

## CHAPTER 6

# MONITORING AND EVALUATION PLAN

### 6.1. INTRODUCTION

Monitoring and evaluation are essential feedback mechanisms within the adaptive management framework to keep the Prairie Plan dynamic and responsive to changing conditions. Monitoring and evaluation provide the public, the Forest Service, and other concerned resource agencies and partners with information on the progress and results of Prairie Plan implementation. The evaluation process provides the feedback that triggers adjustments to actions, plans and budgets, to ensure that they are realistic and are being adhered to.

The Prairie Plan provides management direction for the Midewin National Tallgrass Prairie in terms of goals, objectives, standards and guidelines, all of which are based on underlying working assumptions about policy, science, and technology).

Monitoring may include simple observation of the results of management activities, or more rigorous and systematic data collection, to provide a basis for periodic evaluation of the Prairie Plan. There are three levels of monitoring:

- Implementation Monitoring – Was the project accomplished? This determines if plans, prescriptions, projects and activities are implemented as designed and in compliance with Prairie Plan goals.
- Effectiveness Monitoring – Did the project work? This determines if plans, prescriptions, projects and activities are effective in meeting management goals and direction.
- Validation Monitoring – Is the guidance okay? Here a determination is made if the initial data and assumptions used in developing the Prairie Plan were correct, or if there is a better way to meet planning regulations, policies or goals.

Evaluation includes analysis of the information and data collected during the monitoring phase. A review and evaluation of monitoring results will be conducted annually and summarized in an annual report. The Prairie Supervisor will also review the conditions on the land in the 5<sup>th</sup> year of the Plan implementation to determine whether conditions have changed significantly.

Monitoring is most effective when driven by specific questions, and monitoring evaluation will determine the need to revise management plans or how they are implemented. Monitoring and evaluation thus form the basis for adaptively

managing all Forest Service lands. Monitoring and evaluation keep the Land and Resource Management Plan up-to-date and responsive to changing issues by verifying the effectiveness of management plan standards and guidelines and anticipated program and project effects on resources. Monitoring and evaluation may provide critical information for developing amendments (legal modifications) to the management plan.

## **6.2. ROLES AND RESPONSIBILITIES**

The Forest Service will continue to strengthen the collaborative working relationships between Midewin National Tallgrass Prairie and the Illinois Department of Natural Resources (IDNR). Midewin National Tallgrass Prairie will implement the Prairie Plan and conduct implementation monitoring and evaluation including: preparing an annual monitoring program, collecting data for implementation, effectiveness, and validation monitoring; collaborating with the IDNR for data collection, and analyzing and interpreting monitoring data and reporting monitoring results, conclusions and evaluation recommendations to the Regional Forester, and making these reports available to the public and other agencies.

The IDNR may share responsibilities to provide the Forest Service with scientific and technical expertise to conduct effectiveness and validation monitoring and evaluation. These responsibilities may include advising and assisting Midewin with development of study plans, sampling methods and designs, collection of data, and analysis and interpretation of data.

## **6.3. ANNUAL MONITORING AND EVALUATION PROGRAM**

The Prairie Supervisor is responsible for coordinating the preparation of an annual monitoring and evaluation report. This report will summarize the monitoring activities conducted during the year covered and the results obtained, address each of the monitoring questions listed in this monitoring plan, and evaluate the implementation of the Prairie Plan. The annual monitoring and evaluation report should include recommendations for remedial action, if necessary, to make management activities and their effects consistent with the Prairie Plan. Finally, it may be necessary for Midewin leadership team to assist in prioritizing what will be monitored in any given year.

## **6.4. MONITORING AND EVALUATION ITEMS**

The Prairie Plan monitoring and evaluation items are organized in Table 6-1. Data collected for each monitoring item will be aggregated and evaluated on an annual basis, unless otherwise noted. Monitoring items are displayed alphabetically by resource area, and include the following components:

## **6.5. MONITORING QUESTIONS**

Specific monitoring questions are developed to provide information essential to measuring Prairie Plan accomplishment and effectiveness. These questions

address existing issues and help identify emerging issues. Monitoring questions are constructed to address one or more monitoring drivers.

