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Hoosier National Forest

Fiscal Year 2010 Monitoring and Evaluation Report

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

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PURPOSE/SCOPE OF REPORT

Introduction

The annual monitoring and evaluation report is required by the National Forest System Land Management Planning Rule 36 CFR 219.11 (2000). It is also required by the Hoosier's Land and Resource Management Plan (*Forest Plan*) (USDA FS 2006) which was signed by Regional Forester Randy Moore on January 11, 2006. The Monitoring Program is described in Chapter IV of the *Forest Plan*. This is the fourth annual M&E Report compiled under the 2006 Hoosier National *Forest Plan*. The first was completed in FY 2006.

The Monitoring and Evaluation Report contains four major sections: Purpose/Scope of Report, Specific Monitoring Activities for FY 2010, Findings, and Potential Fiscal Year 2011 Monitoring Needs. Specific Monitoring Activities for FY 2010 is subdivided into Monitoring That Occurred, Why This Monitoring, How and When Monitoring Accomplished, and Who Did the Monitoring. The Findings section is subdivided into What We Learned, Additional Findings, Contributions to Better Projects and Plan Implementation, and Contribution to 5 Year Report.

Monitoring Program

Forest Plan

The *Forest Plan* describes three levels of monitoring:

- Monitoring Implementation—Determines if prescriptions, projects, and activities are implemented as designed and in compliance with *Forest Plan* goals and guidance.
- Monitoring Effectiveness—Determines if prescriptions, projects, and activities are effective in meeting management goals and direction.
- Validation Monitoring—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 be monitored organized by Forest goal.

Monitoring Guide

The Monitoring Guide was completed in July 2007. The Monitoring Guide provides guidance on how to accomplish monitoring of the items listed in Table 4.2 of the *Forest Plan*.

Annual Monitoring Activities

Annual monitoring activities were selected from the Monitoring Guide and listed in the FY 2010 Hoosier National Forest Monitoring Work Plan. Timber harvesting has increased on the Hoosier in the last few years. This influenced the selection of several of the monitoring activities: compliance with *Forest Plan* guidance, timber sale ASQ, and heritage monitoring.

Corporate Databases

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

SPECIFIC MONITORING ACTIVITIES FOR FY2010

Monitoring That Occurred

ANNUAL BREEDING BIRD SURVEY

Purdue University conducted point-count surveys at nine areas on the Hoosier National Forest during summer 2010 as part of the Forest's annual breeding bird survey.

WOODCOCK SURVEY

Forest personnel conducted the third biennial American woodcock (*Scolopax minor*) singing ground survey on the Forest in the spring of 2010. Twenty-four different routes were surveyed.

INSECT SURVEYS

Surveys for gypsy moth (*Lymantria dispar*) were conducted statewide by Indiana Department of Natural Resources (IDNR) including areas of the Hoosier National Forest with assistance from Forest personnel.

COMPLIANCE WITH FOREST PLAN GUIDANCE

Forest personnel conducted monitoring of numerous timber sales and restoration projects checking for adherence to *Forest Plan* guidance.

SOIL AND WATER MITIGATION MEASURES

Forest personnel monitored a timber sale and a restoration project checking the effects of mitigation measures.

WILDERNESS MONITORING

Forest personnel inventoried and measured campsite impacts at the designated campsites in the Charles C. Deam Wilderness. They also monitored impacts to trail access points and trail tread condition.

TIMBER SALE ASQ

Forest personnel reported a FY 2010 harvest level of approximately 3,946 CCF or 41 percent of the annual allowable harvest level permitted in the *Forest Plan*.

HERITAGE MONITORING

Heritage monitoring was completed by forest personnel on six project areas and one priority heritage asset.

LAND ACQUISITION

The Forest acquired 412 acres in FY 2010 through purchase. The deed acreage as of September 30, 2010 was 202,834.

LAND ACQUISITION ANALYSIS

An analysis of ownership acquisition for the past 20 years was conducted to determine the impact on consolidation, parcel numbers, and average parcel size.

