# FISCAL YEARS 2008 AND 2009
# MONITORING AND EVALUATION REPORT FOR THE LAND AND RESOURCE MANAGEMENT PLAN

## OZARK- ST. FRANCIS NATIONAL FORESTS

Baxter, Benton, Conway, Crawford, Franklin, Johnson, Logan, Madison, Marion, Newton, Pope, Searcy, Stone, Van Buren, Washington, Yell, (Ozark National Forest) Lee, and Phillips (St. Francis National Forest) Counties in Arkansas

**UNITED STATES DEPARTMENT OF AGRICULTURE**
**FOREST SERVICE**
**SEPTEMBER 2010**

# TABLE OF CONTENTS

# Forest Supervisor's Certification

I have evaluated and endorsed the monitoring results and recommendations presented in this Monitoring and Evaluation (M&E) Report. This report documents progress made during the 3rd and 4th years since the 2005 Revised Land and Resource Management Plan (Forest Plan) came into effect in September of 2005. Monitoring and evaluation are important tools in determining if management direction contained in the 2005 Forest Plan is effective in achieving the desired conditions for the Ozark-St. Francis National Forests, if program priorities and objectives are being accomplished, and if the Plan standards (design criteria) adequately guide project implementation. This and future M&E Reports will contribute to Comprehensive Evaluation Reports to be issued every five years.

I have directed that the actions necessary to respond to the recommendations in this report be implemented. I have considered funding requirements necessary to implement these actions.

Judith L. Henry 9-30-10

JUDITH L. HENRY — September 30, 2010
Forest Supervisor

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# OZARK-ST. FRANCIS NATIONAL FORESTS

## INTRODUCTION

The 2005 Revised Land and Resource Management Plan (RLRMP) for the Ozark-St. Francis National Forests provides broad, strategic direction for managing the land and its resources. The Forest Plan direction provides a framework to guide future management decisions and actions. Over time, it is necessary to assess progress toward achieving the desired conditions, meeting the objectives, and adhering to the design criteria in the Forest Plan. A cycle of adaptation is formed when management direction in the Forest Plan is implemented, reviewed, and then adjusted in response to knowledge gained through monitoring and evaluation. Monitoring is conducted by Forest Service resource specialists; Forest Service research scientists; universities; state, federal, and resource agencies; and other cooperators. Persons who contributed data, assisted in compilation of data, or helped to prepare this Monitoring and Evaluation Report (M&E Report) are listed in Appendix A.

## PURPOSE OF THE MONITORING AND EVALUATION (M&E) REPORT

The 2005 Forest Plan was completed under the 1982 National Forest Management Act planning regulations (36 CFR 219). These regulations specify that forest plan "implementation shall be evaluated on a sample basis to determine how well objectives have been met and how closely management standards and guidelines have been applied. Based upon this evaluation, the interdisciplinary team shall recommend to the Forest Supervisor such changes in management direction, revisions, or amendments to the forest plan as are deemed necessary." Thus, the purpose of the M&E Report is to identify needed changes to management on the Ozark-St. Francis National Forests (OSFNFs) utilizing the results of monitoring and evaluation. The M&E Report combines the results of the evaluations that occur throughout the year into a summary document. Based on the data gathered during monitoring, trends can be established and management corrections made, as necessary. Monitoring helps to track progress toward achievement of Desired Conditions (Forest Plan, pages 1-18 through 1-49) and Plan Objectives (Forest Plan, pages 2-7 through 2-78); implementation of Design Criteria (Forest Plan, pages 3-1 through 3-38); and occurrence of environmental effects as predicted. Monitoring indicates whether OSFNFs management is addressing plan priorities. The evaluation of monitoring results allows the Forest Supervisor to initiate actions to improve compliance with management direction where needed, improve cost effectiveness, and determine if any amendments to the Forest Plan are needed to improve resource

management. About every five years, all of the information collected in the M&E reports is accumulated into a comprehensive evaluation report that results in periodic updates of the Forest Plan.

### ORGANIZATION OF THE MONITORING AND EVALUATION REPORT

The Monitoring and Evaluation Report is structured similarly to the Forest Plan because the M&E Report evaluates implementation and effectiveness of the Forest Plan. The Monitoring Report covers effectiveness in achieving desired future conditions of ecological communities and management areas.

The M&E Report also reports on progress toward achieving goals and objections within each resource area program on the Forests. Recommendations are made throughout the report to improve management as well as future monitoring methods.

This M&E Report reflects the first two years under a new Forest Management Plan. Much of the work on the Forests in these first two years reflects decisions made under the 1987 Forest Plan and may not reflect the objectives prescribed in the RLRMP. These are also transition years in which the Forests had to learn and adapt to the newly revised plan which necessitated changes in approaches to prescribing activities to meet new objectives and priorities.

It should also be pointed out that many of the Desired Future Conditions and the resultant objectives and priorities do not have time frames prescribed. This was done in order to have a Plan that reflected the reality of changing conditions such as budget, capacity, weather, etc. The Forests fully recognize that under current conditions it affects approximately 10% to 15% of the forest land base over a 10-year cycle. As a result of these conditions some of the monitoring results appear to be very short of the Desired Future Conditions for a particular community, management area, or program. However, as the Forests continue to implement the RLRMP those shortfalls should become less and the Desired Future Conditions should begin to become more abundant on the Forests.

### TRACKING CHANGES IN VEGETATION AND OTHER WILDLIFE HABITAT PARAMETERS

Changes in vegetation and other wildlife habitat components are reported and monitored in two ways. The first reporting method shows changes by ecological community. This is done to evaluate health of the community and its ability to provide for plants and animals that are tied to the community. It is important to track these changes to assess potential effects on wildlife populations.

The other tracking method is to report progress by management area. Each management area contains an emphasis and desired future condition statement. Changes in conditions are monitored to evaluate progress toward the desired results. Tracking these changes is important to help in planning strategies to address any deficiencies noted.

**MAJOR FOREST COMMUNITIES**

## Dry Oak Forest and Woodland – Approximately 358,382 Acres

In general, the Dry Oak Forest and Woodland Communities are overly dense and burned less often than normal. The goal is to restore this community to a more open condition dominated by oaks in the overstory with midstory that is sparse and a diverse understory made up of herbaceous and mood species.

Figure 1 is located on the Big Piney Ranger District and shows an example of a stand nearing desired future conditions for this dry oak woodland site.

**Figure 1: Pilot Rock vicinity, Big Piney Ranger District - Example of a Stand Nearing Desired Future Conditions for this Dry Oak Woodland Site.**

### Prescribed Fire

In 2008, there were approximately 28,833 acres of the community type prescribe burned. Approximately 23,737 acres (82%) of the acres were burned during the growing season, April to October.

In 2009, there were approximately 17,942 acres of the community type prescribe burned. Approximately 13,104 acres (73%) of the acres were burned during the growing season, April to October.

This rate of burning averages 5% of the community annually. The desired rate is about 20 to 30% of the community. Figure 2 shows a prescribed burn in a dry oak woodland site.

**Figure 2: Prescribed Burn in a Dry Oak Woodland Site.**

**Management Implications**
The desired fire return interval in this community is 2 to 7 years. At current, most areas are treated every 8 to 10 years. By burning at this interval, many acres in this community will not be treated often enough to meet desired conditions. The volume of burning in this community should be increased.

## Vegetation Management

**Abundance of mature forest (>70 years)** – There are 309,344 acres in mature age classes. Mature forest comprises 87% of the community.

**Management Implications**
Management direction for this community is to maintain over half of the stand acres in mature age classes. This direction is being met. There is no need to change direction to meet mature forest conditions.

**Abundance of mature woodland (>70 years)** – There were approximately 1,092 acres thinned in 2008 and 1,387 acres thinned in 2009 to establish or maintain a mature woodland condition in Dry Oak Forest and Woodland Community. These treatments affected an average of about 2/5 of 1% of the total acres within this vegetative community per year. Ten years of thinning at this level will result in about 4% of the mature acres in this community being in woodland condition.

**Management Implications**
Plan direction is to maintain over half of the mature acres in this community in woodland condition. There needs to be more thinning done in mature stands for forest health and sustainability purposes.

**Abundance of old growth condition (110+)** – Age class distribution indicates there are 62,837 acres in age classes needed to qualify as old growth condition, comprising 18% of the community.

**Management Implications**
Plan direction is to maintain around 25% of this community in old growth conditions. With current age class structure and rates of regeneration the amount of stand acres of the age to qualify as old growth condition will be achieved in the near future. To achieve true old growth conditions the amount of thinning and prescribe fire will need to be increased.

**Abundance of regenerating forest (0 – 10-years)** – There were 247 acres in 2008 and 108 acres in 2009 of shelter wood harvest implemented, providing the chance to establish new regeneration in this community type The current amount of 1 - 10 year age class in this community type is 14,992 acres. If the current rate of regeneration is successful this will increase the area of regenerating forest by less than 1/10 of 1%. In ten years, it would result in less than 1% of this community type in a regenerating condition.

**Abundance of regenerating and young forest combined (0 – 40 years)** – Within the age class range 0 – 40 there are 26,402 acres, comprising 7% of the community.

**Management Implications**
The desired amount of regenerating and young forest in this community type is around 25% with 6% being in the 0 – 10 year age range. This shows that there has been a long term lack of regeneration cutting in this forest community. See Table 1 for regeneration cuts for FY08 and FY09. It will take many years of regenerating at the appropriate rates to fix this age class imbalance. An opportunity is presented for forest managers to start regenerating more stands in this community type.

**Table 1: Dry Oak Forest and Woodland Community Regeneration Cuts FY 08 & 09.**

| Dry Oak Forest and Woodland Community Regeneration Cuts FY 08 and 09 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Age Class** | **1-10** | | **11-40** | | **41 - 70** | | **71 - 100** | | **100+** | |
| **Fiscal Year** | **08** | **09** | **08** | **09** | **08** | **09** | **08** | **09** | **08** | **09** |
| **Management Area** | | | | | | | | | | |
| 1H - Scenic Byway | | | | | | | 93 | | | |
| 3B - Oak Woodland | | | | | | | 79 | 24 | | |
| 3C - Mixed Forest | | | | | 35 | 7 | 26 | 32 | 25 | 31 |
| 3D - Oak Decline | | | | | | | 68 | | | |
| 3E - High Quality | | | | | | | | 12 | | 2 |
| **Acres Accomplished** | | | | | **35** | **7** | **187** | **68** | **25** | **33** |

**Abundance of mid-aged and mature forest that is in open canopy condition (>40 years; 61 – 80 BA)** – Based on thinning activities in FY08 and FY09 there are 1,271 acres and 1,557 respectively of forest in this community that were thinned. Results are shown in Table 2. There are 331,997 acres in age class >40. These thinning projects affected approximately 2/5 of 1% annually of the area within this community. This rate would result in 4% of this community type being in open canopy condition at the end of ten years.

**Table 2: Dry Oak Forest and Woodland Community Thinning FY 08 & 09.**

| Dry Oak Forest and Woodland Community Thinning FY 08 and 09 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Age Class** | **1-10** | | **11-40** | | **41 - 70** | | **71 - 100** | | **100+** | |
| **Fiscal Year** | **08** | **09** | **08** | **09** | **08** | **09** | **08** | **09** | **08** | **09** |
| **Management Area** | | | | | | | | | | |
| 1H - Scenic Byway | | | | | 3 | 27 | 40 | 44 | 3 | 8 |
| 2C- Desig Rec Area | | | | | | | | 3 | | |
| 3A - Pine Woodland | 3 | 23 | 39 | 31 | 18 | 2 | 56 | 47 | 41 | 1 |
| 3B - Oak Woodland | | 1 | 19 | 33 | 47 | 33 | 401 | 703 | 3 | 4 |
| 3C - Mixed Forest | | | 8 | 7 | 75 | 71 | 33 | 205 | 5 | 41 |
| 3D - Oak Decline | | | | 24 | | 9 | 307 | 90 | | |
| 3E - High Quality | | | | 14 | 36 | 28 | 195 | 240 | | |
| 3F – Old Growth | | | | | | | 8 | | | |
| 3K – Wildlife Area | | | | | | | | 1 | | |
| **Acres Accomplished** | **3** | **24** | **66** | **109** | **179** | **170** | **1040** | **1333** | **52** | **54** |

**Management Implications**

There are opportunities for creating more regeneration areas and thinning within the community for restoration and forest health needs. The challenge in accomplishing the restoration is a result of markets and timber prices fluctuating and, therefore, demands fluctuating over time.

## Shortleaf Pine-Oak Forest and Woodland – Approximately 297,409 acres

The difference in Pine-Oak Forest and Pine-Oak Woodland is the density of the trees. Pine-Oak Forest has a high density of trees with canopy closures of 80 - 100%. Pine Woodland has tree densities with canopy closure of less than 80%. Forests tend to grow on sites with more productive soil and more moisture available than woodlands. Figure 3 is located on the Mt. Magazine Ranger District and shows an example of a stand nearing desired future conditions for this pine-oak woodland site.

**Figure 3: Gum Tree Vicinity, Mt. Magazine Ranger District - Example of a Stand Nearing Desired Future Conditions for this Pine-Oak Woodland Site.**

## Shortleaf Pine Oak Forest

### Prescribed Fire

In 2008, there were approximately 2,072 acres of the community type prescribe burned. Approximately 1,047 acres (51%) of the acres were burned during the growing season, April to October.

In 2009, there were approximately 1,405 acres of the community type prescribe burned. Approximately 1,061 acres (76%) of the acres were burned during the growing season, April to October.

**Management Implications**
The desired fire return interval in this community is 2 to 5 years. At current burning rates, very few acres in this community would be treated often enough to meet desired conditions. The volume of burning in this community should be increased as budgets allow. The ratio of growing season burning should be continued.

## Shortleaf Pine Oak Woodland

In 2008, there were approximately 20,418 acres of the community type prescribe burned. Approximately 11,287 acres (55%) of the acres were burned during the growing season, April to October.

In 2009, there were approximately 15,370 acres of the community type prescribe burned. Approximately 11,751 acres (76%) of the acres were burned during the growing season.

This averages to 7.5% of the acres being burned annually with about 65.5% of the burn acres being burned in the growing season. With increased thinning, there should be KV funds available to burn the thinned acres.

**Management Implications**
The desired fire return interval in this community is 2 to 5 years. At the current fire interval very few acres in this community would be treated often enough to meet desired conditions. The volume of prescribed burning in this community should be increased as funding allows.

## Vegetation Management

**Abundance of mature forest (>70 years)** –Mature forest comprises 44% of the community.

**Management Implications**
The desired amount of mature forest in this community is greater than 40%. The current level of 44% exceeds that level. The Forests should continue to monitor trends to make sure they are headed in the right direction.

**Abundance of mature woodland (>70 years)** – There were approximately 2,165 acres thinned in 2008 and 3,163 acres thinned in 2009 to establish or maintain a mature woodland condition in this community type. These treatments affect about 1% of the total acres annually within this vegetative community. Ten years of treatment at this rate would result in 10% of mature stand acres being at woodland densities.

**Management Implications**
Ten percent of acres in woodland condition is well below the Forest Plan desired level of more than 40%. Additional thinning needs to be prescribed to create needed amounts of woodland condition for forest health and sustainability.

**Abundance of old growth condition (110+)** – Age class distribution indicates there are 22,716 acres in age classes needed to qualify as old growth condition, comprising 8% of the community.

**Management Implications**
The desired amount of stand acres of ages over 109 years old is about 15% of this community type. Currently 8% is in this condition. This is below desired levels. Current levels of regeneration should allow for development of older conditions within a few years to satisfy old growth age requirements in this community type. See Table 3 for regeneration cuts for FY08 and FY09. To satisfy all old growth requirements increased rates of burning in this community will be needed.

**Table 3: Shortleaf Pine-Oak Forest & Woodland Community Regeneration Cuts FY 08 & 09.**

| Shortleaf Pine-Oak Forest and Woodland Community Regeneration Cuts FY 08 and 09 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Age Class** | **1-10** | | **11-40** | | **41-70** | | **71-100** | | **100+** | |
| **Fiscal Year** | **08** | **09** | **08** | **09** | **08** | **09** | **08** | **09** | **08** | **09** |
| **Management Area** | | | | | | | | | | |
| 2C – Desig Rec Area | | | | | | | | | 1 | |
| 3A - Pine Woodland | | | | | | | 28 | | | |
| 3B - Oak Woodland | | | | | | | 59 | 60 | | |
| 3C - Mixed Forest | | | | | 156 | 177 | 320 | 331 | 107 | 136 |
| 3E - High Quality | | | | | | | 116 | 155 | | 44 |
| **Acres Accomplished** | | | | | **156** | **177** | **523** | **546** | **108** | **180** |

**Abundance of regenerating forest (0 – 10-years)** – The current age class for 1 – 10 years is 25,206 acres or about 8.5% of community acres. In 2008 there were 787 acres and in 2009 there were 903 of shelterwood harvest implemented, providing the chance to establish new regeneration in this community type. If the regeneration is successful this will increase the area of regenerating forest by about 3/10 of 1% within this community type on an annual basis. This would produce about 3% of the community acres in regeneration at the end of 10 years.

**Management Implications**
Desired levels or regeneration in this community type is around 8%. It appears that regeneration levels in this community have been close to desired levels in the recent past but have lagged behind since 2006. The Forests should resume regeneration levels around the 8% level.

**Abundance of regenerating and young forest combined (0 – 40 years)** – Within the age class range 0 – 40 there are 94,016 acres, comprising 31% of the community.

**Management Implications**
Desired level of 0-40 year age class is between 30-35%. The current level of 31% is right on target. No change in management is needed.

**Abundance of mid-aged and mature forest that is in open canopy condition (>40 years; 61 – 80 BA)** – Based on thinning activities in FY08 and FY09, there were 4,526 acres and 6,982 of forest in an open canopy condition in this community type. There are 203,569 acres in age class >40. See Table 4 for thinning totals for FY08 and FY09. These thinning projects affected approximately 2% of the area within this community annually. Ten years of thinning at this rate would result in 20% community being in a thinned condition.

**Table 4: Shortleaf Pine-Oak Forest and Woodland Community Thinning FY 08 & 09.**

| Shortleaf Pine-Oak Forest and Woodland Community Thinning FY 08 and 09 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Age Class** | **1-10** | | **11-40** | | **41-70** | | **71-100** | | **100+** | |
| **Fiscal Year** | **08** | **09** | **08** | **09** | **08** | **09** | **08** | **09** | **08** | **09** |
| **Management Area** | | | | | | | | | | |
| 1H - Scenic Byway | | | 24 | 70 | 496 | 562 | 6 | 173 | 159 | 44 |
| 2A - OHT | | | | | | | | 1 | | 12 |
| 2C - Desig Rec Area | 27 | | | | 379 | 2 | | 22 | | |
| 3A - Pine Woodland | 365 | 445 | 70 | 934 | 245 | 605 | 1213 | 1024 | 21 | 123 |
| 3B - Oak Woodland | | 83 | 135 | 96 | 175 | 220 | 196 | 346 | 7 | 46 |
| 3C - Mixed Forest | | | 49 | 765 | 790 | 1713 | 363 | 183 | 4 | 203 |
| 3D - Oak Decline | | | | 29 | 2 | 322 | | 60 | | |
| 3E - High Quality | | 4 | 32 | 114 | 263 | 395 | 164 | 809 | 21 | 37 |
| 3I – Riparian | | | 1 | 2 | 11 | | 6 | 11 | | |
| 3K – Wildlife Area | | 3 | | | | | | 69 | | |
| **Acres Accomplished** | **392** | **535** | **311** | **2010** | **2361** | **3819** | **1953** | **2698** | **212** | **465** |

**Management Implications**
Desired condition is that most stand acres 40 years old or older in this community type are in a thinned condition. Current rates of thinning fall below desired levels. Managers should start thinning more acres it this age-class and community type.

## Dry-Mesic Oak Forest Community –Approximately 444,518 Acres

### Prescribed Fire

In 2008, there were approximately 33,175 acres (7%) of the community type prescribe burned. Approximately 27,082 acres (82%) of the acres were burned during the growing season, April to October.

In 2009, there were approximately 23,440 acres (5%) of the community type prescribe burned. Approximately 19,837 acres (85%) of the acres were burned during the growing season, April to October.

This averages 6% of the acres being burned annually with about 83.5% of the acres being burned in the growing season.

**Management Implications**
The desired fire return interval in this community is two to seven years. At the current fire interval, a small percentage of acres in this community would be

treated often enough to meet desired conditions. The volume of prescribed burning in this community should be increased as budget allows. It appears that the amount of growing season burns is high, which is desirable considering past burn history.

## Vegetation Management

**Abundance of mature forest (>70 years)** – There are 374,380 acres in mature condition. This is well within the goal of at least half of the community being in mature condition.

### Management Implications

Mature forest habitat type is in ample supply. There is no concern that it will be in short supply any time soon. No change in direction is needed to address the need for this habitat type.

**Abundance of mature woodland (>70 years)** – There were approximately 1,052 acres thinned in 2008 and 1,003 acres thinned in 2009 to establish or maintain a mature woodland condition in this community type. Most of the thinning of this community type took place in the High Quality, Mixed Forest, and Oak Woodland Management areas (See Table 5).

**Table 5: Dry-Mesic Oak Forest Community Thinning-FY 08 and 09.**

| Dry-Mesic Oak Forest Community Thinning-FY 08 and 09 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Age Class** | **1-10** | | **11-40** | | **41 - 70** | | **71 - 100** | | **100+** | |
| **Fiscal Year** | **08** | **09** | **08** | **09** | **08** | **09** | **08** | **09** | **08** | **09** |
| **Management Area** | | | | | | | | | | |
| 1H - Scenic Byway | | 18 | | | 6 | 4 | 36 | 108 | 9 | |
| 2A - OHT | | | | | | | 10 | 12 | 4 | |
| 3A - Pine Woodland | | 5 | | | | | | 4 | 11 | 43 |
| 3B - Oak Woodland | | 38 | 21 | 3 | 43 | 23 | 189 | 195 | 121 | 3 |
| 3C - Mixed Forest | | | 1 | 2 | 24 | 39 | 194 | 285 | 42 | 77 |
| 3D - Oak Decline | | | | 3 | | | 184 | | | |
| 3E - High Quality | | 3 | | 13 | 31 | 23 | 252 | 276 | | |
| **Acres Accomplished** | | **64** | **22** | **21** | **104** | **89** | **865** | **880** | **187** | **123** |

Thinning treatments in this community type affected about 1/2 of 1% of the total acres over the two year reporting period. If this rate of treatment is repeated over the life of the plan it will sustain 2.5% of this community type in thinned condition. This assumes affects of thinning treatments in this habitat type last about 10 years. It also assumes there was not suitable thinning from natural events.

### Management Implications

The RLRMP lists a desired condition for this community type with most of the mature stands in a thinned (woodland) condition. The current rate of thinning is falling short of levels to sustain stands in a woodland condition. More thinning needs to be done in this community type for forest health and sustainability.

**Abundance of old growth condition (110+)** – In this community type, there are 93,595 acres (about 2.1%) in age classes needed to qualify as old growth condition.

**Management Implications**
The desired amount of old growth condition for this community type is 20%. Considering current stand ages and the limited amount of regeneration planned for this community, the amount of forest over 110 years old should increase significantly over the life of the RLRMP. Older forest should increase but the amount that is thinned and burned to create true old growth condition may be limited well below the 20% desired level.

**Abundance of regenerating forest (0 – 10-years)** – We implemented 721 acres of shelterwood harvest in 2008 and 453 acres in 2009, which provided the chance to establish new regeneration in this community type. The age class for 1–10 years is 14,992 acres. If the regeneration is successful this will sustain regenerating forest at around one tenth of 1% within this community type on an annual basis. As shown in Table 6, most of the regeneration cut acres of this community type occurred in the Oak Woodland Management Area (3B) followed by Mixed Forest (3C) and Oak Decline (3D). The amount of regeneration cutting does appear to be increasing.

**Table 6: Dry-Mesic Oak Forest Community Regeneration Cuts-FY 08 and 09.**

| Dry-Mesic Oak Forest Community Regeneration Cuts FY 08 and 09 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Age Class** | **1-10** | | **11-40** | | **41-70** | | **71-100** | | **100+** | |
| **Fiscal Year** | **08** | **09** | **08** | **09** | **08** | **09** | **08** | **09** | **08** | **09** |
| **Management Area** | | | | | | | | | | |
| 1H - Scenic Byway | | | | | 3 | | 25 | | | |
| 3B - Oak Woodland | | | | | | | 354 | 160 | | |
| 3C - Mixed Forest | | | | | 63 | 20 | 78 | 247 | | 15 |
| 3D - Oak Decline | | | | | | | 101 | | | |
| 3E - High Quality | | | | | 52 | | 45 | 10 | | 1 |
| **Acres Accomplished** | | | | | **118** | **20** | **603** | **417** | | **16** |

**Management Implications**
This level of regeneration, around 1.1% in a 10-year period, is far below the (at least 6%) desired for this community type. There should be more regeneration cutting in this community in the future to sustain healthy conditions within the Dry-Mesic Forest and Woodland Community.

**Abundance of regenerating and young forest combined (0 – 40 years)** – Within the age class range 0 – 40, there are 54,110 acres, comprising about 12% of the community type. This is below desired level of around 25%.

**Management Implications**
Current regeneration levels in this community are well below levels that would increase younger age classes needed improve health and sustainability of this important community on Ozark National Forest. More regeneration cutting should be planned in this community type.

**Abundance of mid-aged and mature forest that is in open canopy condition (>40 years; 61 – 80 BA**) – Based on thinning activities, there are 2,248 acres thinned to create an open canopy condition. There are 393,338 acres in age class >40. These thinning projects affect approximately 1/5 of 1% of the area within this community. At this rate about 3% of the mid-aged and mature stand acres will have been thinned in 10 years, which is the length of time these treatment are effective.

**Management Implications**
Plan Direction is to maintain "most" of the mid-aged and mature acres of Dry-Mesic Oak Forest Community in a thinned condition. There is a need for increase of more thinning in this community for forest health and sustainability purposes. More thinning should be planned in this community to maintain community health.

## Mesic Hardwood Forest - 7,044 acres

**Total abundance of the Mesic Hardwood Forest -** This forest community occurs on less than 1% of the Forests. Monitoring set up in the RLRMP calls for monitoring changes in community acres.

The RLRMP states that we should monitor trends in total community acres for this community. It occurs at the following amounts by age class. Current age class structure on the Forests for Mesic Hardwood Forest community is reported in Table 7.

**Table 7: Age Class of Mesic Hardwood Forest Community on the Ozark-St. Francis NFs.**

| Age Class of Mesic Hardwood Forest Community | | |
|---|---|---|
| **Age Class (Years)** | **Acres** | **Percentage** |
| 1 to 10 | 35 | 0 |
| 11 to 40 | 345 | 5 |
| 41 to 70 | 185 | 3 |
| 71 to 100 | 1,212 | 17 |
| 101+ | 5,268 | 75 |

**Management Implications**
There are no known management implications that can be derived from this item.

**Recommendation**
Since the acres in this community type are static, it is recommended that this monitoring item be dropped.

### Riparian Forest – Approximately 11,484 Acres

No new acres have been identified to add to this community.

**Management Implications**
Identify any stands that qualify for moving to this community as they are found.

Information gathered for this report came from the Forest Service Activity Tracking System (FACTS) and age class distribution came from the Ozark NF GIS database.

### Loess Slope Forest Community - Approximately 16,484 acres

#### Vegetation Management

**Abundance of mature forest (>70 years)** – There are 11,331 acres greater than 70 years old in this community type. Mature forest comprises 69% of the community.

**Management Implications**
The desired level of mature forest in this community is around 60%. This indicates there is more than enough of this forest condition. It indicates that it would be desirable to begin regenerating some of the mature forest.

**Abundance of old growth condition (110+)** – Age class distribution indicates there are 916 acres in age classes needed to qualify as old growth condition, comprising 6% of the community.

**Management Implications**
The desired level of old growth condition for this community type is 15%. Considering current age classes and the rate of projected regeneration, the Forests are on track to achieve this goal.

**Abundance of regenerating forest (0 – 10-years)** – In FY08 and 09, there were no regeneration harvests implemented in this community. The age class for 1 – 10 years is 85 acres, which is shown in Table 8.

**Table 8: Loess Slope Forest Community Regeneration Cuts FY 08 & 09.**

| Loess Slope Forest Community Regeneration Cuts FY 08 and 09 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Age Class** | **1-10** | | **11-40** | | **41-70** | | **71-100** | | **100+** | |
| **Fiscal Year** | **08** | **09** | **08** | **09** | **08** | **09** | **08** | **09** | **08** | **09** |
| **Management Area** | | | | | | | | | | |
| 3G - Crowley's Ridge | | | | | | | | | 85 | |
| **Acres Accomplished** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **85** | **0** |

**Management Implications**
The lack or regeneration cutting in this community over the last 10 years is problematic and should be addressed as soon as possible. Regeneration cuts should be scheduled in this community.

**Abundance of regenerating and young forest combined (0 – 40 years)** – Within the age class range 0 – 40, there are 4,673 acres, comprising 28% of the community.

**Management Implications**
The desired level of regenerating and young forest is 20%. Looking at the young age classes on Crowley's Ridge shows a history of either over or under cutting. There should be an attempt to implement a more steady flow of regenerating in this community.

**Abundance of mid-aged and mature forest that is in open canopy condition (>40 years; 61 – 80 BA)** – As shown in Table 9, there were 136 acre thinned in FY08 and 79 acres thinned in FY09. There are 11,810 acres in age class >40, comprising 72% of the total community type. At this thinning rate less than 1% is thinned annually.

**Table X: Loess Slope Forest Community Thinning Treatments FY08 & FY09.**

| Loess Slope Forest Community Thinning Treatments FY08 and FY09 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Age Class** | **1-10** | | **11-40** | | **41-70** | | **71-100** | | **100+** | |
| **Fiscal Year** | **08** | **09** | **08** | **09** | **08** | **09** | **08** | **09** | **08** | **09** |
| **Management Area** | | | | | | | | | | |
| 1H – Scenic Corridor | | | | | | | | 23 | | |
| 3G - Crowley's Ridge | | | | | | | 136 | 32 | | 24 |
| **Acres Accomplished** | **0** | **0** | **0** | **0** | **0** | **0** | **136** | **55** | **0** | **24** |

**Management Implications**
Thinning is important to promote growth of overstory and understory as well as to promote oak regeneration. Forest managers should provide thinned conditions on a continuous basis in this community.

## Prescribed Fire

All prescribed burns in this community type were completed during dormant season.

In 2008, there were 1,023 acres prescribe burned. In 2009, there were 2,344 acres prescribe burned.

The desired fire return intervals for the loess slope forest average 5 to 10 years with every third burn being implemented during the growing season.

This burning rate falls short of minimum amounts needed to burn on a 5 to 10 year interval. Higher rates of prescribed burning should be implemented in this forest community type.

## Bottomland and Floodplain Forest - Approximately 2,563 acres

**Abundance of mature forest (>70 years)** – Mature forest is found on 1,228 acres based on age class distribution. Mature forest comprises 48% of the community.

**Management Implications**
Desired condition is to have approximately 65% of this community in mature condition. With low regeneration rates in this type, this goal should be achieved in the future.

**Abundance of regenerating forest (0 - 10 years)** – Currently, there is no acreage in the age class for 1 – 10 years.

**Management Implications**
A careful plan of regeneration should be implemented.
**Abundance of old growth condition (110+)** – In this community type, there are no acres in age classes needed to qualify as old growth condition.

**Management Implications**
It will take time to achieve the growth condition goals in this community type. Low regeneration levels will allow this goal to be achieved.

**Abundance of regenerating and young forest combined (0 – 40 years)** – Within the age class range 0 – 40, there are 577 acres, comprising 23% of the community.

**Management Implications**
Desired condition in regeneration and young forest for this community type is approximately 20%. Current levels are close to desired levels.

### Loblolly Pine Forest - Approximately 11,182 acres

Monitoring is done to follow progress of this forest community. Since this community is outside its natural range on OSFNFs, mature stands are to be converted to the appropriate native forest type for the site. Current age class structure on the Forests is reported in Table 10.

**Table 10: Age Class of Loblolly Pine Forest Community on the Ozark-St. Francis NFs.**

| Age Class of Loblolly Pine Forest Community | | |
|---|---|---|
| **Age Class (Years)** | **Acres** | **Percentage** |
| 1 to 10 | 0 | 0 |
| 11 to 40 | 9,424 | 85 |
| 41 to 70 | 483 | 4 |
| 71 to 100 | 284 | 3 |
| 101+ | 991 | 9 |

**Management Implications**
Older age classes of loblolly pine should be converted to native species the next time the compartment they are in is treated.

## RARE AND SPECIAL COMMUNITIES

### Glades and Barrens

The ranger districts are keeping hard copy maps of glades and barrens. When the database is developed the following items will be tracked:

- Number of occurrences and acreage of this community type.
- Percent of occurrences or acreage at desired conditions.
- Treatments accomplished
- Acres added to GIS layer for this community

**Management Implications**
An electronic database would make analyzing and managing and tracking glades much easier. A database should be developed as funds allow.

### Montane Oak Forest

This community type is located on the top of Mt. Magazine. Approximately 3/4 of the community acres are in burn units and 1/4 located in a special use area devoted to communications towers.

The portion in burn units is progressing toward desired condition with the areas nearest firelines at desired condition. No burning was done in 2008. The south half of the burn unit was burned in 2009.

**Management Implications**
This area is progressing nicely. Some thinning may be needed to speed up recovery. Current burning rates appear to be appropriate for restoration and maintenance of this community.

Development of the Rare Communities Database would also benefit tracking this community.

## Sinkhole and Depression Ponds

No new occurrences of this community type were reported in 2008 or 2009. All areas of the community are being protected at this time. No special treatments are prescribed for this community type.

Development of the Rare Communities Database would also benefit tracking this community.

**Management Implications**
An electronic database would make tracking depression ponds much easier. A database should be developed as funds allow.

## Seeps and Fens

No new occurrences of this community type were added in 2008 or 2009. All areas of the community are being protected at this time. No special treatments are prescribed for this community type.

**Management Implications**
Development of the Rare Communities Database would also benefit tracking this community.

## Canebrakes

The ranger districts are keeping hard copy maps of canebrakes. Fifteen acres of cane restoration were accomplished in 2008. Fourteen acres were restored in 2009.

When the database is developed the following items will be tracked:

- Number of occurrences and acreage of this community type.
- Percent of occurrences or acreage at desired conditions.
- Treatments accomplished
- Acres added to GIS layer for this community

**Management Implications**
Development of the Rare Communities Database would benefit tracking this community.

## Caves, Mines, and Karst

The Forest has been keeping a database on caves since the 1980's. No cave gates were installed in 2008 or 2009.

**Management Implications**

No change in direction is needed.

## Emergent Wetlands

No database is being kept on emergent wetlands. A ponds database is kept and ponds are managed in a way to protect emergent wetlands.

**Management Implications**

The Forest Fisheries Biologist should evaluate if a special database is needed for this community of if management of ponds and riparian zones covers this special community.

## Native Grasslands

This element tracks pastures and large wildlife openings restored to native grasslands.

In 2008, the Forests treated 916 acres for restoration to native grasslands. 402 acres were treated in 2009.

**Management Implications**

The Forests have been aggressive in converting fescue pastures to native warm season grasslands. This trend should be continued as opportunities are found.

