Monitoring and Evaluation Report

Fiscal Year 2008

Midewin National Tallgrass Prairie

USDA Forest Service

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Jerry Heinrich,
Midewin Volunteer

2008 ANNUAL MONITORING and EVALUATION REPORT

MIDEWIN NATIONAL TALLGRASS PRAIRIE

This report documents Land and Resource Management Plan (Prairie Plan) monitoring completed in fiscal year 2008. 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 is also used to identify the need for "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. In this report you will find information about resource activities that have occurred in the last 5 years on Midewin. In 2008, the Prairie Supervisor approved the first Amendment for the Prairie Plan, and made three other decisions to approve proposals for recreation and restoration and demolition of old Army infrastructure.

The Prairie Plan has been implemented since February 2002 and requires detailed planning at the "site-specific" level in compliance with the National Environmental Policy Act (NEPA). During Plan implementation potential projects are first analyzed for environmental effects. 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 doing what we said we would.

Thank you to each person, group, and organization, and to all of Midewin's partners who have made lasting contributions to habitat restoration and recreation improvements in 2008. 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.

Wade Spang
Prairie Supervisor

SUMMARY

Activities undertaken in Fiscal Year 2008 towards fulfillment of Midewin's Prairie Plan goals and objectives include:

1. Restoration of tallgrass prairie ecosystems and investment in long-term prairie ecology on over 6,000 acres, made possible with support from key partners.
2. Preparation of NEPA analyses and making site-specific decisions for planned restoration and recreation projects;four NEPA Decisions were made in 2008, including the decision for the first Prairie Plan Amendment.
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, and road maintenance on 9,000 acres.
5. Implementation of new recreational facilities, including construction of visitor parking lots, new trails and a trailhead at the Iron Bridge site along Route 53.
6. Demolition of unneeded and unsafe infrastructure formerly used during the Joliet Arsenal operation, including removal of 13 buildings.
7. Maintaining and improving access public recreation on over 7,000 acres of Midewin based on the U.S. Army's cleanup schedule.
8. Offering a variety of environmental education programs such as Mighty Acorns, the El Valor partnership, tours, and a lecture series, to reach out to over 3,000 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 2008 and from the previous five 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.

The Prairie Plan was amended in June 2008. One purpose of the amendment was to designate certain parcels transferred from the Army with land use restrictions, based on soil or groundwater issues, and to track those parcels in a Geographic Information System. Those land parcels were designated as Management Area 3 in the Plan Amendment. The Forest Service will use this annual report to notify the US EPA, Illinois EPA and the Department of Defense of any non-compliance with the restricted land uses for those parcels. The Plan amendment also created a Utility Corridor with standards for future proposed utilities on or through National Forest System land.

In summary, 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.

APPROVAL AND DECLARATION OF INTENT

I have reviewed the 2008 Annual Monitoring and Evaluation Report for the Midewin National Tallgrass Prairie. This report meets the intent of annual monitoring and evaluation outlined in the Prairie Plan (Chapter 6) and complies with regulations contained in 36 CFR 219. The staff at Midewin National Tallgrass Prairie continues to make progress towards the Prairie Plan goals and objectives. Accomplishments to date have addressed the long-term goals in the Prairie Plan.

The monitoring and evaluation conducted in 2008 has resulted in no significant issues or reasons to change the Midewin Land and Resource Management Plan at this time.

This report is hereby approved:

Wade Spang
Prairie Supervisor

12/14/2009
Date

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INTRODUCTION

This report documents monitoring and evaluation results for Fiscal Year 2008. The Midewin National Tallgrass Prairie continues to be a "prairie under construction," as restoration of tallgrass prairie ecosystems alters the former Joliet Army Ammunition Plant landscape into one that more closely resembles conditions that existed before European settlement of the region. The potential for Midewin is that of a vast beautiful prairie, rich with natural and cultural resources that visitors will experience to a greater degree in future years.

Why we monitor

The Prairie Plan which lists specific monitoring questions and this report responds to those questions for FY 2008 and determines:

1. Whether the 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 are the tools used to help determine the success or shortcomings of Prairie Plan implementation, and 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 assess the quality of Prairie Plan implementation determine if there is a need for change in the Plan direction. Monitoring addresses the physical, biological, social, and cultural elements along with any emerging issues. Evaluation addresses the results of monitoring, and makes recommendations for amendments, revisions, or changes in management direction to the Prairie Plan.

The Midewin Land and Resource Management Plan (Prairie Plan) was approved in February 2002. This report covers activities occurring during fiscal year 2008, providing answers to monitoring and evaluation program questions outlined in Chapter 6 of the Prairie Plan.

Monitoring and Evaluation Results

The monitoring results that follow reflect the specific monitoring questions in the Midewin Prairie Plan *Monitoring and Evaluation Plan* (Chapter 6). Questions listed in the Prairie Plan pertain to specific monitoring items. The narratives for each monitoring question include evaluation of the monitoring results. Trends that can be discerned from the monitoring results are also addressed.

Program Accomplishments

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

Table 1: Proposed & actual management activities & actual accomplishments: FY 2006-2008.

National Forest Fund Code	Project Description	FY 2006	FY 2007	FY 2008
NFPN Forest Planning	Maintenance of existing Plan; prepare amendments as needed.	Amendment initiated	Amendment will be completed in FY2008	Amendment signed June 26, 2008
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 10,416 acres: Heritage Inventory: 1,999 acres	TES Monitoring: 10,668 acres Heritage Inventory: 617 acres	TES Monitoring: 10, 484 acres Heritage inventory: 1,303 acres
NFRW Recreation/ Heritage/ Wilderness	Outdoor recreation & management. Heritage resource protection, preservation, & interpretation. Environmental education (EE) programming. Interpretive tours & activities.	Recreation: No openings occurred. Bailey Bridge trail connecting to Wauponsee Glacial Trail construction initiated. Heritage: 69 site surveys, 28 new sites identified, 4 sites requiring further NRHP investigation, 16 sites approved	Recreation: Opened 808 acres for public use. Continued construction of west-side trail. Finalized construction of Bailey bridge. Opened 2 new permanent trailheads. Began construc-tion on a new wayside exhibit. Heritage:	Recreation: Continued construction of the west side trail. Completed the construction of 2 bridges for the multiple use portion of the West side trail. Completed the conversion of a trestle to a multi-use bridge. 1.5 miles of trail constructed in

National Forest Fund Code	Project Description	FY 2006	FY 2007	FY 2008
		for interpretation EE: Expanse of El Valor camp & Urban Academy by 1 additional five-week session. Mighty Acorns served 900 students. Total EE 3,000 students. 450 tour participants, 10 lectures.	9 site surveys; 9 new sites identified, 3 sites requiring further NRHP investigation EE: 10 lectures, 900 Mighty Acorn students, EL Valor camp and Urban Academy.	Prairie Creek Woods. EE: 10 lectures with approx 327 participants, 900 Mighty Acorn students. Reached approx 2,800 student contacts through Conservation Ed.
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 Restoration continued at Blodgett Road, 157 acres 160 acres converted from cropland to grassland 13,602 acres under active management 1,900 linear feet (12) acres of hedge row removed to improve grassland bird habitat.	Managed 20 acres of dolomite prairie to protect TES Restoration continues at Middle grant Creek (502 acres) and Drummond Floodplain (470 acres) 160 acres converted to grassland 14, 346 acres under active management Tree and shrub removal within the Drummond Floodplain and Middle Grant Creek Restoration acres to improve grassland bird habitat- 217 acres	Managed 20 acres of dolomite prairie to protect TES Restoration continues at Middle Grant Creek and Drummond Floodplain for a total of 6,481 acres in restoration 115 acres converted to grassland 13, 412 acres under active management
NFRG Grazing Management	Administer & monitor grazing permits for enhancement of grassland bird habitat (approx. 800-4,000 acres/year).	4,525 acres. 12 grazing permits, 11 allotments managed.	4,525 acres, 12 grazing permits, 11allotments managed.	4,525 acres 11 grazing permits, 11 allotments managed. 1 permit was cancelled.
NFVW Vegetation and Watershed Management	Begin implemen-tation of South Patrol Rd and Mola-Hoff Rd wetland restoration projects (approx. 250-500 acres/yr).	Restoration continued at South Patrol Road, Rt 66 Prairie, Middle Grant Creek &	Restoration continued at South Patrol Road, Rt 66 Prairie, Middle Grant Creek	Restoration continued at South Patrol Road, Route 66 Prairie, Middle Grant Creek

National Forest Fund Code	Project Description	FY 2006	FY 2007	FY 2008
	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.	Prairie Creek Woods. Additional species & area added to seed bed production. 4,463 acres treated for noxious and invasive plants. 1,900 linear feet (12 acres) of old hedge row removed to improve grassland bird habitat	Woods. Additional species & area added to seed bed production 2,034 acres treated for noxious and invasive plants.	Woods 3,696 acres treated for noxious and invasive plants by mowing.
NFLM Land Ownership Management	Administer & monitor special use permits. Continue boundary & title management.	8 special use permits for agricultural use; 3,937 acres	8 special use permits for agricultural use; 4670 acres	5 special use permits for agricultural use; 4,574 acres
NFLE Law Enforcement	Support Forest Service LE activities.	LE activities supported	LE activities supported	LE activities supported
WFPR Wildfire Preparedness	Meet minimum firefighting production capability at Most Efficient Level.	Capacity =10 chains built/hour	Capacity=9 chains built/hour	Capacity=9 Chains built/hour
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 1000 acres prescribed burned. 1,114 acres mowed	Fuels Treatment 1,038 acres prescribed burned. 555 acres mowed.	Fuels Treatment 1,700 acres prescribed burned.
CMFC Facilities Capital Improvements and Maintenance	Implement annual maintenance of Administrative Site. Design and build a visitor center.	No new facilities constructed in FY2006.	No new facilities constructed in FY 2006	No new facilities constructed in FY 2006
CMRD Roads Capital Improvements & Maintenance	Eliminate backlog of deferred maintenance for administrative roads (approx. 5 miles/year). Decommission unneeded roads in	No roads decommissioned	3 miles of roads decommissioned	1.3 miles of roads decommissioned

