

**MONITORING AND EVALUATION  
REPORT  
FISCAL YEARS 2013 and 2014**



**Midewin National Tallgrass Prairie  
USDA Forest Service**

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# **Fiscal Years 2013 and 2014 MONITORING AND EVALUATION REPORT**

## **MIDEWIN NATIONAL TALLGRASS PRAIRIE**

### **EXECUTIVE SUMMARY**

This report documents Land and Resource Management Plan (Prairie Plan) monitoring completed in Fiscal Years 2013 and 2014: October 1, 2012 through September 30, 2014. It provides a comprehensive account of our activities based on the Prairie Plan. We have evaluated the monitoring data to determine if management and program direction at the Midewin National Tallgrass Prairie has been effective.

The report also identifies if needed, “course corrections” in program management and direction. We are pleased to report that we are “on course” and the activities, projects, and tools that we have been applying are working as intended. Additionally, specific recommendations to further Prairie Plan implementation are included at the end of certain sections to aid in identifying potential future projects.

The Prairie Plan, implemented since February 2002, requires detailed planning at the “site-specific” level in compliance with the National Environmental Policy Act (NEPA). During plan implementation, analysis of environmental effects is conducted for site-specific projects. Once a decision is made to begin site-specific activities such as building a new recreation trail or starting a new restoration, we monitor changes to relevant resources to see if we are accomplishing the goals we set in the Prairie Plan. In FY2013/FY2014, the Prairie Supervisor made three decisions to approve proposals for Water Improvement Structures, building a Prairie Learning Center, and Hoff Road Ditch Maintenance.

Activities undertaken in Fiscal Years (FY) 2013-2014 (October 1, 2012 - September 30, 2014) towards fulfillment of Midewin’s Prairie Plan goals and objectives include:

1. Work towards restoration of tallgrass prairie ecosystems and investment in long-term prairie ecology on over 8,000 acres, made possible with support from key partners.
2. Preparation of NEPA analyses and making site-specific decisions for planned restoration projects; three NEPA analyses were completed in 2013/14.
3. Production of native prairie plant seeds to increase Midewin’s capacity to meet restoration goals.
4. Maintenance of existing infrastructure and prairie conditions for future use, including grazing, mowing grasses and noxious weeds on more than 7,000 acres.
5. Construction of new recreational facilities, including new trails, bridges, and a scenic overlook.

6. Maintaining and improving access for public recreation in FY2013 on 7,200 acres of Midewin based on the U.S. Army's cleanup schedule.
7. Offering a variety of environmental education programs such as Mighty Acorns, the El Valor partnership, South Point Academy, tours, and a lecture series, to reach out to over 1,800 people of all ages.

Continued monitoring with generous contributions from many hard-working volunteers and partners has allowed us to observe and record the effects of actions taken to implement the Prairie Plan. Our team has evaluated the data collected in FY2013 and FY2014 from previous years and we have made the following conclusions:

- We are meeting the Prairie Plan goals and objectives.
- The Prairie Plan management prescriptions are being applied appropriately.
- The results of land management are responsive to the key issues, concerns, and opportunities.
- New issues, concerns, and opportunities have been adequately addressed.

In summary, as of 2015, we have determined that the desired outcomes in the Prairie Plan are being met, and that the assumptions made during the initial planning stages are still valid today.

Thank you to each person, group, and organization, and to all of Midewin's partners who have made, and continue to make, lasting contributions at Midewin. Volunteers bring a wonderful diversity of skills and knowledge that enhance native seed production, trail construction and maintenance, environmental education, heritage projects, and many other activities. Your combined efforts have greatly furthered restoration efforts and development of recreation facilities at Midewin.

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# INTRODUCTION

The Midewin National Tallgrass Prairie is a “prairie under construction” as restoration of tallgrass prairie ecosystems continues on the former Joliet Army Ammunition Plant landscape. The potential of Midewin is one of vast beauty and richness of biological resources that visitors will experience to greater degrees with passing years, as the result of the activities undertaken now as Prairie Plan is implemented.



The Midewin Land and Resource Management Plan (Prairie Plan) was approved in February 2002 and amended in 2008. Chapter 6 of the Prairie Plan outlines the monitoring and evaluation program. This report covers monitoring and evaluation, reporting on recent actions implementing the Prairie Plan. Monitoring of actions and evaluation of the results of monitoring are essential steps in effective implementation of the Prairie Plan. These steps help determine if management activities are meeting the direction of the Prairie Plan and if there is a need to change the Plan’s desired conditions, goals, objectives, standards, and guidelines. Adaptation of improved management and planning decisions is the expected result of monitoring and evaluation at Midewin.

## **Why we monitor**

Monitoring records the effects of actions taken to implement the Prairie Plan, which lists specific monitoring questions. This report responds to those questions for FY 2013/2014 and determines:

1. Whether goals and objectives outlined in the Prairie Plan are being met;
2. Whether management prescriptions are being applied appropriately;
3. Whether the results of land management are responsive to the key issues, concerns, and opportunities;
4. Whether new issues, concerns, and opportunities are arising;
5. Whether environmental effects are occurring as predicted; and
6. Whether costs of implementing the Prairie Plan are as predicted.

Monitoring responses to these questions and the resulting evaluation of the responses are the tools used to help determine the success or shortcomings of Prairie Plan implementation, if the desired outcomes are being realized, and if the assumptions in the initial planning stages are still valid. Through this monitoring and evaluation process we are able to assess the quality of Prairie Plan implementation and the need for changes in Plan direction. Monitoring addresses the physical, biological, social, and cultural elements along with emerging issues. Evaluation addresses the results of monitoring, and makes recommendations for amendments, revisions, or changes in management direction in the Prairie Plan.

## **How existing data are used in monitoring and evaluation**

Because we use existing information to the extent possible, monitoring is often comprised of field inspections based on sampling, where the frequency, precision, and reliability depend on relative importance and identified needs. We use a full spectrum of data collection techniques, including:

1. Site-specific observations by specialists;
2. Field assistance trips;
3. Formal management reviews; and
4. Discussions with other agencies, partners, and public users and visitors.

Ranging from simple observations to systematic data collection, monitoring is conducted at three levels:

- 1) **Implementation:** are projects accomplished as designed in conformance with Prairie Plan goals?
- 2) **Effectiveness:** are projects working to meet management goals and direction?
- 3) **Validation:** is Prairie Plan guidance satisfactory to comply with planning regulations, policies, and goals?



# MONITORING & EVALUATION RESULTS

## *Volunteer Program*

### **How have volunteers and partners contributed to the Midewin?**

The volunteer program is critical to three of the four primary objectives of Midewin's mission: restoration, education and recreation. Volunteer spirits and accomplishments provide a strong momentum that Midewin relies on to stay true to its mission. The volunteer program is possible through a partnership between The Nature Conservancy and the U.S. Forest Service. The Nature Conservancy provides a volunteer coordinator and assistant to aid in recruiting, training, managing and recognizing Midewin's volunteers.

### **FY2013 Highlights**

1. Midewin received awards for the 2013 U.S. Forest Service Eastern Region volunteer award program for Midewin's entire volunteer program and for an individual volunteer, Lorin Schab. Honorable mentions were granted to Wally Duda, Johannah Deck and the Midewin trail stewards. The Eastern Region includes 17 units within 20 states so this is a very honorable and competitive type of recognition.
2. The Nature Conservancy (TNC) designed and donated several items to the U.S. Forest Service (USFS) that benefit the volunteer program. Three volunteer feather banners, with USFS & TNC logos, are labeled 'Volunteer for Nature Today' and make volunteer events more visible to the public. TNC also designed and donated colorful bandanas that were used as tokens of appreciation at multiple events. These color-coded bandanas also make it easy to split large groups in to smaller ones for different activities. TNC donated a bilingual bird migration game that has been used with a couple of Hispanic youth groups.
3. In FY2013 and 2014 Midewin scheduled volunteer days every Thursday, year round, rain or shine, with the last Thursday being dedicated to trail work.
4. For two weeks in November of 2012, volunteers were recruited to assist USFS archeologists in conducting surveys on a 250 acre site by digging and sifting soil to uncover and any cultural artifacts that should be documented. This activity was necessary in preparing the site for the introduction of bison.
5. In September of 2013, Kathryn Gorman was hired by TNC as the new Assistant Volunteer Coordinator for Midewin's volunteer program. She was introduced to Midewin by a member of the Midewin Alliance and then began volunteering for a few months before this position became available. This shows how valuable word of mouth can be and how caring about a natural area often happens through volunteer and visitor experiences.

6. In addition to traditional annual events such as Earth Day Celebration, Spring into the Prairie, National Public Lands Day, Trick-or-Treat Bunker Style, and the Volunteer Recognition Banquet, Midewin staff coordinated a large event to introduce the partnership between the U.S. Department of Agriculture and Coca-Cola. A grant from Coca-Cola, with match funds from the National Forest Foundation (NFF), will help restore the South Prairie Creek Outwash Plain Midewin. The grant is part of a larger partnership among Coca-Cola, the U.S. Department of Agriculture, and NFF to restore watersheds on National Forest lands. At the event on September 13, 2013, Coca-Cola President Steve Cahillane announced the partnership. Other representatives gave speeches such as U.S. Secretary of Agriculture Tom Vilsack, USFS Chief Tom Tidwell, and National Forest Foundation President Bill Possiel. This event was supported by 20 volunteers who helped with parking, greeting guests, photography, guiding tours, setting-up, lunch planning, planting wildflowers and handing out tokens of appreciation. An additional 50 Coca-Cola volunteers helped plant over 3000 wildflowers.

## **FY2014 Highlights**

1. In 2014, four new volunteer groups joined in Midewin's restoration efforts including Boy Scout Troop 63, Christ the King Parish, Northeastern Illinois University, and Morton College. The most recent group of 26 students came from Morton College, coordinated by the Regional Director (IL/Midwest) USDA Hispanic-Serving Institutions National Program.

2. Two new public programs were added to share more of Midewin's cultural heritage. With volunteer support, the archaeologist lead a new tour, called *Highways Through Time*, to explain that Midewin looks as it does today as a result of 10,000 years as a nexus of transportation. This includes Native American trade routes, explorers Marquette and Joliet, the I&M Canal Corridor, the railroad that carried Lincoln's body to Springfield in 1865, the famous Rt. 66, and the present and future expectations for transportation in the area. The new Midewin for Kids program, called *Can You Dig It?*, explains how people have lived on this land for thousands of years. With volunteer support, Midewin's Archeologist helps children make maps, learn about the tools an archaeologist uses, and get out in the field to investigate a site from the 1800's.

3. The Nature Conservancy donated a bison pelt and a backdrop display that helps promote the bison re-introduction at Nachusa Grasslands and Midewin. The backdrop and pelt are currently being displayed in the Welcome Center at Midewin and they are also used at onsite and offsite events. Midewin volunteer, Joe Hartsfield constructed a proper stand for the pelt that was lightweight, easily mobile and provides great presentation appeal.