## Bottomland Depression

No new occurrences of this community type were added in 2008 or 2009. All areas of the community are being protected at this time. No special treatments are prescribed for this community type.

**Management Implications**

Development of the Rare Communities Database would also benefit tracking this community.

## MANAGEMENT AREAS (MA)

### 3A – Pine Woodland MA - Approximately 97,629 acres

#### Vegetation Management

**Abundance of mature forest (>70 years)** - In 2008, there were 49,757 acres in mature condition, representing approximately 50% of the management area based on age class distribution. In 2009, there were 50,103 acres in mature condition, representing approximately 51% of the management area based on age class distribution.

**Abundance of mature woodland (>70 years)** – There were approximately 1,344 acres in 2008 and 1,296 acres in 2009 thinned to establish or maintain a mature woodland condition. This is a rate of thinning of 1,320 acres annually. These treatments affected about 2.6% of the total mature acres within this management area annually. If this rate of treatment is repeated over the life of the Plan it will sustain 13% of the MA in a mature woodland condition. This assumes affects of thinning treatments in this MA last about 10 years.

**Management Implications**

Desired conditions for this MA are to manage about 60% of the woodland community acres in pine woodland condition. Current rates of thinning will not sustain woodland condition anywhere near the desired rate. A much higher rate of thinning will need to be implemented in this MA to achieve the desired condition.

Proportion of the woodland community in the MA burned at desired intervals and seasons. In this MA, 9,678 acres of woodland were burned in 2008 and 10,354 acres of woodland were burned in 2009. This is an annual average of 10,016 acres of woodland community burned. This is an average of 10% annually.

**Management Implications**

The desired level of burning is to sustain a 2 - 5 year burning cycle for the woodland community types in the MA. On average, every third burn should be during the growing season. The current level of burning is below desired levels. More woodland burning should be prescribed in the MA.

### 3B – Oak Woodland MA - Approximately 154,704 acres

#### Vegetation Management

**Abundance of mature forest (>70 years)** – In 2008, there were 121,163 acres in mature condition, representing approximately 78% of the MA based on age class distribution. In 2009, there were 122,852 acres in mature condition, representing approximately 79% of the MA based on age class distribution.

**Abundance of mature woodland (>70 years)** – There were 917 acres thinned in 2008 and 1,300 acres in 2009 to establish or maintain a mature woodland condition in this MA. This is an average of 1,108 acres thinned annually. This is around 1% of the mature timber being thinned to create woodland densities annually. In 10 years, this would only produce 7% of the mature forest in woodland condition.

**Management Implications**
Desired conditions for this MA are to manage about 60% of the woodland community acres in oak woodland condition. Current rates of thinning will not sustain woodland condition near the desired rate. A much higher rate of thinning will need to be done in this MA to achieve the desired condition.

Proportions of the woodland community in the MA were burned at desired intervals and seasons.

In this MA, 16,378 acres of woodland were burned in 2008 and 6,980 acres were burned in 2009. This is an average of 12,679 acres of woodland community burned annually in the MA.

### 3C – Mixed Forest MA - Approximately 360,401 acres

### Vegetation Management

**Abundance of mature forest (>70 years)** – In 2008, there were about 248,527 acres in mature condition, representing approximately 69% of the MA based on age class distribution. There were about 248,378 acres in mature condition in 2009, representing approximately 69% of the MA based on age class distribution.

**Abundance of thinned mature forest (>70 years)** – There were approximately 641 acres in 2008 and 994 acres in 2009 thinned to improve health and sustainability of the mature mixed forest. This equates to 817 acres annually. These treatments affected about 1/3 of 1% of the total mature acres within this MA annually. If this rate of treatment is repeated over the life of the plan it will sustain 2% of the MA in a thinned condition. This assumes affects of thinning treatments in this MA last about 10 years.

**Management Implications**
This rate of thinning does not meet the desired condition of maintaining well thinned stands to reduce stress on trees. A more aggressive thinning regime should be implemented.

**Abundance of regenerating forest (0 - 10 years)** – In 2008, there were 778 acres and in 2009 there were 996 acres of shelterwood harvest implemented in this MA. This is an annual regeneration rate of 887 acres. If the regeneration is

successful, this will increase the area of regenerating forest by less than 1/5 of 1% within this MA on an annual basis. In a 10 year period less than 2% would be regenerated.

**Management Implications**
This level of regeneration cutting would not lead to most trees being regenerated at an appropriate rotation age. Increased regenerating cutting should be implemented in this MA.

### 3D – Oak Decline Restoration - Approximately 67,691 acres

#### Vegetation Management

**Abundance of mature forest (>70 years)** –There were 53,702 acres in mature condition in 2008, representing approximately 79% of the MA based on age class distribution. In 2009, there were 54,217 acres in mature condition, representing approximately 80% of the MA based on age class distribution.

**Abundance of thinned mature stands(>70 years)** – There were approximately 491 acres in 2008 and 150 acres thinned in 2009 to restore oak forest or woodland condition. This averages about 320 acres thinned annually. Individually, these treatments affected less than 1/2 of 1% of the total mature aged acres within this MA. If this rate of treatment is repeated over the life of the Plan it will sustain 4% of the MA in a thinned condition.

**Management Implications**
The amount of thinning needed in this MA must be evaluated stand by stand. The need for thinning is dependent on the stand age, species composition, stand density, and regeneration present in the stand as well as the expected response from prescribed burning.

**Abundance of regenerating forest (0 - 10 years)** – In 2008, there were 169 acres and no acres in 2009 of shelterwood harvest implemented, providing the chance to establish new regeneration in this MA. This level of regeneration cutting is insignificant. If the regeneration is successful it will have almost no effect on regeneration percentages for the MA. Managers are also evaluating if suitable regeneration is present due to oak decline and the effect of prescribed fire.

**Management Implications**
This rate of treatment falls short of desired goals of restoring this community to productive forest or woodland habitat. Hopefully much of the MA will be restored or regenerated by fire. If not, the rate of thinning and regeneration cutting should be increased appropriately in the near future.

## 3E – High Quality Forest - Approximately 214,358 acres

**Abundance of mature forest (>70 years)** – In 2008 there were 149,232 acres in mature condition, representing approximately 70% of the MA based on age class distribution. In 2009 there were 150,302 acres in mature condition, representing approximately 70% of the MA based on age class distribution.

**Abundance of mature thinned forest (>70 years)** – There were approximately 632 acres thinned in 2008 and 1,362 acres thinned in 2009 to establish or maintain mature stand vigor and growth rates. This averages about 997 acres thinned annually. These treatments affected less than 1/2 of 1% of the total acres within this MA annually. If this rate of treatment is repeated over the life of the Plan it will sustain approximately 5% of the mature stands in the MA in a thinned condition. This assumes affects of thinning treatments in this MA last about 10 years.

**Management Implications**
This rate of thinning will not sustain growth and vigor in the MA. This is the primary purpose in the MA. An active thinning regime should be implemented for the rest of the planning cycle.

**Abundance of old growth condition (110+)** – In this MA, there are 27,050 acres in age classes needed to qualify as old growth condition. These acres comprise about 13% of the total MA.

**Management Implications**
This MA has a short rotation age assigned. Maximum length of rotation is listed as 110 years old. It will take many entries to return overaged stands to young fast growing stands. Increased regeneration cutting should be implemented in the Management Area.

**Abundance of regenerating forest (0 - 10 years)** – In 2008, there were 203 acres and 2009 there was a total of 224 acres of shelterwood harvest implemented in this MA. This is an average of 0% within this MA on an annual basis.

**Management Implications**
The goal of maintaining vigor and growth in stands will not be maintained by letting timber stands get old and decadent. A serious plan for regeneration should be followed in this MA if any progress toward a high quality forest products area is to be realized.

### 3F – Old Growth MA - Approximately 5,062 acres

Table 11 shows the following age class distribution present on designated Old Growth MAs on the Ozark-St. Francis National Forests.

**Table 11: Age Class for Old Growth Management Areas on the Ozark-St. Francis NFs.**

| Age Class of Old Growth Management Areas | | |
|---|---|---|
| **Age Class (Years)** | **Acres** | **Percentage** |
| 1 to 10 | 205 | 4 |
| 11 to 40 | 178 | 4 |
| 41 to 70 | 1,081 | 21 |
| 71 to 100 | 2,906 | 57 |
| 101+ | 692 | 14 |

**Management Implications**
There appears to be good mix of age classes present. If similar regeneration rates are implemented over the next 30 years, around 60% of the MA will be in old growth age classes. If appropriate thinning and burning regimes are implemented, old growth conditions will be met.

In 2008 there were 8 acres, but in 2009 there were no thinning treatments applied to this MA.

**Management Implications**
Thinning should be prescribed the next time these compartments are entered.

### 3G – Crowley's Ridge Upland Hardwood MA – Approximately 11,443 acres

For monitoring of this MA, see monitoring for the Loess Slope Community (Page 15). They are the same area.

### 3H – Mississippi River Bottomland Hardwood MA- Approximately 3,573 acres

For monitoring of this MA, see monitoring for the Bottomland and Floodplain Forest (Page 17). They are the same area.

## 3I – Riparian Corridors MA - Approximately 11,484 acres

The age class distribution for riparian corridors is shown in Table 12.

**Table 12: Age Class for Riparian Corridors MA on the Ozark-St. Francis NFs.**

| Age Class of Riparian Corridors Management Area | | |
|---|---|---|
| **Age Class (Years)** | **Acres** | **Percentage** |
| 1 to 10 | 1,002 | 9 |
| 11 to 40 | 385 | 3 |
| 41 to 70 | 1,067 | 9 |
| 71 to 100 | 6,628 | 58 |
| 101+ | 2,402 | 21 |

In 2008, there were 19 acres and in 2009 there were 18 acres of thinning treatments applied to this MA.

### Management Implications

Riparian zones should be evaluated for thinning. Thinning should be done in a responsible manner if it enhances riparian values.

## 2E – Wedington Unit Urban Recreation Area MA - Approximately 10,467 acres

Table 13 shows class distribution for the Wedington Unit Urban Recreation Area.

**Table 13: Age Class for Wedington Unit Urban MA on the Ozark-St. Francis NFs.**

| Wedington Unit Urban Recreation Area Management Area | | |
|---|---|---|
| **Age Class (Years)** | **Acres** | **Percentage** |
| 1 to 10 | 0 | 0 |
| 11 to 40 | 1,786 | 15 |
| 41 to 70 | 2,641 | 23 |
| 71 to 100 | 4,545 | 39 |
| 101+ | 2,720 | 23 |

There were no acres thinned or regenerated in this MA in 2008 or 2009.

### Management Implications

Wedington is to be managed under a woodlands prescription. It is important to thin stands to create or sustain woodland conditions.

## MANAGEMENT INDICATOR SPECIES (MIS)

MIS were selected "because their population changes are believed to indicate the effects of management activities and are used for planning purposes to help compare effects of alternatives, and as a focus for monitoring.

Table 14 lists the Management Indicator Species for the OSFNFs and indicates the reasons each was chosen. In Table 15, each species is discussed individually with monitoring results for each.

**Table 14: Management Indicator Species Selected and Reason(s) For Selection.**

| Common Name | Ozark | St. Francis | Selection Criteria Indicators |
|---|---|---|---|
| Northern Bobwhite | X | | Restoration of pine and oak woodland and native grasslands |
| Whitetail Deer | X | X | Meeting hunting demand for this species |
| Black Bear | X | | Meeting hunting demand for this species |
| Wild Turkey | X | X | Meeting hunting demand for this species |
| Prairie Warbler | X | | Regenerating forest communities on the Ozark NF |
| Yellow-breasted Chat | | X | Regenerating forest communities on the St. Francis NF |
| Brown-headed Nuthatch | X | | Open pine forest and woodland |
| Northern Parula | X | X | Communities associated with forests in riparian areas |
| Rufous-crowned Sparrow | X | | Maintaining viability of this species through active maintenance of glades along bluff lines on Mt. Magazine |
| Cerulean Warbler | X | X | Communities associated with mature hardwood forest with complex canopy structures and Dry-Mesic Oak Forest communities on the Ozark NF |
| Ovenbird | X | | Dry-Mesic Oak Forests |
| Red-headed Woodpecker | X | | Oak woodland overstories |
| Pileated Woodpecker | X | X | Large snags and snag-dependent wildlife on both forests |
| Scarlet Tanager | X | | Forest interior bird communities and mature Dry-Mesic Oak Forest communities on the Ozark NF |
| Acadian Flycatcher | X | X | Forest interior bird communities on the St. Francis NF, and on mature mesic hardwood forest communities on both forests. |
| Smallmouth Bass | X | | Meeting fishing demand for this species, and on cool-water stream communities |
| Largemouth Bass | X | X | Meeting fishing demand for this species |

## TERRESTRIAL MANAGEMENT INDICATOR SPECIES

Terrestrial Management Indicator Species (TMIS) have been selected help monitor the effects of management practices on all species across the forest. They are representative of species that require similar habitats to occupy. These species are monitored so that the entire range of species does not have to be monitored. Table 15 is a summary of the TMIS monitoring.

**Table xx: Monitoring Methods and Trends for Terrestrial Management Indicator Species.**

| Common Name | Ozark | St. Francis | Trend Evaluation Method | Trend |
|---|---|---|---|---|
| Northern Bobwhite | X | | Woodland, early seral forest type, and age class distribution | Prescribed fire, WSI, wildlife openings, pond construction, and wildlife opening conversion to warm season native grasses remained similar to what they were in the previous 2 years. WSI/TSI increased. |
| Prairie Warbler | X | | North American Breeding Bird Survey & Habitat Capability data | Population trend is downward but habitat capability on the Forests still remains good |
| Yellow-breasted Chat | | X | North American Breeding Bird Survey & Habitat Capability data | Species population trend is increasing slightly; seral habitat capability on the St. Francis NF will continue to be monitored |
| Brown-headed Nuthatch | X | | North American Breeding Bird Survey & Habitat Capability data | Currently poor quality habitat, however, Revised Plan implementation should improve this species habitat |
| Northern Parula | X | X | North American Breeding Bird Survey & Habitat Capability data | Population trend and habitat are increasing slightly |
| Acadian Flycatcher | X | X | North American Breeding Bird Survey & Habitat Capability data | Population trend is increasing slightly |
| Rufous-crowned Sparrow | X | | North American Breeding Bird Survey & Habitat Capability data | Habitat for this species has been improved over much of the top of Mt. Magazine |
| Cerulean Warbler | X | X | North American Breeding Bird Survey & Habitat Capability data | Slight decrease in the population trend |
| Ovenbird | X | | Local searches & Habitat Capability data | Slight increase in the population trend while habitat is steady to increasing |

**Table 15 (Continued): Monitoring Methods and Trends for Terrestrial Management Indicator Species.**

| Common Name | Ozark | St. Francis | Trend Evaluation Method | Trend |
|---|---|---|---|---|
| Red-headed Woodpecker | X | | North American Breeding Bird Survey & Habitat Capability data | Population trend is slightly up on Forest, but experiencing a slight decrease in the state. Habitat is rare and increasing slowly |
| Scarlet Tanager | X | | North American Breeding Bird Survey & Habitat Capability data | Population trend is slightly up on Forest, but experiencing a slight decrease in the state. Habitat changing little |
| Pileated Woodpecker | X | X | North American Breeding Bird Survey & Habitat Capability data | Population trend is slightly decreasing in both the Forest and the state. Habitat quality changing little |
| Whitetail Deer | X | X | Habitat capability to support an average of 11.7 deer per square mile after 10 years (hunter checks and spotlight surveys) | Habitat capability still remains above the Plan projection |
| Black Bear | X | | Hunter checks and bait station surveys | Habitat capability still remains above the Plan projection |
| Wild Turkey | X | X | Annual Wild Turkey Brood Survey | Brood numbers indicate significant population decline, but Habitat capability on the forest still remains good |

### SPECIES REQUIRING EARLY SERAL OR EARLY SUCCESSIONAL HABITATS

Some species were chosen as MIS species because their habitat requirements help indicate effects of management on restoration of pine and oak woodland and native grasslands. These species include the northern bobwhite, the prairie warbler, and the yellow-breasted chat. Table 16 shows timber treatments used in 2008 and 2009 that improve wildlife habitat conditions for these species.

**Table 16: Timber Treatments that Improve Wildlife Habitat Conditions.**

| Ozark-St. Francis NF Timber Treatment Acres by Type 2008-2009 | | | | | | |
|---|---|---|---|---|---|---|
| **Year** | **Clear Cut** | **Shelterwood** | **Seed Tree** | **Thin** | **Salvage** | **Total** |
| 2008 | 0 | 1317 | 324 | 5852 | 0 | 7493 |
| 2009 | 0 | 674 | 292 | 4505 | 2860 | 5471 |
| **Total** | **0** | **1991** | **616** | **10,357** | **2,860** | **12,964** |

Expected trends in these habitats are evaluated in terms of tracking the amount of early seral forest type and age class distribution, the silvicultural treatments (shown in Figure 4) used (including prescribed fire), wildlife stand improvement, and the conversion from non-native cool season grasses such as fescue or the

dominance of Bermuda grass to native warm season grasses and forbs. Table 17 shows the types of treatments completed in 2008 and 2009 that benefited these species.

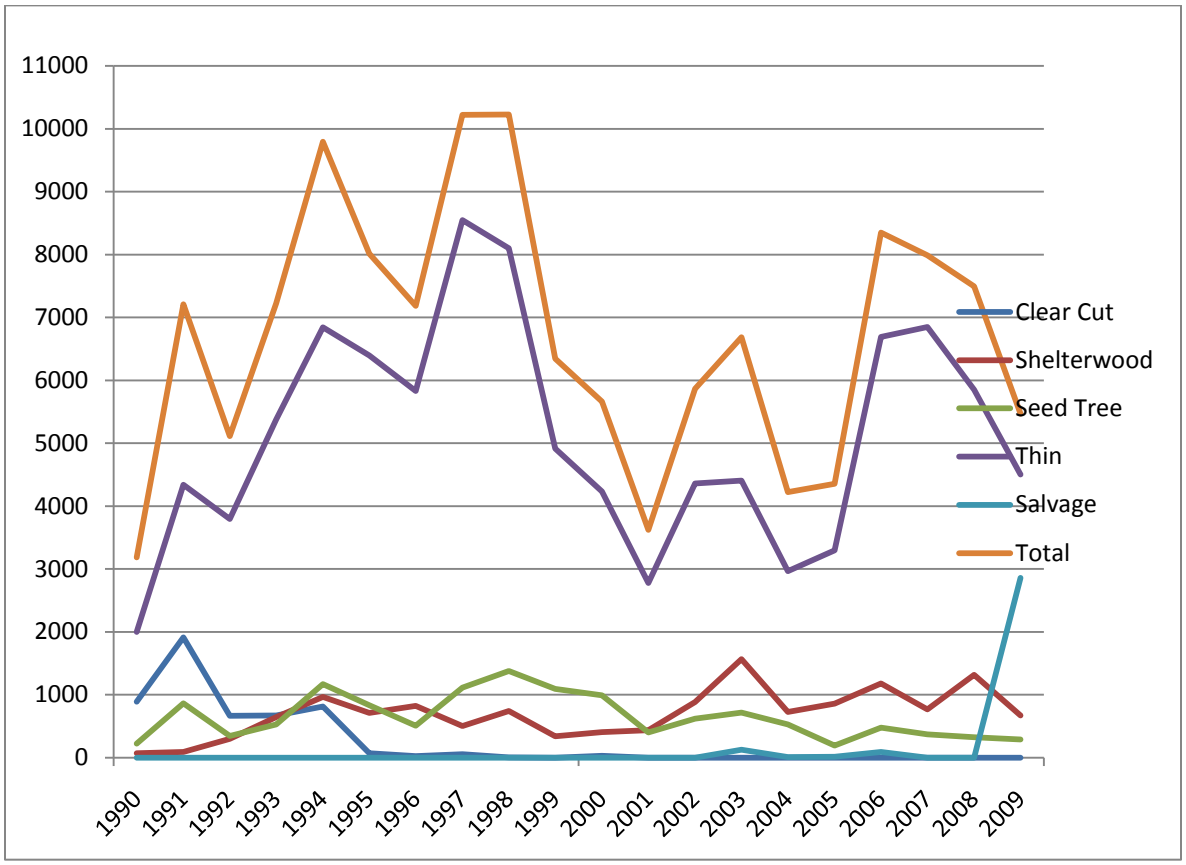


**Figure 4: Timber Treatments 1990-2009**

**Table 17: Early seral habitat improvements (Bobwhite, Turkey, Prairie Warbler, Yellow-Breasted Chat.**

| Early Seral Habitat Improvements | | |
|---|---|---|
| **Treatment** | **2008** | **2009** |
| Prescribed burning (non-KV) | 74,437 acres | 56,899 acres |
| Prescribed burning (KV funded) | 280 acres | 319 acres |
| Wildlife Stand Improvement | 408 acres | 10,548 acres |
| Native grass establishment | 916 acres | 402 acres |
| Wildlife opening construction and maintenance | 1,677 acres | 2,284 acres |
| Pond construction/reconstruction | 24 ponds | 1 pond |

## Northern Bobwhite (Quail)

Historically, quail thrived on lands that are now OSFNFs due to the significant amount of oak savanna, oak woodland, and glade habitat that was maintained by periodic fire.

**Breeding Bird Survey**: Based on the data available, the northern bobwhite in Arkansas has shown a sustained decrease in the population trend since 1966 in the Breeding Bird Survey (Figure 5).

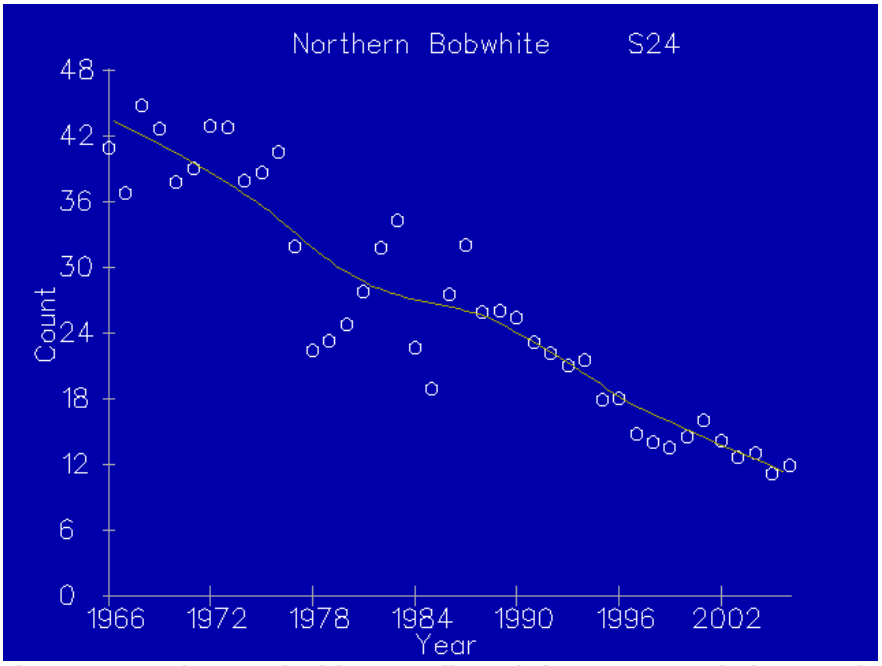


**Figure 5: Northern Bobwhite Breeding Bird Survey population trend for Ozark-Ouachita Plateau for 1966 – 2006.**

### Management Implications

Habitat needs for northern bobwhite will be met over time. This species requires quality early seral habitat of which there is little currently provided forest-wide. Increases in thinning, regeneration timber harvest, and prescribed burning will improve habitat on a much larger scale.

## Prairie Warbler

Prairie warbler was chosen as a MIS to help indicate the effects of management on the early successional component of forest communities. As a Neotropical migrant, the prairie warbler is an international species of concern. This species uses early successional habitats such as regenerating old fields, pastures, and young forest stands. The vegetation selected may be deciduous, conifer, or mixed types. Habitats with scattered saplings, scrubby thickets, cutover or burned over woods, woodland margins, open brushy lands, mixed pine and hardwood, and scrub oak woodlands are most often selected. Optimal habitat

conditions for this species are even-aged regenerating forests of stand size or larger. Monitoring in the Ozark-Ouachita physiographic province shows a declining trend for this species.

**Data Sources:** The North American Breeding Bird Survey (Sauer et al. 2007) indicating trend results for the Ozark - Ouachita Plateau, Forest Landbird point data (1997 – 2009), and the Habitat Capability data are sources for evaluating prairie warbler population trends. The Landbird point data (Figure 6) indicates a slight declining trend for the Forests and is also noted in the Breeding Bird Survey data.

Based on the data available, the prairie warbler is in a downward trend. These data are in agreement with the Breeding Bird Survey data for the Ozark-Ouachita Plateau and the same downward trend that is indicated throughout the prairie warblers' range nationwide.

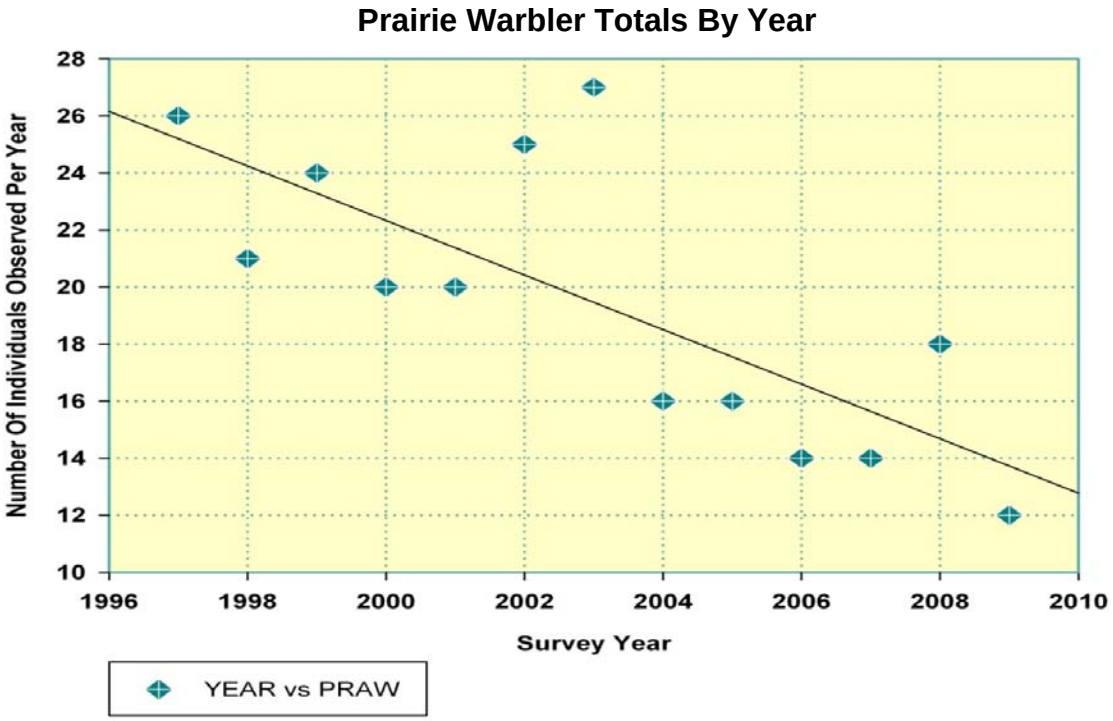


**Figure 6: Prairie Warbler Detected on Landbird Point Counts, Ozark-St. Francis NFs 1997 – 2009**

**Breeding Bird Survey**: Based on the data available, the prairie warbler in Arkansas has shown a slight decrease in the population trend since 1966 in the Breeding Bird Survey (Figure 7).

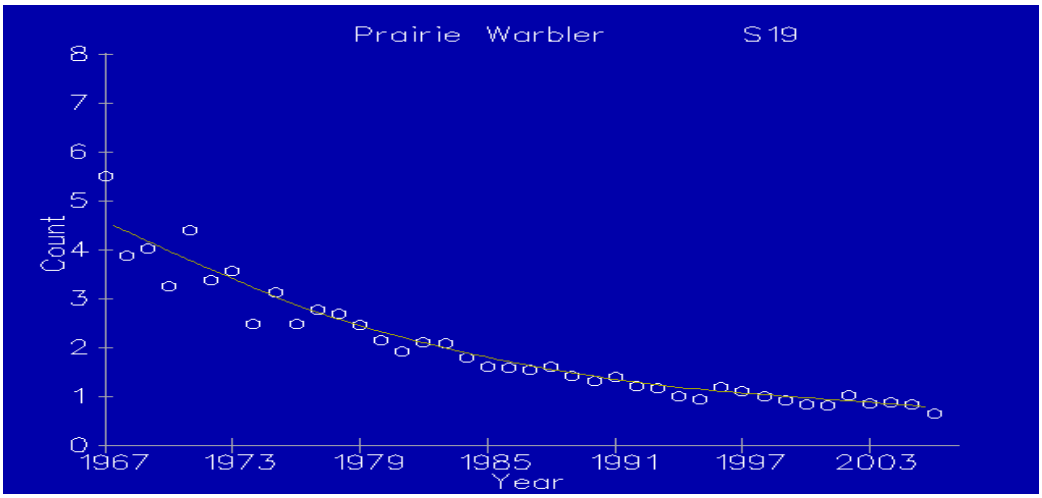


**Figure 7: Prairie Warbler Breeding Bird Survey Population Trend for Ozark-Ouachita Plateau for 1966 - 2006.**

## Management Implications

Actions need to be taken to reverse the decline in habitat so population trend will continue. Prairie warbler population trends are troubling but implementation of the RLRMP, which calls for the creation of early seral habitats across the Forests over the next 10 years, should improve habitat for the species and hopefully improve the downward population trend at the forest level. Habitat capability on the Forests still remains good and there are no indications of a need for adjustments in the Plan or its direction.

## Yellow-Breasted Chat

Yellow-breasted chat was selected to represent species needing early seral habitat conditions on the St .Francis NF. It occupies regenerating forests in small and large patch sizes. Potential populations will be evaluated by tracking the amount of early seral habitat maintained on the St. Francis NF as well as monitoring population trends on the Forest for this unique avian species. Figure 8 shows the distribution of the age class habitat on the St. Francis NF in 2007.

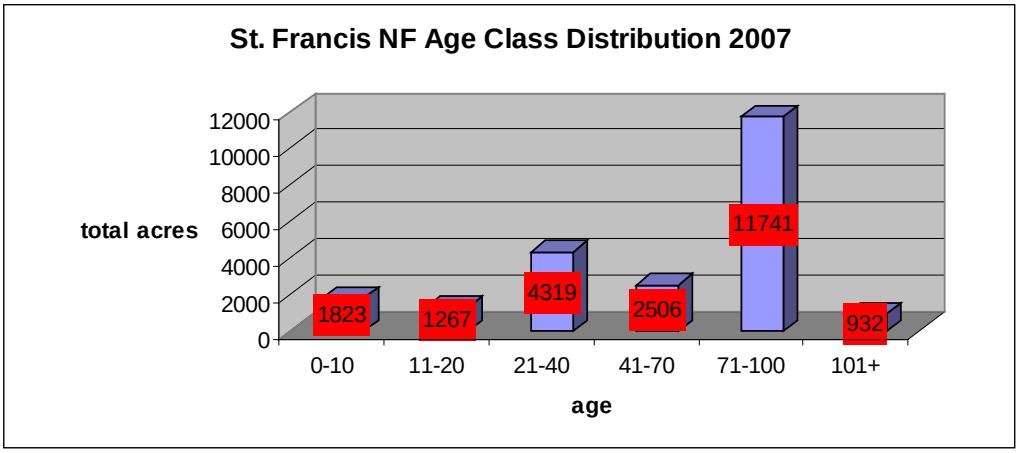


**Figure 8: Yellow-breasted Chat Habitat Distribution on the St. Francis NF in 2007.**

The St. Francis NF has not had much timber management activity in the past 10 years, but is starting to implement the RLRMP (2005). As of 2007, the St. Francis NF age class distribution shows that early seral habitat is available on approximately 8% of national forest lands on the St. Francis. Early seral habitat distribution is not particularly good at the present time.

Forest wide, yellow-breasted chat appears to be doing well with a slight increase in the population trend as shown in the Landbird point data for the Forests. Figure 9 shows Yellow-breasted Chat detected on Landbird Point Counts on the OSFNFs.

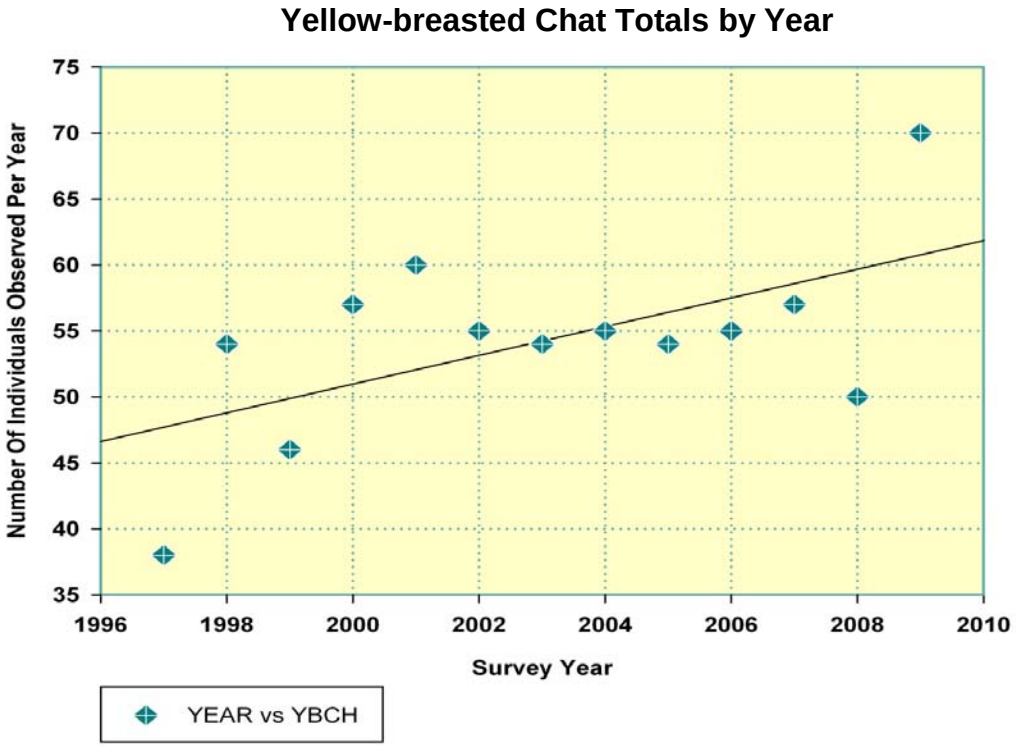


**Figure 9: Yellow-breasted Chat Detected on Landbird Point Counts, Ozark-St. Francis NFs 1997 – 2009.**

**Breeding Bird Survey:** Based on the data available, the yellow-breasted chat in Arkansas has shown a slight increase in population trend since 1992 in the Breeding Bird Survey. This is shown on Figure 10.