National Forest Fund Code	Project Description	FY 2006	FY 2007	FY 2008
	sensitive habitat, near tracts of native vegetation, & those that fragment grassland habitat or traverse wetlands or streams (approx. 10 miles/year, as funds allow).			
DMDM Backlog Maintenance	Demolish former Army facilities and infrastructure as funds allow. Started with 22 transite warehouses and 16 railroad trestles.	Demolished 2 buildings	Demolished 12 buildings: 10 Bunkers and 2 warehouses	13 Buildings Demolished
CMTL Trail Capital Improvements & Maintenance	Designate & maintain interim trails. Design & build permanent trails.	19 miles on interim trail maintained by mowing. Construction for West Side permanent trail began.	19 miles on interim trail maintained by mowing. Construction for West Side permanent trail continued.	19 miles of interim trail maintained by mowing Construction of the West Side trail continued. Construction of the Prairie Creek Loop Trail began.
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	No new lands acquired using this fund
PRPR Midewin Restoration Fund	Collect authorized fees from salvage projects and implement priority projects.	No fees were collected	No fees were collected	No fees were collected
FDFD Recreation Fee Demo Program	Improve visitor facilities & services.	Maintained parking lots; provided portable toilets; provided interpretive programs	Maintained parking lots; provided portable toilets; provided interpretive programs	Maintained parking lots; provided portable toilets; provided interpretive programs
PIPI Midewin Rental Fees	Collect fees for authorized agricultural use & implement grassland habitat management projects, including needed equipment, fencing, mowing, and seeding of grasses.	985 acres integrated fuels treatment-mowing. Installed Deer proof fence- seed production area Brush control treatment 1333 acres heavy	Brush control treatment 595 acres-heavy mowing. Herbicide treatment on restoration areas totaling 657 acres. Purchase of	Brush control treatment 595 acres-heavy mowing. Herbicide treatment on restoration areas totaling 657 acres. Continued

National Forest Fund Code	Project Description	FY 2006	FY 2007	FY 2008
		mowing. Herbicide treatment for species control. Purchased Prairie seed harvester and slip on fire pump 6 wheel utility vehicle.	large bat-wing mower to mow invasive species. Continued railroad tie removal to allow prescribed burning. Construction of cattle fence to allow enlargement of grassland wildlife management areas. Pasture seed for planting grassland wildlife management area	railroad tie removal. Pasture seed for planting grassland wildlife management area
CWFS – Other Cooperative Funds	Deposit cooperator funds and donations; spend on authorized projects.	The Wetland Initiative, Corlands, USACE, IDNR funds applied to South Patrol Restoration. Corland, USACE, Ducks Unlimited funds used for Route 66 Prairie. Corlands, USACE funds used for Prairie Creek Woods. CenterPoint collected funds used for Middle Grant Creek restoration. The Wetlands Initiative funds used for Blodgett Road Dolomite Prairie	CenterPoint collected funds used for Middle Grant Creek and Drummond Floodplain restorations. The Wetlands Initiative partner funds used for Blodgett Road Dolomite Prairie and Drummond Floodplain restorations.	CenterPoint collected funds used for Middle Grant Creek and Drummond Floodplain restorations. ExxonMobil collected funds used for Dolomite Prairie restoration.
NFSD – SCSEP Senior Community Service Employment Project	Hire and train 2-3 senior employees each year.	SCSEP program was stopped at all Forest Service offices	N/A.	N/A

National Forest Fund Code	Project Description	FY 2006	FY 2007	FY 2008
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

Budget: How fiscal year 2008 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 have determined the rate of implementation of the Prairie Plan. The federal budget is appropriated on an annual basis by the United Stated Congress for fiscal years (from October 1 through September 30). Midewin leverages the allocated appropriated funds through cooperative partnerships and volunteer contributions. Table 2 shows annual appropriated funds for Midewin.

Table 2: Fiscal Year 2008 Budget

FUND CODE	TITLE OF FUND CODE	FY2004 FINAL	FY2005 FINAL	FY2006 FINAL	FY2007 FINAL	FY2008 FINAL
NFPN	Planning	$28,000	$58,000	$49,000	$168,000	$102,000
NFIM	Inventory / Monitoring	$516,000	$375,000	$193,000	$180,000	$251,000
NFRW	Rec./ Heritage / Wilderness	$555,000	$843,000	$663,192	$574,000	$593,000
NFWF	Wildlife / Fisheries	$557,000	$542,000	$399,515	$376,000	$424,000
NFRG	Grazing Management	$30,000	$29,000	$16,010	$17,000	$20,000
NFVW	Vegetation / Watershed Mgt.	$525,000 (less $140,000 of ECAP= $385,000)	$542,000	$427,786	$376,000	$424,000
NFLM	Land Ownership Mgt.	$96,000	$99,000	$57,000	$63,000	$71,000
NFLE	Law Enforcement	$0	$0	$0	$0	$0
WFPR	Fire Preparedness	$914,000	$914,000	$679,662	$455,000	$662,000
WFHF	Hazardous Fuels Reduction	$71,000	$57,000	$77,157	$98,000	$82,000
WFW2	Rehab and Restoration	$0	$0	$0	$0	$0
NFCC	Condition Class	$3,000	$0	$0	$0	$0
CMFC	Facilities Capital Improvement/Maintenance	$501,000	$569,000	$97,207	$100,000	$100,000
CMRD	Roads Capital Improve./Maint.	$199,000	$306,000	$40,305	$209,000	$235,000
CMTL	Trails Capital Improve./Maint.	$208,000	$167,000	$616,943	$135,000	$148,000

FUND CODE	TITLE OF FUND CODE	FY2004 FINAL	FY2005 FINAL	FY2006 FINAL	FY2007 FINAL	FY2008 FINAL
CMII	Deferred Maintenance	$263,000	$175,000	$638,736	$244,000	$0
CMC2	Fire Facilities – Backlog	$0	$0	$0	$0	$0
LALW	Land Acquisition	$5,000	$25,000	$11,000	$15,000	$15,000
NFMG	Minerals / Geology Management	$0	$0	$50,000	$53,000	$53,000
NFMP	Monitoring	$0	$0	$0	$0	$0
NFTM	Forest Products	$0	$0	$0	$0	$0
TRTR	10% Roads and Trails	$54,000	$51,000	$1,000	$53,000	$0
RTRT	Reforestation Trust Funds	$0	$0	$0	$0	$0
HWHW	Hazardous Waste	$140,000 (ECAP)	$0	$0	$0	$0
PIPI	Midewin NTP Rental Fees	$500,000	$1,295,000	$1,083,556	$1,083,556	$800,000
DMDM	Deferred Maint. – Fund Cleanup	$0	$0	$0	$0	$0
WFW3	Rehab and Restoration	$0	$0	$46,300	$0	$0
TOTAL		**$5,025,000**	**$5,954,000**	**$5,147,369**	**$4,199,556**	**$4,262,000**

Agriculture Use

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 at Midewin 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 seed bed to plant native prairie seed.

Table 3: Agricultural Permits

FISCAL YEAR	Acres Removed from Crop Production Per Year	TOTAL acres authorized for agriculture includes new acquisitions or additions for seed bed preparation
1997 – 2002	1,894	
2003	343	3,998
2004	695	3,664
2005	238	3,112
2006	317	3,937*
2007	160	4,670*
2008	115	4,574

TOTAL acres removed from production and converted to grassland or prairie.	3,762	

* - In 2006 additional land was transferred from the Army which included cropland. In some years hay fields were added to the agricultural permits program. Often non-agriculture lands have been put into row crop as a preparation to planting native vegetation or pasture. These factors account for the temporary increases in acres authorized for agriculture use from previous years.

The trend has been to remove agricultural fields from production to provide habitat. So far, approximately 3,762 acres have been successfully removed from crop production and converted to native habitat and grassland wildlife habitat. This trend may level off in the future because of the increasing need to control invasive plant species in lands already converted. The early years of conversions require the most invasive plant species control. Additional large conversion areas would increase this workload to the point that the quality control could drop, threatening major investments already made.

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 corn production. The Asian soybean rust arrived in the continental US in 2004 and is devastating to 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 15th to protect ground-nesting wildlife.

Planting Pasture Grasses

Both soybeans and wheat have been used at Midewin prior to the planting of native vegetation or for site preparation. Site preparation with a crop of soybeans has resulted in less invasive plant species. Invasive plant species appear to survive in the wheat field or may colonize after the wheat has been harvested in the summer.

Recommendations:

1. Continue agricultural practices to assist in the restoration process and control invasive species.

2. Maintain current levels of agriculture until levels of invasive plant infestations in currently converted areas are under better control, and only then convert more fields to native prairie or cool season pastures.
3. Keep recently transferred acres in agriculture and return agricultural practices to idle fields to control invasive plants species.
4. Precede prairie and wetland restoration with ideally two seasons of roundup-ready soybeans to control invasive plants.
5. Monitor soybean rust developments and prepare NEPA for the possible use of fungicides for control of the rust.

How many acres are under grazing or special use permits?

Grazing is used as a management tool to control grass height and provide habitat for grassland wildlife. Currently there are 11 grazing allotments, two are west of Route 53 with the remaining 9 allotments east of Route 53. The acres grazed will continue to increase over the next several years, than should probably level off. It takes several years after conversion to cool season pasture grasses before a tract is ready for grazing, which accounts for the lag period between conversion and actual grazing expansion. Once invasive control in the existing pastures is in the less costly maintenance phase, additional conversion from crop production to grazing can take place.

Table 4: 2002-2008 Grazing

YEAR	Acres In Grazing Program*
2002	1,996
2003	2,461
2004	2,822
2005	3,467
2006	4,525
2007	4,525
2008	4,525

**Each year some pastures are taken out of grazing for a brief period for rest and grassland renovation. For example in 2008, 3,862 acres were actually grazed and 663 acres were rested and began grassland renovation. However, a total of 4,525 acres remain under the grazing program.*

Recommendations:

1. Continue grazing permits to provide habitat for grassland wildlife.
2. Maintain current acres grazed on Forest Service lands until levels of invasive plant infestations are under better control.

3. Keep pastures recently transferred from the Army in grazing and return cattle to idle fields as practical to control invasive plants.
4. High priority should be given to controlling invasive trees and shrubs and repairing fencing in pastures recently transferred from the Army.
5. Develop new watering sources (wells) and stock watering ponds that can be used by other wildlife.
6. Start shifting cattle grazing from the west side of Midewin to the east side pastures as specified in the Prairie Plan.

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

For the period between 2002 and 2008, approximately 3,045 acres were taken out of crops and planted to cool season pasture grasses. The 2006 planting was replanted to row crops for the short term as site preparation, due to the failure of the pasture planting, and will be replanted to pasture in the near future. Approximately 541 acres of former crop fields have been converted to native vegetation during last decade. No additional seed production fields were added in 2008.

Table 5: Agricultural Land Restoration

Fiscal Year	Cool Season Grass Pasture and Hay Field Conversion	Prairie and Wetland Conversion	Seed Production
1997 - 2002	1,749		145
2003	293	50	
2004	176	488	31
2005	235	3	
2006	317		
2007	160		
2008	115		
TOTAL	3,045	541	176

Conversion of agricultural land use to cool season grass pasture and natural vegetation should slow down over the next few years, for reasons noted above under agriculture and grazing. Conversion to prairie and wetland communities has slowed down due to supplemental work needed on areas already converted.

Recommendations:

1. Slow conversion until invasive plants are under better control in tracts previously converted.

2. Slow conversion to natural communities until supplemental restoration activities has decreased on tracts already converted.
3. If additional staffing, funding, or partnership help becomes available increase conversion of agricultural lands to cool season pasture or restored prairie.
4. Develop environmental assessments for new native vegetation restoration areas. Partners have expressed interest in continuing restoration partnerships with Midewin into new areas.

Air Quality

Is Midewin causing significant deterioration of air quality?