4. The restoration team at Midewin started a new multi-year project with the ultimate goal to return the rare regal fritillary butterfly to the South Patrol Road Restoration. In June, over 25 volunteers planted 1,000 prairie violets, the food plant of regal fritillaries on and around the dry ridge in South Patrol Road. Regal fritillary larvae feed on violets

and large numbers of violets (thousands) are needed to support a viable population. We will also be planting nectar plants such as pale purple coneflower for the adults. The ultimate goal is to have three large groups of violets with at least 3,000+ violets at each site and lots of nectar plants.

5. In October of 2013, the government shutdown resulted in the cancellations of the following events, which is an estimated loss of 460 volunteer service hours.

- four restoration volunteer days with ~55 volunteers (200 hours)
- six volunteer-led public tours supported by 16 volunteers (50 hours)
- one Halloween event supported by 15 volunteers that attracts ~150 visitors (100 hours)
- two Mighty Acorns field trips for 100 youth volunteers supported by 12 volunteer instructors (90 hours)
- two water quality monitoring dates with 5 volunteers (20 hours)

In addition, five restoration volunteer days (130 hours) and three Mighty Acorns visits (160 hours) were cancelled due to bitter cold and deep snow levels, which decreased volunteer hours by another 290 hours.

#### Total Volunteer Base

	2009	2010	2011	2012	2013	2014	Change 2013-2014 (%)
No. of Group & Ind. Volunteers	586	664	470	481	493	496	3 (0.6%)
Group & Ind. Volunteer Hours	7,749	6,993	8,130	9,846	10,528	7,868 <sup>3</sup>	-2,660 (-25%)
No. of Youth Education Students	863	1,141	968	1,352 <sup>2</sup>	938	948	10 (1%)
Youth Education Stewardship Hours	886	1,230	1,274	1,510	1,057	975	-82 (-8%)

<sup>1</sup> This table is used to see natural fluctuations in our volunteer base over time. It is not necessarily useful in determining the success of the program because we are more interested in retention within certain programs, involving new groups and overall accomplishments.

<sup>2</sup> The significant increase in youth education students in FY12 was due to Spring Into the Prairie, a large event that lasted for 3 days for its first year. It will continue to be a one-day event instead, therefore involving less student visits.

<sup>3</sup> Hours decreased due to the loss of two schools in the Mighty Acorns program and the government shutdown. Also, the National Visitor Use Monitoring program produces hundreds of volunteer hours, but only happens every five years (which was conducted in FY13).

#### Retention Rates in Core Volunteer Programs FY2013

	2010	2011 <sup>2</sup>	2012	2013	2013 New	2013 Retained	Retention Rate Ratio 2013/2011
Restoration	1,476	1,184	1,725	1,312	164	1,148	97%
Eco Monitoring	79	79	61	62	14	48	61%
Ed/Interp.	57	72	75	64	15	49	68%
Trail Stewards	5	11	11	8	0	8	73%

<sup>1</sup> Retained means they have hours in the same department in more than one year, not necessarily consecutively. This means that if large groups come back after multiple year absences, it is possible to have a retention rate of over 100% for that year. Monitors, educators and stewards require the most training, therefore higher retention rates are desired. Restoration can accommodate more short term volunteers.

<sup>2</sup> FY11 is a good baseline year to use for comparisons and retention calculations until a program's capacity needs to significantly change.

#### Retention Rates in Core Volunteer Programs FY2014

	2010	2011 <sup>2</sup>	2012	2013	2014	2014 New	2014 Retained	Retention Rate Ratio 2014/2011
Restoration	1,476	1,184	1,725	1,312	1,206	124	1,082	91%

Eco Monitoring	79	79	61	62	75	19	56	71%
Ed/Interp.	57	72	75	64	58	16	42	58%
Trail Stewards	5	11	11	8	13	4	9	82%

<sup>1</sup> Retained means they have hours in the same department in more than one year, not necessarily consecutively. This means that if large groups come back after multiple year absences, it is possible to have a retention rate of over 100% for that year. Monitors, educators and stewards require the most training, therefore higher retention rates are desired. Restoration can accommodate more short term volunteers.

<sup>2</sup> FY11 is a good baseline year to use for comparisons and retention calculations until a program's capacity needs to significantly change.

## Restoration Individuals (not including group participants)

Fiscal Year	Restoration Individuals Only*
2009	159
2010	144
2011	172
2012	120
2013	127
2014	99

\* Group participation annually can vary greatly and therefore produces big fluctuations. For data analysis purposes, it is helpful to track a core base of *individuals only* each year. We do have several core, returning groups though too. One possibility for this decrease could be due to the elimination of several Saturday restoration volunteer days.

The monitoring results that follow reflect the specific monitoring questions in the Midewin Prairie Plan (Chapter 6) *Monitoring and Evaluation Plan*. Evaluations of the monitoring results are included with the narratives for each monitoring question. Trends that can be discerned from monitoring results are also addressed.

## 1. Program Accomplishments

### 1.1 *Determine how well objectives have been met by a quantitative comparison of outputs and services with those projected by the Plan.*

**Table 1. Proposed and Actual Management Activities and Actual Accomplishments: FY2013-2014.**

National Forest Fund Code	Project Description	FY 2013	FY 2014
CMFC Facilities Capital Improvements and Maintenance	Implement annual maintenance of Administrative Site. Design and build a visitor center.	Continued to work under agreement with FPDWC to design Midewin Wauponsee Trailhead.  Implemented Midewin "Front Door" project by installing banners, benches and table at Midewin Welcome Center.	Under agreement with FPDWC began construction of Midewin-Wauponsee Trailhead
CMRD Roads Capital Improvements & Maintenance	Eliminate backlog of deferred maintenance for administrative roads (approx. 5 miles/year).	No data available	No data available

<b>National Forest Fund Code</b>	<b>Project Description</b>	<b>FY 2013</b>	<b>FY 2014</b>
	Decommission unneeded roads in sensitive habitat, near tracts of native vegetation, & those that fragment grassland habitat or traverse wetlands or streams (approx. 10 miles/year, as funds allow).		
CMTL Trail Capital Improvements & Maintenance	Designate & maintain interim trails. Design & build permanent trails.	34 miles of trail maintained	34 miles of trail maintained
CWFS – Other Cooperative Funds	Deposit cooperator funds and donations; spend on authorized projects.	ExxonMobil collected funds used for Dolomite Prairie restoration.	No data available
DMDM Backlog Maintenance	Demolish former Army facilities and infrastructure as funds allow. Started with 22 transite warehouses and 16 railroad trestles.	Next reported in FY2017	Next reported in FY2017
FDFD Recreation Fee Demo Program	Improve visitor facilities & services.	No FDFD funds were allocated	No FDFD funds were allocated
HWHW Hazardous Waste	Continue environmental coordination & support. Continue wetlands & drainage confirmatory sampling for arsenic in fence lines, railroad ballast, and Kemery and Doyle Lake sediment.	No Hazardous waste removed	No Hazardous waste removed
LALW Land and Water Conservation Fund	Emphasize acquisitions that further Plan objectives and improve access for restoration and recreation.	No new lands acquired using this fund	No new lands acquired using this fund
NFIM Inventory Monitoring	Conduct above project level integrated resource inventories, inventory planning design, documentation, field data collection, data management and stewardship, and prepare reports. Maintain resource information systems; produce annual monitoring and evaluation report.	TES Monitoring: 9,170 acres	TES Monitoring 8,918 acres
NFLE Law Enforcement	Support Forest Service LE activities.	LE activities supported	LE activities supported

<b>National Forest Fund Code</b>	<b>Project Description</b>	<b>FY 2013</b>	<b>FY 2014</b>
NFLM Land Ownership Management	Administer & monitor special use permits. Continue boundary & title management.	9 special use permits administered; (4 for utility or road easements, 5 for agriculture use on 4,574 acres)	9 special use permits administered; (4 for utility or road easements, 5 for agriculture use on 3,706 acres)
NFN3 Native Plant Materials	Expand production of appropriate native plants for habitat restoration and other needs. Initiate/expand native plant/pollinator gardens for public education and habitat.	No new activity	No new activity
NFPN Forest Planning	Maintenance of existing Plan; prepare amendments as needed.	No Amendment needed.	No Amendment needed.
NFRG Grazing Management	Administer & monitor grazing permits for enhancement of grassland bird habitat (approx. 800-4,000 acres/year).	4,221 acres 10 grazing permits, 10 allotments managed.	3,752 acres 11 grazing permits, 11 allotments managed.
NFRW Recreation/ Heritage/ Wilderness	Outdoor recreation & management. Heritage resource protection, preservation, & interpretation. Environmental education (EE) programming. Interpretive tours & activities.	<p>Recreation: Completed the Environmental Assessment for the Prairie Learning Center</p> <p>Completed NVUM inventories</p> <p>Facilitated YCC crew and two NFF crews</p> <p>Connected with 2730 people through on and off site programs</p> <p>EE: Connected with 977 students through Mighty Acorns, Spring into the Prairie and El Valor.</p>	<p>Recreation: Facilitated YCC crew and two NFF crews</p> <p>Worked with numerous municipalities, county, and miscellaneous other entities to unify the vision of the Route 53 corridor</p> <p>7500 Volunteer Hours</p> <p>Connected with 5634 people through on and off site programs</p> <p>EE: Connected with 954 students through Mighty Acorns and El Valor.</p> <p>.</p>

<b>National Forest Fund Code</b>	<b>Project Description</b>	<b>FY 2013</b>	<b>FY 2014</b>
NFSD – SCSEP Senior Community Service Employment Project	Hire and train 2-3 senior employees each year.	NA	NA
NFVW Vegetation and Watershed Management	Begin implementation of South Patrol Rd and Mola-Hoff Rd wetland restoration projects (approx. 250-500 acres/yr). Continue native seed production. Develop wetland seedbed. Assess and maintain watershed conditions at Prairie, Jackson, and Grant Creeks. Monitor air quality. Control noxious weeds (approx. 200-500 acres yearly). Continue removal of woody vegetation in fence & hedge rows to connect fragmented areas. Implement NEPA decision on IPM herbicide use.	Native prairie restoration continues on 3,054 acres. New restoration started at South Prairie Creek Outwash Plain (364 acres).  Monitor stream water quality at 8 Riverwatch sites and 5 water quality locations.  Invasive species control on 3,013 acres.	Native prairie restoration continues on 3,418 acres.  Monitor stream water quality at 9 Riverwatch sites and 5 water quality locations.  Invasive species control on 3,139 acres.
NFWF Wildlife Fisheries Habitat Management	Conserve and recover TES species and ecosystems (leafy prairie clover, white fringed prairie orchid, and other sensitive species). Continue restoration of Blodgett Road Wetlands; continue grassland bird habitat management through conversion of former cultivated land to either grassland or native vegetation by approximately 150 acres yearly. Manage up to 4,000 acres per year of grassland bird habitat, including invasive shrub and tree removal by hand or mechanical tools.	Managed 20 acres of dolomite prairie to protect TES.  Native prairie restoration and conversion to grassland continues for a total of 8,362 acres being actively restored.  158 acres converted to grassland.  15,862 acres under active management.	Managed 20 acres of dolomite prairie to protect TES.  Native prairie restoration and conversion to grassland continues for a total of 8,370 acres being actively restored.  130 acres converted to grassland.  14,895 acres under active management.
PIPI Midewin Rental Fees	Collect fees for authorized agricultural use & implement grassland habitat management projects, including needed equipment, fencing, mowing, and seeding of grasses.	Purchased seeds and plant plugs for prairie and wetland restorations.  Pasture seed for planting grassland wildlife management area	Purchased seeds and plant plugs for prairie and wetland restorations.  Pasture seed for planting grassland wildlife management area

