

Chapter II. Monitoring Findings & Recommendations

Issue A. Ecosystem Condition, Health and Sustainability

Sub-Issue 1. Biological Diversity

a. Vegetation Management

(1) Regeneration of Desired Tree Species

Monitoring Item Description - Restoration of longleaf and shortleaf pine ecosystems is monitored by checking regeneration areas at one and three years to determine if any additional treatments are needed to achieve sufficient stocking. The third-year check will be used to certify that successful stand reestablishment has taken place.

Variability - Longleaf stands should have stocking of at least 400 trees per acre, while shortleaf stands should have stocking of at least 300 trees per acre. When stocking levels of longleaf or shortleaf stands are less than these, each deficient stand must be evaluated to determine if there is sufficient stocking in other desirable species or if remedial treatments are needed.

Finding(s) – Third-year stocking exams conducted in 2006 found that 53 percent of the stands had adequate stocking of the desired species. First-year survival exams found that 56 percent of the stands had adequate survival. Seedling survival was adversely impacted in 2005 by below average rainfall. The Angelina County weather station recorded a total of 31.7 inches of rain in 2005, which is approximately 15 inches below average. The driest month of the year was June, when only 0.85 inches of rain fell, and in April only 1.10 inches fell. Lack of adequate precipitation during these early growing season months is a significant cause of seedling mortality. Since the NFGT is at the extreme western edge of the natural range for pine species, it makes seedling establishment difficult.

The following pictures illustrate regeneration efforts after a major windstorm struck the National Forests in Texas in February 1998. Figure 1, which was taken on March 27, 1998, shows a severely damaged area on the Sabine NF. Figure 2, taken on December 3, 2006, is of the same area and illustrates the successful regeneration of the site. The arrow in the pictures points out the growth of a residual pine seedling that survived the storm and subsequent site preparation for planting.

Figure 1. Windstorm Damage on the Sabine National Forest March 23, 1998



Photo by Jerry Lynch, USFS

Figure 2. Windstorm Damage on the Sabine National Forest December 3, 2006



Photo by Keith Sorrells, USFS

Recommendation(s) – No change needed. Emphasis needs to be placed on planting seedlings in late fall/early winter (November through January) when there is sufficient soil moisture to allow seedlings more time to become established before warmer and drier spring conditions occur. Continue established regeneration checks to assure adequate restocking occurs at required *Plan* levels.

(2) Ten Year Age Class

Monitoring Item Description - Progress in achieving the *Plan's* DFC (Desired Future Condition) for vegetation and a determination that desired diversity for plant communities is being achieved is measured through an evaluation of data obtained from internal reviews and surveys.

Variability - Changes in any ten-year age class greater than one percent per year should be evaluated to determine the cause.

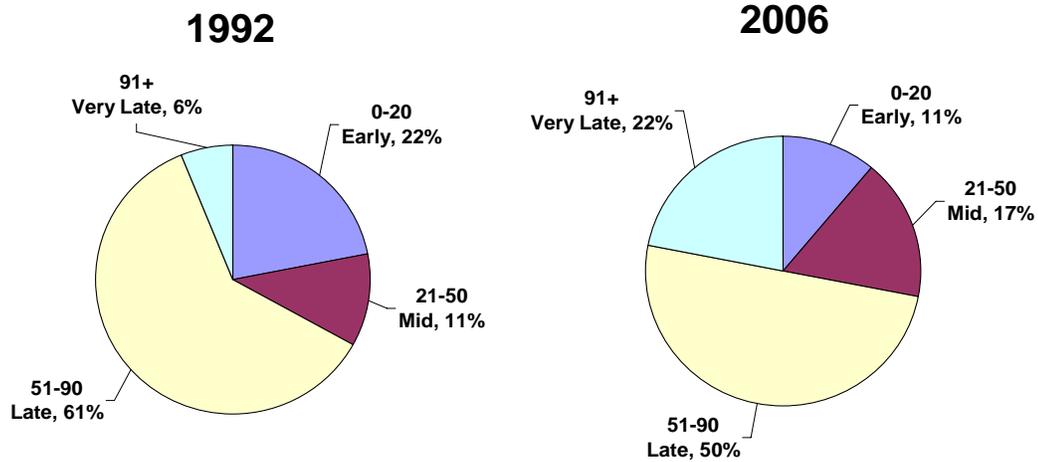
Finding(s) - In previous years, age-class distributions was evaluated by reviewing data obtained from the CISC (Continuous Inventory of Stand Conditions) database. The CISC database has been replaced by a new program named FSveg (Field Sampled Vegetation), and in FY 06 the forest inventory portion of the CISC data was migrated into FSveg. In the future, age class will be monitored via the FSveg database to assure vegetation types are moving along toward the *Plan's* DFCs.

