



United States
Department of
Agriculture

Forest
Service

Hoosier
National
Forest



Hoosier National Forest

Fiscal Year 2006 Monitoring and Evaluation Report

September 2007

**Brown, Crawford, Dubois, Jackson, Lawrence, Martin,
Monroe, Orange, and Perry Counties, Indiana**

Responsible Official:
Kenneth G. Day, Forest Supervisor

For more information, contact:
Dale R. Weigel, Monitoring Specialist
Hoosier National Forest
811 Constitution Avenue
Bedford, IN 47421
Office: 812-275-5987
FAX: 812-279-3423
TDD: 800-877-8339
Website: www.fs.fed.us/r9/hoosier

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, DC 20250-9410, or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

PURPOSE/SCOPE OF REPORT

Reasons for Monitoring and Evaluation Report

The annual monitoring and evaluation report is required by the National Forest System Land Resource Management Planning Rule 36 CFR 219.11 (2000). It is also required by the Hoosier's Land and Resource Management Plan (USDA FS 2006).

Background

Previous Monitoring

Under the previous *Forest Plan* monitoring included the annual breeding bird survey, Indiana bat (*Myotis sodalis*) surveys, non-native invasive species (NNIS), individual project monitoring, recreation use, and heritage resources.

Monitoring Program

Forest Plan

The *Forest Plan* describes three levels of monitoring:

- Monitoring Implementation—This determines if prescriptions, projects, and activities are implemented as designed and in compliance with *Forest Plan* goals and guidance.
- Monitoring Effectiveness—This determines if prescriptions, projects, and activities are effective in meeting management goals and direction.
- Validation Monitoring—This determines if the initial data and assumptions used in developing the Plan were correct or if there is a better way to meet forest planning regulations, policies, and goals.

Table 4.2 of the *Forest Plan* (USDA FS 2006) contains the items to monitor by Forest goal.

Monitoring Guide

The Hoosier National Forest was not required to complete the Monitoring Guide until FY 2007, because the *Forest Plan* was not completed until January 2006. The Monitoring Guide will provide guidance on how to accomplish monitoring of the items listed in Table 4.2 of the *Forest Plan*.

Annual Monitoring Activities

The annual monitoring activities will be selected from the Monitoring Guide and will be listed in the annual monitoring plan. Because we did not complete the Monitoring Guide in FY 2006, an annual monitoring plan was not developed. The monitoring activities completed in FY 2006 were accomplished by Forest personnel and cooperators. Most of the monitoring activities reported here were already planned or were occurring before the *Forest Plan* was completed.

Corporate Databases

All data collected during the monitoring process will be entered into the appropriate corporate database such as NRIS.

SPECIFIC MONITORING ACTIVITIES FOR FY2006

Monitoring That Occurred

FOREST PLAN

The Hoosier National Forest's Land and Resource Management Plan was completed and approved by Regional Forester Randy Moore in January 2006. It provided monitoring and evaluation requirements.

ANNUAL BREEDING BIRD SURVEY

Purdue University conducted point-count surveys at nine areas on the Hoosier National Forest during summer 2006 as part of the Forest's annual breeding bird survey.

WOODCOCK SURVEY

Forest personnel conducted the first American woodcock (*Scolopax minor*) singing ground survey on the Forest in the spring of 2006. Twenty different routes were surveyed.

NNIS CONTROL WITH INDIANA UNIVERSITY

Personnel from Indiana University's School of Public and Environmental Affairs continued their monitoring of garlic mustard (*Alliaria petiolata*) around the Charles C. Deam Wilderness. Also, in cooperation between the Forest and Indiana University, the same personnel are studying the impacts of Japanese stiltgrass (*Microstegium vimineum*) on the Forest's ecosystem.

CLEARCUT STUDY WITH PURDUE UNIVERSITY

In cooperation with the Hoosier, Purdue University's Department of Forestry and Natural Resources completed remeasurement of old clearcuts on the Forest.