## **6.6. MONITORING PRIORITY**

After monitoring questions are developed, a screening process sorts the more significant questions from the less significant to ensure efficient use of limited resources—time, money, and personnel. The priority of a question may affect the intensity or extent of associated monitoring activities. Following is a list of considerations used in the screening process with a brief explanation or example:

**6.6.1. High Management Assumption Uncertainty:** Examples: (1) a new way of doing something where there is limited experience with the new technique; (2) actions taken in response to an unprecedented situation.

**6.6.2. High Condition Disparity:** Examples: (1) a particular habitat component is at a much lower level than desired; (2) the amount of use of a particular resource or use at a particular location is much higher than desired.

**6.6.3. Likely To Affect:** There may be other forces affecting a resource much more significantly than anything the Forest Service does. Also, there may be portions of the landscape where no management activities are planned. An efficient monitoring strategy will focus on those circumstances where management activities are expected to have a discernable outcome.

**6.6.4. Great Consequences:** Examples: (1) if a species is at risk, consequences could be high, whether or not management activities are likely to affect it; (2) if a relationship with cooperators or local government is at risk due to a management activity, consequences could be high (in this case, a human resource).

**6.6.5. Key Issue:** Key issues identified through scoping may warrant monitoring even if they are (1) well understood, (2) the existing condition is good and (3) management activities will have little impact. Monitoring may be necessary for educational and/or accountability purposes.

**6.6.6. Easily/Cost Effectively Answered:** If the cost of answering the question is especially high in regard to benefits, or if an adequate monitoring method cannot be developed, the resource in question may be more appropriately studied by another entity, such as Forest Service research, Illinois Department of Natural Resources (Natural Heritage or Illinois Natural History Survey) or private educational institutions.

### **6.7. MONITORING DRIVERS**

The National Forest Management Act (NFMA) requires specific monitoring tasks. The level and intensity of additional monitoring is dependent on available staffing, funding and Midewin priorities.

Following is a list of monitoring drivers:

- Illinois Land Conservation Act (Pub. L. No. 104-106)
- Prairie Plan desired conditions, goals, objectives, standards and guidelines
- Validation of assumptions/models
- Legal and regulatory requirements and Forest Service Manual direction
- Public expectations/issues
- Cost
- Court rulings

### **6.8. UNIT OF MEASURE**

A unit of measure is a quantitative or qualitative parameter to answer monitoring questions. One or more units of measure can be associated with each question. Examples include acres of grassland bird habitat, miles of impaired streams, number of upland sandpipers, or condition of the trail system.

### **6.9. SAMPLING METHODS**

General methods for collecting information needed to address the monitoring question. These methods will be periodically updated.

### **6.10. SCALE**

Scale describes the level of monitoring and analysis in relation to land area. This measure is important in describing effects dealing with habitat heterogeneity and viability issues; as well as, describing cumulative effects of management actions. Examples include: 6<sup>th</sup> order hydrologic code, geographic area, site specific, management unit, or landscape (grassland-wide).

### **6.11. FREQUENCY**

Frequency describes the pattern of monitoring efforts over time. Examples include: annually, every five years, or every ten years.

### **6.12. Monitoring and Evaluation Items for Midewin National Tallgrass Prairie Plan**

The monitoring and evaluation items contain the relevant Land and Resource Management Plan monitoring called for by the monitoring drivers. It may be necessary for Midewin leadership to assist in prioritizing what will be monitored in any given year.