Table 1 illustrates the trends in age class among the four seral stages on the four National Forests.

Table 1. Seral Stage Distribution

| <u>Seral Stage</u> | <u>Age Class</u> | <u>1992</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2006</u> | <u>Trend</u> |
|-----------------------------|------------------|-------------|-------------|-------------|-------------|-------------|--------------|
| Early Succession | 0-20 years | 22 % | 14 % | 14 % | 13 % | 11 % | -11 % |
| Mid Succession | 21-50 years | 11 % | 15 % | 15 % | 15 % | 17 % | +6 % |
| Late Succession | 51-90 years | 61 % | 55 % | 54 % | 53 % | 50 % | -11 % |
| Very Late Succession | 91+ years | 6 % | 16 % | 17 % | 18 % | 22 % | +16 % |

Figure 3. Seral Stage Distributions



The table and charts show the steady increase in very late seral stage by 16 percent since 1992. The decrease in the late succession is due primarily to stands growing into the very late stage. The decrease in acreage in the early succession stage is due to a decline in regeneration harvests resulting in a reduction in the number of acres being regenerated.

The FS Veg age-class distribution report for the end of 2006 shows a continuing trend towards an older forest. For instance, the acres in stands over 100 years old have increased from 15,037 acres in 1992 to 55,298 acres in 2006, which is a 268 percent increase. Likewise, the acres in young stands age 0 (currently being regenerated) to 10 years old are just 11 percent of what they were in 1992: 83,612 acres in 1992 to just 9,218 acres in 2006.

Table 2 indicates trends in key forest type groups identified in the *Plan*.

Table 2. Forest Type Group Trends

| <i>Forest Type Group</i> | <i>1992</i> | <i>2002</i> | <i>2003</i> | <i>2004</i> | <i>2006</i> | <i>Trend</i> |
|-------------------------------------|-------------|-------------|-------------|-------------|-------------|--------------|
| Longleaf Pine Woodlands | 5.6% | 5.7% | 5.7% | 5.7% | 5.2% | -0.4 % |
| Dry-Xeric Oak Pine Forests | 25.8% | 25.1% | 25.1% | 25.1% | 25.2% | -.6 % |
| Mesic Oak-Pine Forests | 58.6% | 58.3% | 58.3% | 58.4% | 58.6% | No Change |
| Mesic Hardwood Forests | 2.9% | 3.9% | 3.9% | 3.9% | 3.9% | +1.0 % |
| Bay-Shrub Wetlands | 0.4% | 0.4% | 0.4% | 0.4% | 0.4% | No Change |
| Bottomland/Streamside Forest | 6.7% | 6.6% | 6.6% | 6.5% | 6.7% | No Change |

The dry-xeric oak pine forests are composed primarily of shortleaf pine stands and shortleaf pine-oak stands. While this group shows an overall decline of 0.6 percent since 1992, there has been a slight increase in the past two years. The longleaf pine woodlands show a decrease of 0.4 percent since 1992; however, if stands currently being regenerated to longleaf pine were added, this forest type group would likely show an increase instead of a decrease. This is due to the database not including stands where the age year has not been set; this is normally not done until the stands are certified as regenerated.

In FY 06, FS Veg training was offered at the Regional level.

Recommendation(s) - Change needed. More emphasis needs to be placed upon regeneration harvesting to ensure a more even supply of sizes and ages of trees are provided for suitable habitat for all species. If regeneration shortfalls continue, declining forest vigor of older stands will likely lead to loss of habitat for the endangered RCW. During FY 07, provide local training to employees and assure that the required information is being added to the FS Veg database.

(3) Prescribed Burning

Monitoring Item Description – Determine if prescribed burning is occurring at required levels to meet the *Plan*'s goals and objectives and the DFCs for vegetation.

Variability - Achieve 80 percent of forest assigned targets, unless weather or other extenuating circumstances prevent this accomplishment. If the forest falls below the 80 percent target, reassess the target.

Finding(s) - The *Plan* set an annual objective of approximately 100,000 acres of prescribed burning per year. This is calculated on a land base of about 500,000 acres for which fire should play an ecological role. The desired return interval for fire is in a three-to-five year range. In FY 06, the forest burned 96,684 acres. The average acres burned over the ten years since the *Plan* was issued is about 72,254 acres. Table 3 displays acres burned each year (by objective) for the past ten years. Most burns accomplish multiple objectives.