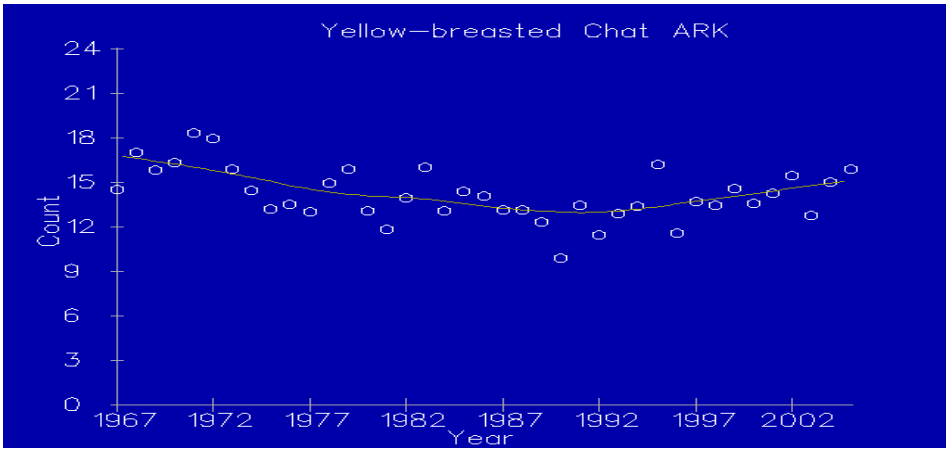


**Figure 10: Yellow-breasted Chat Breeding Bird Survey Population Trend for Ozark-Ouachita Plateau for 1966 - 2006.**

### Management Implications

Yellow-breasted chat is relatively abundant in parts of the Forests and monitoring of this species suggests that the species population trend is increasing slightly. Early seral habitat capability on the St. Francis NF will continue to be monitored but habitat improvement through implementation of the RLRMP will help this species. No change is warranted at this time.

## SPECIES REQUIRING PINE WOODLAND HABITATS

### Brown-Headed Nuthatch

Brown-headed nuthatch was chosen to represent species needing pine woodland condition. Potential populations will be evaluated by tracking the amount of pine woodland condition on the Forests. This species is currently rare on the Forests.

**Data Sources:** Forest Landbird point data (1997 – 2009) and population trend is used to address changes in their condition. Since the RLRMP encourages pine and oak woodland, and work has been done on several districts to increase the number of acres where the woodland condition is the goal, the population trend for this species should continue to increase. Figure 11 shows the survey information concerning Brown-headed nuthatch populations on the OSFNFs.

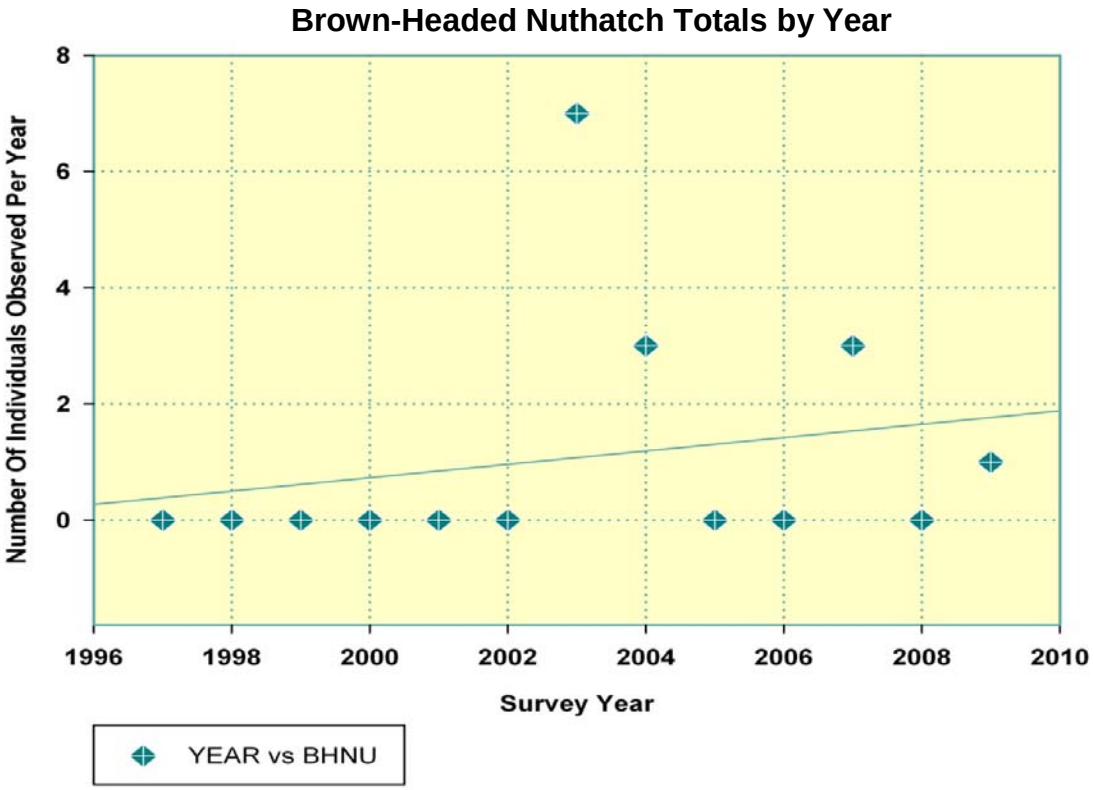


**Figure 11: Brown-headed Nuthatch Detected on Landbird Point Counts, Ozark-St. Francis NFs (1997 – 2009)**.

**Breeding Bird Survey**: Based on the data available, the brown-headed nuthatch in Arkansas has shown a stable population trend in the Breeding Bird Survey since 1967. Results are shown in Figure 12.

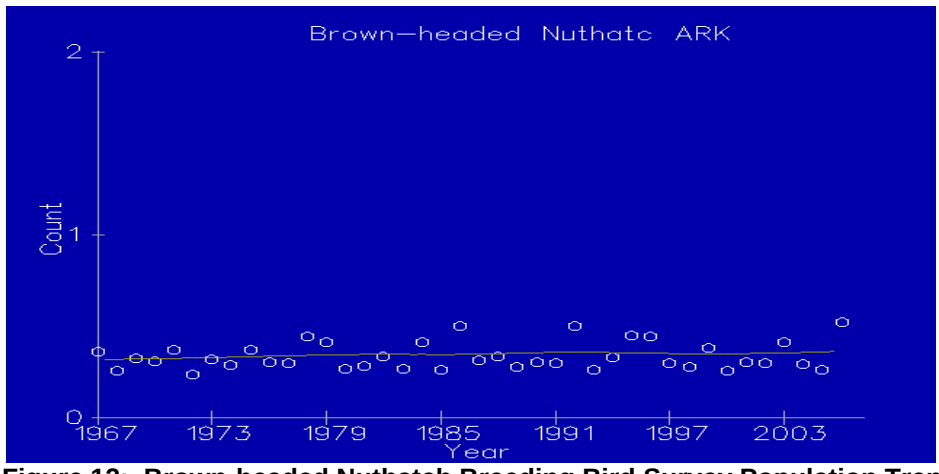


**Figure 12: Brown-headed Nuthatch Breeding Bird Survey Population Trend for Ozark-Ouachita Plateau for 1966 - 2006.**

## Management Implications

The brown-headed nuthatch is a fairly rare bird species on the Forests in part due to poor habitat quality but implementation of the RLRMP should help

increase the available acres in quality woodland habitat for this species. No change is warranted at this time.

### SPECIES REQUIRING RIPARIAN FOREST HABITATS

**Northern Parula**

Northern parula was chosen to represent species needing riparian forest condition. They are common summer residents along the Forests' wooded rivers and streams. Potential populations will be evaluated by tracking mature riparian habitat on the Forests.

**Data Sources:** Forest Landbird point data (2004 – 2009) and population trend will be used to address changes in their condition. Population trends (Figure 13) continue to remain good for this species on the Forests and this should continue with the full implementation of the RLRMP.

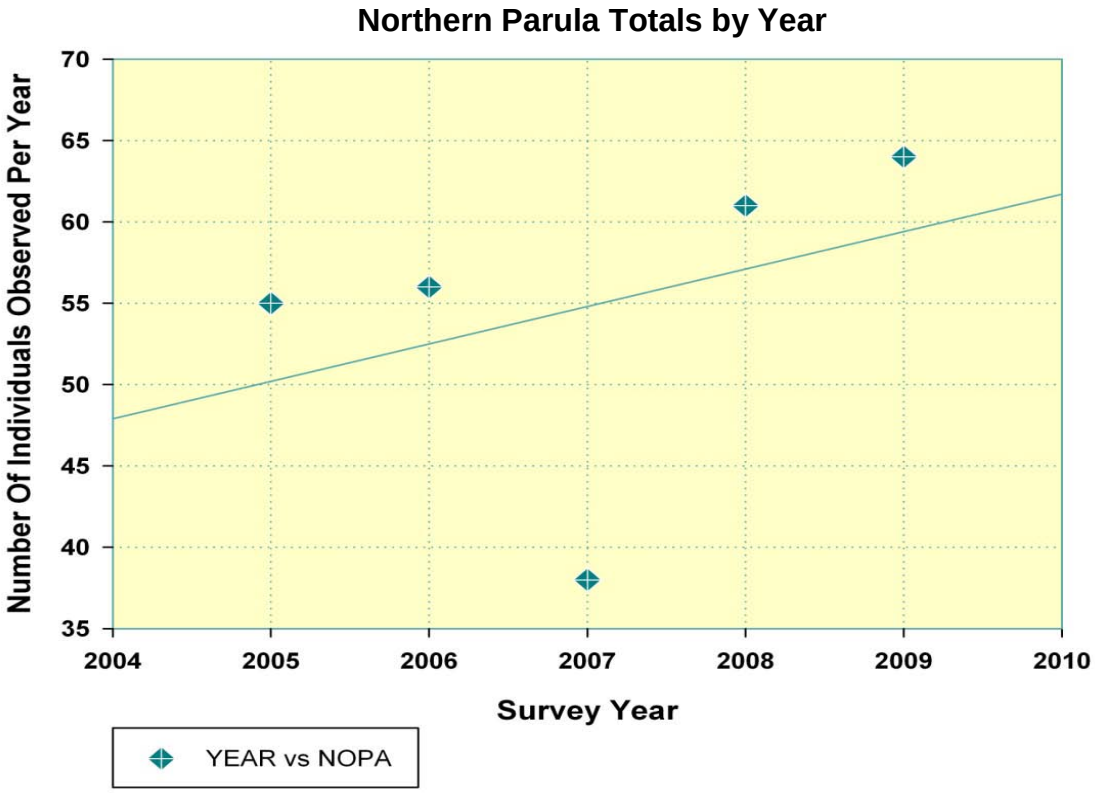


**Figure 13: Northern Parula Detected on Landbird Point Counts, Ozark-St. Francis NFs (1997 – 2009).**

**Breeding Bird Survey:** Based on the data available, the northern parula in Arkansas has shown a stable to declining population trend since 1967 in the Breeding Bird Survey (Figure 14). This is in contradiction to the Landbird points which continue to show an increase population trend on the forest since 2004.

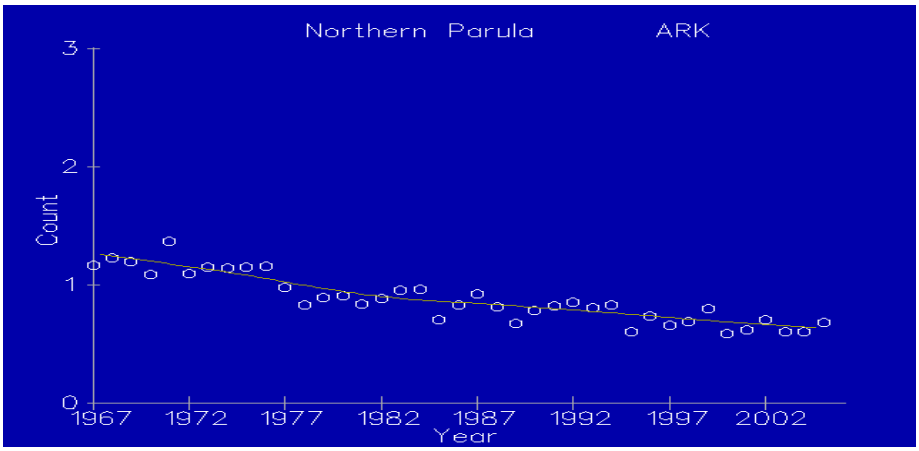


**Figure 14: Northern Parula Breeding Bird Survey Population Trend for Ozark-Ouachita Plateau for 1966 - 2006.**

### Management Implications

Northern parula is relatively abundant in parts of the Forests where suitable habitat occurs and monitoring of this species suggests that the species population trend is increasing slightly. Habitat for this avian species will continue to be monitored. No change is warranted at this time.

## SPECIES REQUIRING MID-AGED TO MATURE FOREST HABITATS

### Acadian Flycatcher

Acadian flycatcher was chosen to represent species needing mid-aged to mature forest stages of Loess Slope Forest found on Crowley's Ridge of St. Francis NF.

**Data Sources:** Forest Landbird point data for 1997 – 2009 and population trend will be used to address changes in their condition. This information is displayed in Figure 15. Population trends continue to remain stable for this species.

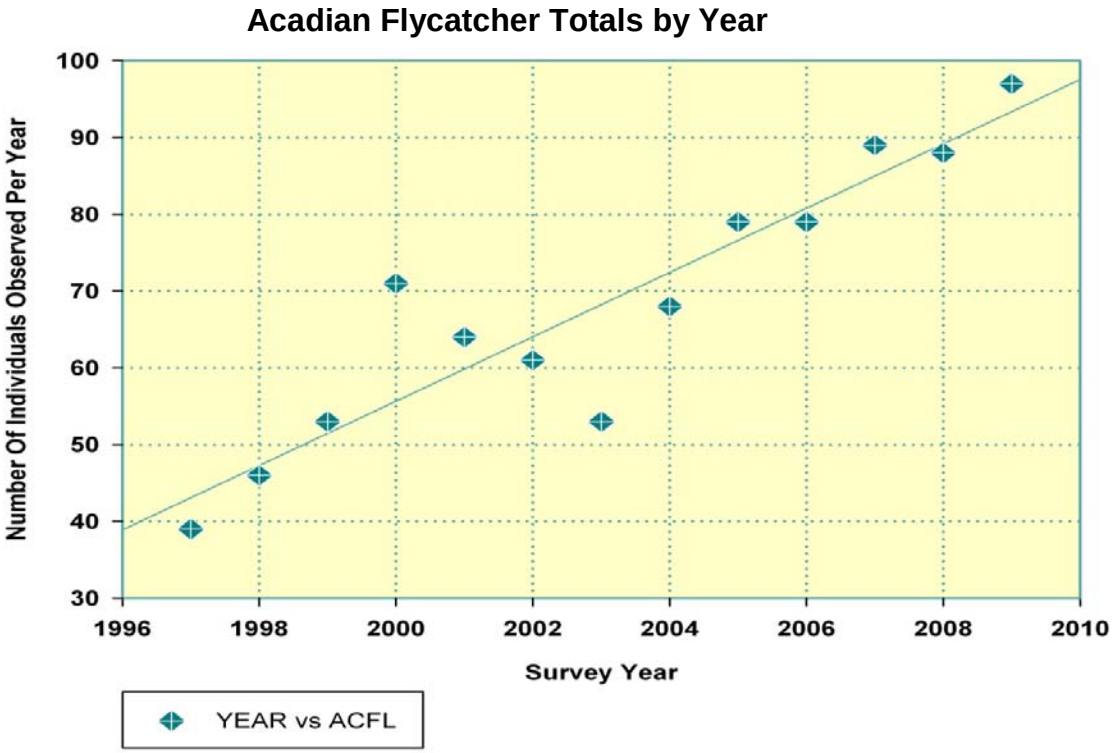


**Figure 15: Acadian Flycatcher Totals Detected on Landbird Point Counts, Ozark-St. Francis NFs (1997 – 2009).**

**Breeding Bird Survey:** Based on the data available, the Acadian flycatcher in Arkansas has shown a stable to declining population trend since 1966 in the Breeding Bird Survey (Figure 16). This is in contradiction to the Landbird points which continue to show an increase population trend on the Forests since 2004.

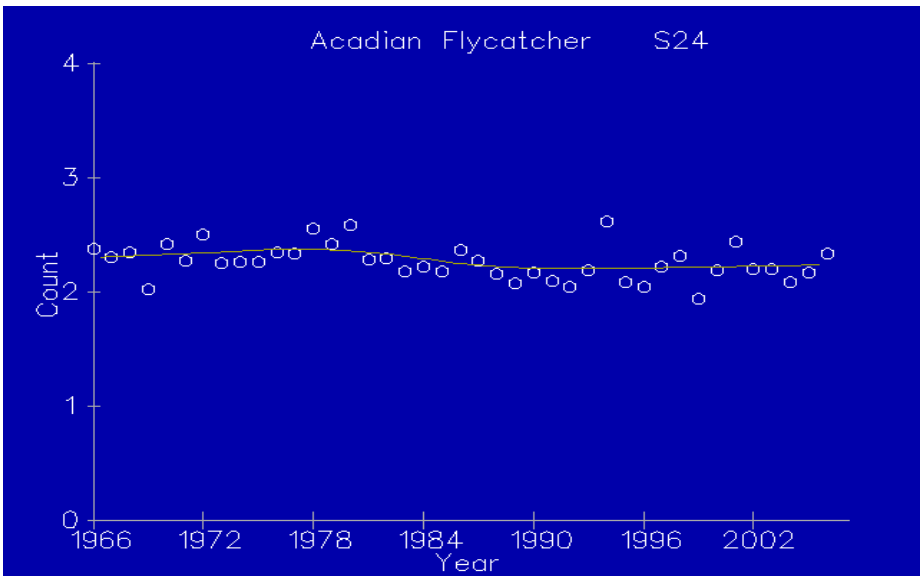


**Figure 16: Acadian Flycatcher Breeding Bird Survey Population Trend for Ozark-Ouachita Plateau for 1966 - 2006.**

**Management Implications**
Acadian flycatcher population trends are increasing. Habitat for this avian species will continue to be monitored. No change is warranted at this time.

**SPECIES REQUIRING GLADE HABITATS**

**Rufous-Crowned Sparrow**

**Affected Environment**
Rufous-crowned sparrow is a common resident in the desert southwest but is very rare in Arkansas. It was chosen as an MIS to track habitat conditions for this species that require maintained glades along bluff lines. Glades containing Rufous-crowned sparrows will be tracked as maintained or not. The species is currently only known to reside on the Ozark NF at Mt. Magazine.

**Data Sources:** Forest Landbird point data (1997 – 2009) and population trend are be used to address changes in their condition (Figure 17). Population trend on the Forest continues to remain stable for the Rufous-crowned sparrow.

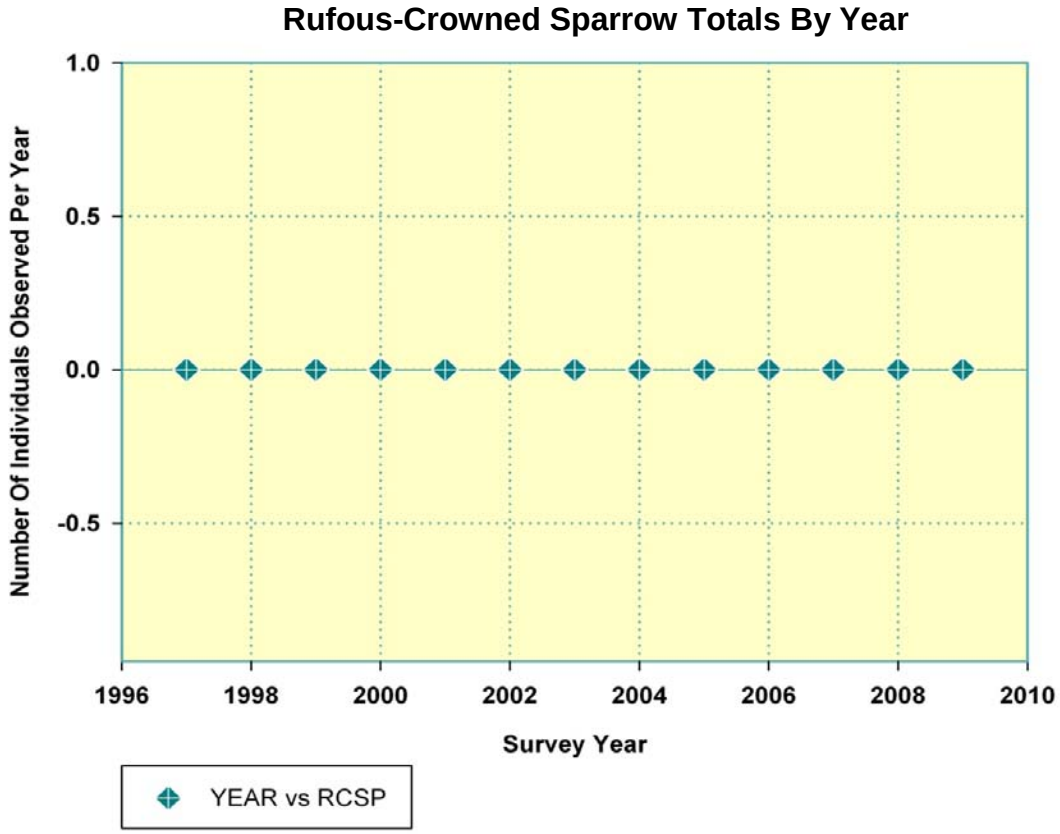


**Figure 17: Rufous-Crowned Sparrow Totals Detected on Landbird Point Counts, Ozark-St. Francis NFs (1997 – 2009).**

**Breeding Bird Survey:** Based on the data available, the Rufous-crowned sparrow in the central U.S. has shown a declining population trend since 1966 in the Breeding Bird Survey. This trend is illustrated on Figure 18.

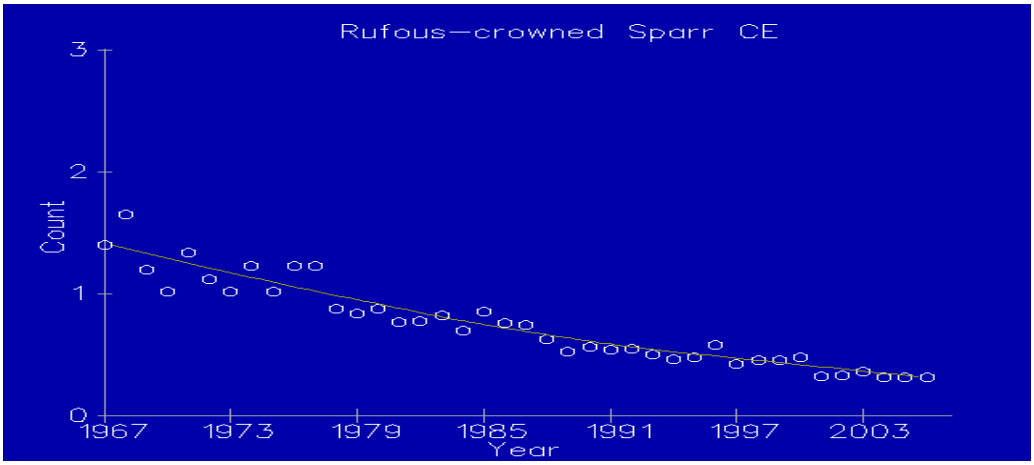


**Figure 18: Rufous-Crowned sparrow Breeding Bird Survey Population Trend for Ozark-Ouachita Plateau for 1966 - 2006.**

### Management Implications

This rarely seen bird has been documented on Mt. Magazine on a regular basis at one time but numbers of this bird fluctuate to such a degree that it is hard to say whether the population is up or down. Habitat for this species has been improved over much of the top of the mountain by the use of prescribed fire and selective thinning of competing red cedar. This work will hopefully continue with the support of the state park. Habitat for this avian species will continue to be monitored. No change is warranted at this time.

### SPECIES REQUIRING MATURE AND OVER-MATURE FOREST HABITATS

#### Cerulean Warbler

Cerulean warbler was chosen as an MIS to represent species needing mature and over-mature forest with a complex canopy structure on highly productive sites.

The cerulean warbler is a species of concern that merits a special evaluation. Its habitat needs are unique and still being evaluated. Breeding cerulean warblers prefer, and are most common in, large contiguous forested tracts (Hamel 1992). In general, their habitat is mature or over-mature, high site, hardwood forest with a complex canopy structure. Large trees protruding above the rest of the canopy are favored. A developed understory also appears to be important (*Personal Communication.* C. Kelner.). The OSFNFs are on the edge of this species range and they only use a percentage of the stands meeting the above criteria. It is not known if the population is a source or sink population (*Personal Communication.* C. Kelner).

This Neotropical migrant bird (NTMB) winters in evergreen forests of the eastern slope of the Andean Foothills (Evans and Fischer. 1997). Tropical deforestation may threaten the cerulean more than any Neotropical migrant because of its dependence on this limited habitat type (Flaspohler. 1993). Habitat loss in this area has been extensive in the past 10 to 15 years, and the area is reported to be one of the most intensively developed (e.g., logged, cultivated) regions in the Neotropics (Robbins et al. 1992).

The cerulean warbler population on the Ozark NF has been documented by several sources. Dr. Chris Kelner of Arkansas Tech University is currently doing extensive research on the species and its breeding habitat on the Forests.

Although mature forest with a canopy is clearly a requirement, several sources indicate that birds tolerate or respond positively to canopy gaps. Noting several sources, Hamel (2000 and references therein) indicated, "gaps in the canopy or openings are important to the distribution of birds." In the Missouri Ozarks, birds similarly use taller trees, group selection cuts, and breaks in the canopy next to rivers. All appear to create structurally similar gaps or microhabitat "edges" that result in use by cerulean warblers (Burhans et al. 2002). Several forests reported use of small openings, canopy gaps, and areas with a history of logging and disturbance (Burhans et. al. 2002).

**Data Sources:** Forest Landbird point data (1997 – 2009) and population trend are used to address changes in their condition. Population trend shows a slight decline in the number of birds and this is also noted at the regional and national level as well. This information is illustrated in Figure 19.

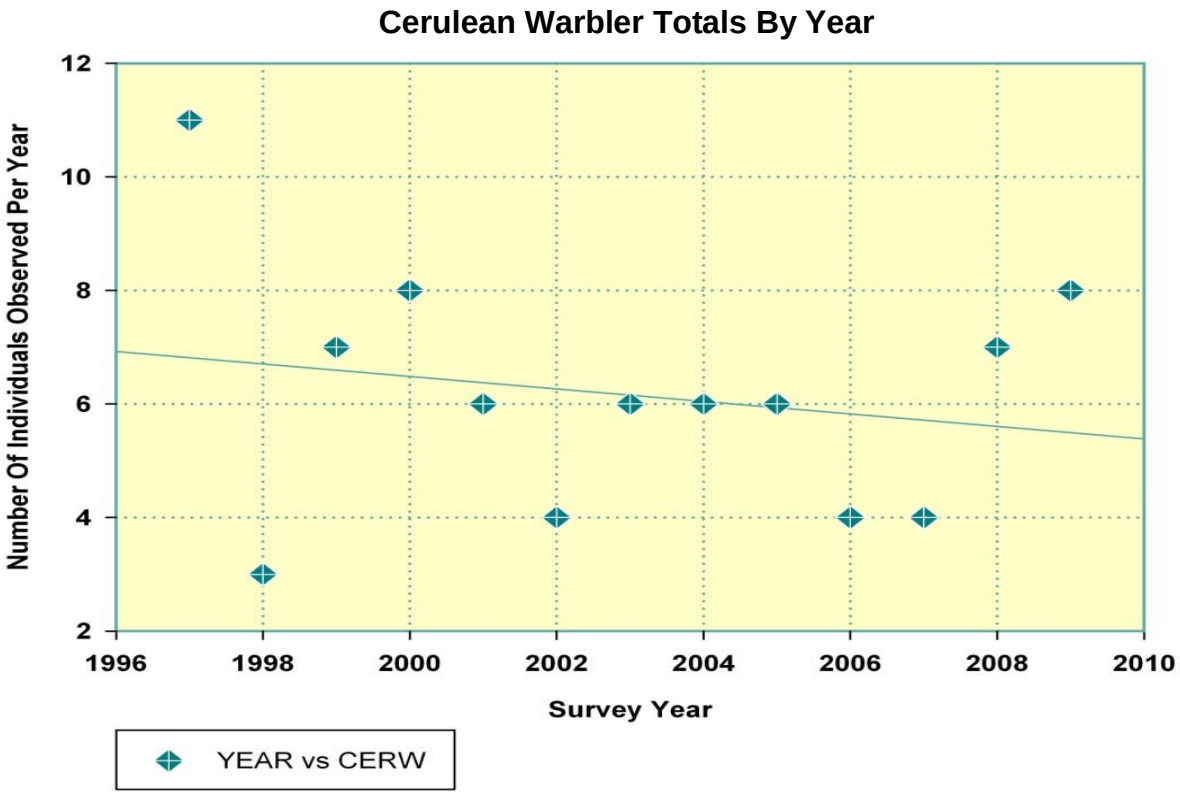


**Figure 19: Cerulean Warbler Totals Detected on Ozark-St. Francis NFs 1997 – 2009**

**Breeding Bird Survey**: Based on the data available, the cerulean warbler in Arkansas has shown a slight increase in the population trend since 1966 in the Breeding Bird Survey (Figure 20).

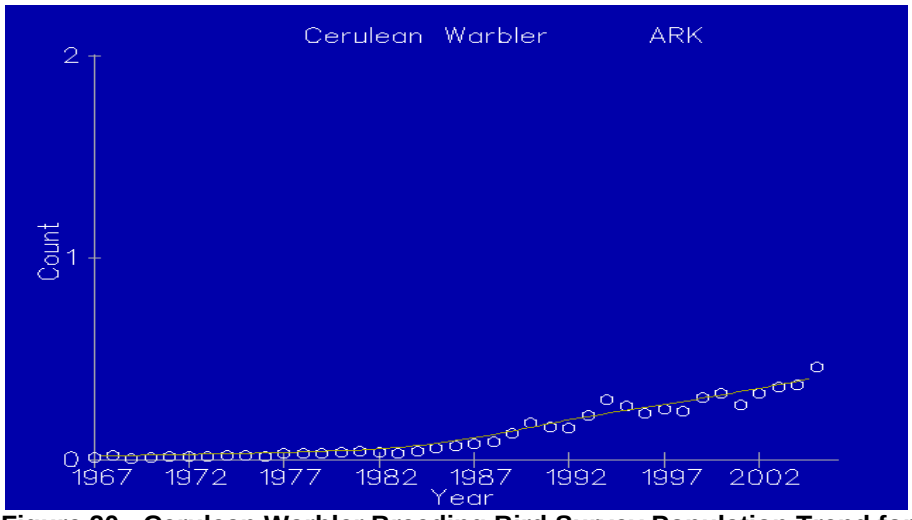


**Figure 20: Cerulean Warbler Breeding Bird Survey Population Trend for Ozark-Ouachita Plateau for 1966 - 2006.**

**Management Implications**
This bird has been documented on the Forests and prefers a specific habitat condition. Limited timber management is not likely to impact this species except temporarily and at localized areas. Creation of large gaps in the canopy would likely be detrimental. In addition, the use of prescribed fire in these stands also temporarily reduces or eliminates their use by cerulean warbler. Recent studies suggest that burning in these stands alters the complex canopy structure that this bird species prefers. The Forests will continue to monitor habitat and bird populations and, where necessary, alter management prescriptions to exclude fire when no other option is available. No change is warranted at this time.

### SPECIES REQUIRING DRY-OAK AND DRY-MESIC OAK HABITATS

#### Ovenbird

Ovenbird was selected to represent ground nesting birds in dry-oak and dry-mesic oak forests.

**Data Sources:** Forest Landbird point data (1997 – 2009) and population trend are to be used to address changes in their condition. Population trend shows a slight increase since 1997 on the Forests. Figure 21 displays this information.

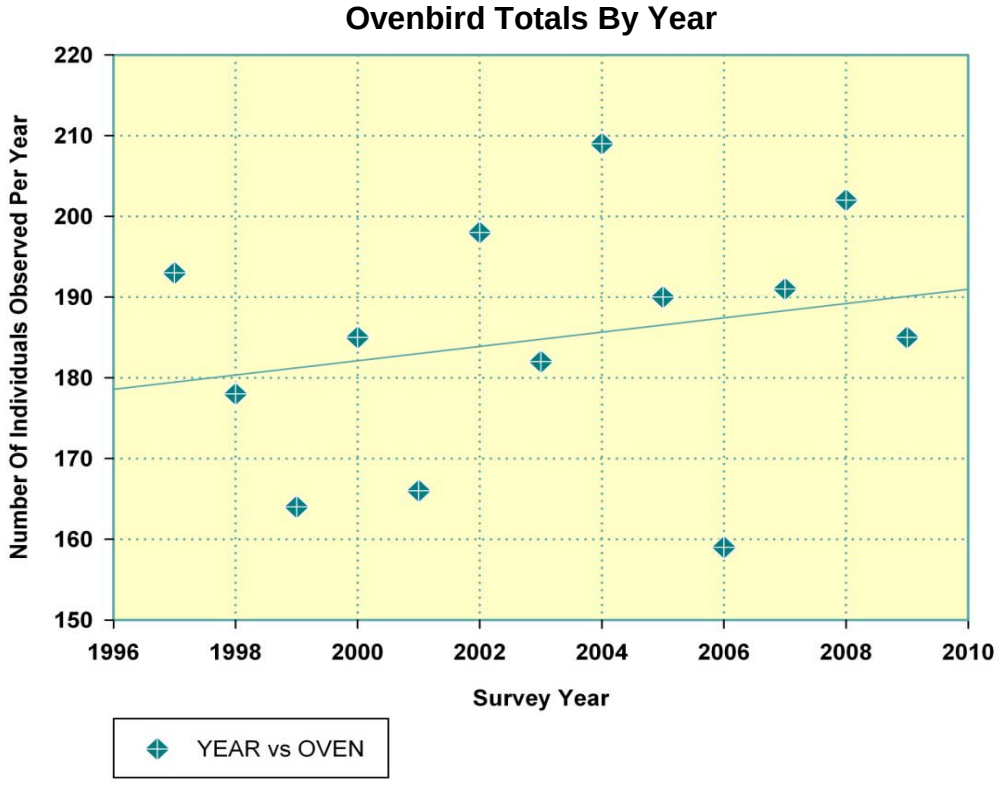


**Figure 21: Ovenbird Totals Detected on Ozark-St. Francis NFs 1997 – 2009.**

**Breeding Bird Survey**: Based on the data available, the ovenbird in Arkansas has shown a fairly stable to slight decrease in the population trend since 1967 in the Breeding Bird Survey (Figure 22).

