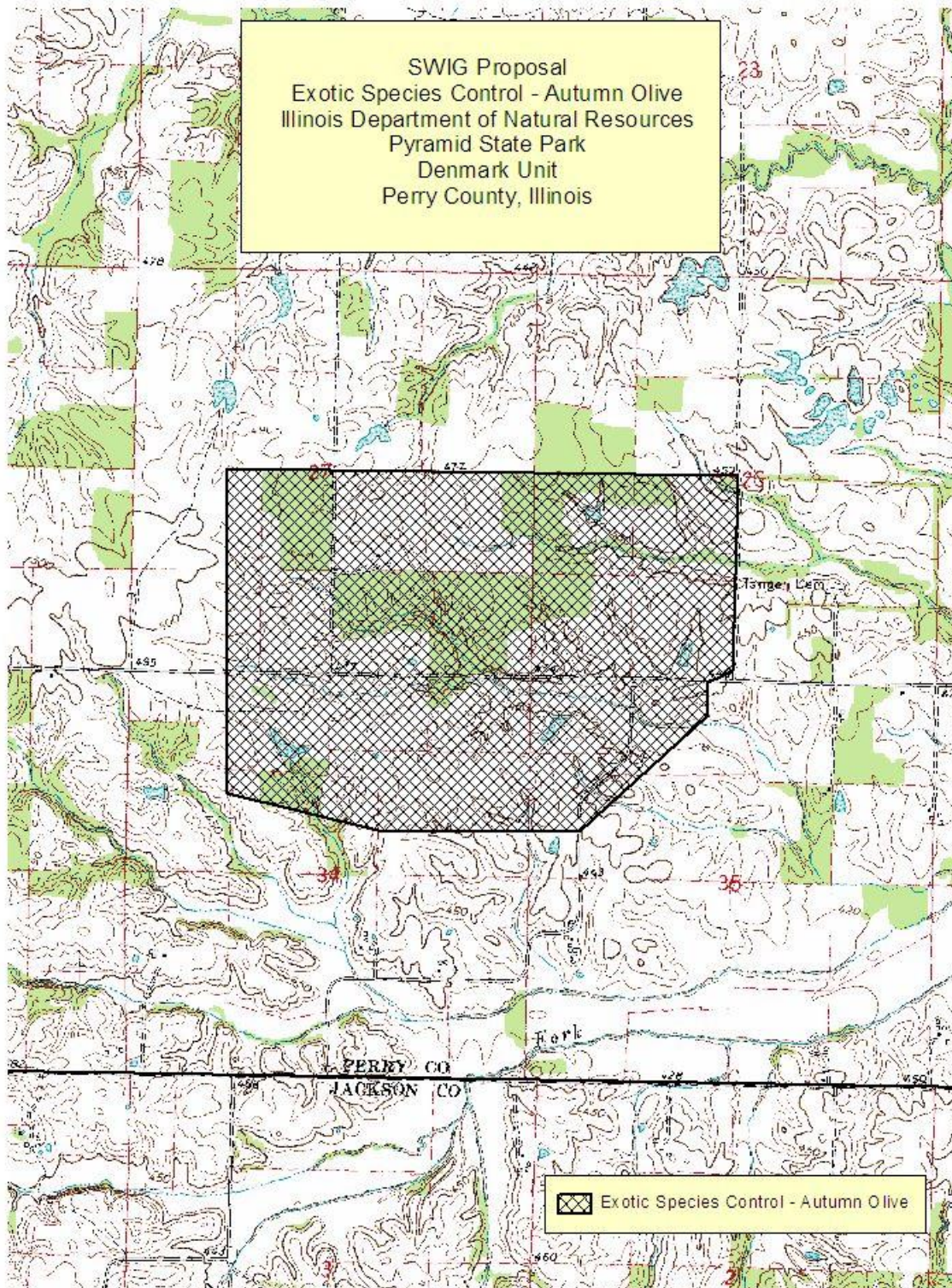
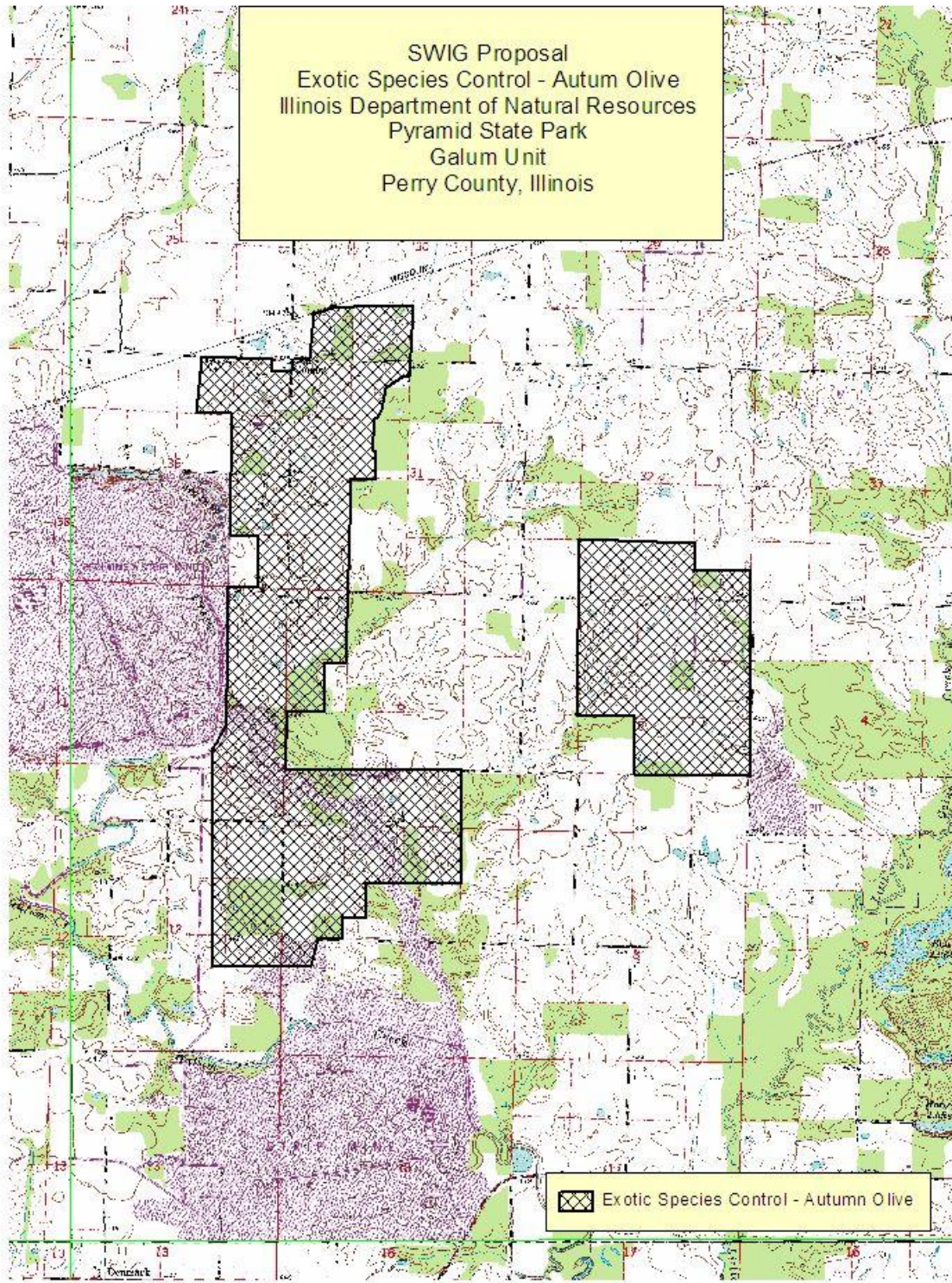