PAYMENTS TO COUNTIES

Payments were made to counties containing National Forest System land in FY 2006, averaging \$1.62 per acre.

HERITAGE MONITORING

Heritage monitoring was completed on one project area and three archaeological sites on the Forest.

LAND ACQUISITION

The Forest acquired 134 acres in FY 2006 through purchase, exchange, and sale. The deed acreage as of September 30, 2006 was 201,460.

Why This Monitoring

FOREST PLAN

The *Forest Plan* responds to four of Region 9's Courageous Conservation goals (USDA FS 2005):

- Protect ecosystems across boundaries
- Connect citizens to the land

- Walk the talk for sustainability
- Revolutionize effectiveness and efficiency

This also responds to the 2004 Forest Service strategic goal 6.5 (USDA FS 2004) in effect during the monitoring period.

ANNUAL BREEDING BIRD SURVEY

The breeding bird survey responds to *Forest Plan* goal “Maintain and Restore Sustainable Ecosystems” and the two questions “What are the population trends of management indicator species?” and “How will diversity be affected by various mixes of resource outputs and uses?”

The breeding bird survey responds to three of Region 9’s Courageous Conservation goals:

- Protect ecosystems across boundaries
- Walk the talk of sustainability
- Revolutionize effectiveness and efficiency

The survey responds to the 2004 Forest Service strategic plan goals 6.1 and 6.5 in effect during the monitoring period..

WOODCOCK SURVEY

The woodcock survey responds to *Forest Plan* goal “Maintain and Restore Sustainable Ecosystems.” The survey responds to the question “What are the population trends of management indicator species?” The American woodcock is one of five management indicator species (MIS) identified in the *Forest Plan*.

The American woodcock survey responds to three of Region 9’s Courageous Conservation goals:

- Protect ecosystems across boundaries
- Walk the talk of sustainability
- Revolutionize effectiveness and efficiency

The survey responds to the 2004 Forest Service strategic plan goals 6.1 and 6.5 in effect during the monitoring period..

NNIS CONTROL WITH INDIANA UNIVERSITY

The NNIS control responds to *Forest Plan* goal “Maintain and Restore Sustainable Ecosystems.” The specific question it answers is “To what extent is Forest management contributing or responding to populations of terrestrial or aquatic non-native invasive species that threaten native ecosystems?”

The NNIS work responds to four of Region 9’s Courageous Conservation goals:

- Protect ecosystems across boundaries
- Connect citizens to the land

- Walk the talk for sustainability
- Revolutionize effectiveness and efficiency

The NNIS control projects respond to the 2004 Forest Service strategic goals 2 and 5.3.

CLEARCUT STUDY WITH PURDUE UNIVERSITY

The clearcut study responds to the *Forest Plan* goal “Maintain and Restore Sustainable Ecosystems” and more specifically the question “What is the status of oak and hickory on established regeneration plots dating to 1985 Purdue Study?”

The clearcut study responds to four of Region 9’s Courageous Conservation goals:

- Protect ecosystems across boundaries
- Connect citizens to the land
- Walk the talk for sustainability
- Revolutionize effectiveness and efficiency

The clearcut study responds to the 2004 Forest Service strategic plan goals 5.1, 6.1, and 6.5. in effect during the monitoring period.

PAYMENTS TO COUNTIES

Payments to counties are responsive to the *Forest Plan* goal “Provide for Human and Community Development.”

They also respond to one of Region 9’s Courageous Conservation goals:

- Connect citizens to the land

HERITAGE RESOURCE MONITORING

The heritage resource monitoring responds to the *Forest Plan* goal “Protect our Cultural Heritage.” More specifically it responds to the two questions “Are mitigations and protection measures correctly applied for ground disturbing activities?” and “Are heritage resources being damaged by vandalism?”