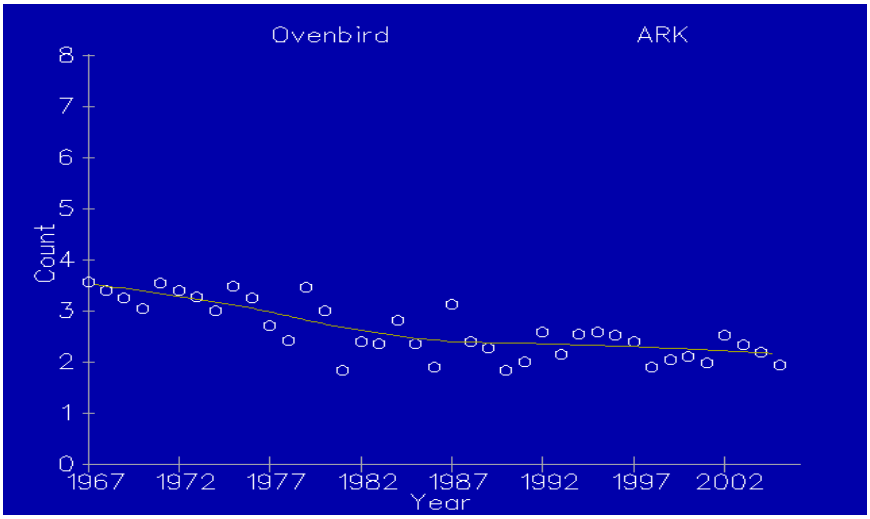


**Figure 22: Ovenbird Breeding Bird Survey Population Trend for Ozark-Ouachita Plateau for 1966 - 2006.**

**Management Implications**
The Forests will continue to monitor habitat and bird populations and, where necessary, alter management prescriptions to maintain or improve habitat for this avian species. No change is warranted at this time.

**Red-Headed Woodpecker**

Red-headed woodpecker was selected to represent species requiring oak woodlands. This species is uncommon on the Forests at present.

**Data Sources:** Forest Landbird point data (1997 – 2009) and population trend are used to address changes in their condition. Population trend is showing a slight increase since 1997 on the Forests (Figure 23). Increases shown in 08 and 09 are encouraging.

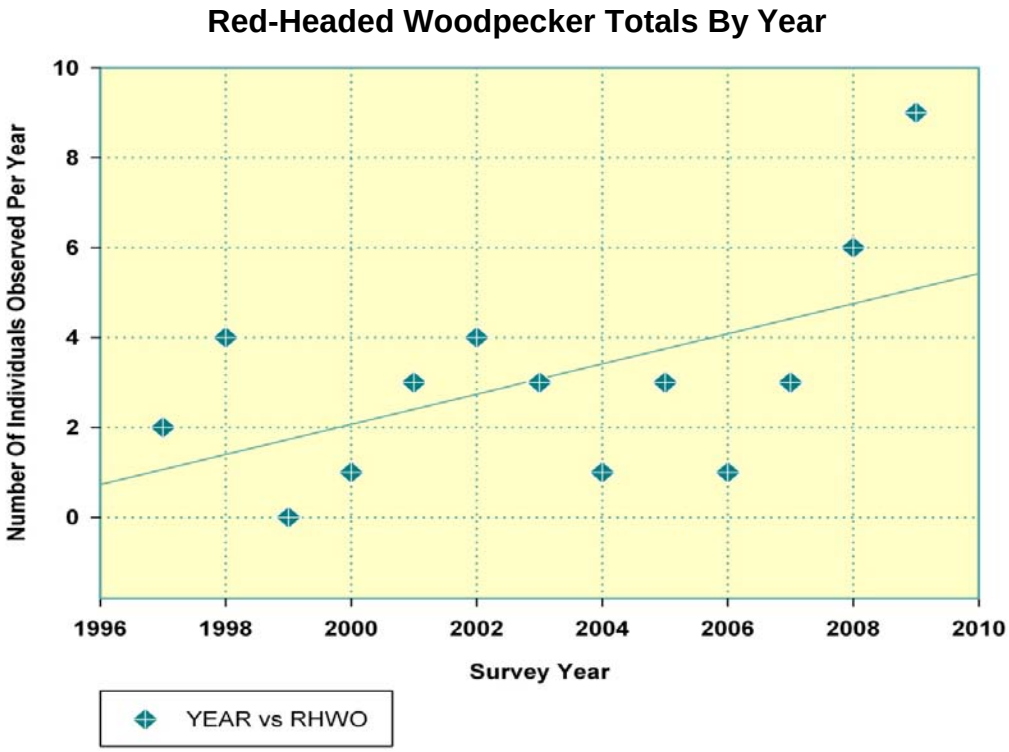


**Figure 23: Red-Headed Woodpecker Totals Detected on Ozark-St. Francis NFs 1997 – 2009.**

**Breeding Bird Survey:** Based on the data available, the red-headed woodpecker in Arkansas has shown a slight decrease in the population trend since 1966 in the Breeding Bird Survey (Figure 24).

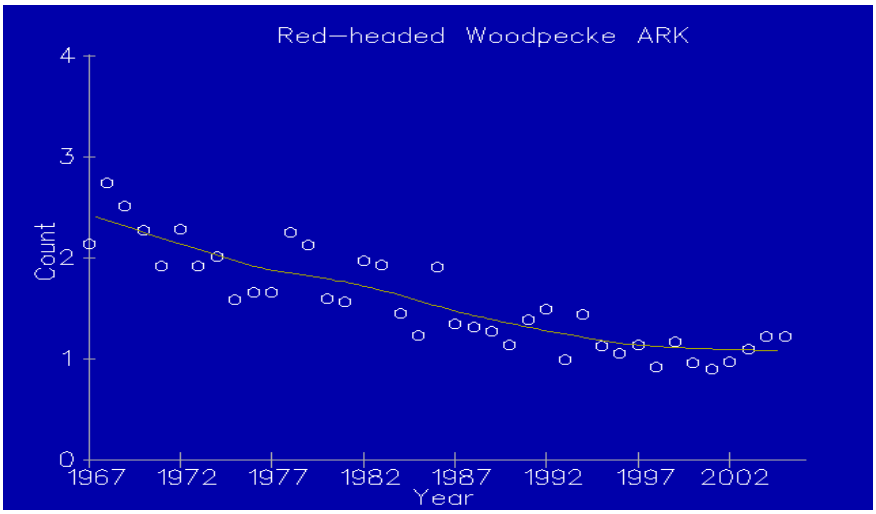


**Figure 24: Red-Headed Woodpecker Survey Population Trend for Ozark-Ouachita Plateau for 1966 - 2006.**

**Management Implications**
The Forests will continue to monitor habitat and bird populations and, where necessary, alter management prescriptions to maintain or improve habitat for this avian species. No change is warranted at this time.

**Scarlet Tanager**

**Data Sources:** Forest Landbird point data (1997 – 2009) and population trend are used to address changes in their condition. Population trends continue to reflect a steady to increasing population on the Forest (Figure 25).

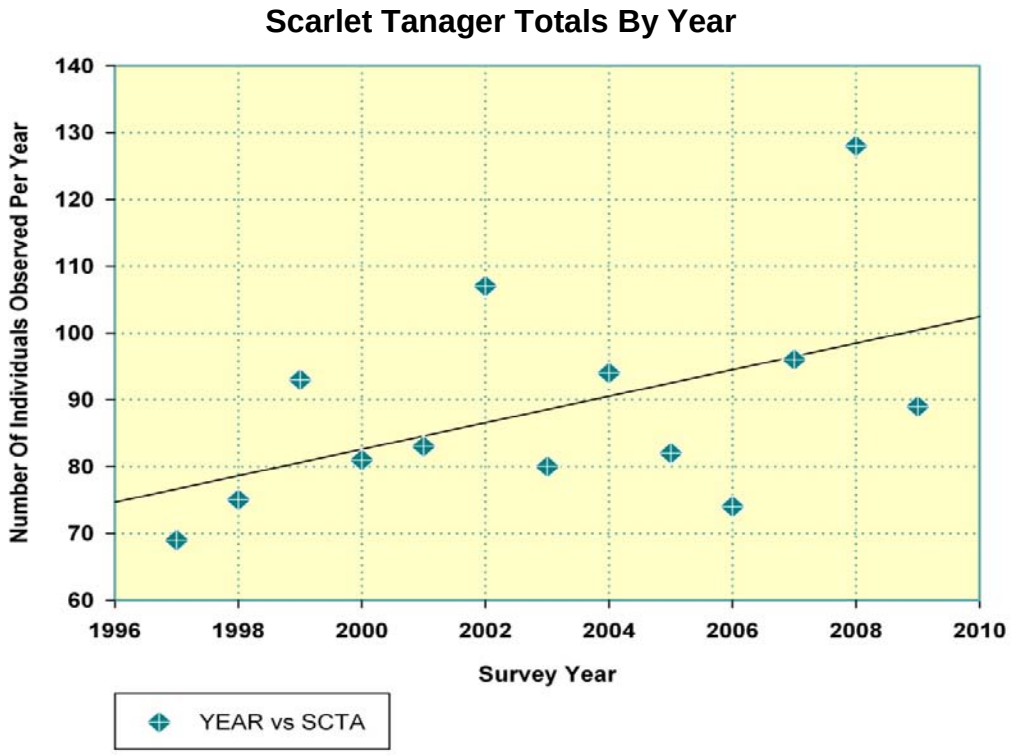


**Figure 25: Scarlet Tanager Totals Detected on Ozark-St. Francis NFs 1997 – 2009.**

**Breeding Bird Survey:** Based on the data available, the scarlet tanager in Arkansas has shown a stable to slight decrease in the population trend since 1966 in the Breeding Bird Survey. See Figure 26 for this information.

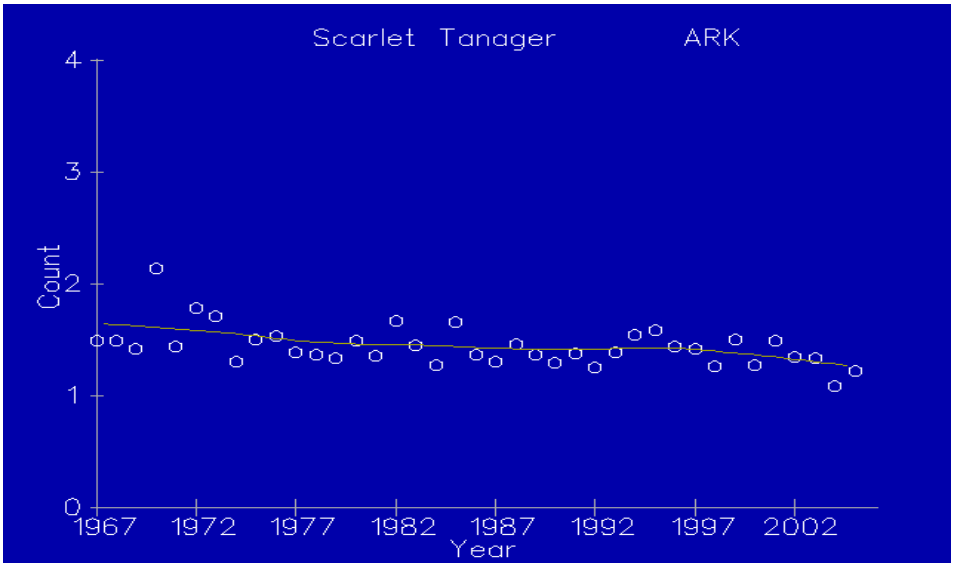


**Figure 26: Scarlet Tanager Survey Population Trend for Ozark-Ouachita Plateau for 1966 - 2006.**

### Management Implications

The Forests will continue to monitor habitat and bird populations and, where necessary, alter management prescriptions to maintain or improve habitat for this species. No change is warranted at this time.

### SPECIES REQUIRING SNAG AND OLDER FOREST HABITATS

#### Pileated Woodpecker

This species was selected as a MIS to represent snag-dependent species and species requiring older forests. Breeding bird surveys in the Ozark-Ouachita physiographic province suggest that populations of the pileated woodpecker trended downward from the 1960s until the mid-1980s and have stabilized since then. The recent episode of oak decline may provide a temporary spike in habitat for this species.

**Data Sources:** Forest Landbird point data (1997 – 2009) and population trend will be used to address changes in their condition. Population trends reflect a fairly stable to slight decline since 1997 on the Forests as illustrated in Figure 27.

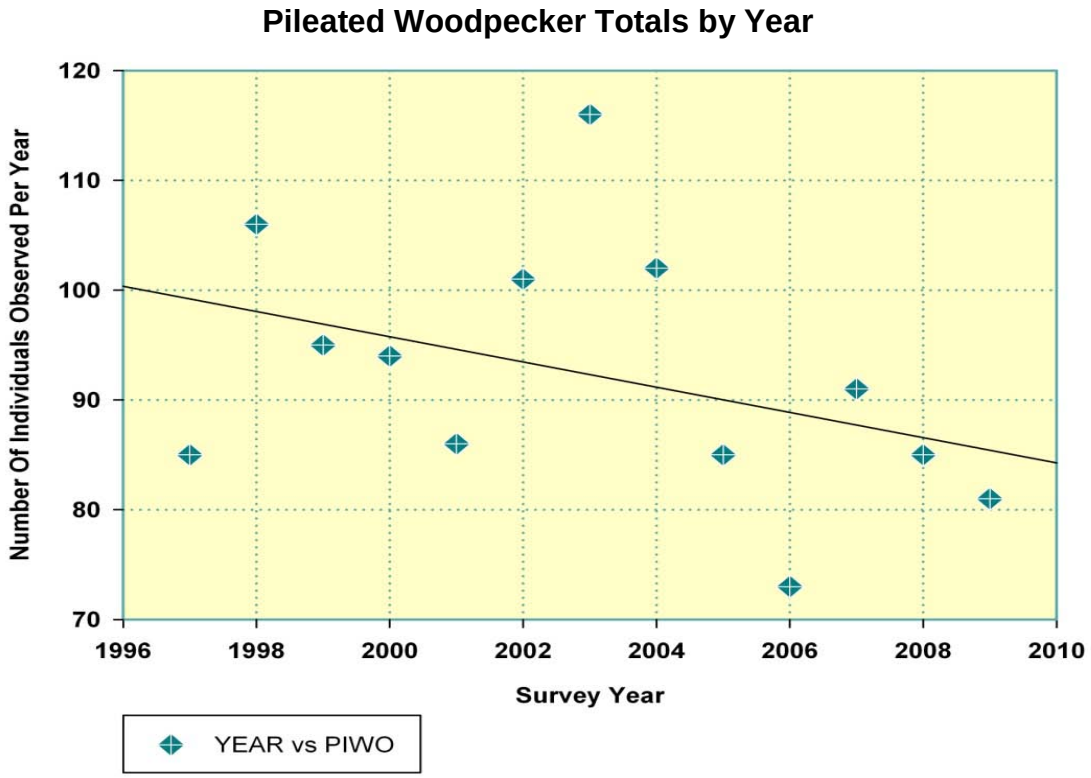


**Figure 27: Pileated Woodpecker Totals Detected on Ozark-St. Francis NFs 1997 – 2009.**

**Breeding Bird Survey**: Based on the data available, the pileated woodpecker in Arkansas has shown a slight decrease in the population trend since 1966 in the Breeding Bird Survey. This trend is demonstrated in Figure 28.

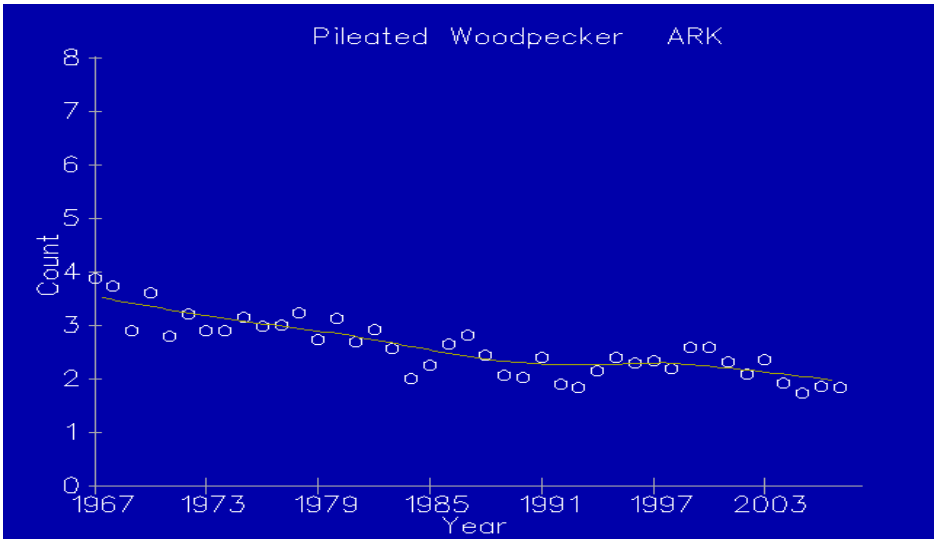


**Figure 28: Pileated Woodpecker Survey Population Trend for Ozark-Ouachita Plateau for 1966 - 2006.**

**Management Implications**
The Forests will continue to monitor habitat and bird populations and, where necessary, alter management prescriptions to maintain or improve habitat for this avian species. No change is warranted at this time.

**GAME SPECIES**

## Whitetail Deer

Whitetail deer was chosen as a MIS because of its popularity as a hunted game species. Monitoring of this species has been done by using the annual harvest data for the species along with deer spotlight surveys each of which have been conducted for many years and help to track population trends over time.

This report summarizes the Ozark-St. Francis National Forests Deer Harvest Data for the Management and Evaluation Report for FY-2008 and FY-2009. Data for this report have been provided by districts as well as the Arkansas Game and Fish Commission.

During the statewide 2007-2008 deer season, Arkansas hunters checked 169,853 deer. This is a 22% increase from the previous year's harvest. In the 2008-2009 season, 184, 991 deer were checked by hunters. This is an 8% increase from the previous year, but still below the peak level of 194,687 in the 1999-2000 season.

Contained within the Ozark –St. Francis National Forests are seven co-op Wildlife Management Areas (WMA) as displayed in the Table 18.

**Table 18: Wildlife Management Areas on the Ozark-St. Francis NFs.**

| WMA | Acres | 07-08 Total Harvest | 08-09 Total Harvest |
|---|---|---|---|
| Mount Magazine | 120,000 | 146 | 175 |
| Ozark NF | 678,878 | 189 | 143 |
| Piney Creeks | 180,000 | 120 | 65 |
| St. Francis NF | 21,201 | 33 | 34 |
| Sylamore | 150,000 | 299 | 278 |
| Wedington | 16,000 | 34 | 58 |
| White Rock | 280,000 | 176 | 167 |
| **Total** | **1,446,079*** | **997** | **920** |

***includes some state lands**

On the Ozark-St. Francis NFs, deer harvest totaled 997 in 2007-2008, up from 841 deer the season before. Deer harvest levels declined slightly in the 2008-2009 season to 920 deer. Deer harvest levels have remained relatively stable but in recent years have been slightly down and this may be attributed to a combination of factors such as a poor hard mast crop and the current oak decline, as well as the ice storm that occurred in January 2009.

The USFS along with the AGFC have conducted spotlight surveys across the Forests with coverage from the St. Francis NF across to the Wedington and Lee Creek units along the west side of the Forests.

The Final Environmental Impact Statement for the 2005 Forest Plan (September 2005) indicates in Table 3-9 (page 3-273), a desired terrestrial habitat capability to support an average of 11.7 deer per square mile after 10 years. Based on deer spotlight survey monitoring results, this goal is being achieved.

**Management Implications**
Deer are widespread, abundant, and the habitat capability still remains above the Plan projection. There are no indications of a need for adjustments in current management practices.

## Black Bear

Black bear was chosen as a MIS due to its popularity as a hunted game species. Monitoring has been done by using the annual harvest data for the species along with bear bait station surveys each of which have been conducted for many years and help to track population trends over time.

The Arkansas' black bear population, historically distributed statewide, was nearly extirpated by the early 1900's because of over exploitation from unregulated hunting and habitat loss caused by human population expansion. In 1915, the Arkansas Game and Fish Commission (AGFC) was created and in 1927 bear hunting was closed because of declining bear numbers. In 1951, the AGFC reported that only 40-50 bears remained in the state.

Between 1958 and 1968, approximately 254 bears from Minnesota and Manitoba were released into Arkansas' Interior Highlands. In 1980, after a 52-year prohibition, bear hunting resumed in the Interior Highlands of Arkansas. The objectives of the hunt were to provide recreational opportunity to hunters and to collect biological data that would help manage the black bear as a resource. Today, AGFC estimates there to be 3,500 bears in the Interior Highlands and a harvest of 10% of the Ozark population and 15% of the Ouachita population is sustainable.

Statewide, hunters checked 381 bears during the 2008 season. This was a 4% decrease from the harvest of 400 in 2007. In 2008, the top three public hunting areas in bear harvest were the Ozark National Forest (42 bears), Ouachita National Forest (32 bears) and White Rock WMA (21 bears).

Statewide, 534 bears were legally harvested during the 2009 season. This was a 28% increase from last year. The 2009 bear harvest was the highest harvest record since modern-day bear hunting began in 1980 (Figure 29). In 2009, the top three public hunting areas in bear harvest were the Ozark National Forest (22 bears), Ouachita National Forest (21 bears) and White Rock WMA (19 bears).

On the Forests, bear populations continue to remain high and harvest by hunters is the primary means of controlling their numbers. In 2007, 31 bears were harvested from the OSFNFs with an additional 42 bears harvested on private inholdings within the Forest boundary. In 2008, 84 bears were harvested on the OSFNFs, including private inholdings within the Forests. Harvest numbers on the OSFNFs for 2009 was 22, not including bears taken within private inholdings within the Forest.

Two hundred eighty hunters (52%) reported using bait in 2009 to harvest their bear. However, since 81% of the harvested bears came from private lands, the actual number of bears harvested over bait was likely a much higher number. Baiting is legal on private lands only.

The AGFC along with the OSFNFs have conducted bear bait station surveys for many years beginning in 1985. Bait-station survey trends and reproductive trends suggest healthy and expanding or stable populations in the Ozarks.

**Management Implications**

Black bear are widespread, abundant, and the habitat capability still remains above the Plan projection. There are no indications of a need for adjustments in current management practices.

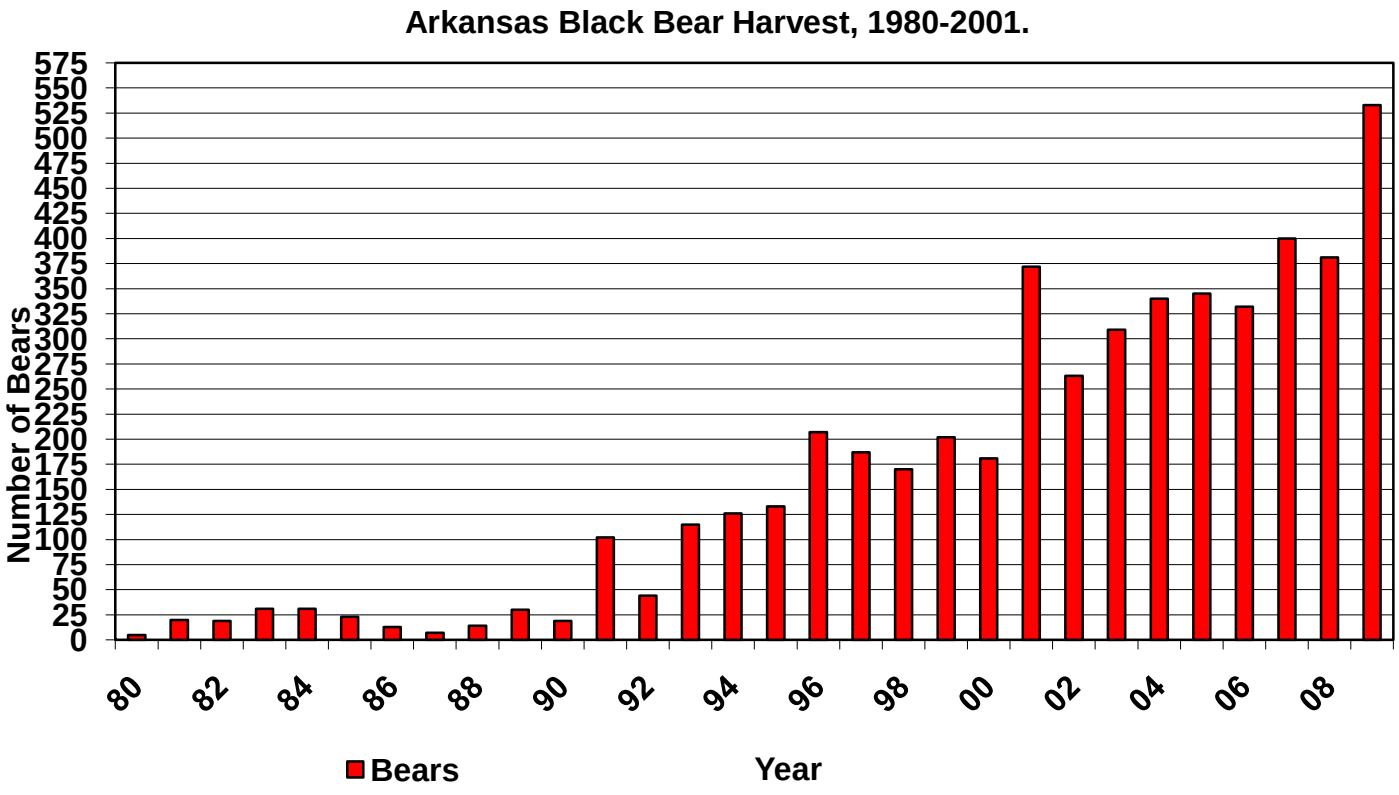


**Figure 29: Arkansas Black Bear Harvest, 1980-2001.**

## Wild Turkey

Wild turkey was chosen as a MIS because of its popularity as a hunted game species and its need for a diverse mix of habitat types. Wild turkey was historically abundant on the Forests. Habitat destruction and over hunting decimated populations in the early 1900s. Restocking efforts and habitat improvement had lead to increasing populations for the last 30 years. Open areas with high insect populations are critical as brood rearing areas. Historically, glades, pine-bluestem, and oak savanna areas provided this habitat. Monitoring has been done by using the annual harvest data provided by the AGFC.

According to the AGFC, statewide 11,910 turkeys were checked in the combined fall 2007/spring 2008 season (449 in the fall and 11,461 in the spring). The combined fall 2008/spring 2009 fell even further to 11,628 turkeys (506 in the fall and 11,122 in the spring). Both these seasons are down significantly from the record harvest of 19,947 turkeys in the spring 2003 hunt. Spring turkey harvest rose dramatically following five above-average brood production years (1997-2001) and liberalization of seasons from 2000 until 2006. However, harvest has dropped with below-average brood production beginning in 2002 (Figure 30).

Statewide spring turkey harvest declined as predicted in 2009. The reduced season length is responsible for about one-third of the decline. The decline was expected primarily because turkeys have not reproduced well in most areas of Arkansas since 2001. One or two bad hatches usually do not impact turkey numbers or turkey harvest drastically, but five years in a row can be devastating. Liberal seasons in place from 2001 through 2006 (up to 39 days of hunting) also likely played a part in the rapid decline in spring gobbler harvest. Data collected by the AGFC suggest gobbler survival declined rapidly after 2001, when seasons were lengthened and opened earlier.

Turkeys are relatively short-lived animals. Because of this short lifespan, annual reproduction is very important to the total population. Several years of good reproduction can result in abundant turkey numbers, while several poor years can result in falling turkey numbers. Long-term data collection in Arkansas has shown that turkey harvest is strongly related to annual poult production.

The OSFNFs turkey harvest has varied greatly over the years with a low point in 1976 of 50 birds taken from the forest to a high point of 1,177 birds in 2003. See Figure 30 for annual turkey harvest records from 1970 to 2010.

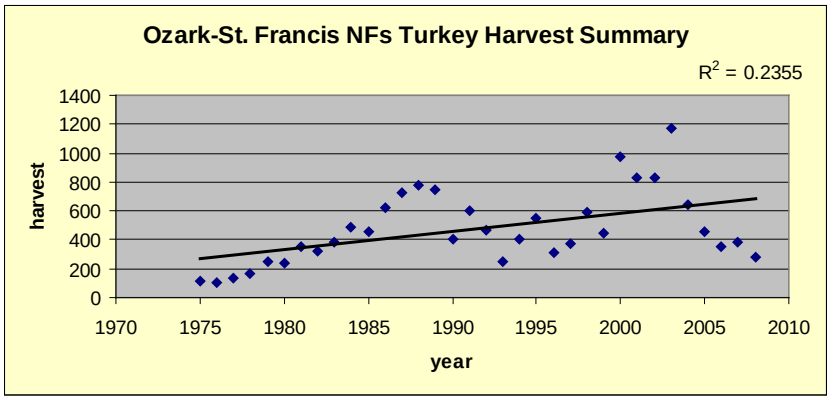


**Figure 30: Annual Turkey Harvest over the past 30 years on the Forests. Recent Turkey Harvest Rates suggest a Downward Trend in the Population**

## Turkey Brood Summary

The AGFC has conducted the Annual Wild Turkey Brood Survey since 1982. Throughout its history, the survey has helped in evaluating turkey stocking success by examining spread and growth of existing populations and determining trends in turkey numbers. The survey has also proven to be highly correlated to turkey harvests in subsequent fall and spring seasons.

## 2008 Summary

Brood survey indices suggest that reproduction was poorer in 2008 than in 2006 or 2007. The poult/hen index of 1.35 for 2008 was the poorest since this survey was initiated in 1982, and remains well below the long-term average of 3.16 poults/hen. Brood production has now been below average for seven years in a row. The number of poults reported in 2008 was the lowest since 1990. In 2008, only 39% of hens were observed with poults. Heavy rain and flooding from March through early summer may have delayed nesting in many areas. Weather had a negative effect on overall brood production in 2008.

## 2009 Summary

Incomplete survey results suggest that 2009 may replace 2008 as the summer with the poorest reproductive indices on record. The preliminary indication is that the 2009 poult/hen index may be at 1.03; significantly lower than the 1.35 in 2008. Some research suggests that a poult/hen index of about 1.75 is needed to maintain stable turkey numbers, anything below this index should result in a decline in turkey populations. The total number of poults in 2009 will probably be less than the 2,015 reported last year. Reproduction in south Arkansas for 2009 appears to be poorer than north Arkansas. Record rains in many areas during early May – the peak of the first nesting effort – undoubtedly affected turkey reproduction in 2009. Figure 31 illustrates the poult/hen ration from 1982 to 2009.

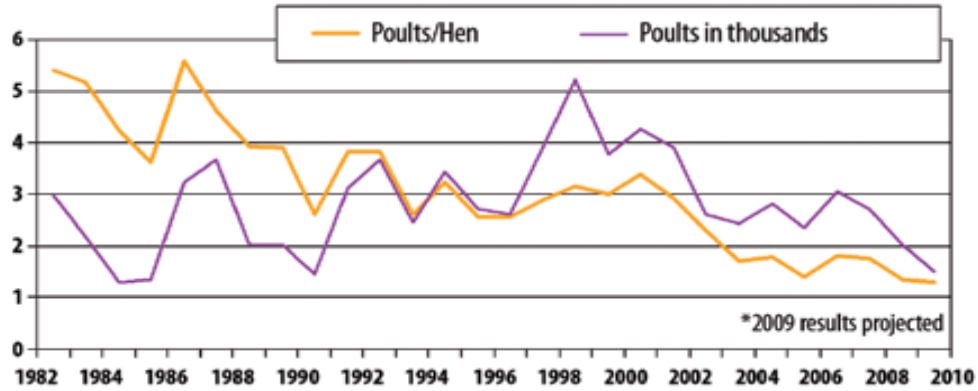


**Figure 31: Wild Turkey Poults and Poult/Hen Ratio, 1982-2009.**

**Implications for Management**: Turkey is a widespread species and although once abundant, relatively recent declines in the population are troubling. Habitat capability on the Forests still remains fair to good. Increased thinning and prescribed burning should produce more early seral or brood habitat for turkeys.

A turkey management meeting to discuss possible reasons for the decline in turkey population numbers in the state was held in Mayflower in January, 2010. Attendees included AGFC, USFS, NPS, private industry, and various academias. Discussions centered on the possible reasons for the decline in turkey numbers in recent years. Possible reasons for the decline included weather, predators, nest predators, feral hogs, supplemental feeding, growing season landscape scale prescribed burns, nesting and brood habitat, illegal kill, and fall hunting, among others.

### AQUATIC MANAGEMENT INDICATOR SPECIES (MIS)

Within the Forest Plan, largemouth bass was included as a MIS for the sole purpose of monitoring conditions of lakes and ponds on the Forests. Smallmouth bass was chosen as a MIS species to monitor the effect of management activities on a stream-dwelling species. Table 19 is a summary of the MIS monitoring.

**Table 19: Monitoring Methods and Trends for Aquatic Management Indicator Species.**

| Common Name | Ozark | St. Francis | Trend Evaluation Method | Trend |
|---|---|---|---|---|
| Smallmouth Bass | X | | Relative abundance in stream | Stable |
| Largemouth Bass | X | X | Proportional Stock Density & Relative Stock Density | Stable |

**Largemouth Bass**
An ideal largemouth bass population within the lakes would be balanced with the available food source.

Relative weights are a measure of the weight of an individual captured versus the weight of an ideal fish at that same length multiplied times 100. Relative weights for all size classes would be at a minimum greater than 85 but no greater than 105 (Kohler and Hubert 1993). Proportional Stock Density (PSD) and Relative Stock Density (RSD) are a measure of the balance of multiple size classes within a population. PSD are the number of quality length fish (>300 mm) versus the number of stock length fish (>200 mm) multiplied times 100 and RSD is the number of preferred length fish (>380 mm) versus the number of stock length fish (>200mm) multiplied times 100. The PSD for largemouth bass should range from 40-70 where as RSD should range from 10-40 (Murphy and Willis 1996).

For lakes on the Forests, the overall relative weights, PSD, and RSD for largemouth bass stayed fairly stable from 2005 to 2009 (Figures 32 and 33). The data also show that the mean relative weight values for all the lakes on the Forests don't get over the values expected in an ideal largemouth bass fishery. The Forests completed the following acres of lake habitat improvement from 2006 to 2009:

- 493 acres in 2006,
- 527 acres in 2007,
- 516 acres in 2008, and
- 810 acres in 2009.

This consisted of the following types of projects: spawning bed development, fertilization, liming, road closures causing sedimentation in the lake, structural additions (cedar trees, Christmas trees, tree hinging along the shore, etc.), and addition of bait fish to the food biomass for predators like largemouth bass. Figure 34 shows a largemouth bass that was shocked in Lake Wedington in 2006.