Table 3. Prescribed Fire – Acres Burned Annually

| FY | Fuel Reduction | Brownsport Control (Longleaf) | Site Prep for Regeneration | Control of Understory | Range Improvement | T&E* | Other Wildlife | Total |
|------|----------------|-------------------------------|----------------------------|-----------------------|-------------------|-------|----------------|--------|
| 1997 | 38,454 | 397 | 196 | 4,353 | 883 | 5,501 | 21,583 | 71,367 |
| 1998 | 29,742 | 0 | 538 | 0 | 0 | 363 | 6,166 | 36,809 |
| 1999 | 52,937 | 667 | 174 | 2,681 | 500 | 5,531 | 24,640 | 87,130 |
| 2000 | 21,408 | 0 | 98 | 690 | 0 | 2,746 | 11,424 | 36,366 |

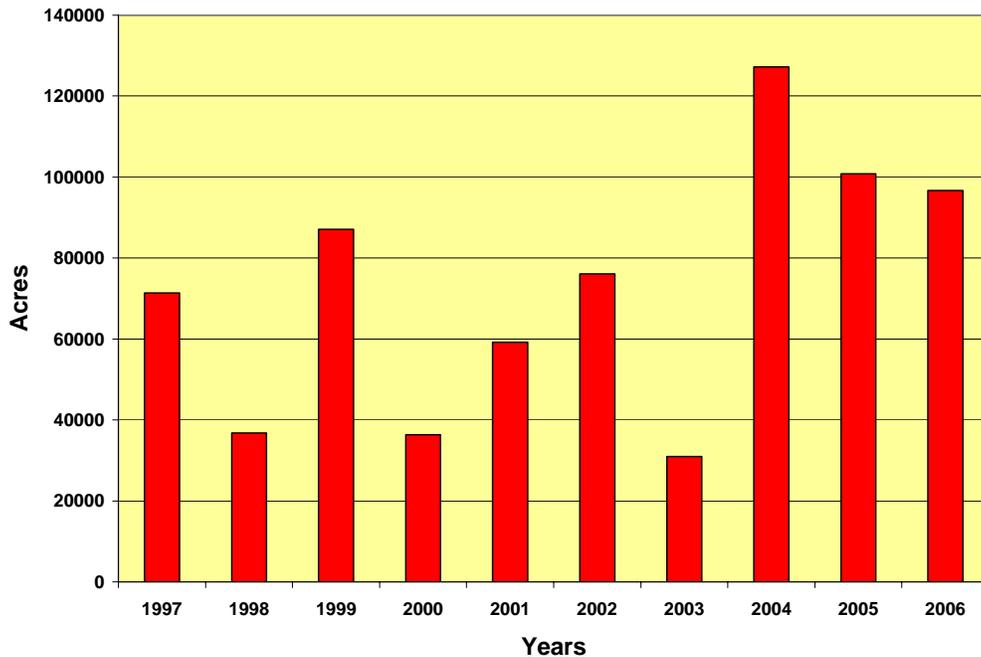
Table 3 – Prescribed Fire – Acres Burned Annually (continued)

| FY | Fuel Reduction | Brownspot Control (Longleaf) | Site Prep for Regeneration | Control of Understory | Range Improvement | T&E* | Other Wildlife | Total |
|------|----------------|------------------------------|----------------------------|-----------------------|-------------------|--------|----------------|---------|
| 2001 | 40,656 | 80 | 92 | 563 | 0 | 3,535 | 14,230 | 59,156 |
| 2002 | 50,926 | 0 | 704 | 2,893 | 0 | 16,726 | 4,796 | 76,045 |
| 2003 | 23,750 | 0 | 1,472 | 0 | 0 | 4,360 | 1,400 | 30,982 |
| 2004 | 89,392 | 219 | 0 | 1477 | 0 | 31,722 | 4,401 | 127,211 |
| 2005 | 87,720 | 0 | 133 | 0 | 0 | 12,872 | 65 | 100,790 |
| 2006 | 95,770 | 0 | 479 | 0 | 0 | 435 | 0 | 96,684 |

*Threatened and Endangered

Figure 4 also shows prescribed burning accomplishments on the NFGT over the past ten years.

