

Project Number: T-43-D-1 (Part 1/4)

Project Title: Hill Prairie/Bluff Habitat Restoration

General Summary:

The Project was awarded in 2007 and continued through July 2013. Table 1 provides an outline of when activities and objectives were carried out during the project. The grant was amended four times (Amendment #1 - Administrative to move funds, Amendment #2 increased the number of sites & doubled the funding, Amendment #3 added new sites and increased the budget by \$124K, and Amendment #4 increased the federal share by \$150K). The Amendments to the grant and contract can be viewed in Appendix A. The end result was a total contract of \$1,792,698.00, including \$847,599.00 in federal funds and a state match of \$945,099.00.

The details of the project objectives are outlined below.

Objective 1. Identify Work Sites and Restoration Needs.

It took IDNR staff approximately 1 year (11/07 – 12/08) to identify work sites and their restoration needs. Priority was given to high quality sites followed by sites with state endangered or threatened species. Staff had to meet with landowners (some of whom were absentee), develop management plans and cost estimates for each site, determine what work items would be done by contractors and what would be completed by IDNR and INPC staff, obtain landowner approval of the three year management schedule, and get private landowners to approve of 10 year management agreement.

Objective 2. Restoration and Management.

A Site Specific Job Specification Form was developed to hire a contractor to assist with management in November 2007. Tallgrass Restoration Inc was awarded a contract to complete the management throughout the state. They started work in February 2009. Their contract was extended once in 2010 through July 2012.

Fifty eight sites throughout Illinois received some management resulting from this grant (Figure 1). Most of the sites contain multiple units (2-4) and some sites contain more than 15 units (Salt Lick Point, Principia College Hill Prairies). Jim Edgar Panther Creek Hill Prairies contains 35 individual units alone. Not every unit within each site received management.

Rough calculations indicate that at least 1 million dollars were spent contractually to complete habitat management to these hill prairies, bluffs and surrounding habitats. This includes approximately \$646K in federal SWG funds and \$379K in state matching funds. Table 2 breaks down the the amount of State and Federal dollars spent at each site within the grant.

Table 3 is the similar to Table 2 except that it is organized by decreasing dollar amount. Harlem Hills Nature Preserve received the most money. All of the money spent at Harlem Hills Nature Preserve was state money. The top 6 funded sites received \$415,253.13, or approximately 40% of all dollars spent contractually during the grant. Each of these marquee sites are protected in perpetuity through an Illinois Nature Preserves Commission program. Twenty nine of the sites (50%) received at least \$10,000.00 for contractual work.

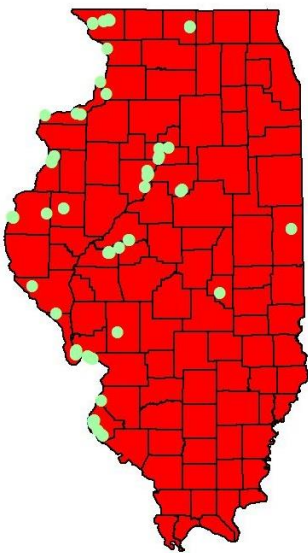


Figure 1. Hill prairies were located across Illinois with an emphasis on the Illinois and Mississippi Rivers

Table 1. Charting the approval date and accomplishments of the objectives, 2007-2013.

| Objectives | Year 1 | | | | Year 2 | | | | Year 3 | | | | Year 4 | | | | Year 5 | | | | Year 6 | | | | Year 7 | |
|---|--------|------|-------|------|--------|------|-------|------|--------|------|-------|------|--------|------|-------|------|--------|------|-------|------|-----------|------|-------|------|--------|------|
| | 5/07 | 8/07 | 11/07 | 2/08 | 5/08 | 8/08 | 11/08 | 2/09 | 5/09 | 8/09 | 11/09 | 2/10 | 5/10 | 8/10 | 11/10 | 2/11 | 5/11 | 8/11 | 11/11 | 2/12 | 5/12 | 8/12 | 11/12 | 2/13 | 5/13 | 8/13 |
| Objective 1. Identify Work Sites and Restoration Needs (Category 1 sites): | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.1 Develop a management plan and cost estimate for each site chosen. | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | COMPLETED | | | | | |
| 1.2 Determine what work items will be done by contractors and what will be done by IDNR and INPC staff. | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | COMPLETED | | | | | |
| 1.3 Confirm landowner approval of management plan | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | COMPLETED | | | | | |
| Objective 1. Identify Work Sites and Restoration Needs (Category 2 sites): | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.1 Meet with landowners | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | COMPLETED | | | | | |
| 1.2 Develop a management plan and cost estimate for each site chosen. | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | COMPLETED | | | | | |
| 1.3 Determine what work items will be done by contractors and what will be done by IDNR and INPC staff. | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | COMPLETED | | | | | |
| 1.4 Get landowner approval of 3 year plan | | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | COMPLETED | | | | | |
| Objective 2. Restoration and Management approach | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.1 Group the chosen sites into sub-project areas by location. | | | | X | C | O | M | P | L | E | T | E | D | | | | | | | | | | | | | |
| 2.2 Develop project specifications and bid packages for each sub-project area. | | | X | X | X | X | X | C | O | M | P | L | E | T | E | D | | | | | | | | | | |
| 2.3 Follow appropriate administrative procedure to hire a contractor for each sub-project area. | | | X | X | X | X | X | | | | | X | X | | C | O | M | P | L | E | T | E | D | | | |

| Objectives | Year 1 | | | | Year 2 | | | | Year 3 | | | | Year 4 | | | | Year 5 | | | | Year 6 | | | | Year 7 | | |
|---|--------|------|-------|------|--------|------|-------|------|--------|------|-------|------|--------|------|-------|------|--------|-----------|-------|------|-----------|-----------|-------|------|--------|------|--|
| | 5/07 | 8/07 | 11/07 | 2/08 | 5/08 | 8/08 | 11/08 | 2/09 | 5/09 | 8/09 | 11/09 | 2/10 | 5/10 | 8/10 | 11/10 | 2/11 | 5/11 | 8/11 | 11/11 | 2/12 | 5/12 | 8/12 | 11/12 | 2/13 | 5/13 | 8/13 | |
| 2.4a Sub-project managers develop work orders for each additional site planned for management.. | | | | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | COMPLETED | | | | | |
| 2.4b. Sub-project managers meet with contractor to discuss details of project on sites. | | | | | | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | COMPLETED | | | | | |
| 2.5 Contractor completes work as specified and discussed over the designated year period. | | | | | | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | COMPLETED | | | | | |
| 2.6 IDNR and INPC staff complete planned work items on project sites over three year period. | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | COMPLETED | | | | | |
| 2.7 IDNR and INPC staff inspect contractor work to assure adequate completion | | | | | | | | | X | X | X | X | X | X | X | X | X | X | X | X | X | COMPLETED | | | | | |
| Objective 3. Monitoring approach: | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.1 Determine extent of prairie and other target communities before any restoration work for the grant is started, using GIS or GPS technology. | | | | | X | X | X | X | X | X | X | X | X | X | X | X | X | C | O | M | P | L | E | T | E | D | |
| 3.2 Determine extent of prairie and other target communities after restoration work when the grant is completed, using GIS or GPS technology, and compare with baseline data. | | | | | | | | | | | | | | | | | | | | | | | | X | X | X | |
| 3.3 Develop an annual report each year of the grant to determine overall status and progress. | | | | | X | | | | X | | | | X | | | | X | | | | | X | | | | X | |
| Objective 4. Education and Training approach: | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.1 Contact other local agencies and organizations to identify opportunities to host training workshops. | | | | | X | X | X | X | X | X | X | X | X | X | X | X | X | COMPLETED | | | | | | | | | |
| 4.2 Complete at least two prescribed burning or management workshops in two different sub-project areas. | | | | X | X | X | X | X | X | | | X | X | | X | | | | X | X | COMPLETED | | | | | | |
| 4.3 Develop literature on prescribed burning or other management of hill prairies/bluffs for distribution to landowners and organizations that have an interest. | | | | | X | X | X | X | X | X | X | X | X | | | | | | | | | | | | | | |
| 4.4 Coordinate other possible activities and outreach opportunities with the Hill Prairie Initiative being developed by the IDNR. | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | |

Table 2. The amount of Federal and State dollars each site spent over the course of the grant.

| Area | County | Site | State Funds | Federal Funds | Total |
|------|-------------|--|---------------------|---------------------|-----------------------|
| 1 | Carroll | French Bluff SNA | \$5,068.80 | \$0.00 | \$5,068.80 |
| 1 | Carroll | Mississippi Palisades State Park | \$6,098.40 | \$0.00 | \$6,098.40 |
| 1 | Henderson | North Henderson Creek Hill Prairie | \$0.00 | \$10,279.08 | \$10,279.08 |
| 1 | Henderson | Henderson Creek Bluff (Tartan Bluff NHL) | \$0.00 | \$18,611.34 | \$18,611.34 |
| 1 | Henderson | North Henderson Creek (Bald Bluff) | \$0.00 | \$8,697.94 | \$8,697.94 |
| 1 | Jo Daviess | Apple River Nature Pres. (Thompson Prairie) | \$2,376.00 | \$5,246.84 | \$7,622.84 |
| 1 | Jo Daviess | Bokina | \$0.00 | \$9,939.28 | \$9,939.28 |
| 1 | Jo Daviess | Eisbach | \$0.00 | \$19,245.60 | \$19,245.60 |
| 1 | Jo Daviess | Falling Down Prairie | \$9,504.00 | \$0.00 | \$9,504.00 |
| 1 | Jo Daviess | Fiedler | \$0.00 | \$4,950.00 | \$4,950.00 |
| 1 | Jo Daviess | Hanover Bluff Nature Preserve, LWR, Rattlesnake area | \$12,276.00 | \$0.00 | \$12,276.00 |
| 1 | Jo Daviess | Lenstra | \$0.00 | \$5,583.60 | \$5,583.60 |
| 1 | Rock Island | Indian Bluff Hill Prairie | \$0.00 | \$8,405.77 | \$8,405.77 |
| 1 | Rock Island | Lindahl Hill Prairies aka Milan So. Geological | \$0.00 | \$18,309.92 | \$18,309.92 |
| 1 | Rock Island | Andress Prairie | \$0.00 | \$1,223.70 | \$1,223.70 |
| 2 | Marshall | Marshall County Hill Prairies | \$5,265.12 | \$10,416.66 | \$15,681.78 |
| 2 | Marshall | Wier Hill Prairie NP | \$6,966.72 | \$1,527.36 | \$8,494.08 |
| 2 | McDonough | Curtis Prairie | \$0.00 | \$7,565.76 | \$7,565.76 |
| 2 | McDonough | Thistle Hills | \$0.00 | \$8,524.80 | \$8,524.80 |
| 2 | Peoria | Mossville Road Hill Prairie | \$0.00 | \$7,216.48 | \$7,216.48 |
| 2 | Peoria | Robinson Park Hill Prairie -PPD | \$0.00 | \$32,749.44 | \$32,749.44 |
| 2 | Peoria | Singing Woods-PPD | \$0.00 | \$23,066.13 | \$23,066.13 |
| 2 | Peoria | St. Mary Cemetery Hill Prairie | \$0.00 | \$25,401.09 | \$25,401.09 |
| 2 | Peoria | Wokanda Camp-PPD | \$0.00 | \$22,480.02 | \$22,480.02 |
| 2 | Tazewell | Crevecour | \$2,060.16 | \$1,704.96 | \$3,765.12 |
| 2 | Woodford | Mackinaw River Hill Prairie NA (Weigand) | \$1,207.68 | \$2,344.98 | \$3,552.66 |
| 2 | Woodford | Ridgetop Hill Prairie | \$4,759.68 | \$12,793.94 | \$17,553.62 |
| 3 | Brown | Snyder Hill Prairie | \$0.00 | \$12,376.26 | \$12,376.26 |
| 3 | Calhoun | Graham Loess HP | \$0.00 | \$4,392.02 | \$4,392.02 |
| 3 | Calhoun | Jennings HP INAI | \$0.00 | \$6,589.50 | \$6,589.50 |
| 3 | Cass | Chandlerville Cemetery hill prairie | \$126.58 | \$9,569.27 | \$9,695.85 |
| 3 | Cass | Cox Creek Hill Prairie and JEPC | \$20,548.18 | \$11,645.35 | \$32,193.53 |
| 3 | Hancock | Cecil White Prairie | \$9,400.90 | \$6,805.20 | \$16,206.10 |
| 3 | Hancock | Mississippi River Sand Hills | \$3,847.41 | \$9,194.72 | \$13,042.13 |
| 3 | Hancock | Kibbe (Cedar Glen) | \$1,234.72 | \$15,878.21 | \$17,112.93 |
| 3 | Jersey | Pere Marquette | \$22,318.42 | \$58,624.97 | \$80,943.39 |
| 3 | Jersey | Principia HP East NA-Campus Unit & Eilestoun | \$1,131.45 | \$10,217.48 | \$11,348.93 |
| 3 | Jersey | Principia HP west | \$2,687.09 | \$27,676.99 | \$30,364.08 |
| 3 | Macoupin | Bouillon glacial till hill prairie | \$0.00 | \$11,206.26 | \$11,206.26 |
| 3 | Macoupin | Glow/Beaver Dam glacial drift | \$0.00 | \$6,861.47 | \$6,861.47 |
| 3 | Morgan | Meredosia Hill Prairie | \$3,075.70 | \$3,053.50 | \$6,129.20 |
| 3 | Mason | Revis Hill Prairie | \$30,780.18 | \$30,435.69 | \$61,215.87 |
| 3 | Pike | Grubb Hollow INAI | \$25,543.95 | \$10,502.26 | \$36,046.21 |
| 3 | Pike | North New Canton | \$2,144.11 | \$6,463.21 | \$8,607.32 |
| 4 | Monroe | Prairie du Rocher Herp area/DeMint NP | \$3,779.91 | \$9,100.94 | \$12,880.85 |
| 4 | Monroe | White Rock (Columbia Quarry) | \$8,417.60 | \$2,795.62 | \$11,213.22 |
| 4 | Monroe | Fults Hill Prairie NP | \$22,268.08 | \$20,203.42 | \$42,471.50 |
| 4 | Monroe | Harry's Prairie | \$11,846.36 | \$58,961.27 | \$70,807.63 |
| 4 | Monroe | Martha & Michelle Prairies | \$4,399.11 | \$7,528.38 | \$11,927.49 |
| 4 | Monroe | Salt Lick Point LWR | \$21,756.77 | \$36,533.97 | \$58,290.74 |
| 4 | St. Clair | Dupo Prairie | \$4,199.67 | \$3,405.78 | \$7,605.45 |
| 4 | St. Clair | Sugar Loaf Prairie | \$2,172.91 | \$0.00 | \$2,172.91 |
| | | OTHER SITES | | | |
| | Menard | Witter' Bobtown Nature Preserve | \$1,500.00 | \$0.00 | \$0.00 |
| | Marshall | Oak Bluff Savanna Nature Preserve | \$7,931.00 | \$0.00 | \$7,931.00 |
| | Marshall | Hopewell Hill Prairies Nature Preserve | \$2,414.00 | \$0.00 | \$2,414.00 |
| | Winnebago | Harlem Hills Nature Preserve | \$101,524.00 | \$0.00 | \$101,524.00 |
| | Vermilion | Windfall Hill Prairie Nature Preserve | \$4,348.00 | \$0.00 | \$4,348.00 |
| | Cass | Manito Hill Prairie Nature Preserve | \$4,100.00 | \$0.00 | \$4,100.00 |
| | | TOTALS | \$379,078.66 | \$646,306.43 | \$1,023,885.09 |

Table 3. The amount of Federal and State dollars each site spent, in descending amount, over the course of the grant.