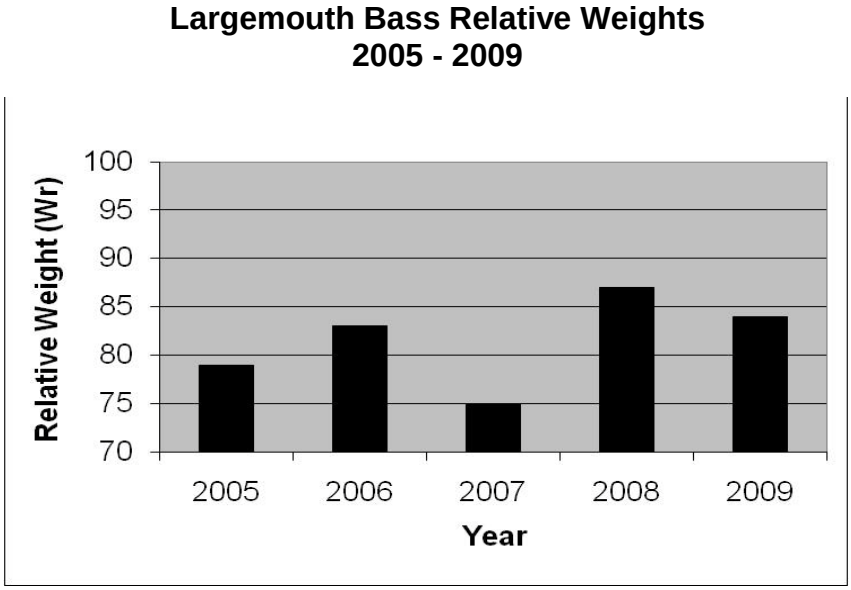


**Figure 32: Largemouth Bass Mean Relative Weights for Lakes on the Forest from 2005 – 2009.**

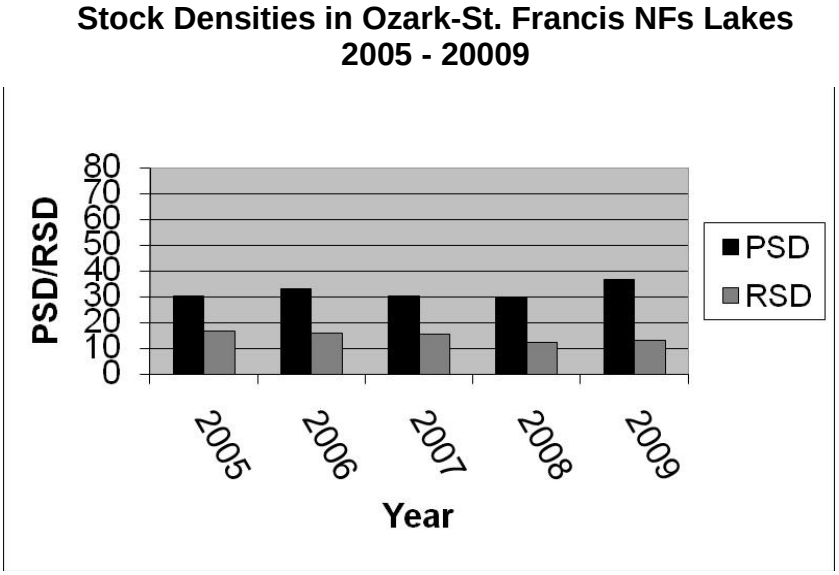


**Figure 33: Largemouth Bass Proportional Stock Density (PSD) and Relative Stock Density for Preferred Size Fish (RSD) on the Ozark/St. Francis NFs from 2005 - 2009 Sampling.**

**Figure 34: Photo of 10 ½ lb. Largemouth Bass Shocked in Lake Wedington in 2006**.

### Smallmouth Bass

Smallmouth bass were chosen as a MIS species to monitor the effect of management activities on a stream-dwelling game species. In most watersheds sampled between 2006 and 2009 smallmouth bass were found. Smallmouth bass relative abundance in streams where it was found made up less than 1% of the overall fish abundance. This is normal for a species that is usually the top predator in these systems. In surveys conducted by the USGS in streams in the Ozarks 2001 to 2002, smallmouth bass relative abundance ranged from 0-4 with a majority of sampling sites having relative abundance less than one (Petersen, 2004).

The Forests completed the following miles of stream habitat improvements from 2006 to 2009:

- 16 miles in 2006,
- 33 miles in 2007,
- 67 miles in 2008, and
- 60 miles in 2009.

These projects consisted of large woody debris (LWD) placement in streams, stream bank stabilization to decrease sediment inputs, road crossing/fish passage barrier replacement, road closing and/or road obliteration in riparian areas, cane restoration in riparian areas and trash cleanups in riparian areas. All this work will help to improve habitat and stream quality within the OSFNFs for all stream fish species including smallmouth bass. Figure 35 shows smallmouth bass caught during a study on the Illinois Bayou.

**Figure 35: Smallmouth Bass Caught as part of the Study on the Illinois Bayou.**

The Forests funded a master's thesis project at Arkansas Tech University in 2006 and 2007, which looked at the effect of summer stream drying on smallmouth bass populations and movement in the Illinois Bayou Watersheds. The study found that streams that had high public access as well as stream drying experienced higher than normal rates of smallmouth bass mortality (Hafs 2007). Figure 36 shows the passive integrated transponder tag being implanted in a smallmouth bass as part of a study. This information will help guide the Forests in making recommendation to the AGFC on fishing regulations for streams on the Forests. The Forest continued to fund smallmouth bass research at Arkansas Tech in 2008 and 2009 to determine if there was historical stream drying in the Illinois Bayou and to continue to look at the current smallmouth bass population.

**Figure 36: Smallmouth Bass having Passive Integrated Transponder (PIT) Tag Implanted.**

## THREATENED, ENDANGERED, AND SENSITIVE (TES) SPECIES

### VASCULAR PLANTS

#### Ouachita False Indigo (*Amorpha ouachitensis*) – Regional Forester's Sensitive

The usual habitat for the Ouachita false indigo (also called Ouachita leadplant) seems to be on rocky, open, and sunlit areas having reliable soil moisture. It occurs on glades, on roadside banks, in roadside ditches, and along ephemeral drainages. Further south into the Ouachita Mountains, this species appears to prefer the edges of small streams and drainages.

This plant is known from several locations on Mt. Magazine (Tucker, 1989). This endemic is found elsewhere in Arkansas and Oklahoma. It has been noted in Conway, Franklin, Johnson, Logan, Madison, and Van Buren Counties as well as in southern Arkansas in Clark, Garland, Montgomery, Perry, Polk, Saline, Scott, and Yell Counties.

Habitat on the Forests is limited to streamside zones and a few roadside ditches where ground disturbance has occurred.

Populations appear to be stable. Typically, areas where this plant occurs will receive little to no resource management other than roadside mowing.

**Management Implications**

This plant is known to occur on the Mt. Magazine, Boston Mountain, and Pleasant Hill Ranger Districts. Because this plant prefers and is found along streamside zones or roadside ditches where disturbance regularly occurs, there is little likelihood that the viability of this species will be compromised. The Forests will continue to survey for this species in suitable habitat and will document those occurrences in the Arkansas Natural Heritage (ANH) database.

#### Bush's Poppymallow (*Callirhoe bushi*) – Regional Forester's Sensitive

The usual habitat for this plant is rocky open woods, wooded valleys, ravine bottoms, and borders of glades. This plant ranges from extreme southwestern Missouri to northwest Arkansas and northeastern Oklahoma. In Arkansas, it has been noted in Benton, Boone, Carroll, Conway, Logan, Marion, Searcy, and Washington Counties.

This species has often been noted in Benton and Washington Counties on roadsides and is easily viewed from several county roads. This species is known from several locations on the Wedington Unit of the Boston Mountain RD.

Threats to this species include collection by plant enthusiasts and herbicide application along roadside areas where it occurs.

**Management Implications**
This plant is still found occasionally on the Forests in fields and along roadside ditches where regular disturbance occurs. Collection by the public along easily accessed roads will likely continue but hasn't been a particular problem yet. The Forests will continue to survey for this species in suitable habitat and will document those occurrences in the ANH database.

**Ozark Chinquapin (*Castanea pumila* var. *ozarkensis*) –**
**Regional Forester's Sensitive**

Until the introduction into this country of the chestnut blight (*Endothia parasitica*) and its subsequent spread, the Ozark chinquapin had been considered a locally abundant and widespread tree species in the Interior Highland Region. As a result of the spread of this parasite, few mature trees of this species still exist although sprouting from stumps is quite common (Tucker, 1980). This plant is fairly common and is found on all forest districts except the St. Francis.

**Data Sources:** Forest monitoring for this species has been done since 2001. Population trends reflect a decreasing population trend on the Forests. This information should be tempered by the fact that we still have lots of chinquapin and the blight is the main cause for decline. The Ozark NF has been working informally with outside organizations and agencies to develop a seed orchard where this plant could be grown to help produce a blight-resistant strain with the resulting seeds being used for planting around the Forests.

**Management Implications**
This species is likely to hold its own despite its infection with chestnut blight, which is the biggest threat to this species. Monitoring of the plant has shown that as plants mature, clonal groups die-off but are soon replaced with other clones. This species seems to do best where sites are disturbed and the overstory competition is reduced.

In early 2010, the US Fish and Wildlife Service received a petition to list this species as threatened or endangered. If the species is listed it could have implications on the vegetation management of the Forest, particularly prescribed burning.

The Ozark NF will continue to survey for this species in suitable habitat and will document those occurrences in the ANH database.

**Southern Lady's Slipper (*Cypripedium kentuckiense*) –**
**Regional Forester's Sensitive**

Habitat for this plant consists of moist floodplains along creeks and on rich, moist slopes. It is a large plant, can grow to a height of three feet, and has a pale, deep lip that barely extends past its opening. The collection for commercial sale and the digging for replanting in wildflower gardens pose the biggest threat to the

plant. The plant appears to be able to tolerate certain timber management activities with some treatments, such as thinning, beneficial.

This species is known to occur in 12 Arkansas counties and possibly others (Smith, 1988). Southern lady's slipper occurs in a relatively narrow range from northeastern Texas and southeastern Oklahoma east to Georgia (although very few sightings) and north to Kentucky. There are very few, if any, protected sites. Threats include highway construction and possible exploitation through plant collecting. On the Forests, one real threat is from feral hogs that root out the plant. One site has already been destroyed by feral hogs.

This species is found in the western 1/3 of the Forests and is confined to riparian areas, moist floodplains, or rich moist slopes.

**Management Implications**
Because this plant is found scattered over a large geographical area with several new populations found on the Forests each year, some may be adversely impacted by forest management but the large number of known sites makes it almost impossible to impact this species to the point where viability would be a concern. The greatest threat to this species is likely from collection by flower enthusiasts on both public and private lands and the growing feral hog population.

The Forests will continue to survey for this species in suitable habitat and will document those occurrences in the ANH database. The Forests, in conjunction with the AGFC, are also taking an active role in reducing the feral hog population.

**Moore's Delphinium (*Delphinium newtonianum*) –**
**Regional Forester's Sensitive**

Moore's delphinium is endemic to and locally abundant in two separate regions of the Interior Highlands regions of Arkansas, but it is unknown from either Missouri or Oklahoma. Preliminary biological data indicate it is of widespread occurrence within a relatively small area in the Ozark National Forest, where it occurs in both mature and successional vegetation types.

Field observations have shown that Moore’s delphinium can tolerate at least light fire during the cool season. Because it typically occurs in mesic habitats, there is probably little potential for fire to pass through suitable habitat with more than low to moderate intensity. These mesic sites are naturally buffered from fire impacts except in extreme circumstances where the fire removes large amounts of surface organic material or excessively dries out the surface soils.

**Management Implications**
Because this plant is found scattered over a fairly small geographical areas, some may be adversely impacted by forest management but because these sites are found in habitat conditions that don’t offer much from a resource

management standpoint, the likely hood of adversely affecting the majority of sites is slim to none and the Forests will continue to check these sites to make sure habitat and numbers of plants are not being adversely impacted by resource management. The greatest threat to this species is likely from collection by flower enthusiasts on both public and private lands.

The Forests will continue to survey for this species in suitable habitat and will document those occurrences in the ANH database.

**Glade Larkspur (*Delphinium treleasei*) –**
**Regional Forester's Sensitive**

According to Smith (1989), this species is endemic to southwestern Missouri and northwest Arkansas. It occurs on limestone glades and bald knobs in the White River region and on rocky open limestone exposures and glades elsewhere.

This plant is known to occur only in Missouri and in counties in north and northwest Arkansas and is relatively common within its limited range, having approximately 80 occurrences. It is no longer tracked in Missouri.

Populations seem to be stable over the Ozark National Forest as continued work on cedar encroachment and reintroduction of fire has had a positive effect.

**Management Implications**

Because this plant is found scattered over a fairly large geographical area, some may be adversely impacted by certain forest management activities such as herbicide application, but because this plant is typically found in habitat conditions where little management is likely to occur, the likelihood of adversely affecting this species to the point of losing viability is very remote.

The Ozark NF will continue to survey for this species in suitable habitat and will document those occurrences in the ANH database.

**French’s Shooting Star (*Dodecatheon frenchii*) –**
**Regional Forester's Sensitive**

**Affected Environment**

At most locations, French’s shooting star grows in microhabitats (i.e., beneath sandstone overhangs) within forest communities that have been managed for timber harvest in the past. Some of the largest populations are located in forested areas that have been high-graded for commercial timber harvest in the past (probably on multiple occasions). Observations made at known sites have demonstrated that the species typically is associated with heavy shade conditions for most of the day. Forest-wide standards limit all disturbance activities above and below bluffs. Talus sites are protected as well.

Field observations that provide solid information on this species' resistance to fire are lacking. Because it typically occurs in isolated and protected habitats such as

beneath bluff shelters, overhangs, and natural bridges where there is little available fuel, there is probably limited potential for fire to pass through suitable habitat with more than low-to-moderate intensity. Because these sites are naturally buffered from fire effects, the impacts of fire may be insignificant except in extreme circumstances where the fire removes large amounts of surface organic material or excessively dries out the surface soils. Aerial parts of the French's shooting star plant are somewhat fleshy and probably would be easily damaged by fire; its fleshy thickened roots, however, probably can withstand at least light fire with little or no damage during the cool season.

**Management Implications**
Activities associated with the implementation of the RLRMP were addressed and may impact individual plants but cumulatively these actions would not cause a trend to federal listing or a loss of viability.

The Forests will continue to survey for this species in suitable habitat and will document those occurrences in the ANH database.

### Gulf Pipewort (*Eriocaulon koernickianum*) – Regional Forester's Sensitive

**Affected Environment**
In the western part of its range (Arkansas, Oklahoma, and Texas), it's found in or near permanently moist to wet seepage areas (particularly upland sandstone glade seeps), bogs, and prairie stream banks. Gulf pipewort is intolerant of shade and is probably an early-successional species (Nature Serve 2002).

This species is reported in Benton, Conway, Franklin, Logan, Johnson, Madison, Pope, and Van Buren Counties in Arkansas.

Field studies indicate gulf pipewort is an early successional and often times long persistent species. There is limited habitat on the Forests for this rare plant species.

Habitat for this species would likely benefit from glade restoration and most timber harvest treatments and prescribed burning, which open the forest floor to sunlight.

**Management Implications**
Activities associated with the implementation of the RLRMP were addressed and may impact individual plants but cumulatively these actions would not cause a trend to federal listing or a loss of viability.

The Forests will continue to survey for this species in suitable habitat and will document those occurrences in the ANH database.

## Large Witchalder (*Fothergilla major*) – Regional Forester's Sensitive

### Affected Environment

Large witchalder occurs in mesic-dry to dry habitats of the uplands (rich mountain woods) and its most characteristic habitats are disturbed areas on dry ridges of southeastern highlands. It grows in hill areas, often along streams.

In Arkansas, this species is found only in Searcy County. This plant is rare throughout its range of five southeastern states and is disjunct in Arkansas. This plant has not been found on the Forests.

### Management Implications

Activities associated with the implementation of the RLRMP were addressed and may impact individual plants but cumulatively these actions would not cause a trend to federal listing or a loss of viability.

The Forests will continue to survey for this species in suitable habitat and will document those occurrences in the ANH database.

## Butternut (*Juglans cinerea*) – Regional Forester's Sensitive

### Affected Environment

Butternut occurs in rich woods along the base of slopes or bluffs, and along streams. Butternut is found on the Sylamore Ranger District in north central Arkansas, and in most counties along Crowley's Ridge on the St. Francis NF. There have been reports from Benton and Marion Counties in northwestern Arkansas. One report of butternut on the Wedington Unit has remained unconfirmed despite numerous surveys attempting to locate it there.

Butternut has experienced a serious decline over the past 25 years over its entire range due in part to the butternut canker, caused by a fungus. The butternut canker is believed to be an introduced disease, and was first isolated in the 1960s. In the north central states, there has been a 70% reduction in live trees over a 15- to 20-year period, particularly in regeneration since butternut does not sprout.

### Management Implications

Timber harvest activities will follow Forest Service guidelines and policy for management. Butternut will be left uncut unless they are dead or pose a risk to public safety. Intermediate timber treatments in stands containing butternut could be beneficial to this species.

Activities associated with the implementation of the RLRMP were addressed and may impact individual plants but cumulatively these actions would not cause a trend to federal listing or a loss of viability.

The Forests will continue to survey for this species in suitable habitat and will document those occurrences in the ANH database.

### Alabama Snow-Wreath (*Neviusia alabamensis*) – Regional Forester's Sensitive

**Affected Environment**

Most populations are found on steep, rocky, wooded sites; however, this is not always true as one Arkansas population is found on a steep riverbank near the Buffalo River. One new site on the Forests has been documented and the site will be excluded from management.

Population monitoring has been done since 2001 and a slight increase in population numbers has been noted.

**Data Sources:** Ozark National Forest data (2001 – 2008) and population trend information will be used to address changes in their condition. Population trends continue to reflect a very slight increase since 2001 on the Forests (see Figure 37).

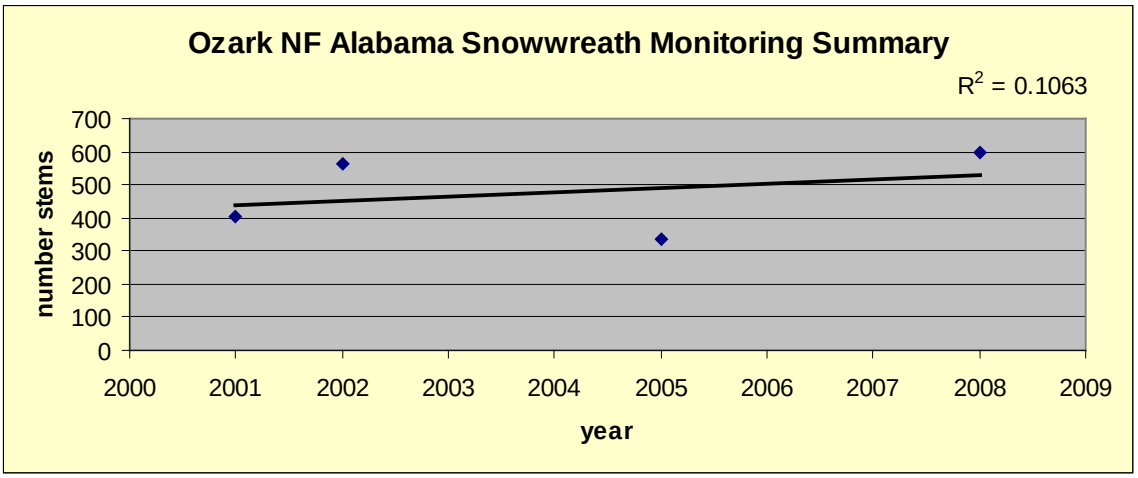


**Figure 37: Monitoring Summary of the Alabama Snow-wreath on the Ozark NF.**

**Management Implications**

Activities associated with the implementation of the RLRMP were addressed and may impact individual plants but cumulatively these actions would not cause a trend to federal listing or a loss of viability.

The Forests will continue to survey for this species in suitable habitat and will document those occurrences in the ANH database.

### Maple-Leaf Oak (*Quercus acerifolia*) – Regional Forester's Sensitive

**Affected Environment**

This small tree species occurs in open woods, ledges and cliff edges, and the rocky edges of plateaus. It is endemic to Mt. Magazine and the Ouachita Mountains in Arkansas with six total occurrences and a few hundred individuals.

This plant could possibly occur on similar sites on the Mt. Magazine Ranger District but because of the limited available habitat, there is likely less than 30 acres of available habitat on the OSFNFs.

**Management Implications**

Activities associated with the implementation of the RLRMP were addressed and may impact individual plants but cumulatively these actions would not cause a trend to federal listing or a loss of viability.

The Forests will continue to survey for this species in suitable habitat and will document those occurrences in the ANH database.

### Bay Starvine (*Schisandra glabra*) – Regional Forester's Sensitive

**Affected Environment**

Bay starvine or climbing magnolia is a vine that occurs in the Atlantic and Gulf Coastal plains from North Carolina south to northern Florida, west to Louisiana and up the Mississippi Embayment into western Tennessee and eastern Arkansas. In Arkansas, it is known only on the St. Francis NF from Crowley's Ridge where it appears to be restricted to four counties (Cross, Lee, Phillips, and St. Francis). Within a year (1990-1991), at least 50 new sites were discovered on the St. Francis NF. Based on continuing survey and inventory, it is expected that this species will be considered very common on the St. Francis NF.

Climbing magnolia has a widespread range but with only a small number of known secure populations. It is highly threatened by competition from non-native invasives, (particularly Japanese honeysuckle), land-use conversion, and habitat fragmentation (conversion to pine plantations in Piedmont has eliminated many populations).

**Management Implications**

Activities associated with the implementation of the RLRMP were addressed and may impact individual plants but cumulatively, these actions would not cause a trend to federal listing or a loss of viability.

The Forests will continue to survey for this species in suitable habitat and will document those occurrences in the ANH database.

**Blue Ridge Catchfly (*Silene ovata*) –**
**Regional Forester's Sensitive**

**Affected Environment**

The range for this species is from Virginia south and west to Georgia, Alabama, Mississippi, and northern Arkansas. In Arkansas, this species is found in Baxter, Benton, Cleburne, Newton, Pope, Stone, and Van Buren Counties.

Favorable habitat would include talus slopes beneath a sandstone bluff lines. This type of habitat is limited on the Forests.

**Management Implications**

Activities associated with the implementation of the RLRMP were addressed and may impact individual plants but cumulatively these actions would not cause a trend to federal listing or a loss of viability.

The Forests will continue to survey for this species in suitable habitat and will document those occurrences in the ANH database.

**Royal Catchfly (*Silene regia*) –**
**Regional Forester's Sensitive**

**Affected Environment**

This Midwestern endemic of tall grass prairie habitats with relatively few, scattered populations are most abundant in Missouri; extirpated from Kansas and Tennessee, and considered quite rare in all other states in its range. Many remaining population remnants are along roadsides where vulnerable to construction or to changes in management of roadside vegetation.

This species is known from Benton, Boone, Bradley, Hot Springs, Newton, Searcy, Sharp, Stone, and Washington Counties in Arkansas. There are very few known locations for this plant on the Forests.

The major threat to this species is habitat destruction through agricultural practices. Prairies are no longer extensive in the Midwest and this plant species is now found principally along roadsides where prairie vegetation still occurs. Other right-of-way maintenance activities such as herbicide application (used to maintain railroad and power line rights-of-way and roadsides) and untimely mowing are additional threats.

**Management Implications**

Activities associated with the implementation of the RLRMP were addressed and may impact individual plants but cumulatively these actions would not cause a trend to federal listing or a loss of viability.

The Forests will continue to survey for this species in suitable habitat and will document those occurrences in the ANH database.

**Ozark Spiderwort (*Tradescantia ozarkana*) –**
**Regional Forester's Sensitive**

**Affected Environment**

This once considered rare plant is endemic to the Ozark Mountains of Missouri, Oklahoma, and Arkansas and the Ouachita Mountains of western Arkansas and southeastern Oklahoma. There are 15 extant populations in Missouri, more than that in Arkansas, and a few in Oklahoma. The species is considered relatively secure despite some documented declines due to construction of dams/impoundments.

Ozark spiderwort does not appear to be highly habitat- specific (Foti 1994). Throughout its range, it has been recorded from rich, diverse, mainly deciduous woodlands.

There are numerous sites on the western side of the Forests where this species is found.

**Management Implications**

Activities associated with the implementation of the RLRMP were addressed and may impact individual plants but cumulatively these actions would not cause a trend to federal listing or a loss of viability.

The Forests will continue to survey for this species in suitable habitat and will document those occurrences in the ANH database.

**Ozark Least Trillium (*Trillium pusillum var. ozarkanum*) –**
**Regional Forester's Sensitive**

**Affected Environment**

This species occurs in acid cherty-flinty soils of shallow draws of oak-hickory, oak-pine, or oak-chestnut woodland in the Ozark region. This species is not known to occur on the Forests.

Because this plant is found scattered over a fairly large geographical area with many more sites, it is considered to be relatively secure. More serious threats to this species occur off-forest where human population increases in Northwest Arkansas are leading to increased housing developments and road construction which are removing available habitat.

**Management Implications**

Activities associated with the implementation of the RLRMP were addressed and may impact individual plants but cumulatively these actions would not cause a trend to federal listing or a loss of viability.

The Forests will continue to survey for this species in suitable habitat and will document those occurrences in the ANH database.

**Ozark Cornsalad (*Valerianella ozarkana*) –**
**Regional Forester's Sensitive**

**Affected Environment**

This plant is found in Benton, Carroll, Conway, Madison, Searcy, and Stone Counties in Arkansas. The Boston Mountain (Wedington Unit), Pleasant Hill, and the Sylamore Ranger Districts have limited habitat along stream bottoms in mixed hardwood stands.

**Management Implications**

Activities associated with the implementation of the RLRMP were addressed and may impact individual plants but cumulatively these actions would not cause a trend to federal listing or a loss of viability.

The Forests will continue to survey for this species in suitable habitat and will document those occurrences in the ANH database.

**SNAILS**

**Magazine Mountain Shagreen (*Mesodon magazinensis*) –**
**Threatened**

This species is known to occur in a very limited area along the north-facing slopes of Mt. Magazine. Habitat is steep talus sites in rich mesic hardwood forest. This snail prefers a cool, moist climate; it moves deeper into rock crevasses during warm, dry weather.

The restricted range of the Magazine Mountain shagreen makes it vulnerable to any land use change or activity that would have an adverse effect on the talus slopes where it is found.

The species is located inside the protected Magazine Mountain Special Interest Area (SIA). Other similar habitat areas are covered by forest-wide standards that prohibit timber harvest, road construction, or recreational development on talus slopes.

Mount Magazine shagreen (MMS) population numbers have been studied since the species discovery in 1989. The population has been checked since 1996 when 10 permanent survey stations were established. Weather patterns leading up to survey dates have been quite variable in years surveyed and may have affected the numbers of MMS located as much as actual population numbers. It is speculated that in low rainfall years, snails may stay further below the surface level seeking a more desired moisture regime. This would affect numbers encountered per hour of searching. Even though soil conditions on the sampling dates were moist, drought conditions from a 4-year drought were still persistent.

**Data Sources:** Numbers of MMS found during sampling declined from 1996 through 1999. Surveys were not conducted in 2000. A rebound occurred in 2001

and 2002; however, the 2003 survey dropped back to the 1999 level. In 2004, eight live snails were found. The 2004 numbers were equal to the previous record high number found in 1996. In 2005, a record 13 live snails were observed. From 2006 to 2008, six live snails were found in each of those years. 2009 was the first year no live snails were found.

**Management Implications**
This species is found in a special interest area and monitoring of populations will continue. Implementation of the RLRMP with its forest-wide standards will continue to provide protection and, where necessary, habitat improvement if applicable.

**INSECTS/ISOPODS**

**American Burying Beetle (*Nicrophorus americanus*) – Endangered**

On the Ozark NF, American Burying Beetles (ABBs) have been found within a mixture of vegetation types from oak-hickory and coniferous forests on lowlands, slopes, and ridgetops to deciduous riparian corridors and pasturelands in the valleys (Service 1991). Most ABB captures occur in soils that are well drained and include sandy and silt loams with a clay component. Soil conditions must be conducive to ABB excavation for reproduction. Level topography and well formed detritus layer at the ground surface are common.

**Population Data:** USFWS (2008) summarizes regional population data for the ABB as follows:

At the time of listing, only two ABB populations were known, one on Block Island, Rhode Island, and one in Latimer County, Oklahoma. When the recovery plan was completed in 1991, the ABB also was known to occur in Sequoyah, Cherokee, and Muskogee Counties, Oklahoma. Between 1992 and 2006, numerous presence/absence surveys for the ABB were conducted in Oklahoma, resulting in the rediscovery of ABB in 19 other counties in the state.

Since 1991, field surveys have discovered additional occurrences in the following states: Arkansas (Figure 38), Kansas, Nebraska, and South Dakota. From 2003 to 2005, the ABB was also discovered in two discrete locations in northeastern Texas: Lamar County and a nearby site in Red River County (Godwin and Minich 2005).

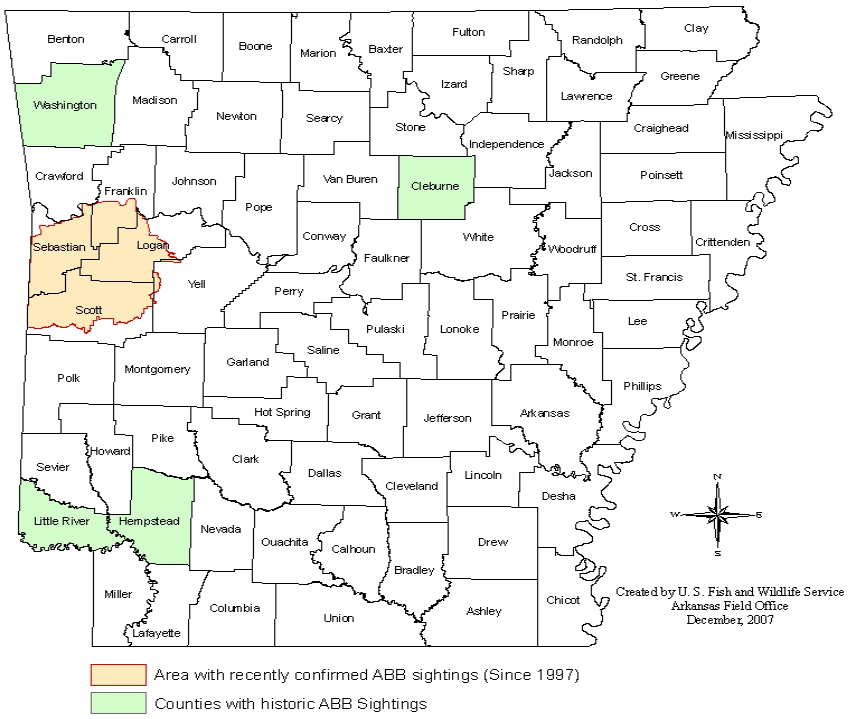


**Figure 38: American Burying Beetle Has Been Found in these Arkansas Counties (USFWS 2008).**

The ABB has been found in very small numbers on the western side of the Mt. Magazine Ranger District in Logan County, Arkansas. ABB captures at these locations typically fluctuate on an annual basis, but in general ABB numbers appear low but stable. (H. Dikeman, USFWS, pers. comm.).

The Ozark National Forest and the Ouachita National Forest and the USFWS Field Office in Conway have developed and just recently (May 2010) completed a Conservation Plan that will incorporate various habitat improvements designed to help prey species needed by the American burying beetle (ABB). In addition, this document contains reasonable and prudent measures and other mitigations as appropriate to protect and or allow for the enhancement of habitat for this species.

**Management Implications**

This species has been found on the OSFNFs only on the Mt. Magazine Ranger District. The Forests will continue to follow guidance provided by the USFWS in the Revised Programmatic Biological Opinion dated May 5, 2010, as well as the forest-wide standards found in the RLRMP for the OSFNFs.

The Forests will continue to survey for this species in suitable habitat and will document those occurrences and provide information to the USFWS as it becomes available.

**Neoarctic Paduneillian Caddisfly –**
**Regional Forester's Sensitive**

No new data was collected for Neoarctic Paduneillian caddisfly on the Forests in 2008 or 2009. A study with the University of Arkansas is being proposed to review the current knowledge about this species as well as surveys of potential habitat on the Forests to better understand its distribution. This species is being protected during management activities by following of state best management practices (BMPs) and standards in the RLRMP. Populations are assumed to be stable.

**Freshwater Isopod (*Lirceus bicuspidatus*) –**
**Regional Forester's Sensitive**

No new data were collected for *Lirceus bicuspidatus* on the Forests in 2008 or 2009. A study with The Nature Conservancy is currently ongoing to study the current knowledge about this species as well as surveys of potential spring and seep habitat on the Forests to better understand its distribution. This species is being protected during management activities by following of state BMPs and standards in the RLRMP. Populations are assumed to be stable.

**CRAYFISH**

**William's Crayfish – (*Orconectes williamsi*) –**
**Regional Forester's Sensitive**

No new data were collected for William's crayfish on the Forests in 2008 or 2009. The species has been found in streams in the headwaters of the White River system. It has been found in the past on the Forests on the Pleasant Hill Ranger District. This species is being protected during management activities by following of state BMPs and standards in the RLRMP. Populations are assumed to be stable.

**MUSSELS**

**Neosho Mucket (*Lampsilis rafinesqueana*) –**
**Regional Forester's Sensitive**

In 2008, the USFWS and the AGFC, with the assistance of the FS, conducted a comprehensive status survey for Neosho mucket in the Arkansas portion of the Illinois River. There was a 53% decline in the number of sites inhabited by Neosho mucket compared to surveys done by Harris in 1998. Sixty-seven percent of the sites with Neosho mucket present were represented by three or fewer live individuals. Of the 15 survey sites, only 2 appear stable with the rest in decline and extirpation is imminent, one of these sites was the site just downstream of Chambers Hollow along the northern edge of the Wedington Unit. Channel instability emerged in 2008 as the primary threat to not only the Neosho mucket population but threatens the continued existence of an entire mussel community in the Arkansas portion of the Illinois River. Channel instability in this segment of the Illinois River can be attributed to two sources: 1) urban

development in the watershed resulting in altered river hydrology and geomorphology (i.e., more frequent flood events that alter channel characteristics), and 2) clearing of riparian vegetation for conversion to pasture (i.e., increase in number and length of eroding stream banks). This species is being protected during management activities on the Forests by following of state BMPs and standards in the RLRMP. Agricultural and urban activities on private lands within the watershed are the leading cause of the channel instability. Populations are in the Illinois River are declining. The Forests are dedicated to working with the USFWS and the AGFC to try to protect this mussel community.

**FISH**

**Pallid Sturgeon –**
**Endangered**

No new data were collected for pallid sturgeon on the Forests in 2008 or 2009. The species is currently known only on the Forests from the St. Francis River. This species is being protected during management activities by following of state BMPs and standards in the RLRMP. Population trends in the St. Francis River are unknown.

**Ozark Shiner –**
**Regional Forester's Sensitive**

No new data were collected for Ozark shiner on the Forests in 2008 or 2009. The stream surveys reported above did not find any Ozark shiner. This species is being protected during management activities by following of state BMPs and standards in the RLRMP. Populations are assumed to be stable.

**Longnose Darter –**
**Regional Forester's Sensitive**

No new data were collected for longnose darter on the Forests in 2008 or 2009. The stream surveys reported above did not find any longnose darter. This species is being protected during management activities by following of state BMPs and standards in the RLRMP. Populations are assumed to be stable.

**Southern Cavefish –**
**Regional Forester's Sensitive**

No new data were collected for southern cavefish on the Forests in 2008 or 2009. One cave on the Sylamore ranger district contains a cavefish species that was first identified as southern cavefish. Recent genetics studies have identified this as a potentially new species. Further research is being conducted to validate this genetic information. This species is being protected during management activities by following of state BMPs and standards in the RLRMP. Populations at this cave are assumed to be stable.

**AMPHIBIANS**

**Oklahoma Salamander –**
**Regional Forester's Sensitive**

No new data were collected for Oklahoma salamander on the Forests in 2008 or 2009. The known range of the Oklahoma salamander on the Forests is strictly within the Wedington Unit. Recent publications have questioned the validity of this species and some states like Missouri no longer recognize it as a valid taxon. This species is being protected during management activities by following state BMPs and standards in the RLRMP. Populations on the Wedington Unit are assumed to be stable.