Why This Monitoring

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 (USDA FS 2005):

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

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 2007 Forest Service strategic plan goal (USDA FS 2007):

- Restore, Sustain, and Enhance the Nation’s Forests and Grasslands

INSECT SURVEYS

Insect surveys respond to *Forest Plan* goal “Maintain and Restore Sustainable Ecosystems” and the questions “Are insect and disease population levels compatible with objectives for restoring or maintaining healthy forest conditions?” and “To what extent is Forest management controlling undesirable occurrences of fire, insect, and disease outbreaks?”

The insect surveys respond to one of Regions 9’s Courageous Conservation goals:

- Protect ecosystems across boundaries

The surveys respond to the 2007 Forest Service Strategic Plan Objective:

- Reduce adverse impacts from invasive and native species, pests, and diseases

COMPLIANCE WITH FOREST PLAN GUIDANCE

This question “Is this Forest complying with guidance outlined in *Forest Plan*?” addresses all eight of the goals in the *Forest Plan*.

The question addresses one of Regions 9’s Courageous Conservation goals:

- Protect ecosystems across boundaries

The monitoring responds to the 2007 Forest Service Strategic Plan Goals:

- Restore, Sustain, and Enhance the Nation’s Forests and Grasslands
- Maintain basic management capabilities of the Forest Service

SOIL AND WATER MITIGATION MEASURES

The water quality monitoring responds to the *Forest Plan* goal “Maintain and Restore Watershed Health.” The monitoring questions it responds to are “To what extent is Forest management affecting water quality, quantity, flow timing, and the physical features of aquatic, riparian, or wetland ecosystems?” and “Have the soil and water mitigation and protection measures been effective as applied to all management activities?”

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

- Protect ecosystems across boundaries

The survey responds to the 2007 Forest Service Strategic Plan Goal:

- Restore, Sustain, and Enhance the Nation’s Forests and Grasslands

WILDERNESS MONITORING

The wilderness monitoring responds to the *Forest Plan* goal “Provide for Recreation in Harmony with Natural Communities.” It responds to the monitoring question “Are we limiting and distributing visitor use in wilderness in accord with periodic estimates of the maximum levels of use that allow natural processes to operate freely and so as not to impair the values?”

The monitoring responds to Region 9’s goal:

- Protect ecosystems across boundaries

The survey responds to the 2007 Forest Service Strategic Plan Goals:

- Restore, Sustain, and Enhance the Nation’s Forests and Grasslands
- Sustain and Enhance Outdoor Recreation Opportunities
- Maintain basic management capabilities of the Forest Service

TIMBER SALE ASQ

The timber sale ASQ monitoring responds to the *Forest Plan* goal “Provide for Human and Community Development.” More specifically it responds to the question “Are timber sales meeting *Forest Plan* ASQ?”

This monitoring also responds to the 2007 Forest Service Strategic Plan Goal:

- Provide and Sustain Benefits to the American People

HERITAGE 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 Region 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 Region 9’s Courageous Conservation goals:

- Protect ecosystems across boundaries
- Connect citizens to the land

It also responds to the 2007 Forest Service Strategic Plan Goals:

- Restore, Sustain, and Enhance the Nation’s Forests and Grasslands
- Provide and Sustain Benefits to the American People
- Conserve Open Space
- Sustain and Enhance Outdoor Recreation Opportunities

LAND ACQUISITION ANALYSIS

The land acquisition analysis 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 Region 9’s Courageous Conservation goals:

- Protect ecosystems across boundaries
- Connect citizens to the land

It also responds to the 2007 Forest Service Strategic Plan Goals:

- Restore, Sustain, and Enhance the Nation’s Forests and Grasslands
- Provide and Sustain Benefits to the American People
- Conserve Open Space
- Sustain and Enhance Outdoor Recreation Opportunities

How and When Monitoring Accomplished

ANNUAL BREEDING BIRD SURVEY

Point-count surveys were conducted at nine areas on the Forest during May-June 2010 by Purdue University (Dunning and Riegel 2010). They conducted two replicate point counts 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.

