# Chapter II

## Summary of the Management Situation

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Chapter II describes the Forest as it is today, the management problems, and summarizes the supply and demand conditions for significant goods and services. Special conditions affecting supply or demand are mentioned briefly. More information is provided in the Final EIS and in the Appendix Volume, Appendix A, Appendix B-Parts 3, 4, 5, 6, 7, and 8 and Appendix C. This chapter also discusses the need to change management direction.

## Introduction

The National Forest Management Act defines forest planning as an issue-driven process. The identification of issues, concerns, and opportunities constituted a major first step of the planning process. The purpose of this step was to assess the need for change in management of the Ottawa National Forest. The issues, concerns, and opportunities were identified by the public and the Forest personnel. Intensive public involvement ensured that the issues were those actually perceived by the public as well as those identified by the Forest Service. These issues, concerns, and opportunities (ICOs) were then developed into management problem statements.

The management problem statements guided the Ottawa National Forest land management planning team through the planning process. The problems, and how the Forest could respond to them, helped determine the information and data needed to develop alternative Forest Plans. The problem statements helped define the analysis needed to display the maximum and minimum amounts of resources that could be provided in response to specific questions. An understanding of the current Forest resource condition, and the management problem statements was essential for determining the range of biological and economic constraints to incorporate into the alternatives.

## Forest Description

### Establishment

The Ottawa National Forest was established in 1931 and has a gross area of 1,559,892 acres, of which 928,441 acres (60 percent) are now in National Forest System ownership. The remaining lands within the Forest consist primarily of a mixture of county and local government ownership, private industrial lands open to public recreation, and small private ownership.

### Climatic, Biophysical Resources

The Ottawa National Forest exhibits a milder climate near Lake Superior and in the southeastern portion of the Forest as compared to the more severe climate (e.g., shorter frost-free period and greater snowfall) of the interior zone of the Forest.

The landforms and soils of the Forest are quite varied and are a result of the last glacial activity. Glacial till, outwash, and glacial lake-laid landforms and materials dominate the landscape. Of minor extent but significant to management are bedrock outcropping, deep river valleys, and organic deposits. Soils originating from these landforms are very complex and have a major influence on vegetation growth and composition; road location, construction costs, and standard; wildlife habitat potential; and the seasons of operation for heavy equipment within the Forest.

The riparian resources consist of more than 500 lakes, 1,500 miles of streams and rivers, wetlands, and floodplains. The lakes and streams provide a variety of fish including walleye, perch, trout, bass, northern pike, brook trout, rainbow trout, brown trout, and panfish. Most of the Great Lakes species of trout and salmon reproduce in the Forest's rivers.

Wildlife such as beaver, mink, otter, and muskrat frequent the edge of lakes, streams, and swamps. Lake and stream edges also provide food and cover for a wide variety of songbirds, predators, waterfowl, shorebirds, and amphibians.

Forest cover types are dependent on soils, landforms, and climatic conditions within the Forest. However, logging activities followed by wildfires during the late 1800s and early 1900s drastically altered the forest vegetative composition. The forest of the presettlement period was largely replaced by younger, even-aged forests that now contain a mix of early, mid, and late successional species (e.g., sugar maple, hemlock). Early successional species such as aspen is being replaced by late (sugar maple) and mid (balsam fir) successional species.

The upland portion of the Forest provides habitat for wildlife, such as deer, grouse, and snowshoe hare, associated with early successional species of vegetation which are declining as the existing forest matures. Mid and late successional forest are increasing and provide habitat for species such as bear, bald eagle, and fisher.

## Social

The Ottawa National Forest is within one day's drive of major cities such as Detroit, Green Bay, St. Paul/Minneapolis, Milwaukee, Madison, and Chicago. The majority of the recreationists come from Wisconsin, Illinois, and Minnesota but the Forest is extensively used by local residents as well. However, overall recreation use on the Forest is light.

Fur, timber, and iron and copper ore brought the early settlers to the region. Many scattered settlements were located near mines and sawmills. But as the ore became uneconomical to mine and the timber ran out, many towns were abandoned.

The boom-and-bust cycles of the mining and timber industry left the area with a depressed economy that continues today. Recreation and timber have taken over as the mainstays of the local economy but strong fluctuations continue to be a major economic factor.

## Cultural

The earliest human occupation in the western Upper Peninsula and on the Ottawa National Forest most likely followed the floral and faunal changes after retreat of the last glacier.

