

# **Managing National Forests for Non-Timber Forest Products**

## **Chapter 3**

### **Forest Management Plans and Management Perspectives**

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### **3. Forest Management Plans and Management Perspectives**

Over the last decade, there has been a growing interest in the economic and ecological potential of non-timber forest products. In the United States, much of this increased interest is the result of drastic changes in forest practices and policies in the Pacific Northwest, a region that produces many non-timber forest products. The forests of the eastern United States, however, also produce many non-timber forest products. This chapter focuses on the status of non-timber forest products in management plans of the national forests in eastern United States.

The eastern United States has some of the most productive forests in this country (USDA Forest Service 1984). Most of the states within the region have a high density of forest cover, and tremendous diversity of forest types. The U.S. Forest Service divides the eastern United States into two regions. The Southern region (Region 8) covers 13 states, while the Eastern region (Region 9) includes 20 states. The National Forest System in this part of the United States has been organized into 31 forestland management planning units.

The hardwood forests of eastern United States have been a valuable and unique source for many non-timber forest products for nearly four hundred years. All types of non-timber forest products (NTFPs) are collected from these forests. Edible and culinary products include wild onions, berries, and wild rice. More than 50 useful medicinal plant products have been identified, some of which are found only in this region. Floral products include moss, grapevine, boughs, pine straw, and birch twigs. Specialty wood products that are collected from the forests of eastern United States include cypress knees for carvings, burls for bowls, and maple saplings for furniture.

More than 80 laws affect how the U.S. Forest Service manages the national forests. Forest management planning on the national forests was not institutionalized until 1974 with the establishment of the Forest and Renewable Resources Planning Act (RPA 1974). Additional direction for the preparation of forest management plans was provided in the 1976 National Forest Management Act (NFMA 1976). The legislation mandates that the Forest Service manage for recreation, timber, range, watershed, fish and wildlife, and minerals. The Forest Service is to prepare and implement multiple-use forest management plans for every national forest. These plans would be revised every 10-15 years, depending on changes in local conditions.

The Forest Service is a hierarchical organization with a chain of command, from the Deputy Chief through the Regional Foresters and Forest Supervisors to the District Rangers (Figure 3.9). The District Rangers are responsible for the daily operations of the local units. These district level managers are aware of the local environment and are responsible for decisions that affect their units. The Forest Supervisors have overall responsibility for strategic and operational decisions on specific national forests. They have ultimate decision-making responsibility for what happens on the national forest. The Forest Planners support the supervisors and coordinate development and implementation of forest management plans. The Regional Forester, with the support of the Unit Leaders, has overall responsibility for management decisions of all forests within the region. The Deputy Chief of the National Forest System, in Washington, DC, has ultimate decision-making responsibility for all national forests. The Directors for each program area, and their staff, support the Deputy Chief and can influence the direction of the agency.

This chapter reports the findings of a content analysis of the forest management plans and other crucial documents that guide management of national forests. It also summarizes in-depth interviews with managers at the four management levels (district, forest, regional, national). A content analysis of the forest management plans and the plan revisions identifies the extent to which NTFPs are being managed. Examination of strategic policy documents provides insight into the consideration that NTFPs are receiving at a national level. In-depth interviews provide further insight into the perceptions of forest managers, at different management levels, concerning non-timber forest products. Key issues that affect forest management for NTFPs are discussed, as well.

### **3.1 Background**

The early inhabitants to the eastern United States brought with them the tools and resources (food, seed, and medicine) they needed to sustain their lives. When these stores were depleted, the settlers turned to the forests as the source for many of these essential items. The forests of eastern U.S. are still an important source for many non-timber forest products (NTFPs). Many of the species from which NTFPs are harvested grow only in the region.

Concern for the management, which includes standards, guidelines, inventory, monitoring, and silvicultural treatments, for non-timber forest products has increased. This increased concern is due, in part, to the changes in forest policies and practices on the national forests in the early 1990s. With a decrease in logging on national forests, and an increase in demand for many non-timber forest products, there are tremendous possibilities to realize the economic development potential of these resources. At the same time, demand for the non-timber forest products could exceed the capacity of the forests to supply them, which could have unfavorable economic and ecological impacts.