**Table 6-1**

<b>Monitoring Question</b>	<b>Monitoring Priority</b>	<b>Monitoring Driver</b>	<b>Sampling Unit</b>	<b>Sampling Methods</b>	<b>Scale</b>	<b>Frequency</b>
<b>1. Program Accomplishments</b>  1.1. Determine how well objectives have been met by a quantitative comparison of outputs and services with those projected by the Plan	High	36 C.F.R. §219.12(k), 1; §219.10 (g); §219.9 (a) (3).				Annual
<b>2. Agriculture Use</b>  2.1. Are continued agriculture permits used for resource management purposes?	Easily/Cost Effectively Answered; Great Consequences	PL 104-106	Number of permits	Review habitat management plans and agriculture special use permits or grazing permits.	Site	Annually
2.2. How many acres are under grazing or special use permits?	Easily/Cost Effectively Answered	PL 104-106	Number of agriculture permits and acres/ permit.	Review agriculture special use permits or grazing permits.	Site	Annually
2.3. How many acres of former ag land use are being restored?	Easily/Cost Effectively Answered; Great Consequences	Goal	Acres	Review habitat management plans and agriculture special use permits or grazing permits	Site	Annually
<b>3. Air Quality</b> 3.1. Is Midewin causing significant deterioration of air quality? (contributing to air quality problems)	Key Issue; Great Consequences	Clean Air Act	Regional air quality information	Summarize and evaluate information from Illinois State and US EPA; review fire management protocols.	Regional (Chicago metropolitan region).	Annually

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Monitoring Question	Monitoring Priority	Monitoring Driver	Sampling Unit	Sampling Methods	Scale	Frequency
<b>4. Capital Infrastructure</b> 4.1. Have adequate facilities been provided?	Key Issue	Goal	Number and type of facility	Customer survey and individual contacts with Midewin staff/visitors	Site	Annually
<b>5. Former Army Facilities Removal</b> 5.1. How many unsafe Army facilities or structures have been removed?	Great Consequences	Goal	Number of facilities or structures	Review of relevant contracts and EPA and Army information and reports.	Site	Five years
5.2. Are former contaminated areas being restored?	Great Consequences	Goal	Acres of restored habitat	Review habitat management plans	Site	Annually
<b>6. Ecosystem Restoration and Management</b> 6.1. Are unfragmented blocks of grassland bird habitat being created and maintained?	High Management Assumption Uncertainty; High Condition Disparity	36 C.F.R. §219.12 (k)	Acres of habitat types. Compare this to the effects estimated for these changes in the Prairie Plan.	Review habitat management plans	Site	Annually
6.2. Are habitats being restored?	Likely to affect; Great Consequences; Key issue	Goal	Acres of habitats restored.	Review habitat management plans	Site	Annually
6.3. How many acres are under management?	Likely to affect; Great Consequences; High Condition Disparity	Goal	Acres of habitats under management	Review habitat management plans	Site	Annually

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Monitoring Question	Monitoring Priority	Monitoring Driver	Sampling Unit	Sampling Methods	Scale	Frequency
6.4. To what extent are vegetation composition objectives being met?	Great Consequences; Key issue; High Condition Disparity	Goal	Location and percent of habitat area not, moving toward, or meeting desired vegetation composition, Management Indicators	Review habitat management plans	Site	Five years
6.5. To what extent is habitat management reaching desired habitat structure for RFSS birds and reaching Management Indicator goals?	Great Consequences; Key issue; High Condition Disparity	Goal	Characteristics of grassland vegetation during critical periods	Review habitat management plans	Site	Annually
<b>7. Environmental Education/Interpretation</b> 7.1. Are tours, interpretation and Environmental Education Programs meeting objectives?	Key issue	Goal	Individual participants	Survey of participants	Site	Annually
<b>8. Fire</b> 8.1. Has a fire/smoke management plan for Midewin been developed and followed?	Likely to affect; Great Consequences; Key issue	Clean Air Act; Goal	Plans	Review fire management plans	Site	Annually
8.2. Have fire burn plans been developed and followed?	Likely to affect; Great Consequences; Key issue	Clean Air Act; Goal	Number of fire burn plans	Review fire management plans	Site	Annually