Knowledge of early occupations in the western Upper Peninsula is scant due largely to the lack of research by professional archaeologists. However, general cultural patterns developed

from research throughout the northern forests and Great Lakes region have been incorporated with data from the western Upper Peninsula and the Ottawa National Forest. Starting around 2500 B.C. to 1000 B.C., people developed an annual subsistence pattern of travel, hunting, fishing, and gathering available foods such as berries and tubers. The prehistoric exploitation of native copper as well as the use of exotic raw materials is displayed in the manufactured tools of this period. Family groups also tended to aggregate for spring and summer fishing and disperse for fall and winter hunting.

This trend continued to about A.D. 1600 when more sedentary family groups necessitated stabilized summer villages. These were usually located along the Great Lakes shorelines, the lower portions of the major rivers, and on the larger inland lakes. Even though a small number of such sites have been reported on the Ottawa National Forest, the prehistory of the western Upper Peninsula remains poorly understood.

The period of recorded history began with the French explorers, missionaries, and fur traders betwen 1615 and 1625. At this time, in the western Upper Peninsula, the primary cultural group was the Chippewa or Ojibway, and included about 25,000 people. Seasonal exploitation of natural resources predominated. Fur trade stations were developed at the mouths of the major rivers.

These early explorations initiated the earliest and largest settlements in the western Upper Peninsula, especially in the 1840s, as word of vast copper resources reached the eastern cities of the United States. In the next quarter of a century, scores of copper mines were established feverishly along the Trap Range, from Copper Harbor to Chippewa Hill in Gogebic County. Although mining continued sporadically into the 1930s and 1940s, most of the mines had played out by 1900. The early lumber industry in the late 19th century followed a similar boom-and-bust pattern. By around 1910, the development of rail transportation enabled the harvesting of hardwoods and hemlock. Today, the physical remains of these logging activities, such as railroad grades, tote roads, camps, artifacts, and splash dams, far outnumber all other cultural resources.

The Ottawa National Forest was established during the 1930s and the Civilian Conservation Corps (CCC) period. The resident CCC camps, spike camps, and related planting areas comprise some of the Forest's most important cultural resources. Other cultural resources recorded throughout the settlement period include homesteads, farmsteads, townsites, railroad stations, schools, cemeteries, and recreation sites.

To date, over 1,200 historic and 40 prehistoric archaeological sites have been recorded on the Forest. Based on Forest inventory data, the current cultural resource density may be as much as one site for every 350 to 500 acres. While site densities tend to vary with environmental conditions, generally cultural resources occur throughout the Forest. Although research overviews, informant interviews, and archival searches have greatly increased the number of reported cultural resources, many of these remain unverified and unevaluated.

## Management Problems

Analysis of the issues and concerns showed that people are concerned with potential changes in the management of the Ottawa National Forest that could affect their economic well being or their traditional leisure pursuits.

The people of the western Upper Peninsula have had close ties to their land since the area's settlement in the 1880s. Rich timber and mineral resources attracted the original immigrants and remained a mainstay of the local economy. The lifestyle that evolved is also outdoor-oriented. Hunting and fishing are popular leisure pursuits and even firewood gathering is a form of recreation with a serious purpose.

While logging and related forest industries have always been a part of the economic base, their importance as a source of jobs and income has increased as copper and iron mining jobs have disappeared. However, the distance from the wood products market has prevented the forest industry from filling the gap left by the closure of the mines.

The timber of the Ottawa National Forest remains a primary source of supply for the local and regional hardwood sawtimber and softwood and aspen pulp industry. A recent emphasis on tourism promotion has increased the economic importance of the Forest's campgrounds, boat landings, roads, and trails.

Private individuals, forest industries, and state and county government own nearly 40 percent of the land within the Ottawa National Forest. Thus, the forests, streams, and lakes of the Ottawa National Forest are not unique but the public access to them for leisure pursuits is. The land for hunting, fishing, and recreation and the road and trail system to reach those opportunities are assets to the lifestyle of local residents and an attraction to area visitors.

This high interest in the outdoors has not generated intense conflicts between different uses because of the sparse population and abundant supply of resources. The Ottawa National Forest is not subject to the intense recreation use that occurs on National Forests closer to urban population centers.

The five management problems identified are briefly summarized below. A more detailed description of these problems can be found in Chapter I of the Draft Environmental Impact Statement and Appendix A of the Appendix Volume.