#### **3.1.1 The Forests of Eastern United States**

The eastern United States has not been the focus of much of the dialogue concerning non-timber forest products. Eastern U.S. hardwood forests are one of the most extensive forests of this type in the world (USDA Forest Service 1984). The biological diversity of some forests of eastern U.S. may surpass that found in tropical and temperate rainforests. The broadleaf forests of the Appalachian and Blue Ridge Mountains ecoregion form one of the most biologically rich temperate forest regions in the world (Ricketts et al. 1999). According to Constantz (1994) “no other region in North America hosts so much living diversity than Appalachia.” The region defined as eastern United States includes 33 states, from Minnesota south through Texas and east to the Atlantic Ocean ([Figure 3.1](#)). Ten ecoregions and the same number of forest types define the ecological environment. An ecoregion is “a relatively large area that contains a geographically distinct assemblage of natural communities” (Ricketts, et al. 1999, p7). A forest type is an area that is dominated by a distinct group of tree species with associated plants and animals.

Ten major forest provinces are represented in the geographic focus of this research ([Figure 3.1](#)). Each forest province is represented by a specific color and associated number code (Bailey

1995). The Laurentian Mixed Forest Province (code -- 212) covers approximately 147 thousand square miles in New England and the Great Lakes. The Eastern Broadleaf Continental Forest Province (code -- 222) stretches north from Tennessee and eastern Oklahoma to Minnesota and covers more than 270,000 square miles. The Eastern Broadleaf Forest Province (code -- 221) covers more than 104 thousand square miles, and is dominated by tall deciduous trees that provide a dense summer canopy. Approximately 43,000 square miles of the eastern United States are classified as Adirondack-New England Mixed Forest Province (code -- M212). The Central Appalachian Broadleaf Forest Province (code -- M221) has some of the most diverse forests in the country. The Southern Mixed Forest Province (code -- 231) embraces the Piedmont and Gulf Coastal Plains and covers approximately 193,000 square miles. The temperate evergreen forest is typical of the Outer Coastal Plain Mixed Forest Province (code -- 232), which covers about 174,000 square miles of the southeast. Prior to being converted to cultivation, the Lower Mississippi Riverine Forest Province (code -- 234) was covered with bottomland deciduous trees. The Ouachita Mixed Forest Province (code -- M231) and the Ozark Broadleaf Forest Province (code -- M222) cover approximately 9,000 and 6,400 square miles respectively. All of these forest provinces are the sources of important non-timber forest products.

The eastern states are the source of many forest resources. Most of the eastern states have a high percentage of forest cover ([Figure 3.2](#)) and a low percentage of rangelands (USDA Forest Service 1980). All but four of the states have more than 25 percent of the total land area in forest. More than 60 percent of the states in the east have more than 50 percent forest cover. While the region has low a percentage of land in range ([Figure 3.3](#)), the eastern U.S. forests produced 100 percent of the wild-harvested ginseng in 1998, and eight states in the region supplied approximately 85 percent (25,739 kg.) of total harvest (Robbins 1999).

The U.S. Forest Service divides the thirty-three states that define the eastern United States into two regions. In the Southern Region ([Figure 3.4](#)), the National Forest System constitutes approximately 12.5 million acres of the roughly 530 million acres of the total land area of this region (USDA Forest Service 1984).

The Southern Region (Region 8) is subdivided into five physiographic regions (USDA Forest Service 1984). The Ozark Highlands are steep-sided plateaus rising from approximately 500 feet above sea level to over 2800 feet. The Blue Ridge and Ridge and Valley subregion is a mountainous area rising from 500 feet in elevation to more than 6,700 feet above sea level. It is considered one of the most extensive hardwood forests in the world. The Piedmont subregion is defined by gently rolling hills rising to 600 feet above sea level. Much of the forestland has reverted back to forest since the early 1900s when it was cut heavily. The fifth subregion, the southern coastal plain, is characteristically a rolling landscape with predominately sandy soils.

Five major forest types found in the region (USDA Forest Service 1984). The upland oaks and pines each comprise approximately 25 percent of the stocking of the Oak-Pine forest type. This type covers about 32 million acres and occurs from east Texas to Georgia on upland sites on the Gulf coastal plain and Piedmont (Powell, et al. 1993). It can be found also in smaller areas north into the Appalachians to include *Pinus pungens* (Table mountain pine), *P. virginiana* (Virginia pine), and *P. resinosa* (Pitch pine). The Loblolly-Shortleaf Pine forest type is composed primarily of *Pinus taeda* (Loblolly pine) and *P. echinata* (Shortleaf pine) and covers

approximately 48 million acres in the region. This type occurs from Delaware south along the Atlantic coastal plain and the Piedmont to Florida. It extends west along the Gulf coast to east Texas. The Longleaf-Slash Pine type is found along the Gulf and Atlantic coastal plain from Louisiana to South Carolina (De Graaf et al. 1999). It covers about 17 million acres. The Oak-Hickory forest type covers the largest area; approximately 69 million acres. It covers a wide geographic range from Texas, Missouri and Iowa to southern New England. Many different species of oak and other hardwoods are found in this highly diverse region. Approximately 33 million acres of Region 8 are classified in the Elm/Ash/Cottonwood forest type.