During FY 2008, activities at Midewin did not result in significant sources of air pollution or contribute to the deterioration of air quality. Prior to conducting prescribed burns on 1,900 acres, Midewin obtained the necessary permits from the Illinois Environmental Protection Agency (IEPA). Midewin prescribed burns did not occur during ozone action days. Midewin participated in the development of the draft Illinois Smoke Management Plan with IEPA in 2008.

Capital Infrastructure

Have adequate facilities been provided?

No new facilities were constructed in FY2008. Current facilities are adequate.

Former Army Facilities Removal

How many unsafe Army facilities or structures have been removed?

Thirteen buildings were demolished in 2008.

Are former contaminated areas being restored?

Midewin has not acquired any of the areas deemed as former contaminated areas. I n 2008 the Army administered contracts to “clean up” the contaminated areas prior to a future land transfer to Midewin.

Ecosystem Restoration and Management

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

Fragmented grassland wildlife habitat is primarily grassland that is divided by tree lines, hedge rows, 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 5 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 created. However, approximately 1,668 acres within those areas identified as large unfragmented tracts, have been opened up. Another 685 acres, (not identified as dedicated unfragmented habitat), have been created by prairie and wetland restoration. In 2008, approximately 3,696 acres were under mowing management to keep them from becoming further fragmented into smaller habitat parcels.

Existing habitat should be managed as unfragmented into the future to meet the requirements of the Prairie Plan. Until environmental analysis is completed for tree removal no additional habitat can be "unfragmented". Maintenance of existing grassland wildlife areas through mowing and prescribed burning will continue to control re-invasions of trees and shrubs.

Mowing Brush - Opening Up Wildlife Habitat

Due to the size of Midewin and limited staffing and funding, woody vegetation encroachment continues and in many areas becomes worse every year. Present management includes sites managed for grazing, hay production or natural community restoration areas. Other areas have encroaching trees and shrubs along the many roadside ditches, medians and along linear old railroad beds. Areas that still belong to the Army, but are scheduled to be transferred to Midewin in the near future, are heavily infested with shrubs and will continue to be a source of shrub invasion until they are brought into a management regime.

Recommendations:

1. Complete environmental analysis for restoring large areas of habitat that are currently fragmented.
2. Continue to unfragment grassland habitat for grassland wildlife; this should occur on a yearly basis.

3. Highest priority for unfragmenting habitat should be given to existing grassland habitat areas, grazing tracts, hay fields, prairie/wetland restorations, remnants, and the areas identified as unfragmented in the Prairie Plan.
4. Continue mowing to control small encroaching trees and shrubs in existing management areas and open up others not presently being managed.
5. Use of herbicide treatment is necessary in many tracts to better control invasive trees and shrubs.
6. Increase the use of prescribed fire in grassland wildlife areas to help control invasive trees and shrubs.
7. Maintain roadsides and medians with periodic mowing, prescribed burning and herbicide.
8. Maintain old railroad beds with periodic mowing, prescribed burning and herbicide.

Are habitats being restored?

Restoration includes conversion of croplands to cool season grasses, planting native species, 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 one step in the restoration process. Another important step is the continued management of these converted tracts and any tracts of existing native vegetation. Management includes prescribed fire, invasive plant species control, and the planting of native seeds and plant plugs.

Each year new sites chosen to begin the restoration process and the acres added vary from year to year. The total acreage that has begun restoration has now reached 6,481 acres. This trend should slow, with limited resources and the need to extensively manage the current restoration areas to control for invasive plant species. Rather than add additional acres that can't be managed properly, resources should be spent on the existing restoration areas.

Table 6: Cumulative Acres Being Restored

Year	Cumulative acres being restored
2002	2,389
2003	4,107
2004	5,583
2005	5,443
2006	6,333
2007	6,472
2008	6,481
2009 (planned)	6,500+

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 the west side of Midewin following the desired outcomes in the Prairie Plan. Crop fields, old pastures and abandoned fields have been converted or restored to native plant communities.

We have 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. The table below summarizes the major partner contributions for each project.

Table 7: Partner Contributions to Restoration Projects

Restoration Project	Acres	Primary Partners	Partner Investment
South Patrol Road	459	The Wetlands Initiative, CorLands, USACE, IDNR	$919,000.00
Route 66 Prairie	65	CorLands, USACE, Ducks Unlimited	$156,000.00
Prairie Creek Woods	56	CorLands, USACE	$200,000.00
Middle Grant Creek	502	CenterPoint Properties	$1,500,000.00+
Blodgett Road Dolomite Prairie	151	The Wetlands Initiative	$600,000.00+
Drummond Floodplain	510	CenterPoint Properties & ExxonMobil	$100,000.00+
Lower Drummond	206	The Wetlands Initiative	$165,000.00
		GRAND TOTAL	**$3,640,000.00**

In 2008 the Blodgett Road Dolomite Prairie, Drummond Floodplain, and Middle Grant Creek restoration projects all benefited from cooperative partnerships. The Wetlands Initiative and their donors partnered with the Forest Service to control invasive species and over-seed the existing planted areas at Blodgett Road Restoration area. Restoration work continued at the Middle Grant Creek Project with mitigation funding from CenterPoint Properties. Work completed in 2008 included removal of storage bunkers, invasive species control, road obliteration, and recontouring of the topography. On Drummond Floodplain (including the land that ExxonMobil donated), invasive species were controlled, a soil berm removed, and native plants were planted on the site.

The Wetlands Initiative has agreed to cooperate with the Forest Service for additional restoration in Drummond Floodplain area in 2009. The University of Saint Francis began a new partnership to work on restoration activities in the Upper Doyle Lake area.

Recommendations:

1. Continue new restoration partnerships.
2. Complete environmental assessments and resource planning for an expanded restoration area on the west side.
3. Add new restoration projects when funding, staffing and/or partnership assistance becomes available.
4. Prioritize new restorations to link up with existing and planned restorations.
5. Complete environmental assessments and resource planning for a restoration area within the Kankakee River watershed on the east side of Midewin.
6. Explore new partnerships to expand restoration potential in the future.

South Patrol Road

How many acres are under management?

For this purpose resource management activities are defined 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. Table 8 below shows the total acreage in some phase of resource management.

Table 8: Acres of Resource Management.

Year	Acres of resource management
2002	7,675
2003	9,662
2004	10,900
2005	10,908
2006	13,602
2007	14,346
2008	13,412
2009 (planned)	14,000

Recommendations:

1. Continue management of existing acreage already in resource management to meet a variety of desired objectives.
2. Add resource management to new areas when additional Forest Service funding and staffing and/or partnership assistance becomes available.

To what extent are vegetation composition objectives being met?

The year 2004 was the first year that native vegetation was planted for restoration on Midewin. For many native prairie and wetland species, it takes several years before they are well established and can be accurately identified in the field. In 2006, The Nature Conservancy helped Midewin staff establish a protocol (Plotwise Floristic Quality Assessment) to gather data from restoration sites. That data will be used to measure restoration success and to see if plant composition objectives are being met. Data from major restoration areas will be collected on an annual basis and compared to data from nearby high quality prairie and wetland remnants. It will be several years before there is sufficient data to determine a trend in species composition.

Another method to evaluate species composition is to determine if species being introduced are actually established and can be identified in plant surveys. The South Patrol Road and Route 66 Prairie restoration areas have had species lists developed. However, these species lists are incomplete as some species are present in small numbers and are not noticed during surveys. Other species, in particular graminoid species, are difficult to find and identify in their early years. The most complete species list exists for the South Patrol Road restoration project where 181 species were seeded or planted, and 115 of these species have been found, representing 62% of the species planted. The actual percentage is probably higher. Considering the relative short period of time since initial planting and the difficulty of locating and identifying young plants, 62% is quite adequate at this time. This number is quite high in comparison to other local new prairie restorations in Northeastern Illinois. The number of species established is expected to increase over time.

Yet another method of determining if vegetation composition goals are being met is to look at the invasive plant species. Invasive plant species can be native and non-native. Early in the restoration process invasive species can be quite prevalent. With succession and management, the goal is to have less overall types of invasive species and smaller frequencies or less area for each invasive species. The Nature Conservancy is assisting the Midewin staff to develop at plotwise floristic quality assessment to monitor invasive plant species. This protocol is under development and should be available for future reporting periods.

As the restorations age over the next 5-10 years and additional data points are established, the evaluation of composition goals will be more comprehensive.

Recommendations:

1. Continue to monitor South Patrol Road, Route 66 and Blodgett Road restorations using the Plotwise Floristic Quality Assessment.
2. Expand Plotwise Floristic Quality Assessment to other current and future restoration efforts as staffing and funding is available.
3. Work with The Nature Conservancy to complete development of an invasive Plotwise Floristic Quality Assessment.

4. Explore other methods to monitor vegetation composition goals.

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 and Blodgett Road restoration projects have restored approximately 100 acres of wetlands. Beaver dams also are good at providing wetland habitat. Where beaver dams on Midewin don't threaten neighboring property or infrastructure, the dams have been left in place. Approximately 70 acres of wetland are being maintained through beaver activity. Wetland birds have been seen using these areas sporadically. Wetlands are starting to form in the Middle Grant Creek restoration project. As this and other wetlands are created, wetland bird use should increase.

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.

Grassland Wildlife Habitat Managers

Tables 9, 10 and 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. In 2002, 2007 and 2008, no tall-stature grassland tracts were monitored. Tall-stature grasslands don't differ much from year to year and are given a much lower priority for monitoring. 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.

Table 9: Grass structure in pastures (short stature grass habitat)

Year	Short Grass Acres	Short Grass Height Range	Short Grass Height Mean	Litter Depth Range	Mean Litter Depth
2002	1335	17-47 cm	30 cm	0.6-2.7 cm	1.7 cm
2003	2133	10-47 cm	23 cm	0.3-5.2 cm	1.9 cm
2004	2169	10-53 cm	25 cm	0.3-3.1 cm	1.7 cm
2005	NA	NA	NA	NA	NA
2006	4071	14-54 cm	31 cm	0.3-3.5 cm	1.6 cm
2007	2436	14-35cm	21 cm	0.65-1.96 cm	1.2 cm
2008	3717	13-32 cm	21 cm	0.4-3.6cm	1.5 cm

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

Year	Mid Grass Acres	Short Grass Height Range	Short Grass Height Mean	Litter Depth Range	Mean Litter Depth
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	NA	NA	NA	NA	NA
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

Table 11: Grass height in idle grasslands and restorations (tall stature grass habitat)

Year	Tall Grass Acres	Tall Grass Height Range	Tall Grass Height Mean	Range Litter Depth	Litter Depth Mean
2002	NA	NA	NA	NA	NA
2003	1028	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	NA	NA	NA	NA	NA
2006	1187	31-47 cm	41 cm	0.3-4.1 cm	2.2 cm
2007	NA	NA	NA	NA	NA
2008	NA	NA	NA	NA	NA

Analysis of the grass heights shows that the desired grass height ranges are available at Midewin for the grassland birds. The data indicates that the current management is

appropriate for grassland wildlife and that no change to the management regime is needed at this time.

