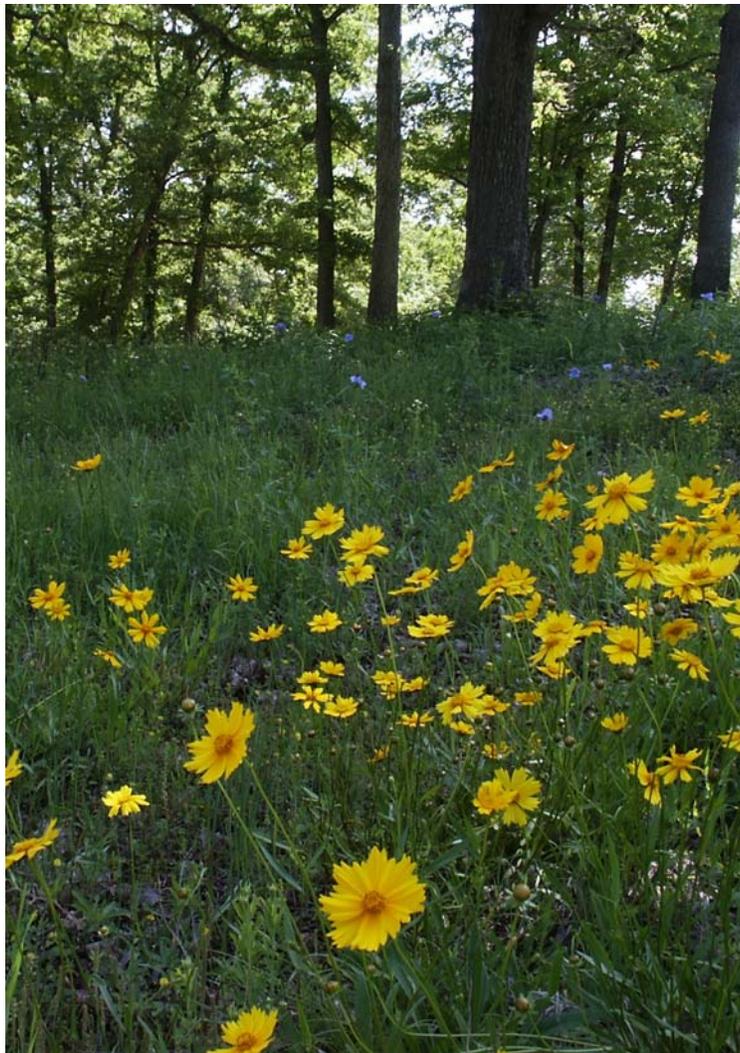


# Chapter 2

## The Alternatives

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Mark Twain  
National Forest

Cover image: Coreopsis in woodland

Photographer: Paul Nelson, MTNF

## Chapter 2

# The Alternatives

### Introduction

This environmental impact statement explores differences between a number of management alternatives for the Mark Twain National Forest. These were developed to provide a range of options for direction that forest management will take for the next 10 to 15 years. Each of these alternatives is a potential Forest Plan that could be implemented if selected.

This chapter discusses:

- How alternatives were developed;
- Features of each alternative, including the no-action alternative;
- How management areas are distributed for each alternative.
- How alternatives compare to each other;
- The Selected Alternative;
- Alternatives that were considered but eliminated from detailed study;

### Development of Alternatives

As explained in Chapter 1, this Forest Plan revision process was initiated by the need to change the 1986 Forest Plan due to changes in environmental conditions, changed circumstances, and societal uses and values. The core of this process is formulation of a Revised Forest Plan and a set of forest management alternatives for implementing the plan. Alternatives provide different scenarios for applying management prescriptions across the Mark Twain National Forest. The alternatives, outside of the No Action Alternative (Alternative 5) that maintains current management direction, do not vary in proposed forest-wide direction. They do vary by acreage allocated to each management prescription (see Table 4 and maps located in the map package.) Alternative 3 is the selected alternative for implementing the 2005 Forest Plan.

The 2005 Forest Plan first defines a set of goals, objectives, standards, and guidelines that provide forest-wide direction for managing resources on the Mark Twain National Forest. Forest-wide direction combines national and regional goals with goals, objectives, standards, and guidelines specific to the Mark Twain National Forest.

Forest goals are broad statements that describe overall conditions managers will strive to achieve. They are not directly measurable and there are no time frames for achieving them. In other words, goals describe ends to be achieved rather than means to those ends; they serve as vision statements. In contrast, objectives provide these means in the form of measurable steps to be taken to accomplish goals. Objectives are generally achieved by implementing projects or activities. However, objectives are not targets, which are a measure of annual outputs dependent upon budgets. Budget allocations may or may not correspond to areas that have been emphasized by the 2005 Forest Plan. A standard is defined as a course of action that must be followed, or a level of attainment that must be reached, to achieve forest goals. Adherence to standards is mandatory. Standards are used to assure that individual projects are in compliance with the Forest Plan and other legal mandates governing the Forest Service.

They should limit project-related activities, not compel or require them. Deviations from standards must be analyzed and documented in a Forest Plan Amendment. A guideline is a preferred or advisable course of action or level of attainment. Guidelines are designed to achieve desired conditions, or goals.

The 2005 Forest Plan also establishes additional direction for management prescriptions. Management prescriptions include a desired condition statement, standards, and guidelines in addition to Forest-wide standard and guidelines necessary for resource protection.

As required by NEPA regulations, alternatives have been developed using an interdisciplinary process. Public comments received during the scoping phase were combined with concerns raised by resource specialists and monitoring results to create revision topics, or significant issues. Five alternatives were then developed, each with a specific theme and set of management prescription allocations designed to match the theme.

Each alternative has been designed to respond to comments and revision topics in a different way, providing a range of possible management approaches from which to choose. In each alternative, this approach is conveyed by the alternative's theme, which emphasizes a particular issue or a group of compatible issues.

Each alternative stands alone as a potential Forest Plan. Alternatives do have many things in common, sharing essential goals, concepts, and policies that all national forests are directed to follow. How they differ from one to another is in the relative emphasis given to particular issues and concerns, which is reflected in management prescription allocations for each alternative.

Details of the alternatives are presented in this chapter. Alternative 3 was designated as the preferred alternative in the Draft Environmental Impact Statement. Following publication of the draft Revised Forest Plan and the Draft Environmental Impact Statement, there was a 90-day comment period. Comments received during the comment period were analyzed, and some changes were made to the goals, objectives, standards and guidelines in the Draft Revised Forest Plan. These changes have been incorporated into all the alternatives. In addition, a minor change was made to the preferred alternative regarding Recreation Opportunity Objectives for a specific area. The Regional Forester has identified Alternative 3, with changes, as the Selected Alternative.

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## **Changes between the Draft and Final Environmental Impact Statements**

The Forest Service received 1,807 individual responses (including letters, emails, and faxes) on the DEIS and draft Revised Forest Plan. These comments, shifts in agency direction, and correction of errors led to several changes in the draft Revised Forest Plan. The changes range from minor edits and clarifications to changes in the standards and guidelines and monitoring requirements. The following summary describes the changes to standards, guidelines and other areas of the 2005 Forest Plan.

Public comments and Agency review also identified the need for several improvements to the analysis and presentation of materials in the FEIS. As a result, editorial discrepancies, minor inconsistencies, or gaps in the presentation of information in the DEIS have been corrected for the FEIS. These changes are noted in the response to comments.

## Management Prescription 1.1 and 1.2

Standards prohibited the construction of wildlife ponds in Management Prescriptions 1.1 and 1.2. Concerns were raised about providing habitat for amphibians in these areas. The standard was changed to allow for the construction of wildlife ponds if a long-term species viability concern is demonstrated, and that concern cannot be addressed in another location.

Questions were raised about the absence of standards or guidelines regarding designation of old growth in Management Prescriptions 1.1 and 1.2. We added direction to clarify that old growth conditions should be provided, although there is no specific percentage to be designated old growth. This change helps explain that by restoring natural communities in these management areas and achieving the desired future conditions for the land, old growth characteristics will be reflected across the landscape in patterns and distributions they would have occurred naturally.

## Management Prescription 2.1

A standard requiring that activities in management prescription 2.1 be distributed to emulate historical conditions was removed. Part of the desired condition for MP 2.1 is that “natural communities are distributed similar to historical vegetation patterns.” The ID team determined that the proposed standard was redundant with the desired condition, did not add any clarity to permitted or restricted activities, and therefore did not meet the basic purpose of a standard. This change will streamline and better align the standards and guidelines with the theme, goals, and desired condition for MP 2.1, and with the analysis that was conducted in the EIS.

## Threatened and Endangered Species

Several changes to Forestwide standards and guidelines were made in response to comments made by the U. S. Fish and Wildlife Service. These modifications represent a strengthening and clarification of direction proposed in the Draft Revised Forest Plan, not a major shift in the management direction. The changes are:

- Added requirements to survey for the presence of mussels prior to in-stream work, and to modify projects if presence confirmed.
- Added standard to prohibit vehicle or equipment use in fens, unless needed to improve Hines Emerald Dragonfly habitat.
- Modified direction for Indiana bat maternity colonies. One change provides additional foraging habitat by strengthening designation criteria of maternity colony area and by specifying activities that are restricted within maternity colonies. A second change increases protection of roost trees by timing and activity restrictions around occupied roost trees.
- Added monitoring requirements for existing bat gates on caves.
- Added restrictions on prescribed burn timing near Indiana bat maternity colonies and near caves during swarming / dispersal periods.
- Prohibited core drilling in the 150 acre areas designated as old growth around gray or Indiana bat caves.

## Wildlife Habitat

We revised Table 2-2 to exclude specific direction regarding methods used for stocking of trout in certain cold water streams. This change is being made in response to comments from

the Missouri Department of Conservation (MDC) so that the 2005 Forest Plan is better aligned with MDC stocking that is currently occurring.

Direction regarding the provision for old growth and regeneration openings in management prescriptions 2.1, 6.1 and 6.2 was moved from standards and guidelines to goals and objectives. Because this direction does not describe permissions or limitations on activities, it does not function well as standards and guidelines. What it does is describe the desired future condition of these management areas. Moving this direction will ensure that it is used to help form the purpose and need for site-specific projects, and will provide more flexibility in placing these habitat conditions on the landscape to meet the needs of a variety of species.

We lowered the percentage of management areas that are desired as regeneration openings in management prescription 2.1 (from 11 – 20% to 8 – 15%) and 6.1.(from 3 - 5% to 1-5%). This change is made in response to public comment noting that the percentages were higher than those prescribed by comparable Management Prescriptions in the 1986 Forest Plan. In addition, the higher percentages did not take into account the contribution of early successional habitat from natural community restoration.

### **Lower Rock Creek Area**

The Draft Revised Plan proposed to change the Lower Rock Creek area from a semi-primitive non-motorized area (6.1 Management Prescription) to a restoration emphasis (1.2) with a semi-primitive motorized designation. The change between draft and final 2005 Forest Plan is that for a portion of the Lower Rock Creek 1.2 area, a standard that restricts motorized use has been added.