| Area | County | Site | State Funds | Federal Funds | Total |
|------|-------------|--|---------------------|---------------------|-----------------------|
| | Winnnebago | Harlem Hills Nature Preserve | \$101,524.00 | \$0.00 | \$101,524.00 |
| 3 | Jersey | Pere Marquette | \$22,318.42 | \$58,624.97 | \$80,943.39 |
| 4 | Monroe | Harry's Prairie | \$11,846.36 | \$58,961.27 | \$70,807.63 |
| 3 | Mason | Revis Hill Prairie | \$30,780.18 | \$30,435.69 | \$61,215.87 |
| 4 | Monroe | Salt Lick Point LWR | \$21,756.77 | \$36,533.97 | \$58,290.74 |
| 4 | Monroe | Fults Hill Prairie NP | \$22,268.08 | \$20,203.42 | \$42,471.50 |
| 3 | Pike | Grubb Hollow INAI | \$25,543.95 | \$10,502.26 | \$36,046.21 |
| 2 | Peoria | Robinson Park Hill Prairie -PPD | \$0.00 | \$32,749.44 | \$32,749.44 |
| 3 | Cass | Cox Creek Hill Prairie and JEPIC | \$20,548.18 | \$11,645.35 | \$32,193.53 |
| 3 | Jersey | Principia HP west | \$2,687.09 | \$27,676.99 | \$30,364.08 |
| 2 | Peoria | St. Mary Cemetery Hill Prairie | \$0.00 | \$25,401.09 | \$25,401.09 |
| 2 | Peoria | Singing Woods-PPD | \$0.00 | \$23,066.13 | \$23,066.13 |
| 2 | Peoria | Wokanda Camp-PPD | \$0.00 | \$22,480.02 | \$22,480.02 |
| 1 | Jo Daviess | Eisbach | \$0.00 | \$19,245.60 | \$19,245.60 |
| 1 | Henderson | Henderson Creek Hill Prairie (Tartan Bluff NHL) | \$0.00 | \$18,611.34 | \$18,611.34 |
| 1 | Rock Island | Lindahl Hill Prairies aka Milan So. Geological | \$0.00 | \$18,309.92 | \$18,309.92 |
| 2 | Woodford | Ridgetop Hill Prairie | \$4,759.68 | \$12,793.94 | \$17,553.62 |
| 3 | Hancock | Kibbe (Cedar Glen) | \$1,234.72 | \$15,878.21 | \$17,112.93 |
| 3 | Hancock | Cecil White Prairie | \$9,400.90 | \$6,805.20 | \$16,206.10 |
| 2 | Marshall | Marshall County Hill Prairies | \$5,265.12 | \$10,416.66 | \$15,681.78 |
| 3 | Hancock | Mississippi River Sand Hills | \$3,847.41 | \$9,194.72 | \$13,042.13 |
| 4 | Monroe | Prairie du Rocher Herp area/DeMint NP | \$3,779.91 | \$9,100.94 | \$12,880.85 |
| 3 | Brown | Snyder Hill Prairie | \$0.00 | \$12,376.26 | \$12,376.26 |
| 1 | Jo Daviess | Hanover Bluff Nature Preserve, LWR, Rattlesnake area | \$12,276.00 | \$0.00 | \$12,276.00 |
| 4 | Monroe | Martha & Michelle Prairies | \$4,399.11 | \$7,528.38 | \$11,927.49 |
| 3 | Jersey | Principia HP East NA-Campus Unit & Ellestoun | \$1,131.45 | \$10,217.48 | \$11,348.93 |
| 4 | Monroe | White Rock (Columbia Quarry) | \$8,417.60 | \$2,795.62 | \$11,213.22 |
| 3 | Macoupin | Bouillon glacial till hill prairie | \$0.00 | \$11,206.26 | \$11,206.26 |
| 1 | Henderson | North Henderson Creek Hill Prairie | \$0.00 | \$10,279.08 | \$10,279.08 |
| 1 | Jo Daviess | Bokina | \$0.00 | \$9,939.28 | \$9,939.28 |
| 3 | Cass | Chandlerville Cemetery hill prairie | \$126.58 | \$9,569.27 | \$9,695.85 |
| 1 | Jo Daviess | Falling Down Prairie | \$9,504.00 | \$0.00 | \$9,504.00 |
| 1 | Henderson | North Henderson Creek (Bald Bluff) | \$0.00 | \$8,697.94 | \$8,697.94 |
| 3 | Pike | North New Canton | \$2,144.11 | \$6,463.21 | \$8,607.32 |
| 2 | McDonough | Thisle Hills | \$0.00 | \$8,524.80 | \$8,524.80 |
| 2 | Marshall | Wier Hill Prairie NP | \$6,966.72 | \$1,527.36 | \$8,494.08 |
| 1 | Rock Island | Indian Bluff Hill Prairie | \$0.00 | \$8,405.77 | \$8,405.77 |
| | Marshall | Oak Bluff Savanna Nature Preserve | \$7,931.00 | \$0.00 | \$7,931.00 |
| 1 | Jo Daviess | Apple River Nature Pres. (Thompson Prairie) | \$2,376.00 | \$5,246.84 | \$7,622.84 |
| 4 | St. Clair | Dupo Prairie | \$4,199.67 | \$3,405.78 | \$7,605.45 |
| 2 | McDonough | Curtis Prairie | \$0.00 | \$7,565.76 | \$7,565.76 |
| 2 | Peoria | Mossville Road Hill Prairie | \$0.00 | \$7,216.48 | \$7,216.48 |
| 3 | Macoupin | Glow/Beaver Dam glacial drift | \$0.00 | \$6,861.47 | \$6,861.47 |
| 3 | Calhoun | Jennings HP INAI | \$0.00 | \$6,589.50 | \$6,589.50 |
| 3 | Morgan | Meredosia Hill Prairie | \$3,075.70 | \$3,053.50 | \$6,129.20 |
| 1 | Carroll | Mississippi Palisades State Park | \$6,098.40 | \$0.00 | \$6,098.40 |
| 1 | Jo Daviess | Lenstra | \$0.00 | \$5,583.60 | \$5,583.60 |
| 1 | Carroll | French Bluff SNA | \$5,068.80 | \$0.00 | \$5,068.80 |
| 1 | Jo Daviess | Fiedler | \$0.00 | \$4,950.00 | \$4,950.00 |
| | Vermilion | Windfall Hill Prairie Nature Preserve | \$4,348.00 | \$0.00 | \$4,348.00 |
| 3 | Calhoun | Graham Loess HP | \$0.00 | \$4,392.02 | \$4,392.02 |
| | Tazewell | Manito Hill Prairie Nature Preserve | \$4,100.00 | \$0.00 | \$4,100.00 |
| 2 | Tazewell | Crevecoeur | \$2,060.16 | \$1,704.96 | \$3,765.12 |
| 2 | Woodford | Mackinaw River Hill Prairie NA (Weigand) | \$1,207.68 | \$2,344.98 | \$3,552.66 |
| | Marshall | Hopewell Hill Prairies Nature Preserve | \$2,414.00 | \$0.00 | \$2,414.00 |
| 4 | St. Clair | Sugar Loaf Prairie | \$2,172.91 | \$0.00 | \$2,172.91 |
| | Menard | Witter's Bobtown Nature Preserve | \$1,500.00 | \$0.00 | \$1,500.00 |
| 1 | Rock Island | Andress Prairie | \$0.00 | \$1,223.70 | \$1,223.70 |
| | | TOTALS | \$379,078.66 | \$646,306.43 | \$1,025,385.09 |

The nearly one million dollars in federal and state funding equvalated to 14,373 hours of contractual work. Table 4 provides the total management hours per site. The majority of management was related to vegetation control (86%) (Figure 23). This included native and exotic species control. The

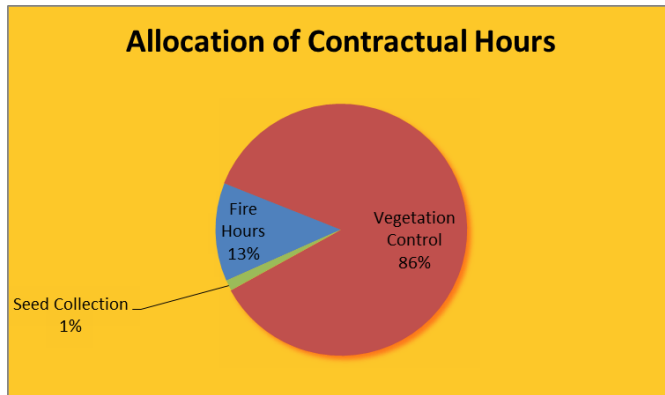


Figure 2. Approximately 86% of all contractual dollars were spent controlling exotic and native woody vegetation from the hill prairies and bluffs. Allocation of contractual hours during the Hill Prairie SWG, 2007-2012.

IDNR purchased more than \$47,000.00 worth of herbicide for vegetation control efforts. Prescribed fire made up 13% (1824.50) of the total contractual hours. This work included installing firebreaks, prescribed burning and mop up.

Over the course of the grant, more than 114 individual prescribed burns were conducted by IDNR, INPC staff, partners, and landowners on approximately 2,528.70 acres of hill prairies and

bluff tops. Only 1% of the hours (<200) was allocated to seeding. Seeding included collecting local ecotype seed and spreading it on nearby hill prairies where shade from woody vegetation had eliminated herbaceous hill prairie species and only bare ground remained after woody vegetation was removed. More specific detail about what

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Nearly 2400 acres of habitat were treated using as a result of the contractual funds (Table 4 XXXX). This includes both a ¼ acre sweet clover patch that was treated twice each year for two years (1 acre treated) and a 100 acre prescribed fire. This provides an average cost of \$423.00 an acre or an hourly rate of \$69.00.

One of the primary goals of the grant was to increase the size of the hill prairies and surrounding blufftop communities by 25% through active management. To accomplish this goal, each unit's perimeter was GPS'ed before and after management. Significant woody/shrubby areas within the prairie were also GPS'ed. Additional information was also collected as part of the pre-assessment such as exotic species present and degree of invasion. The same information was also gathered after the contractual work was completed as part of the post-assessment for each site. A copy of the assessment form can be seen in Appendix BXX.

Comparison of the pre and post assessment forms provide an interesting look at what happened at each site. Appendix 3 provides a summary of the of the pre and post assessment profile for each site included in the project, including gpsed units, number of units per site, the dollars spent contractually, and the coverage of problem vegetation before and after management. Hill prairie/blufftop acreage did increase ~54% exactly 25% across all sites, from 168.40 to 252 193.46 acres, thus exceeding the goal to increase total acreage by 25% (Table 5XXXX). Even if Harlem Hills is removed from the calculation, the increase still totaled 26% across all sites. Appendix C provides a summary of the of the pre and post assessment profile for each site included in the project, including GPS'ed units, number of units per site, the dollars spent contractually, and the coverage of problem vegetation before and after

management. ~~Some units more than doubled while other units decreased if they did not receive any management over the life of the grant (2008-2013).~~

Table 4. The total hours spent on each management activity and total acres treated at each site within the Hill Prairie SWG.

| Site | Fire Hours | Vegetation Control | Seed Collection | Acres Treated |
|---|----------------|--------------------|-----------------|----------------|
| French Bluff SNA | 0.00 | 64.00 | 0.00 | 2.00 |
| Mississippi Palisades State Park #1 | 0.00 | 77.00 | 0.00 | 5.00 |
| Henderson Creek Hill Prairie (Tartan Bluff) #1 | 0.00 | 253.00 | 0.00 | 4.75 |
| North Henderson Creek (Bald Bluff) | 0.00 | 13.00 | 0.00 | 2.00 |
| Bald Bluff | 0.00 | 126.00 | 0.00 | 6.00 |
| Apple River Nature Pres. (Thompson Prairie) | 0.00 | 96.50 | 0.00 | 10.00 |
| Bokina | 0.00 | 126.00 | 0.00 | 4.00 |
| Eisbach | 0.00 | 243.00 | 0.00 | 6.25 |
| Falling Down Prairie #1 | 0.00 | 120.00 | 0.00 | 2.00 |
| Fiedler | 0.00 | 62.50 | 0.00 | 10.00 |
| Hanover Bluff Nature Preserve #2 | 0.00 | 115.00 | 0.00 | 20.00 |
| Lenstra | 0.00 | 70.50 | 0.00 | 3.00 |
| Indian Bluff Hill Prairie | 0.00 | 47.00 | 0.00 | 3.00 |
| Lindahil Hill Prairies aka Milan So. Geological | 0.00 | 123.00 | 0.00 | 7.00 |
| Andress Prairie | 0.00 | 15.00 | 0.00 | 21.00 |
| Harlem Hills Nature Preserve | 0.00 | 0.00 | 0.00 | 0.00 |
| Marshall County Hill Prairies, DNR South | 0.00 | 214.00 | 11.00 | 18.50 |
| Wier Hill Prairie NP | 0.00 | 120.50 | 0.00 | 17.25 |
| Curtis Prairie | 0.00 | 106.50 | 0.00 | 4.89 |
| Thistle Hills | 0.00 | 120.00 | 0.00 | 0.75 |
| Mossville Road Hill Prairie | 13.00 | 87.50 | 0.00 | 4.50 |
| Robinson Park Hill Prairie -PPD | 0.00 | 334.00 | 0.00 | 21.75 |
| Singing Woods-PPD | 0.00 | 211.50 | 0.00 | 47.00 |
| St. Mary Cemetery Hill Prairie, Sanitary District | 0.00 | 364.00 | 0.00 | 41.00 |
| Wokanda Camp-PPD | 0.00 | 225.00 | 0.00 | 72.00 |
| Crevecoeur | 0.00 | 53.00 | 0.00 | 1.50 |
| Parklands Natural Area | 0.00 | 0.00 | 0.00 | 0.00 |
| Manito Prairie Nature Preserve | 0.00 | 0.00 | 0.00 | 0.00 |
| Mackinaw River Hill Prairie NA (Weigand) | 0.00 | 51.00 | 0.00 | 3.00 |
| Ridgetop Hill Prairie | 0.00 | 252.50 | 0.00 | 28.00 |
| Snyder Hill Prairie | 0.00 | 182.00 | 0.00 | 7.00 |
| Graham Loess HP North #1 | 0.00 | 70.00 | 0.00 | 6.00 |
| Jennings HP INAI | 24.00 | 35.00 | 0.00 | 7.00 |
| Chandlerville Cemetery Hill Prairie | 0.00 | 121.00 | 0.00 | 13.30 |
| Cox Creek Hill Prairie | 0.00 | 0.00 | 0.00 | 0.00 |
| Jim Edger Panther Creek SFWA #9 | 0.00 | 604.00 | 0.00 | 58.00 |
| Panther Creek Hill Prairie | 0.00 | 0.00 | 0.00 | 0.00 |
| Cecil White Prairie | 35.00 | 212.50 | 0.00 | 18.00 |
| Mississippi River Sand Hills | 0.00 | 164.00 | 0.00 | 20.00 |
| Kibbe (Cedar Glen) | 0.00 | 61.50 | 0.00 | 2.00 |
| Turkey Savanna (Cedar Glen) | 0.00 | 110.00 | 0.00 | 14.00 |
| Duff's Barrens (Cedar Glen) | 0.00 | 0.00 | 0.00 | 0.00 |
| Warnock (Cedar Glen) | 0.00 | 14.00 | 0.00 | 1.00 |
| Pere Marquette Camp Ouataga | 270.75 | 191.25 | 8.50 | 183.00 |
| Pere Marquette McAdams Peak | 75.00 | 329.50 | 12.00 | 270.00 |
| Pere Marquette St Andrews | 44.00 | 213.00 | 0.00 | 268.00 |
| Principia HP East NA-Campus Unit & Ellestown | 0.00 | 382.00 | 0.00 | 42.00 |
| Principia HP west | 16.00 | 199.00 | 0.00 | 13.00 |
| Bouillon glacial till hill prairie | 12.00 | 155.50 | 0.00 | 14.00 |
| Glow/Beaver Dam glacial drift #4 | 0.00 | 72.50 | 0.00 | 11.00 |
| Meredosia Hill Prairie | 0.00 | 100.00 | 0.00 | 6.00 |
| Revis Hill Prairie | 0.00 | 782.00 | 0.00 | 96.00 |
| Grubb Hollow INAI | 116.00 | 365.50 | 0.00 | 67.00 |
| North New Canton | 35.00 | 102.50 | 0.00 | 12.00 |
| Prairie du Rocher Herp area/DeMint NP | 73.50 | 80.50 | 12.00 | 31.00 |
| Columbia Quarry, White Rock NP | 21.00 | 167.50 | 11.00 | 22.00 |
| Fults Hill Prairie NP | 236.50 | 603.00 | 17.00 | 168.50 |
| Harry's Prairie LWR | 143.00 | 990.00 | 28.00 | 143.00 |
| Martha & Michelle Prairies | 86.50 | 87.50 | 10.00 | 45.50 |
| Salt Lick Point LWR | 595.50 | 2031.00 | 78.00 | 422.00 |
| Dupo Prairie | 7.00 | 156.00 | 1.00 | 26.00 |
| Sugar Loaf Prairie | 21.00 | 82.00 | 5.00 | 9.00 |
| TOTALS | 1824.75 | 12355.25 | 193.50 | 2361.44 |