The heritage monitoring responds to one of Regions 9’s Courageous Conservation goals:

- Protect ecosystems across boundaries

LAND ACQUISITION

The land acquisition responds to the *Forest Plan* goal “Provide a Usable Landbase.” It responds to the question “Does the Forest’s land adjustment program support and enhance the Plan’s desired conditions and goals and contribute to efficient and effective stewardship?”

The land acquisition responds to two of Regions 9’s Courageous Conservation goals:

- Protect ecosystems across boundaries
- Connect citizens to the land

This responds to the 2004 Forest Service strategic goal 1.1 by reducing wildland-urban interface and goals 2, 3.1, 5.1, and 6.3. in effect during the monitoring period.

How and When Monitoring Accomplished

FOREST PLAN

The *Forest Plan* was completed and the Record of Decision was signed by Regional Forester Randy Moore on January 11, 2006.

ANNUAL BREEDING BIRD SURVEY

Point-count surveys were conducted at nine areas on the Forest during summer 2006. They were conducted on two days at each of 25 points in each area. Surveys were 10 minutes in length during which the number, identity, and behavior of all birds seen and heard were recorded. Biologists gathered the data using techniques similar to previous field seasons (described in Winslow 2000, Dunning and Bondo 2003, Dunning 2003) and the survey protocol described in Dunning and Rea (2001).

WOODCOCK SURVEY

The survey was conducted between April 10 and April 30 using the rangewide Woodcock Singing Ground Survey developed by USDI Fish and Wildlife Service. The surveys began 22 minutes following sunset. Survey routes were approximately 3.6 miles in length with 10 equally spaced stops. Survey personnel recorded the number of individual peenting woodcock at each survey stop.

NNIS CONTROL WITH INDIANA UNIVERSITY

A graduate student was funded to conduct research work on the ecology of Japanese stiltgrass. This is a multi-year study. The second part of the NNIS control was pulling and bagging of garlic mustard and the pulling of Japanese stiltgrass around the Charles C. Deam Wilderness. The garlic mustard and Japanese stiltgrass pulling was accomplished in the fall of 2005 and spring of 2006.

CLEARCUT STUDY WITH PURDUE UNIVERSITY

Seventy remeasurement plots were established on old clearcuts that ranged in age from 21 to 35 years of age. They had been initially measured by Fischer (1987) in 1986. The field work was completed in 2004 with the final report completed in 2006 (Morrissey 2006). For a complete description of methods and techniques, see Morrissey (2006).

PAYMENTS TO COUNTIES

The payments to counties report was completed following FY 2006 using information on file in the Supervisor's Office in Bedford.

HERITAGE MONITORING

One project area was monitored in March of 2006, three archaeological sites were visited in September 2006, and one historic cabin was visited in September 2006. The historic cabin was the subject of an oral history interview.

LAND ACQUISITION

The land acquisition report was completed following FY 2006 using the deed records and information on file in the Supervisor's Office in Bedford.

Who Did the Monitoring

FOREST PLAN

The work was completed by Forest personnel. North Central Research Station and Pangaea Information Technologies, Ltd. assisted with data analysis and mapping.

ANNUAL BREEDING BIRD SURVEY

The survey was completed by staff at Purdue University's Department of Forestry and Natural Resources.

WOODCOCK SURVEY

The woodcock survey was completed by Forest personnel.

NNIS CONTROL WITH INDIANA UNIVERSITY

The NNIS work was completed by personnel from Indiana University's School of Public and Environmental Affairs and Duke Energy.

CLEARCUT STUDY WITH PURDUE UNIVERSITY

The survey was completed by staff at Purdue University's Department of Forestry and Natural Resources.

PAYMENTS TO COUNTIES

The work was completed by Forest personnel.

HERITAGE MONITORING

The heritage monitoring was completed by Forest personnel.

LAND ACQUISITION

The land acquisition report was completed by Forest personnel.