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<b>9. Hazardous Materials</b> 9.1. To what extent have hazardous substance sites have been mitigated?	Key issue; Great Consequences	Goal	Number of sites, testing, results of tests	Site Surveys	Site	Annually
<b>10. Heritage Resources</b> 10.1. To what extent are National Register eligible sites being identified, protected, and preserved?	Great Consequences	Legal - National Historic Preservation Act	Number of sites.	Review of National Register Records	Site	Ten years
10.2. To what extent are National Register eligible sites being appropriately examined, reported, and interpreted?	Key Issue	Legal - National Historic Preservation Act	Number of sites	Reports from Midewin staff and visitors and adjacent landowners, peer review of reports and publications.	Site	Ten years
10.3. To what extent are traditional cultural properties being identified and protected?	Likely to Affect	Goal	Number of sites	Locate heritage sites	Site	Ten years
10.4. What cumulative effects are management actions having on cultural resources and/or traditional cultural properties?	Likely to Affect	Goal	Number of sites	Locate and re-visits heritage sites, landscape view landscape planning and review	Site	Ten years

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Monitoring Question	Monitoring Priority	Monitoring Driver	Sampling Unit	Sampling Methods	Scale	Frequency
<b>11. Integrated Pest Management</b> 11.1. To what extent are noxious weeds and invasive species expanding or being reduced?	Likely to affect; Great Consequences; Key issue.	Goal	Species, location, and acres of noxious species, acres treated	Evaluate noxious weed impacts to resources. Conduct on-site evaluations to assess past, current, and future noxious weed impacts and their effects to desired health of prairie ecosystem.	Site	Record acres treated annually as required, and then ongoing species survey every five years
<b>12. Land Ownership</b> 12.1. To what extent land boundaries have been adjusted?	Likely to affect	Goal	Number of acres of land purchase, donation, or exchange	Evaluate land purchase, donation, or exchange where needed to (1) protect and preserve historic, cultural, and natural areas; (2) provide for public access, use, and enjoyment of prairie resources; and (3) improve administrative efficiency and effectiveness at Midewin	Site	Five years
<b>13. Recreation</b> 13.1. Are trails constructed to standards for planned use?	Great Consequences	Goal	Location and condition of trail segments and facilities, miles of trail,	User Surveys User Counts;	Site	Annually
13.2. Is the Prairie being managed in accordance with prescribed ROS guidelines?	Likely to affect	Goal	Representative sample.	Every year monitor a representative sample of each Management Area. Report cumulative ROS changes every 5 years.	Site	Monitor annually, Report every five years

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<b>Monitoring Question</b>	<b>Monitoring Priority</b>	<b>Monitoring Driver</b>	<b>Sampling Unit</b>	<b>Sampling Methods</b>	<b>Scale</b>	<b>Frequency</b>
13.3. Do recreational facilities meet needs of public?	Great Consequences	Goal	Location and condition of developed sites	User Surveys, letters,	Site	Five years
13.4. Are visitors well informed of recreation resources? Have resources been adequately interpreted?	Key Issue	Goal	Individual participants	Customer survey and individual contacts with Midewin visitors and adjacent landowners	Site	Annually
<b>14. Research</b>						
14.1. Are key information needs being pursued as research projects?	Key Issue; Easily/Cost Effectively Answered	Goal	Number and type of projects	Project report	Site	Annually
14.2. What is the contribution of these projects to Midewin and general knowledge?	Key Issue	Goal	Number of publication, reports, and presentations	Evaluation of publications, reports, and presentations.	Site/ Global	Five years
<b>15. Scenery Management</b>						
15.1. Is scenery of NFS land improving?	Likely to affect	Goal	Acres and location of desired versus actual scenery integrity condition.	Survey; Compare desired acres with actual acres.	Site	Five years
<b>16. Social and Economic</b>						
16.1. To what extent Midewin is contributing to the local economy?	Key Issue; Easily/Cost Effectively Answered	Legal 36 C.F.R. §219.7(f)	NFS related Federal revenue sharing with State & Local Govts, School	Survey;	Site	Ten years