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 ofter referred to as “unfragmented areas”. The loggerhead shrike prefers the short-stature grassland with some shrubs for nesting. As areas have been unfragmented by removal of woody brush and small trees, small grouping of shrubby trees are left for loggerhead shrikes along the perimeters. This action has been successful to maintain loggerhead shrike populations; see the status of loggerhead shrikes on page 53. Approximately one-half of the loggerhead shrike nests each year are found in these small areas of shrubby trees on the edges of unfragmented tracts. Large amounts of shrub habitat covers the Army property that will be transferred to the Forest Service. Unfortunately most of the shrub species on the Army property are non-native invasive species, and these will continue to be sources of invasive plants until management plans are developed and followed.

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’s believed the population is small. Woodland and savanna restoration in Prairie Creek Woods should provide for additional habitat.

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 doesn’t appear to be critical at this point in time.

Recommendations:

1. Continue grass height sampling using the Robel pole method.
2. Analyze numbers of cows with grass heights and any differences between yearling and mother/calf operations.
3. Correlate the population of grassland birds with grass height and type of cattle operation.
4. Continue to provide isolated shrubby habitat along edges of open grasslands for loggerhead shrikes and other shrubland birds.
5. Develop a periodic monitoring protocol to monitor the status of the red-headed woodpecker.
6. Identify areas for shrubland wildlife and develop plans to restore these areas to appropriate habitat.

Environmental Education/Interpretation

Are tours, interpretation and environmental education programs meeting objectives?

The goal of interpretation and environmental education at Midewin is to enhance the public's awareness and appreciation of prairies in Illinois in such a way that participants are motivated to become advocates for prairie conservation and restoration. 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 FY2008 was slightly higher than in FY2007 with nearly 700 more people utilizing the facility. The interpretive sales outlet provided by the Midewin Interpretive Association (MidIA) also operated for the entire year. Sales continue to increase. MidIA continues to refine their inventory in response to sales data and customer demand.

Midewin Explorations:
Midewin offered a full range of on-site interpretive programs during FY 2008. Programs added to the tour schedule included a spider walk, geology tour, and photo tour. The number of tour participants in FY 2008 was 312. This represents a slight decrease (4%) from last year.

Midewin Lecture Series:
2008 was the sixth year for the Midewin Lecture Series. This series of 10 biweekly evening lectures during the winter months is designed to introduce participants to the natural and cultural history of Midewin and northeastern Illinois. The Midewin Lecture Series continues to grow in popularity with 327 participants in the 2008 fiscal year.

Youth Conservation Corps:
Midewin hosted the YCC crew for eight weeks during the summer of 2008, providing employment and environmental education for six local high school students.

Mighty Acorns Youth Stewardship Program:
During FY2008, a total of 5 schools representing 3 public school districts and one private school, participated in the Mighty Acorns program at Midewin. This represents a stable program when compared to FY2007. Total student participation in the Mighty Acorns program at Midewin remained at 900 for the 2007-2008 school-year. There are currently at least three additional school districts that would like to join the Midewin Mighty Acorns program. Our ability to maintain our existing Mighty Acorns program and to provide some expansion is dependent on our ability to recruit additional volunteers.

El Valor Summer Camp Partnership:
During FY2008 Midewin supported the 8th year 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.

Summary:
Through the programs listed above, Midewin provided interpretive activities for 1,000 participants in FY 2008. Conservation education programs at Midewin resulted in 2,800 student contacts; some students came to Midewin for 2 or 3 different times.

Recommendations:
1. Continue to focus the interpretive program on the Land and Resource Plan management goals.
2. Through use of non-personal interpretive media such as signs and brochures, explore ways to provide the same benefits of interpretation to a new audience of dispersed recreation visitors.
3. Work with the Volunteer Coordinator to expand the volunteer group leaders for the Mighty Acorns and summer interpretive program.
4. Continue to work with El Valor to refine the curriculum and logistics of the Science and Technology Summer Camp.
5. In addition to the staffed interpretive activities, work to develop additional self guided interpretive products that enhance the visitor experience and are consistent with the Prairie Plan and Interpretive Master Plan.
6. Through grand funding opportunities such as the Forest Service “More Kids in the Woods” program and others, pursue alternative funding sources to maintain current program levels and allow for modest program expansion.

Fire

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

The draft Illinois Smoke Management Plan was in the review and comment period process in 2008. Illinois EPA held two public meetings (one in the southern part of the state and one in Chicago) to solicit input for the draft smoke management plan. A public hearing is schedule in the spring of 2009 to fulfill requirements before finalizing the smoke management plan. Anticipated date for final smoke management plan is late fall of 2009.

Have fire burn plan been developed and followed?

A total of 7 burn plans were written in 2008 for approximately 1,700 acres of prescribed burning that was accomplished in the fall and spring of FY 2008.

Hazardous Materials

To what extend have hazardous substances sites have been mitigated?

Midewin did not mitigate any hazardous substance sites in 2008.

Heritage

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

During FY2008, Midewin had under contract a total of 4,319 acres for archaeological survey. A formal archaeological report was completed for a portion or 1,303 acres, and the remaining acreage will be surveyed and reported for FY 2009. For the 1,303 acres, 22 sites, both historic and prehistoric, were identified. To date, 13,912 acres have been surveyed or are under current contract for Phase I survey. At the close of FY2008, Midewin had 171 sites recorded.

Protection of identified sites is achieved by periodic monitoring of site conditions, monitoring during activities, avoidance of sites during project actions, scheduling activities for certain times of year, and other mitigation measures such as fencing. Of the identified archaeological sites, 16 are considered Forest Service Priority Heritage Assets (PHAs). At Midewin, the PHAs are recognized through prior investment in preservation, interpretation, and use, and 5 of the sites are recognized in an approved management plan.

Most of the administrative boundary of Midewin National Tallgrass Prairie is protected by a 12' chain-link fence with three rows of barbed wire at the top. There is little illegal entry onto the property. Signs have been posted at various historic farmsteads outside of the fence line to notify the public that historic artifacts are considered archaeological resources. The signs also have been posted in all of the public parking areas. The Midewin Heritage Association is working with staff to develop interpretive signs to be placed at the farmsteads located near the Iron Bridge Trailhead.

Table 12: Site Identification, protection, & preservation.

Site # and Type	Action
5 Historic Cemeteries	Monitoring & Protection
26 Heritage Resources	Monitoring & Protection
16 Heritage Resources	Protected as PHAs
22 Heritage Resources	Identified and Protected.

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

During FY2008, 22 heritage resources were examined, reported, and/or interpreted. Examination and reporting determine whether sites are eligible for the NRHP. Selected sites are interpreted for the public during tours, Passport in Time volunteer projects, and Mighty Acorn conservation education projects. The Youth Conservation Corps (YCC)

and Midewin Heritage Association (MHA) assist the Prairie Archaeologist in maintaining the McCune Cemetery, Starr's Grove Cemetery, and select farmsteads.

Table 13: Site Examination, Reporting, & Interpretation.

Site Name & Type	Action
5 historic Cemeteries	Interpreted
12 Farmsteads	Interpreted
3 Schoolhouses	Interpreted
2 Prehistoric Sites	Interpreted

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

Traditional cultural properties (TCPs) are protected by non-disclosure of specific information or locations and by periodic monitoring to assure that TCPs are not impacted by project actions, vandalism, recreation, or natural deterioration.

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

In FY2008, all eligible or unevaluated heritage sites and potential TCPs were protected from the direct or indirect effects of management actions. Monitoring found no cumulative effects on heritage resources from any Forest Service undertakings at Midewin. Cumulative effects of an adverse nature are avoided by different methods including diverting activities away from sites or avoiding surface disturbances through scheduling activities at times of the year when the ground is frozen or dry. Proper planning and communication between resource specialists has helped to minimize or eliminate adverse effects – including cumulative effects – on archaeological resources. Cumulative effects are being managed through Midewin's Environmental Management System (EMS), which promotes continual improvement of land management effects by adaptive management actions. Regular Interdisciplinary Team meetings also foster communication between resource specialists which reduces the chance of adverse effects on sites.

During March of 2008, Midewin National Tallgrass Prairie, the Shawnee National Forest, the Advisory Council on Historic Preservation, and the Illinois Historic Preservation Agency signed the *Programmatic Agreement Regarding the Process for Compliance with Section 106 of the National Historic Preservation Act for Undertakings Related to the Prescribed Fire Programs on the Shawnee National Forest and Midewin National Tallgrass Prairie*. The intent of this Programmatic Agreement (PA) is to streamline the Section 106 process for undertakings conducted within the boundaries of Midewin. It establishes a set of protocols to monitor and protect archaeological resources during prescribed burn activities. Prescribed burn activities during FY2008 had no effect on cultural resources or TCPs.

Integrated Pest Management

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

Controlling invasive plants at Midewin focuses on three specific situations:

1) Reducing or excluding invasive plant infestations in native habitat remnants, restored natural habitats, and grassland wildlife habitat;
2) Conducting eradication efforts or preventing seed production in large infestations acting as seed sources for invasive plants; and
3) Eradicating infestations of invasive plant species that are new to Midewin.

The majority of herbicide applications used to control invasive plants in 2008 were glyphosate and triclopyr, with lesser amounts of clopyralid and sethoxydim. These herbicides were directly applied to kill infestations of both herbaceous and woody invasive plants or to kill re-sprouts from cut stumps of invasive trees and shrubs. Manual methods (hand pulling, cutting) were primarily used in habitats where vegetation or rare plant species were present. Herbicides were only used in these situations when a highly selective herbicide was available or a non-selective herbicide could be applied in a manner that minimized exposure to non-target plants.

Mowing is widely used to prevent seed production in many invasive plants, especially thistles (canada thistle, bull thistle, musk thistle), sweet-clover, and invasive shrubs (autumn-olive, amur honeysuckle, osage-orange, buckthorn). By preventing seed production, mowing reduces the rates of population growth and spread in these invasive plants. Then, at some point in the future, these invasive plants can be controlled by combinations of prescribed fire, herbicide application, and/or competition from native plants.

The following table summarizes changes in the expansion of noxious weeds and invasive species at Midewin between FY2002 and FY2007.

Table 14: Expansion of Noxious Weeds and Invasive Species

Measure	2002	2008
Number of NNIS (non-native invasive plant species) present on Midewin	68 species	69 species (four additional species detected since 2002, but at least one eradicated and two previously reported species have been prevented from establishing a permanent presence.
Noxious weeds/Invasive plants – acres infested	As prior to Plan, entire site (15,200 acres) infested, but to varying degrees with different combinations and intensities of species	18,225 acres infested, but this reflects additional land transferred from the Army to the USFS at Midewin, and not an expansion in infestations. However, there is a reduced frequency of some invasive plants in treated areas.