**REPTILES**

**American Alligator –**
**Threatened**

AGFC records show an increase in American alligator populations in the state. The population has grown so much that the state had their first open hunting season for alligator in 2007. The population on the St. Francis is stable to growing.

**BIRDS**

**Interior Least Tern (*Sterna antillarum athalassos*) –**
**Endangered**

This bird species builds nests mainly on riverine sandbars or salt flats that become exposed during periods of low water. Because of vegetational succession and/or erosion, preferred nesting habitat typically is ephemeral.

Although a widespread species, it is only found in Arkansas along the Mississippi River and Arkansas River systems where it nests on sandbars. This species is distributed over a relatively large area and on the Forests is found only on the St. Francis National Forest.

**Breeding Bird Survey**: Based on the data available, the interior least tern in Arkansas has shown an increase in the population trend since 1966 in the Breeding Bird Survey.

**Management Implications**

Because this bird species is found over a fairly large geographical area and habitat is very limited on the Forests to the St. Francis NF, there is little likely hood that any adverse impacts from management with the current forest-wide standards that protect riparian habitat as well as streamside zones.

The Forests will continue to survey for this species in suitable habitat and will document those occurrences and provide information to the USFWS as it becomes available.

**Bald Eagle (*Haliaeetus leucocephalus*) –**
**Regional Forester's Sensitive**

The bald eagle is listed as a Regional Forester's sensitive species and is typically transitory in this area of Arkansas. There is one known active nest site on the Forests, but there are three other active nests that are within the boundary of the Forests but are on private tracts that are very close to forest service land. The AGFC and USFS check the nests annually. Wintering populations within the state have steadily increased to over 1,000 birds according to the annual eagle survey conducted by the AGFC in cooperation with the USFWS, U. S. Army Corps of Engineers, National Wildlife Federation (NWF), and USFS.

Several roost sites occur scattered over the Forests and are usually associated with lakes or rivers. Being shot by poachers is the most important recognizable threat to the bald eagle in Arkansas at this time, although there is concern of avian diseases with past die-offs occurring on Lake Ouachita and Lake DeGray. Because the Forests will implement forest-wide standards for the protection of eagle nesting and communal roost sites as well as the protection of riparian areas, there is only a remote possibility that proposed management will adversely affect this species. There is, however, still the possibility that the species could be disturbed by noise or recreational use around lakes and streams on the Forests.

**Management Implications**

Because this bird species is found over a fairly large geographical area and numbers continue to increase rangewide, there is little likely hood that any adverse impacts from management with the current forest-wide standards that protect riparian habitat. The Forests will continue to monitor wintering populations as in the past and use adaptive management in areas where the eagles gather to roost.

The Forests will continue to survey for this species as well as many other bird species in suitable habitat and will document those occurrences and provide information to the AGFC as it becomes available.

**Bachman's Sparrow (*Aimophila aestivalis*) –**
**Regional Forester's Sensitive**

Historically, this species has been found in mature to old growth southern pine woodland that has been subjected to frequent growing-season fires. It is a fugitive species, breeding wherever fires created suitable conditions. This species requires a well-developed grass and herb layer with limited shrub and hardwood midstory components. Ideal habitat was originally the extensive longleaf pine woodlands of the south. It was able to colonize clearcuts and early seral stages of old field succession but such habitat remained suitable only for a short time.

In Arkansas, this species ranges across the southern half of the state up to the southern one-half of the Forests. This species historically has been found in Baxter, Conway, Franklin, Johnson, Logan, Newton Pope, and Van Buren Counties in Arkansas. Good or ideal habitat is limited on the Forests to areas where timber management has taken place in the recent past.

**Breeding Bird Survey:** Based on the data available, the Bachman's sparrow in the Central U.S. has shown a decrease in the population trend since 1966 in the Breeding Bird Survey.

**Management Implications**
The Forests will continue to survey for this species in suitable habitat and will document those occurrences and provide information to the USFWS as it becomes available. Plan implementation should provide additional suitable habitat for this species on the Forests.

**BATS**

White nose-syndrome (WNS) is a new disease in the US that was discovered in 2006 in New York State. Since then, WNS has killed at least 1 million hibernating bats in caves and mines, mostly in the northeastern US. WNS symptoms include loss of body fat during hibernation, wakefulness, early starvation, and mass die-offs. Affected bats fly outside caves or mines in winter, sometimes at mid-day, when they should be hibernating. Many of the bats have a white fungal infection (*Geomyces destructans*) visible on the face, wings, and ears. WNS apparently is transmitted bat-to-bat and via the environment. Accidental, human-borne spread is also possible. As of June 2010, it has affected 9 species of bat in 14 states. Gray bats, Indiana bats, and Eastern small –footed bats are 3 of the 9 bat species that have been affected by the disease so far. As of June 2010, WNS has not been detected in Arkansas, but it is expected to impact the state's bats, possibly this winter. A closure order was issued in May 2009 and extended in May 2010 that essentially closed all caves and mines in the Southern Region. Blanchard Springs Caverns remains open to cave tours following decontamination procedures designed to target people that may be carrying *Geomyces destructans* spores. This action was taken to reduce the risk of humans transferring the spores to the cave.

**Gray Bat (*Myotis grisescens*) –**
**Endangered**

The USFWS prepared a Recovery Plan for the bat (USFWS 1982) and it described the habitat components as:

> "…perhaps the most restricted to cave habitats of any U.S. mammal. With rare exception it roosts in caves year around. Most winter caves are deep and vertical; all provide large volume below the lowest entrance and act as cold air traps. In summer, maternity colonies prefer caves that act as warm air traps. Summer caves, especially those used by maternity

> colonies, are nearly always located within a kilometer (0.6 mi) of rivers or reservoirs (rarely more than 4 km [3 mi]). Except for brief periods of inclement weather in early spring and possibly late fall, adult gray bats feed almost exclusively over water along river or reservoir edges. Detailed observations over an east Tennessee reservoir indicated that most foraging was restricted to within 5 m (16 ft) of the water surface near shore, but gray bats in Missouri have been seen foraging in forest canopy along river edges in addition to low over-water. Newly volant young gray bats often feed and take shelter in forest surrounding cave entrances. Also, whenever possible, gray bats of all ages fly in the protection of forest canopy between caves and feeding areas."

Transient groups, consisting of male bats and non-breeding females roost in separate caves from the maternity colonies. Transient bats usually do not show strong ties with the caves that they utilize and may change roost locations.

Clark *et al.* (1993) studied foraging activity of the bats and found that edge habitat (between forest and open areas) was the preferred foraging habitat. They felt this was due to the habitat providing cover from predation (for the bats) and allowing for easier access to the prey species.

There are nine caves on the Forests that contain, or have been known to contain, gray bats.

**Habitat Trend:** Many of the habitat trends for gray bat are similar to those for Indiana bat. Although gray bats are not dependent on roost trees, timber management levels that are imposed to protect Indiana bats are likely to favor gray bats as well. Gray bats forage along or over streams, lakes, and ponds. These areas are usually buffered from most forest management activities and, therefore, are protected. Cave protection strategies for Indiana bat serve gray bats as well. As a result, habitat conditions for this species are relatively stable.

**Population Trend:** Based on the summary of surveys on eight known hibernacula it appears there has been a stable trend in the number of gray bats on the Forests (Figure 39). Surveys are conducted every other year, however, not all caves are always surveyed each year.

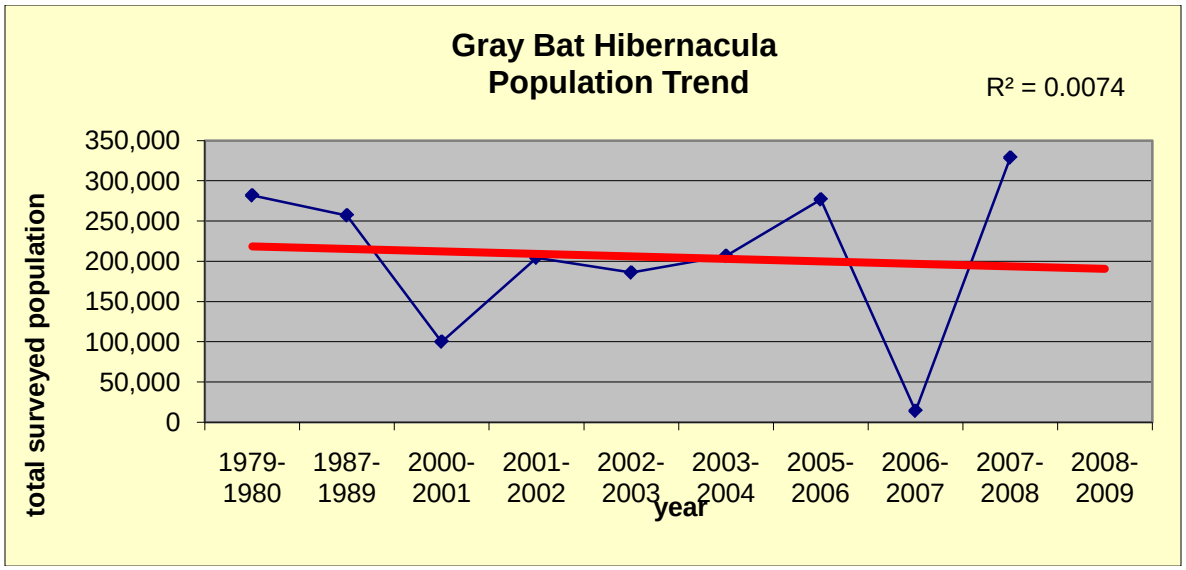


**Figure 39: Population Trend for the Gray Bat Hibernacula on the OSFNFs.**

The bats are extremely susceptible to vandalism and disturbance during hibernation, either by "waking" the bats causing them to use up there critical fat reserves needed to survive the winter or by direct killing. Another major threat to bats is improper cave gates and structures. The cave entrance is blocked to bats or causes a change in the airflow and temperature of the cave. The bats tend to congregate in large numbers in a few caves. This congregation of such a large proportion of the known population into so few caves constitutes the real threat to this species. Additional threats to this species are pesticides, either by bioaccumulation or by depleting their aquatic insect food source; deforestation of areas near the cave entrances and between caves and foraging areas; impoundments of waterways; and natural cave flooding.

**Management Implications**

The viability of the gray bat on the Forests appears as secure as can be expected for a federally-listed endangered species. The Forests' adherence to the identified direction in the Recovery Plan helps to avoid and/or minimize potential impacts. The stable or slightly increasing populations in most forest caves and increasing numbers of bats in caves just off the forest boundary suggest that the bat is likely to persist on and near the Forests for the foreseeable future.

Caves where this species occurs are to be protected on the Forests. Riparian vegetative conditions will be maintained based on standards associated with the Management Area 3.I. Insect populations (especially mayflies and other aquatic insects) will continue to be maintained so foraging will not be affected.

The Forests will continue to survey for and monitor populations of this species in suitable habitat and will document those occurrences and provide information to the USFWS as it becomes available.

**Indiana Myotis (*Myotis sodalist*) –**
**Endangered**

The Indiana bat was listed as endangered under provisions of the Endangered Species Act (ESA) on March 11, 1967. The USFWS developed a Recovery Plan dated October 14, 1983. This range-wide recovery plan outlines distributional and life history information along with management recommendations and recovery objectives. In April 2007, the Indiana Bat Recovery Team released a Technical Draft Indiana Bat Recovery Plan, with a final revised plan due soon.

The Indiana bat currently ranges from several Midwestern states to the mid-Appalachians. It formerly extended north to the New England states of New York, Vermont, and Massachusetts. Its greatest population concentration occurs in Indiana, Kentucky, and Missouri. In Arkansas, approximately 2,200 Indiana bats are found in 10 caves scattered over the north and western part of the state. This species has been recorded in Franklin, Izard, Newton, Stone, and Washington Counties in Arkansas. The USFWS identify no critical habitat in Arkansas.

Less than 1% of the caves and mines within the range of the species offer suitable hibernating conditions. Indiana bats hibernate in characteristically dense clusters in particular sections of certain caves and usually return annually to the same places in the same caves. They emerge in late March to early April and disperse to summer habitat.

Available information on summer habitats suggest they disperse to roost, forage, and bear young in riparian as well as upland sites. It is likely that female Indiana bats from Arkansas hibernacula migrate northward to maternity roost sites located to the north of the Ozark Mountains.

On the Forests, eight known caves serve, or have served historically, as hibernacula for Indiana bats. The entire Ozark NF provides potential suitable habitat.

**Habitat Trend:** Habitat within the secondary zone around Indiana bat hibernacula is important as this is the core area where they forage and roost during much of the year during warmer months.

**Population Trend:** Indiana bat population trend range-wide are shown in Figure 40. Most of the increases seen in the species populations have come in the core of its home range (Indiana, Illinois, and Missouri).

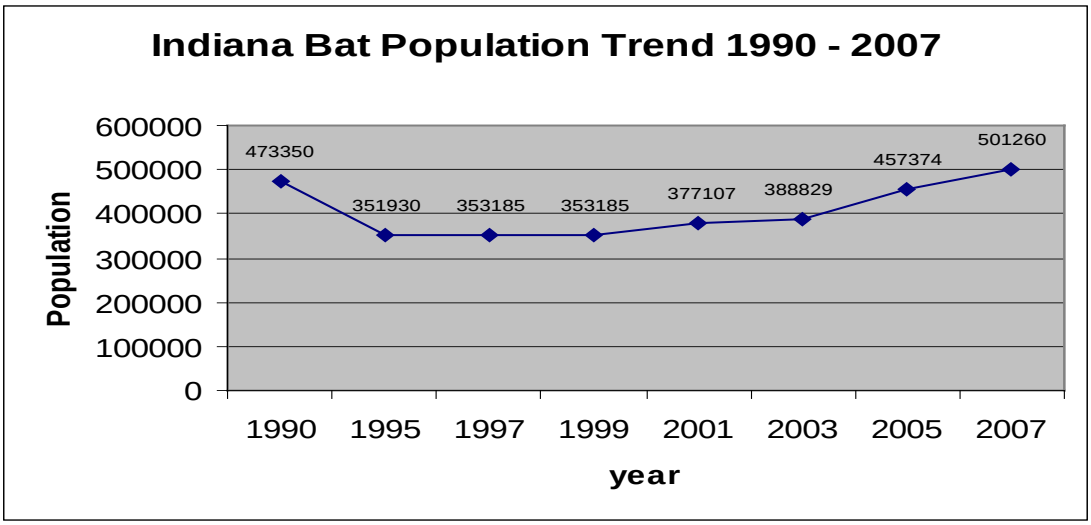


**Figure 40: Population Trend of the Indiana Bat on the Ozark-St. Francis NFs from 1990 – 2007.**

Based on the summary of surveys on eight known hibernacula, it appears there has been a stable to slightly declining trend in the number of Indiana bats on the Forest (Figure 41). Surveys are conducted every other year, however, not all caves are always surveyed each year.

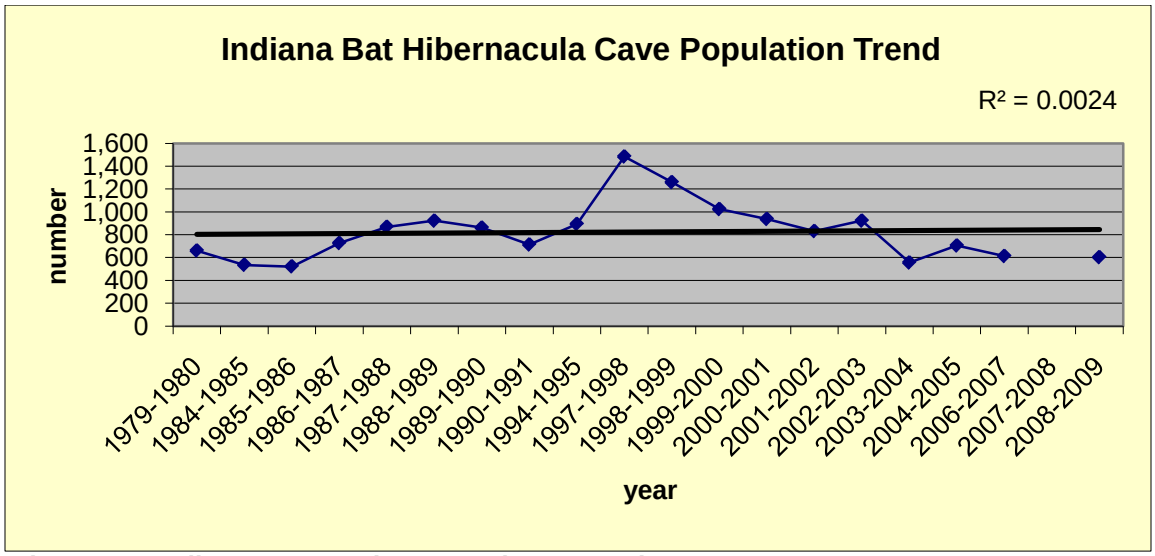


**Figure 41: Indiana Bat Trends on Ozark St. Francis NF 1979-2009.**

The regional (Ozark-Central) population has also been stable to slightly decreasing the last five years. See Figure 42.

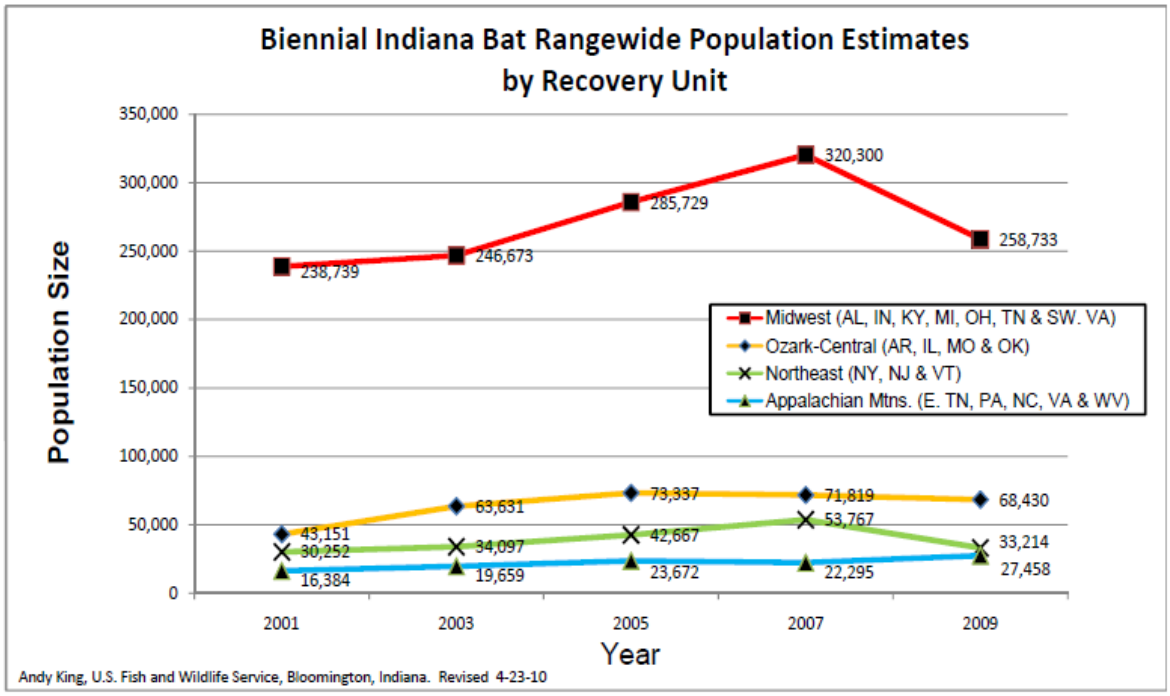


**Figure 42: Biennial Indiana Bat Rangewide Population Estimates (2001-2009).**

### Management Implications

Under full implementation of the RLRMP, the Forests will maintain an abundant supply of snags, live potential roost trees, upland water sources, and other habitat features across the landscape to allow for the maintenance and to promote the recovery of Indiana bat populations.

The Forests will continue to survey for and monitor populations of this species in suitable habitat and will document those occurrences and provide information to the USFWS as it becomes available.

## Ozark Big-Eared Bat (*Corynorhinus townsendii ingens*) – Endangered

The Ozark big-eared bat is generally associated with caves, cliffs, and rock ledges in well-drained, oak-hickory forests. Maternity caves and hibernacula occur in a number of different surroundings ranging from large continuous blocks of forest to smaller forest tracts interspersed with open areas. Clark (1993) found that adult female Ozark big-eared bats from maternity colonies preferred to forage along woodland edges. By foraging along woodland edges, the bat benefits from a less cluttered environment with cover nearby and prey densities high.

The Ozark big-eared bat is now found in western and north central Arkansas as well as eastern Oklahoma. The total population of this species is estimated to be from 1,300 to 2,000 individuals with most found in Oklahoma. Only six caves in

Arkansas are presently known to be regularly inhabited by colonies of Ozark big-eared bats: a hibernation cave and two nearby maternity caves in north central Arkansas, and a hibernation cave and two maternity caves and in the northwestern part of the state. Based on summer estimates, the Arkansas population is approximately 550 individuals (AGFC Annual Report 2002-2003). This species has been reported from the Boston Mountain Ranger District in several locations and potentially may be found on other districts as well. It is found in Crawford, Franklin, Marion, and Washington Counties in Arkansas.

**Population Trend:** Looking at the trend of Ozark big-eared bat population, there is a slight increase at maternity sites. The trend of one known maternity site on the Forests is shown in Figure 43.

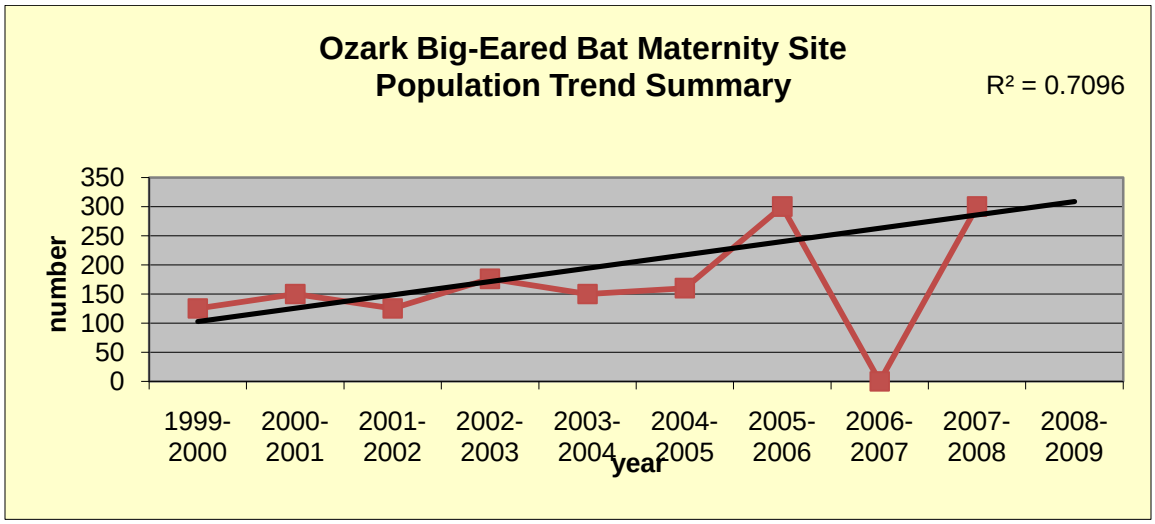


**Figure 43: Summary of the Ozark-Big-Eared Bat Maternity Population Trend on the Ozark-St. Francis NFs.**

Based on the summary of surveys on three known hibernacula, there appears to be a slight reduction in trend in the number of Ozark big-eared bats on the Forests (Figure 44) but as stated above, there is a slight increase in bats at maternity sites. Surveys are conducted every third year, however, not all caves are always surveyed each year.

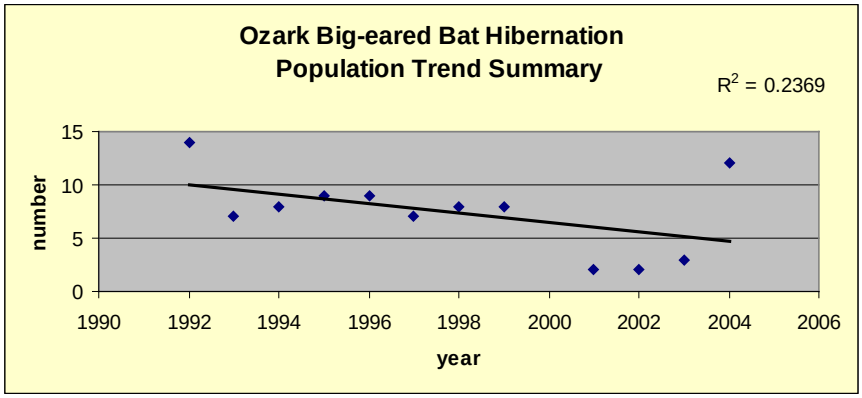


**Figure 44: Summary of the Ozark-Big-Eared Bat Hibernation Population Trend on the Ozark-St. Francis NFs.**

### Management Implications

Full implementation of the RLRMP will continue to protect unique bat habitats this species uses and, when necessary, gates or other exclusion devices will be used to protect bat habitat.

The Forests will continue to survey for and monitor populations of this species in suitable habitat and will document those occurrences and provide information to the USFWS as it becomes available.

## Eastern Small-footed Bat (*Myotis leibii*) – Regional Forester's Sensitive

### Affected Environment

This species ranges from eastern Canada, south to Georgia, and west to Oklahoma. Hibernating in caves or mines, they are the "hardiest" of U.S. cave bats. In Arkansas, it is known in small numbers from only a few caves in the Ozarks. It has been in Newton and Stone Counties, and more recently during surveys conducted in Franklin County. They are one of the last to enter caves in autumn and often hibernate near cave or mine entrances where temperatures drop below freezing and where humidity is relatively low.

This bat species is occasionally found on the Forests during mist net surveys and there are records documenting their presence. This species is rarely captured but occasionally, many can be caught in a single spot.

### Management Implications

Under full implementation of the RLRMP, the Forests will maintain an abundant supply of snags, live potential roost trees, upland water sources, and other habitat features across the landscape to allow for the maintenance and to promote the recovery of Indiana bat populations.

The Forests will continue to survey for and monitor populations of this species in suitable habitat and will document those occurrences and provide information to the USFWS as it becomes available.

Over time as human populations increase on both public and private lands, negative impacts to this species and its habitat are likely to occur. Implementation of forest-wide standards will help to reduce these negative impacts on this species.

### TES Species with Potential/Not Occurring on Forest

Table 20 lists TES species that have the potential to occur on the Forests but have not been found. Surveys are currently being done for these species. If they are found on the Forests, they will be added to future monitoring reports.

**Table 20: TES Species with Potential to Occur but not Currently on Ozark-St. Francis NFs.**

| TES Species with Potential to Occur but are not Currently Found on the Ozark-St. Francis National Forests | | |
|---|---|---|
| **Scientific Name** | **Common Name** | **Status** |
| *Lesquerella filiformis* | Missouri Bladderpod | Threatened |
| *Lindera mellissifolia* | Pondberry | Endangered |
| *Geocarpon minimum* | Geocarpon | Threatened |
| *Potamilus capax* | Fat Pocketbook | Threatened |
| *Lampsilis abrupta* | Pink Mucket | Endangered |
| *Leptodea leptodon* | Scaleshell Mussel | Endangered |
| *Lampsilis streckeri* | Speckled Pocketbook Mussel | Endangered |
| *Cambarus aculabrum* | Cave Crayfish | Endangered |
| *Cambarus zophonastes* | Hell Creek Cave Crayfish | Endangered |
| *Amblyopsis rosae* | Ozark Cavefish | Threatened |
| *Campephilus principalus* | Ivory-billed Woodpecker | Endangered |
| *Draba aprica* | Open-ground draba | Sensitive |
| *Solidago ouachitensis* | Ouachita Mountain goldenrod | Sensitive |
| *Valerianella nuttallii* | Nuttall's cornsalad | Sensitive |

### Fishing Communities, Streams, and Lakes

The Forests completed 67 miles of stream habitat improvement in 2008 and 60 miles in 2009. These projects consisted of large woody debris (LWD) placement in streams, stream bank stabilization to decrease sediment inputs, road crossing/fish passage barrier replacement, road closing and/or road obliteration in riparian areas, cane restoration in riparian areas and trash cleanups in riparian areas. The Forests completed 561 acres of lake habitat improvement in 2008 and 810 acres in 2009. This consisted of the following types of projects: spawning bed development, fertilization, liming (Figure 45), structural additions (cedar trees, Christmas trees, tree hinging along the shore, etc.), vegetative

weed control (includes control of nonnative invasive aquatic species), and addition of bait fish to the food biomass for predators like largemouth bass.

**Figure 45: Spraying of Yellow Floating Heart in Lake Wedington in 2008.**

The RLRMP also stated that looking at fish communities in streams would be a way of monitoring the conditions of streams on the Forests. This includes working with other agencies to develop Index of Biotic Integrity (IBI) for looking at the overall health of each aquatic system in a particular eco-region. An IBI is a numerical measure of the biological completeness of a system. An IBI allows for easy comparison between communities and systems, because it gives each stream a numerical score.

The Arkansas Department of Environmental Quality (ADEQ) had already developed IBIs for all the eco-regions in Arkansas for their analysis of water quality in the state and they have shared their IBIs with the Forest (Jim Wise, personal communication). The IBIs developed by the ADEQ were classified by the eco-region in which the stream exists. Table 21 shows the list of metrics used in the IBIs developed by the ADEQ by eco-region.

**Table 21: Individual metrics used in the IBIs developed by the Arkansas Department of Environmental Quality for eco-regions in Arkansas that contain Ozark-St. Francis NF lands. The X shows which metrics were used for each eco-region.**

| Metric | Arkansas Eco-Regions | | | |
|---|---|---|---|---|
| | Arkansas River Valley | Boston Mountain | Ozark Highlands | Delta Least Disturbed Streams |
| % Sensitive Species | X | X | X | X |
| % Minnow Species | X | X | X | X |
| % Catfish Species | X | X | X | X |
| % Sunfish Species | X | X | X | X |
| % Darter Species | X | X | X | X |
| % Primary Feeders (algae eaters) | X | X | X | X |
| % Key Individuals in each eco-region | X | X | X | X |
| Diversity (using Shannon-Weiner Diversity Index) | X | X | X | X |
| Number of species | | | X | |

For each metric in an IBI, the stream is given a score of 0-5 based on the value of the metric. The scores for each of the metrics are then summed to give a total score for each stream. The final score is then compared to a range of scores from streams that were sampled in that particular eco-region in the past to determine the overall quality of that stream. Table 22 gives the fish species composition of streams sampled in the summers of 2008 and 2009 as well as the IBI scores and ratings for each stream. The IBI score and rating for each stream are based on the IBIs developed by ADEQ. Streams that rated out in the poor category are either on small streams or ones with large amounts of private and USFS mixed ownership.

**Table 22: Fish Species Composition of Streams Sampled in the Summers of 2008 and 2009 with IBI Scores and Ratings for Each Stream.**

| District | Watershed | Stream | IBI Score | IBI Rating |
|---|---|---|---|---|
| Big Piney | Upper Illinois Bayou | Middle Fork Illinois Bayou | 22 | Good |
| | | Snow Creek | 8 | Poor |
| | | Meyer Branch | 14 | Fair |
| | | Hurricane Creek | 14 | Fair |
| | | Crouch Hollow | 6 | Poor |
| | | East Fork Illinois Bayou | 18 | Good |
| | | Mill Creek | 18 | Good |
| | | Unnamed trib to Mill Creek (002247) | 10 | Fair |
| | | Elm Hollow | 12 | Fair |
| Big Piney | West Fork Point Remove Creek | Drivers Creek | 16 | Fair |
| | | Brock Creek | 22 | Good |
| | | Unnamed trib to Brock Creek (001119) | 8 | Poor |
| | | Hill Creek | 12 | Fair |
| | | Unnamed trib to Brock Creek (001116) | 8 | Poor |
| | | Unnamed trib to Drivers Creek (001091) | 14 | Fair |
| | | Mocassin Hollow | 8 | Poor |
| | | Sweeden Hollow | 10 | Fair |
| | | Unnamed trib to Brock Creek (001111) | 14 | Fair |
| | | Rock Creek | 14 | Fair |
| | | Unnamed trib to Brock Creek (002382) | 8 | Poor |
| | | Unnamed trib to Brock Creek (001108) | 10 | Fair |
| | | Unnamed trib to West Fork Point Remove (001130) | 8 | Poor |
| | | Unnamed trib to Rock Creek (001130) | 0 | Poor |

**Table 22 (Continued): Fish Species Composition of Streams Sampled in the Summer of 2008 and 2009 with IBI Scores and Ratings for Each Stream.**

| District | Watershed | Stream | IBI Score | IBI Rating |
|---|---|---|---|---|
| Big Piney | West Fork Point Remove Creek | Poe Creek | 14 | Fair |
| | | Unnamed trib to Poe Creek (001201) | 12 | Fair |
| | | Anderson Creek | 12 | Fair |
| Pleasant Hill | Horsehead Creek | Horsehead Creek | 20 | Good |
| | | West Fork Horsehead Creek | 12 | Fair |
| | | East Fork Horsehead Creek | 6 | Poor |
| | | Cole Creek | 4 | Poor |
| | | Unnamed trib to Horsehead Creek (001363) | 4 | Poor |
| | | Unnamed trib to Horsehead Creek (001386) | 4 | Poor |
| | | Unnamed trib to East Fork Horsehead Creek (001412) | 8 | Poor |
| St. Francis | Misssissippi River – Tunica Lake | Unnamed trib to Phillips Bayou | 6 | Poor |

Proportional Stock Density (PSD) and Relative Stock Density (RSD) are a measure of the balance of multiple size classes within a population. The Forests are using PSD and RSD to evaluate the quality of lake and pond habitat for largemouth bass. PSD are the number of quality length fish (>300 mm) versus the number of stock length fish (>200 mm) multiplied times 100 and RSD is the number of preferred length fish (>380 mm) versus the number of stock length fish (>200mm) multiplied times 100. The PSD for largemouth bass should range from 40 – 70 whereas RSD should range from 10 – 40 (Murphy and Willis, 1996).

Figures 46-53 show the PSD and RSD values for all lakes on the Forests where sampling was done from 2005 to 2009.