The Lower Rock Creek Area is of great interest to groups and local residents. There is disagreement over the appropriate management prescription for this area. Based on public comments, a standard was added prohibiting motorized use in all parts of the Lower Rock Creek Area, except Wolf Hollow. This change is designed to address the concerns through compromise and still meet important restoration of natural community objectives. The 2005 Plan direction will emphasize natural community restoration in this area, which is appropriate due to the ecological conditions. The plan direction will continue to restrict motorized access in the area, except for the Wolf Hollow area where there is occasional, seasonally-restricted use of an existing road for traditional hunting purposes.

### **Temporary Openings**

We changed the definition of a temporary opening in the forest-wide standards and guidelines for timber management to specify that the stand must be 15 feet high instead of 10 feet high. This change is in response to concerns that stands 10 feet high would still be perceived visually as an opening, and could lead to too many adjacent regeneration cuts.

### **Monitoring and Evaluation**

We changed monitoring requirements for Management indicator Species (MIS) to focus on the effects of management activities on habitat, rather than on species populations. Monitoring forest management impacts on MIS and other species can be accomplished in a variety of ways. We believe that monitoring of habitat will be a more reliable indicator of the effects of management actions on MIS as this monitors changes that are directly affected by actions on the Mark Twain National Forest. This change is consistent with the transition language in the 2005 Planning Rule (36 CFR 21914(f)).

## Editorial Corrections

Editorial changes were made to correct misspellings, formatting, or to clarify management direction. These corrections did not change the basic intent of that direction.

## Description of the Alternatives

### Elements shared by all alternatives

#### Laws, Regulations, Policies

All alternatives were designed to comply with applicable laws, regulations, and policies. All alternatives adhere to the concepts of multiple use and ecosystem management, although some alternatives achieve these concepts on varying levels.

#### Special Designations

A number of existing designations do not change by alternative:

- Current designated wilderness;
- Existing developed recreation sites;
- Current designated National Recreation Trails;
- Current designated Wild and Scenic Rivers; and
- Current designated Scenic Byways;
- Current designated State Natural Areas and Natural Landmarks.

#### Management Prescriptions

Several management prescriptions in the 2005 Forest Plan have not changed substantially from the 1986 Plan, and these prescriptions are included in all five alternatives. The allocation of lands to these management prescriptions is essentially the same as under the 1986 Forest Plan, with the exception of MP 6.2, which is greatly increased in Alternative 1. These management prescriptions are shown in Table 1 below.

**Table 1 - 1986 Forest Plan Management Prescriptions used in 2005 Forest Plan**

<b>MP #</b>	<b>Management Emphasis</b>
5.1	Designated Wilderness
6.1	Semi-primitive non-motorized dispersed recreation emphasis, with limited investments in management of natural vegetative communities
6.2	Semi-primitive motorized dispersed recreation experience emphasis, with limited investments in management of natural vegetative communities
6.3	Candidate areas for National River status
7.1	Developed recreation areas
8.1	Designated "special areas" other than Wilderness

### Elements shared by Alternatives 1 through 4

#### Revision Topic 1a - Lands suited to timber production

The following areas are removed from lands suitable for timber production in alternatives 1 through 4: old growth, the Seven Sensitive Areas, Riparian Management Zones, glade complexes, recreation areas, and protection areas for karst features.

## Special Designations

Roadless areas were inventoried and evaluated for their potential for Wilderness designation. Some of those areas adjacent to existing Wilderness, including Irish Wilderness-excluded lands, are recommended for study in alternatives 1 through 4.

A rivers inventory identified one additional river (Black River) with potential for inclusion in the Nation's Wild and Scenic River system.

## Goals, Objectives, Standards and Guidelines

Alternatives 1 through 4 share a set of basic Forest-wide goals and objectives and a set of standards and guidelines (see accompanying 2005 Forest Plan) that ensure protection of forest resources and comply with applicable laws.

Revision topics that are addressed through goals, objectives, standards and guidelines and are the same for Alternatives 1 through 4 are:

### **Revision Topic 1b - Even-aged and uneven-aged management**

Forest Plan standards and guidelines specifying where even-aged and uneven-aged management can be used were eliminated, thereby providing greater flexibility. Decisions regarding silvicultural system and methods to be used will be made based on project level analysis.

### **Revision Topic 2a – Oak decline and forest health**

Vegetation standards and guidelines reference use of the local historic land survey data for purposes of project inventory, vegetation mapping, and determining treatments appropriate to meeting desired conditions. Activities are distributed across the landscape to emulate the historical vegetation patterns and quantities of natural communities based on available information. Activities are designed to mimic ecosystem dynamics, patterns and disturbance processes to achieve desired conditions except where ecological recovery is unlikely or unfeasible.

### **Revision Topic 2b - Reforestation and Timber Stand Improvement**

Restrictions in management prescriptions on the type of reforestation and timber stand improvement were removed from the 2005 Forest Plan. This allows pine and oak reforestation and stand improvement in a wider variety of situations.

### **Revision Topic 2c – Wildlife habitat management**

Direction for the restoration and enhancement of natural communities was developed to provide landscape scale habitat for all species. Objectives and protective measures for specialized habitats such as old growth, early successional forest, caves, glades, seeps and fens, are provided.

### **Revision Topic 2d - Management Indicator Species**

The list of management indicator species was revised to focus on species most likely to provide an indication of the effects of management to natural communities considered most in need of restoration.

### **Revision Topic 3a - Prescribed fire**

Standards and guidelines have been developed for use of prescribed fire for restoration and enhancement of natural communities, and for hazardous fuels reduction. Objectives have also been developed to increase from current levels the number of acres prescribed burned.

**Revision Topic 3b - Wildland fire suppression**

Suppression response is based on a comprehensive dynamic risk assessment which identifies values at high risk and the appropriate management response. Areas of low risk are identified where a full range of responses are available, including wildland fire use to meet the Desired Condition. Direction is provided to identify Wildland Fire Management Units.

**Revision Topic 3c - Fuels management**

Forest Risk Assessment identifies areas on the Forest that are at high risk for wildfire. Hazardous fuels reduction treatments focus on community protection. Fire becomes a major component of ecosystem restoration, using a variety of prescriptions including natural fire to meet management objectives.

**Revision Topic 4b – Special Area allocations**

Identification of special areas, including Wilderness Study areas, and management for these areas is provided.

**Revision Topic 5 - Riparian Areas and Water Quality**

Riparian areas and aquatic ecosystems are defined based on landform, soils, hydrologic criteria and plant communities. Riparian Management Zones and Watershed Protection Zones are established to restore and maintain ecological function and processes of riparian areas, aquatic systems and water quality. Standards and guidelines are developed to protect water quality and ecological processes associated with karst terrain and karst features.

**Revision Topic 6 - Threatened, Endangered, and Sensitive Species Viability**

Management direction is provided for federally-listed species not previously addressed. Management for other federal and RFSS is refined and updated.

**Revision Topic 7a – Road density standards in management area prescriptions**

Road density standards are eliminated. ROS objectives of each management prescription will be used during project level analysis to determine how roads will be managed.

**Revision Topic 7b – “Woods Roads”**

The term “woods road” is eliminated. Those roads will be assigned agency standard maintenance levels.

**Revision Topic 7c - Forest Plan Transportation Map**

The Forest Plan Transportation map will be eliminated. The Forest Transportation Atlas will be used to maintain an inventory of roads on the Forest. Changes to the road system will be project level decisions.

**Revision Topic 7d - OHV and ATV use on the Forest**

Forest direction for OHV and ATV use is stated more clearly.

**Revision Topic 8 - Monitoring and Evaluation**

Strategy for monitoring and evaluation is revised to reflect ecosystem management and ecological sustainability concepts and approaches. Monitoring strategy focuses on information that (1) will enhance understanding of resource management issues; (2) is measurable and scientifically supported; and (3) is feasible given probable budgets.

## Management Prescriptions

An ecological approach views the landscape in the context of restoring forest health and ecological integrity for a greater portion of the MTNF rather than having separate assemblages of land allocations with different natural community or wildlife emphasis or standards. Many management prescription allocations did not take into account new information on biologically rich concentrations of globally distinct ecosystems and sensitive species.

Rather than add or augment more or different management prescriptions, the MTNF is combining seven separate management prescriptions (MP 2.1, 3.1, 3.2, 3.3, 3.4, 3.5, 4.1) into three (MP 1.1, 1.2 and 2.1) with an emphasis on ecosystem restoration (MP1.1), restoration and dispersed recreation in a semi-primitive motorized setting (MP 1.2) and enhancement of natural communities (MP 2.1). These new management prescriptions (MP) were created to reflect current practices, knowledge, and direction. These new management prescriptions are included in Alternatives 1 through 4.

**Table 2 - Management Prescriptions used only in Alternatives 1 through 4**

<b>MP #</b>	<b>Management Emphasis</b>
1.1	Restoration of natural communities while providing a roaded-natural recreation experience
1.2	Restoration of natural communities while providing semi-primitive, motorized, dispersed recreation experiences
2.1	General Forest - Management for multiple use resource objectives while allowing for enhancement of natural communities, improvement of forest health conditions, and roaded, natural recreation experiences

Management Prescriptions 1.1 and 1.2 are created as a strategic means of efficiently and effectively targeting the conservation of Missouri’s globally significant biodiversity (see Appendix D). The underlying concept is that a representative array of natural community/vegetation types will be restored and maintained by mimicking appropriate scales of historical natural disturbances. This should provide the range of structural habitat variations (in prairie, savanna, woodland, forest, glade and fen natural communities) in which plant and animal species have adapted and evolved.

## Elements that vary by Alternative

### Management Prescription Allocations

For each alternative, specific land areas of the Forest are allocated to each management prescription. Each alternative reflects a different combination of management prescription acreages. Management prescription allocations are shown on the maps of each alternative (see map package.) A listing of these acreages is provided in Table 4 of this chapter. Management prescriptions are defined in more detail in Chapter 3 of the accompanying 2005 Forest Plan.

### How alternatives are described

Each alternative is presented in the same format, with the following components:

- Background –Major issues to which the alternative responds.
- Theme – The relative degree of emphasis applied to different resources and concerns.

- Responses to revision topics or issues – Only those revision topics or issues that are addressed differently are included. Describes how the alternative is different based on the revision topics or issues.

The interdisciplinary team considered 5 different alternatives in detail. Other alternatives were considered but were determined to be inappropriate for further analysis. The reasons why they were not considered in detail are presented later in this chapter. Both groups of alternatives contribute to the NEPA requirement that a reasonable range of alternatives be considered.

Alternatives were not given names to keep the comparison of alternatives more objective and impartial. Expected outcomes and effects of the alternatives were analyzed and disclosed in this Final EIS.

## Alternatives Considered in Detail

### Alternative 1

#### Background

This alternative was designed to respond to those who want to see passive restoration principles implemented, less active management of forest resources, semi-primitive recreation emphasized over timber production, and commercial activities reduced or eliminated.

#### Theme

Emphasis is on minimizing direct human influence. Characteristics of the forest environment, such as vegetation structure and species, would be affected primarily by natural disturbance factors such as insects, disease, fire, and weather events. As a result, wildlife habitat would focus on mature forest, with fewer and smaller areas of early successional habitat. No commercial timber harvest would be allowed. Existing developed recreation areas would remain, but other recreation opportunities would emphasize dispersed recreation like backpacking, hunting, and floating in a semi-primitive, motorized environment. Management is focused on visitor safety, law enforcement, and other custodial elements.