Measure	2002	2008
Noxious weeds/Invasive plants - locations	Some species widespread, others very localized; at least 10 species restricted to less than five infestations (per species) not exceeding one acre. Two infestations (purple loosestrife and blue globe thistle) eliminated	Since 2002, little change for some widespread species (canada thistle, amur Honeysuckle, autumn-olive), but documented declines at some sites for amur honeysuckle, poison hemlock, common teasel, reed canary grass, common reed, and garlic mustard. Since 2002, eradication of infestations for purple loosestrife (4); garlic mustard (1) cut-leaved teasel (2), sericea lespedeza (1), blue globe thistle (1), and crownvetch (4). Of concern are increasing numbers of new infestations for reed canary grass, crownvetch, and cut-leaved teasel, especially and in dolomite prairie areas.
Acres treated for NNIS Plants – Herbicide	Less than 0.1 acre (not including row crop fields)	1,731.5 (primarily in ongoing native habitat restorations)
Acres treated for NNIS Plants – Mowing	2070 (both spot mowing and entire tract mowing)	1,040.2 (spot mowing for thistles and sweet-clover); does not include entire tract mowing for control of encroaching shrubs and trees in grassland habitat.
Acres treated for NNIS Plants – Manual Removal	12 acres	95 (hand control of spot infestations in woodlands, dolomite prairie, and along roadsides)
Number of Invasive Plant Species treated:	11 species: garlic mustard cut-leaved teasel common teasel yellow sweet clover white sweet clover canada thistle musk thistle purple loosestrife autumn-olive osage-orange multiflora rose	30 species were treated in 2008**:** garlic mustard cut-leaved teasel common teasel yellow sweet clover white sweet clover wild parsnip poison hemlock canada thistle musk thistle bull thistle plumeless thistle blue globe thistle purple loosestrife crownvetch bird's-foot trefoil reed canary grass common reed invasive cattails autumn-olive osage-orange multiflora rose amur honeysuckle white mulberry black locust european buckthorn sericea lespedeza red clover white clover

Measure	2002	2008
		quack-grass smooth brome grass field garlic
Invasive Insects Monitored through partnerships	1 species: gypsy moth	1 species monitored in 2008**:** gypsy moth (no captures)

Habitat restoration, combined with partial funding through partnerships, has been essential in expanding integrated pest management for more species on more acreage. Staff training has been expanded to include pesticide applicator license for seasonal positions since 2004, which has allowed increased treatment of isolated infestations both within and outside large habitat restoration projects. In 2008, seventeen staff members and three volunteers were licensed herbicide applicators or operators. Additional habitat restoration, new partnerships, and staff training are needed for these trends to continue.

Projected Monitoring Needs for IPM/Invasive Species:

1. Train additional field-going personnel and volunteers to recognize key invasive species, conduct field surveys for these species, map/collect data on infestation, and enter into appropriate databases.
2. Work with partners to rank invasive threats around TES populations and in rare habitats.
3. Improve methods for determining effectiveness of treatments, whether chemical, mechanical, or manual.
4. Improve methods for collecting and entering information on treatments.
5. Continue to participate in technologies assisting in identification and mapping of invasive plant infestations using remote sensing data.

Cooperative Weed Management Area (CWMA)

In 2008, the USDA Forest Service at Midewin National Tallgrass Prairie was working with other land management agencies in northeastern Illinois to develop a CWMA for Chicago Wilderness region (Lake, McHenry, Kane, DuPage, Cook, Kendall, and Will counties). When in operation the CWMA will be a forum to share information, develop joint strategies, and educate the public concerning invasive plants in northeastern Illinois.

Recreation

Are trails constructed to standards for planned use?

Construction of the West Side Trail continued in 2008 and ½ mile of trail was completed and another ½ mile segment started.

Midewin employees and volunteers completed construction of two bridges (one 12' long and one 28' long) on the multiple-use section of the West Side Trail. South Point Academy completed the conversion of a 100' long former railroad trestle to multiple use trail bridge.

A 1.5 mile mowed path, hiking loop was constructed through Prairie Creek Woods by Midewin's YCC crew. Mulch surfacing will be added as necessary in 2009.

Do recreational facilities meet the needs of the public?

Approximately 7,000 acres of 19,000 acres of Midewin is now open to the public. The demand for recreation facilities continues to grow as new opportunities are developed at Midewin. In 2007, two new trailheads were constructed at Midewin. Approximately 2.5 miles of a multiple-use trail has been constructed and one mile of a hiking trail has been constructed. Midewin is currently utilizing about 18 miles of the former ammunition plant roadbed as interim trails and former army parking lots as trailheads to provide temporary facilities until permanent facilities are developed. Midewin's interim trail system connects into a regional trail system by the Wauponsee Glacial Trail. All of these recreation facilities provide access to more area. As more of Midewin is opened to the public and more restoration is started, the public demand for recreational facilities is expected to increase.

The Welcome Center at the Supervisor's Offcer continued to meet the needs of the visiting public in FY2008.

Research

Are key information needs being pursued as research projects?

In FY 2008, as part of the Regional Office (RO) Review of Midewin National Tallgrass Prairie, a review of research activities with Midewin researchers and Forest Service staff was conducted. The purpose was to identify potential avenues for new collaboration, coordination, and funding for research.

Research is an integral component of the mission of the Forest Service at Midewin, and is emphasized by the Illinois Land Conservation Act of 1995, Midewin's founding legislation. Research helps fill information gaps regarding restoration activities at Midewin. Information needs at Midewin fall into two primary categories:

1. Effectiveness of resource management for purposes of adaptive management.

2. Status of biological resources, especially species of conservation concern,

including RFSS, and federal and state threatened and endangered species.

As in past years, research and monitoring projects completed and ongoing within FY 2008 contributed to each of these information needs.

Midewin has a number of annual projects centered on grassland (and other) bird species inhabiting the site. These include the annual Upland Sandpiper Survey, the annual Shrubland Bird Bioblitz, and volunteer monitoring of breeding birds. Related projects included the monitoring of vegetation height-density relationships to evaluate habitat structure and quality for grassland birds with respect to cattle grazing or its absence.

Other research projects examined a variety of topics, including specific species of conservation concern, relationship of soil nutrient status to plant performance, effects of fire management on prairie organisms, invasive species, etc.

Several proposed projects acquired external funding.

Projects with external funding

Conservation 2000, Prairie seed banks at Midewin National Tallgrass Prairie: a key to its restoration, Brenda Molano-Flores and Christopher J. Whelan, Illinois Natural History Survey, $34,694. This project, which began in 2007, continued in 2008 with additional soil and above-ground vegetation sampling. The project supports Jason Zylka, INHS and the Department of Natural Resource and Environmental Sciences, University of Illinois at Urbana-Champaign, who is using it for his Master's research.

Van Alen Institute for Projects in Public Architecture, the New York Prize, Public Ecologies: the Grand Restoration Experiment (GRE) at Midewin, Ellen Grimes, School of the Art Institute of Chicago, $10,000. Dr. Grimes spent May-July, 2008, in residence at the Van Alen Institute in New York. As part of her residence at the institute, Dr. Grimes also held public conversations with Clive G. Jones (ecologist and senior scientist at the Cary Institute of Ecosystem Studies) and Michael Osman (architectural historian) on the intersection of ecological theory and design practice. In a second public conversation, Dr. Grimes hosted Julia Czerniak (associate professor of architecture at Syracuse University and principal of CLEAR) along with Ed Mitchell (principal of Edward Mitchell Architects and adjunct assistant professor of architecture at Yale University) for an unscripted discussion and debate about the possibilities for public life in new ecological infrastructures, concerning the role of Midewin as a forum for public involvement in ecology and landscape architecture. Both conversations took place around Grimes's topographic model of the Midewin National Tallgrass Prairie, and were supplemented by extensive documentation and analyses of the site's geographic, socio-economic and historical contexts and precedents.

National Fish and Wildlife Foundation, Carbon sequestration via prairie restoration at Midewin, Christopher J. Whelan and Brenda Molano-Flores, Illinois Natural History

Survey, Miquel Gonzalez-Meler, University of Illinois at Chicago, $74,380. This project entails soil sampling in conjunction with the C2000 seed bank project and will determine soil nutrient stocks in relation to past land use history. Using a space for time substitution, potential for below-ground carbon sequestration resulting from prairie restoration will be estimated by using agricultural crop fields and existing remnant prairies as endpoints of a continuum from no restoration to full restoration of prairie habitat.

Other ongoing research projects by subject

- Demography, migration and conservation of the Loggerhead Shrike in Eastern North America, Amy Chabot, Queen's University, Ontario, Canada
- Impact of Prescribed Burning on Prairie Spiders, Frank Pascoe, St. Francis University
- Reproductive ecology of prairie plants, Brenda Molano-Flores, Illinois Natural History Survey
- Evaluating restoration success within disparate landscapes; assessing restoration authenticity and conservation value using insects, plants and vertebrates of conservation concern (2006-2007), Ron Panzer, Northeastern Illinois University
- Sex ratio variation in gynodioecious Lobelia siphilitica: effects of population size and geographic location, Christine Caruso, University of Guelph, and Andrea L. Case, Kent State University
- Field Guide to Fishes and Crayfishes, Francis M. Veraldi, Army Corps of Engineers, and Philip, W. Willink, The Field Museum of Natural History

Social Economics

To what extent is Midewin contributing to the local economy?

Midewin contributes to the local economy through official purchasing of fuel and materials, employee purchases of amenities, and revenue sharing from agricultural receipts.

Agricultural Revenues: Under the Illinois Land Conservation Act that established Midewin, 25% of agricultural leasing revenues are shared with local communities for support of roads and schools. Midewin began contributing to local schools and roads in Will County in 1998. These shared revenues are remitted annually from the U.S. Treasury to the Illinois State Treasurer, who then transfers them to the Illinois

Department of Natural Resources (IDNR) for distribution to the county. Payments to Will County are split 50/50 and paid to the Will County Superintendent of Schools and to the Will County Treasurer for roads.

- Under the subsequent Secure Rural Schools and Community Self-Determination Act of 2000 (106-393), the revenue-sharing payment to Will County was altered from a 25% share to an amount calculated nationally for each county, based on the average of its previous 10 years payments. County payments were then further adjusted by the State of Illinois to account for the fact that Will County had only been receiving payments for 3 of the 10 years.

- The Secure Rural Schools and Community Self-Determination Act of 2000 was amended and reauthorized in 2008 (P.L. 110-343). Each county was responsible for selecting among different options for calculating their share of revenues from National Forest System lands. Will County elected the formula based on prior 25% payments. This substantially reduced its payment in 2008 and for the future; however, this formula offered the highest payment among the available options.

Table 14: Midewin Collections and Contributions

	Total Revenues Collected	Payment to Will County
FY1997	$845,405	
FY1998	$657,676	$375,770
FY1999	$788,205	$197,051
FY2000	$625,015	$156,253
FY2001	$678,083	$217,458
FY2002	$690,653	$218,932
FY2003	$434,967	$221,698
FY2004	$411,306	$224,474
FY2005	$356,618	$229,601
FY2006	$454,703	$231,897
FY2007	$782,503	$231,421
FY2008	$1,640,215	$53,394

Payments in Lieu of Taxes (PILT): Will County began receiving Payment in Lieu of Taxes (PILT) in 1999. The federal PILT program pays counties in compensation for forgone tax revenue from tax-exempt federal land within their boundaries. By law, the payments are calculated using a mandated formula, based on the number of acres of federal entitlement land and the population within each county or jurisdiction. Payments to individual counties may vary from the prior year because of changes in acreage data, which is updated yearly by the federal agency administering the land; and population data, which is updated based on U.S. Census Bureau data. The per acre and

population variables used to compute payments are also adjusted for inflation, using the Consumer Price Index, as required by 1994 amendments to the Payments in Lieu of Taxes Act.

