

Chapter 2

MANAGEMENT ALTERNATIVES

Overview

This chapter presents five alternatives for the future management of the Hoosier National Forest (the Forest or the Hoosier). These alternatives represent a reasonable range of management for the Forest.

This chapter describes the process used to develop the alternatives, describes the alternatives, and provides a tabular comparison of each alternative.

Developing Alternatives

The Forest Service issued a Notice of Intent (NOI) to prepare to revise the current Forest Plan in November 2000. The NOI described the Need for Change and outlined revision topics to be included in the Plan Revision. The Forest held meetings that provided input about issues (see Appendix A, Issues, Concerns and Opportunities, for further detail).

Using the input concerning issues, the Forest held public meetings in August of 2003. Members of the public who attended the meetings helped the Forest group activities in ways that could fit together in alternatives. The result was five alternatives, including the No Action Alternative, which would carry forward the emphasis and direction in the current Forest Plan. Although all alternatives would provide a wide range of multiple uses, goods, and services, they address the issues in different ways. All alternatives were required to meet certain minimum management requirements and provide for continued productivity of the renewable resources. Many possible alternatives could meet those requirements, but managers needed to consider conflicting or competing demands for resources, limited funding, and increased concern for cost efficiency. Public demands, land capabilities, the costs of management, and environmental effects were also included in the analysis.

Benchmarks

The Forest analyzed benchmarks to determine the limits of alternatives. Benchmarks define the limits of the reasonable range of timber outputs the Forest could provide. Rather than emphasize a single resource or use to the possible detriment of others, alternatives used "integrated management" or provided a blend of multiple uses for the Forest. Each alternative is a whole Forest solution, and each alternative provides for resources somewhere between the minimum and maximum.

An analysis of the benchmarks provides timber harvest volume and present net value based on a zero harvest or minimum benchmark and a maximum use benchmark. The planning record contains modeling results for the benchmarks.

Development of Alternatives

Benchmarks quantify the tradeoffs between maximizing a single use and balancing multiple uses. To achieve an overall balance, alternatives must use integrated or multiple-use management. Each alternative has different objectives or different responses to the issues. The approach of the alternatives differs so much that not all alternatives can satisfactorily maintain all resources. Nevertheless, all alternatives provide for protection of such resources as soil productivity and recreational opportunities.

The Forest Plan provides goals, objectives, and standards and guidelines that provide Forest-wide management direction. Goals are broad statements and describe overall conditions that managers will strive to achieve. They are not directly measurable and there are no timeframes for achieving them. Goals describe the ends the Forest hopes to achieve rather than the means to these ends; they serve as vision statements. In contrast, Forest objectives provide the means for goal achievements in the form of a measurable step the Forest may take.

The Forest has accepted a definition of a standard as a course of action that the Forest must follow, or a level of attainment that the Hoosier must reach to achieve Forest goals. Adherence to standards is mandatory. In general, the standards limit project-related activities, rather than compel or require them. The Forest must analyze and document in a forest plan amendment any proposed deviations in management activities from standards. Guidelines relate to activities where site-specific factors may require some flexibility. The Forest must analyze and document any proposed deviation from a guideline in a way that meets requirements of the NEPA, but this change would not require a forest plan amendment.

The Forest Plan establishes direction for individual management areas, as needed. Management area direction contains a set of statements describing desired condition including landscape patterns, site level characteristics, desired vegetative conditions, and disturbance regimes. In addition, management activities and additional standards and guidelines may be included to manage or protect specific resources.

The Forest Plan and the FEIS are programmatic documents. The FEIS discusses environmental effects on a broad scale. Over the lifetime of the Forest Plan, the selected alternative and the accompanying Forest-wide standards and guidelines will set Forest management direction by establishing and affirming rules and policies for use of natural resources.

Because this analysis contains a Forest-wide level of analysis, it only estimates what will happen when the Hoosier implements Forest-wide standards and guidelines on individual site-specific projects. This analysis does not convey the long-term environmental consequences of any site-specific project. These actual effects will depend on the extent of each project, environmental conditions at the site, site-specific mitigation measures, and their effectiveness, and the Forest will analyze such project and display the effects in future documents.

Management Areas

Each alternative includes a mix of forest environments. The Hoosier calls these different mixes management areas. The planning team considered 14 different management areas during this analysis. The following paragraphs and pages describe all of the management areas that the Forest considered.

The Hoosier has chosen to continue to use the numbering system developed by the Eastern Region for use in the Forest Plan. The first digit of a management area number identifies the overall management goal. The management goals describe the conditions needed to produce various combinations of goods and services. Within the broad goal, the Hoosier elected to have variations that provide similar land conditions. A second digit following a decimal identifies subparts of the overall management goal.

Management Goal 1

This goal emphasizes small trees for intensive timber production, wildlife game species, and a motorized recreational environment. The Hoosier does not consider the type and level of intensive management associated with this management goal appropriate for the Forest.

Management Goal 2

This goal emphasizes:

- A continuous forested scene
- Wildlife species primarily associated with shade-tolerant vegetation
- Fuelwood and pulpwood from intermediate cuttings
- Large, high-quality hardwood trees
- The reintroduction of fire into the ecosystem to maintain and enhance biological diversity and ecosystem sustainability

Management Area 2.4 Desired Condition

This management area provides a variety of vegetative conditions. Closed canopy hardwood forests provide habitat for plant and animal species that prefer these forest habitats.

This management area protects and enhances water-based recreation experiences, visual quality, riparian values, and riparian habitat. The area is associated with canoeable and fishable streams, rivers, lakes, and reservoirs. Forested shorelines or corridors up to one mile or more in width create an appearance of an unbroken canopy of large diameter trees of a variety of species. Limited vegetation management is appropriate to create and improve habitat for wildlife and plant species in riparian corridors. There is frequent interaction among visitors on system trails and occasional interaction among visitors in other areas.

Key recreation activities include birding, boating, canoeing, fishing, hiking, hunting, trapping, and viewing scenery. The Forest is accessible by canoeable streams or lakes, trails, and State or county roads.

Alternatives 1, 3, 4, and 5 include this management area

Management Area 2.8 Desired Condition

This management area provides a mix of habitats and increased biodiversity. This management area provides a continuous canopy with scattered openings. It is associated with a variety of forest plant communities and has a high degree of vertical and horizontal vegetative diversity.

Human activities include recreation, vegetation management to maintain and enhance wildlife habitat, special uses, and transmission lines and utility corridors. Most activities blend with the natural environment. There is frequent interaction among visitors on system trails and occasional interaction among visitors in other areas.

Various habitat types are present, but late seral habitat may dominate over time. This area provides a variety of forest types, reflecting different ecological sites and management activities.

Openings in the canopy result in different canopy levels and animal communities associated with vertically diverse vegetation, as well as different successional stages of vegetation. Habitat in these areas is best suited to animals that use large hardwood trees and a mosaic of different-aged hardwood forests. There is more early successional habitat in these areas than in most other areas of the Forest.

Fishing, gathering forest products, trail use, hunting, bird watching, and viewing scenery are key recreation activities. Some of the areas are landlocked by private lands, but most are generally accessible by trails and State or county roads.

Alternatives 1 and 5 include this management area.

Management Goal 3

This goal emphasizes:

- A variety of forest views and a feeling of openness in older stands of trees
- Wildlife species associated with a variety of forest habitats
- Large, high-quality hardwood trees
- The reintroduction of fire into the ecosystem to maintain and enhance biological diversity and ecosystem sustainability

Management Area 3.1 Desired Condition

This management area provides a variety of vegetative types and age classes. The area is associated with a mosaic of forest conditions predominated by hardwoods trees and their associated understory, which provides habitat for wildlife species. Management is intensive but is generally not obvious from existing roads and trails.

Over time, stands of large trees will dominate the area, with areas along riparian corridors and inaccessible areas developing into late seral stage habitat.

This management area emphasizes tree species such as ash, cherry, oak, hickory, yellow poplar, and walnut. The predominant management technique applied in this area will be even-aged management and will provide valuable habitat for an array of wildlife and plant species. This management provides an emphasis on wildlife species associated with diverse forested habitats, particularly species that are dependent on young forested stands. The Forest can use a variety of methods to convert pine stands to native hardwoods.

Openings for wildlife are of a variety of sizes, well dispersed, and in character with the landscape. Canopy openings result in different canopy levels. This management area allows for maintaining and providing fishing lakes, marshes, ponds, and waterholes.

Trail use, hunting, bird watching, and viewing scenery are key recreation activities. The Forest is generally accessible by trails and a network of roads.

Alternative 4 includes this management area.