Table 5. Change in the size of hill prairies and blufftops resulting from management during the Hill Prairie SWG T-43-D-1

| <u>Area</u> | <u>County</u> | <u>Site</u> | <u>PreAcres</u> | <u>PostAcres</u> | <u>Difference</u> | <u>%Change</u> |
|-------------|--------------------|--|-----------------|------------------|-------------------|----------------|
| <u>1</u> | <u>Carroll</u> | <u>French Bluff SNA</u> | <u>1.00</u> | <u>1.00</u> | <u>0</u> | <u>0.00</u> |
| <u>1</u> | <u>Carroll</u> | <u>Mississippi Palisades State Park #1</u> | <u>0.25</u> | <u>0.25</u> | <u>0</u> | <u>0.00</u> |
| <u>1</u> | <u>Carroll</u> | <u>Mississippi Palisades State Park #2</u> | <u>0.25</u> | <u>0.25</u> | <u>0</u> | <u>0.00</u> |
| <u>1</u> | <u>Carroll</u> | <u>Mississippi Palisades State Park #4</u> | <u>0.25</u> | <u>0.25</u> | <u>0</u> | <u>0.00</u> |
| <u>1</u> | <u>Carroll</u> | <u>Mississippi Palisades State Park #5</u> | <u>0.25</u> | <u>0.25</u> | <u>0</u> | <u>0.00</u> |
| <u>1</u> | <u>Carroll</u> | <u>Mississippi Palisades State Park #8</u> | <u>0.25</u> | <u>0.25</u> | <u>0</u> | <u>0.00</u> |
| <u>1</u> | <u>Carroll</u> | <u>Mississippi Palisades State Park #11</u> | <u>0.25</u> | <u>0.25</u> | <u>0</u> | <u>0.00</u> |
| <u>1</u> | <u>Carroll</u> | <u>Mississippi Palisades State Park, Bluffpoint Prairie</u> | <u>0.25</u> | <u>0.25</u> | <u>0</u> | <u>0.00</u> |
| <u>1</u> | <u>Carroll</u> | <u>Mississippi Palisades State Park, Rocktop Shelter Prairie</u> | <u>0.25</u> | <u>0.25</u> | <u>0</u> | <u>0.00</u> |
| <u>1</u> | <u>Henderson</u> | <u>Henderson Creek Hill Prairie (Tartan Bluff) #1</u> | <u>0.40</u> | <u>0.70</u> | <u>0.3</u> | <u>75.00</u> |
| <u>1</u> | <u>Henderson</u> | <u>Henderson Creek Hill Prairie (Tartan Bluff) #2</u> | <u>0.30</u> | <u>0.80</u> | <u>0.5</u> | <u>166.67</u> |
| <u>1</u> | <u>Henderson</u> | <u>North Henderson Creek (Bald Bluff)</u> | <u>0.10</u> | <u>0.40</u> | <u>0.3</u> | <u>300.00</u> |
| <u>1</u> | <u>Henderson</u> | <u>Bald Bluff</u> | <u>0.60</u> | <u>1.70</u> | <u>1.1</u> | <u>183.33</u> |
| <u>1</u> | <u>Jo Daviess</u> | <u>Apple River Nature Pres. (Thompson Prairie)</u> | <u>7.00</u> | <u>7.50</u> | <u>0.5</u> | <u>7.14</u> |
| <u>1</u> | <u>Jo Daviess</u> | <u>Bokina</u> | <u>2.35</u> | <u>2.35</u> | <u>0</u> | <u>0.00</u> |
| <u>1</u> | <u>Jo Daviess</u> | <u>Eisbach #1</u> | <u>0.36</u> | <u>0.36</u> | <u>0</u> | <u>0.00</u> |
| <u>1</u> | <u>Jo Daviess</u> | <u>Eisbach #2</u> | <u>1.82</u> | <u>1.82</u> | <u>0</u> | <u>0.00</u> |
| <u>1</u> | <u>Jo Daviess</u> | <u>Falling Down Prairie #1</u> | <u>1.00</u> | <u>1.00</u> | <u>0</u> | <u>0.00</u> |
| <u>1</u> | <u>Jo Daviess</u> | <u>Falling Down Prairie #3</u> | <u>0.25</u> | <u>0.25</u> | <u>0</u> | <u>0.00</u> |
| <u>1</u> | <u>Jo Daviess</u> | <u>Fiedler</u> | <u>0.46</u> | <u>0.46</u> | <u>0</u> | <u>0.00</u> |
| <u>1</u> | <u>Jo Daviess</u> | <u>Hanover Bluff Nature Preserve #2</u> | <u>1.00</u> | <u>1.00</u> | <u>0</u> | <u>0.00</u> |
| <u>1</u> | <u>Jo Daviess</u> | <u>Hanover Bluff Nature Preserve #3</u> | <u>0.5</u> | <u>0.50</u> | <u>0</u> | <u>0.00</u> |
| <u>1</u> | <u>Jo Daviess</u> | <u>Hanover Bluff Nature Preserve #4</u> | <u>2.00</u> | <u>2.00</u> | <u>0</u> | <u>0.00</u> |
| <u>1</u> | <u>Jo Daviess</u> | <u>Hanover Bluff Nature Preserve #5</u> | <u>0.25</u> | <u>0.25</u> | <u>0</u> | <u>0.00</u> |
| <u>1</u> | <u>Jo Daviess</u> | <u>Hanover Bluff Nature Preserve, Shelly Tract</u> | <u>7.00</u> | <u>7.00</u> | <u>0</u> | <u>0.00</u> |
| <u>1</u> | <u>Jo Daviess</u> | <u>Lenstra</u> | <u>0.17</u> | <u>0.17</u> | <u>0</u> | <u>0.00</u> |
| <u>1</u> | <u>Rock Island</u> | <u>Indian Bluff Hill Prairie</u> | <u>0.70</u> | <u>1.43</u> | <u>0.73</u> | <u>104.29</u> |

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| <u>Area</u> | <u>County</u> | <u>Site</u> | <u>PreAcres</u> | <u>PostAcres</u> | <u>Difference</u> | <u>%Change</u> | <u></u> |
|-------------|---------------|---|-----------------|------------------|-------------------|----------------|---------|
| 1 | Rock Island | Lindahl Hill Prairies (Milan So. Geological) | 0.60 | 1.70 | 1.1 | 183.33 | |
| 1 | Rock Island | Andress Prairie | 0.20 | 0.20 | 0 | 200.00 | * |
| 1 | Winnebago | Harlem Hills Nature Preserve | 32.76 | 76.24 | 43.48 | 132.72 | |
| 2 | Marshall | Hopewell Hill Prairies Nature Preserve #116 | 0.10 | 0.10 | 0 | 0.00 | |
| 2 | Marshall | Hopewell Hill Prairies Nature Preserve #117 | 0.30 | 0.60 | 0.3 | 100.00 | |
| 2 | Marshall | Marshall County Hill Prairies, DNR Middle | 0.19 | 0.21 | 0.02 | 10.53 | |
| 2 | Marshall | Marshall County Hill Prairies, DNR North | 0.01 | 0.07 | 0.062 | 775.00 | |
| 2 | Marshall | Oak Bluff Savanna Nature Preserve, NP | 1.60 | 0.60 | -1 | -62.50 | |
| 2 | Marshall | Oak Bluff Savanna Nature Preserve, Rehab Area | 1.20 | 1.20 | 0 | 0.00 | |
| 2 | Marshall | Wier Hill Prairie NP | 0.60 | 0.84 | 0.24 | 40.00 | |
| 2 | McDonough | Curtis Prairie | 1.35 | 1.65 | 0.3 | 22.22 | |
| 2 | McDonough | Thistle Hills | 0.20 | 0.70 | 0.5 | 250.00 | |
| 2 | Menard | Witter's Bobtown Hill Prairie Nature Preserve | 1.30 | 2.40 | 1.1 | 84.62 | |
| 2 | Peoria | Mossville Road Hill Prairie | 0.50 | 0.80 | 0.3 | 60.00 | |
| 2 | Peoria | Robinson Park Hill Prairie -PPD | 2.00 | 4.50 | 2.5 | 125.00 | |
| 2 | Peoria | Singing Woods-PPD | 2.20 | 3.70 | 1.5 | 68.18 | |
| 2 | Peoria | St. Mary Cemetery Hill Prairie, Sanitary District | 0.20 | 0.60 | 0.4 | 200.00 | |
| 2 | Peoria | St. Mary Cemetery Hill Prairie, Northeast Small | 0.20 | 0.25 | 0.05 | 25.00 | |
| 2 | Peoria | St. Mary Cemetery Hill Prairie, Big | 0.70 | 1.50 | 0.8 | 114.29 | |
| 2 | Peoria | Wokanda Camp-PPD | 0.10 | 0.20 | 0.1 | 100.00 | |
| 2 | Tazewell | Crevecour | 0.30 | 0.70 | 0.4 | 133.33 | |
| 2 | Tazewell | Parklands Natural Area | 0.70 | 0.70 | 0 | 0.00 | |
| 2 | Tazewell | Manito Prairie Nature Preserve | 20.00 | 20.00 | 0 | 0.00 | |
| 2 | Woodford | Mackinaw River Hill Prairie NA (Weigand) | 0.10 | 0.22 | 0.12 | 120.00 | |
| 2 | Woodford | Ridgetop Hill Prairie | 2.20 | 3.80 | 1.6 | 72.73 | |
| 3 | Brown | Snyder Hill Prairie | 0.30 | 0.50 | 0.2 | 66.67 | |
| 3 | Calhoun | Graham Loess HP Central (North #2) | 0.15 | 0.21 | 0.06 | 40.00 | |
| 3 | Calhoun | Graham Loess HP East | 0.30 | 0.40 | 0.1 | 33.33 | |

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| <u>Area</u> | <u>County</u> | <u>Site</u> | <u>PreAcres</u> | <u>PostAcres</u> | <u>Difference</u> | <u>%Change</u> |
|-------------|---------------|--|-----------------|------------------|-------------------|----------------|
| - | - | - | - | - | - | - |
| 3 | Cass | Chandlerville Cemetery Hill Prairie | 0.10 | 1.10 | 1 | 1000.00 |
| 3 | Cass | Cox Creek Hill Prairie #11 | 0.50 | 1.83 | 1.33 | 266.00 |
| 3 | Cass | Cox Creek Hill Prairie #15 | 2.80 | 4.00 | 1.2 | 42.86 |
| 3 | Cass | Jim Edger Panther Creek SFWA #9 | 1.10 | 1.41 | 0.31 | 28.18 |
| 3 | Cass | Jim Edger Panther Creek SFWA #33 | 2.20 | 3.39 | 1.19 | 54.09 |
| 3 | Cass | Jim Edger Panther Creek SFWA #34 | 0.10 | 0.27 | 0.17 | 170.00 |
| 3 | Hancock | Mississippi River Sand Hills | 0.30 | 1.60 | 1.3 | 433.33 |
| 3 | Hancock | Duff's Barrens (Cedar Glen) | 0.30 | 1.10 | 0.8 | 266.67 |
| 3 | Jersey | Pere Marquette, St. Andrews NP, Lost Prairie | 0.60 | 1.50 | 0.9 | 150.00 |
| 3 | Jersey | Pere Marquette, McAdams LWR, Twin Mounds | 2.70 | 2.30 | -0.4 | -14.81 |
| 3 | Jersey | Pere Marquette, McAdams LWR, Lower Twin Mounds | 0.90 | 0.80 | -0.1 | -11.11 |
| 3 | Jersey | Pere Marquette, McAdams LWR, Goat Cliff | 1.00 | 0.80 | -0.2 | -20.00 |
| 3 | Jersey | Pere Marquette, McAdams LWR, Twin Shelters | 0.60 | 0.70 | 0.1 | 16.67 |
| 3 | Jersey | Pere Marquette, McAdams LWR, McAdams Peak | 0.50 | 0.50 | 0 | 0.00 |
| 3 | Jersey | Pere Marquette, McAdams LWR, No Name Overlook | 0.10 | 0.30 | 0.2 | 200.00 |
| 3 | Jersey | Pere Marquette, McAdams LWR, Ash Tree Overlook | 0.80 | 0.50 | -0.3 | -37.50 |
| 3 | Jersey | Pere Marquette, Upper Quatoga | 0.50 | 0.77 | 0.27 | -66.52 |
| 3 | Jersey | Pere Marquette, Lower Quatoga | 2.30 | 1.50 | -0.8 | -80.26 |
| 3 | Jersey | Principia HP East NA-Campus Unit & Eilestoun | 7.60 | 6.11 | -1.49 | -19.61 |
| 3 | Jersey | Principia HP west | 0.80 | 1.05 | 0.25 | 31.25 |
| 3 | Macoupin | Bouillon glacial till hill prairie West | 0.15 | 0.70 | 0.55 | 366.67 |
| 3 | Macoupin | Glow/Beaver Dam glacial drift #4 | 5.90 | 4.30 | -1.6 | -27.12 |
| 3 | Mason | Revis Hill Prairie 1E East/ West | 3.00 | 2.57 | -0.43 | -14.33 |
| 3 | Mason | Revis Hill Prairie 1G | 1.03 | 1.03 | 0 | 0.00 |
| 3 | Mason | Revis Hill Prairie 2A/B | 2.90 | 8.60 | 5.7 | 196.55 |
| 3 | Mason | Revis Hill Prairie 2E/F | 4.60 | 5.50 | 0.9 | 19.57 |
| 3 | Mason | Revis Hill Prairie 3ABD | 5.60 | 6.80 | 1.2 | 21.43 |
| 3 | Mason | Revis Hill Prairie 3E | 1.30 | 1.30 | 0 | 0.00 |
| 3 | Pike | Grubb Hollow INAI | 0.30 | 1.13 | 0.83 | 276.67 |
| 3 | Pike | North New Canton | 1.23 | 1.23 | 0 | 0.00 |

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| <u>Area</u> | <u>County</u> | <u>Site</u> | <u>Pre</u> <u>Acres</u> | <u>PostAcres</u> | <u>Difference</u> | <u>%Change</u> | <u>-</u> |
|-------------|---------------|--|----------------------------|------------------|-------------------|----------------|----------|
| 4 | Monroe | White Rock NP, Lost Prairie | 0.10 | 0.20 | 0.1 | 100.00 | |
| 4 | Monroe | White Rock NP, Overlook Prairie (Harris Rd. Prairie) | 0.10 | 0.40 | 0.3 | 300.00 | |
| 4 | Monroe | White Rock NP, Edna's Dell Prairie (Sunday Prairie) | 0.20 | 0.20 | 0 | 0.00 | |
| 4 | Monroe | Fults Hill Prairie NP, North 1 | 0.33 | 1.47 | 1.14 | 345.45 | |
| 4 | Monroe | Fults Hill Prairie NP, Kriebel | 3.25 | 3.25 | 0 | 0.00 | |
| 4 | Monroe | Fults Hill Prairie NP, Unit 2 Big Prairie | 1.49 | 2.95 | 1.46 | 97.99 | |
| 4 | Monroe | Fults Hill Prairie NP, Lost Glade 3 | 0.74 | 1.64 | 0.9 | 121.62 | |
| 4 | Monroe | Fults Hill Prairie NP, Lost Glade 4 | 0.11 | 0.49 | 0.38 | 345.45 | |
| 4 | Monroe | Fults Hill Prairie NP, Horseshoe Prairie | 3.40 | 2.93 | -0.47 | -13.82 | |
| 4 | Monroe | Fults Hill Prairie NP, South 2 | 0.11 | 0.16 | 0.05 | 45.45 | |
| 4 | Monroe | Fults Hill Prairie NP, South 3 Big Prairie | 1.26 | 1.70 | 0.44 | 34.92 | |
| 4 | Monroe | Harry's Prairie, Large Prairie Complex-Bowl Prairie | 0.45 | 0.85 | 0.396 | 88.00 | |
| 4 | Monroe | Harry's Prairie, Large Prairie Complex-2nd Prairie | 0.10 | 0.10 | 0 | 0.00 | * |
| 4 | Monroe | Harry's Prairie, Large Prairie Complex-Large Prairie | 1.30 | 3.69 | 2.394 | 184.15 | |
| 4 | Monroe | Harry's Prairie, Lost Prairie | 0.07 | 0.07 | 0 | 0.00 | * |
| 4 | Monroe | Harry's Prairie, Orchid Prairie | 0.30 | 1.35 | 1.05 | 350.00 | |
| 4 | Monroe | Harry's Prairie, Cedar Prairie | 0.40 | 0.86 | 0.457 | 114.25 | |
| 4 | Monroe | Martha & Michelle Prairies, Pipeline | 0.40 | 0.60 | 0.2 | 50.00 | |
| 4 | Monroe | Martha & Michelle Prairies, Turkey | 0.30 | 0.80 | 0.5 | 166.67 | |
| 4 | Monroe | Martha & Michelle Prairies, Sumac | 0.00 | 0.20 | 0.2 | 200.00 | |
| 4 | Monroe | Martha & Michelle Prairies, Hidden | 0.10 | 0.10 | 0 | 0.00 | |
| 4 | Monroe | Salt Lick Point LWR, Newman Prairie #1 | 0.33 | 0.16 | -0.17 | -51.52 | |
| 4 | Monroe | Salt Lick Point LWR, Rock City Prairie #2 | 0.04 | 0.04 | 0 | 0.00 | |
| 4 | Monroe | Salt Lick Point LWR, Boy Scout Prairie #3 | 0.20 | 2.50 | 2.3 | 1150.00 | |
| 4 | Monroe | Salt Lick Point LWR, Bluestem Glade #5 | 1.60 | 1.60 | 0 | 0.00 | * |
| 4 | Monroe | Salt Lick Point LWR, Powerline Prairie #6 | 0.61 | 0.61 | 0 | 0.00 | |
| 4 | Monroe | Salt Lick Point LWR, Rich's Prairie #7 | 0.09 | 0.09 | 0 | 0.00 | |
| 4 | Monroe | Salt Lick Point LWR, Prairie Dock #10 | 0.14 | 0.20 | 0.06 | 42.86 | |
| 4 | Monroe | Salt Lick Point LWR, Hidden Prairie #12 | 0.11 | 0.25 | 0.14 | 127.27 | |

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| <u>Area</u> | <u>County</u> | <u>Site</u> | <u>PreAcres</u> | <u>PostAcres</u> | <u>Difference</u> | <u>%Change</u> | <u>-</u> |
|-------------|---------------|--|-----------------|------------------|-------------------|----------------|----------|
| 4 | Monroe | Salt Lick Point LWR, Side-oats Prairie #14 | 0.07 | 0.10 | 0.03 | 42.86 | - |
| 4 | Monroe | Salt Lick Point LWR, Lost Glade #16 | 0.17 | 0.10 | -0.07 | -41.18 | - |
| 4 | Monroe | Salt Lick Point LWR, Autumn Glade #17 | 0.13 | 0.10 | -0.03 | -23.08 | - |
| 4 | Monroe | Salt Lick Point LWR, Salt Lick Point Prairie | 0.14 | 0.25 | 0.11 | 78.57 | - |
| 4 | Monroe | Salt Lick Point LWR, Bandits Glade | 0.12 | 0.05 | -0.07 | -58.33 | - |
| 4 | Monroe | Salt Lick Point LWR, Sumac Glade | 0.18 | 0.18 | 0 | 0.00 | * |
| 4 | St. Clair | Sugar Loaf Prairie | 0.10 | 0.30 | 0.2 | 200.00 | - |
| | | TOTALS | 167.10 | 252.84 | | 54.00 | - |

* acreage for pre or post assessment is missing and it was assumed acreage did not change

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Significant gains were made in the size of some of the hill prairies (Table 5). On some sites hill prairie acreage increased more than 300% such as Tartan Bluff/Henderson Creek, Marshall County Hill Prairies, Chandlerville Cemetery Hill Prairie, Mississippi River Sand Hills, Bouillon glacial till hill prairie west, White Rock Nature Preserve, Fults Hill Prairie, Harry's Prairie, and Salt Lick Point. While there are still issues at all of these sites, there was a substantial initial improvement.