The U.S.F.S. Eastern Region (Region 9) includes 20 states; from Minnesota south through Texas and east to the Atlantic Ocean ([Figure 3.5](#)). It encompasses more than 425.2 million acres and includes 16 National Forests (USDA Forest Service 1983). Approximately 38 percent (162.4 million acres) of the land area is forested. Of this, approximately, one hundred and fifty (151.6) million acres are of commercial value. Only 6.6 percent (10 million acres) of this is considered Federal commercial forest. The National Forest System (11.1 million acres) encompasses the largest proportion of the Federal commercial forest (9.19 million acres).

The forests of Region 9 are classified into six major types, of which four are primarily hardwood types (USDA Forest Service 1983). About 75 percent of the forests are classified as hardwood types. Two forest types (Oak-Hickory and Beech/Birch/Maple) cover almost 50 percent of the land area. Two other forest types (Elm/Ash/Cottonwood and Aspen/Birch) cover approximately 26 percent of Region 9. Coniferous forest types include Spruce/Fir (14 percent) and White/Red/Jack Pine (8 percent).

### **3.1.2 Non-Timber Forest Products**

Many important products are harvested from eastern forests that are not timber-based, but are plant or fungi based. Various terms have been used to describe these products, including non-traditional, secondary, minor, non-wood, and special or specialty. In many cases, NTFPs are neither minor nor secondary. The collection and sale of NTFPs may be a major source of income for some rural inhabitants. Often, NTFPs are not specialty products, but move through distribution channels as commodities. Many non-timber products have a long tradition in society. Hunters and gatherers were collecting edible products from the forest long before they had the technology to cut timber. Some wood-based NTFPs have an important niche in the craft and specialty furniture industry.

Non-timber forest products are plants, parts of plants, fungi, and other biological material that are harvested from within and on the edges of natural, manipulated or disturbed forests. Plants may include fungi, moss, lichen, herbs, vines, shrubs, or trees. Many different plant parts are harvested, including the roots, tubers, leaves, bark, twigs and branches, the fruit, sap and resin, as well as the wood. NTFPs can be classified into four major product categories: culinary, wood-based, floral and decorative, and medicinal and dietary supplements (Chamberlain, et al. 1998).

Culinary non-timber forest products include mushrooms, fruits, saps and resins, ferns, tubers and herbs. In many parts of the region, local economies are improved and enhanced by the marketing of edible forest products. Wood-based forest products are considered non-timber if they are



produced from trees or parts of trees, but not from commercially sawnwood. For example, burls, twigs, branches, and cypress knees are processed directly into handicrafts, carvings, turnings, utensils, containers, furniture, tools and musical instruments. Floral and decorative products are used in flower arrangements, for wreathes, swags, garlands, roping, as well as in the landscape industry. Plant derived medicinal products that have been tested for safety and efficacy, and meet strict U.S. Food and Drug Administration standards, may be marketed as medicines; otherwise they are legally considered food items and are marketed as dietary supplements.

The eastern United States is the source of many non-timber forest products, some of which are found only in the region. For example, *Actaea racemosa* (Black cohosh) and *Hydrastis canadensis* L. (Goldenseal), two important medicinal plants (Small and Catling 1999) are native to the East. Though *Acer saccharinum* L. (Sugar maple) is widely distributed throughout the eastern U.S. (Harlow, et al. 1991), the major source of syrup is New England. *Taxodium distichum* (Baldcypress), the knees of which are harvested for woodcarving is distributed throughout the coastal plains of southeastern United States (Harlow, et al. 1991). Some states (e.g., Florida) are the primary worldwide sources of important products, such as *Serona repens* (saw palmetto).

Many species are valued for their therapeutic qualities. Foster (1995) identifies more than 25 tree species, 65 herbaceous plants, and 29 shrubs that have been listed by the U.S. Pharmacopoeia for their medicinal values. More than 500 plant species with medicinal value have been identified in eastern and central North America (Foster and Duke 1990). TRAFFIC North America, a division of the World Wildlife Fund (1999), identified approximately 175 medicinal plants native to North America that are marketed in the United States, many of which are found in forests of eastern United States. Krochmal, et al. (1969) identified more than 125 medicinal plant species that grow in the Appalachian region of the eastern U.S. As the demand for medicinal NTFPs and other products expands, there is potential to realize greater economic benefits, but also potential for increased pressure on the resource base.