#### Response to Revision Topics or Issues

##### Vegetation and Timber Management

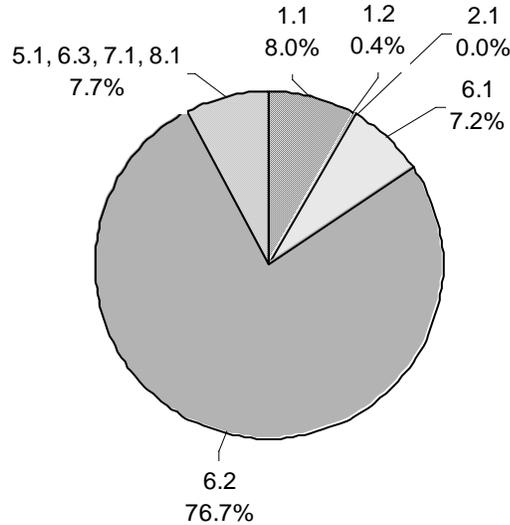
Since there would be no commercial harvest, there would be no suitable lands, and the Allowable Sale Quantity (ASQ) would be zero.

##### Ecological Sustainability and Ecosystem Health

Areas of Management Prescriptions 1.1 and 1.2 are included at the minimum size considered to be feasible for restoration of natural communities. Activities for restoration purposes, such as thinning, regeneration cuts, and prescribed burning, would be implemented only in the Management Prescription 1.1 and 1.2 areas. No commercial timber sales would be used. Trees would be dropped and left on the ground, unless doing so would create an unacceptable fire risk that could not be mitigated with follow-up hazardous fuels reduction treatments.

Areas of Management Prescriptions 1.1 and 1.2 account for approximately 8.5% of National Forest System (NFS) lands. Management Prescription areas for Wilderness (5.1), Semi-primitive, non-motorized recreation (6.1), candidate rivers (6.3), developed recreation areas

(7.1) and designated special areas (8.1) would remain essentially the same as under the 1986 Forest Plan. All other areas (almost 77%) would be allocated to Management Prescription 6.2, which would emphasize semi-primitive motorized dispersed recreation. The only management of vegetative communities would be to meet wildlife needs. There would be no lands allocated to Management Prescription 2.1



**Figure 1 - Alternative 1 Management Area Allocations**

**Wildlife Habitat Management**

Wildlife habitat management direction in management prescriptions other than 1.1 and 1.2 would include objectives for designation of old growth and minimum acreages of young forest (0-9 year age group). These would be implemented through non-commercial means, so trees would be cut and left on site.

**Fire Management**

Use of prescribed fire for restoration of ecosystems or providing wildlife habitat would be allowed only in Management Prescriptions 1.1 and 1.2. Prescribed fire and mechanical treatments could be used throughout the forest for purposes of hazardous fuels management.

**Alternative 2**

**Background**

This alternative was designed in response to those who want Forest management to emphasize maintaining composition, structure and dynamics of native forest ecosystems; aggressively restoring native terrestrial communities, such as glades, savannas, and shortleaf pine forests; and focus on restoration of ecosystems on large regional scales. This alternative provides emphasis and direction to encourage biodiversity and restore sustainable native ecosystems over timber sustainability.

**Theme**

Emphasis is on restoration of underrepresented terrestrial natural communities, while providing forest products and other multiple use benefits. Management activities, such as timber harvest and prescribed fire, would be used to influence ecological processes to attain

and sustain a high diversity of habitats and species. A wide range of wildlife habitat is provided by restoring and enhancing terrestrial natural communities, and emulating their historical distribution patterns. A broad range of settings for a variety of recreational opportunities are provided, including both developed recreation sites and areas for dispersed recreation like backpacking, hunting, floating, and off-road vehicle use.

## Response to Revision Topics or Issues

### Ecological Sustainability and Ecosystem Health

Areas of Management Prescriptions 1.1 and 1.2 are increased to include all of the “portfolio” areas identified in the Ozarks Ecoregional Conservation Assessment (The Nature Conservancy 2003). “Portfolio areas” are designed to incorporate areas with high concentrations of Missouri’s globally significant biodiversity.

### Management Areas

Areas of Management Prescriptions 1.1 and 1.2 make up over 44% of NFS lands. Management Prescription areas for Wilderness (5.1), Semi-primitive non-motorized recreation (6.1), semi-primitive motorized recreation (6.2), candidate rivers (6.3), developed recreation areas (7.1) and designated special areas (8.1) would remain essentially the same as under the 1986 Forest Plan. All other areas, approximately 31% of NFS lands, would be allocated to Management Prescription 2.1.

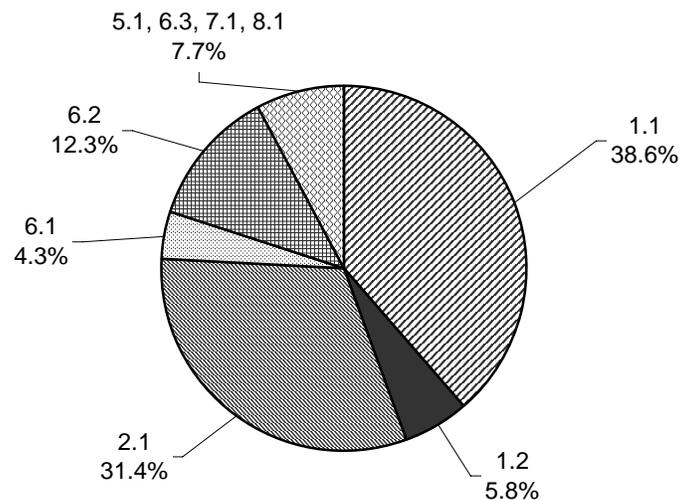


Figure 2 - Alternative 2 Management Area Allocations

## Alternative 3 – Selected Alternative

### Background

This alternative was designed in response to those who want to see a balance between restoration of natural communities and production of traditional forest commodities.

## Theme

Emphasis is on improvement of forest health conditions, production of forest products and other multiple use benefits, and enhancement of terrestrial natural communities. Restoration of terrestrial natural communities is focused in areas that are identified as biologically rich. Management activities, such as timber harvest and prescribed fire, are used to mimic ecological processes to attain and sustain a high diversity of habitats and species. A wide range of wildlife habitat is provided by restoring and enhancing terrestrial natural communities, and emulating their historical distribution patterns. A broad range settings for a variety of recreational opportunities are provided, including both developed recreation sites and areas for dispersed recreation like backpacking, hunting, floating, and off-road vehicle use.

## Response to Revision Topics or Issues

### Ecological Sustainability and Ecosystem Health

The size of areas allocated to Management Prescriptions 1.1 and 1.2 are between those of Alternatives 2 and Alternatives 1&4.

### Management Areas

Areas of Management Prescriptions 1.1 and 1.2 make up about 29% of NFS lands. Management Prescription areas for Wilderness (5.1), Semi-primitive, non-motorized recreation (6.1), semi-primitive, motorized recreation (6.2), candidate rivers (6.3), developed recreation areas (7.1) and designated special areas (8.1) would remain essentially the same as under the 1986 Forest Plan. All other areas, almost 45% of NFS lands, would be allocated to Management Prescription 2.1.

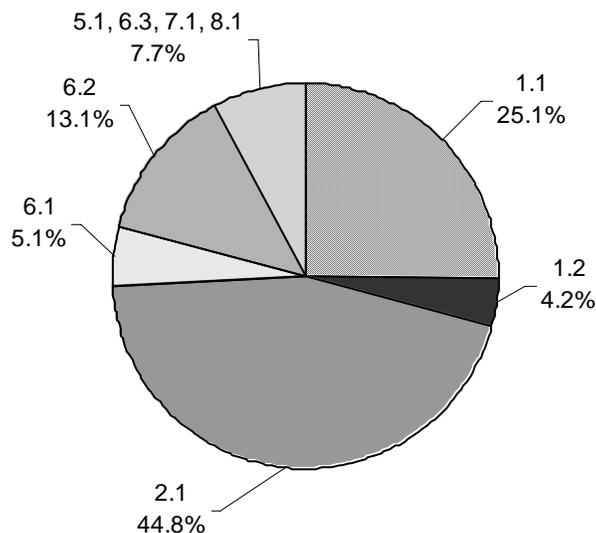


Figure 3 - Alternative 3 Management Area Allocations

## Alternative 4

### Background

This alternative was designed in response to those who want to see the use of traditional forest management and production of forest commodities emphasized over restoration of natural communities.

### Theme

Emphasis is on ecosystem enhancement while providing utilization of forest resources. Multiple use management is emphasized for a majority of the Forest. Timber and mineral extraction, and other activities such as recreation are likely to influence ecological processes. A wide range of wildlife habitat is provided by emphasizing achievement of early successional and old growth habitat objectives, as well as protection of special habitats. A broad range of settings for a variety of recreational opportunities are provided including both developed recreation sites and areas for dispersed recreation like backpacking, hunting, floating, and off-road vehicle use.

### Response to Revision Topics or Issues

#### Ecological Sustainability and Ecosystem Health

Areas of Management Prescriptions 1.1 and 1.2 are the same as in Alternative 1, which is the minimum size considered to be feasible for restoration of natural communities.

#### Management Areas

Areas of Management Prescriptions 1.1 and 1.2 make up 8.4% of NFS lands. Management Prescription areas for Wilderness (5.1), Semi-primitive non-motorized recreation (6.1), semi-primitive motorized recreation (6.2), candidate rivers (6.3), developed recreation areas (7.1) and designated special areas (8.1) would remain essentially the same as under the 1986 Forest Plan. All other areas, 62% of NFS lands, would be allocated to Management Prescription 2.1.

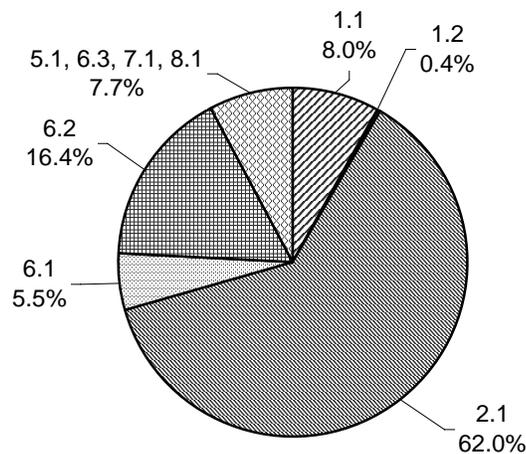


Figure 4 - Alternative 4 Management Area Allocations

## Alternative 5 – No Action

### Background

Alternative 5, the no-action alternative, reflects current Forest-wide direction. It meets the NEPA requirement (36 CFR 219.12(f)(7)) that a no-action alternative be considered. ‘No action’ means that current management allocations, activities, and management direction found in the existing Forest Plan, as amended, would continue. Output levels have been recalculated for this alternative to comply with new information, in particular, new scientific and inventory data.

### Theme

The 1986 Forest Plan gives strong emphasis to wildlife habitat development; particularly unique or specialized habitats such as caves, springs, seeps, fens, riparian areas, glades and fishless ponds. Timber management is the primary tool for reaching desired vegetative conditions, wildlife habitat objectives, and providing timber products for local industrial and individual needs. The Plan provides a range of settings for a variety of recreational opportunities including both developed recreation sites and areas for dispersed recreation like backpacking, hunting, floating, and off-road vehicle use.