Counties received an additional FY2008 PILT payment authorized by the Emergency Economic Stabilization Act of 2008.

Table 15: PILT Payments

Will County	PILT Payment
FY1999	$11,265
FY2000	$1,642
FY2001	$2,396
FY2002	$2,528
FY2003	$2,851
FY2004	$2,974
FY2005	$3,037
FY2006	$3,638
FY2007	$3,691
FY2008	$5,919

Federal Impact Aid: Since 1950, Congress has provided financial assistance to school districts through the Impact Aid Program, administered by the U.S. Department of Education. Impact Aid was designed to assist local school districts that have lost property tax revenue due to the presence of tax-exempt federal property, or that have experienced increased expenditures due to the enrollment of federally connected children.

Former Joliet Arsenal lands lie within both the Wilmington and Elwood school districts. These school districts are receiving Impact Aid payments under Section 8002, Payments for Federal Property, for which a school district must demonstrate that the Federal Government has acquired, since 1938, real property with an assessed valuation of at least 10 percent of all real property in the district at the time of acquisition.

Determining a school district's Impact Aid payments begins by calculating the aggregate assessed value of the Federal property within the school district, based on the highest and best use of taxable properties adjacent to the Federal lands. The current levied real property tax rate is then applied to this assessed value.

Federal lands at the former Joliet Arsenal were reassessed in 2008 at the request of Will County and the Wilmington school district. Significant changes on the lands surrounding Midewin, including development of several industrial and shipping facilities,

resulted in changing the assessment of the Federal lands from an agricultural class to a business/industrial designation. Nearly 20 percent of the Wilmington school district is federal land.

The assessed value of Midewin lands within the Wilmington school district increased from $319 million to just over $4 billion, increasing the school district's future annual Impact Aid payment from $350,000 to just over $1 million. The Impact Aid payment to the Wilmington school district for 2008 included an additional lump sum of the difference between the old and new payments for the years 2006 through 2008.

Threatened, Endangered Species and Regional Forester's Sensitive Species (RFSS)

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?

The staff at Midewin has been attempting to increase the monitoring done on listed species and RFSS. Current staffing levels limits how much can be monitored, but partners and volunteers are helping to increase our capacity.

In 2008, population counts were completed for ear-leaf foxglove, leafy prairie clover, ginseng, small white ladies slipper, limestone hedge-hyssop and glade quillwort. Subplot counts and population estimates were made for Crawe's sedge, false mallow, pitcher's stitchwort, goldenseal, and Sullivant's coneflower. Acres were surveyed for grassland birds (7,961 acres), wetland birds (305 acres), shrubland birds (1,500 acres), ear-leaf foxglove (15 acres), false mallow (20 acres), glade quillwort (20 acres), pitcher's stitchwort (20 acres), leafy prairie clover (20 acres), limestone hedge-hyssop (20 acres), small white ladies slipper (14 acres), ginseng (34 acres), hairy valerian (14 acres) and Sullivant's coneflower (541 acres), for a total of 10,568 acres.

Table 16: Population Counts and Surveys (Plants).

2002	Population Counts = 2 Acres Surveyed = 4,592
2003	Population Counts/Estimates = 5 Acres Surveyed = 5,948
2004	Population Counts/Estimates = 7 Acres Surveyed = 6,620
2005	Population Counts/Estimates = 7 Acres Surveyed = 6,717
2006	Population Counts/Estimates = 10 Acres Surveyed = 10,416
2007	Population Counts/Estimates = 11 Acres Surveyed = 10,668

2008	Population Counts/Estimates = 10 Acres Surveyed = 10,568

Plants, grassland birds, and wetland birds are adequately monitored at this time. Additional shrubland bird habitat could be monitored, after all the land from the Army is transferred. Much of the current Army land provides habitat for shrubland birds. As more wetlands are re-created at Midewin, monitoring of wetland birds and amphibians will need to be increased. Protocols and monitoring of the RFSS insects needs to be initiated, especially as the prescribed fire program increases and burning takes place in higher quality natural communities. Many of these insects are difficult to capture in large enough numbers to allow for the determination of population trends. Efforts should be made to monitor red-headed woodpeckers.

In compliance with Prairie Plan direction (p. 6-13), monitoring of RFSS and other sensitive species will be conducted on a rotational basis so that in any given year, a subset of species is monitored. Each subset is to be monitored only every five years. Midewin is a fairly new unit and monitoring of many species has just started in the last 5 years. For many target species, the small number of sampling years makes definitive results difficult to determine, but the trends are discernable.

Through the help of volunteers and partners monitoring of some species has taken place at more frequent intervals; on a yearly basis for some species. Much of the plant monitoring is accomplished through a partnership with the Chicago Botanic Garden (CBG) and volunteers with the Chicago Wilderness “Plants of Concern” (POC) monitoring program. Where necessary to meet the needs of intensive monitoring, additional monitoring techniques are added to the POC protocol. Protocols for some problematic plant species are still being developed and/or refined.

Leafy Prairie Clover *Dalea foliosa* (Federally Endangered):

Leafy Prairie Clover

Leafy prairie clover is a relatively short-lived perennial plant associated with dolomite prairie. Weather conditions are major factors on seedling germination and survival, so the number of seedlings can fluctuate wildly from year to year. A more stable population measurement is the vegetative and flowering plants, whose numbers are not as subject to weather conditions. Standardized monitoring of the entire population was initiated in 2002. Overall the population at this point appears stable; the sudden increase during 2008 may be related to high seedling survival from previous years, perhaps because of late summer precipitation patterns. However, prescribed burns and invasive species management are needed. Some invasive species control was conducted in 2008, focusing on removal and control of woody encroachment. With the transfer of 39 acres from ExxonMobil to the FS more thorough

management will be possible in future years. With management, the population size is expected to increase over time.

Table 17: Leafy Prairie Clover Population Sampling

	# Seedlings	# Vegetative Plants	# Flowering Plants	Flowering & Vegetative Plants	Total # Plants
2002	0	83	9	92	92
2003	161	15	64	79	240
2004	31	76	144	220	251
2005	26	53	115	168	194
2006	41	51	95	136	187
2007	99	86	95	181	280
2008	220	223	205	428	648

Monitoring protocols which include assessing population status and impacts of management are currently meeting the goals outlined in the Prairie Plan. The current monitoring techniques are adequate. Re-establishment of fire to the population is critical. Invasive species also need to be controlled within the entire dolomite prairie. This monitoring is being done by FS staff at Midewin.

Currently, Midewin is assisting the US Fish and Wildlife Service in recovery actions for Leafy Prairie Clover in northeastern Illinois. In 2008, Midewin provided 2,200 plants to the Illinois Department of Natural Resources, Forest Preserve District of Kane County, and Forest Preserve District of Will County for the purpose of enhancing existing populations or establishing new populations in appropriate habitat. All the plants were grown from seed collected at existing populations in northeastern Illinois. Midewin is raising more plants for distribution in 2009. With additional restoration planned in the Drummond Floodplain, opportunities may develop for restoration of leafy prairie clover in current degraded areas. With the expansion of dolomite prairie restoration, the viability of the Midewin population will increase.

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

The glade quillwort is a plant found in association with dolomite prairie. Population size monitoring and demographic monitoring has been established for this plant and five years of data has been collected. Since 2003 the plant population tends to fluctuate, but appears to be stable based on the data. Additional years of monitoring will be necessary to determine how well the population is doing. Monitoring the leaf number and longest leaf length was started in 2003 as a possible means of measuring fitness of the plants. So far there is little difference from year to year, but because of the short monitoring period trends are difficult to determine.

The collecting of demographic data may prove problematic; it is difficult relocating tagged plants. The tags apparently get heaved out of the thin soil from the winter freeze

thaw action. Flooding in the Drummond floodplain over the past few years may have had an impact on glade quillwort. The source of the flooding on the BNSF railroad has been resolved and the waters have receded.

In 2004, 156 plants of glade quillwort were salvaged from a degraded dolomite prairie and transplanted onto Midewin, but survivorship has been low (<5% of the transplants have been relocated). A large portion of the glade quillwort was on the ExxonMobil property, with the recent transfer of the property to the FS, management of the entire population will be much easier and effective.

Table 18: Glade Quillwort Population Sampling

Year	Population Size
2003	163
2004	408
2005	277
2006	398
2007	230
2008	369

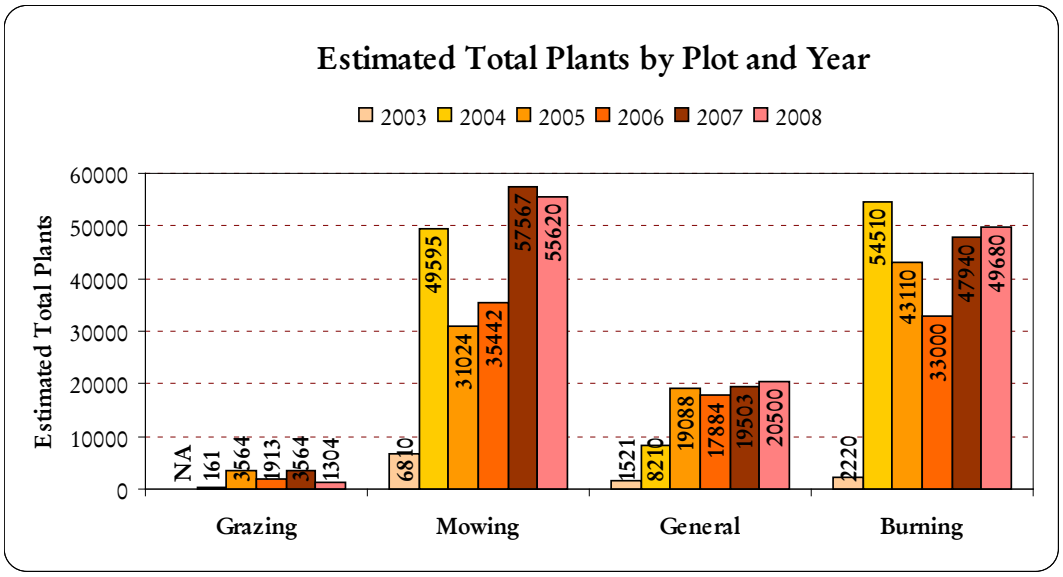
The monitoring goal is to monitor population changes in relation to management activities and to assess the status of the population. Threats to the population such as invasive species are also being monitored. These techniques to determine population size and threats are adequate and should continue on a yearly basis, along with demographic monitoring if suitable techniques can be developed. Monitoring should help determine the effects of future management on this area and RFSS plant populations. Monitoring is being conducted by Chicago Botanic Garden with volunteers and Midewin staff.