Some sites had hard borders such that expansion was impossible so although hill prairies improved in quality, there was no measurable gain in acreage. This is the case at Manito Prairie Nature Preserve which is bordered by roads on three sides so had no increase in acreage but had substantial interior brush removal. Other, smaller interior hill prairies are surrounded by forest and can not be significantly increased in size as could bluff edges. Sometimes removing interior brush and fighting perimeter brush in successive years is all that could be done at some of these hill prairies. For example, no acreage increase was measured for any of the hill prairies at Mississippi Palisades State Park but 100% of woody species such as red cedar, American basswood, and black walnut were removed within some of the units.

In addition to the acreage increase, another important aspect of the project was the exotic species that were controlled at many sites (Appendix C). For example, Lenstra Loess Hill Prairie had a 100% decrease in multiflora rose and Indian Bluff Hill Prairie had a 100% decrease in sweet clover.

Another accomplishment was that at some enclosed sites we were able to restore the open woodland on the bluff surrounding the prairie such as at Marshall County Hill Prairies. This has restored woodland understory vegetation and has allowed hill prairies to grade gradually into the adjacent woodland, wind to flow across the bluff, and pollinators to move between the prairies. The drying effect of wind flow up and across the bluff is important to keeping hill prairies free of woody vegetation which increases with mesic conditions. This was recognized at sites such as Crevecoeur Hill Prairie where woody encroachment was removed downslope of the hill prairie to open up a breezeway from the river to the prairie.

Several challenges were faced during this grant project. The landowners of privately owned hill prairies tended to be very conservative in what management was allowed. Additionally, some landowners only trusted a particular contractor and not the contractor that won the contract for this grant. Therefore, benefits were much smaller on such sites. This was the case at Thistle Hills Prairie. At some privately owned sites we were not able to receive permission for access or management.

At several units, removing oaks and eastern red cedars from the canopy, or removing thickets of dogwood and sumac resulted in a flush of herbaceous exotics, including common mullien, sweet clover or crown vetch. The result was trading one problem for another. For example, there was a dramatic increase in mullein in areas of brush removal at many sites such as Salt Lick Point, Wier Hill Prairie, and Revis Hill Prairie and a heavy invasion of sweet clover at Josua Lindahl Hill Prairies.

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Equally important to the acreage increases and exotic species control from the initial work was what follow-up management was completed at sites. At some sites there were so many prairies and glades that although contractual work was done very early in the contract (2009 or 2010), there was not enough money for follow-up. Therefore, by the time the post assessments were completed in 2013, many sites were exploding with woody brush again.

However, management has continued at other sites and expanded on what was done in the grant project. For example, Cecil White Hill Prairie Land and Water Reserve is doing well because DNR allowed for more aggressive clearing through the Plan of Work process. In addition, the site was burned for the first time in many years. Initially this site was nearly 100% tree-covered.

Appendix D provides some pre and post assessment photos with a short caption explaining what management issues the site is facing.

Objective 3. Monitoring

In addition to IDNR matching federal funds with \$350K of state funds for contractual work, they also matched with their time to a total of \$533,081.21. Much of this in-kind match was used to complete monitoring. Field biologists were extremely dedicated conducting pre-assessments, photo stations, checking contractor work, checking endangered and threatened species, and completing post assessments. This became even more impressive when they pulled together after losing 4 field staff to retirement or other jobs.

Objective 4. Education and Training.

To fulfill part of the educational outreach aspect of the Hill prairie State Wildlife Grant, staff members from IDNR's Division of Natural Heritage and the Illinois Nature Preserves Commission have worked closely with private landowners as well as other state and federal entities to help raise awareness about sensitive resources here in Illinois including hill prairies and glades and to stimulate more protection and management of these rare communities. Planned outreach focused on raising awareness in the local communities about the high quality resources and management needs in their area. In addition, outreach activities aimed to promote improved land and wildlife management stewardship practices and information on the natural history of the rare plant communities.



Figure 2 Participants hike around at the Josua Lindahl Hill Prairie Nature Preserve during the 2nd Hill Prairie Conference.

As a part of the Hill Prairie Initiative developed by IDNR and the Illinois Nature Preserve Commission, staff also helped to organize and host the second and third Hill Prairie Conferences in Illinois on May 1-2, 2009 and April 27-28, 2012 respectively. The conferences included presentations, posters, discussion roundtables, and field trips. All events were well attended and praised by municipal, state, and federal employees, as well as natural resource contractors, NGO's, representatives from academic institutions, and numerous landowners.

A number of brochures and posters were developed over the life of the grant. Also, several hill seminars/presentations about hill prairies were given to various audiences throughout the state. Additional detailed information regarding the educational events associated with this grant can be seen in the individual annual reports.

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Figure 3. Angella Moorehouse leads a field trip to Robinson Woods Hill Prairie at the 3rd Annual Prairie Conference.

Objective 5: Critical Research Needs.

In Winter and Spring of 2010, IDNR staff worked with Dr. Diane Wood, Entomologist at Southeastern Missouri University (SEMO) to develop a proposal for an insect inventory and assessment of the effect of fire management practices on the ground-dwelling insect assemblage in Fults Hill Prairie Nature Preserve, Monroe County, Illinois. Currently, there is limited information regarding what insect species occur in hill prairies, their biology, and their responses to different conservation practices. This is especially true for hill prairies in southwestern Illinois, including Fults Hill Prairie Nature Preserve. This site could potentially harbor insect species unique to this region or species in greatest need of conservation that are not known from this area.

A total of nine study plots are being used to assess the impact of fire management on the ground-dwelling insect assemblage in Fults Hill Prairie Nature Preserve. The nine experimental plots include three plots within prairie sites having had 10 or greater years since last fire application, three plots within prairie sites having had two or less years since last fire application and three plots within associated forested areas bordering the hill prairie sites (Figure 5). In 2010, a total of ten pitfall traps were placed in each of the nine experimental plots. Pitfall trapping occurred once in May, July and September. In Spring 2011, IDNR staff conducted prescribed burns on three hill prairie sites that had a more recent burn history. Pitfall trapping was again completed in 2011.

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Figure 5. Units varied in their prescribed burn frequency to aid in the ongoing insect research at Fults Hill Prairie Nature Preserve.

The processing of insects yielded a total of 4,534 individual insects have been identified thus far and resulted in taxa belonging to 10 orders, 103 families, 230 genera and 71 species (Figure 6). Identifications for the Orthoptera, Curculionidae and Formicidae were confirmed by specialists for those named groups, Dr. Sam Heads, Dr. Robert Anderson and Dr James Trager. The researchers continue to attempt to find taxonomists for the remaining groups (difficult task to find people willing to give their time for gratis). Appendix E summarizes a taxa list from the research project.



There is a current graduate student, Casey L. Brennan, completing her thesis project which is assessing the potential fire effects on the Formicidae assemblage at Fults Hill Prairie N.P. Upon completion of the thesis and acceptance of the expected publication, IDNR will be sent electronic files of both documents.

Figure 6. A zebra swallowtail feeds on hairy puccoon at Fult's Hill Prairie Nature Preserve. They are not a hill prairie specific species, but instead are found in the groves within the ravines or at the base of the hill prairie where their host plant, paw paws, thrive.

Two publications have thus far resulted from this study, either directly or indirectly. These include:

Wood D. L. and C. L. Brennan. 2013. First vouchered record for Strumigenys louisianae (Hymenoptera: Formicidae) in Illinois. The Great Lakes Entomologist 46(3-4): 235-237.

This is a significant finding considering that though claimed to be present at the site, no specimen was ever vouchered. Their range expansion is considerable.

Wood D. L. , A. J. Bornstein and K. A. P. Byers. 2013. Matelea decipiens (Asclepiadaceae): A new county record from Illinois. Castanea 78(1): 79-81.

This species was recorded by IDNR for Fults Hill Prairie Nature Preserve but no specimens were vouchered. The population at Fults Hill Prairie N.P. is included in the text even though the vouchered cutting was collected at White Rock Nature Preserve.

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Appendix A
Amendments to T-43-D-1

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Office of Resource Conservation

State of Illinois

Grant Segment/Proposal
T-43-D-1 Amendment #1

Project Number: T-43-D-1 Amendment #1

Project Title: Hill Prairie/Bluff Habitat Restoration

Purpose: (Revised and updated)

Hill prairies along the Mississippi and Illinois river bluffs and their tributaries provide essential habitat to numerous species in greatest need of conservation (SGNC) as identified in the Illinois Wildlife Action Plan (IWAP): Appendix 1 (IDNR, 2005). The bluffs and adjacent woodlands provide corridors for species migration and habitat connectivity. The purpose of this project is to expand and enhance public and privately owned hill prairies and their adjacent woodlands in need of management by providing much needed exotic and invasive species control and facilitating the reintroduction and use of prescribed burning on these sites to maintain their viability and quality. The amendment to this project will allow IDNR to increase the number of hill prairie/bluff sites that are being actively managed and restored and to continue management actions and complete the necessary follow-up treatments on sites that are already included in the project.

In addition to specific species benefits, the project addresses the following parts of the IWAP (Section III: C): Grassland Habitat Goals 2 and 6; Forest Habitat Goals 1 and 2; Open Woodland Habitat Goals 2 and 3; and Primary Habitat Goal 1; and IWAP (Section III: E) Farmland/Prairies Campaign Actions 1b, 2b, 3a, f and 7; Forest Campaign Actions 1a, 2b and d, 4, and 7; Invasive Species Campaign Actions 3b and 4; Land and Water Stewardship campaign Actions 1b, 2a, 3, 4, and 6; and specific management guidelines for the natural divisions involved in the project (Section IV) (IDNR, 2005).

Need:

No change

Objectives (Revised and Updated)

Objective 1. Identify Additional Work Sites and Restoration Needs. The majority of the following specific tasks will be accomplished during the 3rd year of the project. Time lines for each of the tasks listed are given in the Project Schedule table on pages 8-9. Initially, approximately 90 potential work sites were identified. We began work on 41 sites as of the writing of this amendment. More of these original sites will receive work through this amendment and at least 20 additional sites will be added to the Potential Work Sites list. These will be the sites addressed in Objectives 2 and 3 also. Specific acreage for each site has not been determined yet, but through objective 2 and 3, we intend to determine acreage figures.

Category 1 sites (sites with existing management agreements or plans)

- 1.1 Develop a management plan and cost estimate for each site chosen.
- 1.2 Determine what work items will be done by contractors and what will be done by IDNR and INPC staff.
- 1.3 Confirm landowner approval of management plan

Category 2 sites: (sites with no existing management agreements or plans)

- 1.1 Meet with landowners
- 1.2 Develop a management plan and cost estimate for each site chosen.

- 1.3 Determine what work items will be done by contractors and what will be done by IDNR and INPC staff.
- 1.4 Get landowner approval of 3 year plan

Objective 2. Restoration and Management. The majority of the following specific tasks will begin during the 1st to 2nd years of the project and will continue through the 6th year. Time lines for each of the tasks listed are given in the Project Schedule table on pages 8-9. This is the main focus of the project and will use a majority of the funding/time allocated in contractual services, commodities, and staff time.

- ~~2.1 Group the chosen sites into sub-project areas by location. Completed~~
- ~~2.2 Develop project specifications and bid packages for each sub-project area. Completed~~
- ~~2.3 Follow appropriate administrative procedure to hire a contractor for each sub-project area. Completed~~
- 2.4a Sub-project managers develop work orders for each additional site planned for management.
- 2.4b. Sub-project managers meet with contractor to discuss details of project on sites.
- 2.5 Contractor completes work as specified and discussed over the four year period.
- 2.6 IDNR and INPC staff complete planned work items on project sites over five year period.
- 2.7 IDNR and INPC staff inspect contractor work to assure adequate completion.

Objective 3. Monitoring. The following tasks will be accomplished during the 2nd and 3rd year of the project (task 3.1); during the 3rd-4th Q of the 5th year and the 1st-2nd Q of the 6th year (task 3.2); and during the 1st Q of the 2nd – 6th year (task 3.3). Time lines for each of the tasks listed are given in the Project Schedule table on pages 8-9.

- 3.1 Determine extent of prairie and other target communities before any restoration work for the grant is started, using GIS or GPS technology.
- 3.2 Determine extent of prairie and other target communities after restoration work for the grant is completed, using GIS or GPS technology, and compare with baseline data. The final report may take longer because of the reassessment of sites, so an additional 6 months was added to the time line to accommodate that possibility.
- 3.3 Develop an annual report each year of the grant to determine overall status and progress.

Objective 4. Education and Training. The following tasks will be begin during the 4th Q of the 1st year and will continue through the 2nd Q of the 6th year. These tasks will use approximately \$20,000 total in contractual services and staff time. Time lines for each of the tasks listed are given in the Project Schedule table on pages 8-9.

- 4.1 Contact other local agencies and organizations to identify opportunities to host training workshops.
- 4.2 Complete at least three prescribed burning or management workshops in two different sub-project areas.
- 4.3 Develop literature on prescribed burning or other management of hill prairies and bluffs for distribution to landowners and organizations that would have an interest in this work.
- 4.4 Coordinate other possible activities and outreach opportunities with the Hill Prairie Initiative being developed by the IDNR.

Expected Results or Benefits: (Revised and Updated)

We expect the result to be a significant increase in the amount of actual hill prairie habitat in the target project area which includes approximately 20 counties. Through active management and restoration we aim to maintain and expand current hill prairie acreage and enhance habitat quality on approximately 50-60 target sites, and increase the size of these areas on average by 20- 25%. Additional funding will allow for more follow up on sites being managed and more acreage and/or prairies treated at the larger sites with multiple prairies. The expansion of habitat should also lead to an increase in populations of the species found at these sites which include over 20 species listed in the IWAP as species in greatest need of conservation (SGNC). The areas targeted also include many high quality natural areas that are among the highest diversity prairies remaining in "The Prairie State." Management actions on these sites will help to preserve the diversity that is currently threatened by exotic and invasive species encroachment and general lack of management. We also believe that a substantial focus on these community types, especially on private lands, will increase public awareness of and appreciation for hill prairie and bluff habitats. Additional educational efforts through this project will support this objective.

In addition to specific species benefits, the project addresses the following parts of the IWAP (Section III: C): Grassland Habitat Goals 2 and 6; Forest Habitat Goals 1 and 2; Open Woodland Habitat Goals 2 and 3; and Primary Habitat Goal 1; and IWAP (Section III: E) Farmland/Prairies Campaign Actions 1b, 2b, 3a, f and 7; Forest Campaign Actions 1a, 2b and d, 4, and 7; Invasive Species Campaign Actions 3b and 4; Land and Water Stewardship campaign Actions 1b, 2a, 3, 4, and 6; and specific management guidelines for the natural divisions involved in the project (Section IV) (IDNR, 2005).

Approach:

Objective 1. Identify Work Sites and Restoration Needs.

IDNR and INPC field staff will prioritize sites for work considering the following factors: presence of high quality remnants, E&T and rare (including SGNC) species habitat, high restoration potential, historical presence (determined by analysis of historical aerial photos), connectivity of habitat, and landowner interest. Main target sites are located along the Mississippi and Illinois River Bluff systems but other sites along smaller stream systems have also been included. In addition, IDNR and INPC field staff will assess the current or potential use of other funding sources, such as LIP, CREP, CRP, or other SWG projects such as the T-5-M and T-28-M Public Lands projects. If other federal funding is already being used on a potential project site, field staff will either avoid using SWG funding at the site or coordinate with staff working on the other program to assure that the two projects have clearly defined scopes (in specific location, time or type of work). Field staff will also consider which program may be best suited to a particular site or landowner, and will accordingly contact program to staff to assure effective uses of funding sources and avoid duplication of effort. (See Related Programs section).

The sites will fall into two general categories: (1.) sites with previous management history and current management agreement, and (2.) new sites with no current management agreement. Sites in category 1 will be selected according to the above-mentioned factors and restoration needs including a cost estimate will be determined for each by IDNR and INPC staff. Sites in category 2 will likely require additional steps including initial landowner contact and assessment of resource condition, which will also be accomplished by IDNR and INPC field staff. For each chosen project site, they will develop a management plan based on restoration needs and including cost estimates and how the work will be accomplished. For sites that are not under some type of easement or protection program, landowners will be asked to sign an agreement to maintain the site in its natural condition for 10 years.

Objective 2. Restoration and Management Approach including follow-up:

For each site, IDNR and INPC field staff will determine what management our staff can complete and what work will be accomplished through contractors. Typical work will include brush control, exotic species control, fireline development, prescribed fire preparation, and prescribed burning. A chipper or other methods of removing excess cut material may be used in areas where the amount of material is a hindrance to restoration. Some prescribed grazing (likely using goats) may be used experimentally to assess its utility and efficiency in managing hill prairie and bluff communities. Sites chosen for this treatment will not be the highest quality sites and will be monitored closely for any negative effects. We have followed our standard procedures for hiring a contractor including developing job specifications, soliciting bids, and getting necessary approvals. IDNR/INPC field staff will develop work orders for each site and then will meet with the successful contractor to make a field visit to each site to explain site specific work and details of the job site. Contractor will complete the designated work within the remaining grant period. IDNR/INPC field staff will complete their management work as outlined in the management plan. IDNR/INPC field staff will meet with contractors as needed to inspect the work and provide any additional guidance. Because prescribed burning is such an important component to hill prairie management, we will pursue using contractors to complete prescribed burns and/or assist on burn crews.