<b>National Forest Fund Code</b>	<b>Project Description</b>	<b>FY 2013</b>	<b>FY 2014</b>
		Construction of cattle fence to allow enlargement of grassland wildlife management areas.	Construction of cattle fence to allow enlargement of grassland wildlife management areas.
PRPR Midewin Restoration Fund	Collect authorized fees from salvage projects and implement priority projects.	No fees were collected	No fees were collected
WFHF Hazardous Fuels Reduction	Plan, treat, and manage vegetation by mechanical treatment, prescribed fire, and other strategies. Monitor and document treatment. Continue to implement 2001 Prescribed Fire EA decision. Treat approximately 200 – 1,000 acres/year.	Fuels Treatment 880 acres prescribed burned in 2012/2013.	Burn plans written for new areas.  Prescribed burns on 546 acres.
WFPR Wildfire Preparedness	Meet minimum firefighting production capability at Most Efficient Level.	Capacity=9 Chains built/hour	Capacity=9 Chains built/hour

### **Budgets: How Fiscal Years 2013-2014 program funding was utilized**

The Prairie Plan is the basis for developing multi-year program budget proposals and the annual program of work. Actual funding levels appropriated by Congress determined the rate of implementation of the Prairie Plan. The federal budget is appropriated on an annual basis by the United States Congress for fiscal years (from October 1 through September 30). Midewin leverages the appropriated funding received through partners and volunteers.



**Table 2. Final Budgets for Fiscal Years 2013 and 2014.**

<b>FUND CODE</b>	<b>TITLE OF FUND CODE</b>	<b>FY2013 FINAL (\$)</b>	<b>FY2014 FINAL (\$)</b>
CMFC	Facilities Capital Improvement/Maintenance	94,644	76,000
CMII & CP09	Deferred Maintenance	353,000	356,000
CMLG	Legacy Roads	155,000	155,000
CMRD	Roads Capital Improve./Maint.	222,000	209,000
CMTL	Trails Capital Improve./Maint.	124,206	158,991
FDCL	Recreation Enhancement	0	0
FDDS	Recreation Enhancement	0	0
GBFB	Gifts and Banquets	0	0
HTAE	Federal Highways	0	0
HTAP	Federal Highway Aquatic Passage	0	0
HTRP	Public Lands Transportation Plan	0	0
LALW	Land Acquisition	0	0
MSEQ	Administrative Visitor Maps	0	0
NFIM	Inventory / Monitoring	223,000	228,000
NFLM	Land Ownership Mgt.	58,000	50,000
NFMG	Minerals / Geology Management	2,000	2,000
NFN3	Native Plant Materials	0	0
NFPN	Planning	66,000	54,000
NFRG	Grazing Management	33,000	35,000
NFRW	Rec./ Heritage / Wilderness	517,405	496,731
NFVW	Vegetation / Watershed Mgt.	497,589	641,617
NFWF	Wildlife / Fisheries	421,660	468,366
PIPI	Midewin Rental Fees	800,000	800,000
QMQM	Quarter's Maintenance	0	0
TRTR	10% Roads and Trails	0	0
URMN & URCP	Restoration Trust Funds	0	0
WFHF	Hazardous Fuels Reduction	204,908	263,000
WFPR	Fire Preparedness	369,549	560,716
WFW3	Rehab and Restoration	0	0
NFXF	Great Lakes Restoration Initiative	30,961	28,000
RISP	Dominion Settlement Fund	0	125,000
<b>TOTAL</b>		<b>4,172,922</b>	<b>4,707,421</b>

## **2. Agriculture Use**

### *2.1 Are continued agriculture permits used for resource management purposes?*

Agricultural special use permits or leases continue to be used for resource management purposes at Midewin. Specifically, agricultural permits are used to control invasive plant species until areas can be converted to native vegetation or grassland wildlife habitat. These areas, if left idle, would be a major source of invasive plant invasion throughout Midewin. Agricultural crops are also used to prepare sites for planting prairie and wetland vegetation and grassland bird habitat. The agricultural production controls invasive species prior to planting and provides an excellent seedbed to plant native prairie seed. In FY2013 and 2014 there were 4,574 acres and 3,706 acres in cultivation, respectively.

The trend has been to remove agricultural fields from production to provide habitat. At the end of FY2013 and FY2014, approximately 4,244 and 4,374 acres, respectively, have been removed from crop production and converted to native habitat, grassland wildlife habitat, or seed production (Table 5). Most of the crop fields on the west side have been converted to native habitat and restoration is now highlighting former pastures.

The current crop rotation is between Roundup-ready soybeans and winter wheat. Corn has been excluded from this rotation because of the chemicals (pesticides and fertilizer) necessary for production. The Asian soybean rust arrived in the continental US in 2004 and is devastating some soybean production. Currently the rust is more prevalent in the southern states, but is expected to travel north. The fungus could have an impact on the use of soybeans for future management and may need to be treated with a fungicide.

Hay permits are utilized in grassland wildlife management areas to control grass height and woody plant invasion. All hay is cut after August 15<sup>th</sup> to protect ground-nesting wildlife.

Both soybeans and wheat have been used at Midewin prior to the planting of native vegetation or for site preparation. To date, site preparation with a crop of soybeans has resulted in fewer invasive plant species. Use of winter wheat prior to conversion to native vegetation has been less successful. Invasive plant species appear to survive in the wheat fields or may colonize after the harvest of wheat in the summer.

**Table 3. Acres Removed From Agriculture**

<b>FISCAL YEAR</b>	<b>Acres Removed from Crop Production Per Year *</b>
1997 to 2002	1,894
2003	343

2004	695
2005	238
2006	317
2007	160
2008	115
2009	98
2010	15
2011	53
2012	158
2013	158
2014	130
<b>TOTAL acres removed from crop production</b>	<b>4,374</b>

\* Often non-agriculture lands have been put into row crops as a preparation to planting native vegetation or pasture; this was the case in 2014 where approximately 184 acres of former row crops were converted to pasture grasses and legumes.

## *2.2 How many acres are under grazing or special use permits?*

Conservation of prairie birds and other wildlife requires a mosaic of habitat conditions across the landscape (Midewin Prairie Plan 1.13.3). Cattle grazing are just one management tool used in accomplishing this desired mosaic. At the end of FY2014, there were eleven grazing allotments totaling 3,752 acres - two west of Highway 53 and nine east of Highway 53. In accordance with the Prairie Plan, approximately 158 acres in FY 2013 and 130 acres in FY2014 were removed from row crop production and converted to pasture will be available for grazing. By continuing conversion of row crop fields to pasture acres suitable for grazing are increasing and will continue to do so over the next few years. Within these areas seeding, invasive control, and installation of water sources and fences are being planned and developed.

**Table 4. 2013-2014 Grazing**

<b>Year</b>	<b>Acres in Grazing*</b>
2002	1,996
2003	2,461
2004	2,822
2005	3,467
2006	4,525
2007	4,525
2008	4,525
2009	4,525
2010	4,525
2011	4,525
2012	4,382
2013	4,221
2014	3,752

*\* Each year some pastures are taken out of grazing for a brief period for rest and grassland renovation. For example in 2014 3,752 acres were actually grazed and 630 acres were rested or grassland renovation was implemented. However, a total of 4,382 acres remain under the grazing program.*

### 2.3 How many acres of former agriculture land use are being restored?

For the period between 1997 and 2011, approximately 3,056 acres have been taken out of crop production and planted to cool season pasture grasses. A 2006 planting was replanted to row crops for the short term as site preparation, due to the failure of the pasture planting, and replanting was started in 2011. In 2013, 48 new acres were converted to prairie and wetlands. Approximately 676 acres of former crop fields have been converted to native vegetation during the last decade.

Conversion of agricultural land use to cool season grass pasture will increase over the next several years while a large crop field is converted to grassland. Conversion to prairie and wetland communities has slowed because most of the crop fields on the west side of Route 53 have been converted and restoration emphasis is still on the west side. Current prairie and wetland restoration work is being done in former pastures.

**Table 5. Agricultural Land Restoration**

<b>Fiscal Year</b>	<b>Cool Season Grass Pasture and Hay Field Conversion</b>	<b>Prairie and Wetland Conversion</b>	<b>Seed Production</b>
1997 - 2002	1,749	0	145
2003	293	50	0
2004	176	488	31
2005	235	3	0
2006	317	0	0
2007	160	0	0
2008	115	0	0
2009	11	87	0
2010	15	0	0
2011	39	0	14
2012	158	0	0
2013	158	48	0
2014	130	0	0
<b>TOTAL</b>	<b>3,556</b>	<b>676</b>	<b>190</b>

## 3. Air Quality

### 3.1 Is Midewin causing significant deterioration of air quality (contributing to air quality problems)?

During the two years 2013 through 2014, activities at Midewin did not result in significant sources of air pollution or contribute to the deterioration of air quality. Midewin obtained the necessary permits from the Illinois Environmental Protection Agency (IEPA) prior to

conducting prescribed burns. Midewin prescribed burns did not occur during ozone action days.

## **4. Capital Infrastructure**

*4.1 Have adequate facilities been provided?*

*No data provided*

## **5. Former Army Facilities Removal**

*5.1 How many unsafe Army facilities or structures have been removed?*

*Report every five years (Next required reporting FY2017)*

*5.2 Are former contaminated areas being restored?*

*No data provided*

## **6. Ecosystem Restoration and Management**

*6.1 Are unfragmented blocks of grassland bird habitat being created or maintained?*

Fragmented grassland wildlife habitat is primarily grassland that is divided by tree lines, hedgerows, scattered large trees, numerous shrubby woody plants, and/or old Army infrastructure, which results in smaller less desirable habitat compartments. Many types of grassland wildlife, especially grassland birds, are sensitive to nearby woody vegetation and require large open spaces for optimum breeding and rearing of their young in the grasslands.