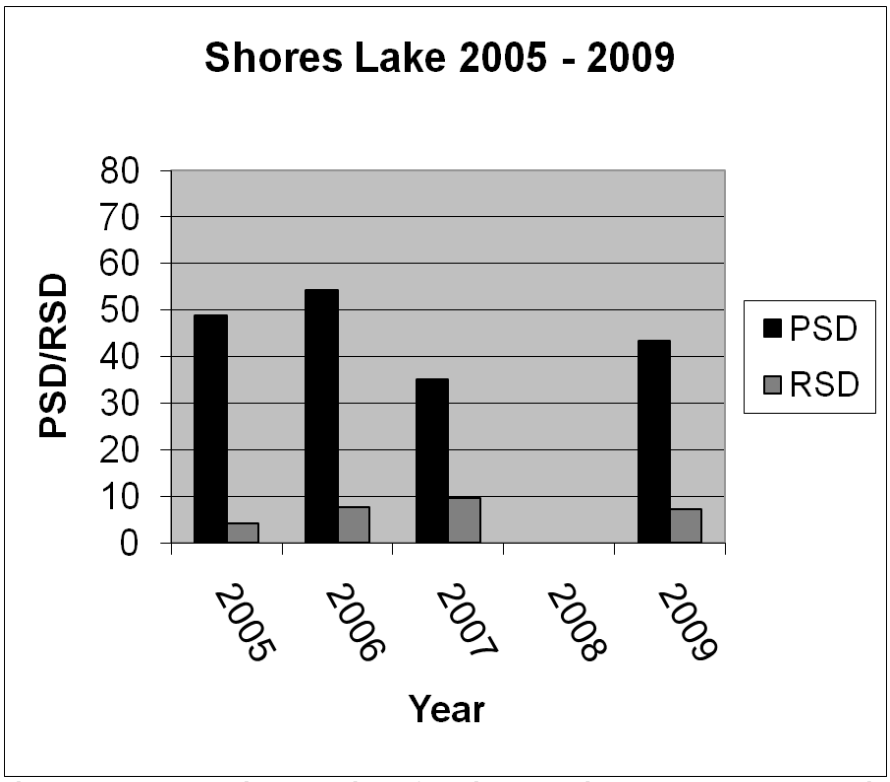


**Figure 46: PSD and RSD values for Shores Lake. Surveys were not done in 2008.**

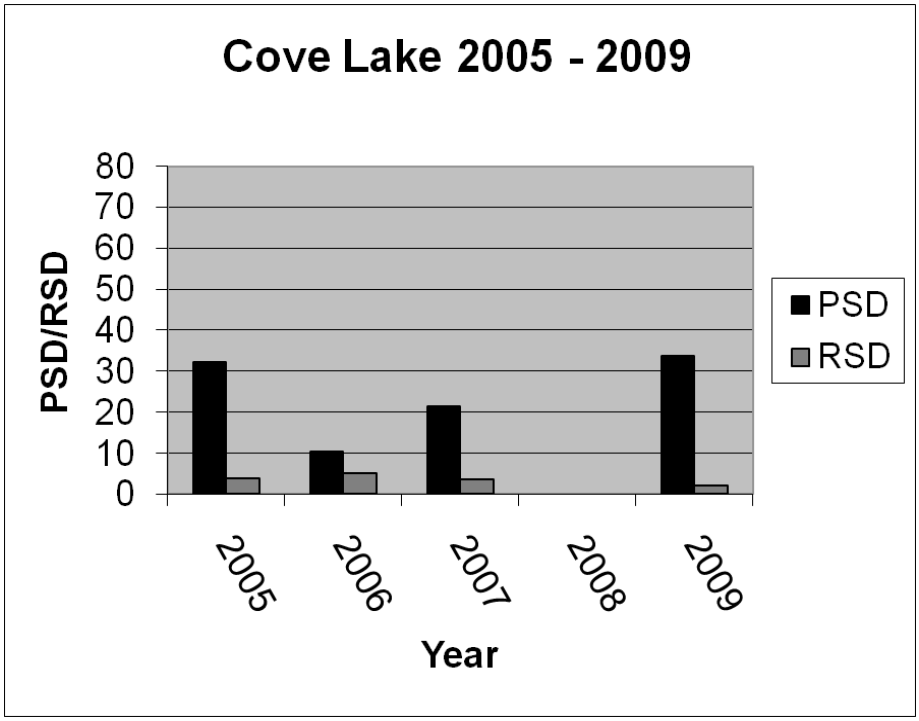


**Figure 47: PSD and RSD values for Cove Lake. Surveys were not done in 2008.**

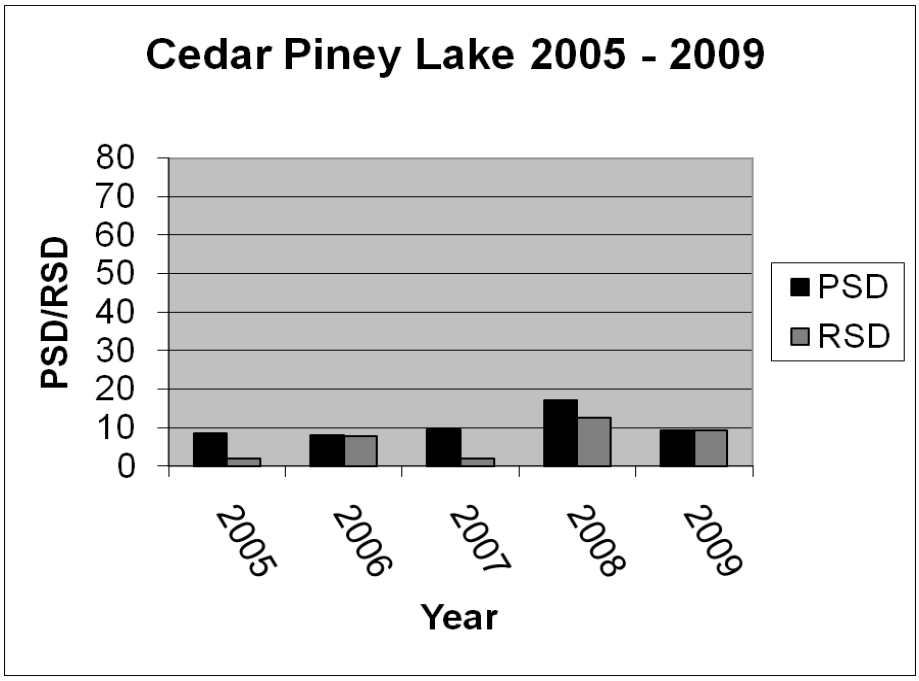


**Figure 48: PSD and RSD values for Cedar Piney Lake.**

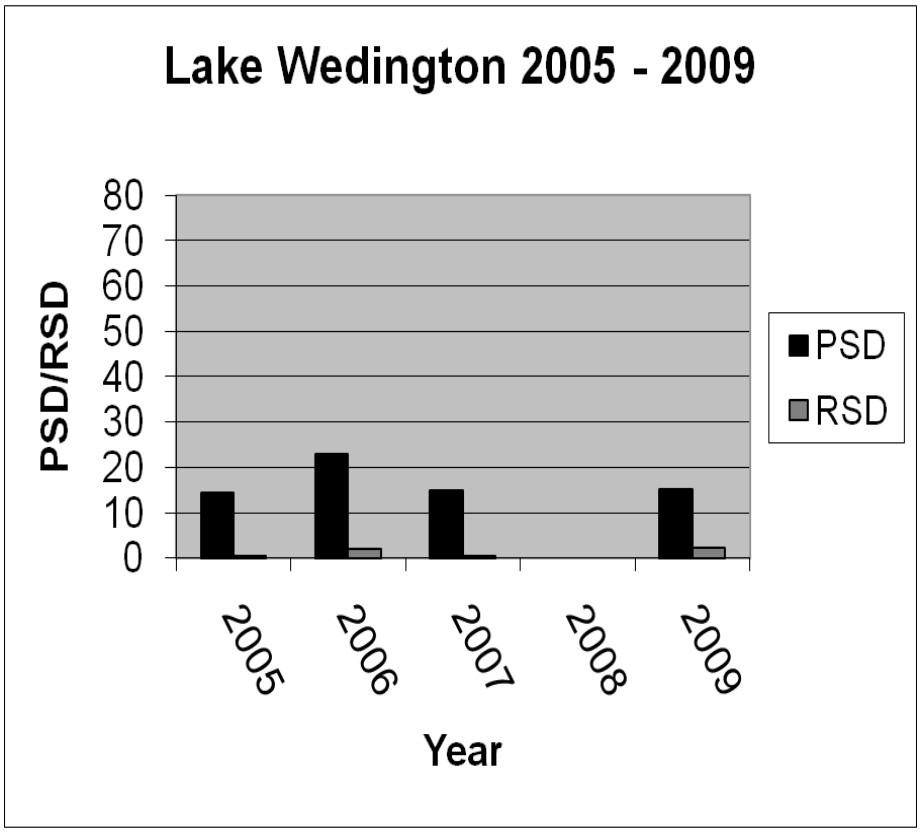


**Figure 49: PSD and RSD values for Lake Wedington. Surveys were not done in 2008.**

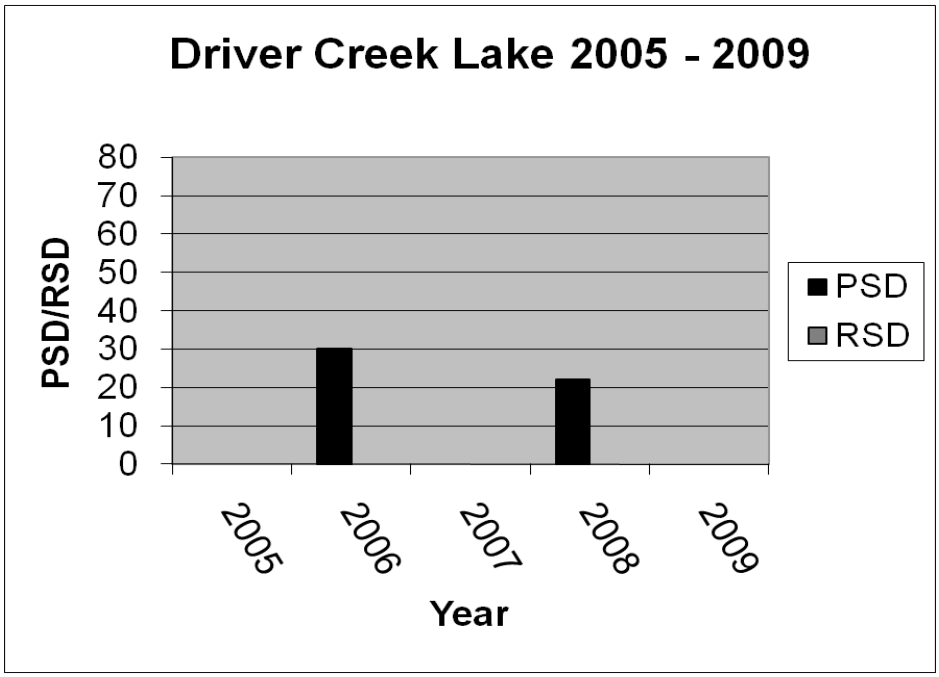


**Figure 50: PSD and RSD values for Driver Creek Lake. Surveys were not done in 2005, 2007, or 2009.**

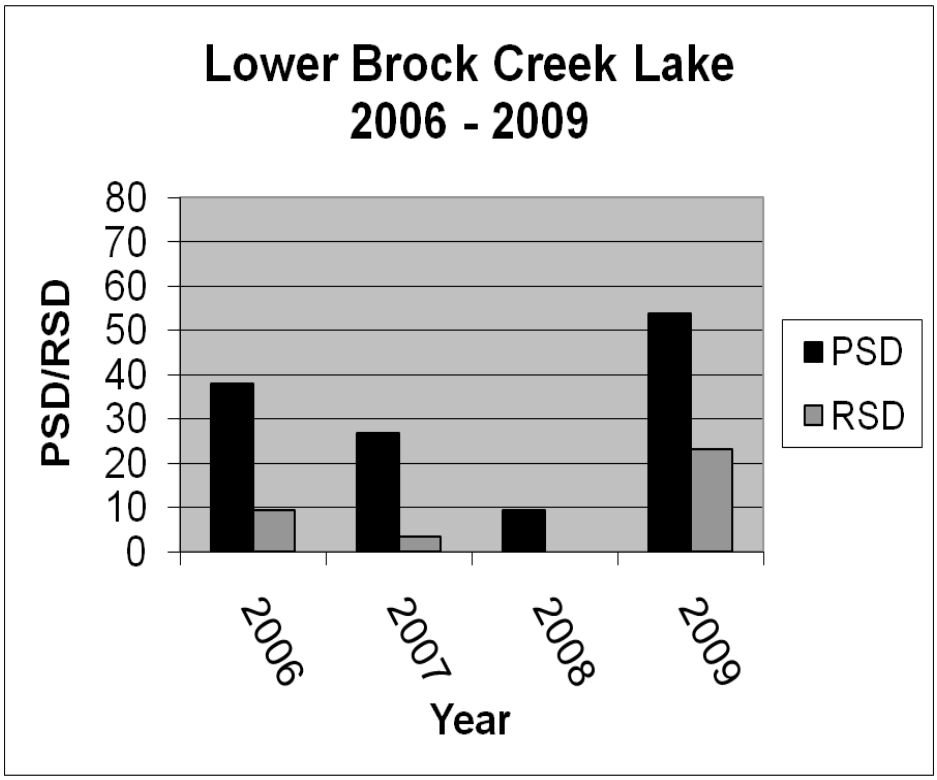


**Figure 51: PSD and RSD values for Lower Brock Creek Lake.**

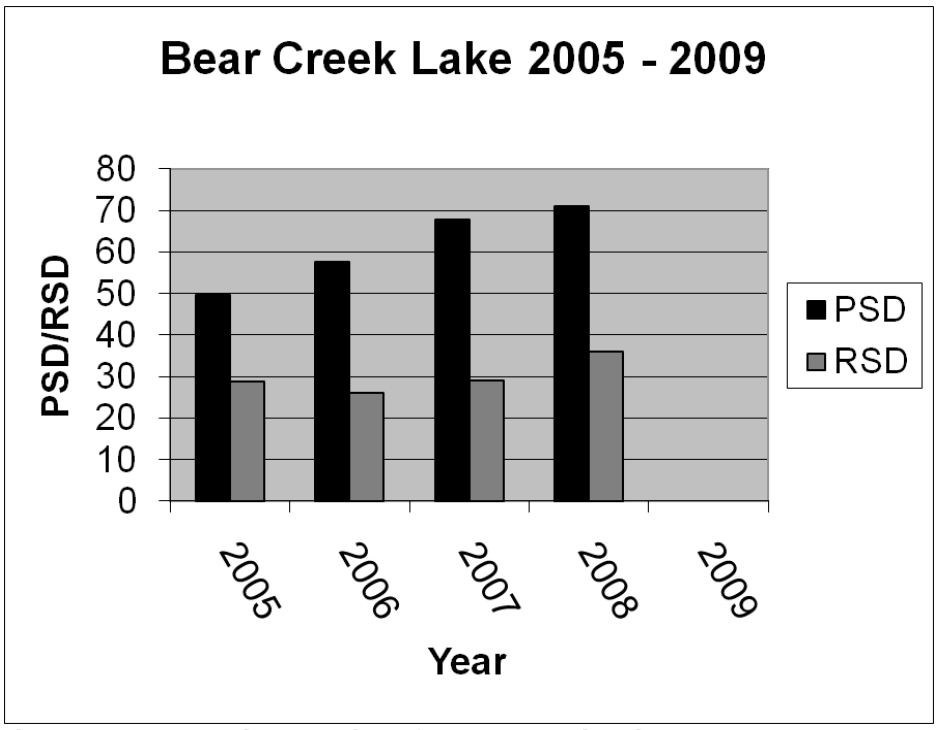


**Figure 52: PSD and RSD values for Bear Creek Lake. Surveys were not completed in 2009.**

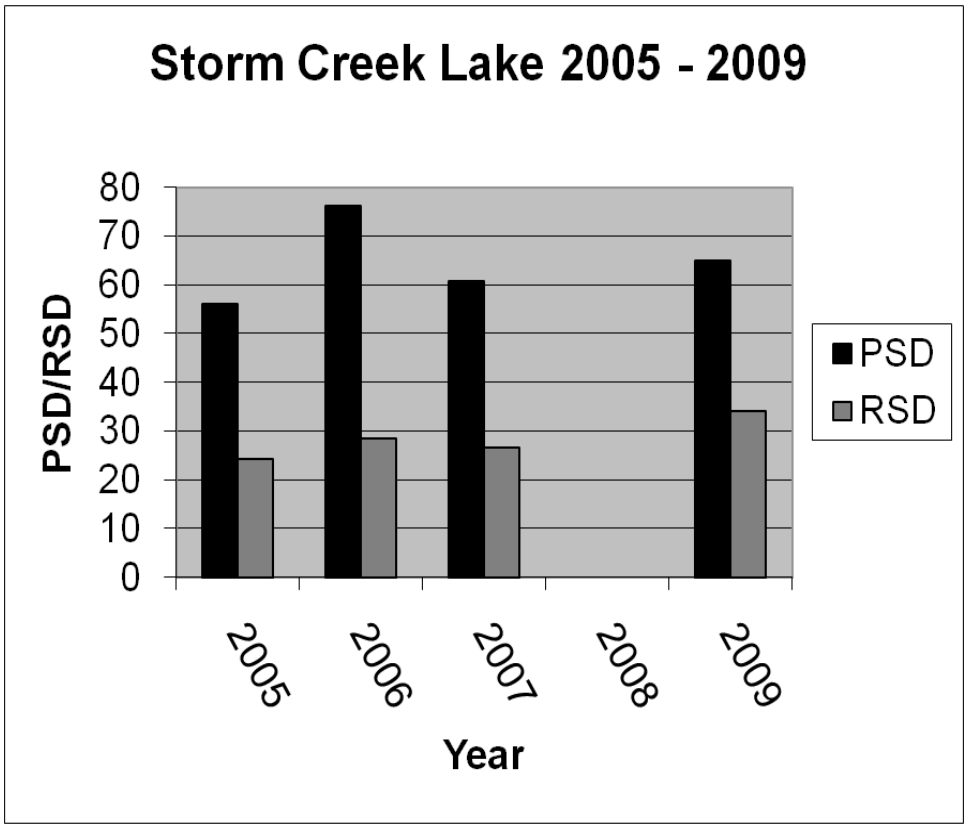


**Figure 53: PSD and RSD values for Storm Creek Lake. Samples were not completed in 2008.**

## SOIL, WATER, AND AIR

In fiscal year 2008, the Forests accomplished 385 acres of watershed improvement, which consisted of illegal road/trail closure, gully stabilization, hog eradication (causing sediment issues), trash cleanups in watersheds, large wood additions to streams, and cane restoration.

In fiscal year 2009, the Forests accomplished 48 acres of watershed improvement, which consisted of illegal road/trail closure, road obliteration, bank stabilization, hog eradication (causing sediment issues), trash cleanups in watersheds, large wood additions to streams, wetland restoration, and cane restoration.

The RLRMP provided three objectives for improved stream conditions on the OSFNFs:

- OBJ. 21 - Maintain or restore between 30 to 70 percent of the total perennial stream/river surface area if the National Hydrography Dataset (NHD) reaches as pool habitat in the first decade.
- OBJ. 22 - Maintain or restore large woody debris (LWD) levels in perennial streams/rivers at 75 to 200 pieces/mile for all LWD larger than 3.3 feet long and 3.9 inches in diameter in the first decade.
- OBJ. 23 - Maintain or restore LWD levels in perennial streams/rivers at 8 to 20 pieces/mile for all LWD larger than 16.4 feet long and 19.7 inches in diameter in the first decade.

Table 23 gives results of streams surveys conducted in 2008 and 2009 on the Forests for each of these objectives and the miles of streams where LWD was added to improve pool habitat conditions and LWD levels in the stream. Figure 54 shows a site of LWD additions on the Sylamore Ranger District.

**Table 23: Stream miles surveyed during the summers of 2006 to 2009, amounts of pool habitat and LWD levels found during the surveys, and miles of stream were LWD was added from 2006 to 2009.**

| Survey Items and Findings | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|
| Miles of stream habitat inventoried | 76 | 72 | 47 | 90 |
| Miles meeting 30 – 70% Pool Habitat: Obj. 21 | 35 (46%) | 47 (65%) | 21 (45%) | 34 (38%) |
| Miles meeting LWD 75 – 200 pieces larger 3.3 feet long and 3.9 inches in diameter: Obj. 22 | 0 (0%) | 10 (14%) | 19 (47%) | 59 (84%) |
| Miles meeting LWD 8 – 20 pieces larger 16.4 feet long and 19.7 inches in diameter: Obj. 23 | 0 (0%) | 0 (0%) | 4 (9%) | 1 (1%) |
| Miles of stream where LWD was added to meet Obj. 22 and Obj. 23 | 2 | 8 | 7 | 12 |

**Figure 54: Site of Large Woody Debris additions in Cole Fork on the Sylamore Ranger District.**

One of the other main focus areas of the RLRMP was the improvement of native cane breaks within riparian areas on the Forests. Native cane breaks are a rare community on the Forests where they provide bank stabilization and flood control as well as an important niche habitat for certain wildlife species.

In FY2007, the Forests accomplished eight acres of cane restoration, which consisted of increasing the stem density in previously planted areas and expanding the size of the area in cane. In FY2008, the Forests accomplished 21 acres of cane restoration, which consisted of expanding the size of the area covered by cane in a riparian area that was converted to pasture, and increasing the stem density in previously planted areas. In FY2009, the Forests accomplished fourteen acres of cane restoration, which consisted of increasing the stem density in previously planted areas and expanding the size of the area in cane.

Another main focus of the RLRMP was on improving road/stream crossings to improve fish/aquatic organism passage. Funding was used in 2005, 2007, 2008, and 2009 to complete inventories on the Forests to determine locations where problems existed. Table 24 supplies information about road crossing that were inventoried and found to be barriers to aquatic organism migration. Funding in 2006 and 2007 was used to do National Environmental Protection Act (NEPA) analysis and design work on several projects on the Forests. The Forests started construction on three fish passage projects in 2008 (Barkshed, Chambers, and Spring Lake). Two of the projects were not completed until early 2009. An example of an inventoried bad culvert is shown in Figure 55. The RLRMP Objective 54 called for replacing at least 6 crossings a year. The Forests did not meet that objective in any of the years but they did acquire the data that can make it possible to meet that objective in future years if funding is available.

**Table 24: Road crossings inventoried from 2005 to 2009 and found to be barriers to aquatic organism migration.**

| Year | Road/Stream Crossings Inventoried | Road/Stream Crossings Inventoried - Impassible | Fish Passage Projects Completed on the Forest |
|---|---|---|---|
| 2005 | 35 | 27 (77%) | - |
| 2006 | - | - | 0 |
| 2007 | 84 | 53 (62%) | 0 |
| 2008 | 10 | 10 (100%) | 3 |
| 2009 | 21 | 15 (71%) | 0 |

**Figure 55: A Road Crossing Surveyed on the Big Piney Ranger District in the Summer of 2008.**

## AIR RESOURCES

Air pollution can impact both human health as well as the environment. The two main air pollutants of concern on the OSFNFs are ozone and fine particulate matter. At elevated ambient concentrations, ground level ozone can cause respiratory distress in sensitive populations, and can also cause negative growth impacts to vegetation. Fine particulate matter ($PM_{2.5}$) causes cardiopulmonary symptoms in certain individuals, and also significantly contributes to regional haze. Because of these concerns, the U.S. Environmental Protection Agency (EPA) has established National Air Quality Standards (NAAQS) for these two pollutants. There are both primary and secondary NAAQS. Primary standards set limits to protect public health, particularly the health of sensitive populations such as children and the elderly. Secondary standards are set to protect public welfare, including visibility, crops, vegetation, animals, and buildings.

State air quality agencies monitor for both ozone and $PM_{2.5}$ near the OSFNFs. Measured concentrations are compared to the NAAQS for each of the pollutants. There is both a 24-hour and an annual NAAQS for $PM_{2.5}$, while there is currently just one NAAQS for ozone, based on 8-hour average concentrations. Areas that exceed the NAAQS are designated nonattainment, and a State Implementation Plan (SIP) must be prepared to demonstrate how the area will come back into attainment with the NAAQS.

Additionally, air quality agencies issue an air quality forecast in the form of the Air Quality Index (AQI) for both pollutants. The color code for the AQI is shown in Table 25. An AQI of code orange or worse means that air quality in the area is predicted to exceed the NAAQS.

**Table 25: Color Code for the Air Quality Index.**

| AQI Code | Description |
|---|---|
| Green | Good |
| Yellow | Moderate |
| Orange | Unhealthy for Sensitive People |
| Red | Unhealthy |
| Purple | Very Unhealthy |
| Maroon | Hazardous |

Air quality is recognized in the RLRMP for OSFNFs as an important parameter to measure forest health. The plan lists the following forest-wide standards relating to air quality.

- **FW93:** Prescribed burning will be conducted in, or adjacent to, counties with forecasted high Air Quality Index (AQI) values (AQI equals orange or higher) only if meteorological conditions indicate that smoke will be carried away from the high AQI area.
- **FW94:** Conduct all National Forest management activities in a manner that does not result in (1) a significant contribution to a violation of National Ambient Air Quality Standards (NAAQS) or (2) a violation of the applicable provisions in the State Implementation Plan (SIP).

**Standard FW93:** The use of prescribed fire emits $PM_{2.5}$, along with other pollutants. With the growing prescribed fire program, it is important for the National Forests to be aware of downwind concentrations of fine particulate matter to ensure that prescribed fire emissions are not contributing to any violations of the NAAQS. There are three $PM_{2.5}$ monitors near the OSFNFs. As Figure 56 shows, there does appear to be a correlation between prescribed fire emissions and measured fine particulate matter concentrations near the Forests.

**Daily and Annual Fine Particulate Matter Trends Compared to Emissions from Prescribed Fires on Ozark-St. Francis NFs 2006-2009**

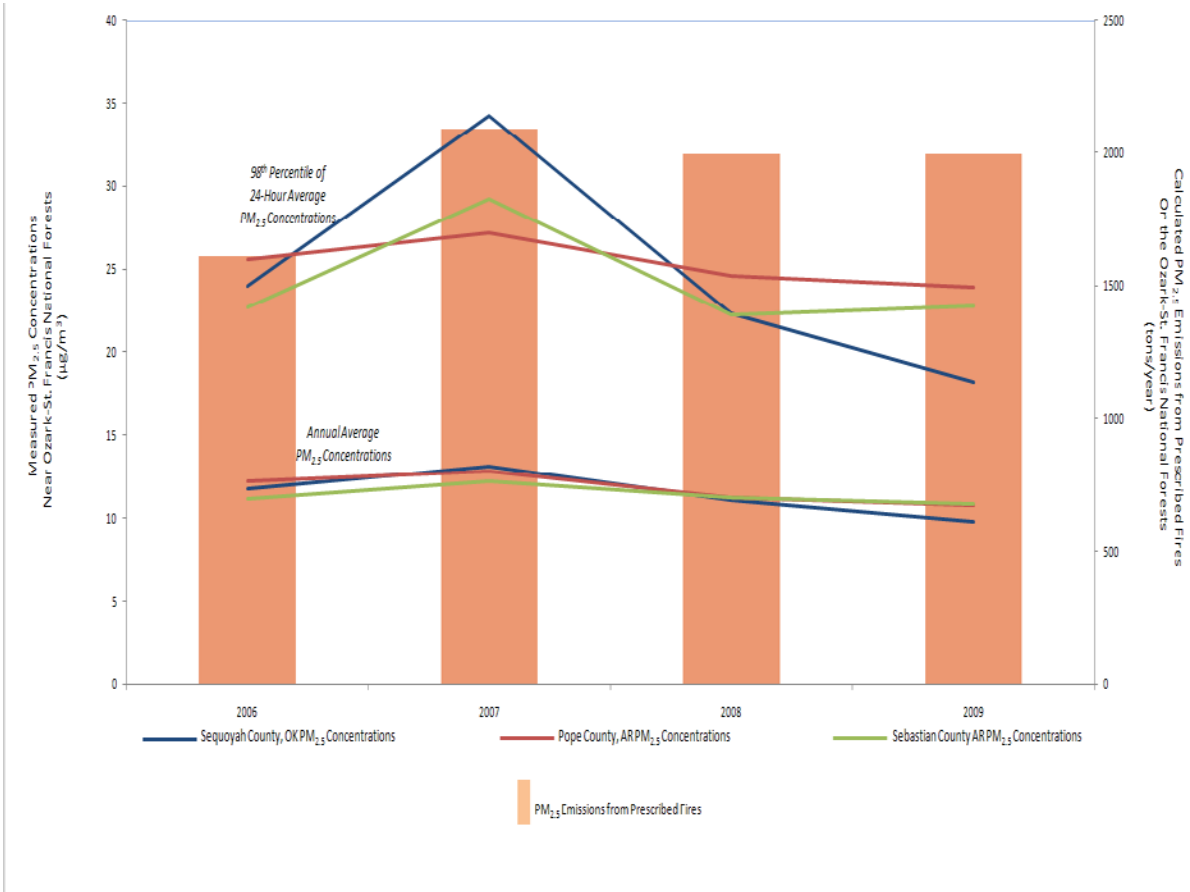


**Figure 56: The Correlation between Prescribed Fire Emissions and Measured Fine Particulate Matter Concentrations near the OSFNFs.**

However, the concentrations of fine particulate matter, both on a daily and an annual basis are not higher than the $PM_{2.5}$ NAAQS, which are 35 and 15 µg/m3, respectively. Thus, while prescribed fire is contributing to nearby concentrations of $PM_{2.5}$, the area is still meeting the NAAQS for this pollutant.

**Standard FW94:** The NAAQS,are based on 3-year averages of the measured concentrations. Using 2006 through 2009 data, the measured concentrations near the OSFNFs were compared to the 24-hour and the annual $PM_{2.5}$ NAAQS. As shown in Figure 57, these monitors have not documented any exceedances of the $PM_{2.5}$ NAAQS over the past several years. Thus, it can be concluded that forest management activities are not resulting in any exceedances of the NAAQS.

**Particulate Matter Concentrations near Ozark-St. Francis NFs**
**3-Year Averages as Compared to Both the Annual Averages and 24-Hour NAAQS**
**2006-2009**

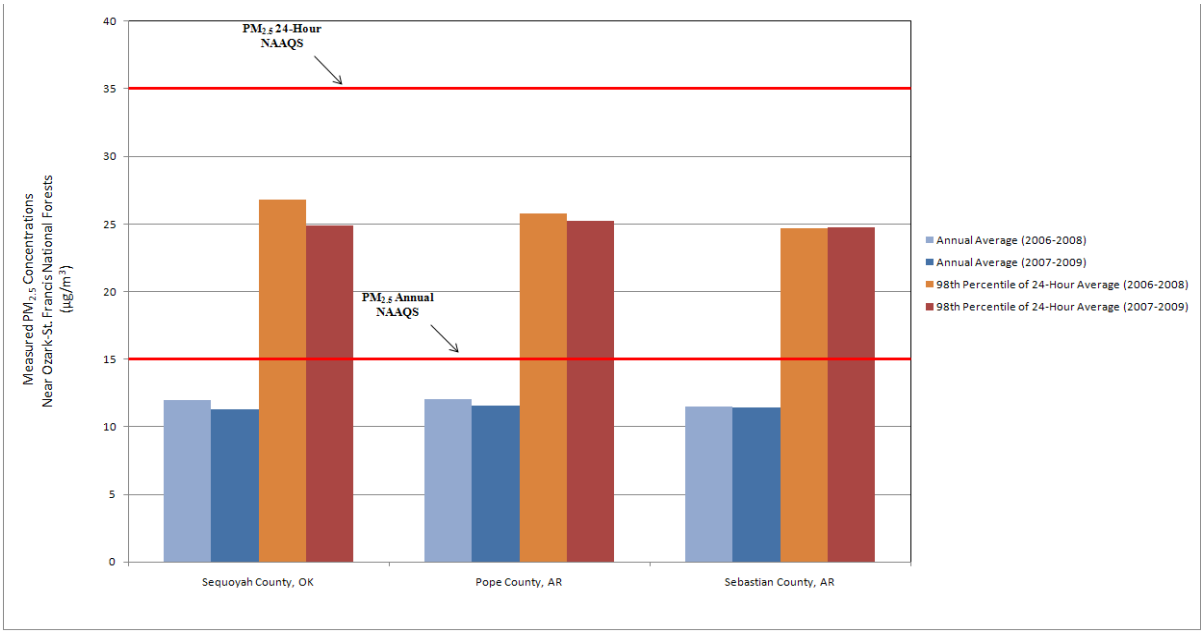


**Figure 57: Particulate Matter Concentrations near Ozark-St. Francis NFs from 2006 – 2009.**

Ozone concentrations are also measured at several locations near the OSFNFs. The NAAQS is based on a 3-year average of the 4$^{th}$ highest 8-hour ozone concentration. Figure 58 shows the nearby ozone concentrations for 2006 through 2009 as compared to the NAAQS. As shown, ozone levels are not exceeding the NAAQS, and thus no forest management activities are contributing to any exceedance of the air quality standards.

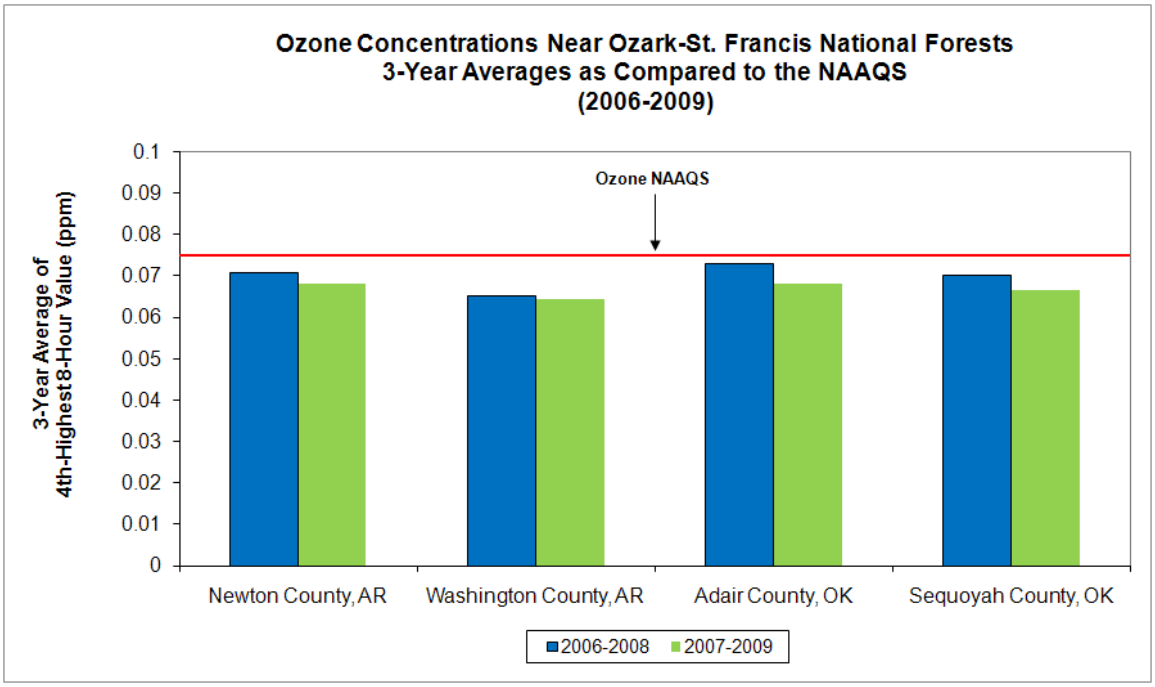


**Figure 58: Ozone Concentrations near the OSFNFs compared to the NAAQS Values.**

**PSD Permit Review:** The Clean Air Act and its amendments designate specific wilderness areas and national parks as mandatory Class I areas, and these areas are provided special protection against degradation of air quality related values such as visibility. The OSFNFs manage one Class I area, the Upper Buffalo Wilderness. The Clean Air Act requires federal land managers with the 'affirmative responsibility' to protect the air quality related values at these Class I areas, and to consider whether a proposed new or modified source of air pollution may adversely impact these values. The OSFNFs work with state regulatory agencies in Arkansas and Oklahoma to determine if new or existing industry will impact air quality at Upper Buffalo Wilderness through the Prevention of Significant Deterioration (PSD) permitting process. The Table 26 shows the number of proposed new or modified sources that were reviewed over the past several years.