Figure 4. Prescribed Burn Acres



On September 24, 2005, Hurricane Rita made landfall on the Texas coast and severely affected the Angelina and Sabine NFs, and to a lesser degree affected the Sam Houston and Davy Crockett NFs. The hurricane increased the amount of down and dead vegetation, which created a dangerous situation for forest fires in general, and especially for fires impacting neighboring communities. Figure 5 shows an area of severe hurricane damage. More detailed information of these impacts and the NFGT actions to mitigate the damage are in the Hurricane Rita section later in this report.

Figure 5. Hurricane Rita Damage



Photo by James Flue, USFS

One objective of prescribed fire is to improve red-cockaded woodpecker habitat. Figure 6 shows how mid-story vegetation is controlled by vegetation treatments. First, the area was mulched to reduce mid-story vegetation; then prescribed fire was applied to reduce fuel loading.

Figure 6. Mechanical Mulching & Prescribed Fire in Red-Cockaded Woodpecker Cluster



Photo by James Flue, USFS

Recommendation(s) – No change needed. Maintain prescribed burning targets at approximately 100,000 acres per year in order to meet vegetation management objectives.

b. Management Indicators

(1) Diversity of Plant and Animal Communities

Monitoring Item Description - Plant and animal communities are defined through the descriptions of community components by vegetation group in the *Plan*, Chapter V (pgs 306-307). These forest and grassland communities, as defined in the ECS (Ecological Classification System) in *Plan* Appendix A, form the ecological groups monitored through time. Through an evaluation of data obtained from internal reviews and surveys, as well as reports obtained from other state and federal sources, the Forest Service determines if the desired diversity and objectives for plant and animal communities (MI- management indicators, TES-threatened and endangered, and sensitive species) are being maintained.

Variability - Trends, as determined through monitoring, are based on one-to-five years or more of population change. Natural populations fluctuate through time; however, if five or more consecutive years of downward trends are documented, this trend would indicate a need for closer evaluation and possible change in management strategies.

Finding(s) - The majority of management indicators have indicated stable or increasing trends through the past five-to-ten years. With the exception of northern bobwhite quail and certain stream fishes which have been impacted range-wide, most other species' trends indicate stable or increasing populations (see Appendix A). Lake and reservoir fishes (such as largemouth bass) continue to improve with two additional bass over 13 pounds caught in 2006. The red-cockaded woodpecker population is at 301 active clusters, a new milestone for the NFGT.

In the past three years, increased emphasis has been directed at evaluating previous known plant sites, verifying location, documenting and evaluating status, and identifying protection and management needs. In addition, surveys in potential habitat have found a number of new locations for R8 TES and MIS. All new and relocated occurrences have been inventoried using a GPS (Global Positioning System) and added to the corporate database.

Recommendation(s) – Change needed. Continue population monitoring and evaluation to determine if any changes in monitoring strategy or management actions are needed. Cooperative work with other agencies should allow better understanding of range-wide declines in certain species.

(2) Habitat for Management Indicator Species (MIS)

Monitoring Item Description – Annual evaluation of forest habitat change is documented through levels of forest and grassland management actions such as prescribed fire, regeneration cutting and forest thinning. These activities are described in acres within forest compartments or allotments in the GIS (Geographic Information System) spatial database. This database, as well

as other USFS (U.S. Forest Service) database information, is updated regularly and evaluated annually. Changes in habitat will directly and indirectly affect management indicator species population trends.

Variability - Five years or more of undesirable trend in any management indicator species habitat would indicate a need for some change. Changes needed could include either modification of habitat described and desired for any particular species in question, or implementation of different management actions.

Finding(s) - Habitat for management indicator species is generally improving throughout the forests and grasslands. Increased prescribed fire efforts are revealing greater improvements in both the number of certain element occurrences and quality of each occurrence for fire-dependent plant species like Louisiana squarehead. Through an evaluation of GIS data and FSveg, communities such as the longleaf pine, shortleaf pine and tallgrass prairie are being restored and increasing. Most species habitat and trends appear to be stable or increasing (see Appendix A).

Recommendation(s) – Change needed. Continue population monitoring and evaluation to determine if any changes in monitoring strategy or management actions are needed. Consider increasing prescribe burning to benefit habitat for plants and other wildlife species such as wild turkey, bobwhite quail and RCW. Also continue cooperative work with other agencies.

(3) Population Trends of Management Indicators

Monitoring Item Description – Population trends of management indicator species are monitored through annual efforts and evaluated and reported on periodically to relate trends to habitat changes.