To unfragment grassland habitat requires the removal of trees, shrubs, and/or manmade infrastructure to create large contiguous open spaces. The Prairie Plan calls for five large unfragmented areas that range in size from 501 acres to over 3,000 acres. Prairie and wetland restoration work also creates unfragmented habitat. Once an area is unfragmented, then continuous management is needed to keep it in that state, otherwise woody shrubs will soon grow right back. This management can be prescribed burning, grazing, or mowing.

To date, none of the large unfragmented areas identified in the Prairie Plan have been completely created. However, over 2,000 acres within those areas identified as large unfragmented tracts have been opened up. Another approximately 1,000 acres, not identified as dedicated unfragmented habitat, has been created by prairie and wetland restoration. During FY 2013 tree and shrub removal in the in the Grant Creek Watershed was completed. This project resulted in over 90% of one area identified in the Prairie Plan as unfragmented now being complete. Work has started in the Prairie

Creek watershed with a partnership with the National Forest Foundation and The Wetlands Initiative that is enlarging another identified unfragmented area.

## 6.2 *Are habitats being restored?*

Restoration includes planting native species to create native habitat, conversion of croplands to cool season grasses, and management activities to improve existing cool season pastures and natural community areas. The initial conversion of croplands to grass fields and native vegetation is only the first step in the restoration process. Another important step is the continued management of these converted tracts and any areas of existing native vegetation. Management includes prescribed fire, invasive plant species control, overseeding with additional native seed, and enrichment by planting plant plugs.

Some agricultural fields have been converted to grazing tracts. These fields along the eastern boundary of Midewin are in areas designated as grassland habitat in the Prairie Plan. Restoration work for native vegetation has been concentrated on lands west of Illinois State Route 53 following the desired outcomes in the Prairie Plan. Crop fields, old pastures, and abandoned fields have been converted or restored to native plant communities. Table 6 shows the yearly restoration totals.

**Table 6. Acres Being Restored Annually**

<b>Fiscal Year</b>	<b>Acres Receiving Restoration Treatments</b>
2002	2,389
2003	4,107
2004	5,583
2005	5,443
2006	6,333
2007	6,472
2008	6,481
2009	6,117
2010	9,002
2011	6,033
2012	7,788
2013	8,362
2014	8,370

The Midewin has several key partners to thank for making major contributions towards restoration of native habitat. Without these generous contributions, the progress we have made in restoration during the last decade would not have been possible Table 7 summarizes the major partner contributions for each project.

**Table 7. Partner Contributions to Restoration Projects**

<b>Restoration Project</b>	<b>Year Of Partner Assistance</b>	<b>Acres</b>	<b>Primary Partners*</b>	<b>Partner Investment</b>
South Patrol Road	2002 - 2004	459	The Wetlands Initiative, CorLands, USACE, IDNR	\$919,000
Route 66 Prairie	2003 -2004	65	CorLands, USACE, Ducks Unlimited	\$156,000
Prairie Creek Woods	2002 - 2005	56	CorLands, USACE	\$200,000
Middle Grant Creek	2003 -2008	502	CenterPoint Properties	\$1,500,000+
Blodgett Road Dolomite Prairie	2002 - 2009	151	The Wetlands Initiative	\$600,000+
Drummond Floodplain	2003 - 202011	510	CenterPoint Properties & ExxonMobil, Openlands, USACE	\$150,000+
Lower Drummond	2008 - 2009	206	The Wetlands Initiative	\$165,000
ExxonMobil Prairie Donation	2008 – 2009	40	ExxonMobil	\$126,000
Grant Creek Prairie Annex	2009 – 2011	500	The Wetlands Initiative	\$650,000
Lobelia Meadows	2012 - present	160	The Wetlands Initiative	\$791,000 est.
Drummond Floodplain	2012 - present	205	Openlands, USACE, City of Chicago	\$1,800,000 est.
Grant Creek North	2012 - present	200	Openlands, The Wetlands Initiative	\$850,000 est.
South Prairie Creek Outwash Plain	2013 – present	364	National Forest Foundation, Coca-Cola Company, The Wetlands Initiative	\$1,500,000 est.
<b>GRAND TOTAL – excluding current projects</b>				<b>\$4,466,000.00</b>

\* USACE is the United States Army Corps of Engineers, and the IDNR is the Illinois Department of Natural Resources.

### 6.3 How many acres are under management?

For the purpose of this monitoring question, we've defined management activities as mowing, planting (native vegetation and pasture vegetation), herbicide treatment for invasive species, agricultural production, and grazing to manage for grassland bird habitat. The acres under management will increase over time, but is limited by staffing and budget levels. The Table 8 shows the approximate acreage in some phase of

resource management. Number of acres under management varies from year to year, depending upon specific yearly needs.

**Table 8. Acres of Resource Management**

<b>Fiscal Year</b>	<b>Area Under Resource Management (Acres)</b>
2002	7,675
2003	9,662
2004	10,900
2005	10,908
2006	13,602
2007	14,346
2008	13,412
2009	10,987
2010	12,717
2011	14,576
2012	15,764
2013	15,862
2014	14,895

*6.4 To what extent are vegetation composition objectives being met?*

*Report every five years (Next required reporting FY2017)*

*6.5 To what extent is habitat management reaching desired habitat structure for RFSS birds and reaching Management Indicator goals?*

Regional Forester Sensitive Species (RFSS) list of birds at Midewin fall into three categories: wetland birds, grassland birds, and open woodland birds. Wetland birds require wetlands (marsh, sedge meadow, and wet prairie). Restoration activities have restored former wetlands that had been drained by field tiles and drainage ditches. The South Patrol Road, Blodgett Road, Lower Drummond, Middle Grant Creek restoration projects have restored approximately 130 acres of wetlands. Beaver dams can also provide wetland habitat. Where beaver dams on Midewin do not threaten neighboring property or infrastructure, the dams have been left in place. Approximately 100 acres of wetland are being maintained through beaver activity. As additional wetlands are created, wetland bird use should increase. Restoration work in the Lobelia Meadows, Grant Creek North and Drummond restoration areas are creating and improving wetland bird habitat. King rails, American bitterns and least bitterns continue to be seen periodically in the wetlands.

Grassland birds can be placed into three suites: those that prefer short-stature grasses, those that prefer medium-stature grasses, and those preferring tall-stature grasses. Species do overlap the three general suites, but each seems to do best in one of the



suites. The most critical grass height habitat at Midewin is the short-stature grasslands. Midewin uses cattle grazing to provide the short-stature grass habitat. Hay mowing and idle pastures provide the mid-stature grass habitat, while the prairie reconstructions and other non-grazed areas provide tall-stature grass habitat. Litter depth can also be important for some grassland bird species.

Grass height and litter depth are monitored during late spring and early summer to determine if the proper habitat structure is being maintained. Ideally, grass height should range from 15 to 80 cm and litter range from 2 to 4 cm in depth to provide habitat for each of the three suites of grassland birds.

Table 9, Table 10, and

Table 11 display grass height data collected for the past seven years. No data was collected in 2005, but grass heights would probably have been similar to 2003 and 2004 since the grazing and management was identical. No data was collected for the medium height grass in 2012.

**Table 9. Grass structure in pastures (short-stature grass habitat)**

<b>Year</b>	<b>Short Grass Acres</b>	<b>Short Grass Height Range</b>	<b>Short Grass Height Mean</b>	<b>Litter Depth Range</b>	<b>Mean Litter Depth</b>
2002	1,335	17-47 cm	30 cm	0.6-2.7 cm	1.7 cm
2003	2,133	10-47 cm	23 cm	0.3-5.2 cm	1.9 cm
2004	2,169	10-53 cm	25 cm	0.3-3.1 cm	1.7 cm
2005	-	-	-	-	-
2006	4,071	14-54 cm	31 cm	0.3-3.5 cm	1.6 cm
2007	2,436	14-35 cm	21 cm	0.65-1.96 cm	1.2 cm
2008	3,717	13-32 cm	21 cm	0.4-3.6 cm	1.5 cm
2009	2,083	26-44 cm	34 cm	0.7-2.9 cm	1.5 cm
2010	3,762	25-55 cm	39 cm	1.2-3.0 cm	2 cm
2011	1,808	19-46 cm	33 cm	1.4-2.9 cm	2.4 cm
2012	2,694	20-44 cm	31 cm	3.1-8.0 cm	5.2 cm
2013	2,457	27-56 cm	38 cm	1.9-3.4 cm	3.0 cm
2014	3,127	28-59 cm	36 cm	1.7-7.5 cm	4.1 cm

**Table 10. Grass height in idle pastures and hay fields (medium-stature grass habitat)**

<b>Year</b>	<b>Mid Grass Acres</b>	<b>Mid Grass Height Range</b>	<b>Mid Grass Height Mean</b>	<b>Litter Depth Range</b>	<b>Mean Litter Depth</b>
2002	195	58 cm	58 cm	2.1 cm	2.1 cm
2003	305	34 cm	34 cm	1.2 cm	1.2 cm
2004	195	46 cm	46 cm	1.7 cm	1.7 cm
2005	-	-	-	-	-
2006	396	25-47 cm	36 cm	1.2-2 cm	1.6 cm

2007	1035	26-29 cm	27 cm	0.9-2.63 cm	1.6 cm
2008	177	39 cm	39 cm	1.3 cm	1.3 cm
2009	543	37-40 cm	39 cm	1.1-2.5 cm	1.8 cm
2010	640	22-45 cm	34 cm	.1.0-1.7 cm	1.4 cm
2011	406	48-53 cm	50 cm	2.0-4.2 cm	3.1 cm
2012	-	-	-	-	
2013	543	56-61 cm	58 cm	2.5-5.4 cm	4.2 cm
2014	728	49-56 cm	56 cm	2.5-7.4 cm	5.8 cm

**Table 11. Grass height in idle grasslands and restorations (tall-stature grass habitat)**

<b>Year</b>	<b>Tall Grass Acres</b>	<b>Tall Grass Height Range</b>	<b>Tall Grass Height Mean</b>	<b>Range Litter Depth</b>	<b>Litter Depth Mean</b>
2002	-	-	-	-	-
2003	1,028	34-49 cm	43 cm	0.7-4.9 cm	3.0 cm
2004	592	32-53 cm	42 cm	2.8-2.9 cm	2.8 cm
2005	-	-	-	-	-
2006	1,187	31-47 cm	41 cm	0.3-4.1 cm	2.2 cm
2007	-	-	-	-	-
2008	-	-	-	-	-
2009	-	-	-	-	-
2010	947	47-70cm	57 cm	2.8-3.5 cm	3.2 cm
2011	-	-	-	-	-
2012	-	-	-	-	-
2013	-	-	-	-	-
2014	-	-	-	-	-

Tall-stature grasslands do not differ much from year to year and are given a much lower priority for monitoring. The tall stature grasslands are also much easier to evaluate visually. Grazing tracts are measured more than non-grazing tracts to help determine the proper number of cattle needed to achieve the desired results. The Robel pole method is used to determine grass height.