Overall, this objective will be the longest part of the grant and will run from the start of year one to the end of the fourth quarter in year six (5/15/07 - 2/31/13). For Category 1 sites, restoration and management work can begin immediately after the grant is approved and the management needs are identified. For Category 2 sites, actual restoration and management actions will not begin until after initial landowner contact and resource assessment is completed. Therefore management work may not begin on these sites until year two of the grant.

Objective 3. Monitoring:

In order to adequately gauge the impact of the project on our chosen sites we will use either GIS and/or GPS technology to determine the baseline (beginning) condition of all project sites. This occurred for currently managed sites during the second year of the grant (5/15/08 - 4/30/09). This work will continue and be done as needed as new sites are added. After the restoration work is completed, each site will be assessed again in comparison to the baseline condition to determine to amount of area restored. This is planned for the last year of the grant (11/1/12 - 5/31/13).

Objective 4. Education and Training:

Outreach is critical to generate awareness and interest in hill prairies and develop a foundation of support. IDNR staff in cooperation with private groups and other government agencies (local, state, federal) will initiate an awareness campaign through media outlets, public open houses, or field trips designed to introduce people to the prairie. IDNR will produce or contract out development of informational material to go to various targeted audiences. This will have a dual role of presenting the problem of the loss of hill prairie and the developing a network to address the problem.

Fire is a fundamental force in the maintenance of these grassland ecosystems. While it is an effective and cost efficient management practice, safety is the primary concern. Prescribed fire requires careful planning and proper training. The IDNR and INPC staff have training, can plan burns, and write burn prescriptions, but often there is more burning needed than can be accomplished by staff. Development of a coordinated team of trained landowners, volunteers, and professional fire practitioners for hill prairies and other natural areas is an additional objective of this project. We will partner with other agencies, organizations and local fire departments and plan to provide training opportunities to landowners interested in conducting prescribed burns.

One event (Festival of the Bluffs, Monroe Co.) has been completed. The two additional workshops or outreach events will be completed by the end of the grant period, as needed in cooperation with our partners.

Location:

Project location includes the major bluff systems along the Mississippi River, Illinois River, and areas along other stream systems with significant hill prairie and bluff resources. An overall map of the potential project sites is attached along with individual maps of sites, or grouped sites.

Related Grants:

There are several other grants and programs that will be concurrent with this project and may have similar goals and objectives. The federal Landowner Incentive Program (LIP) has the potential to overlap with the private land sites that are targeted with this project. Because the LIP is administered through IDNR, we have already done some coordination between the program and project to see how we can best complement each others work to get the most resource work out of these funding mechanisms. Initially, we will attempt to keep project sites separate, but if both funding sources are desired for a single landowner, the field staff of both programs will work together to

coordinate the work and define what areas or type of work will be completed with each program, and assure that matching funds are sufficient for both programs. In nearly all cases, the staff working on LIP projects will also be working on this hill prairie project, so they will be aware of any potential overlap. By using programmatic timekeeping we will accurately reflect time spent on each of the projects so the corresponding match from salaries will go to the correct project. We also plan to assess some of our potential privately-owned project sites to determine if LIP is more suitable for various reasons. If this is the case, staff will coordinate so that we can achieve the best success with the programs and avoid any duplication of efforts. This project has initially identified many Illinois Natural Area Inventory (INAI) sites as potential work sites. These areas may and often do include multiple landowners. At this stage, the exact work site will not be determined until we have assessed the site. After assessment we will designate a more specific work site for this grant, leaving the rest of the INAI site open for other program work.

Other potential programs and projects that may overlap the target areas include CRP, WHIP, CREP and other State Wildlife Grant (SWG) projects including the T-5-M and T-28-M Public Lands grants. If these other grant programs or projects overlap this project in location or timing, we plan to coordinate with the administrators of the other grant/program to assure that each remains well defined and fully and legitimately matched.

Compliance

The IDNR will use its CERP (Comprehensive Environmental Review Process) as a tool to aid the Department in meeting NEPA compliance for the project 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.

All planned activities will also be in compliance with the Endangered Species Act. All determinations and documentation will be 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 the manufacturers 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.

Grant Proposal Support Documentation:

The following documents are attached in support of this grant proposal:

1. Application for Federal Assistance (Standard Form 424)

2. Grant Agreement - Budget Information
3. Federal Aid Section 7 Evaluation Form
4. Illinois Clearinghouse Response per Federal Executive Order 12372
5. NEPA Compliance Checklist and Environmental Assessment
6. Location Maps.

Project Schedule: The planned project period is 5/15/07 - 8/31/2013

| Objectives | Year 1 | | | | Year 2 | | | | Year 3 | | | | Year 4 | | | | Year 5 | | | | Year 6 | | | | Year 7 | | |
|---|--------|------|-------|------|--------|------|-------|------|--------|------|-------|------|--------|------|-------|------|--------|------|-------|------|--------|------|-------|------|--------|------|--|
| | 5/07 | 8/07 | 11/07 | 2/08 | 5/08 | 8/08 | 11/08 | 2/09 | 5/09 | 8/09 | 11/09 | 2/10 | 5/10 | 8/10 | 11/10 | 2/11 | 5/11 | 8/11 | 11/11 | 2/12 | 5/12 | 8/12 | 11/12 | 2/13 | 5/13 | 8/13 | |
| Objective 1. Identify Work Sites and Restoration Needs (Category 1 sites): | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.1 Develop a management plan and cost estimate for each site chosen. | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | | |
| 1.2 Determine what work items will be done by contractors and what will be done by IDNR and INPC staff. | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | | |
| 1.3 Confirm landowner approval of management plan | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | | |
| Objective 1. Identify Work Sites and Restoration Needs (Category 2 sites): | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.1 Meet with landowners | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | | |
| 1.2 Develop a management plan and cost estimate for each site chosen. | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | | |
| 1.3 Determine what work items will be done by contractors and what will be done by IDNR and INPC staff. | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | | |
| 1.4 Get landowner approval of 3 year plan | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | | |
| Objective 2. Restoration and Management approach | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.1 Group the chosen sites into sub-project areas by location. | | X | X | X | X | | | | | | | | | | | | | | | | | | | | | | |
| 2.2 Develop project specifications and bid packages for each sub-project area. | | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | |
| 2.3 Follow appropriate administrative procedure to hire a contractor for each sub-project area. | | X | X | X | X | X | X | | | | | | | X | X | X | X | | | | | | | | | | |

| Objectives | Year 1 | | | | Year 2 | | | | Year 3 | | | | Year 4 | | | | Year 5 | | | | Year 6 | | | | Year 7 | |
|--|--------|------|-------|------|--------|------|-------|------|--------|------|-------|------|--------|------|-------|------|--------|------|-------|------|--------|------|-------|------|--------|------|
| | 5/07 | 8/07 | 11/07 | 2/08 | 5/08 | 8/08 | 11/08 | 2/09 | 5/09 | 8/09 | 11/09 | 2/10 | 5/10 | 8/10 | 11/10 | 2/11 | 5/11 | 8/11 | 11/11 | 2/12 | 5/12 | 8/12 | 11/12 | 2/13 | 5/13 | 8/13 |
| 2.4a Sub-project managers develop work orders for each additional site planned for management.. | | | | | | | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | |
| 2.4b. Sub-project managers meet with contractor to discuss details of project on sites. | | | | | | | | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | |
| 2.5 Contractor completes work as specified and discussed over the designated year period. | | | | | | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | |
| 2.6 IDNR and INPC staff complete planned work items on project sites over three year period. | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | |
| 2.7 IDNR and INPC staff inspect contractor work to assure adequate completion | | | | | | | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | |
| Objective 3. Monitoring approach: | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.1 Determine extent of prairie and other target communities before any restoration work for the grant is started, using GIS or GPS technology. | | | | | X | X | X | X | X | X | X | X | | | | | | | | | | | | | | |
| 3.2 Determine extent of prairie and other target communities after restoration work for the grant is completed, using GIS or GPS technology, and compare with baseline data. | | | | | | | | | | | | | | | | | | X | X | X | X | X | X | | | |
| 3.3 Develop an annual report each year of the grant to determine overall status and progress. | | | | | X | | | | X | | | | X | | | | X | | | | X | | | | X | |
| Objective 4. Education and Training approach: | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.1 Contact other local agencies and organizations to identify opportunities to host training workshops. | | | | | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | |
| 4.2 Complete at least two prescribed burning or management workshops in two different sub-project areas. | | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | |
| 4.3 Develop literature on prescribed burning or other management of hill prairies/bluffs for distribution to landowners and organizations that have an interest. | | | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | |
| 4.4 Coordinate other possible activities and outreach opportunities with the Hill Prairie Initiative being developed by the IDNR. | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | |

Project Budget - Total

Hill Prairie/Bluff Habitat Restoration
 Effective Dates: 5/15/07 - 8/1/10

| Object Categories | Federal Request | IDNR Cost share Total |
|--|-----------------|--------------------------|
| Salaries, Wages and Fringe Benefits | | |
| District Heritage Biologists (approx \$27,000) | | |
| INPC field staff (approx \$27,000) | | |
| Regional Administrator-Natural Heritage (approx \$6241.00) | | |
| Activities include landowner contact, management planning, contractor coordination, project administration and actual management activities including burning and invasive control. | \$0.00 | \$268,632.00 |
| Fringe Benefits included in salaries above (15.4%) | \$268,632.00 | \$268,632.00 |
| Travel | | |
| None | \$0.00 | \$0.00 |
| Supplies (Commodities) | | |
| Chemicals for exotic and invasive control | \$0.00 | \$55,000.00 |
| Contractual Services | | |
| Contractors to accomplish exotic and invasive species control, burning and burn prep, etc on identified project sites. Also will include paying contractors to provide workshops for landowners and managers and production and printing of educational materials to support and promote the effort. | \$597,599.00 | \$200,000.00 |
| | | \$797,599.00 |
| Equipment | | |
| None | \$0.00 | \$0.00 |
| Total Direct Costs | | |
| | \$597,599.00 | \$523,632.00 |
| | | \$1,121,231.00 |
| Indirect Costs | | |
| 21.59% on Salaries, Wedges, and Fringe Benefits only | \$0.00 | \$73,967.00 |
| | \$73,967.00 | \$73,967.00 |
| Totals | \$597,599.00 | \$1,195,198.00 |

Personnel:

The following IDNR/INPC personnel will be the primary staff implementing the hill prairie/bluff restoration project. They will be doing the administration and direct contact with landowners, managers, and contractors. Other Office of Resource Conservation and Land Management staff may be involved in site specific project implementation as their time permits.

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Literature Cited:

Illinois Department of Natural Resources. Illinois Comprehensive Wildlife Conservation Plan. 2005. <http://dnr.state.il.us/orc/wildliferesources/theplan/>

McClain W.E., and E.A. Anderson. 1990. Loss of hill prairie through woody plant invasion at Pere Marquette State Park. Jersey County, Illinois. *Natural Areas Journal* 10:69-75.

Robertson, K.R., M.N. Schwartz, J.W. Olson, B.K. Dunphy, and H.D. Clarke. 1995. 50 years of change in Illinois Hill Prairie. *Erigenia* 14:41-52.

Schwartz, M.W., K.R. Robertson, B.K. Dunphy, J.W. Olson, and A.M. Trame. 1997. The biogeography of and habitat loss on hill prairies. In M.W. Schwartz, ed. *Conservation in highly fragmented landscapes*. Chapman and Hall, New York NY.

White, J. 1978. Illinois Natural Areas Inventory technical report, Vol 1. Survey methods and results. Illinois Natural Areas Survey, Urbana IL.

Office of Resource Conservation

State of Illinois

Grant Segment/Proposal
T-43-D-1 Amendment #2

Project Number: T-43-D-1 Amendment #2

Project Title: Hill Prairie/Bluff Habitat Restoration

Purpose: (Revised and updated)

Hill prairies along the Mississippi and Illinois river bluffs and their tributaries provide essential habitat to numerous species in greatest need of conservation (SGNC) as identified in the Illinois Wildlife Action Plan (IWAP): Appendix 1 (IDNR, 2005). The bluffs and adjacent woodlands provide corridors for species migration and habitat connectivity. The purpose of this project is to expand and enhance public and privately owned hill prairies and their adjacent woodlands in need of management by providing much needed exotic and invasive species control and facilitating the reintroduction and use of prescribed burning on these sites to maintain their viability and quality. The amendment to this project will allow IDNR to increase the number of hill prairie/bluff sites that are being actively managed and restored and to continue management actions and complete the necessary follow-up treatments on sites that are already included in the project.

This amendment will also address particular data needs identified in the Illinois Wildlife Action Plan. Data are lacking for most invertebrate species so it is difficult to determine all the Species in Greatest Need of Conservation. A small portion of this project will fund a research project to identify insect species at a high quality hill prairie location and also conduct a preliminary study on the potential effects of fire management on ground-dwelling insects. If other critical research needs that address goals of the IWAP are identified, these may also be funded through this grant, not to exceed 5% of the total grant value.

In addition to specific species benefits, the project addresses the following parts of the IWAP (Section III: C): Grassland Habitat Goals 2 and 6; Forest Habitat Goals 1 and 2; Open Woodland Habitat Goals 2 and 3; and Primary Habitat Goal 1; IWAP (Section III: D) Challenges for Wildlife and Habitat Resources, Species in Greatest Need of Conservation, Invertebrates; and IWAP (Section III: E) Farmland/Prairies Campaign Actions 1b, 2b, 3a, f and 7; Forest Campaign Actions 1a, 2b and d, 4, and 7; Invasive Species Campaign Actions 3b and 4; Land and Water Stewardship campaign Actions 1b, 2a, 3, 4, and 6; and specific management guidelines for the natural divisions involved in the project (Section IV) (IDNR, 2005).

Need: (Revised and Updated)

Hill prairies are one of the most endangered natural communities in Illinois. The Illinois Natural Areas Inventory (INAI), a statewide comprehensive natural resource inventory, identified 446 hill prairies but only 127 were deemed "High quality" (Grades A or B) (White, 1978). These 127 sites accounted for only 534.4 acres of hill prairie vegetation including a total of 463 acres of loess hill prairies, 51.5 acres of glacial drift hill prairie, 14.7 acres of gravel hill prairie and 5.3 acres of sand hill prairie. Many of the inventory sites were less than 1 acre in size (White, 1978).

These habitats were far more extensive as recently as the early 20th century. Changes in land use, invasion by exotic species, and lack of fire have resulted in a dramatic decline in overall acreage and diversity within these prairies. The Illinois Natural History Survey has documented that individual Illinois hill prairies have decreased in size an average of 63% in the 50 year period from 1938 to 1988 (Robertson et al, 1995). This is a very conservative estimate of hill prairie loss as it does not include hill prairies that completely disappeared during this interval nor does it take into account that as hill prairies become encroached with invasive and exotic species, the rate of loss

of hill prairie increases. As hill prairies decline in size, they are lost at a faster rate. Work done by Robertson et. al., Schwartz et. al., and McClain and Anderson, 1990, indicated that in 15-20 years, without management, the remaining hill prairies in Illinois would be gone.

Hill prairies and their adjacent woodland habitats support many rare plant and animal species and provide corridors and migration routes along the river systems. Over twenty SGNC (see below) and several additional rare and endemic species depend on hill prairies for their existence. As the acreage of these habitats decline, the future of these species is placed in jeopardy. In addition to outright habitat loss, these hill prairies are also becoming more fragmented. This limits the dispersal of hill prairie species and increases species extinction at individual sites.

Management of some hill prairies has been ongoing for nearly three decades. Control of invasive and exotic plant species and re-introduction of fire can have rapid and profound positive impacts on these habitats and the species that depend on them. The technology for restoration of these habitats and species is well known, widely practiced, efficient, and effective. Given the current state of the art technology, hill prairie restoration on a large scale is feasible and likely to quickly result in the desired outcomes.

However, we currently lack the resources to address hill prairie restoration on most of the sites that need it. Without a substantial concerted effort to increase management at these sites, Illinois will likely lose much of the remaining acreage of this rare habitat type and the rare species that depend upon it. Management at some of these sites could easily be considered triage by planning for work on the most critical cases that still have restoration potential. Funding for this project will allow us to concentrate our focus and make a substantial positive impact on the community.

Lack of management on these sites is only one aspect of the problem. There is also a critical lack of understanding about the significance and importance of these communities. Prairies in general is underappreciated in Illinois because of its virtual elimination from the landscape. The majority of hill prairies are located on privately owned land in rural areas. Hill prairies are generally small and due to their position on rugged topography have little economic use in a traditional, agricultural sense. Therefore, landowners generally have little appreciation for the importance of maintaining these prairies. This project will allow Illinois Department of Natural Resources (IDNR) biologists and Illinois Nature Preserves Commission (INPC) field staff (as listed in Personnel Section) to approach landowners with monetary assistance for hill prairie management and provide an opportunity to educate landowners about these significant resources. In addition, new, non-traditional uses and values of hill prairies may be recognized. The intent is that landowners will take an interest in maintaining their hill prairies and possibly take steps toward long term protection.