INSECT SURVEYS

Because of gypsy moth previously found in the area around the Charles C. Deam Wilderness, Forest personnel with guidance from IDNR Division of Forestry located 69 gypsy moth traps surrounding the previous infestation. All traps were placed before the end of June. They were collected the last two weeks of August.

COMPLIANCE WITH FOREST PLAN GUIDANCE

The monitoring was completed at various times throughout FY 2010.

SOIL AND WATER MITIGATION MEASURES

The monitoring was completed at various times throughout FY 2010.

WILDERNESS MONITORING

The monitoring was completed at various times throughout FY 2010.

TIMBER SALE ASQ

The analysis was completed in January 2011 by accessing the timber sale records for FY 2010.

HERITAGE MONITORING

The monitoring was completed at various times throughout FY 2010.

LAND ACQUISITION

The land acquisition report was completed at the end of FY 2010 using the deed records and information on file in the Supervisor's Office in Bedford.

LAND ACQUISITION ANALYSIS

The land acquisition analysis was completed in December 2010 using ownership GIS layers from 1990, 2000, and 2010. The individual layers were analyzed using Patch

Analyst, an extension for ArcGIS. The variables total area, number of patches, mean patch size, median patch size, total edge, edge density, and mean patch edge were obtained.

Who Did the Monitoring

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.

INSECT SURVEYS

The gypsy moth traps were placed by Forest personnel on National Forest System land. IDNR personnel placed the traps on non-Forest Service lands.

COMPLIANCE WITH FOREST PLAN GUIDANCE

The monitoring was completed by Forest personnel.

SOIL AND WATER MITIGATION MEASURES

The review of soil and water mitigation measures was completed by Forest personnel.

WILDERNESS MONITORING

Trail monitoring was completed by Forest personnel.

TIMBER SALE ASQ

The review of timber sale ASQ was completed by Forest personnel.

HERITAGE MONITORING

Heritage monitoring was completed by Forest personnel.

LAND ACQUISITION

The review of land acquisition was completed by Forest personnel.

LAND ACQUISITION ANALYSIS

The analysis was completed by Forest personnel.

FINDINGS

What We Learned

ANNUAL BREEDING BIRD SURVEY

The areas sampled in 2010 were the same ones sampled in 2008. Similar to previous years, Dunning and Riegel (2010) state, "The results of the 2010 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. The list of

common species includes many neotropical migrants, a group of management concern. The continued presence of several locally rare, potentially breeding species, such as Black-and-white Warbler, Black-throated Green Warbler, and American Redstart is encouraging.”

Many neotropical migrants were among the common species noted, including two Management Indicator Species (MIS) - Acadian flycatcher (*Empidonax vireescens*, 5.9% of total count) and wood thrush (*Hylocichla mustelina*, 4.7% of total count). MIS, yellow-breasted chat (*Icteria virens*), was recorded 22 times and Louisiana waterthrush (*Seiurus motacilla*) was recorded 16 times (Dunning and Riegel 2010). However, yellow-breasted chats prefer early successional habitat a cover type not monitored in this survey. The numbers for Acadian flycatcher and Louisiana waterthrush are similar to those surveyed in 2008. Wood thrush numbers decreased about 3% while yellow-breasted chat increased slightly.

The red-eyed vireo (*Vireo olivaceus*) was the most abundant species, the same as in most previous years. It was followed by ovenbird (*Seiurus aurocapilla*), Acadian flycatcher and Eastern wood-pewee (*Contopus virens*).

WOODCOCK SURVEY

A total of 29 peenting woodcock were heard on 11 routes. This equates to 1.21 peenting woodcock heard per route surveyed. This is above the statewide breeding index of 0.30 woodcock heard per route but below the regional breeding index of 2.69 birds per route (Cooper and Parker 2010). The 2010 results show an increase from the 2008 results (1.21 peenting woodcock per route versus 0.26). Because this is only the third measurement, it remains difficult to determine a trend because of the fluctuation over the three measurement years. The fluctuation may be in part a response to the addition of new surveyors with less experience.