Analysis of grass height shows that desired grass height ranges are available for the grassland birds, although there are differences from year to year due to precipitation amounts.

Another structure component is the amount and location of shrubs and trees within the grasslands. Most grassland birds require wide-open areas with little to no shrubs and these areas are often referred to as “unfragmented areas”. The loggerhead shrike prefers short-stature grassland with some shrubs for nesting. As areas have been unfragmented by removal of woody brush and small trees, small groupings of shrubby trees are left for loggerhead shrikes along the perimeters. This action has been successful to maintain loggerhead shrike populations. Approximately half of the

loggerhead shrike nests found each year are in small areas of shrubby trees on the edges of unfragmented tracts.

In summary, current management plans for restoration and grazing are adequate to maintain the current populations of RFSS birds. To increase RFSS bird population numbers, additional restoration needs to take place. As additional lands are restored, the population numbers should increase. Fine-tuning the grazing regime would be useful, but does not appear to be critical at this point in time.

## **7. Environmental Education / Interpretation**

### *7.1 Are tours, interpretation, and environmental education programs meeting Prairie Plan objectives?*

The goal of interpretation and environmental education at Midewin is to enhance the public's awareness and appreciation of prairies in Illinois and motivate participants to become advocates for prairie conservation and restoration. In January 2010, a new environmental education specialist was hired. Midewin's interpretive and environmental education programs continue to focus on the following program activities:

#### Midewin Welcome Center

The Welcome Center was open to the public for the entire year. Visitation for FY 2014 was 6,078 visitors. Data was not available for FY2013. The interpretive sales outlet provided by the Midewin Interpretive Association (MidIA) also operated for both years.

#### Midewin Explorations

Midewin offered a full range of on-site interpretive programs during FY 2013 and 2014. The number of tour participants in FY2013 was 533 and FY 2014 was 422.

#### Midewin Lecture Series

FY2013 was the eleventh year for the Midewin Lecture Series. This series of seven biweekly evening lectures during the winter months is designed to introduce participants to the natural and cultural history of Midewin and northeastern Illinois. Attendance was growing for both FY 2013 and 2014, at 402 and 526 respectively.

#### Youth Conservation Corps (YCC)

Midewin hosted the YCC crew for eight weeks during the summers of FY 2013 and 2014 providing employment and environmental education for six local high school students. These students helped develop and maintain the trail system, assisted with bird predation research and RiverWatch monitoring. The students took educational field trips every Friday.

#### National Forest Foundation Crew

In FY 2013, Midewin hosted the second annual NFF 8 person crew. In 2014, NFF sponsored two 8 person crews at Midewin. The crews, made up of students from North Lawndale College Prep school in Chicago provided employment, leadership and environmental opportunities to Chicago youths. During the six week program, the crews were managed similar to the YCC crew with a variety of projects including restoration, grazing and recreation projects with environmental education trips every Friday.

#### Mighty Acorns Youth Stewardship Program

During FY2013, five schools representing three public school districts and one private school participated in the Mighty Acorns program at Midewin. Total student participation in the Mighty Acorns program at Midewin was 557 for the 2013 and 591 for 2014 school years. Our ability to maintain our existing Mighty Acorns program and to provide some expansion is dependent on our ability to provide transportation.

#### El Valor Summer Camp Partnership

During FY2013 and 2014 Midewin supported year 13 and 14 of the Forest Service El Valor Science and Technology day camp. Two four-week sessions operated out of the center in the Pilsen neighborhood and one five-week session operated out of the South Chicago center. Approximately 100 students participated in the camp, including a trip to Midewin and environmental education activities provided by volunteers.

Through the programs listed above, Midewin provided interpretive activities for over 1,637 participants in FY2010 and to 2,344 participants in FY 2011. Conservation education programs at Midewin resulted in over 3,000 student contacts each year; some students came to Midewin two or three different times in one year.

## **8. Fire Management**

### *8.1 Has a fire/smoke management plan for Midewin been developed and followed?*

Interagency Federal fire policy requires that every area with burnable vegetation must have a Fire Management Plan (FMP). The Midewin FMP was reviewed and updated on January 23, 2011. This FMP provides information about the fire management planning process for the Midewin National Tallgrass Prairie and compiles guidance from existing sources such as but not limited to, the Midewin National Tallgrass Prairie Land and Resource Management Plan (LRMP), national policy, and national and regional directives. Midewin is following state direction for smoke management under the Clean Air Act and Draft Illinois Smoke Management Plan issued October 9, 2008.



**Prescribed Burning River Road Seed Beds Spring 2013**

### *8.2 Have fire burn plans been developed and followed?*

Eight burn plans were prepared in FY12/13 and 880 acres of prescribed burning was accomplished in FY12/13 at several different locations (River/Chicago Road Seed Beds, Supervisor's Office, Hoff Road, Iron Bridge Trailhead, South Patrol Road and Chicago Road Intersection).

Seven burn plans were prepared in FY14 and 546 acres of prescribed burning was accomplished in FY14 at several different locations (River/Chicago Road Seed Beds, Supervisor's Office, Iron Bridge Trailhead, South Patrol Road and Chicago Road Intersection, Drummond & Middle Grant Creek).

## **9. Hazardous Materials**

### *9.1 To what extent have hazardous substance sites been mitigated?*

*No data available*

## 10. Heritage Resources

10.1 *To what extent are National Register-eligible sites being identified, protected, and preserved?*

*Report every ten years (Next required reporting FY2022)*

10.2 *To what extent are National Register-eligible sites being appropriately examined, reported, and interpreted?*

*Report every ten years (Next required reporting FY2022)*

10.3 *To what extent are traditional cultural properties being identified and protected?*

*Report every ten years (Next required reporting FY2022)*

10.4 *What cumulative effects are management actions having on cultural resources and/or traditional cultural properties?*

*Report every ten years (Next required reporting FY2022)*

## 11. Integrated Pest Management

11.1 *To what extent are noxious weeds and invasive species expanding or being reduced?*

Midewin treated 3013 and 3139 acres for invasive species in 2013 and 2014, respectively (see Table 1 for breakdown by method and year). These treatments were focused to control the following species:

Autumn-olive (*Elaeagnus umbellata*)  
Reed canary-grass (*Phalaris arundinacea*)  
Multiflora Rose (*Rosa multiflora*)  
Teasels (*Dipsacus laciniatus* and *D. fullonum*)  
Sweet-clovers (*Melilotus alba* and *M. officinalis*)  
Osage-orange (*Maclura pomifera*)  
Poison-hemlock (*Conium maculatum*)  
Bird's-foot Trefoil (*Lotus corniculatus*)  
Clovers (*Trifolium* spp.)

Amur Honeysuckle (*Lonicera maackii*)  
Garlic Mustard (*Alliaria petiolata*)  
Common Reed (*Phragmites australis*)  
Thistles (*Carduus nutans*, *Cirsium arvense*)  
Cattails (*Typha* spp.)  
Wild Parsnip (*Pastinaca sativa*)  
Crownvetch (*Coronilla varia*)  
Spotted Knapweed (*Centaurea stoebe*)

Most of these plant species pose serious threats to ongoing prairie habitat restorations, native habitat remnants, grassland habitat management areas, and native seed production.

Other efforts focused on eradicating or preventing further spread of new infestations of invasive plants, mostly species that occur around Midewin but are not yet widely established on FS land. These potential problem species include purple loosestrife (*Lythrum salicaria*), Asiatic bittersweet (*Celastrus orbiculatus*), leafy spurge (*Euphorbia esula*), Sericea bushclover (*Lespedeza cuneata*), Mugwort (*Artemisia vulgaris*) and blue globe thistle (*Echinops sphaerocephalus*).

**Table 12. Invasive Plant Treatments – Acres (2002-2014)**

<b>FY</b>	<b>Acres Treated with Herbicide</b>	<b>Acres Treated Mechanically</b>	<b>Acres Treated by Hand Pulling</b>	<b>Totals</b>
2002	<1	2070	12	2082
2003	162	4231	15	4408
2004	889	4220	20	5129
2005	1403	3585	25	5013
2006	1520	2926	40	4486
2007	668	1380	95	2134
2008	1731	1040	95	2866
2009	1414	1813	114	3341
2010	1156	2248	25	3429
2011	1480	921	15	2416
2012	997	1624	10	2631
2013	1200	1798	15	3013
2014	1102	2007	30	3139

Changes in acres treated (total amounts and by method) reflect changes in funding, staffing, and management priorities (Table 1). The increase in acres treated with herbicide reflects completion of environmental analyses for herbicide use and (in part) staff training in herbicide application

Midewin continues to monitor for gypsy moth (*Lymantria dispar*), first discovered on Midewin in 2005. While further treatments have occurred on adjacent lands (2011),

Midewin has not received any additional treatments since 2010 (Table 2) and monitoring still continues on an annual basis.

**Table 13. Invasive Insect Treatments – Acres (2010-2014)**

FY	Species	Treatment	Acres
2010	Gypsy Moth	Mating Disruption ('pheromone flakes')	600
2012	Gypsy Moth	No treatment	
2013	Gypsy Moth	No treatment	
2014	Gypsy Moth	No treatment	

In 2013, Midewin also continued to support the cooperative weed management area (CWMA) initiated in 2010. The CWMA is now officially the Northeastern Illinois Invasive Plant Partnership (NIIPP) and receives funding through Midewin from the Great Lakes Restoration Initiative agreement between the Forest Service and US EPA. NIIPP now has over 53 members over an eighteen-county area in northeastern Illinois, including most of the Chicago area. NIIPP currently co-coordinates the aquatic invasive species education and outreach program Clean Boats Crew with IL-IN Sea Grant, works with MIPN to provide invasive ornamental plant education and outreach to green industry and its consumers, supports the New Invaders Watch Program through training and database maintenance, and co-coordinates the IL Hydrilla Task Force. Last fall NIIPP was instrumental in organizing a symposium and working group involving green industry and conservation - the first of its kind in Illinois.

In 2014, Midewin continued in partnership with the National Forest Foundation to provide outdoor educational opportunities for students from North Lawndale College Prep Academy. This opportunity allows students to learn about National Forest lands as well as experience the outdoors through stewardship. Students participated in various activities throughout the summer such as restoration plantings, native seed collecting, seed bed maintenance, weeding, and trail maintenance. They also dedicated much of their time to invasive control. Enduring extreme heat, no shade, and creepy crawlies, students gathered bags upon bags and endless truckloads of honeysuckle, sweet clover, autumn olive, and seed heads from cattail, reed canary grass, and teasel. They worked with much excitement and determination to create yet another successful summer of invasive control!