Without the understanding and commitment of landowners, we may be unable to conserve this rare community and associated species for the long term. This type of approach will give us the best chance to build partnerships with private landowners of resources of statewide significance and concern. Moreover, partnerships will be formed with other public agencies and private organizations who share the common goal of hill prairie conservation and protection.

This project will expand habitat for the following SGNC identified in the IWAP (Appendix 1):

- Eastern narrowmouth toad
- Timber rattlesnake
- Great plains rat snake
- Western hognosed snake
- Slender glass lizard
- Coachwhip
- Flathead snake
- American woodcock
- Red headed woodpecker
- Yellow billed cuckoo
- Northern bobwhite

Northern flicker
Prairie warbler
Field sparrow
Yellow breasted chat
Striped scorpion
Whitney's underwing
Ottoe skipper
Cobweb skipper
Arogos skipper
Regal fritillary
Fichiella robersoni
Flexamia albida
Paraphlepsius texanus
Polyamia dilata
Scaphytopius vaccinum
Schinia gloriosa

A number of plant species in greatest need of conservation in Illinois would also benefit from the project. They include:

Pale false foxglove
Wooly milkweed
Narrow leaved milkweed
Large ground plum
Kittentails
Wooly buckthorn
Hill's thistle
White lady's slipper orchid
Whitlow grass
Prairie trout lily
Prairie spurge
Dwarf bedstraw
Slender heliotrope
Crested coral-root orchid
Climbing milkweed
Pink milkwort
Missouri orange coneflower
False melic grass
Cliff goldenrod
Arrowwood
White camass

In addition, the diversity and distribution of hill prairie insect species is not well known. While some hill prairie sites have had insect inventories completed in the past, Fults Hill Prairie, one of the state's largest and highest quality hill prairie sites has only had some limited inventory work done. Having a better understanding of the insect diversity at this site will also give us insight into the possible diversity at numerous other hill prairie sites in southwestern Illinois. Much of the more comprehensive insect inventory work has been done on hill prairie sites in Central Illinois. It is quite possible that the central Illinois species assemblages are significantly different from those in Southwestern Illinois, especially considering the western influences on other plant and animal distributions in this part of the state (e.g. plains scorpion, Missouri coneflower). There may be additional species in greatest need of conservation that can be identified in the IWAP as a result of this research.

Last year during the Illinois Hill Prairie Conference, there was contentious discussion about the effects of prescribed burning on insects in hill prairie systems. As a result of those discussions and a paucity of research on

the subject, one of the attending researchers developed a proposal to specifically look at the effects of fire on ground-dwelling insects at Fults Hill Prairie. Although this is only a subset of the research needed, it is a step towards better understanding of how the commonly used practice of prescribed burning may or may not affect prairie insects. Considering that prescribed burning is readily promoted as a necessary management tool on this community type, a better understanding of its effects is needed to assure that we consider all species in greatest need of conservation as well as rare and declining habitat types.

If other critical research needs that address goals of the IWAP are identified, these may also be funded through this grant, not to exceed 5% of the total grant value.

Objectives (Revised and Updated)

Objective 1. Identify Additional Work Sites and Restoration Needs. The majority of the following specific tasks will be accomplished during the 3rd year of the project. Time lines for each of the tasks listed are given in the Project Schedule table on pages 8-9. Initially, approximately 90 potential work sites were identified. We began work on 41 sites as of the writing of this amendment. More of these original sites will receive work through this amendment and at least 20 additional sites will be added to the Potential Work Sites list. These will be the sites addressed in Objectives 2 and 3 also. Specific acreage for each site has not been determined yet, but through objective 2 and 3, we intend to determine acreage figures.

Category 1 sites (sites with existing management agreements or plans)

- 1.1 Develop a management plan and cost estimate for each site chosen.
- 1.2 Determine what work items will be done by contractors and what will be done by IDNR and INPC staff.
- 1.3 Confirm landowner approval of management plan

Category 2 sites: (sites with no existing management agreements or plans)

- 1.1 Meet with landowners
- 1.2 Develop a management plan and cost estimate for each site chosen.
- 1.3 Determine what work items will be done by contractors and what will be done by IDNR and INPC staff.
- 1.4 Get landowner approval of 3 year plan

Objective 2. Restoration and Management. The majority of the following specific tasks will begin during the 1st to 2nd years of the project and will continue through the 6th year. Time lines for each of the tasks listed are given in the Project Schedule table on pages 8-9. This is the main focus of the project and will use a majority of the funding/time allocated in contractual services, commodities, and staff time.

- ~~2.1 Group the chosen sites into sub-project areas by location. Completed~~
- ~~2.2 Develop project specifications and bid packages for each sub-project area. Completed~~
- ~~2.3 Follow appropriate administrative procedure to hire a contractor for each sub-project area. Completed~~
- 2.4a Sub-project managers develop work orders for each additional site planned for management.
- 2.4b. Sub-project managers meet with contractor to discuss details of project on sites.
- 2.5 Contractor completes work as specified and discussed over the four year period.
- 2.6 IDNR and INPC staff complete planned work items on project sites over five year period.
- 2.7 IDNR and INPC staff inspect contractor work to assure adequate completion.

Objective 3. Monitoring. The following tasks will be accomplished during the 2nd and 3rd year of the project (task 3.1); during the 3rd-4th Q of the 5th year and the 1st-2nd Q of the 6th year (task 3.2); and during the 1st Q of the 2nd – 6th year (task 3.3). Time lines for each of the tasks listed are given in the Project Schedule table on pages 8-9.

- 3.1 Determine extent of prairie and other target communities before any restoration work for the grant is started, using GIS or GPS technology.

- 3.2 Determine extent of prairie and other target communities after restoration work for the grant is completed, using GIS or GPS technology, and compare with baseline data. The final report may take longer because of the reassessment of sites, so an additional 6 months was added to the time line to accommodate that possibility.
- 3.3 Develop an annual report each year of the grant to determine overall status and progress.

Objective 4. Education and Training. The following tasks will be begin during the 4th Q of the 1st year and will continue through the 2nd Q of the 6th year. These tasks will use approximately \$20,000 total in contractual services and staff time. Time lines for each of the tasks listed are given in the Project Schedule table on pages 8-9.

- 4.1 Contact other local agencies and organizations to identify opportunities to host training workshops.
- 4.2 Complete at least three prescribed burning or management workshops in two different sub-project areas.
- 4.3 Develop literature on prescribed burning or other management of hill prairies and bluffs for distribution to landowners and organizations that would have an interest in this work.
- 4.4 Coordinate other possible activities and outreach opportunities with the Hill Prairie Initiative being developed by the IDNR.

Objective 5: Critical Research Needs. The following tasks will begin during the Spring of 2010 and continue through the rest of the grant period as needed.

- 5.1 Contract with researcher to complete necessary field work, data collection and analysis.
- 5.2 Assist researchers as needed, especially to conduct prescribed burns for fire effects study. Provide other guidance as needed to assure that needed data is collected.
- 5.3 Review and approve completed research results and data.

Expected Results or Benefits: (Revised and Updated)

We expect the result to be a significant increase in the amount of actual hill prairie habitat in the target project area which includes approximately 20 counties. Through active management and restoration we aim to maintain and expand current hill prairie acreage and enhance habitat quality on approximately 50-60 target sites, and increase the size of these areas on average by 20- 25%. Additional funding will allow for more follow up on sites being managed and more acreage and/or prairies treated at the larger sites with multiple prairies. The expansion of habitat should also lead to an increase in populations of the species found at these sites which include over 20 species listed in the IWAP as species in greatest need of conservation (SGNC). The areas targeted also include many high quality natural areas that are among the highest diversity prairies remaining in "The Prairie State." Management actions on these sites will help to preserve the diversity that is currently threatened by exotic and invasive species encroachment and general lack of management. We also believe that a substantial focus on these community types, especially on private lands, will increase public awareness of and appreciation for hill prairie and bluff habitats. Additional educational efforts through this project will support this objective.

The research component of this project may identify new locations of Species in Greatest Need of Conservation and may also identify additional species that should be added to the SGNC invertebrate list of the IWAP. It will also provide more comprehensive baseline data for a significant high quality hill prairie site in Southwestern Illinois. The study on potential fire effects on ground-dwelling insects may provide better data on the actual effects management practice of prescribed burning

In addition to specific species benefits, the project addresses the following parts of the IWAP (Section III: C): Grassland Habitat Goals 2 and 6; Forest Habitat Goals 1 and 2; Open Woodland Habitat Goals 2 and 3; and Primary Habitat Goal 1; IWAP (Section III: D) Challenges for Wildlife and Habitat Resources, Species in Greatest Need of

Conservation, Invertebrates; and IWAP (Section III: E) Farmland/Prairies Campaign Actions 1b, 2b, 3a, f and 7; Forest Campaign Actions 1a, 2b and d, 4, and 7; Invasive Species Campaign Actions 3b and 4; Land and Water Stewardship campaign Actions 1b, 2a, 3, 4, and 6; and specific management guidelines for the natural divisions involved in the project (Section IV) (IDNR, 2005).

Approach: (Revised)

Objective 1. Identify Work Sites and Restoration Needs.

IDNR and INPC field staff will prioritize sites for work considering the following factors: presence of high quality remnants, E&T and rare (including SGNC) species habitat, high restoration potential, historical presence (determined by analysis of historical aerial photos), connectivity of habitat, and landowner interest. Main target sites are located along the Mississippi and Illinois River Bluff systems but other sites along smaller stream systems have also been included. In addition, IDNR and INPC field staff will assess the current or potential use of other funding sources, such as LIP, CREP, CRP, or other SWG projects such as the T-5-M and T-28-M Public Lands projects. If other federal funding is already being used on a potential project site, field staff will either avoid using SWG funding at the site or coordinate with staff working on the other program to assure that the two projects have clearly defined scopes (in specific location, time or type of work). Field staff will also consider which program may be best suited to a particular site or landowner, and will accordingly contact program to staff to assure effective uses of funding sources and avoid duplication of effort. (See Related Programs section).

The sites will fall into two general categories: (1.) sites with previous management history and current management agreement, and (2.) new sites with no current management agreement. Sites in category 1 will be selected according to the above-mentioned factors and restoration needs including a cost estimate will be determined for each by IDNR and INPC staff. Sites in category 2 will likely require additional steps including initial landowner contact and assessment of resource condition, which will also be accomplished by IDNR and INPC field staff. For each chosen project site, they will develop a management plan based on restoration needs and including cost estimates and how the work will be accomplished. For sites that are not under some type of easement or protection program, landowners will be asked to sign an agreement to maintain the site in its natural condition for 10 years.

Objective 2. Restoration and Management Approach including follow-up:

For each site, IDNR and INPC field staff will determine what management our staff can complete and what work will be accomplished through contractors. Typical work will include brush control, exotic species control, fireline development, prescribed fire preparation, and prescribed burning. A chipper or other methods of removing excess cut material may be used in areas where the amount of material is a hindrance to restoration. Some prescribed grazing (likely using goats) may be used experimentally to assess its utility and efficiency in managing hill prairie and bluff communities. Sites chosen for this treatment will not be the highest quality sites and will be monitored closely for any negative effects. We have followed our standard procedures for hiring a contractor including developing job specifications, soliciting bids, and getting necessary approvals. IDNR/INPC field staff will develop work orders for each site and then will meet with the successful contractor to make a field visit to each site to explain site specific work and details of the job site. Contractor will complete the designated work within the remaining grant period. IDNR/INPC field staff will complete their management work as outlined in the management plan. IDNR/INPC field staff will meet with contractors as needed to inspect the work and provide any additional guidance. Because prescribed burning is such an important component to hill prairie management, we will pursue using contractors to complete prescribed burns and/or assist on burn crews.

Overall, this objective will be the longest part of the grant and will run from the start of year one to the end of the fourth quarter in year six (5/15/07 - 2/28/13). For Category 1 sites, restoration and management work can begin

immediately after the grant is approved and the management needs are identified. For Category 2 sites, actual restoration and management actions will not begin until after initial landowner contact and resource assessment is completed. ~~Therefore management work may not begin on these sites until year two of the grant.~~

Objective 3. Monitoring:

In order to adequately gauge the impact of the project on our chosen sites we will use either GIS and/or GPS technology to determine the baseline (beginning) condition of all project sites. This occurred for currently managed sites during the second year of the grant (5/15/08 - 4/30/09). This work will continue and be done as needed as new sites are added. After the restoration work is completed, each site will be assessed again in comparison to the baseline condition to determine to amount of area restored. This is planned for the last year of the grant (11/1/12 - 5/31/13).

Objective 4. Education and Training:

Outreach is critical to generate awareness and interest in hill prairies and develop a foundation of support. IDNR staff in cooperation with private groups and other government agencies (local, state, federal) will initiate an awareness campaign through media outlets, public open houses, or field trips designed to introduce people to the prairie. IDNR will produce or contract out development of informational material to go to various targeted audiences. This will have a dual role of presenting the problem of the loss of hill prairie and the n developing a network to address the problem.

Fire is a fundamental force in the maintenance of these grassland ecosystems. While it is an effective and cost efficient management practice, safety is the primary concern. Prescribed fire requires careful planning and proper training. The IDNR and INPC staff have training, can plan burns, and write burn prescriptions, but often there is more burning needed than can be accomplished by staff. Development of a coordinated team of trained landowners, volunteers, and professional fire practitioners for hill prairies and other natural areas is an additional objective of this project. We will partner with other agencies, organizations and local fire departments and plan to provide training opportunities to landowners interested in conducting prescribed burns.

One event (Festival of the Bluffs, Monroe Co.) has been completed. The two additional workshops or outreach events will be completed by the end of the grant period, as needed in cooperation with our partners.

Objective 5. Critical Research Needs

1. Insect inventory – monthly collection throughout the growing season for a period of two years. An electronic data base of all insects collected over the course of this study will be developed. Identification will be to the lowest possible taxonomic level. Voucher specimens will be housed in the Invertebrate Collections at Southeast Missouri State University and readily available to interested researchers and conservation agency representatives.

Insects will be collected monthly during the growing season for a total of two years. Collection will occur at multiple prairie sites within the nature preserve. Collecting techniques will include but not limited to sweep-netting, pitfall traps, hand-collection, aspirators for small specimens, emergence cages for collection of stem borers and digital photography. Collection effort will occur over a two day period each month to begin in April and conclude after first frost of the year

2. Assessment of fire management practices for the maintenance of current hill prairie sites at Fults Hill Prairie Nature Preserve based on possible effects on the ground-dwelling insect assemblages. Comparisons will be quantitatively made relative to hill prairies with recent burn histories, hill prairies not

burned in recent 10 years and surrounding forested areas. Prescribed burns will be done on a subset of the experimental plots and then sampled again the following season to provide a classic, pre-treatment/post-treatment experimental design.

Location: (Revised)

Six new project sites are being added through this amendment. See attached list for information.

Project location includes the major bluff systems along the Mississippi River, Illinois River, and areas along other stream systems with significant hill prairie and bluff resources. An overall map of the potential project sites is attached along with individual maps of sites, or grouped sites.

Related Grants: No Change

Compliance: No Change

Grant Proposal Support Documentation: (No Change by DT)

The following documents are attached in support of this grant proposal:

1. Application for Federal Assistance (Standard Form 424)
2. Grant Agreement - Budget Information
3. Federal Aid Section 7 Evaluation Form
4. Illinois Clearinghouse Response per Federal Executive Order 12372
5. NEPA Compliance Checklist and Environmental Assessment
6. Location Maps.