- Plants - Seasonal botanical surveys are conducted on units in appropriate habitat, based on forest-wide sampling strategies or to support project planning. Numbers of occurrences are tracked over time.
- Animals – Birds are monitored annually with point counts. Northern bobwhite are monitored on the National Grasslands through targeted annual surveys of sight, sound, or sign of targeted species in appropriate habitat.
- Fish – Periodic incidental records, annual netting or electrofishing sampling of water bodies occurs.

Variability - Five years or more of downward population trends would indicate a need for change.

Finding(s) – Most species' long-term trends appear to be stable or increasing (see Appendix A), with the exception of the wood thrush and Navasota ladies'-tresses. A 2006 downward estimate for yellow-breasted chat and pileated woodpecker will be evaluated closely to determine if any true trend is developing. The habitat for these species and especially the many fire-dependent species continues to improve, so the declines are likely due to: (1) sampling irregularity (chat and pileated woodpecker); and (2) range-wide considerations (wood thrush) or irregularity of flowering (Navasota ladies'-tresses).

Recommendation(s) – Change needed. Continue monitoring and coordination with other agencies for population monitoring and evaluation to determine if and what changes in survey – sampling strategy are needed to better evaluate the trends as localized or regional in scope.

c. Threatened, Endangered, and Sensitive Species

Monitoring Item Description – Surveys for each T&E and Sensitive Species known to reside on the forests or grasslands are conducted forest-wide and project based. Periodic surveys for some species, such as the American burying beetle that may have the potential to occur but have not been found to date, are conducted if conditions warrant or as indicated in the updated Appendix G Summary Table in the Forest *Plan* (see Appendix B). Through an evaluation of data obtained from these surveys, as well as reports obtained from other state and federal sources, a presence or absence determination can be made for potential species and a judgment can be made whether recovery objectives for resident T&E and Sensitive Species are being met.

Variability - Five years or more of downward population trends would indicate a need for change. Confirming presence of potential T&E and Sensitive Species would identify the need to manage habitat accordingly to facilitate population expansion.

Finding(s) - Most resident T&E and Sensitive Species populations are increasing, with the exception of the Navasota ladies' -tresses (a plant which is difficult to monitor due to flowering cycles that are cyclic and unpredictable). The RCW and bald eagle populations are at an all-time high, with increased sightings of Louisiana black bear (see Appendices A and B). Habitats for other sensitive species/management indicators appear to be stable.

Recommendation(s) – No change needed. Continue annual monitoring and periodic surveys for presence to determine if progress is being made towards recovery objectives.

Sub-Issue 2. Forest and Range Health

a. Air Quality

(1) General Forest Air Quality

Monitoring Item Description - Determine if NFGT management activities are being conducted to maintain air quality within appropriate standards. Ensure air quality control and compliance activities are being conducted in a manner consistent with all Federal, State, local standards or regulations and *Plan* guidelines.

Variability - Documented particulate matter levels in NFGT areas that reach or exceed the National Ambient Air Quality Standards (NAAQS) PM (particulate matter) 2.5 level during state or federal monitoring. If PM 2.5 levels are exceeded, reduce the size of prescribed burns or reduce the size of the fuels consumed (through mulching) until appropriate levels are met.

Finding(s) - In FY 06, the NFGT did not exceed the NAAQS PM 2.5 level. Of the thirteen counties in Texas that have NFGT lands, there is only one air quality monitoring station and it is located in Montgomery County. The air quality in Montgomery County, according to the Air Quality Index, was generally good (279 days). There were 79 days when the air quality was classified as moderate, with 6 days classified as unhealthy for sensitive groups. Only one day had air quality classified as unhealthy for the general population. There were 215 days where the major pollutant was ozone (O₃) and 1,250 days where the major pollutant was PM 2.5.

The NFGT coordinated with TCEQ (Texas Commission on Environmental Quality) on air quality monitoring issues. This is an ongoing process. Air quality was addressed during prescribed burning by operating within the burn plan perimeters for smoke dispersion.

Recommendation(s) – No change needed. However, the NFGT needs to work with CENRAP (Central Regional Air Planning Association) and also the TCEQ to have its emissions added to their emissions inventory to insure that activities meet general conformity requirements. Continue to review monitoring data from the EPA (Environmental Protection Agency) monitoring stations to determine if counties are out of compliance with air quality standards and ascertain whether any NFGT actions, especially prescribed burning, could be the cause (based on timing of the activity verses when air quality was found to be out of compliance).