INSECT SURVEYS

No gypsy moths were found in the traps. It appears the pheromone flake treatment in 2008 has significantly reduced or possibly eliminated the gypsy moth population in the treated area. No additional trapping is planned for the area in FY 2011 by IDNR.

COMPLIANCE WITH FOREST PLAN GUIDANCE

The Forest Leadership Team monitored the Tower and Plock timber sales. The skid and log roads had been closed and water bars and other mitigation measures were working. The seeding had not taken hold due to the severe drought that was occurring. Once moisture conditions improved it was planned to reseed areas as needed. There were no other reported problems associated with timber sales.

SOIL AND WATER MITIGATION MEASURES

Before the Leopold timber sale was begun the timber sale administrator and soil scientist reviewed the potential log landing sites. After review the 2 landings preselected where judged acceptable. Soil and water mitigation measures were included to prevent

soil movement into a nearby stream. The timber sale administrator and soil scientist have been working well together to mitigate the impacts of timber harvests.

WILDERNESS MONITORING

Twenty-four campsites were inventoried using the Cole rating method. Seven of the 24 sites had a campsite condition rating greater than 4 on a scale of 1 to 5 with 5 being the worst. Nine of the 24 campsites were also missing the sign indicating the site as a designated campsite. It is planned that the signs will be replaced in 2011. Garbage was minimal at trailheads and campsites as well as along the trails.

TIMBER SALE ASQ

In FY 2010, the Hoosier National Forest harvested approximately 3,946 hundred cubic feet (CCF) of timber. The majority of this volume was on the Tell City Ranger District and was comprised of salvage from the Tell City Windthrow 2004 project and three green sales.

The allowable sale quantity for the Forest as stated in the *Forest Plan* is 9.612 MMCF for the first decade of plan implementation. This is equal to an average of 9,612 CCF per year, which is well above the actual amount harvested in FY 2010.

The Hoosier National Forest has not approached anticipated harvest limits since the implementation of the current *Forest Plan*.

HERITAGE MONITORING

Monitoring was completed on one priority heritage asset (Krieger 2010). The site showed ATV tracks through the shelter. Law enforcement was notified. Otherwise damage to heritage resources due to vandalism has not been observed.

Hoosier personnel have done a good job of applying mitigation and protection measures around ground-disturbing activities, and the mitigation and protection measures do provide protection to the sites marked. They have reported newly discovered sites as required to the Heritage Resource Specialist.

LAND ACQUISITION

The acquisitions have helped consolidate ownership providing better user access to the Hoosier National Forest. The Forest acquired 412 acres in FY 2010 through purchase and exchange. The deed acreage as of September 30, 2010 was 202,834.

LAND ACQUISITION ANALYSIS

The Forest increased just over 10,000 acres between 1990 and 2000 and just over 4,500 acres from 2000 to 2010 (Weigel 2010). The number of patches decreased over each 10 year period from 228 in 1990 to 212 in 2010. This would indicate that the Forest is either exchanging away separate parcels or through purchasing connecting and consolidating separate parcels with neighboring ones. Mean patch size increased over the same 20 year period from 820 acres to 950 acres. This is another indication that the Forest ownership program is consolidating ownership. Two better indicators of

ownership consolidation are edge density and mean patch edge. Edge density, amount of edge relative to the total area, decreased from 1990 to 2010, 0.0072 miles/acre and 0.0067 miles/acre respectively. Having more acres surrounded by fewer miles indicates that consolidation is occurring. While decreasing edge density indicates consolidation, increasing mean patch edge indicates consolidation. Mean patch edge increased over the 20 year period from 5.90 miles/patch to 6.41 miles/patch. All variables examined indicate that the Forest is consolidating ownership.