## Summary of the Management Problems

**Transportation Problem**

The transportation management problem involves deciding what type of transportation system is needed to provide access for a variety of recreational opportunities and provide access and transportation of timber products in a timely manner. The transportation system must also be designed and managed to provide a variety of recreation settings.

**Wildlife Problem**

The wildlife management problem involves deciding what composition, arrangement, and age class structure of vegetation would be appropriate to provide habitat conditions for a variety of wildlife species. Habitat for threatened, endangered, and unique wildlife species, including areas with low amounts of road, needs to be provided. Providing improved habitat conditions for white-tailed deer and ruffed grouse is of particular local interest.

**Vegetation Problem**

The vegetative management problem involves deciding what vegetative composition should be maintained and what silvicultural systems will be utilized. These decisions influence several issues relating to the vegetation management including wildlife habitat, clearcutting, chemical use, the type of wood products available, the overall amount of timber available over time, and the economic efficiency of managing the vegetation to provide a variety of products and uses.

**Landownership Problem**

Forty percent of the land within the boundaries of the Ottawa National Forest is private or forest industry, state, or county owned. Public and private lands are intermingled, creating administrative problems for all landowners. Corporate lands for the most part are large contiguous areas.

From the Forest Service perspective, small parcels of land are difficult to locate, hard to reach, and inefficient to manage. Owners of small parcels within National Forest ownership are often concerned about continued access to their property and public use of nearby lands.

Some communities feel that National Forest landownership limits expansion opportunities. Developers are also interested in the availability of some National Forest System land for private use.

The present options for resolving mixed ownership problems are land exchange between the affected owners or outright purchase by the U.S. Government of the property in question. Opinions concerning further acquisition of land by the USDA Forest Service vary. Some favor such action while others oppose it strongly. Opposition is, in large part, based on a belief that public land

erodes the local tax base and affects local economies by limiting the amount of land available for private development.

Wilderness Problem

The wilderness problem involves deciding which existing roadless areas on the Forest should be designated for wilderness, wilderness study, or nonwilderness.

Reactions to the wilderness problem tend to vary sharply between local, regional, and national interests. Some local residents view wilderness designation as a lockup of land that infringes on their traditional uses of these areas. Other local, regional, and national interests see wilderness designation as a need for protection of unique characteristics of these area.

## Resource Demands and Supply

The Ottawa National Forest produces a wide variety of public benefits. These benefits range from those for which well defined markets exist, such as timber, to benefits which are difficult to measure or value such as vegetative diversity or visual quality.

To represent demand for these benefits, consumption of some of the Forest's products was estimated. This analysis predicted consumption for each of five decades. The analysis assumed all resource prices would remain the same through time. In some cases, substitution of products was considered a likely and acceptable outcome. Details of demands for individual benefits are presented in the following discussions.

The ability and the means through which the Forest can respond to these demands is presented in each resource discussion. Many factors that make up resource supply are presented. Finally, an interpretation of the supply and demand situation that represents how the Forest Plan will respond to anticipated demands is presented.

### Wildlife-based Recreation

Demand

Several sources of information were used to develop estimates of wildlife-based recreation consumption affecting the Forest. These included Forest recreation use inventories, Michigan Department of Natural Resources license sales records, and the RPA program. The process centered on four areas of recreation, big game hunting, small game hunting, waterfowl hunting, and nature study.

Table 2.1 shows the wildlife-based recreation use expected on the Forest for the next 50 years. The composite growth for these four uses revealed a less-than-1 percent change in consumption between 1980 and 1990. This change reflects, in part, the predicted drop in waterfowl hunting due to a continental decline in wetlands and waterfowl hunting experienced in the past.

Table 2.1
Wildlife-based Recreation Demand
(in thousand recreation visitor days per year)

| | Time Period 1 | Time Period 2 | Time Period 3 | Time Period 4 | Time Period 5 |
|---|---|---|---|---|---|
| Demand Trend | 105 | 106 | 107 | 108 | 108 |

Supply

Estimates of the supply of wildlife recreation were based on historical use records and the importance of different vegetation types to wildlife habitat. The estimates developed represent the sum of wildlife recreation visitor days (RVDs) including big game hunting, small game hunting, waterfowl hunting, and nature study.