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Monitoring Question	Monitoring Priority	Monitoring Driver	Sampling Unit	Sampling Methods	Scale	Frequency
<p><b>17. Threatened, Endangered Species and Regional Forester's Sensitive Species</b>                      17.1. To what extent are National Forest System 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?</p>	Key Issue; Great Consequences	Legal ESA, Migratory Bird Treaty Act and 36 C.F.R. §219.19(a)(7);	Individuals or populations as appropriate	Population counts or sampling; acres of habitat, protected or improved; acres surveyed for populations or potential habitat	Site	Annually, or as appropriate for species for censusing
<p>17.2. To what extent are National Forest System Lands and their management contributing to the viability of Regional Forester' Sensitive Species and other species of concern?</p>	Key Issue; Great Consequences	Migratory Bird Treaty Act and 36 C.F.R. §219.19;	Individuals or populations as appropriate	Population counts or sampling; acres of habitat created, restored or improved; acres surveyed for populations or potential habitat; number of active reintroduction programs	Site	Five year <sup>1</sup>
<p><b>18. Transportation &amp; Utilities</b>                      18.1. How many miles of roads are decommissioned?</p>	Likely to affect; Great Consequences; Key issue.	Goal	Miles of roads	Funds spent on road removal	Site	Five years

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Monitoring Question	Monitoring Priority	Monitoring Driver	Sampling Unit	Sampling Methods	Scale	Frequency
18.3. To what extent are road closures effective in preventing off-road vehicle travel?	Key Issue	Legal 36 C.F.R. §219.21 (g)	Number of off-road vehicle use beyond closed road signs or gates: Number of off-road vehicle accidents, number of off-road and other user conflicts.	Surveys, visitor complaints Number of tickets issued by law enforcement personnel	Site	Two years
<b>19. Watershed, Riparian, and Wetlands</b> 19.1. What is the condition of watersheds within Midewin?	Likely to affect	Goal	Watershed	Inventory and classify all Sixth level watersheds as to Condition Class I, II, & III	Geographic	Ten Years
19.2. How many acres of riparian lands have been restored?	Likely to affect Key Condition High Condition Disparity	Goal	Acres of riparian land, Changes in species composition (native vs. non-native)	Survey, species list, presence or absence; cover extent and type	Site	Five Years
19.3. To what extent are management activities affecting riparian areas?	Likely to affect Key Condition High Condition Disparity	Goal	Acres and location of riparian areas not meeting rating of proper functioning condition.	Survey, species list, presence or absence; cover extent and type	Site	Five years
19.4. How many acres of wetland have been restored?	Likely to affect Key Condition High Condition Disparity	Goal	Acres of wetlands, Changes in species composition (native vs. non-native)	Survey, species list, presence or absence; cover extent and type	Site	Five years

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<b>Monitoring Question</b>	<b>Monitoring Priority</b>	<b>Monitoring Driver</b>	<b>Sampling Unit</b>	<b>Sampling Methods</b>	<b>Scale</b>	<b>Frequency</b>
19.5. To what extent are management activities affecting wetland areas?	Likely to affect Key Condition High Condition Disparity	Goal	Acres of wetlands, Changes in species composition (native vs. non-native)	Survey, species list, presence or absence; cover extent and type	Site	Five years
<b>20. Water Quality</b> 20.1. What is the condition of water bodies on Midewin?	Likely to affect	Clean Water Act; Goal	Water bodies (i.e., ponds, streams)	Inventory and classify the quality, quantity, and condition of the water bodies	Site	Five years
<b>21. Wildlife</b> 21.1. What effects are management activities having on Management Indicators?	Great Consequences; Key Issue	Legal: 36 C.F.R. §219.19 (a)(6)	Management Indicators	Population counts or sampling; acres of habitat created, restored or improved; acres surveyed for populations or potential habitat; number of active reintroduction programs; Habitat structure or composition.	Site	At least every Five years

<sup>1</sup>Monitoring of sensitive species will be conducted on a rotational basis so that in any given year a subset of species is monitored, but each subset is monitored only every five years.