FINDINGS

What We Learned

ANNUAL BREEDING BIRD SURVEY

Dunning and Riegel (2006) state "The results of the 2006 monitoring season emphasize that the Hoosier National Forest supports sizeable populations of bird species associated with mature eastern deciduous forest. While the health and viability of these populations cannot be assessed without demographic studies, it is clear that many species of forest birds are widespread throughout the National Forest." Further Dunning and Packett (2006), from the cumulative breeding bird survey data, report "trends shown by five common bird species supports the general expectation that most birds associated with mature forest are variable but stable – they are not demonstrating significant population increases or declines."

WOODCOCK SURVEY

McCreedy (2006) reported “A total of 8 peenting woodcock were heard on 8 routes. This equates to 0.4 peenting woodcock heard per route surveyed. This corresponds to the statewide breeding index of 0.22 woodcock heard per route and a regional breeding index of 2.00 birds per route.” This was the initial survey of the American woodcock on the Hoosier. Only repeated surveys will be able to establish or detect a trend.

NNIS CONTROL WITH INDIANA UNIVERSITY

The experimental portion of this project was in the initial stages of establishment and no data analysis had been completed. The control portion of the project pointed out the importance of continual monitoring and control of NNIS. New populations of garlic mustard were discovered compared to previous years. Repeated trips are necessary to keep the garlic mustard and Japanese stiltgrass under control. The cooperators stated that some areas may be “entirely uncontrollable until we have herbicides available.”

CLEARCUT STUDY WITH PURDUE UNIVERSITY

Morrissey (2006) reported “[T]he results from this study indicate that dominant and codominant oaks actually increased in frequency and density on most sites since the 1986 sample period. Aspect code, natural ecological region and pre-harvest oak levels best explained the variation in oak relative density of the 2004 sample....When contrasted with mean pre-harvest density of oaks, it appeared that the density of oak stems across most sites is very comparable to the pre-harvest levels and some form of treatment, such as an intermediate cutting or selective herbicide applications, could produce stands similar in structure and composition to the pre-harvest stands.”

HERITAGE MONITORING

The heritage resources are being protected from vandalism and mitigation and protection measures have been applied correctly to ground disturbing activities. Forest personnel have worked with the heritage resource specialist to ensure that heritage resources are protected.

LAND ACQUISITION

The acquisitions have consolidated ownership and provided access to National Forest System (NFS) land.

Contributions to Better Projects and Plan Implementation

The annual breeding bird survey indicates that mature forest bird populations are stable and not declining. Dunning and Packett (2006) recorded no yellow-breasted chats (*Icteria virens*) in their 2006 survey. They are dependent on early successional forest habitat. This habitat is some of the least common on the Forest. The stability of the mature forest bird populations may permit the increase of habitat for early successional forest birds such as the yellow-breasted chat.

The NNIS project should provide information on methods that can be used to control NNIS when new projects are implemented.

The clearcut study provides information on areas where regeneration of oak is easier to accomplish. This information can be used in the design and implementation of vegetation management projects to ensure the presence of oak in future stands.

Consolidating ownership and providing improved access to other NFS land will improve future projects by reducing the need for concern about adjacent private ownership. It will also permit easier landscape scale management projects due to larger consolidated blocks of NFS land.

Potential Improvements

The annual breeding bird survey, woodcock survey, NNIS control, and clearcut study have all been established using sound research methods. It will be necessary to ensure that any other future research projects the Forest cooperates with use the same sound research methodology. This ensures that the results are sound and are able to withstand scientific scrutiny.

The heritage report shows that there have been good working relations between Forest staffs, but this level of cooperation needs to continue so that heritage resources remain protected.

Contribution to 5 Year Report

Monitoring data collected this year and in subsequent years will support the Forest's ability to evaluate current social, economic, and ecological conditions and trends. Monitoring *Forest Plan* compliance and implementation will tell Forest long-range planners if initial projections in the plan were adequate to meet the goals considered.

Monitoring of MIS identified in the plan will show how well the *Forest Plan* is helping to improve and maintain viable habitat for the five MIS species identified.

Overall, monitoring will justify those goals and objectives that may need to be adjusted or strengthened half-way through the planning period.