Sullivant's Coneflower *Rudbeckia fulgida var. sullivantii* (RFSS):

Sullivant's coneflower is a common perennial plant at Midewin. Monitoring was initiated in 2003 to determine the impacts of management activities (grazing, prescribed burning, mowing, general restoration techniques and a control) on the plant. Five macroplots are being monitored with different management regimes. Each plot has population size, area covered, and invasive species threats identified. In 2004 photopoints were established.

A number of results were obtained: estimated total numbers of plants, total stem density, mean percent cover, estimated flowering stems, estimated flower heads, and estimated percent reproductive. For each result, the grazing tract had lower values. Mowing and burning usually had higher values for each result. Below, as an example, is the estimated number of plants in each plot.

Figure 1: Estimated Total Plant Counts by Management Regime and Year



The data in the figure is interesting, but there aren't enough years of data to make any definitive statements. In 2003, rosettes and cotyledons were not counted so the numbers are low across all the plots. The highest population counts are found under the active management activities of mowing and burning, but these had high population sizes to begin with. Although the smallest plant counts are located in the grazing plot, this does not necessarily mean that grazing is deleterious. This area was not grazed from 1996 to 2003. The first total plant count sampling took place in 2004 and we do not know if this population was originally small. Only additional years of data will ultimately determine the effects of each management regime.

Planned dolomite prairie restoration in the Drummond Floodplain area will provide additional habitat in the future. The recent transfer of the ExxonMobil property and the initiation of management should benefit the population.

Monitoring is conducted by Chicago Botanical Gardens (CBG) with volunteers and Midewin staff. Monitoring goals are to determine the impact of different management practices on population numbers, plant cover, density, frequency, and reproductive output. This species is regularly incorporated into seed and planting mixes used in prairie restoration on Midewin, but only on ecologically appropriate sites.

Ear-leaf False Foxglove *Tomanthera auriculata* (RFSS, Illinois Threatened Plant):

Ear-leaf foxglove is an annual plant associated with a variety of prairie habitats, but most often on fine-textured soils. Due to its annual life history, there are often fluctuations in population numbers; being abundant in some years and essentially

disappearing in other years only to reappear again in subsequent years. On Midewin, earleaf false-foxglove occurs in six sub-populations. Two of the six subpopulations were only discovered during the 2007 monitoring season. Population size monitoring has taken place since 2001. Overall the population appears to be doing well, although some subpopulations may wink out in some years. The current management of prescribed fire and invasive species control may have benefited the population over the last three years.

Table 19: Ear-leaf False Foxglove Population Sampling

Year	Population Size/ Number of stems
2001	1873
2002	1134
2003	236
2004	1100
2005	1775
2006	3224
2007	9,400[1]
2008	22,130[1]

[1]Two subpopulations were so large that population numbers were estimated based on sample transects.

The subpopulations at Midewin have shown characteristic fluctuations. The two largest subpopulations have tended to increase, probably in response to prescribed burning and control of woody encroachment during 2007 and 2008. The smaller populations continue to fluctuate, sometimes down to less than 10 individuals. Overall the population is increasing, but there does appear to be fairly significant deer browse occurring which is decreasing potential reproduction.

Current management practices of periodic prescribed burning and invasive species control appear to be adequate at this time. Restoration of prairie habitat will benefit the ear-leaf false foxglove. Seeds have been planted in some of the restorations, but plants have not been located yet. Deer browse may be a threat, as they browse the tops of the plants before seed can be produced.

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

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

The globe mallow is an annual plant found in dolomite prairies with population numbers in the thousands that may fluctuate yearly. The species occurs on Midewin and the recently transferred ExxonMobil property. The entire population across both ownerships

is sub-sampled. Monitoring started in 2003 and three subpopulations are being monitored. Besides the number of plants, an estimated percent cover is determined. Photopoints have also been established at each subpopulation. Overall, based on five years of data, the populations in the plots look stable. This implies that the overall population is probably stable. With increased and more effective management (prescribed fire and invasive control) with the recent ExxonMobil land transfer the population should increase.

The table below indicates the number of plants within each 6 meter by 6 meter monitoring plot within each of the three subpopulations.

Table 20: Globe Mallow Subpopulation Sampling

Year	Plot 1	Plot 2	Plot 3	Total of 3 Plots
2003	459	164	NA*	623
2004	111	34	317	462
2005	215	14	210	439
2006	81	73	496	650
2007	169	7	87	263
2008	194	12	5	211

* Plot 3 was not established until 2004.

In 2008, the estimated population on subpopulation 2 based on the sampling plot 2 was 1,202 individuals, while subpopulation 3 was estimated to have 8,953 individuals. The number of plants in the plots is at the lowest level since monitoring started, but because of the transient nature of annual plants it is difficult to determine the cause. Only future years of management and data collection will be able to answer this question. Overall the population appears healthy and common throughout the habitat.

The monitoring goals are to reflect population changes in relation to management activities and to track threats to the population. Presently these goals are being met. Continued experimentation with photoplots should continue. With the land transfer from ExxonMobil and start of management, monitoring will become more important and should be able to determine the effects of management.

Pitcher's Stitchwort

Pitcher's Stitchwort *Minuartia pitcheri* (RFSS, Illinois Threatened Plant):

Pitcher's stitchwort is another annual dolomite prairie plant that can have large fluctuations in population size from year to year. Discrete populations may not fluctuate synchronously, because of differences between sites. This plant is difficult to monitor because of its

annual transitory nature. With large population sizes and difficulties in population monitoring, the protocols are still in the formative stages. Seven permanent plots have been established and monitored since 2004. Within the plots, subplots are used to determine population size and the data averaged and merged for the entire plot. Use of the larger plots accommodates the fluctuation in population size and migration of the annual plant locations. The current data is incomplete; therefore no trends can be determined. Photoplots were established in 2004 to visually show population change from year to year.

Table 21: Pitcher's Stitchwort Subpopulation Sampling

Year	Plot 1	Plot 2	Plot 3	Plot 3A	Plot 4	Plot 4B	Plot 6
2004	5	7	375	NA	63	NA	NA
2005	63	NA	129	NA	15	NA	198
2006	0	NA	101	600*	1	147	55
2007	0	NA	77	1,525	1	181	281
2008	0	0	239	3,524	1	240	249

*An estimate because of the large and dense population in 2006 in this location.

The goals of the monitoring are to reflect population changes in relation to management activities and to track threats to the population. Because of the former split ownership only limited management has taken place. Now that the ExxonMobil land has been transferred more effective management can take place and hopefully population increases will be detected. More years of data are needed to make serious evaluations on management practices. The current subplot monitoring doesn't appear to be adequate. It's hoped the photoplots will help determine gross population changes over time. Pitcher's Stitchwort has a very transient nature that makes monitoring difficult. The CBG with assistance from volunteers and Midewin staff monitors this rare plant.

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

Crawe's sedge is small perennial sedge which can be found in dolomite prairies and other calcareous habitats. Subpopulation monitoring began in 2004. Different monitoring techniques are being tried and evaluated. There are currently 4 subpopulations and it will take several years to determine any trends. The random quadrats are censused within the subpopulations to determine densities. The densities are used to estimate population sizes for the subpopulations.

Table 22: Crawe's Sedge subpopulations

Year	Subpop1	Subpop2	Subpop 2A	Subpop3	Subpop4	Subpop5
2004	101-200	101-200	NA	124*	165*	NA
2005	401-800	NA	NA	1094*	2,663*	NA
2005 est	NA	NA	NA	17,769	76,468	NA
2006	7,562	NA	NA	4102	18,118	NA
2007	16,108	NA	NA	8,936	68,221	NA

2008	15,004	NA	214*	196	5,714	101-200

*estimated counts

In 2005 and subsequent years total subpopulation sizes were estimated based on quadrat and transect sub-sampling. Subpopulation 2 has not been monitored recently due to problems with localized flooding.

Monitoring goals are to reflect population changes in number and extent of area occupied in relation to management activities and threats to the population. The monitoring protocols seem adequate at this time. The CBG is helping develop monitoring techniques and conducting the monitoring with trained volunteers.

Salvaged plants of this species, taken from unprotected sites around Midewin, have been used to propagate this species for establishment in restored habitats.

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

This small newly described semi-aquatic annual plant species was only discovered at Midewin in 2003. It grows in small vernal ponds within the dolomite prairie. Monitoring was initiated in 2006 and all the monitoring protocols are just being developed. There isn't enough data at this time to indicate how the population is doing. However, like other annual plants, populations of this species appear to fluctuate with climatic conditions.

Table 23: Limestone Hedge-hyssop Population

Year	Plant Count
2006	1,300
2007	NA
2008	14,420

In 2007, the habitat was much drier than normal and no plants confirmed as *Gratiola quartermaniae* were found. However, a considerable seedbank must exist given the population size recorded in 2008.

Monitoring goals are to determine the population size and area of the population. The techniques used will help determine significant increases or decreases of the population. The CBG with the assistance of volunteers is monitoring the population.

Glade Mallow *Napaea dioica* (RFSS):

Glade mallow is a perennial plant usually fund in alluvial soils along streams and rivers. Two small subpopulations are known and were monitored for presence in 1997, 1998 and in 2002, but not seen in other years. In 2006 and 2007, concentrated efforts were made to relocate these populations. No plants were found. Although no formal search was conducted during 2008, at least two plants were found adjacent to Forest Service

land, along a railroad right-of-way. The goal is to relocate the live plants on Midewin, and cage them to prevent deer browse. Deer browse may be an important factor in this species decline and possible disappearance from FS land. Future searches will be conducted, but it may be necessary to re-establish this plant species. This species is successfully being grown in the Midewin seed production area; some of the plants producing seed are descended from the population once present on Midewin.

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

White lady's slipper is a long-lived perennial orchid that occurs in calcareous prairies. Seven subpopulations are located on Midewin with two additional ones on adjacent Illinois Department of Natural Resources property. Each subpopulation located on Midewin is only represented by a few plants. One subpopulation on adjacent land is represented by several hundred plants. The Midewin subpopulations appear stable, but because of the small size are probably vulnerable.

White Lady's Slipper

Two subpopulations were not relocated in 2008.

Table 24: White Lady's Slipper subpopulation

Year	Subpop 2	Subpop 3	Subpop 4	Subpop 5	Subpop 6	Subpop 7	Subpop 8
2002	1	NA	NA	NA	NA	NA	NA
2003	2	1	2	NA	NA	NA	NA
2004	2	1	2	NA	NA	NA	NA
2006	2	2	3	NA	9	NA	NA
2007	2	5	3	1	10	2	1
2008	2	5	4	NA	NA	3	3

NA means the subpopulations were not yet located in that year.

The monitoring goal is to determine potential population changes in relation to management activities. The monitoring protocol is adequate. The monitoring is being done by volunteers with protocols developed by the CBG.