Management Area 3.3 Desired Condition

This management area emphasizes diversity for wildlife species requiring a mix of early and late successional vegetative types and age classes. It is associated with a mosaic of forest conditions predominated by hardwoods trees and their associated understory, to provide habitat for wildlife species. Horizontal and vertical diversity are present in the forest. In general, one finds early and late successional stands close together to provide for those non-migratory species that require a mix of both of these habitats. Management is more intensive than in other management areas, but blends with the natural environment.

Hardwood management is by even-aged methods, emphasizing a diversity of species such as ash, cherry, hickory, oak, yellow poplar, and walnut to provide valuable habitat for wildlife and plant species. Vegetation management is more intense in this area than elsewhere in the Forest with as much as 16 percent of the management area in the 0-9 age class. The Forest can use a variety of methods to convert pine stands to native hardwoods.

Maintained openings for wildlife are of a variety of sizes, well dispersed, and in character with the landscape. This management area also allows for maintaining and providing fishing lakes, marshes, ponds, and waterholes.

Viewing scenery, bird watching, hunting, and trail use are key recreational activities. The Forest is generally accessible by trails and a network of roads.

Alternatives 3, 4, and 5 include this management area.

Management Area 3.5 Desired Condition

This management area provides a variety of vegetative types and age classes. The area is associated with a mosaic of forest conditions predominated by hardwood trees and their associated understory to provide habitat for wildlife species. Horizontal and vertical diversity are present in the forest. Management is intensive but generally not obvious. The Forest may allow limited all-terrain vehicle access and use.

Over time, stands of large trees dominate the area, with areas along riparian streams and inaccessible areas developing into late seral stage habitat.

This management area emphasizes tree species such as ash, cherry, oak, yellow poplar, and walnut. The Forest uses both even-aged and uneven-aged management to provide valuable habitat for wildlife and plant species. The Forest can use a variety of methods to convert pine stands to native hardwoods.

Openings for wildlife are of a variety of sizes, well dispersed, and in character with the landscape. This management area allows the maintenance and creation of fishing lakes, marshes, ponds, and waterholes.

Hunting, trail use, and viewing scenery are key recreation activities. The Forest is generally accessible by trails and a network of roads.

Alternative 3 includes this management area.

Management Goal 4

This goal emphasizes a variety of coniferous views and scenes. It provides a primarily motorized environment and habitat associated with coniferous vegetation. This management goal is not applicable to habitats and ecosystems on the Hoosier.

Management Goal 5

This goal is for Congressionally designated wilderness areas. This goal protects the wilderness character of the land, provides for wilderness experiences, and preserves the natural ecosystems.

Management Area 5.1 Desired Condition

This management area is for the Charles C. Deam Wilderness. *"It is managed to promote and perpetuate the wilderness character of the land and its specific values of solitude, physical and mental challenge, scientific study, inspiration and primitive recreation..." (Eastern Wilderness Act, P.L. 93-622).*

Over time, habitat changes to late successional habitat. Stands are then characterized by large mature or over-mature trees. Some younger trees and openings occur as a result of natural processes.

Evidence of human development includes trails, old roads, stone walls, and cellar holes that have been overgrown and dilapidated by natural forces. Some cemeteries are present.

The size of the area is sufficient to allow users to be reasonably isolated from the sights and sounds of people. There may be occasional interaction between users.

Key recreation activities include backpacking and trail use. The wilderness is generally accessible by trails.

All alternatives include this management area.

Management Goal 6

This goal emphasizes:

- Lands primarily closed to public motorized vehicles
- A mix of forest conditions
- A reintroduction of fire into the ecosystem to maintain and enhance biological diversity and ecosystem sustainability

The Hoosier has two areas under Management Goal 6--Management Areas 6.2 and 6.4. Management Areas 6.2 and 6.4 are quite similar, but there are important differences between the two. The differences include:

- In Management Area 6.2, the Forest creates no forest openings, waterholes, lakes, or ponds, and since the Hoosier does not maintain these existing features, they revert naturally.
- Visual quality objectives are more restrictive in Management Area 6.2, since Management Area 6.4 allows some vegetative management.
- Management Area 6.4 allows some management of pine.
- The Mogan Ridge area occurs in Management Area 6.4. Mogan Ridge is open to motorized vehicles a portion of the year.

Both management areas create physical settings that provide an opportunity for solitude and a feeling of closeness to nature. Both areas are general forestland with the appearance of extensive stands of forest dominating the landscape.

Management Area 6.2 Desired Condition

Over time, extensive stands of natural-appearing forests of shade-tolerant species will characterize the area. Stands will be dominated by large mature and over-mature trees and will provide habitat for late-successional species. Some younger trees and openings will result from natural causes. Removal of commercial products is not appropriate except timber salvage or sanitation harvest.

Key recreation activities include backpacking, hunting, nature watching, and trail use. The Forest is generally accessible by trail and from county or State roads around the perimeter of these areas.

Roads in the interior are closed to public motorized vehicles.

Interaction between users is low, and there is only subtle evidence of other users. Tranquility and solitude are likely.

This management area applies in all alternatives.

Management Area 6.4 Desired Condition

Over time, extensive stands of natural-appearing forests of shade-tolerant species will characterize the area. Stands will be dominated by large mature and over-mature trees and will provide habitat for late-successional species. Some younger trees and openings will result from natural causes. Commercial removal of vegetation is not appropriate except for pine removal with existing access and salvage or sanitation harvest.

Key recreation activities include backpacking, trail use, hunting, and nature watching. The Forest is generally accessible by trails, and from county or State roads around the perimeter.

Roads in the interior are closed to public motorized vehicles, except Mogan Ridge, which is open to motorized vehicles a portion of the year.

Interaction between users is low, and there is only subtle evidence of other users. Tranquility and solitude are likely.

This management area applies in Alternatives 1, 3, 4, and 5.

Management Goal 7

This goal provides for recreation facilities and highly developed areas, including campgrounds, swimming beaches, and other areas intended to serve large numbers of people.

Management Area 7.1 Desired Condition

This management area emphasizes high-density, self-contained recreational experiences. It provides recreation facilities and highly developed areas, including boat ramps, campgrounds, and swimming beaches.

These areas vary in size and offer high-density, destination type use. In general, fees are collected at these areas. Developments are evident and may dominate the landscape. Design, building materials, and placement of facilities and structures are such that they are in harmony with the environment.

This management area applies in all alternatives.

Management Goal 8

This goal emphasizes:

- Preservation of unique ecosystems for scientific purposes
- Areas for research

- Protection of unique areas of national significance
- Reintroduction of fire into the ecosystem to maintain and enhance biological diversity and ecosystem sustainability

Management Area 8.1 Desired Condition

These are Research Natural Areas (RNAs). This designation allows unique ecosystems to follow natural processes for scientific purposes. Research may be conducted in these areas to better understand natural processes and enhance the benefits of our forests.

The only MA 8.1 area on the Forest is the Pioneer Mothers Memorial Forest, an 88-acre old-growth hardwood forest.

The size of the area, type of vegetation, wildlife habitat, and recreational opportunities provided depend on the uncommon or outstanding characteristics to be protected. A natural-appearing condition exists although evidence of humans is occasionally noticeable.

The rare or outstanding values of the areas are the primary consideration. Other resource values and uses are secondary to the protection of the area's special values for public education and enjoyment.

Key recreation activities include hiking and nature watching.

All alternatives include this management area.

Management Area 8.2 Desired Condition

These Special Areas include unique or unusual botanical, ecological, geological, historic, prehistoric, scenic, zoological, or other values that merit special recognition and management. Management of these areas emphasizes the protection, perpetuation, or restoration of their special features and values.

These regionally or locally significant areas must meet one or both of these criteria:

- Be representative of unusual cultural, ecological, geological, or other scientific values; or
- Have the potential to be a regional or national landmark based on natural or cultural values.

Across the Hoosier, the Forest has currently designated 24 of these areas. These special characteristics include a variety of ecosystems, forest conditions, cultural history, and scientific and scenic values. Plant and animal species and communities vary depending on the characteristics of each area.

The rare or outstanding values of the areas are the primary consideration. Other resource values and uses are secondary to the protection, maintenance, and restoration of an area's special values for public education, enjoyment, and study.

A management plan identifies special features of the area, boundaries, desired conditions, and specific management direction. Management plans have been prepared

for some areas, and others are being or will be prepared. Eventually each area will have a management plan.

All alternatives include this management area.

Management Area 8.3 Desired Condition

This management area provides areas for research and scientific study of forest ecosystems.

The Paoli Experimental Forest is a 632-acre area located southwest of Paoli on the Tell City Ranger District.