### Response to Revision Topics or Issues

Because this alternative does not incorporate the 2005 Forest Plan, it responds to all the revision topics differently than do Alternatives 1 through 4. Therefore, each of the revision topics is discussed here, to highlight the differences between the direction in the 1986 Forest Plan and the 2005 Forest Plan.

#### **Vegetation and Timber Management**

Uneven-aged management is required on wet, mesic bottomlands (ELTs 1-6, 39, 56, 59, 61-62), on Cedar Creek Ranger District, and in the Seven Sensitive Areas; it is allowed on ELTs 7 and 18.

#### **Ecological Sustainability and Ecosystem Health**

There are no areas of Management Prescriptions 1.1 and 1.2, and no emphasis on natural community restoration. While natural communities are mentioned in the plan, there is no clear direction to consider their spatial distribution or structural components in project planning. Insect and disease problems are treated diagnostically, not proactively. Artificial reforestation (pine planting) is allowed only in MP 4.1 and 4.2. There are restrictions on release and/or pre-commercial thinning in certain management prescriptions. Wildlife habitat objectives are defined by age-class distribution; those objectives vary by management prescription and landtype association. Existing lists of management indicator species emphasizes species of interest to the public, including both species that are hunted and those that are not. Information gained through monitoring population trends suggests that many of these species do not really reflect changes in habitat composition and quality.

#### **Fire Management**

While the use of prescribed burning is not precluded, there is little direction regarding the use of prescribed fire to meet Forest Plan objectives. Risk assigned to each management area is not based on site specific risk information, and does not allow a variety of suppression responses such as wildland fire use. There is no direction to initiate wildland fire management units.

### Riparian Areas and Water Quality

Little to no management activities are allowed in riparian areas. Riparian areas are delineated based on frequently flooded and occasionally flooded areas. Most protection is based on use of filter strips prescribed along streams. Riparian areas, caves and springs are protected as specialized wildlife habitats.

### Management Areas

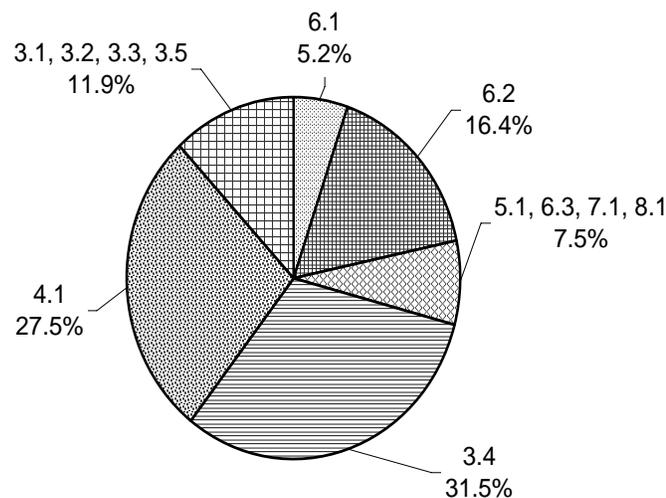
There are seven management prescriptions from the 1986 Forest Plan that are included only in Alternative 5. These prescriptions are:

**Table 3 - Management Prescriptions used only in Alternative 5**

MP #	Management Emphasis
3.1	Management of natural vegetative communities and their successional stages to produce moderate resource outputs from a managed forest environment.
3.2	Intensive management of hardwood species capable of yielding high value products.
3.3	Grassland management for the production of cattle
3.4	Forest management which emphasizes wildlife habitat diversity
3.5	Protection for Indiana bats and their habitat in and around hibernacula and known sites of reproductively active females
4.1	Management of shortleaf pine
4.2	Management for production of sawtimber-sized eastern redcedar

Four of these management prescriptions emphasize specific species or types of vegetation (high quality hardwoods; grasslands; shortleaf pine; and eastern redcedar.) There are no prescriptions that emphasize restoration of natural communities.

Management Prescription areas for Wilderness (5.1), Semi-primitive, non-motorized recreation (6.1), candidate rivers (6.3), developed recreation areas (7.1) and designated special areas (8.1) are essentially the same as for the other alternatives. Almost a third of NFS lands are allocated to Management Prescription 3.4, which emphasizes wildlife habitat defined by age class distributions. Another third of NFS lands are allocated to Management Prescription 4.1, which emphasizes shortleaf pine management. There would be no lands allocated to Management Prescriptions 1.1, 1.2, or 2.1.



**Figure 5 - Alternative 5 Management Area Allocations**

## **Alternatives Considered but Eliminated from Detailed Study**

The following alternatives were considered in the analysis, but were eliminated from further detailed study.

### **An alternative considering recommendation of all Inventoried Roadless Areas mapped in the Roadless Area Conservation Rule Final Environmental Statement as Wilderness Study Areas**

An alternative including all five Roadless Areas mapped in the Roadless Area Conservation Rule Final Environmental Impact Statement as potential Wilderness Study Areas was considered and eliminated from detailed study.

The 2001 Roadless Rule calls for analysis of each of the RARE II areas not already designated as Wilderness during Forest Plan revision. Part of that analysis includes identification of areas that have been “substantially altered” by road construction and subsequent timber harvest.

A new Mark Twain National Forest roadless area inventory, The Forest Roadless Area Inventory and Wilderness Evaluation, was begun in 2002 and the report compiled in 2004. All five RACR inventoried areas were considered in that analysis as well as the rest of the land base in the Forest. Appendix C in this document describes the process used and displays results of the analysis.

Using the 2004 Forest Roadless Area Inventory and Wilderness Evaluation, the Forest concluded that an alternative allocating all five areas as potential Wilderness Study Areas should be eliminated from detailed study. Only one of the inventoried RACR areas, the Irish Wilderness Excluded Lands, was included as a potential Wilderness Study Area in alternatives considered in detail. When applied in 2004, the other four inventoried RACR areas did not meet minimum Roadless Inventory and Wilderness evaluation criteria, due to road management or influences from private lands. Therefore, the interdisciplinary team did not believe this to be a reasonable alternative.

The 2004 report identified eleven other potential Wilderness Study Areas in that are included in alternatives considered in detail. All of these areas are adjacent to one of five existing Wilderness areas

All the areas formerly identified as RARE II roadless areas and mapped in the Roadless Area Conservation Rule Final Environmental Statement, with the exception of the Irish Wilderness Excluded Lands, have been assigned to management areas other than potential Wilderness Study Areas in alternatives considered in detail. More detail on treatment of RACR areas in alternatives is included in Appendix C and the planning record.

### **An Alternative(s) providing off-road, off-trail cross-country use of motorized vehicles by changing the Forest policy of “closed unless posted open.”**

The current plan restricts off-road vehicle (ORV) use to designated trails or use areas. The Forest Plan allows for the development and designation of additional trails and use areas. During the comment period for the Notice of Intent a number of respondents asked that the current Forest policy be changed and allow cross-country use by ORVs.

Off-road vehicles may use Forest Service classified roads (system roads), if the vehicle complies with State law. The Forest Plan considers all unclassified roads to be closed (whether or not there is a physical closure) and therefore off-limits to all motorized vehicle use. The Forest Supervisor’s closure order for roads, however, seems to restrict use only on

those roads that are gated, bermed, or signed closed. OHV users have expressed confusion regarding which roads they are allowed to use, as have forest managers.

Extensive Forest Service experience with OHVs (<http://www.fs.fed.us/projects/four-threats/facts/unmanaged-recreation.shtml>) indicates that “open unless posted closed” policies frequently lead to environmental damage. The interdisciplinary team determined that an alternative allowing unrestricted use of OHVs would not meet the purpose and need, specifically the need to provide better protection for riparian areas and water quality. Furthermore, potential impacts of proposals for OHV use are best assessed at a site-specific level that is outside the scope of decisions made in a Forest Plan, making this alternative impractical. Such an analysis is underway. For additional information on this project, see <http://www.fs.fed.us/r9/forests/marktwain/projects/projects/40401/index.htm>. In the Plan revision, we have concentrated on clarifying the existing direction for OHVs.

### **An alternative(s) to restrict or prohibit mineral exploration and development within the Forest or within a specific area, such as the Eleven Point River.**

There is a high level of interest and widely differing opinions about the mining and processing of lead in Missouri. The responsibility of the Forest Service in regards to mining is limited to the surface activities, primarily those associated with exploration for minerals. The Bureau of Land Management has responsibility and authority over federally owned minerals (including those lying under National Forest System lands).

Currently research is being conducted in Missouri by the U.S. Geological Service to determine the effects of mineral exploration and development on National Forest lands. Until this research is completed and scientific data specific to the Ozark ecosystems are available, it is impractical to consider an alternative that would drastically change management direction for the minerals program.

Under all alternatives the Forest Plan contains appropriate and adequate direction in regards to the surface activities associated with mining that occur on the Mark Twain National Forest. The goals established in the Forest Plan for minerals management are to provide for mineral prospecting and mineral development while complementing other resource management objectives. Management direction is provided to protect soil, water, wildlife, scenery and other resources.

### **An Alternative(s) where the Standards and Guidelines for resource management are different, either more or less restrictive.**

Standards and guidelines are permissions and limitations needed to achieve the goals and objectives of the plan. They are essentially mitigation measures that minimize or negate the effects of a management action or land use. Standards and guidelines provide the baseline direction needed to protect forest resources while providing a variety of goods and services to the public. The standards and guidelines used in the alternatives were designed by the interdisciplinary team to provide needed protection and to meet the minimum management requirements established in the 1982 planning regulations. The interdisciplinary team used the best available technical and scientific information in developing the standards and guidelines.

Comparing alternatives with differing protection measures would be impractical. Therefore, it was determined that the same standards and guidelines would be used in all alternatives (with the exception of Alternative 5, No Action) to provide a baseline level of comparison. In addition, providing less restrictive standards and guidelines would not adequately protect the resources, and therefore would not meet the purpose and need for revision. Because the

standards and guidelines were designed specifically to provide needed and adequate protection for the resource, more restrictive standards and guidelines would only restrict management activities without any evidence that additional protection would be provided.

**An Alternative(s) that includes each of the principles and criteria from the “Citizens’ Call for Ecological Forest Restoration: Forest Restoration Principles and Criteria” (Citizens’ Call) as standards in the revised Forest Plan**

While many of the criteria listed under the Ecological Forest Restoration Principles are aligned with the methods used to development of the Forest Plan, they are not appropriate standards. Standards and guidelines are permissions or limitations that apply specifically to on the ground implementation of management activities. As stated on page 6 of the document, the Citizen’s Call “... is proposed as a national policy statement to guide sound ecological restoration policy and projects. These Restoration Principles seek to articulate a collective vision of forest restoration....” It is clear that the principles and criteria were designed for use in developing policy, programmatic direction and for guiding project planning. They were not designed to provide direction for on the ground implementation, and therefore they are not practical or effective as Forest Plan standards and guidelines.

Many of the principles and criteria identified in the Citizens’ Call, modified to adapt to Midwestern ecosystems, are the same as those the Forest Service used when developing the proposed action and alternatives for the Forest Plan revision. Appendix A (Terrestrial Natural Communities) of the 2005 Forest Plan and Appendix D (Sustainability through Ecosystem Restoration) of the FEIS describe how these principles were used to develop the 2005 Forest Plan and allocate lands to the different management prescriptions.