## **12. Land Ownership**

### *12.1 To what extent have land boundaries been adjusted?*

*Report every five years (Next required reporting FY2017)*



## 13. Recreation

### *13.1 Are trails constructed to standards for planned use?*

In FY 2013 and 2014 the Midewin Trail Stewards program continued. Stewards contribute to vegetation management on and near the trail through mowing, herbicide spraying and pruning. They also perform minor maintenance and repair as needed along assigned trail segments. Trail stewards often act as Midewin liaisons both on and off the Prairie answering questions about Midewin and reporting violations.

All existing trails were maintained to standard.

### *13.2 Is the Prairie being managed in accordance with prescribed ROS guidelines?*

*Monitor annually, Report every five years (Next required reporting FY2017)*

### *13.3 Do recreational facilities meet the needs of the public?*

*Report every five years (Next required reporting FY2017)*

### *13.4 Are visitors well informed of recreation resources? Have resources been adequately interpreted?*

An extensive array of brochures, flyers and maps is available in hard copy and the internet. Maps are up to date to show trail and open area opportunities. Flyers are published annually that promote interpretive programs at Midewin. The Midewin Welcome Center was open six days a week during the peak-use season to answer questions and handout brochures. Brochure boxes offer some of the flyers and brochures at the trailheads. The escorted tour program continued to offer interpreted tours to lands that remain closed to the public.

The Forest Protection Officer program continued to provide visitor information and provided enforcement in the absence of a full time law enforcement office on the Midewin.

In 2013:

Midewin connected with 2730 people through on and off site programs

- 1160 participants on 40 programs
- 533 participants on 31 tours
- Spring Into the Prairie had 345
- Trick-or-Treat Bunker Style grew to 278 participants
- 402 participants in 7 lectures in 2013

Midewin attended over 20 outreach events with over 8000 people in attendance

In 2014:

Midewin connected with 5634 people through on and off site programs including:

- 4335 people at 18 off site programs such as library talks, schools, etc.
- 357 people at 20 on site tours that are open to the public
- 540 people at 18 on site tours for special groups
- 402 people at 7 Midewin lectures

Midewin connected with 4388 people at the Midewin Welcome Center (excluding tours)

804 students were involved in the Mighty Acorns program that included one off site visit and three on site visits each

150 students were involved in the El Valor summer camp through a partnership with El Valor and Chicago Academy of Sciences that included programming at El Valor facilities and a visit to Midewin

## **14. Research**

### *14.1 Are key information needs being pursued as research projects?*

Incorporated Research Institution for Seismology of 1200 NEW YORK AVE NW STE 800 WASHINGTON DC UNITED STATES 20005. The USArray Transportable Array is an Earthquake monitoring system, operated and maintained by IRIS (a non-profit corporation of US Universities) on behalf of the National Science Foundation. It uses continuously operating seismic stations to measure groundmotion caused by earthquakes and volcanic processes. The continuously operating seismic station consists of a buried vault enclosing the sensor and electronics, a mast-mounted solar panel with radio antenna. It has been approved as a Special Use Permit until 10/31/2017.

Amy Chabot, Loggerhead Shrike long term study. Loggerhead Shrike were monitored during the 2012 and 2013 breeding seasons as part of a long-term monitoring and research study focused on the species (2005 to present). Monitoring consisted of initial survey work by Midewin staff and volunteers, focused on known historic breeding sites. Follow up work by Dr. Amy Chabot including monitoring to determine reproductive success, and assessment of adults that were previously banded, and thus returning to Midewin to breed. Banding of adults was conducted as needed, during which time samples were collected for DNA analysis and birds were aged as being in their first or second breeding season. Four breeding pairs and 2 single shrikes were located in 2012, the lowest population size since monitoring began in 2005; all 4 pairs were successful in fledging young. Seven pairs and 2 single birds were located in 2013; 4 of the 7 pairs (57%) were successful in fledging young.

Morton Arboretum, Scharenbroch, Bryant C. Fahey, Robert T, Principle Investigators. The Chicago Urban Forest Study (Carbon Sequestration and Resiliency of the Urban Forest. Midewin was one of many sites sampled to understand tree growth and tree sensitivity to soil conditions and climatic fluctuations across various land use classes in the urban forest continuum. Tree increment core samples were extracted to evaluate tree growth and response to site and climate conditions across species and land uses. Also total carbon sequestration and turnover in the urban forest was determined. Sub-soil, upper soil, and litter layer samples were extracted for analysis of below ground carbon storage.

Illinois Natural History Survey (INHS). Molano-Flores, Brenda investigator. An assessment of the reproductive ecology and climate change response of *Malvastrum hispidum* (Malvaceae).

Other research or studies conducted at Midewin in 2013 and 2014 include:

- Susan Kirt Alterio – Study of Ant Communities present in different grassland habitats (old field, restoration, remnants) for a PhD. Thesis.
- D.T Tyler Flockhart – Dept of Integrative Biology University of Guelph, Ontario CANADA. Study of monarch butterflies population growth at Midewin.
- Ryan Arnold, Study of microbes in the dolomite prairie soil at Midewin.
- Carl A Strang, Survey of Singing Insects of Northeast Illinois and Northwest Indiana.
- Erin Vander Stelt. Study of factors influencing population dynamics of the rare plant *Isoetes butleri* (Butler's quillwort) at Midewin.

*14.2 What is the contribution of these projects to Midewin and to general knowledge?*

*Report every five years (Next required reporting FY2017)*

## **15. Scenery Management**

*15.1 Is scenery of National Forest System land improving?*

*Report every five years (Next required reporting FY2017)*

## **16. Social and Economic**

*16.1 To what extent is Midewin contributing to the local economy?*

*Report every ten years (Next required reporting FY2022)*

## **17. Threatened, Endangered Species and Regional Forester's Sensitive Species**

*17.1 To what extent are NFS lands and their management contributing to the recovery, conservation, and viability of threatened, endangered, or proposed species and to what extent are actions prescribed in recovery plans being implemented?*

### **Leafy Prairie Clover (*Dalea foliosa*) (State and Federally Endangered)**

Leafy prairie clover is a perennial plant that is found in the shallow soils of dolomitic prairie, in which the bedrock is close to the surface. Monitoring of this endangered plant at Midewin originally began in 2002 and is conducted each year. Population numbers of this plant can be affected by climatic conditions such as levels of precipitation as well as animal browse from deer, voles and mice. For these reasons, population numbers of this plant fluctuate from year to year, although generally at Midewin, this plant is increasing in population size and number. In 2013, over 87% of the plants were reproductive, with most of the mature seed being allowed to fall naturally from the plants, assisting in new plant recruitment and germination. In 2014, the highest plant numbers were recorded, with 839 total plants counted. Of this number, 301 plants were seedlings and 375 plants were flowering, assisting in the recruitment of new plants.

Monitoring protocols include assessing population numbers, and their status such as vegetative, seedlings or flowering plants. These protocols meet the goals outlined in the Prairie Plan. Prescribed burning was initiated in part of this area containing the population and more regular implementation of prescribed burns is expected in the coming years and it is anticipated this will improve the habitat. Invasive control has been occurring for several species such as Cut-Leaf and Common Teasel, Reed Canary Grass, Bird's Foot Trefoil and these actions will lessen threats to the population. Population size is expected to continue expanding as greater land management occurs.

Midewin is working in cooperation with the U.S. Fish and Wildlife Service (USFWS) toward the recovery of this plant in northeastern Illinois. Monitoring protocols have been developed in cooperation with the USFWS. Monitoring of Leafy Prairie Clover plots planted in 2009 continues each year. Efforts continue each year to propagate small amounts of Leafy Prairie Clover plugs at Midewin's production facilities. As these efforts continue, plugs and seed will be distributed into appropriate habitat at Midewin. In 2013, plugs were planted and seed spread in the Lobelia Meadows Restoration Area at Midewin, near the naturally occurring population of Leafy Prairie Clover. These efforts will continue as further restoration occurs in the Drummond dolomite prairie.

**Table 14. *Dalea foliosa* Population Demographics at the Midewin National Tallgrass Prairie**

Monitoring Year	Seedlings Present	Vegetative Plants	Plants flowering	Plant Totals
2001	1	26	82	114
2002	0	83	9	92
2003	161	15	64	240
2004	31	76	144	251
2005	26	53	115	194
2006	41	51	95	187
2007	87	88	105	280
2008	151	154	129	434
2009	198	453	65	716
2010	68	156	340	564
2011	52	294	240	586
2012	13	149	322	484
2013	12	43	381	436
2014	301	163	375	839

Eastern Prairie Fringed Orchid: *Platanthera leucophaea* (Federally Threatened, State Endangered)

The Eastern Prairie Fringed Orchid (EPFO) is a Federally Threatened plant not yet found at the Midewin, but is located on adjacent land owned by the Illinois Department of Natural Resources (IDNR). The naturally occurring population on IDNR land is near the boundary with Midewin and occurs on similar habitat. It is hoped that the existing population may expand onto forest service land naturally or through reintroduction in the future. This perennial orchid species spends its early life stages as small vegetative plants. Plants that occur on IDNR land are monitored annually by Midewin staff in cooperation with IDNR and in cooperation with the USFWS while flowering and most visible. In addition, surveys for the orchid are conducted during the blooming period on adjacent forest service land using protocols designated by USFWS.

Data collected on IDNR plants includes the number of blossoms and leaves, plant height, and impacts from herbivory. Plants are re-visited to assess seed pod production annually. Orchids have not been found on Midewin land to date. When plants appear on the Midewin through natural expansion or reintroduction, monitoring will begin annually.

Mead's Milkweed: *Asclepias meadii* (Federally Threatened, State Endangered)

The Mead's Milkweed is federally listed perennial plant species that does not occur naturally at the Midewin. However, this plant is being propagated at Midewin in coordination with the U.S. Fish and Wildlife Service (USFWS) with plants received from

the Morton Arboretum. This species is in propagation in seed production beds and the horticultural facilities at Midewin to work towards the recovery of the species. Studies have shown it can take up to fifteen years or longer for maturity to a flowering plant for this milkweed species. In 2013 seed pods were produced from plants in propagation for the first time which continued in 2014. The seeds will be used to further propagation of the species in cooperation with USFWS to aid in its recovery.

*17.2 To what extent are NFS lands and their management contributing to the viability of Regional Forester's Sensitive Species and other species of concern?*

**Plants:**

A subset of RFSS plants are monitored each year by Midewin staff and the Plants of Concern citizen science rare plant monitoring group coordinated by the Chicago Botanic Garden. Data is collected on rare plant populations, land management is assessed and population trends are evaluated to assist in species conservation and enhancement.