All alternatives include this management area.

Management Goal 9

This goal emphasizes:

- Minimal management and investment
- Protection and maintenance of environmental values
- Protection of public health and safety

Management Area 9.2 Desired Condition

This designation serves as a holding category until further study and recommendations on specific designations can be made, or conditions warrant a change in management. These areas receive little or no vegetation manipulation, development, or capital investment. Natural forces maintain and influence existing conditions. Management activities and facilities ensure the protection of public health and safety and the prevention of significant loss of existing resources or productivity of the area.

Existing roads and trails provide access to the areas. The Forest maintains existing facilities but additional facilities or improvements are provided only for the protection of the land and public health and safety. Utility corridors and other special-use applications are permitted on a case-by-case basis. There may be evidence of human activities.

This management area applies in all alternatives, but only Alternatives 2, 3, and 4 have acres allocated.

Management Area 9.3 Desired Condition

This management area emphasizes the protection and maintenance of environmental values associated with unique ecosystems. These areas receive little or no vegetation manipulation, development, or capital investment for reasons other than low impact recreation uses (for example, trails and trail improvements) and public health and safety. Guidance emphasizes dispersed recreation activities. Natural forces maintain and influence existing conditions. Management activities and facilities ensure the protection of public health and safety and the prevention of significant loss of existing resources or productivity of the area.

Existing roads and trails provide access to the areas. Existing facilities are maintained, but additional facilities or improvements are provided only for the protection of the land or public health. Utility corridors and other special-use applications are permitted on a case-by-case basis. Evidence of human activities may be present.

This management area applies in Alternative 2.

Alternatives Eliminated from Detailed Study

NEPA requires Federal agencies to explore and objectively evaluate a range of reasonable alternatives and briefly discuss the reason for eliminating alternatives that the Hoosier did not consider in detail (40 CFR 1502.14). Alternatives not considered in detail:

- may be illegal
- may not meet the purpose and need
- may be technologically or clearly infeasible
- may be a duplication of an alternative considered in detail
- may be one on which a decision has already been made at a higher level
- may be determined to cause unreasonable environmental harm
- may be impossible to implement
- may be remote or speculative in nature

The paragraphs below summarize the reasons the Forest considered some alternatives but dismissed them from detailed consideration.

The Forest Service considered but did not analyze an alternative that combined elements of Alternatives 1, 3, and 4 as displayed. The alternative would have resulted in effects already displayed in the analysis of Alternatives 1, 3, and 4. During development of the alternative, it became apparent that analysis of this alternative showed little difference in effects from the alternatives already being considered.

A Draft Conservationist's Alternative to the Hoosier National Forest Land and Management Plan (Conservationist's Alternative) was submitted by the Indiana Public Lands Coalition in September of 2000. This alternative was the "result of research, discussion, and labor by the environmental community of Indiana" (Conservationist's Alternative, September 2000). The alternative presented a "four-part framework of goals to be met for ecological and human interaction paradigms" on the Forest (Conservationist's Alternative, September 2000). Alternative 2 closely represents the idea and intent of the submitted alternative.

The Conservationist's Alternative presented the following:

- Prohibit commercial logging
- Discontinue commercial uses beyond existing commercial rights and leases
- Discontinue the forest openings program
- Restrict the use of prescribed fire to barrens
- Designate additional wilderness areas
- Designate identified roadless areas

- Prevent further road construction
- Emphasize high quality, primitive recreational experiences
- Continue to exclude off-road vehicle use
- Develop a system of hiker only trails
- Place a moratorium on land exchange until a plan is in place that assures the public of fair compensation for Federal lands.

This alternative was not carried further into analysis because it would closely match the expected outcomes of Alternative 2. The main difference is that the Conservationist Alternative allowed for burning of barrens. Prescribed burning of barrens was analyzed in other alternatives.

During the public comment period held from March to June of 2005, two additional alternatives were submitted for consideration. The Planning Team considered both alternatives and determined neither should be carried forward in detailed study. A few aspects of these alternatives were, however, incorporated, mainly in Alternative 5.

The first alternative would have applied the following changes to the current Alternative 4:

- Shift MA 6.2 and 6.4 into either a modified MA 2.8 or a proposed Research MA 8.3 for ruffed grouse and early successional species. The desired condition would be to maintain 8 to 12 percent of the areas in early successional forest habitat (0 to 9 years), with 1 to 2 percent in openings. For group selection, temporary opening size should be increased to 5 acres, and for even-aged management, increase the upper limit of temporary openings to 10 acres in hardwoods.
- MA 3.1 should have a desired condition maintained at 10 to 16 percent in early successional forest habitat (0 to 9 years), 2 to 3 percent in openings, temporary opening size for group selection of 2 to 4 acres, and the temporary openings for even-aged management should be 10 to 30 acres.
- In MA 2.4 the visual quality “retention” distances are excessive at 1,000 to 4,000 feet and would severely limit forest openings in riparian zones, which are important habitat for American woodcock. Visual retention parameters should be more consistent with the definition presented in the DEIS.
- Even-aged timber harvests should include 80 to 100-year as well as 120-year rotations, not just 120 year as inferred in the documents. Ruffed grouse will benefit most from 80-year rotations.

This alternative was not considered for detailed study because the shift of acres from Management Area 6.2 and 6.4 to MAs with completely different desired conditions and goals would not be appropriate. These lands provide for the continued development and enhancement of old growth characteristics and habitat conditions for old growth species such as some forest interior birds. These areas also provide non-wildlife values such as solitude and recreation values that do not coincide with active timber management. This change would also require creation of another management area. The Need for Change (November 1, 2000) stated, “The forest proposes to maintain the existing array of management areas; however, the boundaries may be modified. The current plan provides a blend of different desired conditions in management areas across the forest, with emphasis on native plant and animal communities and provisions for large forest ecosystems with relatively little manipulation. This blend has worked well and provides

for a diversity of plant and animal communities on both local and regional scales.” Management Areas 6.2 and 6.4 are maintained to “provide an opportunity for solitude and a feeling of closeness to nature” (Need for Change 2000). One new MA (3.3) was included in the EIS to meet our legal requirement to “*maintain viable populations of existing native and desired non-native vertebrate species in the planning area*” (36 CFR 219.14). The Forest will maintain suitable habitat for these species without changing acres currently designated as 6.2 and 6.4.

The second alternative recommended that, if the above alternative were not developed, the acreage of Management Area 3.3 should be increased to four areas located throughout the Forest, each being equal to or greater than 10,000 acres.

The Planning Team considered this alternative and looked at some areas to see if implementation was possible. Following completion of a GIS analysis, it was determined that the Hoosier does not have a large enough land base to host three additional blocks of MA 3.3. Currently, Alternatives 3, 4, and 5 would implement MA 3.3 on the Tell City Ranger District. The areas were to be removed from existing MA 2.8 areas, as those areas were already deemed General Forest areas and would have similar management goals. The areas were mapped using GIS technology, and none of the additional three areas were shown to have land characteristics that would allow for creation of a contiguous block 10,000 acres or more in size.

The planning team looked closely at creating one additional area of MA 3.3 on the Brownstown Ranger District close to the Maumee Boy Scout camp. The largest area that could be moved into MA 3.3 amounted to approximately 7,840 acres. Limitations of the land base would not allow for creation of an additional 10,000-acre area of MA 3.3.

Some of the changes suggested in the alternatives above have been incorporated into the current Alternative 5 and included in the analysis and final decision. Some changes were made to VQO classification for all alternatives. Specifically, the changes are:

- Even-aged management treatments have been increased to a maximum size of 10 acres in MA 2.8. The effects of this change can be found in Chapter 3.
- VQO changes (for all alternatives), the effects can be found in Chapter 3:
 - The VQO map has been adjusted to modify MA 2.4 from retention to partial retention. This will allow managers to better provide habitat for wildlife dependent on early successional mesic areas.
 - The secondary roads were moved from partial retention to assume the VQO for the surrounding areas.
 - The Ohio River Scenic Byway along the Ohio river, Interstate 64, State Highways 37, 50, 60, 64, 66, 150, and 446, and the Tower Ridge Road all became retention.
 - Lost and Little Blue River corridors in MA 2.4 remained retention.
 - Areas immediately surrounding developed recreation areas are reclassified as modification while those farther away from the recreation areas are partial retention.

Alternatives Considered in Detail

This section describes the five alternatives that the planning team analyzed in detail.

The planning team designed each alternative to respond to comments and significant issues in a different way, providing a range of possible management approaches from which to choose.