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

Common valerian is a gynodioecious (has both female and hermaphroditic individuals) perennial plant species that is found in prairies and wetlands. Common valerian currently isn't found at Midewin, although it is found on adjoining state land within a few feet of Midewin's boundary. Similar habitat that is adjacent to state land is censused to document plants on FS managed land. So far no plants have shown up; if plants

appear population monitoring will start. This plant is being reintroduced into Midewin restorations. Once successfully introduced, monitoring of restored populations will start.

American Ginseng *Panax quinquefolius* (RFSS):

Ginseng is a long-lived herbaceous perennial plant with a thick taproot that is harvested for medicinal purposes. Overharvesting is a threat to this species. Ginseng is uncommon at Midewin, only found in a few scattered locations.

Monitoring has sporadic from 2001 by Midewin staff. The plants were monitored in 2001, 2003, 2006 and 2007. Some marked plants have disappeared after 2001. Deer browse was thought to be the problem. Fruiting and foliage persistence improved in 2006 after caging the plants. The population is at threat; caging helps protect from deer browse but also calls attention to the plants and illegal harvesting may occur. Plants were checked in 2008 to ensure that cages were still place, but the plants were not monitored.

Table 25: Ginseng Population Size

Year	Ginseng Population Size
2001	20
2002	NA
2003	9
2004	NA
2005	NA
2006	12
2007	12
2008	NA

Yearly demographic monitoring (number of leaves, height to base of petioles, number of flowers, and number of fruits) was started in 2007 to better monitor the plants and their health. The demographic monitoring should be adequate to determine the health of the population over time. Reintroduction of additional plants and increased protection of existing plants is necessary to have any hope of maintaining the viability of this plant.

Goldenseal *Hydrastis Canadensis* (RFSS):

Goldenseal is another long-lived perennial herbaceous plant with a rhizome that is frequently harvested for supposed medical uses like ginseng. Overharvesting also is a threat to this species. Goldenseal is uncommon at Midewin, found in a few scattered locations.

Monitoring has been sporadic from 2001 by Midewin staff. The plants were monitored in 2001, 2003 and 2006. Approximately 10 subpopulations were located in the early

years, but only 5 in 2006, although the search in 2006 was not as complete. In 2007 demographic monitoring (number of stems with different numbers of leaves, percent herbivory, and number of fruits) was initiated on 6 populations that were located. There isn't enough data to determine any trends although there does seem to be a reduction in stem density which is attributed to deer browse. The population appears to be threatened by deer browse. Plans for 2009 include caging some populations to determine the exact cause of the stem density declines. Caging may also call attention to the plants and may increase the possibility of illegal harvesting.

Reintroduction of additional plants and increased protection of existing plants is necessary to have any hope of maintaining the viability of this plant. The demographic monitoring should be sufficient once enough years of data is collected.

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

The eastern prairie fringed orchid has not been found at Midewin, even though it is located on adjacent land owned by the IDNR. The population is within a few hundred feed of Midewin on similar habitat as that of Midewin. As habitat improvement occurs on Midewin it's thought that the existing population may expand onto Midewin if it isn't already there. This orchid spends early stages of its life cycle underground or as hard to find vegetative plants. There is a possibility that there are vegetative plants on appropriate habitat adjacent to the state land.

Eastern Prairie Fringed Orchid

Seeds have been introduced onto Midewin from adjacent plants, but no plants have been found yet. Seed reintroduction will probably continue in the future. If and when plants start to appear from the reintroduction efforts or show up naturally, monitoring will be initiated. Several partners have expressed an interest in expanding the reintroduction program at Midewin and locating appropriate habitat by surveying for the soil fungus needed by the orchid.

Regional Forester Sensitive Species- 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). Incidental to this specific data collection, data is also collected on other grassland bird species including the RFSS Henslow's sparrow *Ammodramus henslowii* and Bobolinks *Dolichonyx oryzivorus.*

Henslow's sparrow prefers taller grass heights and are usually found in idle grasslands or prairie restorations. Bobolinks tend to prefer the medium height grasses, lightly grazed areas, hay fields or idle grasslands. Loggerhead shrikes and upland sandpipers prefer short grass heights, usually grazed tracts. Loggerhead shrike habitat needs include scattered small trees and shrubs to nest in, while upland sandpipers prefer open relatively treeless expanses. Although there is some fluctuation in the population numbers from year to year, each seems to be doing adequately at this time based on this year's survey.

Table 26: Grassland Bird Population Numbers

Year	Bobolink	Henslow's Sparrow	Upland Sandpiper	Loggerhead Shrike (nests)
2001	278	41	15	9
2002	281	15	11	7
2003	234	16	20	9
2004	325	12	21	8
2005	321	20	20	12
2006	260	10	22	12
2007	268	19	25	10
2008	337	22	20 est.	6

In order to count most of the upland sandpipers and loggerhead shrikes this annual census is completed slightly early in the breeding season for some species of grassland birds. Other more rigorous census monitoring is being performed throughout the breeding season and that data fits very closely with the data collected from the upland sandpiper/loggerhead shrike survey. In 2009 additional monitoring by staff, partners and volunteers is planned to get a better idea of the status of grassland birds at Midewin.

Loggerhead Shrike

None of these four species are at the population numbers estimated to be needed for viable populations over a 50-year period. The addition of the Army lands will increase these population numbers. As more restoration takes place, the population numbers should increase and hopefully approach the numbers needed for viable populations.

Jim Herkert from The Nature Conservancy has also been monitoring grassland birds of concern at Midewin by point count data with distance sampling which provides for robust population size estimates. This data can be used to monitor population trends and the effects of management practices.

The figure below shows the population trends from 2002 thru 2008. Henslow's sparrows are just too rare to determine trends. Eastern meadowlark and bobolinks show a negative trend. Yet the upland sandpiper survey data shows increases. This

may be a factor of where the point count surveys are conducted. Point count surveys will be expanded in the future, to determine if there is really a decrease with these species. A new volunteer monitoring program is also starting to help shed more light on the status of birds at Midewin.

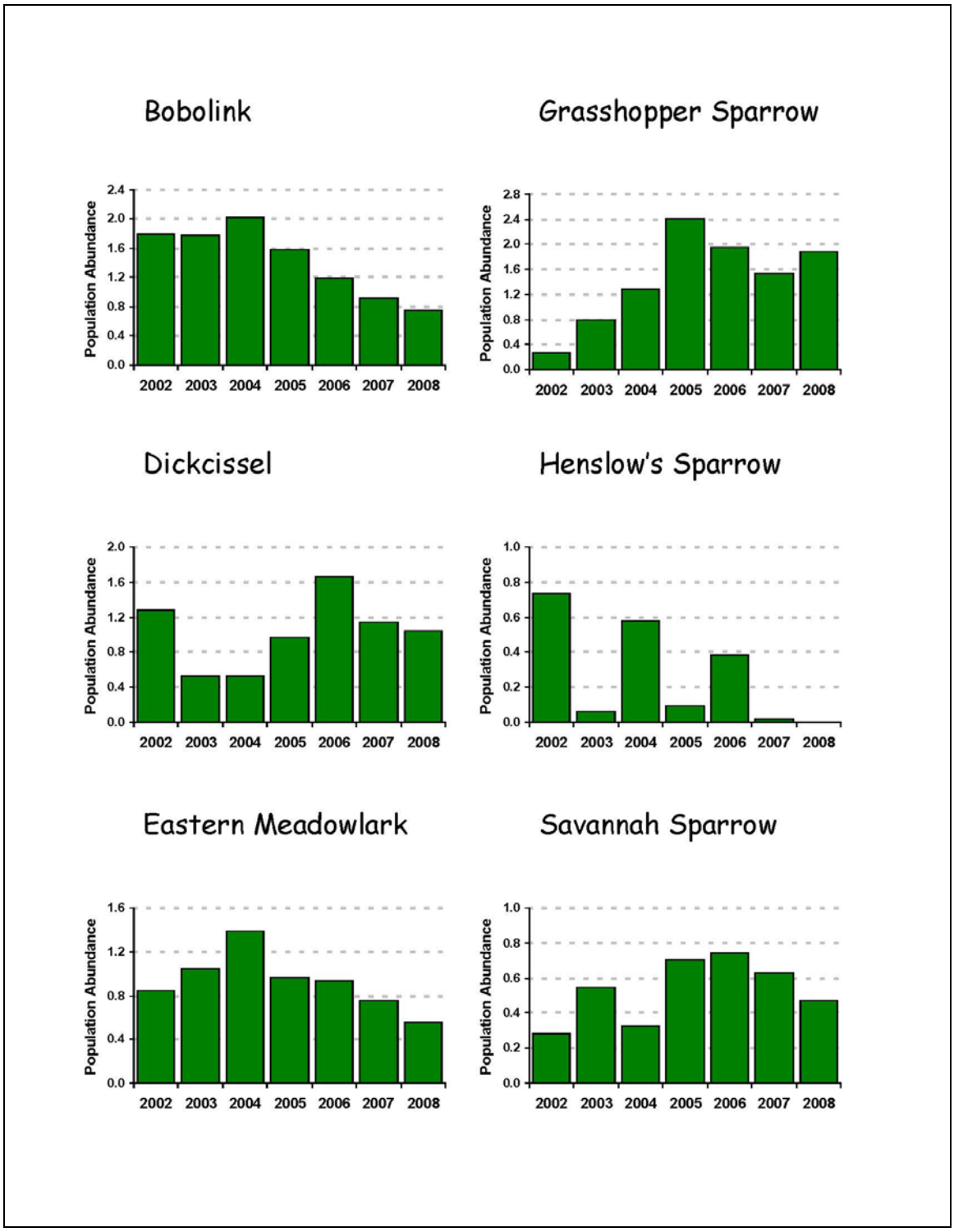


Figure 2: Annual Population Indices for Grassland Birds

These annual population indices for grassland birds are based on 270 point counts conducted in 11 fields from 2002-2008. Annual indices are least-square means that were derived from a generalized linear model that included fields and years, in order to account for the fact that not all fields were surveyed in every year.

This data can also be examined to show what types of habitat is being used by each bird species. Grassland tracts can be broken up into four types. Active pasture represents the short-grass stature grasslands. Hay fields represent the medium-grass stature grasslands. The tall-grass stature grasslands are represented by cool season grasslands idle (idle pastures) and warm season grasslands (restored prairie). However, there isn't enough data to draw graphs for upland sandpipers.

Special Areas

Has there been any non-compliance for Management Area 3 Lands? If so, describe actions taken to remedy the non-compliance and explain the reasons for the non-compliance.

Resource activities on lands designated as Management Area 3 have all complied with the standards set for these special areas. Therefore no actions were needed to remedy for non-compliance activities.

CONCLUSION

Midewin has been a busy place in 2008, with Forest Service staff, and many volunteers and partners all working together to plan, and begin new recreation and restoration projects, and monitor the ecological and biological resources of the Prairie. Much progress has been made towards the goals and objectives of the Prairie Plan, as new trails and parking lots are built for recreational use and more acres are brought under management for restoration or control of invasive species. The Prairie Plan was amended to add a new Management Area and create new standards for and designate utility corridors for future use.