(2) Class I and Class II Lands Air Quality

Monitoring Item Description - Determine if management activities are being conducted in a manner that protects the air quality on Class II lands. Currently there are no Class I Lands on the NFGT. The EPA lists six criteria pollutants and maximum concentration levels that should not be exceeded. These pollutants are carbon monoxide, nitrogen dioxide, ozone, sulfur dioxide, particulate matter and lead. Monitoring air quality at stations established in the state will indicate pollutant occurrences.

Variability - Air quality pollutant occurrences should be identified and investigated to determine their cause. If an occurrence is related to NFGT activities, appropriate actions should be taken.

Finding(s) - Based on a review of the EPA data, there was no indication of change in air quality on Class I and Class II lands during FY 06 and only one pollutant, ozone, had any exceedences in Montgomery County. This consisted of two exceedences for the 1-hour value and was probably due to emissions coming from the Houston/Galveston/Brazoria non-attainment area and not from any NFGT management activities.

Recommendation(s) – No change needed. Continue to monitor the air quality index and the emissions per county per year, as reported on EPA's website (<http://www.epa.gov/air/data>). [Note: This does not indicate how much of the emissions are from NFGT; it just shows if there is any change.]

b. Forest Pests

(1) Pine Beetles

Monitoring Item Description – Includes actions to protect forest health by reducing the potential impacts of expanding SPB (southern pine beetle) infestations in forest stands and minimizing the threat of other pine bark beetles. Protection will be accomplished through prevention (such as thinning stands with high SPB hazard ratings) and beetle population monitoring. All National Forests must monitor southern pine beetle population levels.

Variability - Reduction of high hazard rated areas should exceed 1,000 acres per year on the NFT (National Forests in Texas.)

Finding(s) – No SPB infestations were detected on the NFT in FY 06. The NFT participated in the spring southern pine beetle survey, and results from the survey predicted extremely low populations, as no SPB were captured. The number of the SPB insects, clerids and predators collected fell from the previous year. The NFT also participated in fall SPB trapping, a new program designed to provide early warning of SPB outbreaks. No SPB were collected in the fall. No detection fights were made due to the low level of SPB activity predicted.

Figure 7 is an aerial view of a SPB infestation (spot) illustrating trees in several age classes. Gray trees in background no longer contain beetles in any stage; red trees contain late developmental stages and beetles ready to emerge; lightly faded trees contain early developmental stages; and green trees in the foreground (at the edge of the spot) are being attacked.

Figure 7. Typical Start of a SPB Spot



Source: <http://www.barkbeetles.org/spb/spbbook/Index.html>

The forests thinned 1,715 acres of dense pine stands as part of their SPB prevention program. A total of 3,123 acres were thinned for multiple benefits, including SPB prevention. Many scattered pines were affected by the prolonged drought, and increased tree mortality due to the combined effects of the drought and *Ips* bark beetles occurred. No other major insect or disease problems or outbreaks occurred on the NFGT in FY 06.

Impacts of bark beetles in stands damaged by Hurricane Rita were monitored in FY 06, and the results presented in the publication “Forest Health Evaluation of Bark Beetle Activity in Areas Damaged by Hurricane Rita on the National Forests in Texas”. All downed and some of the leaning trees were infested by *Ips* bark beetles. Wood borers penetrated into the sapwood of the infested trees that were not salvaged quickly. Bark beetles did not attack the residual standing trees in affected stands.

Ten plots were established in FY 06 to track tree mortality through time. Six of the stands had been thinned recently, while the other four had not. Mortality will be checked twice annually. This long-term monitoring will help document impacts of *Ips* bark beetles.

Recommendation(s) – No change needed. Continue SPB monitoring and hazard reduction by thinning densely stocked pine stands in advance of the next outbreak.

(2) Non-Native Invasive Plants

Monitoring Item Description - Identify and protect forests and rangelands by preventing the introduction of NNIPS (non-native invasive plant species), controlling their spread and eradicating any known NNIPS from priority areas.

Variability - If significant growth occurs in areas of existing NNIPS or if new areas of NNIPS are identified that threaten forest or grassland ecosystems, recommendations for control or eradication will need to be developed and (once approved) implemented.

Finding(s) - In FY 06, 30 acres of *Hydrilla verticillata* were treated as part of an ongoing NNIPS control and eradication effort in Ratcliff Lake on the Davy Crockett NF. On the LBJ NG, 55 acres were treated for the noxious weed, *Sericea lespedeza* and 2 acres were treated in Unit 21 for a newly found infestation of *Tamarix ramosissima*, salt cedar. In addition, NNIPS surveys were conducted forest-wide. This survey focused on primary vectors for infestations such as utility rights-of-ways, special use sites, recreation sites, and road right-of-ways. Approximately 6,600 GPS (Global Positioning System) points were recorded as individual NNIPS infestations across the NFGT in acreages ranging from 0.001 acre (single tree) to 20 acres. An area encompassing more than 25,000 acres was visually surveyed. This information will be used in the forest-wide management plan for treating NNIPS that is currently being developed. Implementation of a NNIPS Management Strategy is expected to begin in FY 08.