- Alternative 1 would continue the current management direction.
- Alternative 2 considers what would occur on the Forest if management included no commercial timber harvest, prescribed burning, or openings maintenance and little to no vegetation management and most other forms of active management. It would be similar to the minimum management benchmark.
- Alternative 3 would emphasize management to obtain and maintain a diversity of forest size and age classes and would develop areas for ATV use.
- Alternative 4 would provide the most biological diversity and the most fire-dependent and early successional species habitat. It would maintain habitat for late successional species, provide habitat management for a wide spectrum of wildlife species, and encourage a high level of visitor use and economic return.
- Alternative 5 modifies the current management direction to reduce the risk to species viability by directing even-aged management into MA 3.3 to provide young forest habitat. This alternative would provide habitat for a wide spectrum of wildlife species while maintaining current types of recreational use.

Alternative 5 is the selected alternative.

Elements Common to All Alternatives

Certain elements remain the same across all the alternatives. These include:

The Charles C. Deam Wilderness legislation designated 12,953 acres on the Hoosier. The Hoosier makes no recommendation in this revision process for designating additional lands as wilderness.

All five alternatives consider the same eight goals.

All alternatives will follow recovery plans for Federally threatened and endangered species. The Hoosier follows guidance in the “Biological Opinion on Implementation of the Hoosier National Forest Plan” from the USDI Fish and Wildlife Service. The Hoosier’s biological assessment, which preceded the Biological Opinion, addressed the five Federally listed threatened or endangered species found on the Forest.

The Paoli Experimental Forest would remain under the same management and in the same management area.

The 24 special areas and the one existing Research Natural Area are common to all alternatives. All candidate Special Areas and Research Natural Areas have been designated as the appropriate management area and their boundaries established.

Although the multiple-use philosophy guides each of the alternatives, multiple-use is not interpreted as meaning every use is appropriate for every area or even for every national forest.

No alternative considers surface disturbing leasing of Federal oil and gas resources.

All alternatives encourage partnerships to complete fisheries, recreation, vegetation, and wildlife projects when possible.

All alternatives would provide motorized vehicle access to the perimeter of large tracts of NFS land, where parking areas may be provided.

The Hoosier would manage areas that surround the Lost and Little Blue Rivers to protect their future eligibility as Wild, Scenic, or Recreation Rivers.

The Hoosier would provide for the protection of heritage resources.

Alternative 1– No Action (Current Forest Plan)

This alternative represents the 1985 Forest Plan, as amended. This alternative would provide a strategy to create areas reserved for continuous canopy mature forests and areas managed to provide recreation opportunities, wildlife habitat, and other opportunities. See Figure 2.1 in the map folder for a map of the alternative.

This alternative would maintain a designated trail system, with most trails providing for multiple users – hikers, mountain bikers, and horseback riders. It would allow no off-highway vehicle (OHV) use. The Forest would continue to manage developed and dispersed recreation use.

Alternative 1 would restore streams and historic wetlands where possible, and new lakes and ponds may be constructed. It would also maintain current forest openings and promote native grasses, forbs, and shrubs. The alternative would continue to convert openings featuring fescue and other nonnative species to native ecosystems. With this alternative, the Hoosier would use prescribed fire to maintain fire-dependent ecosystems or reduce fuel buildup. This alternative would maintain openings with a variety of management tools that include removing trees, disking, mowing, burning, and chemical controls. This alternative would use integrated pest management to control and limit nonnative invasive species.

This alternative would maintain biological diversity and forested habitat for wildlife using a variety of methods including timber harvests. Where even-aged harvests are used, they would provide young forest habitats. Prescribed burning is also an appropriate tool for maintaining biological diversity and forested habitats for wildlife. The Forest would maintain the current burning program including the reduction of hazardous fuels created by emergency situations, such as tornadoes.

Timber management would take advantage of opportunities to create and maintain wildlife habitat. The alternative would classify approximately 41 percent of NFS land on the Hoosier as suitable for timber production. Possible harvest methods could include thinning, single-tree selection, group selection, shelterwood, and clearcutting. Uneven-aged management would predominate. Many consolidated areas of the Forest are not suitable for timber production, and harvesting would be restricted on areas most able to provide opportunities for solitude and large areas of natural-appearing forests. The size of even-aged management treatments would be limited to a maximum of 10 acres in pine stands and 5 acres in hardwood stands.

Oil and gas activities would be restricted, but the alternative would allow some activities on a portion of the Forest.

The Forest would maintain the management area prescriptions identified in the 1985 Forest Plan as amended. The alternative would include the following management areas: 2.4, 2.8, 5.1, 6.2, 6.4, 7.1, 8.1, 8.2, 8.3, and 9.2.

Alternative 1 addresses the following issues addressed in the Need for Change:

- Watershed Health - Continues protection and enhancement of watersheds
- Ecosystem Sustainability - Maintains habitat for wildlife populations by providing a variety of habitat types including forest openings and all forest seral stages. Allocates significant acres to management areas that exclude almost all vegetative management.
- Recreation Management - Provides dispersed, developed, and trail opportunities. Does not provide an OHV trail system, but licensed OHVs may continue to be used on public roads.

Alternative 2

This alternative represents a preservation theme for management of the Hoosier. The focus on limited vegetation management would encourage the development of large areas of continuous forest canopy. This continuous canopy would provide a progression toward old growth characteristics typical of species associated with late successional habitat. See Figure 2.2 in the map folder for a map of the alternative.

Alternative 2 would maximize areas that provide a degree of solitude. Other than trails, these areas would exhibit little visible signs of vegetation management, and natural processes would predominate. With this alternative, management would maintain and enhance recreation development as appropriate. The Forest would construct no additional major recreation sites. Alternative 2 would maintain existing trail systems and trailhead facilities and may construct additional hiking trails. This alternative would seasonally close selected trails to horse and mountain bike use to minimize impacts to the resources during inclement weather. The Forest would implement no off-highway vehicle trail system.

This alternative would designate developed horse camps and other developed recreational sites on the Forest as Management Area 7.1, developed recreation. This would add approximately 30 acres to Management Area 7.1.

This alternative would not construct new ponds or lakes and would not maintain existing ponds except as necessary to protect public safety. It would not maintain or develop wetlands or allow for stream restoration. This alternative would provide habitat for wildlife species requiring high forest canopy and little disturbance and emphasize mature forest interior species. However, this alternative does not provide early successional shrubland or young forest habitats for viable populations of many species.

Alternative 2 would allow mowing or manual pulling of nonnative invasive plants, but it would use no chemical controls except in recreation areas.

Under this alternative, the majority of the wildlife habitat would move over time to a late successional seral stage. No commercial timber harvesting would occur. The Forest would allow tree removal only when the trees pose a threat to human health and safety. Only limited vegetation management or prescribed burning, if any, would occur with this

alternative and then only where there is clear and immediate need. In some cases, this alternative would allow native species to be planted or seeded to restore native ecosystems. This alternative would maintain no wildlife openings, so current openings would revert to forest, and it would close roads used only for access and maintenance of forest openings, wetlands, or ponds.

This alternative would classify no management areas as suitable for timber management or harvesting.

Oil, gas, and mineral activities are incompatible with the management philosophy of this alternative.

Alternative 2 proposes to change some management areas described in the 1985 Forest Plan as amended. It would include the following management areas: 5.1, 6.2, 7.1, 8.1, 8.2, 8.3, and 9.2. Additionally, this alternative would create Management Area 9.3, a land allocation associated with large blocks of continuous forest canopy emphasizing dispersed recreation in natural-appearing landscapes (see description in the section concerning management areas). The alternative would place most acres previously designated as Management Area 2.4 and 2.8 in Management Area 9.3.

This alternative addresses the following issues from the Need for Change:

- Watershed Health - Limits possible degradation of watershed by limiting management and impacts to the land. Does not allow for enhancement of watersheds by restoring or maintaining wetlands. Might close selected trails seasonally, based on impact.
- Ecosystem Sustainability - Provides habitat for species associated with late successional habitat. Depends on random actions of private landowners and off-Forest habitat and natural disturbances to provide early successional habitat. Does not meet NFMA requirements for providing habitat for viable populations of all native and desired non-native species in the planning area.
- Recreation Management - Optimizes opportunity for solitude. Does not provide an OHV trail system, but licensed OHVs may continue to be used on public roads.

Alternative 3

Alternative 3 emphasizes a diversity of forest size and age classes including areas of continuous canopy. Management Areas 2.4, 5.1, 6.2, 6.4, 7.1, some of 8.2; and some areas of consolidated ownership would be managed primarily for recreational uses and provide habitat for wildlife needing late successional habitat. The alternative would provide for construction of additional trails and development of an ATV trail system and associated facilities. See Figure 2.3 in the map folder for a map of the alternative.