We believe that Alternatives 1-4 embody most of the principles espoused by the Citizens’ Call. Alternative 1, in particular, “was designed to respond to those who want to see passive restoration principles implemented” (Final EIS page 2-8). In this alternative, there is no commercial harvest and almost 77% of the Forest is designated as Management Prescription 6.2, emphasizing semi-primitive recreation with little to no active management activities.

Two of the Principles (Ecological Economics Core Principle and Communities and Workforce Core Principle) deal with processes that are not part of decisions made in the Forest Plan, such as agency funding mechanism, contracting, restoration on private lands, tax incentives, community development, job development and training, cooperation among communities, government and interest groups, and participation by the public in decision making processes. While the Forest Service agrees with and operates in accordance with many of the criteria listed under these Core Principles, they are not part of the six decisions made in Forest Plans. Therefore, an alternative that incorporates the principles and criteria from the Citizen’s Call as standards and guidelines is impractical, does not meet the purpose and need, and was not analyzed in detail.

## Comparison of Alternatives

### Comparison of Alternatives by acres allocated to management prescriptions

**Table 4 - Management Prescription Allocations for All Alternatives**

	Management Prescription	ROS	Alt1	Alt2	Alt3	Alt4	Alt5
1.1	Restoration of natural communities	RN	120,400	576,900	376,200	120,400	N/A
1.2	Restoration of natural communities	SPM	5,400	86,900	62,200	5,400	N/A
2.1	General Forest - Management for multiple use resource objectives while allowing for enhancement of natural communities, improvement of forest health conditions	RN	0	469,500	670,100	927,800	N/A
3.1	Management of natural vegetative communities and their successional stages to produce moderate resource outputs from a managed forest environment.	RN	N/A	N/A	N/A	N/A	13,600
3.2	Intensive management of hardwood species capable of yielding high value products.	RN	N/A	N/A	N/A	N/A	74,100
3.3	Grassland management for the production of cattle	R	N/A	N/A	N/A	N/A	13,700
3.4	Forest management which emphasizes wildlife habitat diversity	RN	N/A	N/A	N/A	N/A	470,600
3.5	Protection for Indiana bats and their habitat in and around hibernacula and known sites of reproductively active females	SPM	N/A	N/A	N/A	N/A	76,400
4.1	Management of shortleaf pine	RN	N/A	N/A	N/A	N/A	411,000
4.2	Management for production of sawtimber-sized eastern redcedar	R	N/A	N/A	N/A	N/A	0
5.1	Designated Wilderness	P	64,100	64,100	64,100	64,100	64,100
6.1	Semi-primitive dispersed recreation emphasis, with limited investments in management of natural vegetative communities	SPNM	108,400	64,600	76,300	81,900	78,500
6.2	Semi-primitive dispersed recreation experience emphasis, with limited investments in management of natural vegetative communities	SPM	1,147,000	183,300	196,400	245,700	245,300
6.3	Candidate areas for National River status	SPM/RN	17,200	17,200	17,200	17,200	17,300
7.1	Developed recreation areas	R	3,000	3,000	3,000	3,000	3,000
8.1	Designated "special areas" other than Wilderness	RN	30,600	30,600	30,600	30,600	28,500
	<b>Total</b>		<b>1,496,100</b>	<b>1,496,100</b>	<b>1,496,100</b>	<b>1,496,100</b>	<b>1,496,100</b>

*\*Note: Acres rounded to the nearest 100*

## Managment Prescription Allocations

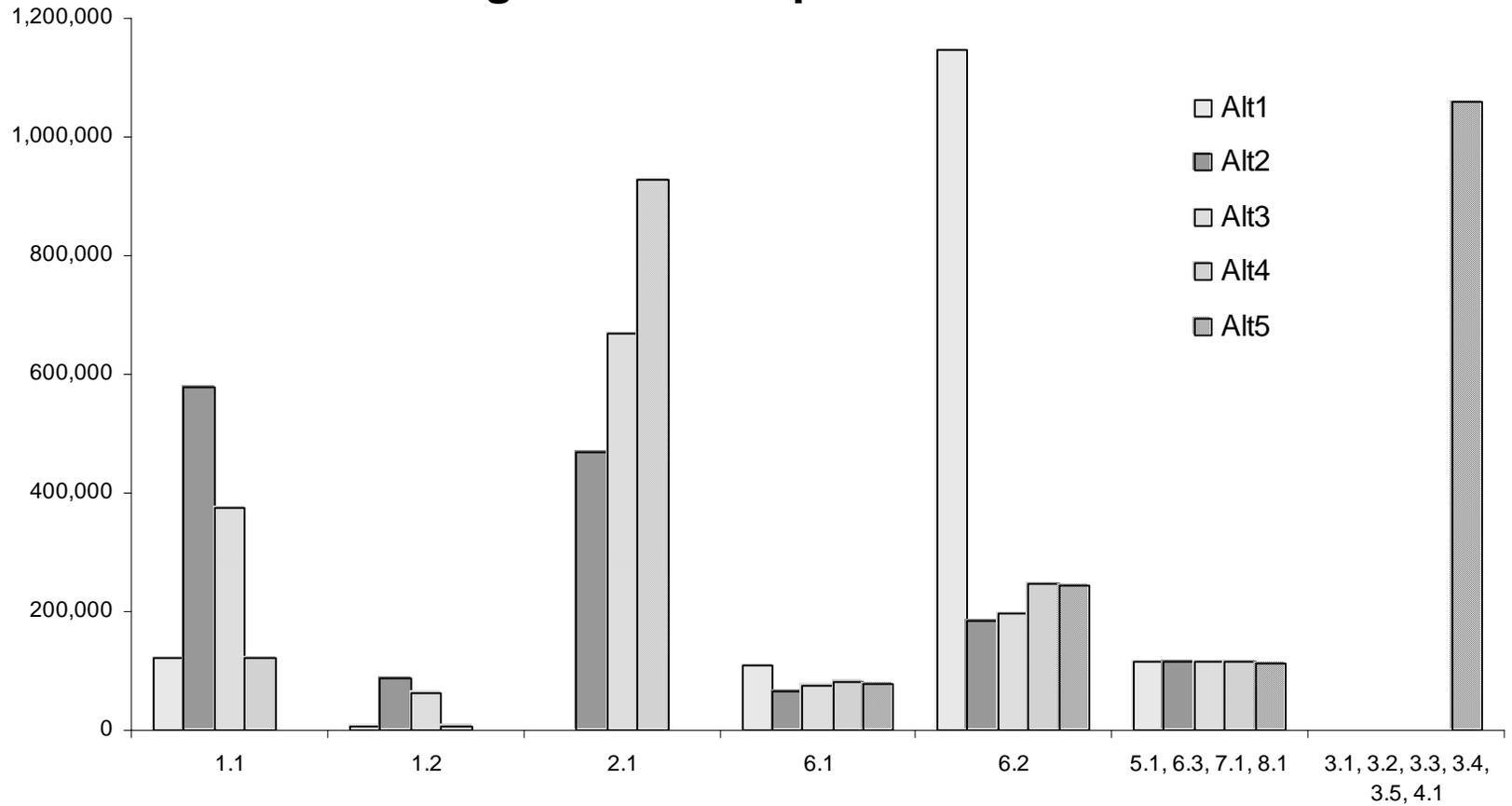


Figure 6 - Comparison of Management Prescription Allocations

## Comparison of Alternatives by Key Indicators

**Table 5 – Comparison of Alternatives by Key Indicators**

Key Indicator	Units	Current Condition	Alternative				
			1	2	3	4	5 No Action
<b>Issue 1 – Timber Supply.</b>							
Average Annual Allowable Sale Quantity (ASQ)	MMBF/year	49*	0	99	103	105	105
Sawtimber Portion (1 <sup>st</sup> Decade)	MMBF/year	38*	0	38.5	43.5	47.5	50
<b>Issue 2 – Ecosystem Sustainability and Ecosystem Health</b>							
Ground cover meeting desired condition for savanna, woodland and glade	Ac/Decade	26,000	35,600	185,500	122,800	35,600	30,000
Acres treated to move towards natural community type	Ac/Decade	<500	17,800	93,300	61,000	17,800	13,000
Acres Burned	Ac/Decade	30,000	73,000	383,000	250,000	73,000	125,000
Acres Thinned	Ac/Decade	<3,000	26,300	143,500	94,500	27,900	<15,000
<b>Issue 3 – Wildlife Habitat Management</b>							
OG Natural Community Types Treated in 1 <sup>st</sup> decade (MP 1.1 and 1.2 only)	Range of Acres	n/a	24,200 to 37,200	125,900 to 193,900	83,400 to 128,400	24,200 to 37,200	0
Natural Community Old Growth in 50 years (MP 1.1 and 1.2 only)	Acres	n/a	5,400	36,700	24,500	12,100	<5,000
Natural Community Old Growth in 100 years (MP 1.1 and 1.2 only)	Acres	n/a	10,800	73,500	49,000	24,200	< 10,000
Early Successional habitat (first decade)	Percent of Forest	2.5%	0.6%	7.3%	7.5%	7.8%	7.5%
Management Indicator community trends	Trends		Slight increase in MP 1.1 and 1.2; Decrease on 77% of Forest	Increase in quantity and quality	Increase in quantity and quality	Slight increase in MP 1.1 and 1.2	No significant change

Key Indicator	Units	Current Condition	Alternative				
			1	2	3	4	5 No Action
<b>Issue 4 – Fire Management</b>							
Acres treated to progress toward Condition Class 1	% of total available Acres	0.07	0.51	0.59	0.57	0.54	0.57
Area treated with Prescribed Fire	Acres/Year	<17,000	61,630	72,420	68,800	63,700	59,320
<b>Issue 5 – Economic Sustainability of Local Communities</b>							
Potential Jobs as result of Forest Management	Number of jobs	4,795	4,563	4,951	4,990	5,081	5,097
Potential Labor Income as result of Forest Management	Millions of dollars	168.2	160.7	174.6	175.5	177.8	178.1
Payments to counties based on 25% funds	Millions of dollars	1.4	1.0	2.2	2.3	2.3	2.4
Area in Semi-primitive management	Percent of Forest	34%	87%	25%	25%	29%	26%

\*Average annual timber sold, 1986 - 2003

### Comparison of Alternatives by Resource Indicators

Table 6 - Comparison of Alternatives by Resource Indicators

Key Indicator	Units	Current Condition	Alternative				
			1	2	3	4	5 No Action
<b>Watershed conditions and riparian and aquatic area functioning.</b>							
Total allotment acres of riparian open to grazing	Acres	3,315	1,050	1,780	1,780	1,770	0
Management intensity on sensitive soils	Relativity	Low	Low	Medium	Medium	Medium	Medium-high
Acres potentially moved toward the DC for riparian	Acres	0	12,330	31,300	24,900	12,330	0
Acres in riparian or watercourse management	Acres	65,000	84,500	84,500	84,500	84,500	65,000
<b>Range Management</b>							
Acres of existing allotments available for continued use	Acres	52,092	7,803	10,153	10,820	11,384	20,640
Animal Unit Months supported	AUM	26,635	10,036	22,660	23,102	22,925	26,635