In the early 1990s, a series of major factors helped spark an increase interest in non-timber forest products. As a result of major forest fires, bumper crops of edible mushrooms appeared on many National Forests in Oregon and Washington (Freed 1994). Perceiving the potential for economic development and increased revenues, the federal and state forestry departments, as well as private companies, commissioned market studies on the opportunities for non-timber forest products (Mater Engineering 1992, 1993, 1994).

The findings of medical research also helped to increase market demand for non-timber medicinal forest products (Eisenberg, et al. 1993, Le Bars, et al. 1997, Stix 1998). The 1996 estimated value of the global markets for herbal medicines was approximately \$14 billion (Genetic Engineering News 1997). Europe was the largest market, representing one-half of the global trade. Asia commanded approximately 36 percent of the global market. In 1998, the total retail market for medicinal herbs in the United States was estimated at \$3.97 billion, more than double the estimate for North America in 1996 (Brevoort 1998, Genetic Engineering News 1997).

The mass-market segment for herbal medicinal products, which constitutes approximately 17% of the U.S. market, is growing at an annualized rate of over 100 percent (Brevoort 1998). The growth in exports of forest-harvested ginseng from 1993 (69,000 kg) through 1996 (191,500 kg) is illustrative of the trend in demand for many medicinal NTFPs (USDA 1999). Though exports of forest-harvested ginseng decreased in 1997 (144,000 kg) and 1998 (109,000 kg), demand for other species continues to expand (USDA 1999). For example, the estimated growth in the mass market for St. John's wort and black cohosh, for the 52-week period ending July 12, 1998, were approximately 2,800 percent and 500 percent, respectively (Brevoort 1998).

### **3.1.3 Management Agency for the National Forests**

No fewer than 82 laws affect Forest Service activities on national forests (Floyd 1999). Four laws provide the main direction on which, and how, the natural resources will be managed. The Organic Administration Act of 1897 (U.S. Code 30 Stat. 35) initiated management of the national forests. The act directs that forests be established to improve and protect the resources to secure water and to furnish a continuous supply of timber (U.S. Code 30 Stat. 35). More than sixty years later, the Multiple-Use Sustained Yield Act (MUSYA 1960) authorized and directed the Secretary of Agriculture to manage the national forests to ensure the multiple-use and sustained yield of the renewable surface resources of the forests. MUSYA defines the purposes for which the national forests are established and administered: "outdoor recreation, range, timber, watershed, and wildlife and fish" (MUSYA 1960).

The Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974 institutionalized land and resource management planning in the Forest Service (RPA 1974). The legislation requires the Secretary to prescribe land and resource management planning regulations that incorporate standards and guidelines, which are fully integrated into each national forest management plan. In particular, the legislation directs that plans to address recreation and wilderness, range, timber, watershed, and fish and wildlife.

The RPA also directs the Forest Service to undertake an assessment of the Nation's renewable resources and to develop a national renewable resources program. A new assessment is to be produced every 10 years to examine resource conditions, supply and demand trends, and investment opportunities for resource production and use. A national renewable resource program is to be crafted every 5 years, to direct Forest Service programs in response to trends and opportunities. The RPA program activities are to be consistent with the principles established in the MUSYA and the National Environmental Policy Act of 1969 (U.S. Congress, Office of Technology Assessment 1992).

The National Forest Management Act (NFMA) of 1976 amended the RPA to provide additional statutory direction on preparation and revision of Land and Resources Management Plans (LRMPs). The NFMA restated that such plans include "coordination of outdoor recreation, range, timber, watershed, fish and wildlife, and wilderness" (NFMA 1976, section 6 (c)(1)). Plans "determine forest management systems, harvesting levels and procedures in light of all of the uses set forth in subsection (c)(1)" (NFMA 1976, section 6(c)(2)). The LRMP provide management direction through a combination of activities for the use and protection of the natural resources within the bounds of the national legislation. To accomplish this, forest plans:

1) establish goals and objectives for a 10-15 year period; 2) Prescribe standards and guidelines, prescriptions, resources needed, and; 3) monitor and evaluate management impact (White Mountain NF LRMP 1985). In this study, reference to management for NTFPs, should be considered with regards to these mandates.