POTENTIAL NEXT YEAR MONITORING NEEDS

The monitoring for FY 2007 listed in the FY 2007 Monitoring Plan consisted of the following questions from the *Forest Plan*.

- In cooperation with the USDI Fish and Wildlife Service, track the status of Indiana bats on the Forest.
- What level of prescribed fire should be used to maintain desired fuel levels or mimic natural processes, maintain and improve vegetative conditions, or restore natural processes and functions to ecosystems?
- What are the population trends of management indicator species?
- What is the status of oak and hickory on established regeneration plots dating to 1985 Purdue study?
- To what extent is forest management contributing to or responding to populations of terrestrial or aquatic non-native invasive species that threaten native ecosystems?

- Are heritage resources being damaged by vandalism?
- Does the Forest's land adjustment program support and enhance the Plan's desired conditions and goals and contribute to efficient and effective stewardship?

Literature Cited

Dunning, J. B. 2003. Results of the breeding bird monitoring survey, Hoosier National Forest, Spring 2003. West Lafayette, IN: Department of Forestry and Natural Resources, Purdue University. [On file with: Hoosier National Forest, 811 Constitution Ave., Bedford, IN 47421].

Dunning, J.B.; Bondo, K. 2003. Results of the breeding bird monitoring survey, Hoosier National Forest, Spring 2002. West Lafayette, IN: Department of Forestry and Natural Resources, Purdue University. [On file with: Hoosier National Forest, 811 Constitution Ave., Bedford, IN 47421].

Dunning, John B.; Packett, Jeffery K. 2006. Results of the breeding bird monitoring survey Hoosier National Forest, summer 2006. West Lafayette, IN: Department of Forestry and Natural Resources, Purdue University. 7 p. [On file with: Hoosier National Forest, 811 Constitution Ave., Bedford, IN 47421].

Dunning, J.B.; Rea, C.M. 2001. Results of the breeding bird monitoring survey, Hoosier National Forest, spring 2001. West Lafayette, IN: Department of Forestry and Natural Resources, Purdue University. [On file with: Hoosier National Forest, 811 Constitution Ave., Bedford, IN 47421].

Dunning, John B.; Riegel, Dianne L. 2006. Hoosier National Forest breeding bird monitoring survey, 1991-2005: A comprehensive examination of the database and revised population trend estimation for 5 common species. West Lafayette, IN: Department of Forestry and Natural Resources, Purdue University. 16 p. [On file with: Hoosier National Forest, 811 Constitution Ave., Bedford, IN 47421].

Fischer, B.C. 1987. The regeneration response to clearcutting on the U.S. Forest Service Hoosier National Forest. West Lafayette, IN: Department of Forestry and Natural Resources, Purdue University. 84 p. + appendices. [On file with: Hoosier National Forest, 811 Constitution Ave., Bedford, IN 47421].

McCreeedy, Clark D. 2006. Results of the 2006 woodcock singing ground survey. 5 p. [On file with: Hoosier National Forest, 811 Constitution Ave., Bedford, IN 47421].

Morrissey, Robert C. 2006. Natural regeneration of clearcuts in the stem exclusion stage on the Hoosier National Forest, south-central Indiana. M.S. Thesis, Purdue University. 89 p.

U.S. Department of Agriculture, Forest Service. 2004. USDA Forest Service strategic plan for fiscal years 2004-2008. FS-810. U.S. Department of Agriculture, Forest Service. 32 p.

U.S. Department of Agriculture, Forest Service. 2005. Strategic framework for the Eastern Region. Eastern Region. 26 p.

U.S. Department of Agriculture, Forest Service. 2006. Land and resource management plan--Hoosier National Forest. Eastern Region, Hoosier National Forest. 85 p. + appendices.

Winslow, D. 2000. Results of the breeding bird monitoring survey, Hoosier National Forest, spring 2000. Bloomington, IN: Department of Biology, Indiana University.