## Comparison of Alternatives by Effects on Resources

**Table 7 - Comparison of Alternatives by Effects on Resources or Programs**

Resource	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Timber Production and Supply	No commercial timber harvest allowed. An estimated 25 MMBF would be cut and left on the ground to accomplish ecosystem restoration activities in MP 1.1 & 1.2, and to meet early successional habitat needs in 6.2. Overstocked conditions would result in stands with smaller trees and more susceptible to insect and disease.	Commercial timber harvest allowed. Has the largest allocation of land in MP 1.1 & 1.2, which would influence the amount and type of timber harvest accomplished. Most harvest would be thinning producing industrial roundwood products. Tree planting is allowed along with timber stand improvement activities to enhance conditions of natural communities.	Commercial timber harvest allowed. Most harvest would be thinning producing industrial roundwood products. Tree planting is allowed along with timber stand improvement activities to enhance conditions of natural communities.	Commercial timber harvest allowed. Has less land allocated to MP 1.1 and 1.2 than Alternatives 2 or 3. More harvests would be for regeneration producing more sawtimber products due to shorter rotation ages. Tree planting is allowed along with timber stand improvement activities to enhance conditions of natural communities.	Commercial timber harvest allowed. Most harvest would be regeneration harvest producing hardwood sawtimber products with more pine trees harvested due to shorter rotation ages. Natural regeneration of trees is emphasized. Some timber stand improvement activities would not be allowed in some portions of the Forest.
Ecological Sustainability and Ecosystem Health	Ecosystem restoration and enhancement allowed only in MP 1.1 & 1.2, and would be accomplished by using mechanical treatments and prescribed fire. An increase in shade and the buildup of leaf litter would reduce current species diversity in most of the Forest.	Timber harvest, along with the use of prescribed fire, would move areas toward more open forest and woodlands. Has the largest allocation of land in MP 1.1 & 1.2, allowing more opportunities for restoration and enhancement of ecosystems.	Timber harvest, along with the use of prescribed fire, would move areas toward more open forest and woodlands. A large variety of management activities would be available to use for restoration and enhancement of ecosystems.	Timber harvest, along with the use of prescribed fire, would move areas toward more open forest and woodlands. Land Allocations would result in smaller scale restoration of open forested natural communities with timber harvest and prescribed fire.	No lands allocated specifically for large scale restoration of natural communities; the least number of acres managed for more open forestland. The forest would look much the same as it does today with dense forested and overstocked lands. Fewer management activities could be used to restore or enhance natural communities.

<b>Resource</b>	<b>Alternative 1</b>	<b>Alternative 2</b>	<b>Alternative 3</b>	<b>Alternative 4</b>	<b>Alternative 5</b>
Wildlife Habitat Management	High chance that Bachman's sparrow would be extirpated from Missouri. More MIS, TES, RFSS and other species of concern negatively affected by lack of management and lack of early successional habitats.	High likelihood that all MIS, TES, RFSS, and other species of concern remain viable and are distributed in historical patterns.	High likelihood that all MIS, TES, RFSS, and other species of concern remain viable and are distributed in historical patterns.	Good likelihood that all MIS, TES, RFSS, and other species of concern remain viable and are distributed in historical patterns.	Good likelihood that all MIS, TES, RFSS, and other species of concern remain viable and are distributed in historical patterns.
Fire and Fuels Management	Fuels management would only be accomplished without removal of timber products, using mechanical treatments and prescribed fire. Less than five percent of the forest would be treated specifically to move from fire regime condition class 3 to 1. Without removal of fallen trees, high fuel loads would remain in the forest. More frequent catastrophic stand replacing wildland fire could occur.	Fuels management and prescribed fire are used to change fire regime condition class at the highest levels resulting in an increase in an open forest and woodlands and a reduction of fuels within the Urban Wildland Interface. Wildland fires should be easier to suppress and have less erratic behavior within treated areas.	Fuels management and prescribed fire are used to change fire regime condition class are at a high level resulting in an increase in an open forest and woodlands and a reduction of fuels within the Urban Wildland Interface. Wildland fires should be easier to suppress and have less erratic behavior within treated areas.	Fuels management and prescribed fire are used to change fire regime condition class are at a level similar to alternative 1. Though timber harvest is used to remove and reduce fuels within the Urban Wildland Interface. Wildland fires should be easier to suppress and have less erratic behavior within treated areas.	No direction to restore fire dependant natural communities or reduce fuel loading in the forest. The least amount of prescribed fire of any alternative due to current management restrictions. Fewer acres would move to a historical fire regime condition class.
Economic and Social Sustainability	Jobs and income resulting from all activities are at the lowest level due to the restriction on commercial timber harvest. Lowest payments made to counties of any alternative.	Jobs and income are the lowest of all management based alternatives. Payments to counties the same for Alternatives 2 - 5.	Jobs and income slightly higher than for Alternative 2. Payments to counties the same for Alternatives 2 - 5.	Jobs and income resulting from all activities are at a level similar to Alternative 5. Payments to counties the same for Alternatives 2 - 5.	Jobs and income resulting from all activities are at the highest level due to an increase in commercial timber harvest and emphasis on sawtimber production. Payments to counties the same for Alternatives 2 - 5.

<b>Resource</b>	<b>Alternative 1</b>	<b>Alternative 2</b>	<b>Alternative 3</b>	<b>Alternative 4</b>	<b>Alternative 5</b>
Management Area Allocations	Minimum land allocation in MP 1.1 and 1.2 considered feasible for restoration of natural communities.	Largest allocation of land in MP 1.1 for 1.2 for large scale restoration of natural communities.	Though less than in Alternative 2, allocation of land in MP 1.1 and 1.2 would allow large scale restoration of natural communities.	Majority of land is allocated to MP 2.1 where timber management is the emphasis. Land allocation in MP 1.1 and 1.2 same as for Alternative 1.	No change from current Forest Plan in management prescriptions or allocations of lands.
Riparian Areas, Water Quality and Soils	Lowest impact on soils due to the least amount of management of any alternative. Due to overall reduction in management as a result of land allocation to semi-primitive areas, the least amount of acres in riparian natural communities would be restored. Areas in riparian or watercourse protection zones are the same for Alternatives 1 – 4.	Soils impacts less than in alternative 5 as a result of changed standards and guidelines and differing levels of management activities. The highest amounts of activities to restore riparian communities. Areas in riparian or watercourse protection zones are the same for Alternatives 1 – 4.	Soils impacts the same as in Alternative 2. Activities to restore riparian communities between those in Alternatives 2 and 4. Areas in riparian or watercourse protection zones are the same for Alternatives 1 – 4.	Soils impacts would be same as in Alternative 2. The lowest amounts of activities to restore riparian communities. Areas in riparian or watercourse protection zones are the same for Alternatives 1 – 4.	Largest impacts on soils due to highest intensity of timber and other management activities resulting in greater need to temporarily access interior forest areas. No specific direction to restore riparian natural communities. Least amount of acres covered under watercourse management direction.
Recreation	Estimated 15% decrease in dispersed recreation activities, such as hunting, due to reduced access and species diversity.	Estimated 20% increase in dispersed recreation activities as a result of ecosystem restoration and species diversity.	Estimated 10% increase in dispersed recreation activities as a result of ecosystem restoration and species diversity.	No expected change due to management though could change with population demographics.	No expected change due to management though could change with population demographics.

<b>Resource</b>	<b>Alternative 1</b>	<b>Alternative 2</b>	<b>Alternative 3</b>	<b>Alternative 4</b>	<b>Alternative 5</b>
Recreation Opportunity Spectrum	87% of the Forest would be managed for semi-primitive objectives. More solitude would be found in areas with less management.	22% of the Forest would be managed for semi-primitive objectives. More acres are allocated to roaded natural recreation objectives which would provide for more motorized use.	25% of the Forest would be managed for semi-primitive objectives. Acres allocated to roaded natural recreation objectives are similar to Alternative 2.	25% of the Forest would be managed for semi-primitive objectives. Acres are allocated to roaded natural recreation objectives similar to Alternative 2.	29% of the Forest would be managed for semi-primitive objectives. Slightly more acres are allocated to semi-primitive recreation objectives than in alternatives 2 - 4, though motorized use would be at similar levels.
Wilderness Study Areas Roadless	Thirteen areas recommended for Wilderness study.	Thirteen areas recommended for Wilderness study.	Thirteen areas recommended for Wilderness study.	Thirteen areas recommended for Wilderness study.	No areas recommended for Wilderness study.
Wild and Scenic Rivers	2005 Forest Plan Standards and Guidelines would protect the Outstandingly Remarkable Values of classified Rivers under MP 6.3. Place one additional river into MP 6.3	2005 Forest Plan Standards and Guidelines would protect the Outstandingly Remarkable Values of classified Rivers under MP 6.3. Place one additional river into MP 6.3	2005 Forest Plan Standards and Guidelines would protect the Outstandingly Remarkable Values of classified Rivers under MP 6.3. Place one additional river into MP 6.3	2005 Forest Plan Standards and Guidelines would protect the Outstandingly Remarkable Values of classified Rivers under MP 6.3. Place one additional river into MP 6.3	Current Forest Plan Standards and Guidelines would protect the Outstandingly Remarkable Values of classified Rivers under MP 6.3. NO additional rivers will be classified.
Heritage Resources	2005 Forest Plan Standards and Guidelines would protect the heritage resource values.	2005 Forest Plan Standards and Guidelines would protect the heritage resource values.	2005 Forest Plan Standards and Guidelines would protect the heritage resource values.	2005 Forest Plan Standards and Guidelines would protect the heritage resource values.	Current Forest Plan Standards and Guidelines would protect the heritage resource values.

<b>Resource</b>	<b>Alternative 1</b>	<b>Alternative 2</b>	<b>Alternative 3</b>	<b>Alternative 4</b>	<b>Alternative 5</b>
Access and Transportation Management	In the short-term, roads would become more difficult to travel on due to limited maintenance and reconstruction. In the long-term, many local, dead-end, maintenance level 2 roads would be closed and/or decommissioned, thus limiting motorized travel to a small road network of maintenance level 3 and 4 roads.	No appreciable changes to the transportation system or the long-term motorized access of the Mark Twain NF.	No appreciable changes to the transportation system or the long-term motorized access of the Mark Twain NF.	No appreciable changes to the transportation system or the long-term motorized access of the Mark Twain NF.	No appreciable changes to the transportation system or the long-term motorized access of the Mark Twain NF.
Rangeland Management	Grazing would be the lowest of all alternatives.	Grazing would be the second lowest of the alternatives, since it would be phased out in MP 1.1 and 1.2 and within riparian areas in an effort to restore glade and riparian natural communities	Grazing would be reduced since it would be phased out in MP 1.1 & 1.2 and within riparian areas.	Grazing would be phased out in MP 1.1 & 1.2 and within riparian areas.	Grazing could continue affecting glade ecosystems and reducing their diversity of species.