National legislation forms the legal basis of all management planning structure ([Figure 3.6](#)). The resource planning assessment (RPA) and program provide national production and use goals for recognized natural resources. Regional guides are based on an assessment of the natural resources and how those resources can be best managed to provide a share of the national goals and objectives. The Land and Resources Management Plans (LRMPs) reflect an assessment of how each forest's resources can be managed to provide a share of the regional goals and objectives. The purpose of the LRMPs (forest management plans) is to provide management direction through a mixture of activities for the use and protection of the natural resources within the purview of the national legislation.

As the steward of the national forests, the U.S. Forest Service has a responsibility to manage for all natural resources found on national forest lands, and to meet the public's needs without degrading the environment (USDA Forest Service 1999). Under the National Forest System (NFS), the U.S. Forest Service manages 155 national forests and 20 national grasslands and is the steward of more than 192 million acres of public lands (USDA Forest Service 1999). The NFS is partitioned into 9 divisions ([Figure 3.7](#)) including Wildlife, Fish and Rare Plants, Forest Management, Recreation, Heritage and Wilderness Resources, Range Management, Minerals and Geology Management, and Watershed and Air Management (USDA Forest Service 1997).

The U.S. Forest Service divides the eastern United States into two regions. U.S. Forest Service Region 8 – The Southern Region – includes 13 states (Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia). In Region 8, the NFS contains 35 National Forests and 2 Grasslands, which are organized into 17 forestland management planning units (USDA Forest Service 1984). The U.S.F.S. Eastern Region (Region 9) includes 20 north-central and northeastern states. The National Forest System in Region 9 includes 16 National Forests that are organized into 15 management planning units (USDA Forest Service 1983).

If one seeks to define and understand the spectrum of attitudes toward managing for NTFPs, it seems logical to examine a vertical stratification of the Forest Service along its chain of command. This approach recognizes the importance of the chain of command in the agency. It is used to elicit and extract perspectives at different levels of management. The Forest Service is a hierarchical organization with a distinct line of command ([Figure 3.8](#)). The National Forest staff at the headquarters in Washington, D.C. provides a national strategic view of issues that affect management of the national forests. The national level perspective reflects a concern to ensure compliance with national laws, statutes, and policies that affect the entire organization.

The National Forest System staff at the regional level provides a perspective that is relative to how the forests fit within the national scope. The main concern at this level is strategic as well as programmatic. The regional staff coordinates resources and provides technical support to the national forests. This group establishes region-wide policies and practices.

The Forest Supervisor and his/her staff coordinate overall management of national forests, while the District Rangers focus on specific units within each forest. Forest Supervisors are responsible for the strategic and programmatic focus and activities within their national forests. The Forest Supervisors establish forest-wide policies and practices that are relative to regional goals and objectives. These individuals coordinate and oversee activities throughout each forest. The District Ranger is responsible for the smallest unit on a National Forest. This person is accountable to the Forest Supervisor and is in-charge of all day-to-day operations on the district. The District Ranger has direct contact with people who use the national forest on the district. The District Ranger is in-charge of issuance of permits to collect non-timber forest products and makes the final decision to allow collection.

Directives are “handed-down” from the highest level through the chain of command to the District Rangers who have direct control of day-to-day operations on the forest. The attitudes and perceptions of the managers at each level may vary tremendously. The perspective concerning NTFPs of the decisions makers at each level is important in determining policies and practices that affect how non-timber forest products are managed.

### **3.2 Research Methods**

This study used a combination of methods to better understand the coverage provided to NTFPs in documents that affect management of national forests, and the perception of forest managers (district, forest, regional, national) concerning management issues. This required an examination of forest management plans and plan revisions, and strategic documents that affect management decisions. In-depth, semi-structured interviews with a cross section of national forest managers were undertaken to understand their perception of management activities and needs. This a well accepted approach to eliciting more in-depth insight into different issues.

To facilitate measurement of the content of the forest management plans, this study adapted a methodology developed to analyze the contents of newspapers, presidential speeches, and other printed material (Holsti 1969, Carney 1972, Krippendorff 1980). Though previous studies used “column inches” to measure text, this study measured content using square centimeters (cm<sup>2</sup>). Measurements were limited to the text devoted to each management objective or public issue identified in the Land and Resource Management Plans (LRMP). The tables and figures were not measured because of the potential to bias the analysis by giving more attention to an objective that required more figures or tabular data. For example, the analysis of timber management requires a large number of volume tables and figures. Also, the units of measurement of tabular data vary tremendously between management objective, making comparisons problematic.