While records did attempt to define use by type, such as big game and small game hunting, records associated with deer hunting were considered the most reliable. Also, the ability to adequately relate vegetation types to animal habitat and to RVD use was best for deer and deer hunting. Because of these relationships, RVDs were developed for deer hunting and an increment of RVDs added, at a fixed ratio, to represent other wildlife-based recreation use. The basic approach required study of historical surveys of local use related to white-tailed deer density estimates and development of a method of estimating white-tailed deer density based on vegetative composition and the relative importance of different vegetation types to deer.

Additional factors important to estimates of wildlife-based recreation supply included:

- The effect geographic, biological, climatic, and social differences across the Forest may have on RVDs.
- The benefits 0- to 10-year age classes of vegetation (temporary openings) may have on provision of habitat.
- The impact that management intensity may have on individual vegetative types and how this may affect RVDs.

The analysis revealed that the Forest has the ability to meet or exceed demands for the Forest as a whole. However, supply could be enhanced by concentrating certain management efforts in specific areas of the Forest where expected use is highest. Doing this could increase the availability of wildlife-based recreation opportunities while maintaining or enhancing the quality of experience.

Fishing Recreation

Fishing recreation demand is expected to increase by about 20 percent by the year 2000. The planned fisheries program will provide RVDs at that level through habitat improvements and/or maintenance projects on lakes and streams. (See Table 2.2.)

The program includes activities such as improving stream habitat by building riffles and sand traps and placing half-logs, improving lake habitat by building spawning reefs and liming, and

improving riparian areas through removal of beaver dams. All of these projects will be carried out and coordinated with Michigan Department of Natural Resources.

These projects will be emphasized on lakes with campgrounds and/or boat landings and on top-quality trout streams.

Table 2.2
Fishing Recreation Demand
(in thousand recreation visitor days per year)

| | Time Period 1 | Time Period 2 | Time Period 3 | Time Period 4 | Time Period 5 |
|---|---|---|---|---|---|
| Demand Trend | 116 | 137 | 156 | 175 | 192 |
| Supply | 126 | 147 | 165 | 182 | 191 |

## Dispersed Recreation

### Demand

Dispersed recreation demand includes all recreation activities not accounted for by wildlife-based, developed, or fishing recreation. These activities include backpacking, hiking, cross-country skiing, and driving for pleasure. A variety of uses is compatible with some or all Recreation Opportunity Spectrum (ROS) classes.

The range of recreation opportunity settings which can be provided on the Ottawa National Forest includes roaded natural, semiprimitive motorized, and semiprimitive nonmotorized. Activities such as driving for pleasure and developed recreation uses are compatible with a roaded natural ROS.

The ROS system matches activities and opportunities for experiences with the forest settings in which they are compatible. (See Forest Plan, Plan Appendix F for more information about the ROS system.) However, the correlation between the demand for ROS classes and the demand for activities is not well established. While it is difficult to precisely correlate the two, a demand exists for a variety of activities within a mix of settings to provide a variety of experience opportunities. Table 2.3 defines the estimated demand.

Table 2.3
Dispersed Recreation Demand
(in thousand recreation visitor days per year)

| | Time Period 1 | Time Period 2 | Time Period 3 | Time Period 4 | Time Period 5 |
|---|---|---|---|---|---|
| Demand Trend | 769 | 885 | 1,002 | 1,186 | 1,239 |

Supply

The Forest Plan will make available RVDs equal to and exceeding Forest demands for dispersed recreation activities and provide a mix of settings (ROS classes). The opportunity will be available, for example, to hike in a range of ROS classes from roaded natural to semiprimitive nonmotorized settings. There will also be settings where more specialized uses can take place. For example, backcountry camping may occur in some areas where all-terrain-vehicle use will be prohibited such as in a semiprimitive nonmotorized area.

By providing a mix of settings, the Forest will be able to meet demand for individual activities and provide a range of settings in which those activities can be experienced. The Forest Plan significantly increases acreages of both semiprimitive motorized and semiprimitive nonmotorized ROS classes over the current direction alternative. This means the Forest can better than meet demand estimates, which are an outgrowth of current use levels and recreational settings.

In short, the Forest Plan establishes a change in management direction to ensure that a range of ROS classes from roaded natural to semiprimitive nonmotorized is provided over time and that ROS objectives are set for each management area of the Forest.

The Forest Plan designates 51,000 acres of semiprimitive motorized recreation opportunity. It also provides for 164,000 acres of semiprimitive nonmotorized setting. Included in this are 50,026 acres of designated wilderness and wilderness study areas.