Project Schedule: The planned project period is 5/15/07 - 8/31/2013 - Revised

| Objectives | Year 1 | | | | Year 2 | | | | Year 3 | | | | Year 4 | | | | Year 5 | | | | Year 6 | | | | Year 7 | | |
|---|--------|------|-------|------|--------|------|-------|------|--------|------|-------|------|--------|------|-------|------|--------|------|-------|------|--------|------|-------|------|--------|------|--|
| | 5/07 | 8/07 | 11/07 | 2/08 | 5/08 | 8/08 | 11/08 | 2/09 | 5/09 | 8/09 | 11/09 | 2/10 | 5/10 | 8/10 | 11/10 | 2/11 | 5/11 | 8/11 | 11/11 | 2/12 | 5/12 | 8/12 | 11/12 | 2/13 | 5/13 | 8/13 | |
| Objective 1. Identify Work Sites and Restoration Needs (Category 1 sites): | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.1 Develop a management plan and cost estimate for each site chosen. | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | | |
| 1.2 Determine what work items will be done by contractors and what will be done by IDNR and INPC staff. | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | | |
| 1.3 Confirm landowner approval of management plan | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | | |
| Objective 1. Identify Work Sites and Restoration Needs (Category 2 sites): | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.1 Meet with landowners | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | | |
| 1.2 Develop a management plan and cost estimate for each site chosen. | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | | |
| 1.3 Determine what work items will be done by contractors and what will be done by IDNR and INPC staff. | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | | |
| 1.4 Get landowner approval of 3 year plan | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | | |
| Objective 2. Restoration and Management approach | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.1 Group the chosen sites into sub-project areas by location. | | X | X | X | X | | | | | | | | | | | | | | | | | | | | | | |
| 2.2 Develop project specifications and bid packages for each sub-project area. | | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | |
| 2.3 Follow appropriate administrative procedure to hire a contractor for each sub-project area. | | X | X | X | X | X | X | | | | | | | X | X | X | X | | | | | | | | | | |

| Objectives | Year 1 | | | | Year 2 | | | | Year 3 | | | | Year 4 | | | | Year 5 | | | | Year 6 | | | | Year 7 | |
|--|--------|------|-------|------|--------|------|-------|------|--------|------|-------|------|--------|------|-------|------|--------|------|-------|------|--------|------|-------|------|--------|------|
| | 5/07 | 8/07 | 11/07 | 2/08 | 5/08 | 8/08 | 11/08 | 2/09 | 5/09 | 8/09 | 11/09 | 2/10 | 5/10 | 8/10 | 11/10 | 2/11 | 5/11 | 8/11 | 11/11 | 2/12 | 5/12 | 8/12 | 11/12 | 2/13 | 5/13 | 8/13 |
| 2.4a Sub-project managers develop work orders for each additional site planned for management.. | | | | | | | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | |
| 2.4b. Sub-project managers meet with contractor to discuss details of project on sites. | | | | | | | | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | |
| 2.5 Contractor completes work as specified and discussed over the designated year period. | | | | | | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | |
| 2.6 IDNR and INPC staff complete planned work items on project sites over three year period. | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | |
| 2.7 IDNR and INPC staff inspect contractor work to assure adequate completion | | | | | | | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | |
| Objective 3. Monitoring approach: | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.1 Determine extent of prairie and other target communities before any restoration work for the grant is started, using GIS or GPS technology. | | | | | X | X | X | X | X | X | X | X | | | | | | | | | | | | | | |
| 3.2 Determine extent of prairie and other target communities after restoration work for the grant is completed, using GIS or GPS technology, and compare with baseline data. | | | | | | | | | | | | | | | | | | X | X | X | X | X | X | | | |
| 3.3 Develop an annual report each year of the grant to determine overall status and progress. | | | | | X | | | | X | | | | X | | | | X | | | | X | | | | X | |
| Objective 4. Education and Training approach: | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.1 Contact other local agencies and organizations to identify opportunities to host training workshops. | | | | | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | |
| 4.2 Complete at least two prescribed burning or management workshops in two different sub-project areas. | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | |
| 4.3 Develop literature on prescribed burning or other management of hill prairies/bluffs for distribution to landowners and organizations that have an interest. | | | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | |
| 4.4 Coordinate other possible activities and outreach opportunities with the Hill Prairie Initiative being developed by the IDNR. | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | |

Project Budget – Total (Revised)

Hill Prairie/Bluff Habitat Restoration
 Effective Dates: 5/15/07 - 8/1/13

| Object Categories | Federal Request | IDNR Cost share Total |
|---|---|--|
| Salaries, Wages and Fringe Benefits | | |
| District Heritage Biologists (approx \$27,000 <u>152,000.00</u>) | | INPC field staff (approx \$27,000 <u>95,000</u>) |
| Regional Administrator-Natural Heritage (approx \$6241.00 <u>75,000</u>) | | |
| Activities include landowner contact, management planning, contractor coordination, project administration and actual | | |
| management activities including burning and invasive control. | \$0.00 | |
| Fringe Benefits included in salaries above (15.4%) | | |
| | \$322,600.00 <u>\$322,600.00</u> | \$322,600.00 <u>\$322,600.00</u> |
| | \$268,632.00 <u>\$268,632.00</u> | \$268,632.00 <u>\$268,632.00</u> |
| Travel | | |
| None | \$0.00 | \$0.00 |
| Supplies (Commodities) | | |
| Chemicals for exotic and invasive control | \$0.00 | |
| | \$55,349.66 <u>\$55,349.66</u> | \$55,349.66 <u>\$55,349.66</u> |
| Contractual Services | | |
| Contractors to accomplish exotic and invasive species control, burning and burn prep, etc on identified project sites. Also will include paying contractors to provide workshops for landowners and managers and production and printing of educational materials to support and promote the effort. | | |
| | \$697,599.00 <u>\$697,599.00</u> | \$250,000.00 <u>\$250,000.00</u> |
| | \$597,599.00 <u>\$597,599.00</u> | \$797,599.00 <u>\$797,599.00</u> |
| Equipment | | |
| None | \$0.00 | \$0.00 |
| | \$697,599.00 <u>\$697,599.00</u> | \$627,949.66 <u>\$627,949.66</u> |
| Total Direct Costs | \$597,599.00 <u>\$597,599.00</u> | \$1,121,231.00 <u>\$1,325,548.60</u> |
| Indirect Costs | | |
| 21.59% on Salaries, Wages, and Fringe Benefits only | \$0.00 | |
| | \$73,967.00 <u>\$73,967.00</u> | \$73,967.00 <u>\$69,649.34</u> |
| | \$697,599.00 <u>\$697,599.00</u> | \$1,195,198.00 <u>\$1,395,198.00</u> |
| Totals | \$597,599.00 <u>\$597,599.00</u> | \$1,195,198.00 <u>\$1,395,198.00</u> |

| **Personnel:** [No Change](#)

| **Literature Cited:** [No Change](#)

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State of Illinois

Grant Segment/Proposal
T-43-D-1 Amendment #3**Project Number:** T-43-D-1 Amendment #3**Project Title:** Hill Prairie/Bluff Habitat Restoration**Purpose: (Revised and updated)**

Hill prairies along the Mississippi and Illinois river bluffs and their tributaries provide essential habitat to numerous species in greatest need of conservation (SGNC) as identified in the Illinois Wildlife Action Plan (IWAP): Appendix 1 (IDNR, 2005). The bluffs and adjacent woodlands provide corridors for species migration and habitat connectivity. The purpose of this project is to expand and enhance public and privately owned hill prairies and their adjacent woodlands in need of management by providing much needed exotic and invasive species control and facilitating the reintroduction and use of prescribed burning on these sites to maintain their viability and quality. The amendment to this project will allow IDNR to increase the number of hill prairie/bluff sites that are being actively managed and restored and to continue management actions and complete the necessary follow-up treatments on sites that are already included in the project.

This amendment will also address particular data needs identified in the Illinois Wildlife Action Plan. Data are lacking for most invertebrate species so it is difficult to determine all the Species in Greatest Need of Conservation. A small portion of this project will fund a research project to identify insect species at a high quality hill prairie location and also conduct a preliminary study on the potential effects of fire management on ground-dwelling insects. If other critical research needs that address goals of the IWAP are identified, these may also be funded through this grant, not to exceed 5% of the total grant value.

In addition to specific species benefits, the project addresses the following parts of the IWAP (Section III: C): Grassland Habitat Goals 2 and 6; Forest Habitat Goals 1 and 2; Open Woodland Habitat Goals 2 and 3; and Primary Habitat Goal 1; IWAP (Section III: D) Challenges for Wildlife and Habitat Resources, Species in Greatest Need of Conservation, Invertebrates; and IWAP (Section III: E) Farmland/Prairies Campaign Actions 1b, 2b, 3a, f and 7; Forest Campaign Actions 1a, 2b and d, 4, and 7; Invasive Species Campaign Actions 3b and 4; Land and Water Stewardship campaign Actions 1b, 2a, 3, 4, and 6; and specific management guidelines for the natural divisions involved in the project (Section IV) (IDNR, 2005).

Need: (Revised and Updated)

Hill prairies are one of the most endangered natural communities in Illinois. The Illinois Natural Areas Inventory (INAI), a statewide comprehensive natural resource inventory, identified 446 hill prairies but only 127 were deemed "High quality" (Grades A or B) (White, 1978). These 127 sites accounted for only 534.4 acres of hill prairie vegetation including a total of 463 acres of loess hill prairies, 51.5 acres of glacial drift hill prairie, 14.7 acres of gravel hill prairie and 5.3 acres of sand hill prairie. Many of the inventory sites were less than 1 acre in size (White, 1978).

These habitats were far more extensive as recently as the early 20th century. Changes in land use, invasion by exotic species, and lack of fire have resulted in a dramatic decline in overall acreage and diversity within these prairies. The Illinois Natural History Survey has documented that individual Illinois hill prairies have decreased in size an average of 63% in the 50 year period from 1938 to 1988 (Robertson et al, 1995). This is a very conservative estimate of hill prairie loss as it does not include hill prairies that completely disappeared during this interval nor does it take into account that as hill prairies become encroached with invasive and exotic species, the rate of loss

of hill prairie increases. As hill prairies decline in size, they are lost at a faster rate. Work done by Robertson et. al., Schwartz et. al., and McClain and Anderson, 1990, indicated that in 15-20 years, without management, the remaining hill prairies in Illinois would be gone.

Hill prairies and their adjacent woodland habitats support many rare plant and animal species and provide corridors and migration routes along the river systems. Over twenty SGNC (see below) and several additional rare and endemic species depend on hill prairies for their existence. As the acreage of these habitats decline, the future of these species is placed in jeopardy. In addition to outright habitat loss, these hill prairies are also becoming more fragmented. This limits the dispersal of hill prairie species and increases species extinction at individual sites.

Management of some hill prairies has been ongoing for nearly three decades. Control of invasive and exotic plant species and re-introduction of fire can have rapid and profound positive impacts on these habitats and the species that depend on them. The technology for restoration of these habitats and species is well known, widely practiced, efficient, and effective. Given the current state of the art technology, hill prairie restoration on a large scale is feasible and likely to quickly result in the desired outcomes.

However, we currently lack the resources to address hill prairie restoration on most of the sites that need it. Without a substantial concerted effort to increase management at these sites, Illinois will likely lose much of the remaining acreage of this rare habitat type and the rare species that depend upon it. Management at some of these sites could easily be considered triage by planning for work on the most critical cases that still have restoration potential. Funding for this project will allow us to concentrate our focus and make a substantial positive impact on the community.

Lack of management on these sites is only one aspect of the problem. There is also a critical lack of understanding about the significance and importance of these communities. Prairies in general is underappreciated in Illinois because of its virtual elimination from the landscape. The majority of hill prairies are located on privately owned land in rural areas. Hill prairies are generally small and due to their position on rugged topography have little economic use in a traditional, agricultural sense. Therefore, landowners generally have little appreciation for the importance of maintaining these prairies. This project will allow Illinois Department of Natural Resources (IDNR) biologists and Illinois Nature Preserves Commission (INPC) field staff (as listed in Personnel Section) to approach landowners with monetary assistance for hill prairie management and provide an opportunity to educate landowners about these significant resources. In addition, new, non-traditional uses and values of hill prairies may be recognized. The intent is that landowners will take an interest in maintaining their hill prairies and possibly take steps toward long term protection.

Without the understanding and commitment of landowners, we may be unable to conserve this rare community and associated species for the long term. This type of approach will give us the best chance to build partnerships with private landowners of resources of statewide significance and concern. Moreover, partnerships will be formed with other public agencies and private organizations who share the common goal of hill prairie conservation and protection.

This project will expand habitat for the following SGNC identified in the IWAP (Appendix 1):

- Eastern narrowmouth toad
- Timber rattlesnake
- Great plains rat snake
- Western hognosed snake
- Slender glass lizard
- Coachwhip
- Flathead snake
- American woodcock
- Red headed woodpecker
- Yellow billed cuckoo

Northern bobwhite
Northern flicker
Prairie warbler
Field sparrow
Yellow breasted chat
Striped scorpion
Whitney's underwing
Ottoe skipper
Cobweb skipper
Arogos skipper
Regal fritillary
Fichiella robersoni
Flexamia albida
Paraphlepsius texanus
Polyamia dilata
Scaphytopius vacciniim
Schinia gloriosa

A number of plant species in greatest need of conservation in Illinois would also benefit from the project. They include:

Pale false foxglove
Wooly milkweed
Narrow leaved milkweed
Large ground plum
Kittentails
Wooly buckthorn
Hill's thistle
White lady's slipper orchid
Whitlow grass
Prairie trout lily
Prairie spurge
Dwarf bedstraw
Slender heliotrope
Crested coral-root orchid
Climbing milkweed
Pink milkwort
Missouri orange coneflower
False melic grass
Cliff goldenrod
Arrowwood
White camass

In addition, the diversity and distribution of hill prairie insect species is not well known. While some hill prairie sites have had insect inventories completed in the past, Fults Hill Prairie, one of the state's largest and highest quality hill prairie sites has only had some limited inventory work done. Having a better understanding of the insect diversity at this site will also give us insight into the possible diversity at numerous other hill prairie sites in southwestern Illinois. Much of the more comprehensive insect inventory work has been done on hill prairie sites in Central Illinois. It is quite possible that the central Illinois species assemblages are significantly different from those in Southwestern Illinois, especially considering the western influences on other plant and animal distributions in this part of the state (e.g. plains scorpion, Missouri coneflower). There may be additional species in greatest need of conservation that can be identified in the IWAP as a result of this research.

Last year during the Illinois Hill Prairie Conference, there was contentious discussion about the effects of prescribed burning on insects in hill prairie systems. As a result of those discussions and a paucity of research on the subject, one of the attending researchers developed a proposal to specifically look at the effects of fire on ground-dwelling insects at Fults Hill Prairie. Although this is only a subset of the research needed, it is a step towards better understanding of how the commonly used practice of prescribed burning may or may not affect prairie insects. Considering that prescribed burning is readily promoted as a necessary management tool on this community type, a better understanding of its effects is needed to assure that we consider all species in greatest need of conservation as well as rare and declining habitat types.

If other critical research needs that address goals of the IWAP are identified, these may also be funded through this grant, not to exceed 5% of the total grant value.

Objectives (Revised and Updated)

Objective 1. Identify Additional Work Sites and Restoration Needs. The majority of the following specific tasks will be accomplished during the 3rd year of the project. Time lines for each of the tasks listed are given in the Project Schedule table on pages 8-9. Initially, approximately 90 potential work sites were identified. We began work on 41 sites as of the writing of this amendment. More of these original sites will receive work through this amendment and at least 20 additional sites will be added to the Potential Work Sites list. These will be the sites addressed in Objectives 2 and 3 also. Specific acreage for each site has not been determined yet, but through objective 2 and 3, we intend to determine acreage figures.

Category 1 sites (sites with existing management agreements or plans)

- 1.1 Develop a management plan and cost estimate for each site chosen.
- 1.2 Determine what work items will be done by contractors and what will be done by IDNR and INPC staff.
- 1.3 Confirm landowner approval of management plan

Category 2 sites: (sites with no existing management agreements or plans)

- 1.1 Meet with landowners
- 1.2 Develop a management plan and cost estimate for each site chosen.
- 1.3 Determine what work items will be done by contractors and what will be done by IDNR and INPC staff.
- 1.4 Get landowner approval of 3 year plan

Objective 2. Restoration and Management. The majority of the following specific tasks will begin during the 1st to 2nd years of the project and will continue through the 6th year. Time lines for each of the tasks listed are given in the Project Schedule table on pages 8-9. This is the main focus of the project and will use a majority of the funding/time allocated in contractual services, commodities, and staff time.

- ~~2.1 Group the chosen sites into sub-project areas by location. Completed~~
- ~~2.2 Develop project specifications and bid packages for each sub-project area. Completed~~
- ~~2.3 Follow appropriate administrative procedure to hire a contractor for each sub-project area. Completed~~
- 2.4a Sub-project managers develop work orders for each additional site planned for management.
- 2.4b. Sub-project managers meet with contractor to discuss details of project on sites.
- 2.5 Contractor completes work as specified and discussed over the four year period.
- 2.6 IDNR and INPC staff complete planned work items on project sites over five year period.
- 2.7 IDNR and INPC staff inspect contractor work to assure adequate completion.

Objective 3. Monitoring. The following tasks will be accomplished during the 2nd and 3rd year of the project (task 3.1); during the 3rd-4th Q of the 5th year and the 1st-2nd Q of the 6th year (task 3.2); and during the 1st Q of the 2nd – 6th year (task 3.3). Time lines for each of the tasks listed are given in the Project Schedule table on pages 8-9.

- 3.1 Determine extent of prairie and other target communities before any restoration work for the grant is started, using GIS or GPS technology.
- 3.2 Determine extent of prairie and other target communities after restoration work for the grant is completed, using GIS or GPS technology, and compare with baseline data. The final report may take longer because of the reassessment of sites, so an additional 6 months was added to the time line to accommodate that possibility.
- 3.3 Develop an annual report each year of the grant to determine overall status and progress.

Objective 4. Education and Training. The following tasks will be begin during the 4th Q of the 1st year and will continue through the 2nd Q of the 6th year. These tasks will use approximately \$20,000 total in contractual services and staff time. Time lines for each of the tasks listed are given in the Project Schedule table on pages 8-9.

- 4.1 Contact other local agencies and organizations to identify opportunities to host training workshops.
- 4.2 Complete at least three prescribed burning or management workshops in two different sub-project areas.
- 4.3 Develop literature on prescribed burning or other management of hill prairies and bluffs for distribution to landowners and organizations that would have an interest in this work.
- 4.4 Coordinate other possible activities and outreach opportunities with the Hill Prairie Initiative being developed by the IDNR.

Objective 5: Critical Research Needs. The following tasks will begin during the Spring of 2010 and continue through the rest of the grant period as needed.

- 5.1 Contract with researcher to complete necessary field work, data collection and analysis.
- 5.2 Assist researchers as needed, especially to conduct prescribed burns for fire effects study. Provide other guidance as needed to assure that needed data is collected.
- 5.3 Review and approve completed research results and data.

Expected Results or Benefits: (Revised and Updated)

We expect the result to be a significant increase in the amount of actual hill prairie habitat in the target project area which includes approximately 20 counties. Through active management and restoration we aim to maintain and expand current hill prairie acreage and enhance habitat quality on approximately 50-60 target sites, and increase the size of these areas on average by 20- 25%. Additional funding will allow for more follow up on sites being managed and more acreage and/or prairies treated at the larger sites with multiple prairies. The expansion of habitat should also lead to an increase in populations of the species found at these sites which include over 20 species listed in the IWAP as species in greatest need of conservation (SGNC). The areas targeted also include many high quality natural areas that are among the highest diversity prairies remaining in "The Prairie State." Management actions on these sites will help to preserve the diversity that is currently threatened by exotic and invasive species encroachment and general lack of management. We also believe that a substantial focus on these community types, especially on private lands, will increase public awareness of and appreciation for hill prairie and bluff habitats. Additional educational efforts through this project will support this objective.