Figure 8. Hydrilla



Raghavan Charudattan,
University of Florida
www.Invasive.org

Figure 9. Lespedeza



James H. Miller
USDA Forest Service
www.forestryimages.org

Figure 10. Salt Cedar



Steve Dewey,
Utah State University
www.forestryimages.org

Recommendation(s) – Change needed. Continue the development of a forest-wide NNIPS Management Strategy and begin implementation efforts.

Sub-Issue 3. Watershed Conditions

a. Soil and Water Conservation

Monitoring Item Description - Conduct periodic reviews/inspections of project areas and environmental documents to avoid permanent impairment of site productivity and ensure conservation of soil and water resources.

Variability - Appendix F of the *Plan* “Erosion and Sediment Coefficients” will be used during project planning and monitoring to assure the NFGT does not exceed allowable soil loss tolerance levels that would result in permanent impairment of site productivity. Texas Forest Service BMPs (Best Management Practices) inspection reports will be analyzed and if the overall inspection results fall below 90 percent, forest specialists will identify the reason and recommend corrective actions that need to be taken.

Finding(s) - No soil and water disturbances occurred that were identified by NFGT personnel as exceeding the soil loss tolerance levels set out in the *Plan*. In February 2006, TFS (Texas Forest Service) conducted a BMP compliance review on the Davy Crockett NF. The review concluded that overall compliance met the 90 percent variability target and passed in accordance to State Recommended BMPs. The NFGT has been cited as one of the “model” operations for other entities to study.

In the FY 05 report, a recommendation was made to identify all stream types (perennial, intermittent and ephemeral), and their expected flow in order to determine the proper drain structures needed for road maintenance contracts. Consultations between the new Soil Scientist and the Forest Engineer during FY 06 resulted in the determination that all necessary measurements, etc. are conducted by engineers during planning for road contracts. Therefore, there is no need to specifically identify all stream types across the forest. Necessary protections are already in place wherein each stream is evaluated on a case-by-case basis.

As part of the NFGT’s endeavors to protect soil and water resources in FY 06, the Caddo and LBJ NGs continued to implement an active Watershed Improvement Program. The objective of this program is to repair active soil erosion that is the result of weather and poor management activities that have existed for many years. Most of the initial damage predates the establishment of the unit. These accomplishments help the grasslands meet the intent of Section 319 of the Clean Water Act. Actions in FY 06 included the completion of 50 acres of watershed improvement in the Denton Creek Watershed and another 50 acres on the LBJ - Unit 9. This work included 1 grade stabilization structure, 2 dams, 3,850 feet of diversion terraces and 8 acres of gully shaping. Figure 11 shows an excellent stand of little bluestem grass; however, even this does not stop the four foot deep head cut and associated soil erosion.

Figure 11. Active Erosion on the LBJ National Grasslands



Photo by Gary Bible, USFS

Table 4 displays accomplishments on the Caddo/LBJ NGs for the past ten years.

Table 4. Caddo/LBJ Watershed Improvement Accomplishments

| Year | Acres Treated for Erosion Control | Grade Stabilization Structures | Feet of Terraces Constructed | Number of Gully Plugs Installed |
|-------------|--|---------------------------------------|-------------------------------------|--|
| 1997 | 49 | 5 | 3,080 | 0 |
| 1998 | 28 | 4 | 2,466 | 0 |
| 1999 | 49 | 11 | 4,410 | 0 |
| 2000 | * | 0 | 0 | 0 |
| 2001 | 58 | 1 | 3,004 | 8 |
| 2002 | 100 | 3 | 6,884 | 14 |
| 2003 | * | 0 | 0 | 0 |
| 2004 | 95 | 3 | 7,007 | 17 |
| 2005 | * | 0 | 0 | 0 |
| 2006 | 50 | 1 | 3,850 | 8 |

* No budget allocation received.

Figures 12 and 13 show how a large gully was shaped to stop the active soil erosion. In Figure 12, note that soil erosion cut under the fence leaving the posts hanging in the air. The area in Figure 13 was seeded and now supports a good stand of native grass.