Table 2.4
Acres of ROS Setting
(in thousand acres)

| | Forest Plan Objectives | Current Direction Objectives |
|---|---|---|
| Roaded Natural | 711 | 820 |
| Semiprimitive Motorized | 51 | 0 |
| Semiprimitive Nonmotorized | 164 1/ | 106 |

1/ Includes approximately 50,026 acres of designated wilderness and wilderness study areas.

Developed Recreation

Developed recreation includes all those activities that occur at developed facilities across the Forest including those at Black River Harbor and in the perimeter area of the Sylvania Recreation Area. These facilities include campgrounds, picnic areas, and boat landings which will be managed to meet the roaded natural ROS setting requirements. Growth in user demand for these facilities is expected to grow about 14 percent over the first time period.

The Forest expects to satisfy the growth in RVDs in the near term, two time periods, without a loss in the quality of experience made available to the user. All existing sites and facilities will remain open. However, the level of service provided for each individual site will be matched to the historical use and duration of use over the season. In this way, the greatest amount of recreation opportunity will be available when demanded while operating the developed recreation program with the least expense possible. Table 2.5 compares the Forest's expected supply and demand for developed recreation.

Table 2.5
Developed Recreation Demand
(in thousand recreation visitor days per year)

| | Time Period 1 | Time Period 2 | Time Period 3 | Time Period 4 | Time Period 5 |
|---|---|---|---|---|---|
| Demand Trend | 257 | 293 | 334 | 381 | 434 |
| Forest Plan Objectives | 268 | 302 | 336 | 369 | 407 |

## Timber

### Demand

Timber consumption (demand) was estimated for hardwood, softwood and aspen products. (See Table 2.6.) Discussions with local and regional mills were used to better understand recent trends in Forest timber sales and to aid in developing short-term wood projection for the Forest. This information was used to project 1981 sales figures forward to 1995. The projections for 1995 to 2030 were built, reflecting RPA growth trends and assuming prices rise enough to maintain a balance between supply and demand. Major increases were foreseen in all pulpwood markets with less significant changes in sawlog consumption. It was also evident that current demand for hardwood sawlogs was in excess of current supply. Several assumptions were made concerning uncertainty of projections and substitutability of products over time.

### Supply

The supply of timber can vary widely depending on management direction, budget levels, and the intensity of management planned. All supply projections were constrained by minimum legal requirements such as nondeclining yield, culmination of mean annual increment, and size and dispersal of temporary openings. Supply projections were estimated for sawtimber and pulpwood products within the hardwood, softwood, and aspen species groups.

Maximum supply projections were determined from benchmark analysis. The maximum supply potential for total timber was well in excess of expected demand levels. Maximum supply potential of individual products generally exceeded expected demand with the exception of aspen products in the third to the fifth time period.

Forest Plan objectives provide a supply of total timber equal to expected demand for the first four decades. Fifth time period production would satisfy about 88 percent of total timber demand. The planned supply meets or exceeds expected demand for softwood products for four time periods, hardwood pulpwood for two time periods, and hardwood sawtimber in the third time period and beyond. Hardwood sawtimber supply in the early decades will fall short of demand due to the low average volume per acre of available hardwood sawtimber.

Planned supply of aspen products would fall short of expected demand. However, a continued increase in the supply of aspen will be maintained. Planned timber supply projections assumed some substitution of products can occur.

For example, some of the excess production of hardwood sawlogs (lower grades) in the later time periods could be substituted for hardwood pulpwood or aspen products. The excess production of hardwood and softwood products could also be substituted for aspen products.

This planned level of timber supply is an economically efficient level. Of the products and amounts produced, only aspen products volume for five time periods and hardwood sawtimber in the first time period were forced up to the levels desired.