The area of text was measured for three general categories: 1) natural resources mandated by national legislation; 2) management objectives identified in the Forest Service Manual (USDA Forest Service 1998a) or as a major public issue, and 3) non-timber forest products. Legislation mandates that national forests manage for certain natural resources: timber, range, minerals, recreation and wilderness, water, and fish and wildlife. In addition, national forest plans address other management objectives as identified in the Forest Service Manual (USDA Forest Service 1998a). These objectives include transportation (e.g., roads), special uses (e.g., power lines,

military installations), protection (e.g., fire management, pest control), and facilities (e.g., buildings). Major public issues might include ecosystem management, biodiversity conservation, and old-growth forest. As a management objective, non-timber forest products include discussions about one of the four major product categories.

In-depth, semi-structured interviews of forest managers (national, regional, forest and district level), lasting 45-75 minutes, were carried out over a three-week period in early 2000. These were accomplished after the forest managers had participated in an internet based survey concerning their attitudes toward NTFPs. More than 40 national forest managers were interviewed: 7 national level managers, 7 regional level managers, 8 forest level managers, and 21 district level managers. Interviews were conducted with forest managers in both Regions 8 and 9.

All interviews were recorded with the permission of the participant. Interviews were transcribed from the recorded tapes into separate Microsoft Word documents. These were then grouped by question within each management level. The statements within each management level were then condensed and organized by common theme. These are presented as the perceptions of the forest managers by each management level and aid in development of an eastern U.S. perspective. The perceptions were purposefully left anonymous, to protect participants' privacy. This was done out of deference to the forest managers and to help elicit candid responses.

### **3.3 Findings**

An analysis of the forest management plans for the national forests of eastern United States reveals a lack of coverage for non-timber forest products. The coverage for NTFPs in plan revisions is encouraging, but still lacking. Analysis of strategic documents suggests that NTFPs are receiving more attention. Most of the national forests that address NTFP management in the forest plans are in the eastern region. The management plan for the Finger Lake National Forest has a comprehensive coverage for blueberry production. References in other national forest management plans address research and recreational issues of various products. The perceptions of forest managers at the different management levels reveal differences that may constrain forest management.

#### **3.3.1 Forest Management Plans and Revisions**

Non-timber forest products are not recognized in national legislation as natural resources to be included in multiple-use management. In the 1980s when the first forest plans were developed the management of non-timber forest products was not a public issue. Though the markets for many of these products were established, demand on the resources was not sufficient to raise public concern. Even though management for these products was not identified as an issue, seven out of thirty-one national forest plans addressed them to some extent. This section summarizes the extent of coverage afforded to NTFPs in the seven forest plans. It also presents the situation concerning forest plan revisions in 1999.

The majority of forest management plans were accepted by late 1986. The last plan to have the Record of Decision (ROD) accepted was the Wayne National Forest (1988) in Ohio. As

mandated by the National Forest Management Act, all forest plan revisions, with the exception of the Wayne national forest, are due by 2001. The Notice of Intent (NOI) for plan revisions announces that a national forest is prepared to revise the LRMP. In September of 1997, the Secretary of Agriculture put a moratorium on forest plan revisions until the new planning regulations were established. For that reason, only those national forests that had submitted the NOI prior to that date are revising the forest plans. The Notice of Availability (NOA) of the Draft Environmental Impact Statement (DEIS) indicates that the environmental impact assessment is completed and ready for external review. Only five national forests in these regions have revised plans.

The contents of each LRMP are consistent throughout the Forest Service. Multiple-use goals and objectives are established that guide program activities. Forest-wide standards and guidelines are set for each forest based on national standards and guidelines. Each forest is sub-divided into multiple-use management areas, each with a set of prescriptions that describe how specific areas will be managed. Lands suitable for timber harvesting are identified along with the allowable sales volumes.

**National Forests Management Plans:** Approximately 23 percent of the national forest plans in eastern United States address non-timber forest products to some extent. Seven of the thirty-one national forests in Regions 8 and 9 addressed the management of forest resources for non-timber forest products. Of these, six were located in the Eastern Region (R9). The only national forest plan in Region 8 (Southern) to address NTFPs at some level was The National Forests of Florida (Florida NF LRMP 1985).