Figure 12. Large Gully Before Treatment



Photo by Gary Bible, USFS

Figure 13. Large Gully After Treatment



Photo by Gary Bible, USFS

Recommendation(s) – Change needed. Continue to monitor projects, environmental documents and follow up on other requests made by districts to review areas to assure the *Plan's* Standards and Guidelines are being used to protect soil and water resources. Increase the amount of on-the-ground monitoring being performed by the Forest Soil Scientist/Watershed Specialist. Also request that the TFS increase the frequency of BMP compliance reviews on the NFGT.

b. Water Quality

Monitoring Item Description - Ensure vegetative manipulation prescriptions and other management actions on the NFGT provide the desired effects on water quality. Water quality will be monitored by routine sampling of the conductivity in streams.

Variability - Identify elevated conductivity levels during routine stream sampling. If conductivity levels reach above 200uS (micro siemens, this is the established unit of measure for conductivity), a forest specialist will investigate the cause and recommend appropriate action.

Finding(s) - There were no identified adverse soil and water occurrences from activities on NFGT lands or to impaired stream segments identified in FY 06. Today, the TCEQ is the primary agency responsible for water quality management in Texas, although it shares the responsibility with other state agencies such as the Texas Parks and Wildlife Department, the General Land Office and the Railroad Commission of Texas.

In FY 06, thirty sites were monitored for baseline data by sampling PH, conductivity and turbidity. To conduct a complete analysis of impacts, however, additional parameters need to be measured. This would require the purchase of additional equipment (which at this time the NFGT does not have the funds to purchase). Baseline monitoring will be continued at the current level of analysis.

Recommendation(s) – Change needed. Continue to monitor projects, environmental documents and follow up on other requests to review areas to assure the *Plan's* Standards and Guidelines are being met to protect water quality. Increase the amount of on-the-ground monitoring being performed by the Forest Soil Scientist/Watershed Specialist.

c. Revegetation of Temporary Roads

Monitoring Item Description - Ensure temporary roads are revegetated in accordance with standards set forth in the *Plan* and BMPs. Review Harvest Inspectors, Timber Sale Administrators and Minerals Operation Inspection Reports to assure timely revegetation of temporary roads occurs.

Variability - Best Management Practice inspections that fall below 90 percent compliance will be reviewed on the ground to identify changes needed to correct deficiencies. Harvest Inspectors, Timber Sale Administrators and Minerals Operation Inspection Reports are reviewed and non-compliance of revegetation of roads is corrected in a timely manner. If not corrected in a timely manner, actions against the operator will be taken.

Finding(s) - In February 2006, TFS conducted a BMP compliance review on the Davy Crockett NF. As part of their review, the agency monitors temporary roads for stabilization. The review concluded that overall compliance met the 90 percent variability target and passed in accordance to State Recommended BMPs. Also a review of reports from Harvest Inspectors, Timber Sale Administrators and Mineral Operation Inspectors indicated there were no known problems.

Recommendation(s) – No change needed. Continue temporary road revegetation efforts and monitoring procedures in accordance with *Plan* Standards and Guidelines as well as State Recommended BMPs.

Issue B. Sustainable Multiple Forest and Range Benefits

Sub-Issue 1. Outdoor Recreation Opportunities

a. Recreation Uses and Opportunities

Monitoring Item Description - Review recreation opportunities provided by the NFGT and compare them to what the public demands, considering what is feasible based on expected budgets and what is environmentally sustainable. The NFGT is expected to align its recreation program so that it is offering the public recreation opportunities that they desire (within the above parameters). This alignment is tracked annually.

Variability - Recreation construction, reconstruction or decommissioning performed on trails or developed/dispersed recreation areas must follow the NFGT's alignment philosophy. If monitoring identifies deviation from this philosophy, necessary changes must be made to bring the project back into alignment.

Finding(s) - In FY 06, trails data was loaded into the Infrastructure Application (INFRA) database, and trail condition surveys along with the trail bridge survey met protocols. The updating of this database is an annual and ongoing process. The Recreation Enhancement Act (REA) Fee Legislation (that replaced the Fee Demonstration Program) has been implemented. It has been an effective program, as 80 percent of the fees stay on the Forest where they are collected for maintenance improvement, 15 percent goes to the collection of fees, and 5 percent is returned to the Region for special projects and to pay for fee envelopes, etc.

Recommendation(s) – No change needed. Complete long-term plans that are being developed for NFGT recreation areas and trails since these plans will be used to guide future recreation work on the forest. These long-term plans are scheduled to be completed in FY 07 or FY 08.