Glade Quillwort (*Isoetes butleri*) (RFSS, Illinois Endangered Plant):

The glade quillwort is a small, grass-like plant found in the dolomite prairie at Midewin. It has unusual phenology and reproduces through underground spores. Since monitoring of this species began, protocols have included recording the number of leaves, length of longest leaf, herbivory, percentage of duff around the plant and substrate classification (bare soil, gravel, vegetation or pavement) as a measure of plant fitness. It has been theorized the number of leaves are related to plant reproductive capacity. Since monitoring began in 2004, it has been noticed the accumulation of duff can negatively affect seedling germination. Population numbers of this plant increased by 25.2% in 2013 to 129 plants from less than 110 plants in 2012. Additional years of monitoring are needed to better ascertain population trends. Monitoring of this species is expected to continue. In the future, prescribed burning will be an important management tool to aid in the recovery of this species.

**Table 15. Glade Quillwort Population Numbers**

Fiscal Year	Population Size
2003	140
2004	243
2005	277
2006	398
2007	230
2008	369
2009	632
2010	67
2011	52
2012	103
2013	129
2014	220

Collecting population data and management activities help assess the fitness of the population. The current techniques to determine population size and threats are adequate and should continue on a yearly basis. Research conducted and finished in 2013, provided some insight that may aid in the conservation and benefit of this species. It appears *Isoetes* requires a balancing of temperature and soil moisture for the growth of leaves and roots and this appear to affect growth the following year.

Eared False Foxglove: *Tomanthera auriculata* (RFSS, Illinois Threatened Plant):

Eared False Foxglove is an annual plant associated typically with moist prairie habitats. Its population numbers fluctuate from year to year, a common trait seen in annual plants. Eared False Foxglove occurs in two locations at Midewin. Monitoring this plant includes both census and demographic protocols. Population size estimation and monitoring has taken place since 2001. Overall, the population appears to remain stable, with higher population counts in 2013 than the previous year.

In 2014, the population at Midewin appears stable, with higher population counts at one location and lower population numbers at a second location. This follows the trends for annual plants in which plant numbers fluctuate from year to year. Prescribed burning early in the spring of 2014 occurred at one location, which likely resulted in increased population numbers for all three of these subpopulations. Woody vegetation will continue to be controlled at the second location at Midewin, which can assist in a rebound of the population.

**Table 16. Eared False Foxglove Population Sampling**

Year	Population Size/Number of Stems
2001	1873
2002	1134
2003	236
2004	1100
2005	1775
2006	3224
2007	9400
2008	22136
2009	3386
2010	540
2011	1879
2012	1941
2013	4333

The subpopulations at Midewin have shown characteristic fluctuations. Continued control of woody vegetation is needed. With the increase in plant numbers in 2013, 94.9% of plants produced fruit in 2013. Current management practices of periodic prescribed burning, and removal of invasive species, including brush control, should

continue to assist in increasing the numbers of this species. Seeds have been spread in several restorations areas, and it is hoped new plants will be found.

Monitoring goals include tracking the trends in population size over time, impacts of management and threats to the populations. The current monitoring strategy is sufficient to meet the goals in the Prairie Plan. Monitoring is being conducted by CBG with volunteers along with Midewin staff.

False Mallow *Malvastrum hispidissimum* (RFSS, Illinois Endangered Plant):

The False Mallow is an annual plant found in the dolomite prairie at Midewin whose population numbers vary each year. The entire population is sub-sampled. Monitoring began in 2003 and three subpopulations are assessed annually. The number of plants and estimated percent cover is determined yearly. Plant numbers of the three subpopulations are generally stable. In 2013, population numbers once again increased from 2012. In addition, the total area for this plant increased 81%, expanding south. It is hoped further prescribed burning and invasive control will positively affect the population. In 2014, the subpopulation that increased in number also expanded in polygon area by 35%.

**Table 17. False Mallow Subpopulation Sampling**

Year	Plot 1	Plot 2	Plot 3	Total
2003	459	164	N/A (plot est. 2004)	623
2004	111	34	317	462
2005	215	14	210	439
2006	81	73	496	650
2007	169	7	87	263
2008	84	12	5	211
2009	0	21	179	200
2010	0	18	49	67
2011	9	2	91	102
2012	0	12	133	145
2013	16	3	154	173

Invasive plant control near and within these subpopulations will continue into the future. Bird's Foot Trefoil and Canada/Tall Golden rod are growing threats and their control may provide some benefit.

The monitoring goals are to reflect population changes in relation to management activities and to track threats to the population. Taking yearly photographs of each plot assists in providing a visual reference for the changing population.

Slender Sandwort/Pitcher's Stitchwort *Minuartia patula* (RFSS, Illinois Threatened Plant):



Pitcher's stitchwort is an annual plant species growing in dolomitic areas of Midewin that fluctuates in population size each year. This plant can be challenging to monitor because of its annual transitory life cycle. Seven permanent plots have been established and monitoring has occurred since 2004. In each plot, subplots are used to determine population size and data is averaged and merged. Use of the larger plots accommodates the fluctuation in population size and migration of annual plant locations.

Although population numbers fluctuate, they appear to be stable for this species. The area where these plants occur is divided into two subpopulations. In 2013, the southern subpopulation has 7183 plants, which is down approximately 17% from counts in 2012. However, the northern subpopulation has 1727 plants in 2013, an increase of 299%. In 2014, population numbers and the area occupied for both subpopulations increased. The southern subpopulation had an estimated 69,000 plants and the northern subpopulation had an estimated 7,400 plants, both historical highs for this species. It appears that accumulation of duff and the absence of prescribed fire to assist in decreasing competition are two reasons populations numbers may decrease. It is anticipated the increased use of prescribed burning in this area will be beneficial for this species. New habitat has been created in the last several years for this species with the removal of a former railroad berm, and *Minuartia* plants have moved into this area. Monitoring should continue on this species to assist in reviewing effectiveness of land management activities and protocols appear to be acceptable at this time.

#### Crawe's Sedge (*Carex crawei*) (RFSS):

Crawe's sedge is a small perennial sedge plant found in dolomite and calcareous habitats. Monitoring of the four subpopulations began in 2004. A census is taken in random quadrats in the subpopulations to determine densities. The densities are used to estimate population sizes for subpopulations. This plant is normally visited on a rotating schedule, although it was monitored in both 2012 and 2013.

**Table 18. Crawe's Sedge estimated population size**

Count and Estimated Population Size by Subpop and Year						
	SUBPOP 1	SUBPOP 2	SUBPOP 2A	SUBPOP 3	SUBPOP 4	SUBPOP 1
2004	101-200	101-200	-	124	165	-
2005	401-800	NA	-	1,094	2,663	-
2005 Est.	NA	NA	-	17,769	76,468	-
2006	15,124	NA	-	8,203	60,392	-
2007	16,158	NA	-	0	68,221	-
2008	15,004	NA	214	200-400	5,714	-
2010	NA	NA	NA	19,579	23,549	-
2011	1,281	NA	0	NA	NA	3128
2012	176	0	0	637	252	164
2013	141	NA	0	NA	74	21

In 2005 and subsequent years, total subpopulation sizes were estimated based on quadrat and transect sub-sampling. However, in 2012 and 2013, exact population counts were used since the size was small enough to count individuals. It is theorized population numbers may have decreased in 2012 and 2013 due to an accumulating layer of duff and increased competition, primarily from non-native grasses. A more regular regimen of prescribed burning is needed to provide opportunity for increased growth.

In 2014, three of the five subpopulations were monitored. Subpopulations in one location decreased in number but increased in size of the area the plants occupy. Plants in the third subpopulation increased in number in 2014. Competition from the build-up of litter and duff is a threat to this species but it is hoped increased prescribed burning will provide increased growth for this species.

Monitoring goals are to reflect population changes in number and extent of area occupied in relation to management activities and threats to the population and these goals appear sufficient at this time.

Limestone Hedge-Hyssop, (*Gratiola quartermaniae*) (RFSS):

This small semi-aquatic annual plant species was discovered at Midewin in 2003. It grows in small vernal ponds in the dolomite prairie. As in other annual plants, populations of this species appear to fluctuate with climatic conditions. In 2013, the overall population size increased dramatically, and again in 2014 with estimated count of over 15,000 plants.

**Table 19. *Gratiola quartermaniae* Total Area Data**

Subpop 1 Total Area Data						
	Plant Count	Area (m2)	Density	Non-flowering	Flowering	% Reproductive
2006	1300	530	2.45	831	469	36%
2007	108	19.32	5.59	NA	NA	NA
2008	15290	483	31.67	10611	4679	31%
2009	5690	283	20.11	2948	2742	48%
2010	293	2334.2	0.13	38	255	87%
2011	51	4104	0.01	15	36	71%
2012	0	0	0.00	0	0	0%
2013	373	321.8	1.16	37	336	90%
Subpop 2 Total Area Data						
	Plant Count	Area (m2)	Density	Non-flowering	Flowering	% Reproductive
2009	13	0.1	130.00	2	11	85%
2010	234	27.88	8.39	41	193	82%
2011	800	27.88	28.69	400	400	50%
2012	16	4.9	3.27	2	14	88%

Monitoring goals are to determine the population size and area of the population. The techniques used will help determine significant changes to the population. This species is also in propagation at Midewin's production facilities. The plants being grown originate from an unprotected prairie remnant that has since been destroyed.

Small White Lady's Slipper (*Cypripedium candidum*) (RFSS, Illinois Threatened Plant):

Small White Lady's Slipper is a long-lived, clump-forming perennial orchid that occurs in calcareous prairies. Six subpopulations are located on Midewin land with additional subpopulations located nearby on adjacent land owned by the Illinois Department of Natural Resources (IDNR). One subpopulation on IDNR land is represented by several hundred plants and its population numbers have been increasing each year. The Midewin subpopulations appear stable and most are increasing, but since several of the subpopulations are very small, they are still vulnerable.

**Table 20. Plant Counts for *Cypripedium candidum* at Midewin**

YEAR	Subpop 2	Subpop 3	Subpop 4	Subpop 5	Subpop 7	Subpop 8
2002	1	N/A	N/A	N/A	N/A	N/A
2003	2	1	2	N/A	N/A	N/A
2004	2	1	2	N/A	N/A	N/A
2006	2	2	3	1	N/A	N/A
2007	2	5	3	2	2	N/A
2008	2	5	4	3	3	N/A
2009	2	12	4	3	3	N/A
2010	31	15	5	17	2	N/A
2011	54	24	4	24	2	1
2012	58	23	4	13	3	1
2013	81	26	6	29	5	1
2014	73	24	9	44	7	1

- N/A designates subpopulation not in existence in that year

The monitoring goal is to determine potential population changes in relation to management activities. The monitoring protocol is acceptable at this time. The monitoring is being conducted by Midewin staff on Forest Service lands and by volunteers on adjacent IDNR land through protocols developed by the Chicago Botanic Garden.