The extent of coverage for each of the management objectives ([Table 3.1](#)) addressed in the seven national forest plans that included non-timber forest products provides valuable insight. Percent coverage was based on the area devoted to a management objective relative to the total coverage. Overall, the amount of attention afforded to non-timber forest products is insignificant compared with other natural resources. No national forest plan provided NTFPs more than one percent coverage. The amount of coverage provided to legislatively recognized management objectives exceeded 68 percent, with the exception for the Hoosier National Forest Plan. Problem issues commanded more than 26 percent of each plan. All plans, except for the Hoosier LRMP, addressed management of rangeland resources even though range is a relatively minor resource.

The seven national forest management plans that addressed NTFPs varied in what they coverage. In general the coverage focused on the recreational opportunities and the research needed to better address these products. Berry production and collection was identified in all but one management plan as a management opportunity. While all seven national forest management plans provide general forest-wide guidance for NTFPs, only three have prescriptions for maintaining or enhancing NTFP production.

**Chequamegon National Forest Plan --** The plan for this forest, which is located in Wisconsin, devoted approximately 0.4 percent of its coverage to non-timber forest products. The primary focus of the coverage was on research needed to better manage NTFPs. The specific coverage dealt with how to restore wild rice beds to their former abundance (Chequamegon NF LRMP

1986). These resources were recognized for their wildlife habitat and for recreational opportunities, but not as a revenue generating natural resource.

Additional coverage was provided to non-timber forest products in the management prescriptions for five management areas. The desired future condition in four management areas was to provide increased access to the collection of NTFPs (Chequamegon NF LRMP 1986, p. 4.108, p. 4.128). One purpose of management area 8.1 was to “create and/or maintain a berry crop” (Chequamegon NF LRMP 1986, p. 4.162). The desired future condition of this management area was to provide for more berry-pickers. The plan recognizes berry picking as an opportunity along with bird watching, hunting, fishing, and trapping.

**The Finger Lakes National Forest** -- This small (13,200 acre) national forest is located in New York State (Finger Lakes NF LRMP 1986). The primary focus of the coverage devoted to NTFPs (0.64 percent) was to provide for the recreational collection of blueberries. The plan provided a vision for the management of these resources, as well as prescriptions on how that vision would be achieved. Supply and demand analysis for blueberries provided the general context by which the prescriptions were developed. The major research question defined for this resource was how to keep a desirable mix of blueberry varieties productive with prescribed burns. The plan directed that 5 acres of blueberry patches be provided annually for recreation purposed (Finger Lakes NF LRMP 1986, p. 4.09) and acknowledges the benefits of managing the blueberry resource for forest wildlife. Management prescriptions focused on maintaining and promoting fruit production, including apples. The plan provides forest-wide standards and guidelines for management of this natural resource in accordance with national legislation.

**National Forests of Florida** -- The management plan for the national forests in Florida includes four national forests (Apalachicola, Choctawhatchee, Osceola and Ocala) and covers approximately 1.1 million acres (Florida NF LRMP 1985). The management of NTFPs is afforded approximately 0.08 percent of the plan’s discussion. The major focus of the coverage was the research needed to develop a way to deal with the expected increased demand for NTFPs, particularly Christmas trees, firewood, and berries (Florida NF LRMP 1985, p. 2-19).

**The Green Mountain National Forest** -- Located in Vermont, the Green Mountain National Forest covered about 325,000 acres in 1986 when the plan was adopted. An explicit goal for the national forest was to “maintain existing areas that provide blueberries for picking and valuable habitat for wildlife” (Green Mountain NF LRMP 1991, p. 4.07). The plan established forest-wide standards and guidelines for the management of fruit and berry production and prescribes eliminating vegetative competition, pruning and fertilizing to maintain productivity. To maintain and increase blueberry production, the plan prescribes burning 1/3 of each patch every 3 years. The plan calls for maintaining 2/3 of each patch in vigorous growth (Green Mountain NF LRMP 1991).

**The Hoosier National Forest** -- This forest is located in Indiana and covers approximately 196,000 acres. During the development of the forest plan environmental pressure on how the Hoosier National Forest was to be managed grew substantially. The well-organized and motivated environmental community was instrumental in directing how the forest resources were to be managed. The low amount of coverage afforded to timber management (6.3 percent) is a

result of these efforts. At the same time, substantially more coverage is afforded to problem issues in the Hoosier plan (58.95 percent) than any other plan.

The original plan (Record of Decision – 1985) for the Hoosier National Forest was significantly amended in 1991 (Hoosier NF LRMP 1991). The amount of coverage afforded to non-timber forest products, in the amended plan, was approximately 0.54 percent. The plan recognizes management of mushrooms and berries as an issue of public concern. The discussion professes an abundance of edible forest products on the forest and suggests that some areas have been managed for NTFPs, particularly blackberries. Yet, NTFPs are not addressed in the management areas nor accompanying prescriptions.