**Table 8 - Comparison of Effects on Management Indicator Species (5 total)**

<b>Effect</b>	<b>Alternative 1</b>	<b>Alternative 2</b>	<b>Alternative 3</b>	<b>Alternative 4</b>	<b>Alternative 5</b>
No significant change in habitat from current condition	2 species (Worm-eating warbler, red bat)	1 species (Worm-eating warbler)	1 species (Worm-eating warbler)	All species (Worm-eating warbler, red bat, Summer tanager, northern bobwhite, Bachman's sparrow)	All species (Worm-eating warbler, red bat, Summer tanager, northern bobwhite, Bachman's sparrow)
Short & long term negative impact on habitat quality and quantity	1 species (Summer tanager), due to continued dense canopy, impoverished ground flora & lack of early successional habitat	None	None	None	None
Long term negative impact on habitat quality and quantity	2 species (northern bobwhite, Bachman's sparrow), due to continued dense canopy, impoverished ground flora & lack of early successional habitat	None	None	None	None
Short & long term positive effects on habitat quantity & quality	None	4 species (Summer tanager, red bat, northern bobwhite, Bachman's sparrow) due to increased amount of quality open woodland, glade, savanna communities in MP 1.1 & 1.2	4 species (Summer tanager, red bat, northern bobwhite, Bachman's sparrow) due to increased amount of quality open woodland, glade, savanna communities in MP 1.1 & 1.2	None	None
Likelihood of viability	<b>High</b> likelihood that Bachman's sparrow would be extirpated from Missouri due to lack of open woodland and early successional habitat - indicator of decrease in all open pine woodland species	<b>High</b> likelihood that all habitats & species represented by MIS remain viable throughout MTNF and distributed in patterns approaching historical occurrence	<b>High</b> likelihood that all habitats & species represented by MIS remain viable throughout MTNF and distributed in patterns approaching historical occurrence	<b>Good</b> likelihood that all habitats & species represented by MIS remain viable throughout MTNF and distributed in patterns approaching historical occurrence	<b>Good</b> likelihood that all habitats & species represented by MIS remain viable throughout MTNF and distributed in patterns approaching historical occurrence

**Table 9 - Comparison of Effects on Federally - Listed Threatened and Endangered Species (11 animals, 2 plants)**

Effect	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
No significant change in habitat from current condition	11 species	8 species	8 species	11 species	11 species
Positive effect on habitat quality & availability	None	4 species	4 species	None	None
Topeka shiner habitat - Cedar Creek Unit	Long-term positive effect with protection of Watershed Protection Zones (WPZ)	Long-term positive effect with protection of WPZ	Long-term positive effect with protection of WPZ	Long-term positive effect with protection of WPZ	Long-term positive effect with protection of riparian areas
Hine's Emerald dragonfly habitat	Long-term decrease	No Change from Current			
Mead's milkweed habitat	Long-term adverse impact with potential for population to disappear with out glade management in Wilderness area	Long-term adverse impact with potential for population to disappear with out glade management in Wilderness area	Long-term adverse impact with potential for population to disappear with out glade management in Wilderness area	Long-term adverse impact with potential for population to disappear with out glade management in Wilderness area	Long-term adverse impact with potential for population to disappear with out glade management in Wilderness area
Meets or exceeds Recovery Plan objectives	All species except Mead's milkweed				

**Table 10 - Comparison of Effects on Regional Forester Sensitive Species (36 animals)**

Effect	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
No significant change in habitat from current condition	24 species	24 species	24 species	24 species	24 species
Long term negative impact on habitat quality and quantity	3 species due to continued dense canopy, impoverished ground flora, and lack of early successional habitat	None	None	None	None

Effect	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Short & long term positive effects on habitat quantity & quality	None	1 species short term; 3 species long term, due to increased amount of quality open woodland, glade, savanna communities in MP 1.1 & 1.2	1 species short term; 3 species long term, due to increased amount of quality open woodland, glade, savanna communities in MP 1.1 & 1.2	None	None
Short & long term negative impact on habitat quality and quantity	None	None	None	1 species due to continued dense canopy & impoverished ground flora	1 species due to continued dense canopy & impoverished ground flora
Species trending towards listing	<b>High</b> likelihood that Bachman's sparrow would trend toward listing due to lack of management action on MTNF leading to lack of open woodland and early successional habitat.	MTNF activities do not contribute to trend toward listing any RFSS	MTNF activities do not contribute to trend toward listing any RFSS	MTNF activities do not contribute to trend toward listing any RFSS	MTNF activities do not contribute to trend toward listing any RFSS
Likelihood of viability	Possibility of decreased viability for 3 species due to continued dense canopy, impoverished ground flora and lack of early successional habitat. Good likelihood that all other habitats & species remain viable.	<b>High</b> likelihood that all habitats & species remain viable throughout MTNF and distributed in patterns approaching historical occurrence	<b>High</b> likelihood that all habitats & species remain viable throughout MTNF and distributed in patterns approaching historical occurrence	<b>Good</b> likelihood that all habitats & species remain viable throughout MTNF and distributed in patterns approaching historical occurrence	<b>Good</b> likelihood that all habitats & species remain viable throughout MTNF and distributed in patterns approaching historical occurrence

**Table 11 - Comparison of Effects on Regional Forester Sensitive Species (76 plants)**

Effect	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Forest habitat	Available in same or greater amount than present.	Available in at least historic amounts.	Available in at least historic amounts.	Available in at least historic amounts.	No significant change from present conditions in amount or quality
Open woodland, closed woodland, glade, savanna, wetland & fen habitats	Some increase in amount & slight increase in quality due to community restoration in MP 1.1 & 1.2, but habitat quality and quantity reduced on 77% of MTNF	Significant Increase in amount & quality due to community restoration	Significant Increase in amount & quality due to community restoration	Some increase in amount & slight increase in quality due to community restoration	No significant change from present conditions in amount or quality
Prairie habitat	Slight increase in quality, but so few acres affected that no significant effect on species viability	Slight increase in quality, but so few acres affected that no significant effect on species viability	Slight increase in quality, but so few acres affected that no significant effect on species viability	Slight increase in quality, but so few acres affected that no significant effect on species viability	No significant change from present conditions in amount or quality
Likelihood of viability	<b>Fair</b> likelihood that all habitats & plant species remain viable throughout MTNF and distributed in patterns moving toward historical occurrence; MTNF activities do not contribute to trend toward listing any RFSS plants	<b>High</b> likelihood that all habitats & plant species remain viable throughout MTNF and distributed in patterns approaching historical occurrence; MTNF activities do not contribute to trend toward listing any RFSS plants	<b>High</b> likelihood that all habitats & plant species remain viable throughout MTNF and distributed in patterns approaching historical occurrence; MTNF activities do not contribute to trend toward listing any RFSS plants	<b>Good</b> likelihood that all habitats & plant species remain viable throughout MTNF and distributed in patterns approaching historical occurrence; MTNF activities do not contribute to trend toward listing any RFSS plants	<b>Good</b> likelihood that all habitats & plant species remain viable throughout MTNF and distributed in patterns approaching historical occurrence; MTNF activities do not contribute to trend toward listing any RFSS plants

**Table 12 - Comparison of Effects on State Endangered Species (30)**

All State Endangered species have been analyzed under Federal, RFSS, MIS and/or SVE

**Table 13 - Comparison of Effects on Other Species at Risk (66 animals)**

40 animal species also included in Federal, RFSS, or MIS analysis

<b>Effect</b>	<b>Alternative 1</b>	<b>Alternative 2</b>	<b>Alternative 3</b>	<b>Alternative 4</b>	<b>Alternative 5</b>
No significant short term change in habitat from current condition	46 species	41 species	41 species	51 species	51 species
No significant long term change in habitat from current condition	45 species	43 species	43 species	58 species	59 species
Long term positive effects to habitat	4 species due to positive effects to limited prairie & swamp habitat due to MP 1.1 restorations & prairie streams due to WPZ's	20 species due to increased amount of quality open woodland, glade, savanna communities in MP 1.1 & 1.2	20 species due to increased amount of quality open woodland, glade, savanna communities in MP 1.1 & 1.2	4 species due to positive effects to limited prairie & swamp habitat due to MP 1.1 restorations & prairie streams due to WPZ's	4 species due to positive effects to limited swamp habitat due to MP 1.1 restorations & prairie streams due to WPZ's
Short term positive effects on habitat quantity & quality		10 species due to increased amount of quality open woodland, glade, savanna communities in MP 1.1 & 1.2	10 species due to increased amount of quality open woodland, glade, savanna communities in MP 1.1 & 1.2		
Short term negative effects on habitat quantity & quality	5 species due to lack of availability of early successional & disturbance-dependent habitats, and quality of openland habitat				
Long term negative effects on habitat quantity & quality	13 species due to lack of availability of early successional & disturbance-dependent habitats, and quality of openland habitat			2 species due to negative effects on canebrakes from lack of disturbance and large open glades from continued invasion of red cedar	2 species due to negative effects on canebrakes from lack of disturbance and large open glades from continued invasion of red cedar
Long term unknown impacts		3 species	3 species		

Effect	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Species with significant concerns for long-term viability in Missouri due to MTNF activities	1 Species with significant concern for long-term viability in Missouri due to MTNF activities (Bachman's sparrow – MIS, State Endangered) due to decrease in early successional habitat & lack of open pine woodland	None	None	None	None

Table 14 - Comparison of Effects on Other Species at Risk (176 plants)

Effect	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Forest habitat	Available in same or greater amount than present	Available in at least historic amounts	Available in at least historic amounts	Available in same or greater amount than present	No significant change from present conditions in amount or quality
Open woodland, closed woodland, glade, savanna, wetland & fen habitats	Some increase in amount & slight increase in quality due to community restoration	Significant increase in amount & quality due to community restoration	Significant increase in amount & quality due to community restoration	Some increase in amount & slight increase in quality due to community restoration	No significant change from present conditions in amount or quality
Prairie habitat	Slight increase in quality, but so few acres affected that no significant effect on species viability	Slight increase in quality, but so few acres affected that no significant effect on species viability	Slight increase in quality, but so few acres affected that no significant effect on species viability	Slight increase in quality, but so few acres affected that no significant effect on species viability	No significant change from present conditions in amount or quality
Species with significant concerns for long-term viability in Missouri due to MTNF activities	1 plant specie with significant concerns for viability due to MTNF activities (Mead's milkweed - see Federal species)	None	None	None	None

**Table 15 - Comparison of Alternatives in Meeting Conservation Approaches for Species at Risk**

<b>Conservation Approach</b>	<b>Alternative 1</b>	<b>Alternative 2</b>	<b>Alternative 3</b>	<b>Alternative 4</b>	<b>Alternative 5</b>
A: Maintain riparian structure and function	Meets	Meets	Meets	Meets	Meets
B: Maintain free-flowing streams and rivers	Meets	Meets	Meets	Meets	Meets
C: Minimize sedimentation from National Forest lands	Meets	Meets	Meets	Meets	Meets
D: Maintain hydrologic integrity of wetland and lowland forest natural communities	Meets for lowland forest; Partially meets for wetlands	Meets	Meets	Meets for lowland forest; Partially meets for wetlands	Meets for lowland forest; Partially meets for wetlands
E: Maintain forested landscapes (with all successional stages present)	Meets	Meets	Meets	Meets	Meets
F: Restore prescribed fire regimes and manage fire-adapted natural communities	Partially meets	Meets	Meets	Partially meets	Meets least of all alternatives
G: Protect the structural and biological integrity of caves and reduce human disturbance to cave systems.	Meets	Meets	Meets	Meets	Meets
H: Protect and manage known locations of species at risk	Meets for listed species; Partially meets for non-listed SAR	Meets for listed species; Partially meets for non-listed SAR	Meets for listed species; Partially meets for non-listed SAR	Meets for listed species; Partially meets for non-listed SAR	Meets for listed species; Partially meets for non-listed SAR
I: Retain den trees and snags, downed woody material (particularly large size)	Meets	Meets	Meets	Meets	Meets for most habitat types; May or may not meet for in-stream woody
J: Control non-native invasive species	Meets	Meets	Meets	Meets	May or may not meet