The alternative would manage much of the Forest to provide wildlife habitat for a variety of species and areas for dispersed recreation. The alternative would provide natural-appearing forests while focusing on healthy and vigorous forests and biological diversity. This alternative would allow some expansion of existing recreational facilities and the development of additional areas, if needed.

The Forest trail system would primarily provide multiple-use trails open to hikers, mountain bikers, and horseback riders, although it would also provide single-use trails on a limited basis. It would also authorize closure of trails in the Charles C. Deam Wilderness to horseback riders seasonally to minimize resource damage and maintenance costs, based on impacts.

This alternative would add or expand developed recreation sites or improvements to increase the ability of Forest sites to better meet demand. The Forest could develop group sites where regular use increases the need for hardened sites to protect resources and provide for visitor health and safety concerns. The alternative would allow more hardened pull-off sites along public roads to provide better access to the Forest.

This alternative would designate developed horse camps and other developed recreational sites on the Forest as Management Area 7.1 developed recreation. This would add approximately 30 acres to Management Area 7.1.

Alternative 3 would provide wildlife habitat for all species, including forest interior and early successional species. It would maintain openings and could create new openings as the Forest acquires land, with the preference being larger openings or complexes of openings. It would maintain openings with a variety of management tools including removing trees, disking, mowing, burning, and chemical controls. This alternative would continue to eliminate openings from large areas of contiguous forest canopy. The alternative would restore streams and historic wetlands where possible and may construct new lakes and ponds.

Timber harvest to create young forested habitat would be a focus of MA 3.3, located on the Tell City Ranger District.

This alternative would consider approximately 56 percent of the NFS land suitable for timber management or production. This would provide a variety of forest age classes and species. The Forest would accelerate pine harvest in the first three decades to allow for regeneration of the sites to hardwoods. While even-aged treatments would occur throughout the Forest, the Hoosier would focus much of that treatment in Management Area 3.3. This management area would encompass approximately 13,000 acres of the Tell City Ranger District. No even-aged harvest in Management Area 3.3 would exceed 40 acres in size.

Timber stand improvement techniques would move stands toward native species and improve stand health and vigor, resulting in better disease resistance and better mast production.

Alternative 3 would use prescribed fire in conjunction with harvesting to increase oak-hickory regeneration. The use of prescribed fire would also maintain fire-dependent ecosystems and reduce fuel buildup. This alternative would use integrated pest management to control and limit nonnative invasive species.

This alternative would not allow oil, gas, and mineral activities.

Alternative 3 would include the following management areas: 2.4, 5.1, 6.2, 6.4, 7.1, 8.1, 8.2, 8.3, and 9.2. This alternative would implement Management Area 3.3 to provide

increased habitat for early successional species. Additionally, this alternative proposes to add Management Area 3.5, a designation associated with a mosaic of forest conditions and plant communities and emphasizing uneven-aged forest management techniques.

Alternative 3 responds to the following issues addressed in the Need for Change:

- Watershed Health - Continues protection and enhancement of watersheds. Closes trails seasonally in the Charles C. Deam Wilderness.
- Ecosystem Sustainability - Maintains viable populations by providing a variety of habitat types including forest openings and all forest seral stages. Increases habitat for species associated with early seral stages.
- Recreation Management - Provides for an ATV trail system.

Alternative 4

This alternative emphasizes fire-dependent and early successional habitat while maintaining habitat for late successional forest species. It would increase biological diversity, provide habitat management for a wide spectrum of wildlife species and a wide range of plant communities, and encourage a high level of visitor use and economic return. See Figure 2.4 in the map folder for a map of the alternative.

The alternative would maximize recreational opportunities such as fishing, hunting, trail use, and wildlife viewing but offer less area for solitude or closed-canopy forest conditions than the other alternatives. It would place priority on restoring native hardwood species and providing habitat for those species dependent on early-successional habitat.

Alternative 4 would maintain a designated trail system with opportunities for hikers, mountain bikers, and horseback riders. This alternative would not provide opportunity for off-highway vehicle use. Dispersed use would occur throughout the Forest, and the Forest would expand developed facilities as needed to meet increased demand.

This alternative would designate developed horse camps and other developed recreational sites as Management Area 7.1, developed recreation. This would add approximately 30 acres to Management Area 7.1.

This alternative would provide wildlife habitat for all species, including forest interior and early successional species. It would maintain openings and could create new openings, with the preference being larger openings or complexes of openings. It would maintain openings with a variety of management tools that include burning, diskings, mowing, removing trees, and using chemical controls.

Timber harvest to create young forested habitat would be the focus of Management Area 3.3.

Alternative 4 would restore streams and historic wetlands where possible and could construct new lakes and ponds. It would maintain current forest openings with native grasses, forbs, and shrubs and would use prescribed fire to maintain fire-dependent ecosystems or to reduce fuel buildup.

This alternative classifies approximately 56 percent of the NFS land as suitable for vegetation management including timber harvesting. Even-aged management would predominate under this alternative. While even-aged treatments could occur throughout the Forest, the Forest would focus a portion of that harvesting in Management Area 3.3. Even-aged treatment in Management Area 3.3 would not exceed 40 acres each in size. The alternative would treat pine stands to regenerate the sites to native hardwoods. The Forest would accelerate pine harvest in the first three decades. Timber stand improvement techniques, including the use of herbicides, could be used to move stands toward native species, to improve the vigor and health of a forest stand, or to improve mast production.

Alternative 4 would use a prescribed fire program in conjunction with timber harvest. This would increase the presence of oak and hickory species and maintain fire-dependent ecosystems. It would also use prescribed fire to reduce fuel buildup.

This alternative aggressively treats nonnative invasive species and allows use of all available methods.

Alternative 4 would include the following management areas: 2.4, 5.1, 6.2, 6.4, 7.1, 8.1, 8.2, 8.3, and 9.2. This alternative would create Management Area 3.1, a designation associated with a mosaic of forest conditions and plant communities. Management Area 3.1 allows for both even-aged and uneven-aged forest management techniques but predominantly uses even-aged management techniques. Additionally, this alternative would implement Management Area 3.3 to provide habitat for early successional species. This management area would encompass approximately 13,000 acres.

The alternative would not allow oil, gas, or mineral activities.

Alternative 4 addresses the following issues identified in the Need for Change:

- Watershed Health - Protects and enhances watersheds.
- Ecosystem Sustainability - Maintains viable wildlife populations by providing a variety of habitat types including forest openings and all forest seral stages and increases habitat provided for early seral stage habitats.
- Recreation Management - Encourages a high level of visitor use and economic return while continuing to protect resources. Does not provide for an off-highway vehicle trail system.

Alternative 5

This alternative provides a strategy to create areas reserved for continuous canopy mature forests and areas managed to provide recreation opportunities, wildlife habitat for native species, and other opportunities. This alternative is similar to the existing Forest Plan, but it adds features such as a 13,000-acre area focused on providing early successional habitats. Even-aged management would predominate in this area. While even-aged treatments could occur throughout the Forest, the Hoosier would focus a portion of this harvest in Management Area 3.3. See Figure 2.5 in the map folder for a map of the alternative.

This alternative would maintain a designated trail system, with most trails providing for multiple users – hikers, mountain bikers, and horseback riders. It would allow no off-

highway vehicle (OHV) use. Developed and dispersed recreation use would continue to be managed. This alternative would designate developed horse camps and other developed recreational sites on the Forest as Management Area 7.1, developed recreation. This would add approximately 30 acres to Management Area 7.1.

Alternative 5 would restore streams and historic wetlands where possible, and new lakes and ponds could be constructed. It would maintain current forest openings with native grasses, forbs, and shrubs. The alternative would continue to convert openings featuring fescue and other nonnative species to native ecosystems. This alternative would maintain openings with a variety of management tools including burning, disking, mowing, removing trees, and using chemical controls. With this alternative, the Hoosier would use prescribed fire to maintain fire-dependent ecosystems or reduce fuel buildup.

In addition, this alternative would maintain biological diversity and forested habitat for wildlife using a variety of methods including timber harvests.

The alternative would classify approximately 41 percent of NFS land on the Hoosier as suitable for timber harvest. Timber management would be used to create and maintain wildlife habitat especially for species dependent on this type of disturbance. Harvest methods could include thinning, single-tree selection, group selection, shelterwood, and clearcutting. Uneven-aged management would predominate. Even-aged management treatments across most of the Forest would be limited to a maximum of 10 acres in MA 2.8, but such treatments could be up to 40 acres in size in MA 3.3.