Additional Findings

In FY 2009 the National Visitor Use Monitoring was completed on the Hoosier National Forest. The results of the monitoring were not available until FY 2010. Methodology can be found in English, Kocis, Zarnoch, and Arnold (2002). Total estimated visits to the Hoosier for FY 2009 were 306,200 with 27,900 visiting the Charles C. Deam Wilderness (USDA FS 2010). Most visitors were local, 56 percent. Overall 85 percent of visitors were very or somewhat satisfied with their recreation experience. Less the 3 percent expressed any level of dissatisfaction.

The IDNR, Division of Fish & Wildlife coordinated surveys of ruffed grouse (*Bonasa umbellus monticola*) breeding populations during the spring of 2010 on the Hoosier (Backs 2010a). “For the first time since the roadside counts were initiated in 1953, no male ruffed grouse were heard along the roadside drumming routes” (Backs 2010a). Backs (2010a) concluded “Ruffed grouse population levels are projected to drop below “viable population levels” within the next 5 years in portions of their existing range in south-central Indiana unless some intervention (e.g. timber harvests of sufficient intensity) or sizable natural disturbances occur across the forested landscape to create early successional forest habitats.” (figure 1).

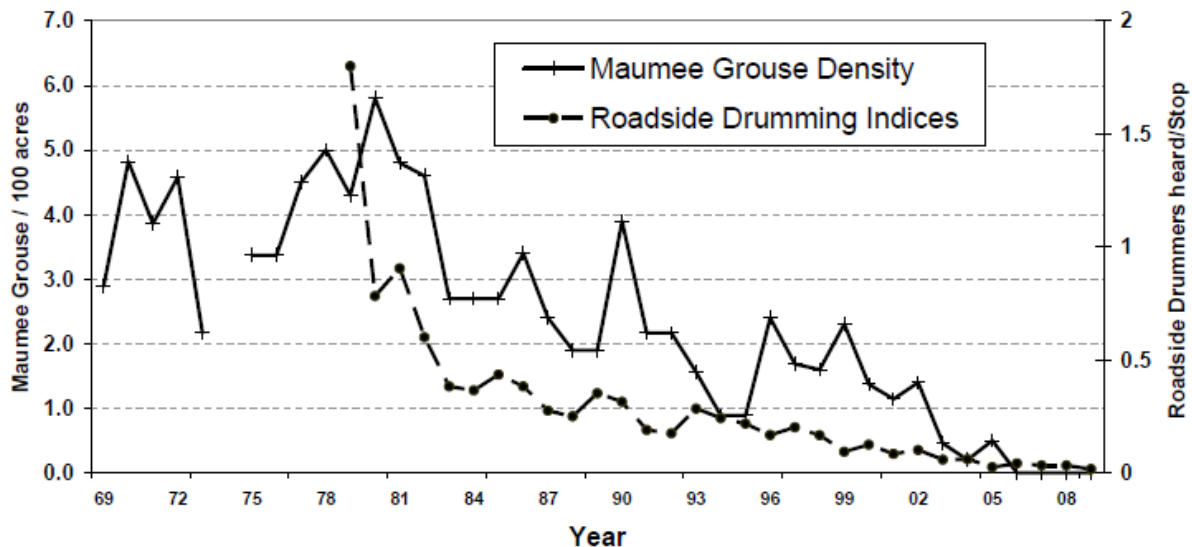


Figure 1-Indiana grouse population trends (Backs 2010a)

The IDNR, Division of Fish & Wildlife coordinated surveys of wild turkey (*Meleagris gallopavo*) during the spring of 2010 on portions of the Hoosier (figure 2). Backs (2010b) reported “The slight depression in the gobbling indices since the 2006 peak probably reflects the low summer brood production of 2005-2009. The 10% decrease in the gobbling index in 2010 was not significantly different ($P > 0.05$) from the previous 5-yr mean of 0.94 gobblers heard/stop (2004-2009)....Gobbling count indices will now begin to fluctuating above/below a lower, long-term mean unless habitat conditions or harvest strategies change the impact of environmental influences.”