Table 2.6
Timber Product Supply and Demand Estimates
(in million cubic feet per year for each time period) 6/

| Timber Species Product | Maximum Supply Potential | Demand Trends 8/ | Forest Plan Objective |
|---|---|---|---|
| | | Average Annual | |
| Total Timber | 1/ | | |
| Time Period 1 | 33.4 | 13.1 | 13.1 |
| Time Period 2 | 44.0 | 19.0 | 19.0 |
| Time Period 3 | 44.0 | 22.3 | 22.3 |
| Time Period 4 | 44.0 | 26.0 | 25.8 |
| Time Period 5 | 44.0 | 29.2 | 25.8 |
| Hardwood Sawlogs | 1/ | | |
| Time Period 1 | 4.7 | 2.1 | 1.8 |
| Time Period 2 | 5.1 | 2.5 | 2.4 |
| Time Period 3 | 8.7 | 2.5 | 4.1 7/ |
| Time Period 4 | 12.0 | 3.0 | 5.0 7/ |
| Time Period 5 | 18.5 | 3.3 | 6.2 7/ |
| Hardwood pulpwood | 2/ | | |
| Time Period 1 | 5.2 | 3.3 | 4.3 7/ |
| Time Period 2 | 14.0 | 5.6 | 7.4 7/ |
| Time Period 3 | 13.4 | 6.8 | 6.5 |
| Time Period 4 | 11.4 | 8.0 | 7.0 |
| Time Period 5 | 6.6 | 8.9 | 2.8 |
| Aspen Products 5/ | 3/ | | |
| Time Period 1 | 4.2 | 4.1 | 4.1 |
| Time Period 2 | 7.0 | 6.3 | 4.6 |
| Time Period 3 | 7.0 | 7.6 | 5.4 |
| Time Period 4 | 7.3 | 8.9 | 5.9 |
| Time Period 5 | 9.2 | 10.0 | 6.5 |
| Softwood Products 5/ | 4/ | | |
| Time Period 1 | 4.5 | 3.6 | 2.9 |
| Time Period 2 | 7.5 | 4.6 | 4.6 |
| Time Period 3 | 18.3 | 5.4 | 6.2 7/ |
| Time Period 4 | 34.9 | 6.2 | 8.0 7/ |
| Time Period 5 | 23.8 | 6.8 | 10.4 7/ |

1/ Max. Volume/Timber benchmark
2/ Max. Vol./Hardwood Sawtimber with Even-aged Management Emphasis benchmark
3/ Max. Vol./Aspen benchmark
4/ Max. Vol./Softwood Sawtimber Emphasis benchmark
5/ Includes pulpwood and sawlogs.
6/ To convert to board feet, multiply sawtimber by 5.4, pulpwood by 6.4, aspen by 5.75.
7/ Planned production exceeds the level demanded for an individual product but could be substituted for a product which is in short supply or less efficient to produce.
8/ These figures represent initial estimates of demand which timber consumers have for timber products from the Ottawa National Forest. They have not been adjusted to reflect uncertainty nor do they reflect the possibility that other timber products may be acceptable substitutes in many cases. Refer to Appendix Volume, pages B6-20-23 and B7-19-21 for additional discussion.

## Nonpriced Benefits and Management Opportunities

Specific consumption trends were not estimated for nonpriced benefits the Forest is able to produce. However, these benefits played an important role in the development of alternative Forest Plans and the selection of the preferred alternative. Chapters III and IV of the Forest Plan contain discussions of responses to Forest problems and Forest goals, based on nonpriced benefits.

Nonpriced benefits included those outputs, effects or conditions for which there was no established market price or means of estimating a price from willingness-to-pay studies. These benefits did not overlap with priced benefits but in some cases were closely linked. For example, improved vehicular access may affect yield coefficients and/or values either through lessening the cost of woods operations or increasing the attractiveness of an area to many recreationists.

Some of the nonpriced benefits sought included:

- Improvement of the quality and variety of recreation opportunities including semiprimitive and wilderness.
- Providing a variety of plant and animal community types.
- Maintenance of viable populations of all wildlife species.
- Providing visual variety consistent with visual quality objectives (VQOs).
- Maintenance of aspen ecosystems for a variety of resources uses.
- Species diversity within the hardwood type.
- Age class distribution of hemlock and swamp conifer.
- A reduction of potential impacts of herbicide use on the environment.
- Mix of road standards.
- Providing an appropriate level of conifer thermal cover for a variety of resource uses with particular emphasis on winter cover for deer.
- Providing suitable habitat for increased populations of endangered and threatened wildlife species including bald eagle and gray wolf.
- Maintenance of a suitable acreage of less common cover types such as hemlock and paper birch in selected locations.
- Improvement of vegetative age class distribution from younger growth conditions to older growth conditions.
- Providing a stable supply of wood products for local and regional wood products industries.
- Reduced risk of insect and disease outbreaks.
- Generating local income and employment.
- Improvement of the growth and quality of the timber resources.