Prescribed burning is an appropriate tool for use in maintaining biological diversity and forested habitats for wildlife. The Forest maintains the current burning program including the reduction of hazardous fuels created by emergencies, such as tornadoes.

This alternative would allow for oil, and gas leasing without surface disturbance and some gypsum mining activities.

The alternative would include the following management areas: 2.4, 2.8, 5.1, 6.2, 6.4, 7.1, 8.1, 8.2, 8.3, and 9.2. This alternative would create a new management area, 3.3, to provide habitat for early successional species.

Alternative 5 addresses the following issues addressed in the Need for Change:

- Watershed Health - Continues protection and enhancement of watersheds.
- Ecosystem Sustainability - Maintains viable habitat including forest openings and all forest seral stages, including the focus of MA 3.3 on providing early successional forest habitat.
- Recreation Management - Provides dispersed, developed, and trail opportunities. Does not provide an OHV trail system, but licensed OHVs may continue to be used on public roads.

We have made changes to Alternative 5 since the DEIS was made available. Based on public comments, we have modified Alternative 5 in two ways:

- Even-aged management treatments have been increased to a maximum size of 10 acres in MA 2.8, regardless of vegetation type. In the DEIS, openings were limited to 5 acres in hardwoods and 10 acres in pine stands.

- Mineral developments are allowed in the Crawford Uplands and Brown County Hills Ecotypes, in MAs 2.8 and 3.3 only, and only with no surface occupancy. In the DEIS, mineral development was prohibited except to prevent Federal mineral rights from being drained by adjacent development.

The upper limit of even-aged management treatments in MA 2.8 was increased in response to information concerning the need of specific species, especially bird species, for larger opening sizes and in response to input from State agencies and others concerning this habitat need and the importance of that habitat in ensuring the viability of those species. The slight relaxation in the general prohibition on mineral development was made in recognition of the increasing difficulties in supplying this nation with petroleum and the President's emphasis on such development.

Acreages of Management Areas

Different alternatives allocate land to the various management areas differently. Table 2.1 shows by alternative the acreage that would be in each management area.

Table 2.1

ACRES OF NFS LAND BY MANAGEMENT AREA

| Management Area | Alt. 1 | Alt. 2 | Alt. 3 | Alt. 4 | Alt. 5 |
|-----------------|---------|---------|--------|--------|--------|
| 2.4 | 16,900 | 0 | 11,238 | 11,238 | 16,900 |
| 2.8 | 102,127 | 0 | 0 | 0 | 88,919 |
| 3.1 | 0 | 0 | 0 | 88,919 | 0 |
| 3.3 | 0 | 0 | 13,178 | 13,178 | 13,178 |
| 3.5 | 0 | 0 | 88,919 | 0 | 0 |
| 5.1 | 12,953 | 12,953 | 12,953 | 12,953 | 12,953 |
| 6.2 | 18,564 | 41,885 | 18,564 | 18,564 | 18,564 |
| 6.4 | 23,321 | 0 | 23,321 | 23,321 | 23,321 |
| 7.1 | 6,291 | 6,321 | 6,321 | 6,321 | 6,321 |
| 8.1 | 88 | 88 | 88 | 88 | 88 |
| 8.2 | 18,274 | 18,274 | 18,274 | 18,274 | 18,274 |
| 8.3 | 632 | 632 | 632 | 632 | 632 |
| 9.2 | 0 | 5,662 | 5,662 | 5,662 | 0 |
| 9.3 | 0 | 113,335 | 0 | 0 | 0 |

Table 2.2 displays the activities allowed in the various management areas. Alternative 2, however, would allow no prescribed burning, openings maintenance, stream and aquatic habitat improvement or maintenance, or pesticide use, and allows almost no timber harvesting regardless of the management area considered.

Table 2.2

ACTIVITIES ALLOWED BY MANAGEMENT AREA

| Projected Activities | MA 2.4 ¹ | MA 2.8 ² | MA 3.1 ³ | MA 3.3 ⁴ | MA 3.5 ⁵ | MA 5.1 | MA 6.2 | MA 6.4 ⁶ | MA 7.1 | MA 8.1 | MA 8.2 | MA 8.3 | MA 9.2 | MA 9.3 ⁷ |
|--|---------------------|---------------------|---------------------|---------------------|---------------------|--------|--------|---------------------|--------|--------|--------|--------|--------|---------------------|
| Even-aged Management | | √ | √ | √ | √ | | | | | | | √ | | |
| Uneven-aged Management | √ | √ | √ | √ | √ | | | √ | | | | √ | | |
| Conversion of pine stands to hardwood stands | √ | √ | √ | √ | √ | | | √ | √ | | | | | |
| Oak - hickory Management | √ | √ | √ | √ | √ | | | | | | | √ | | |
| Timber Stand Improvements | | √ | √ | √ | √ | | | | √ | | √ | √ | | |
| Salvage/Sanitation Harvest | √ | √ | √ | √ | √ | | √ | √ | √ | | √ | √ | | |
| Prescribed Burning | √ | √ | √ | √ | √ | | | √ | √ | | √ | √ | | √ |
| Forest Openings Maintenance | √ | √ | √ | √ | √ | | | √ | √ | | √ | | | |
| Aquatic Habitat Improvements | √ | √ | √ | √ | √ | | | √ | √ | | | | | |
| Road Construction Reconstruction | √ | √ | √ | √ | √ | | | | √ | | | | | |
| Recreation Management Activities | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | | √ | √ |
| OHV Trails | | | | | √ | | | | | | | | | |
| Pesticide Use | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | | |

¹ Applies in Alternatives 1, 3, 4, and 5² Applies in Alternative 1 and 5³ Applies in Alternative 4⁴ Applies in Alternatives 3, 4, and 5⁵ Applies in Alternative 3⁶ Applies in Alternative 1, 3, 4, and 5⁷ Applies in Alternative 2

Comparison of Alternatives

This section provides a summary of the effects of implementing each of the alternatives.

Watershed Health

Maintenance of watershed health has been an objective of the Forest Service since its beginnings as an agency. The Hoosier provides watershed protection on NFS lands in an area where there are many cultivated fields, livestock operations, pastures, homes, private forests, small communities, and small farms, all in an area dominated by private land. Hardwood forests dominate the landscape and provide protection to watersheds by reducing erosion and sedimentation. The acreage suitable for management in each alternative provides an indication of the intensity level of that alternative's management activities. Road mileage, type, and location can have both positive and negative effects on watershed health and water quality. Implementation of management direction, site-specific mitigation, and Best Management Practices (BMPs) (IDNR 1998a) would result in minimal impacts to watershed resources. Table 2.3 displays indicators of response associated with the issue.

Table 2.3

WATERSHED INDICATORS AFTER 10 YEARS

| Indicators | Alt. 1 | Alt. 2 | Alt. 3 | Alt. 4 | Alt. 5 |
|---|--------|--------|---------|---------|--------|
| Suitable Acres for Management | 81,000 | 0 | 112,000 | 112,000 | 81,000 |
| Road Reconstruction and Construction (miles) ¹ | 147 | 6 | 146 | 202 | 147 |
| Even-aged Treatments (acres) | 16,500 | 0 | 39,000 | 88,000 | 16,500 |
| Uneven-aged Treatments (acres) | 64,500 | 0 | 73,000 | 24,000 | 64,500 |

¹ Based on recent project planning, the Forest expects about 18% of the road reconstruction and construction to be construction.

Ecosystem Sustainability

Viable populations of species, as well as plant and animal communities, are important components of maintaining ecosystem sustainability. The wide range of habitats on the Forest supports an equally wide array of plant and animal species that use or are dependent on those habitats. The Forest considered an ecosystem approach to management that emphasizes ecosystem integrity and a focus on species viability. The LANDIS model was used to describe future forest conditions on the Forest under each proposed alternative. The Forest Service considered all principal habitats on the Forest, and selected 19 species to determine risk to viability. The 19 species selected for analysis use the following 10 principal habitats found on the Forest: wetlands, rivers, ponds, dry forest, mesic forest, barrens, cliffs, karst, open lands, and wide-ranging.

Based on functional relationships between wildlife and habitat requirements, Habitat Suitability Index (HSI) models provide an index of habitat quality ranging from 0 (not habitat) to 1 (habitat of maximum suitability). HSI models were developed for each of the 19 SVE species and were used to compare future conditions under each proposed alternative to the current conditions found on the Hoosier.

Although the approach used for plant species differed from animals, the analysis assessed the effects of alternatives on plant populations.

Table 2.4 summarizes the predictions the risk to viability determined by the results of the HSI models. Readers can find more information in Chapter 3.