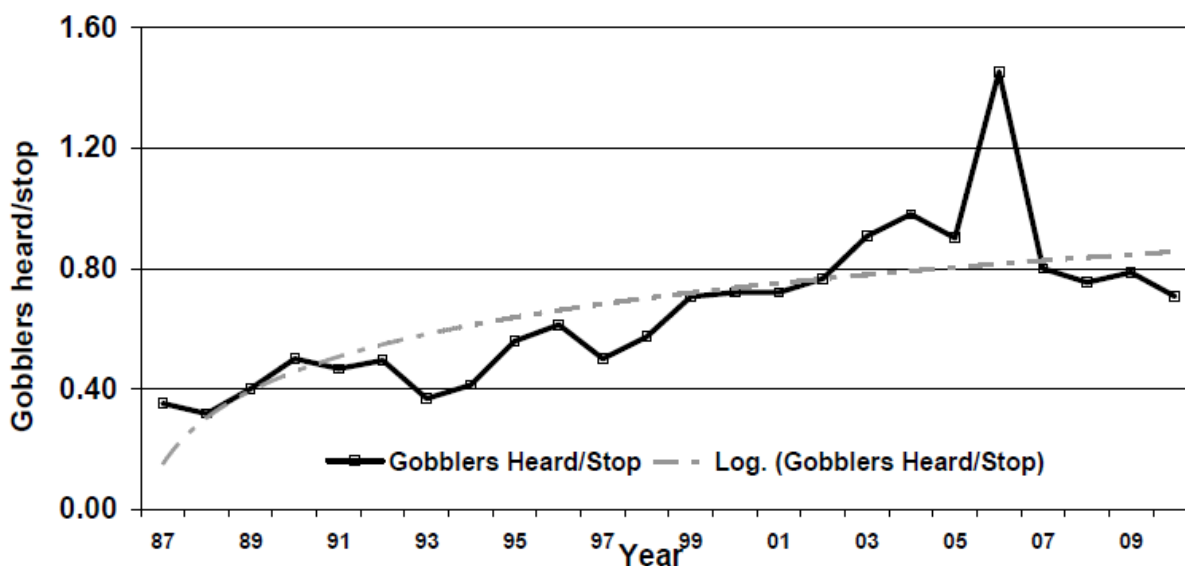


Figure 2-Roadside gobbling indices (Backs 2010b)

Contributions to Better Projects and Plan Implementation

Standards and guidelines in planning documents should not be so restrictive that they preclude the ability of forest personnel to establish acceptable skid trails and log landings. It is also important that personnel laying out skid trails and landings work with soil scientists, fisheries personnel, and others to locate them so as to reduce environmental impacts as much as possible and also to jointly develop and implement mitigation measures.

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 help determine if activities need to be adjusted or strengthened halfway through the planning period to meet *Forest Plan* goals and objectives.

POTENTIAL FISCAL YEAR 2011 MONITORING NEEDS

The monitoring for FY 2011 consists of the following questions from the *Forest Plan*.

- Is this Forest complying with guidance outlined in *Forest Plan*?
- Are insect and disease population levels compatible with objectives for restoring or maintaining healthy forest conditions?
- Are harvested lands adequately restocked within 5 years?
- What are the population trends of management indicator species?
- Have there been changes in cave environments?
- How will diversity be affected by various mixes of resource outputs and uses? Ensure that the diversity of plant and animal communities is at least as great as that which would be expected in a natural forest and that reductions in diversity are prescribed only where needed to meet overall multiple use objectives.
- Are we limiting and distributing visitor use in wilderness in accord with periodic estimates of the maximum levels of use that allow natural processes to operate freely and so as not to impair the values?
- Are temporary roads closed and revegetated within 10 years of contract or permit termination?
- Have the soil and water mitigation and protection measures been effective as applied to all management activities?
- Are timber sales meeting *Forest Plan* ASQ?
- Are mitigation and protection measures correctly applied for ground-disturbing activities?
- Are heritage resources being damaged by vandalism?
- How do actual costs of carrying out planned management compare to cost estimates?
- Does the Forest's land adjustment program support and enhance the Plan's desired conditions and goals and contribute to efficient and effective stewardship?

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