Common Valerian: *Valeriana edulis* var. *ciliata* (RFSS)

Common Valerian is a perennial species found in moist prairies and wetlands. It is currently not yet found in Midewin restorations, although it is found on Illinois Department of Natural Resources (IDNR) land near the boundary of Midewin. Plants located on IDNR property are monitored through the Chicago Botanic Garden Plants of

Concern program on a rotating schedule. The population on IDNR land was monitored in 2014 and plant counts were stable in comparison to previous years. When plants appear or are reintroduced into restorations on Midewin land, population monitoring will be implemented. In addition this species has been planted for propagation purposes at seed production beds. Seed is harvested each year from plants in the production beds and will be included in restoration projects at Midewin in the future.

#### Clustered Fescue Grass (*Festuca paradoxa*) (RFSS)

Clustered Fescue is a perennial, native cool-season grass only recorded in one location at Midewin. It is normally found in variable mesic to moist habitat with very small numbers present, reproducing by seed alone. Seed heads are produced in mid-summer and the plant goes dormant in the heat of August. This plant is believed to have a mutualistic relationship with soil fungi.

Monitoring first began on this plant in 2012 after its discovery and inclusion in the list of Regional Forester Sensitive Species. Attributes collected are population size (area), the number of plants, associate species and threats.

In the first year of monitoring, twelve flowering individuals were found in a small square area of only 38.0 square meters. In 2013, the second year this species was monitored, the population size increased by 692% to 95 individuals with a density of 0.97 plants per square meter. In 2014, its third year of monitoring, the population size decreased slightly to 41 individuals.

Threats to this population include brush encroachment from the southeast and herbaceous invasive plants. Brush control is being implemented at this location and its reduction is expected to have a positive effect. Accumulation of duff is also a considerable threat in this area, but more regular use of prescribed fire may also provide a benefit.

The first few years of monitoring provide a baseline for future monitoring years. Goals of monitoring this species include learning the population trends and the extent of area occupied and threats to the population.

#### American Ginseng (*Panax quinquefolius*) (RFSS):

Ginseng is a long-lived herbaceous perennial plant with a thick taproot harvested for medicinal purposes. It is also grown commercially in some areas of the U.S. for this purpose. Overharvesting and poaching are major threat to this species. Ginseng is rare on Midewin and found only in a few locations.

Plants have been periodically monitored by Midewin staff since 2001. Some marked plants disappeared after 2001 with deer browse thought to be the cause. Plants have been caged since 2006 and fruiting and foliage persistence has improved. However, the population is still vulnerable to threat. Installing cages around the plants protects

them from deer browse, but also calls attention to the plants and may result in illegal harvesting or destruction of the plants. New seedlings have been located near existing plants in recent years. In the past, cages have been removed by deer attempting to reach the plants. It is difficult to determine the cause when plants disappear.

**Table 21. American Ginseng (*Panax quinquefolius*) Population Numbers**

YEAR	Population Size
2001	20
2002	N/A
2003	9
2004	N/A
2005	N/A
2006	12
2007	12
2008	N/A
2009	10
2010	10
2011	13
2012	8
2013	11
2014	11

N/A = Plant not monitored that year.

Yearly demographic monitoring began in 2007 and this monitoring appears adequate to determine health of the population over time. Establishment of additional plants through propagation and increased protection of existing plants is necessary to maintain the viability of this plant.

### **Regional Forester Sensitive Species (RFSS)- Grassland Birds**

Grassland birds are being monitored using several different methods. One monitoring method was designed to accurately reflect the upland sandpiper *Bartramia longicauda* populations and nesting loggerhead shrikes *Lanius ludovicianus migrans* (both species are RFSS). This survey is an incidental walking survey completed in early May to cover most of the likely habitat for these two birds at Midewin. The other survey is a formal point count survey that covers most of the grassland bird habitat at Midewin. The point count survey has been changing over time as needs change and new habitat is established. Currently the point count survey has a distance component (only birds within 100 meters are used in the analysis) which helps to determine birds per area. The amount of grassland bird habitat has increased to the point that it is getting difficult to census all the habitat. In 2014 a random subset of points were surveyed and the number of birds per 100 points was determined. For comparison purposes the 2009 – 2013 data was converted to birds per 100 points. Table 27 shows estimated population

numbers for the RFSS grassland birds, bobolink, upland sandpiper and loggerhead shrike along with other grassland birds at Midewin.

**Table 22. Grassland Bird Population Numbers**

Grassland Bird	2009	2010	2011	2012	2013	2014
Upland Sandpiper	18	18	18	6	6	4
Bobolink <sup>1</sup>	106	115	152	106	127	103
Dickcissel <sup>1</sup>	238	189	244	231	167	214
Grasshopper Sparrow <sup>1</sup>	152	127	159	99	94	117
Eastern Meadowlark <sup>1</sup>	159	164	160	165	171	187
Western Meadowlark <sup>1</sup>	0.4	0	0	0	0	0
Henslow's Sparrow <sup>1</sup>	20	35	36	41	20	27
Savannah Sparrow <sup>1</sup>	21	25	21	15	24	10
Vesper Sparrow <sup>1</sup>	0.04	0	0.7	5	1	1
Northern Harrier	3	0	0	0	0	0
Loggerhead Shrike (pairs)	7	9	12	4	7	13

<sup>1</sup> – birds per 100 survey points

Monitoring is being completed by Forest Service staff with assistance from The Nature Conservancy, Illinois Natural History Survey, Illinois Department of Natural Resources, and volunteers.

### **Wetland Bird RFSS species**

King rail *Rallus elegans*, least bittern *Ixobrychus exilis* and American bittern *Botaurus lentiginosus* are RFSS wetland birds that nest at Midewin. These birds tend to be secretive and use of Midewin wetlands is sporadic. Monitoring is difficult, but all three species are assumed to be breeding at Midewin since they are seen occasionally and young birds have been seen. As wetland restoration increases it's expected that populations of these birds will increase and monitoring may become easier.

### **Other Federally listed and RFSS Species**

The federally listed bald eagle *Haliaeetus leucocephalis* and Whooping crane *Grus Americana* have used Midewin infrequently during migration. There is no evidence they are nesting on Midewin.

Short-eared owl *Asio flammeus* and northern harrier *Circus cyaneus* are raptors that may have nested infrequently at Midewin in the past, but there is little evidence of current nesting. Both of these species are common winter residents, especially when their prey items (voles) are common.

The red-headed woodpecker is a bird of open woodlands and savannas. Although red-headed woodpeckers have been known at Midewin for years and are assumed to nest,

their current status is unknown. It is believed the population is small. Red-headed woodpecker are regularly seen in Prairie Creek Woods and Jackson Creek Woods. They can also be seen periodically in other wooded areas of Midewin.

One or two calling male Cerulean warblers *Dendroica cerulean* were reported on the former Joliet Army Ammunition Plant in the mid-1990s. There is no evidence that these birds were breeding and there have been no confirmed sightings since the initial ones.

Plains leopard frog *Rana blairi* is an uncommon frog at Midewin. They are seen infrequently, but were heard on two occasions recently. Individuals were heard by frog and toad monitors in 2013 and 2014.

Blanding's turtle *Emydoidea blandingii* is a very uncommon turtle at Midewin. Several sightings were recorded in the mid-1990s. No Blanding's turtle has been seen since the original sightings. A graduate student trapped turtles for one summer at locations they were previously seen and never caught any. It is not known if there still is a population of this rare turtle. It seems likely that even if there is, it may not be a viable population. There is the possibility of reintroducing Blanding's turtle in the future as a part of captive breeding programs in the Chicago area. Turtles seen in appropriate ponds will continue to be identified in order to verify Blanding's turtles on Midewin.

Franklin's ground squirrel *Spermophilus franklinii* is a secretive rare prairie mammal. Franklin's ground squirrel prefers tall, thick grasses and forbs. They appear to be quite rare at Midewin; no live animals have been found, but a carcass was found on the far east side of Midewin near an abandoned railroad that the Will County Forest Preserve District developed into a trail. In FY2009, during a pipeline installation, one was caught on Forest Preserve property and released adjacent to Midewin.

Ten RFSS insects are known from Midewin. Monitoring populations of these insects is difficult. Midewin staff have been depending upon researchers familiar with these species to determine their presence in the past. Food plants for these species are being reintroduced into Midewin prairie and wetland restorations. Monitoring may consist of monitoring the increase of food plants and periodic presence monitoring of the particular insects. The current status of these species is unknown, but thought to be stable or expanding since habitat for them is expanding and management techniques are used to minimize disturbance to these species.

**Table 23. Midewin RFSS Insects**

Scientific Name	Common Name
<i>Aflexia rubranura</i>	Red-veined Prairie Leafhopper
<i>Papaipema beeriana</i>	Blazing Star Stem Borer
<i>Papaipema eryngii</i>	Rattlesnake-master Borer
<i>Danella lita</i>	Crawling Mayfly
<i>Deltocephalus gnarum</i>	A Leafhopper
<i>Dichagyris reliqua</i>	A Noctuid Moth

<i>Macrosteles pоторia</i>	A Leafhopper
<i>Onconcnemis saundersiana</i>	A Noctuid Moth
<i>Plusia vernusta</i>	White-streaked Looper Moth
<i>Sphinx luscitiosa</i>	Clemen's Sphinx Moth

## **18. Transportation and Utilities**

*18.1 How many miles of roads are decommissioned?*

*Report every five years (Next required reporting FY2017)*

*18.2 To what extent are road closures effective in preventing off-road vehicle travel?*

*No data available*

## **19. Watershed, Riparian, and Wetlands**

*19.1 What is the condition of watersheds within Midewin?*

*Report every ten years (Next required reporting FY2022)*

*19.2 How many acres of riparian lands have been restored?*

*Report every five years (Next required reporting FY2017)*

*19.3 To what extent are management activities affecting riparian areas?*

*Report every five years (Next required reporting FY2017)*

*19.4 How many acres of wetland have been restored?*

*Report every five years (Next required reporting FY2017)*

*19.5 To what extent are management activities affecting wetland areas?*

*Report every five years (Next required reporting FY2017)*



## **20. Water Quality**

*20.1 What is the condition of water bodies on Midewin?*

*Report every five years (Next required reporting FY2017)*

## **21. Wildlife**

*21.1 What effects are management activities having on Management Indicators?*

*Report at least every five years, (Next required reporting FY2017)*

## **22. Management Area 3 – Special Areas**

*22.1 Has there been any non-compliance of restrictions for MA 3 lands? If so, describe actions taken to remedy the non-compliance and explain reasons for the non-compliance.*

On lands designated as Management Area 3, activities on Midewin National Tallgrass Prairie have complied with the standards set for these special areas during the Fiscal Years 2013-2014. No actions were taken or were needed to make any remedies for non-compliance activities.