Table 2.4
DETERMINATION OF VIABILITY RISK FOR EACH SVE SPECIES AT YEAR
150

| Species | Alt. 1 | Alt. 2 | Alt. 3 | Alt. 4 | Alt. 5 |
|-----------------------|--------|--------|--------|--------|--------|
| ANIMALS | | | | | |
| Cerulean warbler | LOW | LOW | LOW | LOW | LOW |
| Wood thrush | LOW | LOW | LOW | LOW | LOW |
| Worm-eating warbler | LOW | LOW | LOW | LOW | LOW |
| Henslow's sparrow | LOW | HIGH | LOW | LOW | LOW |
| Yellow-breasted chat | HIGH | HIGH | LOW | LOW | MEDIUM |
| Ruffed grouse | HIGH | HIGH | LOW | LOW | LOW |
| Northern bobwhite | MEDIUM | HIGH | LOW | LOW | LOW |
| American woodcock | HIGH | HIGH | LOW | LOW | LOW |
| Indiana bat | LOW | LOW | LOW | LOW | LOW |
| Spotted salamander | LOW | LOW | LOW | LOW | LOW |
| Northern river otter | LOW | LOW | LOW | LOW | LOW |
| Indiana crayfish | LOW | LOW | LOW | LOW | LOW |
| Northern cavefish | LOW | LOW | LOW | LOW | LOW |
| PLANTS | | | | | |
| Carolina thistle | LOW | LOW | LOW | LOW | LOW |
| Prairie parsley | LOW | HIGH | LOW | LOW | LOW |
| Yellow gentian | LOW | HIGH | LOW | LOW | LOW |
| Climbing milkweed | LOW | HIGH | LOW | LOW | LOW |
| Illinois wood-sorrel | LOW | LOW | LOW | MEDIUM | LOW |
| French's shootingstar | LOW | LOW | LOW | MEDIUM | LOW |

The forest openings program manages areas in early successional shrubland habitat for wildlife that is dependent on this habitat. Table 2.5 summarizes percentages in maintained openings.

Table 2.5

PERCENTAGE OF THE FOREST IN MAINTAINED PERMANENT OPENINGS

| Alt. 1 | Alt. 2 | Alt. 3 | Alt. 4 | Alt. 5 |
|--------|--------|--------|--------|--------|
| 3 | 0 | 2.5 | 3 | 3 |

A shift in forest composition from oak-hickory to maple-beech dominated forest has implications for many wildlife species. This could result in a reduction of species richness and abundance in bird communities and is likely to negatively affect many species. Table 2.6 presents the expected oak-hickory component present in the Forest following 150 years of implementing the various management alternatives as contrasted to the existing condition.

Table 2.6

ACRES OF OAK-HICKORY PRESENT AFTER 150 YEARS

| Existing | Alt. 1 | Alt. 2 | Alt. 3 | Alt. 4 | Alt. 5 |
|----------------|---------------|---------------|----------------|----------------|---------------|
| 130,890 | 87,610 | 63,570 | 104,600 | 135,340 | 87,610 |

Table 2.7 portrays expected age class distribution following implementation of alternatives, while Figure 2.1 displays the dominant species composition predicted by the LANDIS model.

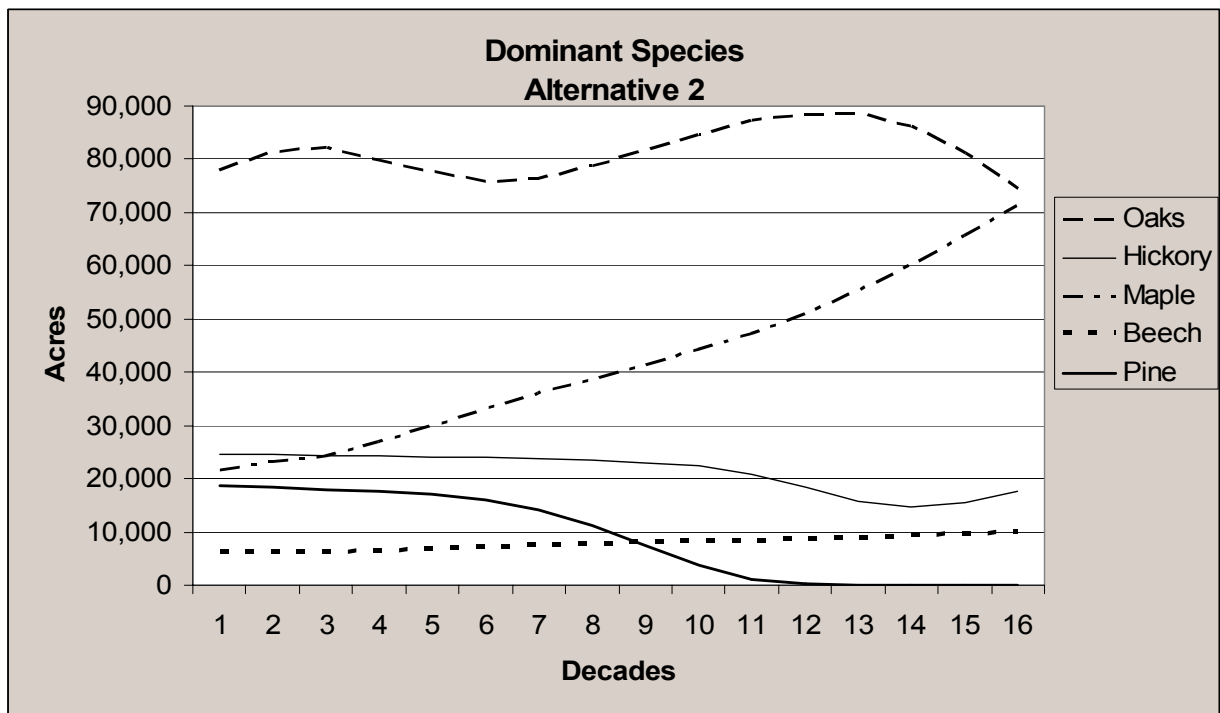
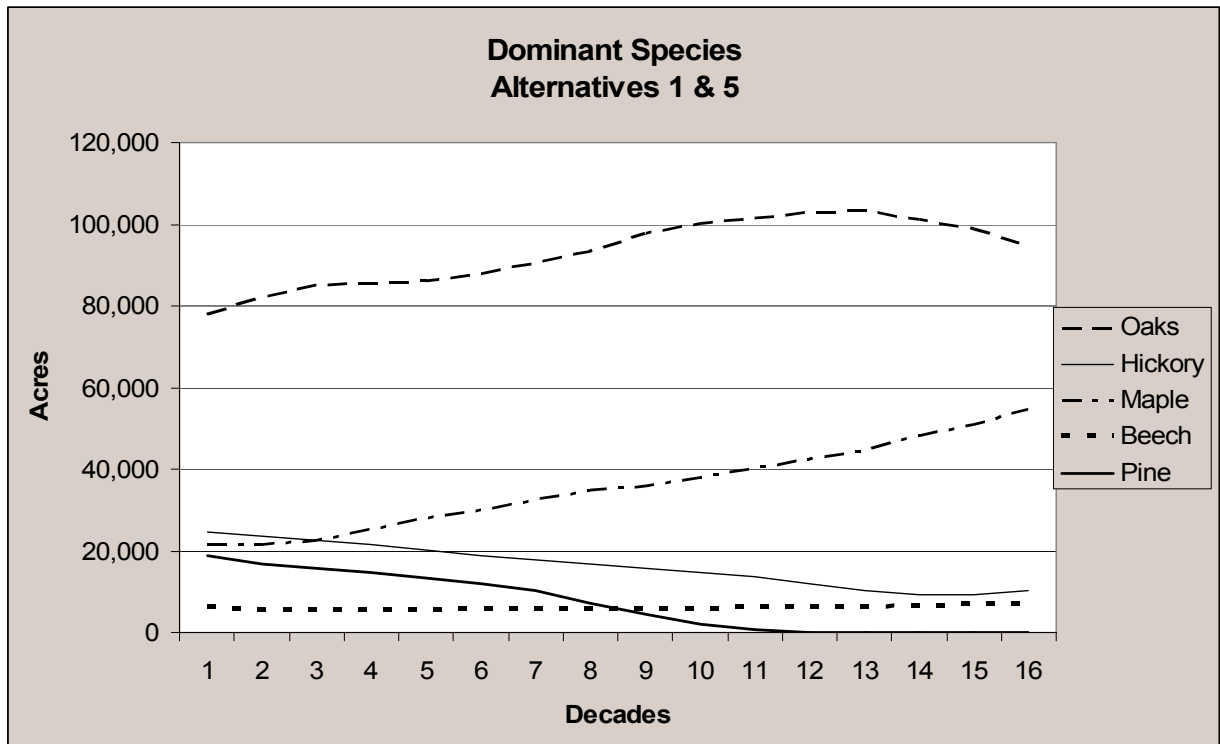
Table 2.7