A mix of road standards provides year-round access for woods operations and employment. The mix provides improved adaptability to changes in timber market conditions and improves

access for a great number of recreational uses and firewood gathering.

A variety of vegetative community types provides potential benefits in every resource area. Cover types of many age classes in aspen, hemlock, swamp conifer as well as hardwoods and other conifers ensures a wide range of plant and animal species that can be maintained through time.

The overriding value of all these benefits, variety of recreational opportunities, mix of timber species/products, variety of wildlife habitats, and a high degree of visual variety, is stability. These benefits improve the Forest's ability to contribute to biological, social, and economic stability through time and to better respond to changes in technology or public preferences. Significant changes could result in changes in demand for various forest resources.

This especially is important in an environment where decisions are, by the nature of the business, very long term. Once set in motion, events become very difficult to change away from for very long periods of time. In other words, an examination of problems may reveal the "best" answer to be one heavily favoring one vegetative type, recreational setting, or roading network. If taken up, the ability to adjust to changes in problems may be very limited or impossible, at least in the short term. By seeking the benefits listed above, the Forest could retain the ability to respond to change and provide benefits not otherwise available.

In short, nonpriced benefits included those conditions, resource outputs, and certain resource and/or locational uses. The reasons these were sought were (1) they were valuable to addressing minimum management requirements, (2) they provided conditions or resource outputs responsive to public issues but not readily obtained through a strict financial analysis, (3) they could ensure greater feasibility of alternatives to be effectively put in place on the ground and, (4) they provided a measure of adaptability so as to be able to quickly respond to changing market conditions and public issues.

## Summary of the Management Situation

In the analysis of the management situation, a number of important resource production tradeoffs were identified which occur when addressing the management problems.

A summary of key tradeoffs is shown below.

- Reductions in the acreage of aspen management reduces the acreage of clearcutting and as a result habitat for deer and grouse would be reduced.

- Emphasis on even-aged management of hardwoods and regeneration harvest in the early decades increases overall cost efficiencies and also increases hardwood sawtimber production in the early decades. However, the acreage of temporary opening would be increased resulting in potential impacts on visual and recreation resources.

- Emphasis on low standard roads reduces cost. However, the efficiency or flexibility of transporting timber products to market and motorized access for recreational uses would be reduced.

- Higher road densities may increase accessibility and efficiency in production of market goods and roaded natural recreation uses. However, a highly roaded forest would reduce the amount of semiprimitive recreation opportunities and habitat for gray wolf and other species requiring remoteness.

- Emphasis on even-aged management of hardwoods provides an opportunity to increase diversity of plant and animal communities within the hardwood type. However, to increase the relative amount of mid-tolerant species would require increased expenditures on reforestation and timber stand improvement practices and would increase the acreage of temporary openings created during any given time period.

- Timber sale activities could be emphasized in areas of the Forest where market demand is greater or where opportunities to improve habitat for deer and grouse are greater. However, emphasizing timber sales in these areas may also require higher cost. Also, supplies of products may be limited due to the concentration of harvest activities in these areas in the past.

- The acreage of aspen can be increased and provide increased habitat for game species of wildlife. However, this would require increased levels of clearcutting and if aspen acreage is increased substantially, the acreage of critical thermal cover types such as balsam fir may be reduced.

- The level of timber supply over time could be increased if existing roadless areas are managed for timber production. However, an adequate level of timber can be provided without the use of these same acres. Further, significantly more volume of most species/products groups can be supplied than demanded without consideration of these areas.

- Timber productivity could be increased significantly from present potential. However, this would require more intensive timber management including increased type conversions, artificial reforestation, and use of herbicides.

- Hardwood sawtimber supply has been less than demand due to low average volume per acre of available sawtimber and poor markets for hardwood pulpwood. Hardwood sawtimber supply could be increased only if market conditions improve for other products, especially hardwood pulpwood.

The Ottawa National Forest has the ability to provide a wide range of benefits and essentially meet demands for all goods and services at the same time. While Forest uses exist that are not compatible on the same acres, such as timber harvest and wilderness recreation, demands for both can be met. Also, satisfying demands for more than one good or service together may be more cost efficient than if they were produced separately.

In addition, ensuring satisfactory levels of nonpriced benefits, such as visual quality or vegetative diversity, will increase cost. However, only through appropriate consideration of priced and nonpriced benefits can maximum net public benefit be achieved.