Figure J2. There were two major units treated in the Galum Unit of Pyramid State Park in Perry County Illinois.



APPENDIX K

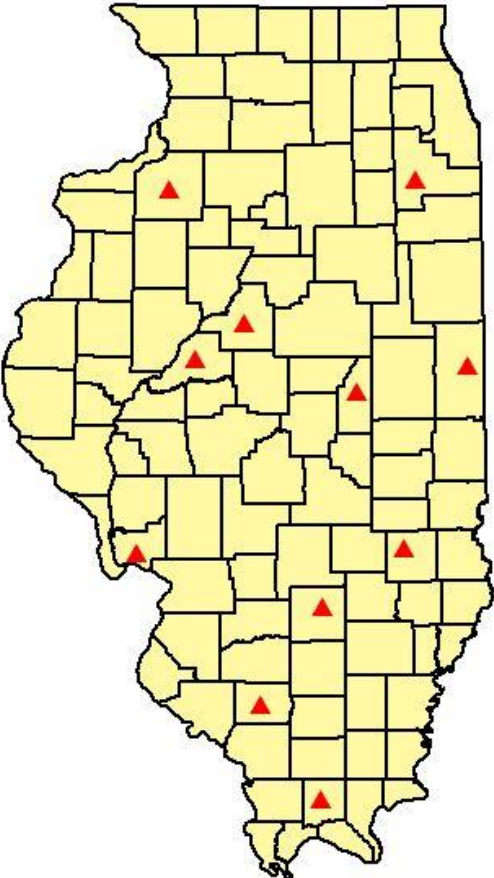


Figure K. Jobs performed with Federal SWG T-5-M-1, Public Lands Initiative, are scattered across Illinois