AGE CLASS DISTRIBUTION
Projection of 150 Years from Today (Percent)

| Age Class | Existing | Alt. 1 | Alt. 2 | Alt. 3 | Alt. 4 | Alt. 5 |
|---------------------------------|----------|--------|--------|--------|--------|--------|
| 0-9 | 1 | 1 | 0 | 2 | 3 | 1 |
| 10-39 | 19 | 5 | 3 | 6 | 11 | 5 |
| 40-59 | 12 | 4 | 0 | 3 | 8 | 4 |
| 60-79 | 14 | 3 | 2 | 4 | 7 | 3 |
| 80+ | 48 | 80 | 91 | 78 | 64 | 80 |
| Non-Forested Areas ¹ | 6 | 7 | 4 | 7 | 7 | 7 |

¹ Non-forested areas related to maintained forest openings, lakes, ponds, streams, and power line rights-of-way

Figure 2.1 Species Composition



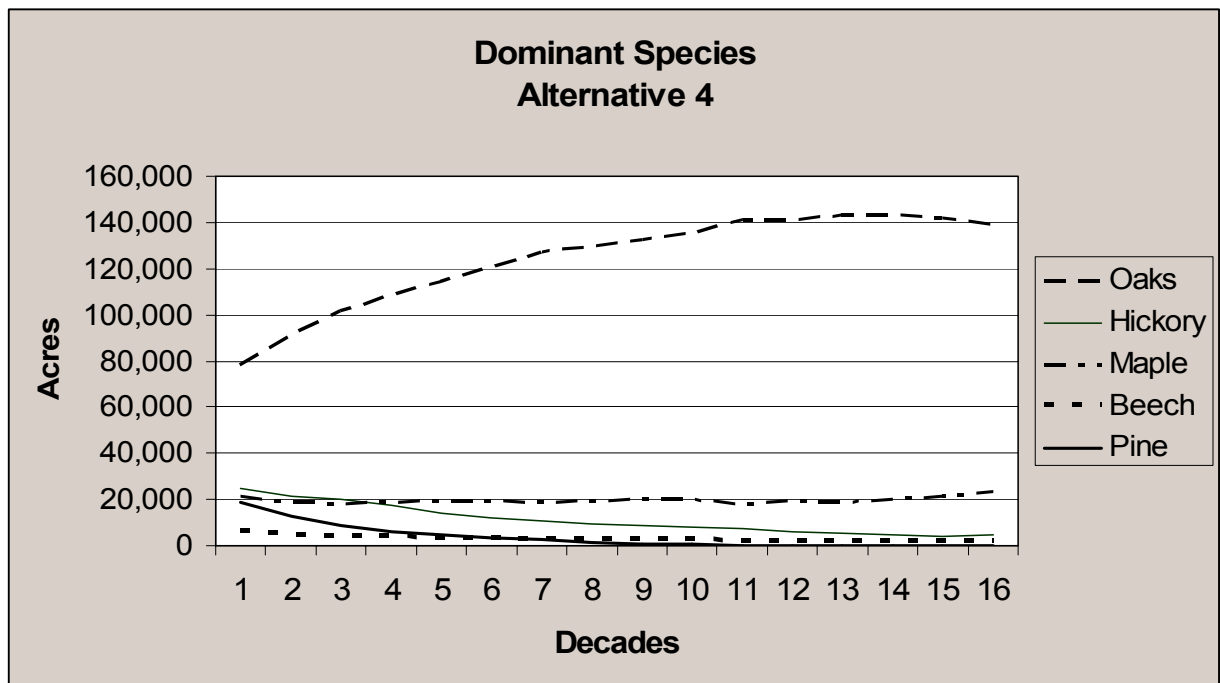
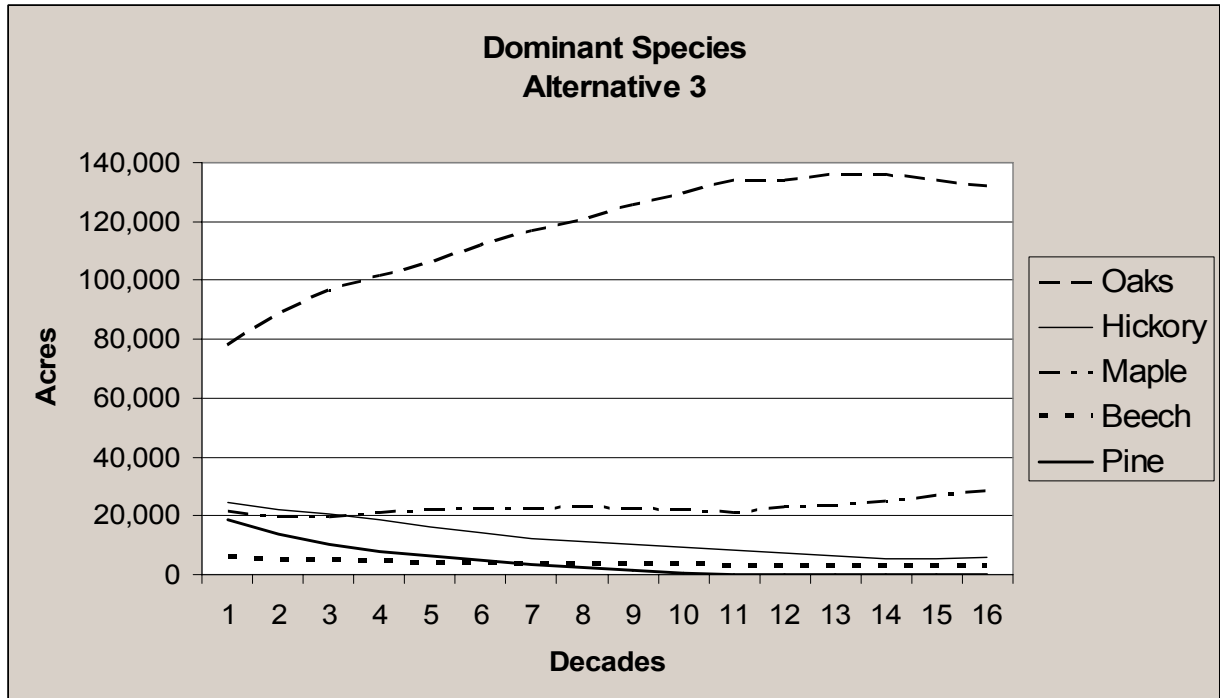


Table 2.8

SUMMARY OF PROJECTED VEGETATION TREATMENTS (ACRES)

| Activities in First Decade | Alternative 1 | Alternative 2 | Alternative 3 | Alternative 4 | Alternative 5 |
|--|---------------|---------------|---------------|---------------|---------------|
| Prescribed Burning in Combination with Timber Harvest ¹ | 5,720 | 0 | 11,350 | 19,240 | 5,720 |
| Prescribed Burning Not Accompanied by Timber Harvest | 14,280 | 0 | 38,650 | 80,760 | 14,280 |
| Total Clearcut Projected | 2,020 | 0 | 1,600 | 6,020 | 2,020 |
| Total Shelterwood Projected | 840 | 0 | 4,070 | 3,600 | 840 |
| Total Single-tree Selection | 1,110 | 0 | 3,820 | 5,160 | 1,110 |
| Total Group Selection | 2,850 | 0 | 240 | 0 | 2,850 |
| Total Harvest | 6,820 | 0 | 9,730 | 14,780 | 6,820 |

¹ Burning with timber harvest would burn half the stated acres but burn each acre twice.

The National Forest Management Act (NFMA) states that a national forest should maintain the capacity to provide a sustained yield of forest products through time. The allowable sale quantity (ASQ) displays the non-declining sustained flow of forest products to the communities (Table 2.9).

Table 2.9

ALLOWABLE SALE QUANTITY BY ALTERNATIVE
(First Decade - MMBF)

| Alt. 1 | Alt. 2 | Alt. 3 | Alt. 4 | Alt. 5 |
|--------|--------|--------|--------|--------|
| 57.6 | 0 | 62.3 | 94.7 | 57.6 |

Recreation

Table 2.10 presents a summary of the recreation indicators, including the amount of output, jobs, and income determined by the IMPLAN analysis (Fox 2004).