**Table 26: The Number of Proposed New or Modified Sources (2006-2009)**

| Prevention of Significant Deterioration (PSD) Permits Reviewed by the Ozark-St. Francis National Forests | |
|---|---|
| **Fiscal Year** | **Number of Permits** |
| 2006 | 4 |
| 2007 | 4 |
| 2008 | 3 |
| 2009 | 6 |

None of these proposed facilities were shown to cause an adverse impact to the Upper Buffalo Wilderness.

**FIRE**

**Smoke and Prescribed Burning**

All controlled burns require an approved prescribed burning plan and must comply with the Clean Air Act and the Arkansas Voluntary Smoke Management Program http://www.forestry.state.ar.us/manage/smoke_management.pdf

Agency requirements for conducting prescribed burns identify specific weather conditions (parameters) that must be met prior to burning. Planning efforts include picking wind directions to avoid negatively impacting smoke sensitive sites and notifying the public of impending burns. Simple smoke screening is done to determine potential downwind impacts. (A model for simple smoke screening can be found at http://shrmc.ggy.uga.edu/smoke/ )

Other, more complex models such as VSmoke (http://webcam.srs.fs.fed.us/vsmoke/ ) and HYSPLIT (http://www.arl.noaa.gov/ready/hysplit4.html) are used to model smoke from planned prescribed burns.

The Arkansas-Oklahoma Interagency Coordination Center (AOICC) provides detailed mapping and tables of information for each planned Forest Service burn. This site includes archives back to calendar year 2005. http://www.fs.fed.us/r8/ouachita/fire/index_aoicc.shtml

Archived tables of prescribed burn locations, sizes, and names can be found at http://www.fs.fed.us/r8/ouachita/fire/rx_information_archive.shtml

A toll free number is provided (1-888-243-1042) with daily messages detailing who is burning and location of the burn. Additionally, individual ranger districts maintain a “call-up” list of people wanting to be notified of local prescribed burns. Media (newspapers and radio), sheriff’s departments, and volunteer fire departments are also contacted prior to burning.

During FY08 (October 1, 2007, through September 30, 2008), 60 prescribed burns were conducted on approximately 63,376 acres. The average burn size was 1,056 acres. These numbers are from the OSFNFs national database application FACTS (Forest Activity Tracking System).

During FY09 (October 1, 2008, through September 30, 2009), 28 prescribed burns were conducted on approximately 53,140 acres. The average burn size was 1,899 acres. These numbers are from the OSFNFs national database application FACTS (Forest Activity Tracking System).

These numbers are from the AOICC website listing of prescribed burns and acres accomplished.

Smoke is monitored at near real-time through use of websites such as http://adds.aviationweather.gov/satellite/ and http://www.firedetect.noaa.gov/viewer.htm

Archived smoke plumes as detected from satellites from prescribed burns and other federal and non-federal sources (including wildfires) can be found via use of NOAA's website above.

Real-time emissions monitoring can be done via the use of http://www.airnow.gov/, or when available, real-time reading from dataram or EBAM monitors at http://satguard.com/usfs/default.asp

Archived emissions monitoring information can be extracted from these sites also.

Visibility monitoring can be done using aircraft during burns or sometimes via webcams found at sites such as: http://www.fsvisimages.com/upbu1/upbu1.html http://www.instacam.com/search.asp?searchbox=ar&searchtype=state http://www.wunderground.com/webcams/index.html http://weatherbonk.com/weather/webcams.jsp?where=67005&cm_ven=wx_bonk&cm_cat=wx_com&cm_pla=today_cc&cm_ite=undecl and others.

There were very few smoke-related incidents attributable to FS prescribed burning between Oct. 1, 2008 and October 1, 2009. Smoke impacts for these incidents were moderate in intensity and short-lived - lasting only a few hours. While not all the smoke that affected communities came from FS burning, it is possible that some was.

During the monitoring period no prescribed burns conducted by the Forest Service are known to have negatively affected any regulatory-related federal or state smoke monitors contributing to higher-than-average hourly or daily $PM_{2.5}$ emissions.

**Wildfires**

During FY08 (October 1, 2007, through September 30, 2008), there were 15 wildfires involving 285 acres of national forest land. Of the 15 wildfires; 11 (73% of fires) were human caused for 268 acres (94% of total acres), 2 (13% of fires) were miscellaneous caused for 1.5 acres (<1% of total acres), 1 (<1% of fires) were debris burning caused for 15 acres (<1% of total acres), and 1 (<1% of fires) were escaped campfire for .3 acres (<1% of total fires).

During FY09 (October 1, 2008, through September 30, 2009), there were 30 wildfires involving 1221 acres of National Forest. Of the 30 wildfires; 7 (23% of fires) were miscellaneous caused for 110 acres (9% of total acres), 19 (64% of fires) were human caused for 1102 acres (90% of total acres), 1 fire (3% of fires) was an escaped campfire for 2.2 acres (< 1% of total acres), 1 fire (3% of fires) were railroad caused for 1.2 acres (< 1% of total acres), 1 fire (3% of fires) was debris burning for 5 acres (< 1% of total acres), and 1 fire (3% of fires) was equipment caused for 2 acres (<1% of total acres).

## Condition Class Improvement

Prescribed burns are conducted to meet a variety of resource objectives. These site-specific objectives are documented in either the Prescribed Burn Plan and/or in Environmental Assessments associated with compliance to the National Environmental Policy Act (NEPA). Burning has the potential to help restore ecological conditions to approximate reference conditions (with vegetational composition and structure similar to those estimated for the pre-settlement (pre-Columbian) landscape. Typical reference conditions for the Interior Highlands are documented in http://www.landfire.gov and http://www.frcc.gov.

A condition class of one is one closest to the reference condition while a condition class of three represents the most “highly departed” of landscape conditions. The vast majority of prescribe burns conducted during the monitoring period improved (lowered) condition class with perhaps 50-60% of the burns lowering condition class quantitatively from CC3 to CC2.

## Wildland Urban Interface (WUI)

The WUI is variously defined as that area of urbanized (or rural) development adjacent to wildlands. For purposes of monitoring, this is designated as the area involving private lands with human-improvements (homes, buildings etc.) within one-quarter to one-half mile of the Forest Service administrative boundary. Within this zone from October 1, 2007 through September 31 2008, 35 prescribed burns involving 12,261 acres of hazardous fuel-reduction burning were conducted by the Forest Service. From October 1, 2008 through September 31 2009, 17 prescribed burns involving 5,693 acres of hazardous fuel-reduction burning were conducted by the Forest Service.

## Communities at Risk and Firewise Communities

Communities at risk are federally identified communities in the WUI where the risk of wildfire could pose a significant threat. There are 18 such communities found adjacent to forest service land on the OSFNFs. One prescribed burn to reduce hazardous fuels was conducted within ¼ to ½ mile of these communities.

Firewise communities are recognized through state and federal certification for their efforts to mitigate the risk of wildfires through specific mitigation projects conducted by homeowners. There are more Firewise communities in Arkansas

that any other state in the U.S. Information on Arkansas Firewise Communities can be found at http://www.arkansasfirewise.com/

There were 0 prescribed burns involving 0 acres adjacent (within ¼ to ½ miles) of Firewise communities on the OSFNFs.

**Wyden Amendment and Stevens Act**

The Wyden Amendment authorizes the Forest Service to enter into agreements with private landowners and prescribe burn their lands in concert with planned Forest Service burns. The use of this authority often enhances opportunities to do fuels reduction and other burning adjacent to private lands. It can reduce the amount of plowed fireline (control lines) needed for prescribe burning allowing the use of roads and natural fire breaks that occur on private lands. During the reporting period of October 1, 2007 - September 30, 2009, Wyden Agreements were signed involving approximately 80 acres.

The Steven Act authorizes the state (Arkansas Forestry Commission) to enter into cost-share agreements to help private landowners with prescribed burning when they can be coordinated with burning on federal (Forest Service) lands. During the reporting period of October 1, 2007 - September 30, 2009, agreements involving 1,647 acres were executed by the AFC in close coordination with the Forest Service.

**Native American Firefighter Program**

The Native American Firefighter Program was conceived by the OSFNFs and began in 1988. This program jointly administered by the OSFNFs and Oklahoma Native American Tribes (Apache Tribe, Caddo Nation, Cherokee Nation, Choctaw Nation, Iowa Tribe, and Kiowa Nation) involves the recruitment, training, and mobilization of hundreds of Native Americans representing federally-recognized tribes. These trained crews are dispatched to wildland fires and other regional and national disasters where they provide critical manpower.

The salaries earned by this workforce contribute significantly to local economies in rural areas of Oklahoma.

During the reporting period 67 firefighters were trained and 15 crews were mobilized to several incidents.

In 2006, Participating Agreements were established with the six Tribes/Nations in Oklahoma and the Ozark-St. Francis National Forests. These Agreements allow the Tribal firefighters/members to participate in Forest projects which include but not limited to; Heritage Resource Surveys, Prescribe Burning, Recreation construction and maintenance, Trail construction and maintenance, etc. Each year these Agreements have provided several weeks of work for the Tribal firefighters/members outside the normal wildland fire season.

The Caddo Nation was the first to become qualified as Heritage Resource surveyors and have since surveyed thousands of acres on the Ozark-St. Francis NFs, Ouachita NF, National Forests and Grasslands in Texas, and the Bugaboo Fire in Florida.

### LANDS AND SPECIAL USE PERMITS

Table 27 shows the Lands and Special Use items are tracked. The amount of work accomplished is dependent upon funding for that item each year.

**Table 27: The Lands and Special Use Items that are Tracked.**

| Lands and Special Use Items Tracked | FY08 | FY09 |
|---|---|---|
| Land for Land Exchange- acres acquired & (conveyed) | 0 | 41.3 |
| Tripartite Exchange-acres acquired | 255 | 40 |
| LWCF Purchase-acres acquired | 0 | 0 |
| Small Tracts Act, Title Claims- acres acquired & (conveyed) | 0 | 0 |
| Administrative Site Conveyance-cases (acres ) | 0 | 0 |
| Change in Public/Private land interface- +/-mile line | -3.5 | - 0.5 |
| Corners maintained | 370 | |
| Corners set | 75 | |
| Miles of landlines maintained | 36.1 | 4.0 |
| Miles of landlines established | 132.0 | 127.6 |
| Trespass cured | 9 | 10 |
| Special Use Permits Administered to Standard (recreation) | 89 | 145 |
| Special Use Permits Administered to Standard (lands) | 511 | 528 |
| Rights-of-Way Secured (Donation or Purchase) | 1 | 2 |
| Rights-of-Way Secured (Land Adjustment) | 1 | 0 |

**Recommendations:**
Continue to accomplish items as funded. Corners maintained and corners set will be dropped from future monitoring reports as they do not reflect how much line is maintained and that is the important unit of measure.

### MINERALS (NATURAL GAS)

Minerals activity is dependent upon market values for gas and estimated potential to drill producing wells. Table 28 shows the activity on the Forests for 2008 and 2009. Activity on the Forests appears to be increasing.

**Table 28: Activity on the Ozark-St. Francis NFs in 2008 and 2009.**

| Activity on Forests | FY08 | FY09 |
|---|---|---|
| Acres on Title Report (Leasing) | 90,000 | 115,000 |
| Notices of Intent (Seismic) | 0 | 0 |
| Notices of Staking (onsite completed) | 64 | |
| Applications for Permits to Drill (APDs) approved | 16 | 26 |
| Producing wells administered to standard | 63 | 79 |

Mitigation standards applied as projects include implementation of standards from The Gold Book, AR State Best Management Practices, and the Arkansas Best Management Practices for Fayetteville Shale Natural Gas Actives. These are applied to 100% of the locations proposed.

Continue to process all minerals requests and administer minerals facilities. Notices of Staking will be dropped from future monitoring reports since this item has no bearing on actual proposals (APDs) received. Notices of Staking don't show the natural gas workload that is being accomplished.

### TIMBER FOREST PRODUCTS

In the process of managing communities and management areas for their desired future condition, there are products produced that benefit the public. One of the main products is wood used by industry for a variety of reasons.

Total timber volume harvested in 2008 was 91,313 ccf. In 2009, there was 140,344 ccf harvested. Table 29 gives the approximate breakdown in harvest for the two-year period.

**Table 29: Volume of Timber Harvested in ccf in 2008 and 2009.**

| Volume of Timber Harvested in ccf | | |
|---|---|---|
| **Harvest type** | **2008** | **2009** |
| Hardwood sawtimber | 17,838 | 27,417 |
| Hardwood small round wood | 13,489 | 20,962 |
| Pine sawtimber | 44,350 | 68,165 |
| Pine pulpwood | 15,636 | 23,800 |
| **Totals** | **91,313** | **140,344** |

### FACILITIES

**Accessibility** - There is no facility accessibility backlog database, but it is standard procedure to include accessibility into all facility construction and reconstruction projects. No new major facilities projects were started in FY08/FY09, but work continued on the Koen Building Supervisor's Office addition and renovation work which includes accessibility improvements.

**Health and Safety** - There is no health and safety database but health and safety considerations are built into all projects and are top priority to be funded each year with our limited funding available for maintenance of facilities on the OSFNFs.

**Energy efficient upgrades** - There is no energy efficient upgrades database but all new construction/reconstruction projects will consider energy efficiency when applicable

**Upgraded fire facilities** - There is no fire facilities database. No fire facilities were constructed in FY08/FY09.

### TRANSPORTATION AND PUBLIC ACCESS ROAD CHANGES

**Road Additions** - In FY08, there were 0.9 miles of new roads constructed and added to the system along with a +29.7 miles of roads added to the system (due to adjustments/updates in INFRA roads module). In FY09, there were 3.4 miles of new roads constructed and added to the system.

**Road Subtractions** - In FY08, there were no subtractions to the system (due to adjustments/updates in INFRA roads module). In FY09, there were 27.1 miles of roads removed from the system (due to adjustments/updates in INFRA roads module).

**Roads Closed** - This item monitors additions or subtractions to Level 1 roads (closed to vehicle traffic). This is tracked in the infra database and may not exactly reflect the on-the-ground situation (i.e.: INFRA may not have yet been updated to reflect that roads have been opened to do project work or closed to prevent resource damage). In FY08, there was an increase of approximately 20 miles in Level 1 roads from the previous year. In FY09, there was an increase of approximately 268 miles in Level 1 roads from the previous year.

**Obliteration or decommissioned** - In FY08, there were 6.6 miles of roads obliterated or decommissioned. In FY09, 1.0 mile of road was obliterated or decommissioned.

### OFF-HIGHWAY VEHICLES (OHVS)

In 2008, the Forests worked with the public to designate new OHV routes on the Forests. The result of this collaboration was an OHV system map (Back Country Guide) that was completed in 2007. Table 30 lists the OHV trails that were in place on the Ozark National Forest in 2008 and 2009:

**Table 30: 2008 and 2009 OHV Trails on the Ozark National Forest.**

| 2008 & 2009 OHV Trails on the Ozark National Forest | | | |
|---|---|---|---|
| **District** | **Trail** | **Miles** | **Description** |
| Big Piney | Moccasin Gap Horse Trail | 28 | Multiple Use |
| Big Piney | Brock Creek OHV Trail | 42 | Dual Track and Single Track |
| Boston Mountain | Mill Creek Trail | 42 | 27 – Main Trail<br>15 – Interior Loops |
| Mt. Magazine | Huckleberry Mountain Horse Trail | 40 | Multiple Use |

In 2007, the Back Country Guide was published. This guide showed designated OHV routes. It included almost 900 miles of designated routes on roads and an additional 211 miles of designated OHV trails for an approximate total of 1100 miles. This guide was still valid in 2008 and 2009 as no new routes were added. This initial OHV Trail System will be used as a baseline and analyzed periodically to officially add or subtract OHV routes.

## 2008 – 2009 PLAN MONITORING

### RECREATION AND VISUAL MANAGEMENT

#### Scenic Byway

**Plans Completed** – No plans were completed in 2008 or 2009. The Highway 103 portion of the Mulberry River Road Scenic Byway was completed in draft (Pleasant Hill RD) in 2007.

**Byway Areas Monitored** – The Pig Trail Scenic Byway (Boston Mountain and Pleasant Hill RDs); Ozark Highlands, Mulberry River Road, Highway 21 Scenic Byway (Pleasant Hill RD), Arkansas Scenic Seven, Hwy 123, and the Ozark Highlands Scenic Byway were monitored during the 2008 – 2009 year.

**Recommendations** – Complete Mulberry River Road Scenic Byway Plan and complete Forest scenic byway nomination documentation for Mulberry River Road Scenic Byway

#### Wild and Scenic Rivers

**Plans Revised** – No plans were revised in 2008 or 2009.

**Change in Outstandingly Remarkable Values** – There was no change in values in 2008 or 2009.

**Wild Section Use Trend Change** – There were no trend changes in wild sections of wild and scenic rivers for 2008 or 2009.

**Visitor Satisfaction** – Visitor satisfaction data was not collected in 2008 or 2009.

**Recommendations** – Schedule Wild and Scenic River Plan revisions. Eliminate visitor satisfaction as a meaningful measure due to difficulties in obtaining this type of information.

## Wilderness Areas

**Non-native Invasive Species Inventoried** –None.

**Non-native Invasive Species (NNIS) Treated** – No NNIS treatments were done in 2008 or 2009.

**Old Roads Reverting Back to Natural** – No change from 2007 – 2008 (Big Piney). In 2008, the Leatherwood began to experience heavy horse recreation use, however; the ice storm in 2009 has closed many of the old roads found in the Leatherwood Wilderness and has reduced horse use on these roads.

**Resource Damage Monitored Using Limits of Acceptable Change** – Wilderness air quality plan completed, including monitoring of water quality as a surrogate for air quality. Water quality sampling planned to take place in 2010.

**Recommendations** – Monitor mapped NNIS occurrences and prioritizes treatment needs. The Forests should fully fund on-going water quality sampling in wilderness areas as required by the new air quality plan.

## Ozark Highlands Trail (OHT)

**Miles of Trail Maintenance** – In 2008 and 2009, 26.6-miles of OHT were maintained on Boston Mountain RD by the Ozark Highlands Trail Association (OHTA); 32-miles were maintained on the Sylamore RD; 68.4 miles on the Pleasant Hill RD by the OHTA; and 59.9-miles of trail were maintained by the OHTA on the Big Piney RD.

**Trail Maintenance Trends** – Heavy rains and flash-flooding in 2008 caused severe damage to the tread of many Forest trails and significant damage to trail corridors was caused by the ice storm in 2009. Many trails were closed for some time before crews could react and repair tread damage in 2008 and clear downed trees and limbs from the trail tread in 2009.

## Experimental Forests

**Research Projects Developed** – No projects were developed in 2008 or 2009.

**Data Collected or Analyzed** – None.

## Special Interest Areas

**Management Plans Completed –** The Mt. Magazine SIA Management Plan final edit was completed in 2008.

**Trends** – No change reported for most districts in 2008. In 2009, use trends were down due to damage caused by the ice storm to trails and vehicular access.

There has been a significant increase in use of Mt. Magazine SIA due to the new Mt. Magazine State Park and an increase in rock climbers using Stack Rock SIA.

There has been increased gas well activity near Mt. Magazine SIA that may impact visual quality as seen from the bluff line.

## Research Natural Areas

**Research Natural Area Plan Priority** – Priorities have not yet been established.

## State Parks

**Visitor Satisfaction Related to the Partnership** – Unknown.

**Public Health and Safety Through Permit** – The annual state park inspections for Mt. Magazine State Park were completed in on 6/26/08 and 7/14/09. Health and safety were addressed.

## Developed Recreation Areas

**Visitor Satisfaction –** Visitor satisfaction data was not collected in 2008 or 2009.

**Public Health and Safety** – The following accidents which resulted in hospitalization of the person involved or death were reported to Forest Service Law Enforcement Officers for the calendar years 2008 & 2009:

2008 Serious Accidents: 2
2008 Deaths: 0
2009 Serious Accidents: 4
2009 Deaths: 1

Rotary Ann Rest Stop on Arkansas Scenic 7 Byway continues to provide the only public restroom facilities along the length of Arkansas Highway 7.

The ice storm of 2009 has left a significant number of dead and dying tree limbs in the upper canopy of the Forests. Of greatest concern are areas frequented by the public which cannot be reached by equipment to remove these potentially lethal hazards. As the limbs and tree-tops age and as wind or other outside events impact their stability in the canopy, they will fall to the ground with significant force. Forest district personnel has posted warning signs at trail heads, recreation areas, and other locations where they can be seen by the public in order to warn of this continuing hazard.

**Recommendations** –Drop visitor satisfaction as a measure due to difficulties in obtaining this type of information.

**RLRMP RECREATION PRIORITIES**

## Wilderness

**Priority One -** Protect and manage wilderness to improve the capability to sustain a desired range of benefits and value so that changes in ecosystems are primarily a consequence of natural processes. Protect and manage the areas recommended for wilderness designation to maintain their wilderness values.

- In 2008 the Big Piney RD contracted to have non-native, invasive plant species found in the Richland Creek, Upper Buffalo, Hurricane Creek and East Fork Wilderness Areas inventoried.
- In 2009, Richland Creek, Upper Buffalo, Hurricane Creek, and East Fork Wilderness Areas peak season visitation use was exceeding recommended group size for wilderness areas.
- No activities were completed in 2009**.**

**Priority Two -** Update all wilderness management plans, including monitoring components, wilderness education, and restoration needs by 2008.

- Plans were not updated in 2008 or 2009.

**Recommendations -** Update plans as funds are available.

**Priority Three** - Prohibit mining claim locations under the General Mining Law of 1872 in Designated Wildernesses (MA 1.A)

- No wilderness mining claims were processed in 2008 or 2009.

## RLRMP Recommended Wilderness

**Priority One** - Complete land line surveys on newly recommended wilderness boundaries. Boundaries will be ready for use as boundary postings after congressional designation.

- Landlines were not surveyed for recommended wilderness in 2008 or 2009.

**Recommendations -** Annually prioritize surveying budget and survey proposed wilderness boundaries as budget allows.

## Designated Wild and Scenic Rivers

**Priority One -** Manage designated wild and scenic river sections to perpetuate their free-flowing condition and designated classifications, and to protect and enhance their outstandingly remarkable values and water quality.
This requirement was followed in 2008 and 2009.

**Recommendations -** Drop this monitoring item. This requirement is covered in priority two (below) on an individual river basis.

**Priority Two** - Manage designated wild and scenic rivers according to their Comprehensive River Management Plan.

- Comprehensive management plans were followed in 2008 and 2009.

**Priority Three -** Review public access needs.

- Pogue Springs Road, an access roadway to Sylamore Creek Wild and Scenic River, was approved for reconstruction in 2009 from Arkansas State Highway No. 14 to the river.

**Recommendations -** Provide additional access as funding sources are provided.

**Priority Four -** Prohibit mining claim locations under the General Mining Law of 1872 in designated wild sections of the Designated Wild and Scenic Rivers

- There were no mining claims in 2008 or 2009.

**Recommendations -** Drop this as a monitoring requirement. Wild sections are classified as Withdrawn from mining leasing. It is standard procedure to restrict claims for these areas.

It is also standard procedure to follow the protocol listed on Table 2-12 (Page 2-83) of the RLRMP to regulate mining on Scenic and Recreational Sections of Wild and Scenic Rivers.

**Recommended Wild and Scenic Rivers**

**Priority One -** For the newly recommended Wild and Scenic River (North Fork of Illinois Bayou River), a comprehensive river management plan and boundary declaration will be prepared and implemented within three years of congressional designation as required in the designation language.

- There was no activity toward congressional designation of North Fork of Illinois Bayou from 2006 to 2009.

**Experimental Forest**

**Priority One -** Protect and manage research natural areas to maintain natural processes. Identify a sufficient range of opportunities to meet research needs. Compatible uses and management activities are allowed.

- There was no activity reported in 2008 or 2009.

**Priority Two -** Continue to cooperate and assist the Southern Research Station to provide to forest managers research data related to timber harvest, ecosystem management, prescribed burning, soil, water, and other related forestry activities**.**

- No research activities on the Forest were reported for 2008 & 2009.

## Research Natural Area

**Priority One**- Protect and manage research natural areas to maintain natural processes. Identify a sufficient range of opportunities to meet research needs. Compatible uses and management activities are allowed.

- No activities were reported in 2008 or 2009.

## Special Interest Area

**Priority One** - Protect and manage each special interest area (SIA) for its unique qualities and features. Allow uses and management activities, including access, that complement or are subordinate to the unique qualities and features.

- In 2009, trails and roads used to access these areas were cleared of downed trees and debris opening the routes to the public and FS.

**Priority Two -** Within the planning cycle, develop management plans and monitoring protocols for existing SIAs. Management plans for SIAs will be developed before implementing project work.

- Management plan final draft completed for Mt. Magazine Special Interest Area in 2008. Also, Mt. Magazine Special Interest Area visitor use continues to increase due to location of Mt. Magazine State Park within the SIA. A portion of gas wells being installed on the Mt. Magazine Ranger District may be seen from overlooks atop the SIA.

**Trends** – For 2008 & 2009, increases in visitor numbers at Mt. Magazine SIA are apparent. Also, additional viewshed changes just outside the SIA boundary due to industrial gas recovery activity continue to increase.

## Scenic Byway Corridor

**Priority One -** Preserve view-shed quality when accomplishing other resource activities.

- The Mt. Magazine, Boston Mountain, Sylamore, and Pleasant Hill Ranger Districts all incorporate viewshed quality into NEPA for all proposed actions.

**Priority Two -** Develop public view points and interpretive opportunities.

- Arkansas Highway and Transportation Department has proposed viewpoints for Pig Trail Scenic Byway on the Pleasant Hill RD.
- Draft interpretive plan for AR 215 Mulberry River Road is under development.

**Priority Three -** Promote and manage the scenic byways within the Forests for the traveling public and the benefit of local communities.

- Byway displayed in various brochures available to the public.
- FS office adopted a section of Scenic Byway 309 for maintenance (Mt. Magazine RD).

**Priority Four** - Work toward state or national scenic byway designation for all byways.

- In 2009, Arkansas Highway and Transportation Department began an effort to have Arkansas Scenic 7, which bisects the Ozark NF from north to south, designated as a National Scenic Byway.

**Priority Five -** Within one year of the approval of the RLRMP, establish a schedule to complete corridor plans for all scenic byways. Complete all plans in the first planning period.

- All scenic byway plans for all scenic byways on the Forests need to be reviewed and revised as necessary as a result of the adoption of the Revised Land and Resource Management Plan.

**Ozark Highlands Trail Corridor**

**Priority One** - Maintain a forest trail system across the Ozark NF.

- OHT was maintained by volunteer groups in 2008.
- OHT was maintained by volunteer groups, TDY groups responding to the ice storm incident and by Forest force account staff in 2009.

**Priority Two** - Manage the Ozark Highland Trail to protect the trail experience, and to provide for the conservation and enjoyment of its nationally important scenic, historic, natural, and cultural qualities.

The OHT was managed to provide for conservation and protection of visitors experiences in 2008 and 2009.

## State Parks

**Priority One** - Work with the State Parks to provide interpretive information about forest management activities.

- The Mt. Magazine Ranger District provides the state park with brochures and recreation information. The district participates in state park events such as the Mt. Magazine International Butterfly Festival.
- The St. Francis National Forest is working cooperatively with Arkansas Department of Parks to facilitate the transition of FS recreation facilities to the State for the creation of the Mississippi River State Park in 2008 & 2009.

## Developed Recreation Area

**Priority One** - Supply a variety of recreational facilities that are responsive to user demands.

- Recreational facilities for all areas of the Forests remain essentially the same with the exception of the St. Francis National Forest. The St. Francis National Forest recreational facilities will eventually be turned over to the State of Arkansas to reconstruct and manage as part of the Mississippi River State Park.

**Priority Two** - Operate developed recreation sites including campsites and picnic areas. Activities included in this endeavor are trash collecting, cleaning, maintaining equipment, monitoring water systems, and other activities associated with keeping the facilities clean, safe, and in good repair. These will continue to be managed utilizing meaningful measures standards or the appropriate Agency standards while stressing health and safety.

- All ranger districts on the Forests maintain the minimum standard for developed recreation site operations.

**Priority Three** - Focus investments and improve the cost effectiveness of operating recreational facilities by using one or more of the following techniques where feasible: decommissioning underused sites, maintaining concessionaire agreements, entering into management partnerships, and investigating other measures.

- Cove Lake on the Mt. Magazine Ranger District is operated by concession. Mt. Magazine State Park is located on the district by a management partnership. The Mississippi River State Park on the St. Francis National Forest is operated under a management partnership. All of the Ozark Highlands Trail is maintained by a volunteer organization, the Ozark Highlands Trail Association. Blanchard Springs Caverns is assisted during peak tourist times by ticket sales assistance provided by the Ozark Interpretive Association.

**Priority Four** - Focus developed recreation on the niche statement written during the recreation alignment process, which emphasizes water related day-use activities, scenic and wildlife viewing, and trail activities such as hiking, biking, horseback riding, and off-highway vehicle (OHV) riding. Overnight facilities will only be developed in support of the niche activities.

- All districts report following the above focus for 2008 & 2009.

**Upper Buffalo Dispersed Recreation Area**

**Priority One** - Maintain semi-primitive non-motorized management of activities.

- Acknowledged, signed Decision Memo and began formal trail development process for user defined mountain bike trails within the Upper Buffalo Dispersed Recreation Area.

**Wedington Unit Urban Recreation Area**

**Priority One** – Provide urban recreation opportunities.

- Forest Service reassumed management of Lake Wedington and continues to manage the area in 2008 & 2009.

**Indian Creek Dispersed Recreation Area**

**Priority One** - Provide a combination of semi-primitive, non-motorized, and motorized management activities.

- Activities to manage Indian Creek Dispersed Recreation Area to provide this combination of recreational experiences.

**Priority Two -** Maintain two major motorized routes through the Indian Creek Dispersed Recreation Area as the primary access with secondary routes supporting dispersed recreation opportunities. This includes access to trailheads for horseback riding, hiking, biking, and rock climbing activities, local historic points of interest, interpretive opportunities, and administrative uses including timber harvest for forest health. Development of motorized recreation opportunities will not be a priority in this area although they will exist due to motorized access to other recreational opportunities.

- Yes - Pleasant Hill RD.

**Priority Three -** Determine where motorized access will be allowed by considering support of dispersed recreation activities; disturbance of solitude of large blocks of land; public health and safety; forest health; and local economic and administrative considerations.

- Indian Creek Dispersed Recreation Area Draft Management Plan scheduled to be written starting in 2010.

**Priority Four** - The Forests' Trails Strategy Team will consider motorized opportunities in this area utilizing roads and trails developed for access to other dispersed recreation opportunities.

### HERITAGE

Archeological sites are reported as protected to standard or managed to standard.

"Protection" is defined as avoiding any disturbing impacts to an archaeological site. This includes redesigning projects to avoid sites, or painting boundaries around sites to prevent any penetration by machines or ground disturbing activities.

"Managed" is defined as a treatment that enhances, protects, or preserves an archaeological site. This could include removal of all trees within a tree-length buffer around a cemetery, use of prescribed fire to reduce woody vegetation favoring fine fuels to prevent root damage to intact cultural deposits, or streambank stabilization to reduce erosion and caving.

The items listed in the RLRMP to be monitored by Heritage are displayed in Table 31 with results being given for 2008 and 2009.

**Table 31: Heritage Monitoring Results for 2008 and 2009.**

| Heritage Monitored Item | 2008 Result | 2009 Result |
|---|---|---|
| Sites protected to standard | 3064 | 3484 |
| Sites managed to standard | 4624 | 5044 |
| Number of site management plans made | 4 | 5 |
| New sites recorded in heritage resource database | 357 | 420 |
| Government to government agreements | 1 | 1 |
| Participation in Bridge-A-Gap Conference | Yes | Yes |
| Evaluation of Native American feedback | Positive | Positive |

### LAW ENFORCEMENT

#### Trends in Unlawful Criminal Behavior

- There has been a decrease in marijuana production on USFS lands.
- Illegal use of OHV use remains about the same with little or no notable changes.
- The illegal harvest of ginseng continues to increase due to the increase of the price per pound. Most wholesalers are giving $800 per pound.

**Cumulative Impacts to Natural/Cultural Resources**
Continued illegal OHV use is causing soil erosion on natural resources.

- Law Enforcement continues to enforce illegal activities by patrolling known OHV areas as much as possible.

**Accidents**

- Accidents including OHV and hunting continue to rank high in the accident category.
- The majority of OHV accidents are caused by the abuse of alcohol and speed.
- Hunting accidents occur sporadically through hunting season and are usually attributed to hunters not identifying their target.

**Citations**
Citations issued by Law Enforcement for FY2008 and FY2009 are recorded in Table 32.

**Table 32: Citations issued by Law Enforcement during FY2008 and FY2009.**

| Law Enforcement Citations | FY2008 Statistics | FY2009 Statistics |
|---|---|---|
| Violation Notices | 435 | 367 |
| State Violation Notices | 157 | 102 |
| Warning Notices | 609 | 606 |
| Incident Reports | 405 | 322 |

**Acres Affected**
The majority of the forest is affected in some form. The majority of the affected acres are in recreation areas both developed and undeveloped.

**Types of Impact of Illegal Activity**

- Illegal OHV use impacts natural resources.
- Illegal use of alcohol and drugs continues to impact the public and employees by creating a driving hazard.
- Violating State driving laws impacts driving conditions as well as public and employee safety.
- Continued disturbance and thefts of cultural resources continues to be impacted by opportunist and organized theft.

**ENVIRONMENTAL MANAGEMENT SYSTEM**

Adherent to Executive Order 13423 of 2007 and following Washington Office direciton, the Forest Service developed the Environmental Management System (EMS) in FY2008. Forest personnel were introduced to EMS by training conducted at monthly safety meetings held at the district offices and the supervisor's office. All employees were given wallet cards with pertinent information and telephone numbers. Information pertaining to EMS was posted to

the Forest home page on the intranet. Fleet management was identified as the significant aspect for 2008.

The OSFNFs developed an EMS Implementation and Action Plan, which was signed by the Forest Supervisor. A Management Review was conducted and reported to the Regional Office in November 2008.

In FY2009, Chief Kimbell's letter of June 2009 was posted to the Forest home page and all employees were encouraged to do the 2009 EMS Refresher. All districts and staff areas were contacted and furnished with training materials for all new employees. Instructions were given on how to access EMS via AgLearn. EMS was discussed at safety meetings throughout the year. Vegetation Management was identified as the significant aspect for 2009.

**Recommendations**
Continue to follow the direction given by the WO and RO.

# Appendix A

## List of Preparers

The following individuals contributed to the 2008 – 2009 Monitoring and Evaluation Report.

| | |
|---|---|
| A.J. Brigance | Forest Timber Contracting Officer |
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