The research component of this project may identify new locations of Species in Greatest Need of Conservation and may also identify additional species that should be added to the SGNC invertebrate list of the IWAP. It will also provide more comprehensive baseline data for a significant high quality hill prairie site in Southwestern Illinois. The study on potential fire effects on ground-dwelling insects may provide better data on the actual effects management practice of prescribed burning

In addition to specific species benefits, the project addresses the following parts of the IWAP (Section III: C): Grassland Habitat Goals 2 and 6; Forest Habitat Goals 1 and 2; Open Woodland Habitat Goals 2 and 3; and Primary Habitat Goal 1; [IWAP \(Section III: D\) Challenges for Wildlife and Habitat Resources, Species in Greatest Need of Conservation, Invertebrates](#); and IWAP (Section III: E) Farmland/Prairies Campaign Actions 1b, 2b, 3a, f and 7; Forest Campaign Actions 1a, 2b and d, 4, and 7; Invasive Species Campaign Actions 3b and 4; Land and Water Stewardship campaign Actions 1b, 2a, 3, 4, and 6; and specific management guidelines for the natural divisions involved in the project (Section IV) (IDNR, 2005).

Approach: [\(Revised \)](#)

Objective 1. Identify Work Sites and Restoration Needs.

IDNR and INPC field staff will prioritize sites for work considering the following factors: presence of high quality remnants, E&T and rare (including SGNC) species habitat, high restoration potential, historical presence (determined by analysis of historical aerial photos), connectivity of habitat, and landowner interest. Main target sites are located along the Mississippi and Illinois River Bluff systems but other sites along smaller stream systems have also been included. In addition, IDNR and INPC field staff will assess the current or potential use of other funding sources, such as LIP, CREP, CRP, or other SWG projects such as the T-5-M and T-28-M Public Lands projects. If other federal funding is already being used on a potential project site, field staff will either avoid using SWG funding at the site or coordinate with staff working on the other program to assure that the two projects have clearly defined scopes (in specific location, time or type of work). Field staff will also consider which program may be best suited to a particular site or landowner, and will accordingly contact program to staff to assure effective uses of funding sources and avoid duplication of effort. (See Related Programs section).

The sites will fall into two general categories: (1.) sites with previous management history and current management agreement, and (2.) new sites with no current management agreement. Sites in category 1 will be selected according to the above-mentioned factors and restoration needs including a cost estimate will be determined for each by IDNR and INPC staff. Sites in category 2 will likely require additional steps including initial landowner contact and assessment of resource condition, which will also be accomplished by IDNR and INPC field staff. For each chosen project site, they will develop a management plan based on restoration needs and including cost estimates and how the work will be accomplished. For sites that are not under some type of easement or protection program, landowners will be asked to sign an agreement to maintain the site in its natural condition for 10 years.

Objective 2. Restoration and Management Approach including follow-up:

For each site, IDNR and INPC field staff will determine what management our staff can complete and what work will be accomplished through contractors. Typical work will include brush control, exotic species control, fireline development, prescribed fire preparation, and prescribed burning. A chipper or other methods of removing excess cut material may be used in areas where the amount of material is a hindrance to restoration. Some prescribed grazing (likely using goats) may be used experimentally to assess its utility and efficiency in managing hill prairie and bluff communities. Sites chosen for this treatment will not be the highest quality sites and will be monitored closely for any negative effects. We have followed our standard procedures for hiring a contractor including developing job specifications, soliciting bids, and getting necessary approvals. IDNR/INPC field staff will develop work orders for each site and then will meet with the successful contractor to make a field visit to each site to explain site specific work and details of the job site. Contractor will complete the designated work within the remaining grant period. IDNR/INPC field staff will complete their management work as outlined in the management plan. IDNR/INPC field staff will meet with contractors as needed to inspect the work and provide any additional guidance. Because prescribed burning is such an important component to hill prairie management, we will pursue using contractors to complete prescribed burns and/or assist on burn crews.

Overall, this objective will be the longest part of the grant and will run from the start of year one to the end of the fourth quarter in year six (5/15/07 - 2/28/13). For Category 1 sites, restoration and management work can begin immediately after the grant is approved and the management needs are identified. For Category 2 sites, actual restoration and management actions will not begin until after initial landowner contact and resource assessment is completed. ~~Therefore management work may not begin on these sites until year two of the grant.~~

Objective 3. Monitoring:

In order to adequately gauge the impact of the project on our chosen sites we will use either GIS and/or GPS technology to determine the baseline (beginning) condition of all project sites. This occurred for currently managed sites during the second year of the grant (5/15/08 - 4/30/09). This work will continue and be done as needed as new sites are added. After the restoration work is completed, each site will be assessed again in comparison to the baseline condition to determine to amount of area restored. This is planned for the last year of the grant (11/1/12 - 5/31/13).

Objective 4. Education and Training:

Outreach is critical to generate awareness and interest in hill prairies and develop a foundation of support. IDNR staff in cooperation with private groups and other government agencies (local, state, federal) will initiate an awareness campaign through media outlets, public open houses, or field trips designed to introduce people to the prairie. IDNR will produce or contract out development of informational material to go to various targeted audiences. This will have a dual role of presenting the problem of the loss of hill prairie and the n developing a network to address the problem.

Fire is a fundamental force in the maintenance of these grassland ecosystems. While it is an effective and cost efficient management practice, safety is the primary concern. Prescribed fire requires careful planning and proper training. The IDNR and INPC staff have training, can plan burns, and write burn prescriptions, but often there is more burning needed than can be accomplished by staff. Development of a coordinated team of trained landowners, volunteers, and professional fire practitioners for hill prairies and other natural areas is an additional objective of this project. We will partner with other agencies, organizations and local fire departments and plan to provide training opportunities to landowners interested in conducting prescribed burns.

One event (Festival of the Bluffs, Monroe Co.) has been completed. The two additional workshops or outreach events will be completed by the end of the grant period, as needed in cooperation with our partners.

Objective 5. Critical Research Needs

2. Insect inventory – monthly collection throughout the growing season for a period of two years. An electronic data base of all insects collected over the course of this study will be developed. Identification will be to the lowest possible taxonomic level. Voucher specimens will be housed in the Invertebrate Collections at Southeast Missouri State University and readily available to interested researchers and conservation agency representatives.

Insects will be collected monthly during the growing season for a total of two years. Collection will occur at multiple prairie sites within the nature preserve. Collecting techniques will include but not limited to sweep-netting, pitfall traps, hand-collection, aspirators for small specimens, emergence cages for collection of stem borers and digital photography. Collection effort will occur over a two day period each month to begin in April and conclude after first frost of the year

2 Assessment of fire management practices for the maintenance of current hill prairie sites at Fults Hill Prairie Nature Preserve based on possible effects on the ground-dwelling insect assemblages. Comparisons will be quantitatively made relative to hill prairies with recent burn histories, hill prairies not burned in recent 10 years and surrounding forested areas. Prescribed burns will be done on a subset of the experimental plots and then sampled again the following season to provide a classic, pre-treatment/post-treatment experimental design.

Location: (Revised)

Five new project sites are being added through this amendment. See attached list for information.

Project location includes the major bluff systems along the Mississippi River, Illinois River, and areas along other stream systems with significant hill prairie and bluff resources. An overall map of the potential project sites is attached along with individual maps of sites, or grouped sites.

Related Grants: No Change

Compliance No Change

Grant Proposal Support Documentation: (No Change by DT)

The following documents are attached in support of this grant proposal:

1. Application for Federal Assistance (Standard Form 424)
2. Grant Agreement - Budget Information
3. Federal Aid Section 7 Evaluation Form
4. Illinois Clearinghouse Response per Federal Executive Order 12372
5. NEPA Compliance Checklist and Environmental Assessment
6. Location Maps.

Project Schedule: The planned project period is 5/15/07 - 8/31/2013 - [Revised](#)

| Objectives | Year 1 | | | | Year 2 | | | | Year 3 | | | | Year 4 | | | | Year 5 | | | | Year 6 | | | | Year 7 | | |
|---|--------|------|-------|------|--------|------|-------|------|--------|------|-------|------|--------|------|-------|------|--------|------|-------|------|--------|------|-------|------|--------|------|--|
| | 5/07 | 8/07 | 11/07 | 2/08 | 5/08 | 8/08 | 11/08 | 2/09 | 5/09 | 8/09 | 11/09 | 2/10 | 5/10 | 8/10 | 11/10 | 2/11 | 5/11 | 8/11 | 11/11 | 2/12 | 5/12 | 8/12 | 11/12 | 2/13 | 5/13 | 8/13 | |
| Objective 1. Identify Work Sites and Restoration Needs (Category 1 sites): | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.1 Develop a management plan and cost estimate for each site chosen. | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | | |
| 1.2 Determine what work items will be done by contractors and what will be done by IDNR and INPC staff. | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | | |
| 1.3 Confirm landowner approval of management plan | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | | |
| Objective 1. Identify Work Sites and Restoration Needs (Category 2 sites): | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.1 Meet with landowners | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | | |
| 1.2 Develop a management plan and cost estimate for each site chosen. | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | | |
| 1.3 Determine what work items will be done by contractors and what will be done by IDNR and INPC staff. | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | | |
| 1.4 Get landowner approval of 3 year plan | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | | |
| Objective 2. Restoration and Management approach | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.1 Group the chosen sites into sub-project areas by location. | | X | X | X | X | | | | | | | | | | | | | | | | | | | | | | |
| 2.2 Develop project specifications and bid packages for each sub-project area. | | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | |
| 2.3 Follow appropriate administrative procedure to hire a contractor for each sub-project area. | | X | X | X | X | X | X | | | | | | | X | X | X | X | | | | | | | | | | |

| Objectives | Year 1 | | | | Year 2 | | | | Year 3 | | | | Year 4 | | | | Year 5 | | | | Year 6 | | | | Year 7 | |
|--|--------|------|-------|------|--------|------|-------|------|--------|------|-------|------|--------|------|-------|------|--------|------|-------|------|--------|------|-------|------|--------|------|
| | 5/07 | 8/07 | 11/07 | 2/08 | 5/08 | 8/08 | 11/08 | 2/09 | 5/09 | 8/09 | 11/09 | 2/10 | 5/10 | 8/10 | 11/10 | 2/11 | 5/11 | 8/11 | 11/11 | 2/12 | 5/12 | 8/12 | 11/12 | 2/13 | 5/13 | 8/13 |
| 2.4a Sub-project managers develop work orders for each additional site planned for management.. | | | | | | | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | |
| 2.4b. Sub-project managers meet with contractor to discuss details of project on sites. | | | | | | | | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | |
| 2.5 Contractor completes work as specified and discussed over the designated year period. | | | | | | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | |
| 2.6 IDNR and INPC staff complete planned work items on project sites over three year period. | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | |
| 2.7 IDNR and INPC staff inspect contractor work to assure adequate completion | | | | | | | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | |
| Objective 3. Monitoring approach: | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.1 Determine extent of prairie and other target communities before any restoration work for the grant is started, using GIS or GPS technology. | | | | | X | X | X | X | X | X | X | X | | | | | | | | | | | | | | |
| 3.2 Determine extent of prairie and other target communities after restoration work for the grant is completed, using GIS or GPS technology, and compare with baseline data. | | | | | | | | | | | | | | | | | | X | X | X | X | X | X | | | |
| 3.3 Develop an annual report each year of the grant to determine overall status and progress. | | | | | X | | | | X | | | | X | | | | X | | | | X | | | | X | |
| Objective 4. Education and Training approach: | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.1 Contact other local agencies and organizations to identify opportunities to host training workshops. | | | | | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | |
| 4.2 Complete at least two prescribed burning or management workshops in two different sub-project areas. | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | |
| 4.3 Develop literature on prescribed burning or other management of hill prairies/bluffs for distribution to landowners and organizations that have an interest. | | | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | |
| 4.4 Coordinate other possible activities and outreach opportunities with the Hill Prairie Initiative being developed by the IDNR. | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | |

Project Budget – Total (Revised)

Hill Prairie/Bluff Habitat Restoration
 Effective Dates: 5/15/07 - 8/31/13

| Object Categories | Federal Request | IDNR Cost share | Total |
|--|---|--|---|
| Salaries, Wages and Fringe Benefits | | | |
| District Heritage Biologists (approx \$27,000 149,161.00) | | INPC field staff (approx \$27,000 95,000) | |
| Regional Administrator-Natural Heritage (approx \$6241.00 75,000) | | | |
| Activities include landowner contact, management planning, contractor coordination, project administration and actual management activities including burning and invasive control. | \$0.00 | \$268,632.00 \$319,161.00 | \$268,632.00 \$319,161.00 |
| Fringe Benefits included in salaries above (15.4%) | | | |
| Travel | | | |
| None | \$0.00 | \$0.00 | \$0.00 |
| Supplies (Commodities) | | | |
| Chemicals for exotic and invasive control | \$0.00 | \$55,000.00 \$55,349.66 | \$55,000.00 \$55,349.66 |
| Contractual Services | | | |
| Contractors to accomplish exotic and invasive species control, burning and burn prep, etc on identified project sites. Also will include paying contractors to provide workshops for landowners and managers and production and printing of educational materials to support and promote the effort. | \$697,599.00 \$250,000.00 | \$597,599.00 \$200,000.00 | \$947,599.00 \$797,599.00 |
| Equipment | | | |
| None | \$0.00 | \$0.00 | \$0.00 |
| Total Direct Costs | \$597,599.00 \$624,511.00 | \$523,632.00 \$697,599.00 | \$1,121,231.00 \$1,322,110.00 |
| Indirect Costs | | | |
| 21.59% 22.9% on Salaries, Wages, and Fringe Benefits only | \$0.00 | \$73,967.00 \$73,088.00 | \$73,967.00 \$73,088.00 |
| Totals | \$597,599.00 \$697,599.00 | \$597,599.00 \$1,395,198.00 | \$1,195,198.00 \$1,395,198.00 |

| **Personnel:** [No Change](#)

| **Literature Cited:** [No Change](#)

Office of Resource Conservation

State of Illinois

Grant Segment/Proposal
T-43-D-1 Amendment #4

Reason for Amendment: This amendment will add \$150,000.00 in FY'11 Federal Funds to continue management on 50-60 hill prairies in Illinois. No additional time will be required. Federal Funds will be matched with \$247,500.00 in state funds (personnel and contractual). This will meet the new 65:35 match requirements

Project Number: T-43-D-1 Amendment #4

Project Title: Hill Prairie/Bluff Habitat Restoration

Purpose: No Change

Objectives: No Change

Expected Results or Benefits: No Change

Approach: No Change

Location: No Change

Related Grants: No Change

Compliance: No Change

Grant Proposal Support Documentation: No Change

The following documents are attached in support of this grant proposal:

1. Application for Federal Assistance (Standard Form 424)
2. Grant Agreement - Budget Information
3. Federal Aid Section 7 Evaluation Form
4. Illinois Clearinghouse Response per Federal Executive Order 12372
5. NEPA Compliance Checklist and Environmental Assessment
6. Location Maps.

Project Budget -- Changes as noted

Hill Prairie/Bluff Habitat Restoration
 Effective Dates: 5/15/07 - 8/1/13

| Object Categories | Federal Request | IDNR Cost share | Total |
|--|-------------------------|-------------------------|---------------------------|
| Salaries, Wages and Fringe Benefits | | | |
| District Heritage Biologists (approx \$27,000 152,000.00) | | | |
| INPC field staff (approx \$27,000 95,000) | | | |
| Regional Administrator-Natural Heritage (approx \$75,000) | | | |
| Activities include landowner contact, management planning, contractor coordination, project administration and actual management activities including burning and invasive control. Fringe Benefits included in salaries above (15.4%) | \$0.00 | \$322,600.00 | \$322,600.00 |
| | | \$470,100.00 | \$470,100.00 |
| Travel | | | |
| None | \$0.00 | \$0.00 | \$0.00 |
| | | \$402.53 | \$402.53 |
| Supplies (Commodities) | | | |
| Chemicals for exotic and invasive control | \$0.00 | \$55,349.66 | \$55,349.66 |
| Contractual Services | | | |
| Contractors to accomplish exotic and invasive species control, burning and burn prep, etc on identified project sites. Also will include paying contractors to provide workshops for landowners and managers and production and printing of educational materials to support and promote the effort. | \$697,599.00 | \$250,000.00 | \$947,599.00 |
| | \$847,599.00 | \$317,752.22 | \$1,165,351.22 |
| Equipment | | | |
| None | \$0.00 | \$0.00 | \$0.00 |
| Total Direct Costs | \$697,599.00 | \$627,949.66 | \$1,325,548.60 |
| | \$847,599.00 | \$843,604.41 | \$1,691,203.41 |
| Indirect Costs | | | |
| 21.59% on Salaries, Wages, and Fringe Benefits only | \$0.00 | \$69,649.34 | \$69,649.34 |
| | | \$101,494.59 | \$101,494.59 |
| Totals | \$697,599.00 | \$697,599.00 | \$1,395,198.00 |
| | \$847,599.00 | \$945,099.00 | \$1,792,698.00 |

Personnel: No Change

Literature Cited: No Change