Table 16 - Comparison of Alternatives in Meeting Indiana bat Habitat Needs

Resource	Habitat Needs Addressed	Alt 5 (1986 Plan) MP 3.5 Management Direction	Alts 1-4 MP 1.1 & 1.2 Management Direction	Habitat Needs Provided	Alts 1-4 MP 2.1 Management Direction	Habitat Needs Provided
Vegetation	Foraging habitat near hibernacula Roost trees near hibernacula Foraging & roost trees within maternity colony area	Vegetation management done only to improve or enhance Indiana bat habitat, to maintain or enhance natural vegetative communities on appropriate sites, or for public safety.	Restore, enhance, maintain the structure, composition & function of distinctive natural communities. Distribute activities across landscape to emulate historical vegetation patterns & quantities. Character of maternity colony areas maintained or enhanced by maintaining snags & roost trees & foraging habitat.	Same	Manage natural communities to enhance & retain their characteristic ecological elements. Distribute activities across landscape to emulate historical vegetation patterns & quantities. Character of maternity colony areas maintained or enhanced by maintaining snags & roost trees & foraging habitat.	Same
Rangeland	Foraging habitat across landscape over time  Roost trees across landscape over time	Development of forage resource limited to existing allotments and allotment plans designed to protect or enhance Ibat habitat and water quality values	Grazing only on existing improved pastures. Close all areas that contain glades and natural woodlands when the current permit expires. Limitations on grazing w/in WRZ & RMZ to protect water quality. W/in allotments, retain all living shagbark & shellbark hickory, white oak, lightning struck & cavity trees $\geq 12$ " dbh, unless pose safety hazard.	Better in Revised Plan	Limitations on grazing w/in WRZ & RMZ to protect water quality. W/in allotments, retain all living shagbark & shellbark hickory, white oak, lightning struck & cavity trees $\geq 12$ " dbh, unless pose safety hazard.	Same or better in Revised Plan

<b>Resource</b>	<b>Habitat Needs Addressed</b>	<b>Alt 5 (1986 Plan) MP 3.5 Management Direction</b>	<b>Alts 1-4 MP 1.1 &amp; 1.2 Management Direction</b>	<b>Habitat Needs Provided</b>	<b>Alts 1-4 MP 2.1 Management Direction</b>	<b>Habitat Needs Provided</b>
Recreation	Minimize physical disturbance near hibernacula entrance & maternity colony areas	Semi-primitive non-motorized in key area.	Avoid road construction above known cave passages w/in 100 feet of cave entrance. Relocate roads away from cave entrances when possible. Minimize human disturbance near maternity colonies during summer season.	Same	Avoid road construction above known cave passages w/in 100 feet of cave entrance. Relocate roads away from cave entrances when possible. Minimize human disturbance near maternity colonies during summer season.	Same
Recreation	None	Semi-primitive motorized in primary area	1.1 Roded natural 1.2 Semi-primitive motorized	No habitat need addressed	Roded natural	No habitat need addressed
Visual Quality	None	Visual quality objective = Modification	VQO determined based on site-specific conditions; range from Retention to Maximum Modification	No habitat need addressed	VQO determined based on site-specific conditions; range from Retention to Maximum Modification	No habitat need addressed
Recreation	Hibernation with no human disturbance	Caves closed to human visitation Sept 15 – April 30	Do not allow human entry during fall swarming, hibernation , & spring emergence	Same	Do not allow human entry during fall swarming, hibernation , & spring emergence	Same

<b>Resource</b>	<b>Habitat Needs Addressed</b>	<b>Alt 5 (1986 Plan) MP 3.5 Management Direction</b>	<b>Alts 1-4 MP 1.1 &amp; 1.2 Management Direction</b>	<b>Habitat Needs Provided</b>	<b>Alts 1-4 MP 2.1 Management Direction</b>	<b>Habitat Needs Provided</b>
Timber	Foraging habitat across landscape over time  Roost trees across landscape over time	Timber management only to improve or enhance bat habitat, to maintain or enhance natural vegetative communities on appropriate sites or for public safety	Prohibit timber harvest w/in 100 feet of cave entrance. Prohibit skid trails w/in 100 feet of cave entrance. Use silvicultural method appropriate to move toward desired conditions based on management objectives, natural community type, stand conditions, and silvical characteristics of tree species. Intermediate harvest normally leave largest &/or oldest trees to meet basal area objectives. All even-aged regeneration will leave 7-10% as reserve trees or groups. Rotation ages are: 100 SLP, 120 PO/WO; 80 RO/SO/BO	Better in Revised Plan	Prohibit timber harvest w/in 100 feet of cave entrance. Prohibit skid trails w/in 100 feet of cave entrance. Use silvicultural method appropriate to move toward desired conditions based on management objectives, natural community type, stand conditions, and silvical characteristics of tree species. Intermediate harvest normally leave largest &/or oldest trees to meet basal area objectives. All even-aged regeneration will leave 7-10% as reserve trees or groups. Rotation ages are: 70 SLP; 90 PO/WO; 70 RO/SO/BO	Same
Wildlife	Hibernation with no human disturbance	Protect hibernacula by restricting human entry Sept 15 – April 30	Do not allow human entry during fall swarming, hibernation, & spring emergence	Same	Do not allow human entry during fall swarming, hibernation, & spring emergence	Same
Wildlife	Cave microclimate maintained	Structures must permit bats to pass & must not alter airflow	Structures must permit bats to pass & must not alter airflow	Same	Structures must permit bats to pass & must not alter airflow	Same

<b>Resource</b>	<b>Habitat Needs Addressed</b>	<b>Alt 5 (1986 Plan) MP 3.5 Management Direction</b>	<b>Alts 1-4 MP 1.1 &amp; 1.2 Management Direction</b>	<b>Habitat Needs Provided</b>	<b>Alts 1-4 MP 2.1 Management Direction</b>	<b>Habitat Needs Provided</b>
Wildlife	<p>Cave microclimate maintained</p> <p>Roost trees near hibernacula</p> <p>Foraging habitat near hibernacula</p> <p>Minimize physical disturbance near hibernacula entrance</p>	AOI Key area 20 acres OG & additional 130 acres mature forest	At least 20 acres OG around cave & additional 130 acres mature forest or woodland	Same	At least 20 acres OG around cave & additional 130 acres mature forest or woodland	Same
Wildlife	<p>Roost trees near hibernacula</p> <p>Foraging habitat near hibernacula</p>	AOI Primary range – up to 5 miles- 20% OG and minimum 50% oak/oak-pine >50	Range of ages including old growth throughout management areas. Designate tree groups/stands >175 years old as OG.	More dispersed through landscape than current Plan	Designate 8-12% OG for each management area. Designate tree groups/stands >175 years old as OG.	Fewer OG acres, but roost trees don't appear limiting on MTNF
Wildlife	Foraging habitat across landscape over time	AOI Primary range - Maintain minimum 50% in pole/saw with 50-70% canopy closure	Open and closed woodland natural communities desired basal area is 30-50% and 50-90% respectively. Maternity colony areas should maintain canopy gaps for foraging.	Better in Revised Plan	Open and closed woodland natural communities desired basal area is 40-70 and 70-90% respectively. Maternity colony areas should maintain canopy gaps for foraging.	Foraging distributed across landscape on appropriate sites

<b>Resource</b>	<b>Habitat Needs Addressed</b>	<b>Alt 5 (1986 Plan) MP 3.5 Management Direction</b>	<b>Alts 1-4 MP 1.1 &amp; 1.2 Management Direction</b>	<b>Habitat Needs Provided</b>	<b>Alts 1-4 MP 2.1 Management Direction</b>	<b>Habitat Needs Provided</b>
Wildlife	Foraging habitat across landscape over time	AOI Primary range - Natural regeneration ok to perpetuate oak-hickory/oak-pine forest. No more than 7% in 0-9 age class at any time.	MP 1.1 & 1.2 - Desired canopy gaps in open woodland = 10 acres with 1-3 per 100 acres and in closed woodland = 3 acres with 1-5 per 100 acres. MP 1.2 - No more than 20% of each Management Area harvested during each decade	Better in Revised Plan	Regen 8-15% each management area w/1-5% in openings <=2 acres. Regen openings distributed proportionately to ELTs and natural communities present.	Same or better in Revised Plan
Wildlife	Drinking water	AOI Primary range 1-4 water sources per square mile	No new wildlife waterholes unless demonstrated viability need for TES, RFSS, species group; Construct temporary pools at end of outlet ditches when possible.	Same	Construct new waterholes only where existing water sources limited or lacking. Manage & rehabilitate existing waterholes as priority over constructing new ones. Construct temporary pools at end of outlet ditches when possible.	Same
Wildlife	Foraging habitat across landscape over time	AOI Primary range -Up to 15% can be in open or semi-open habitats	Maintain or improve artificial openlands only where they currently exist	Better in Revised Plan	Maintain or improve artificial openlands only where they currently exist	Better in Revised Plan

<b>Resource</b>	<b>Habitat Needs Addressed</b>	<b>Alt 5 (1986 Plan) MP 3.5 Management Direction</b>	<b>Alts 1-4 MP 1.1 &amp; 1.2 Management Direction</b>	<b>Habitat Needs Provided</b>	<b>Alts 1-4 MP 2.1 Management Direction</b>	<b>Habitat Needs Provided</b>
Minerals	<p>Cave microclimate maintained</p> <p>Minimize physical disturbance near hibernacula entrance</p> <p>Minimize disturbance near maternity colony areas</p>	No drilling in key area.	Prohibit drilling or other surface disturbing mineral operations over known caves & within 150 acre hibernacula buffer. No surface disturbing mineral activity w/in 100 feet of cave entrance. Minimize human disturbance near maternity colonies during summer season.	Same	Prohibit drilling or other surface disturbing mineral operations over known caves & within 150 acre hibernacula buffer. No surface disturbing mineral activity w/in 100 feet of cave entrance. Minimize human disturbance near maternity colonies during summer season.	Same
Fire	<p>Cave microclimate maintained</p> <p>Summer roosting bats</p> <p>Fall swarming</p>	All Indiana bat AOI considered smoke sensitive areas	Area around Indiana bat cave is smoke sensitive area. Conduct prescribed burning within maternity colony areas only during hibernation season. Avoid prescribed burning within 150 acre buffer at lbat hibernacula in swarming & staging periods. Prescribed burning in maternity colony areas only during hibernation season.	Same	Area around Indiana bat cave is smoke sensitive area. Conduct prescribed burning within maternity colony areas only during hibernation season. Avoid prescribed burning within 150 acre buffer at lbat hibernacula in swarming & staging periods. Prescribed burning in maternity colony areas only during hibernation season.	Same