**The Nicolet National Forest --** The forest plan for this 655,000 acre national forest in Wisconsin was accepted in 1986 (Nicolet NF LRMP 1986). The plan provides approximately 0.54 percent of the management discussion to non-timber forest products. The major focus of the coverage is forest-wide standards and guidelines that deal with sensitive species. Throughout the forest, “harvesting of ginseng without a permit (Form 2400-14) is a violation of 36 CFR 261.6(h)” (Nicolet NF LRMP 1986, p. 62). District Rangers are directed not to grant permits for harvesting ginseng. Embedded within a table, and therefore not measured as part of the coverage, is a proposed activity to manage 50 acres of blueberry annually.

**The White Mountain National Forest --** The plan for this 750,000-acre national forest, in New Hampshire, was accepted in 1986 (White Mountain NF LRMP 1986) Non-timber forest products are addressed in the discussion (0.16 percent) of forest-wide standards and guidelines. The general direction provided for “other forest products” in the plan is to consider applications for collection on a case-by-case basis. The plan recognizes maple sap, Christmas trees, and evergreen boughs.

**Forest Plan Revisions:** The National Forest Management Act requires that all forest plans be revised “when the agency finds that conditions on a forest have significantly changed, or at least every 15 years” (NFMA, section 6(f)(5)). Following this legislation, all national forest plans in eastern U.S. should be revised by 2002. Only 13 national forests in regions 8 and 9 had submitted a “Notice of Intent” to revise the forest plan prior to August of 1997 (USDA Forest Service 1999a). In the fall of 1997, the Secretary of Agriculture ordered a moratorium on forest plan revisions until the new planning regulations were published.

Of the seven national forest plans that addressed NTFPs, four are in the process of, or have completed the plan revision. The plan for the national forests in Florida, the only completed revision, has forest-wide standards and guidelines for special forest products. It designates the District Rangers as the responsible party for establishing appropriate restrictions on the collection of seventeen recognized special forest products (Florida NF LRMP 1999).

The Chequamegon and Nicolet National Forests, which are combining efforts to produce one plan for two forests, have the most comprehensive “Analysis of the Management Situation” for special forest products (USDA Forest Service 1998). It summarizes current outputs and activities, assesses demand for special forest products, and recognizes the need to “manage these resources” (USDA Forest Service 1998, p. 10).



The 1998, draft forest plan for the Croatan National Forests provides forest-wide management direction concerning production of pine straw (Croatan NF LRMP, Draft 1998). It recognizes the need for habitat manipulation to ensure the sustainable production of this important NTFP. The plan provides specific prescriptions for fertilizer application and prescribed burning to maintain site productivity. Also, it provides direction for the rotation of harvesting through the 600 acres that is designated for pine straw production.

### 3.3.2 Strategic Documents

**1995 Resource Planning Assessment:** The 1995 Resource Planning Assessment (RPA) program identifies ecosystem management as the strategy by which the Forest Service can reach the goal of sustainable forest management by 2000. This new strategy will require the Forest Service to “move beyond traditional approaches to include a broad range of values” (USDA Forest Service 1995, p. ES-1). Four fundamental elements (ecosystem protection, restoration, multiple benefits, and organizational effectiveness) are identified as necessary for the success of the strategy (USDA Forest Service 1995).

All of the fundamental elements have direct implications on how forest resources are managed for non-timber forest products. A greater diversity of ecosystems creates potential for greater diversity of forest products. Conserving species before they are protected under the Endangered Species Act helps to assure productive populations of harvestable NTFPs. The use of native species in restoring ecosystems suggests that the gene pool for NTFPs could be conserved. Accelerating natural processes could help to restore NTFP species that have been extirpated from certain forests. For example, Forest Service research efforts to restore the pine/bluestem ecosystem in the Ouachita National Forest may prove beneficial to *Echinacea spp.* (purple coneflower), a plant harvested and marketed for medicinal purposes (Guldin 1999). A priority management activity of developing a system to charge fees for harvesting and using the natural resources that is based on fair market value could significantly change the permit system for collection of NTFPs. Further, an emphasis on restoring and sustaining strong and diversified rural economies could lead to greater assistance to NTFP harvesters.

In the 1995 RPA special forest products are a main concern under the priority management area “economic action programs” (USDA Forest Service 1995, p. III-31) and are identified as compatible with sustainable forest management. The Forest Service uses the term “special forest products” to describe products derived from biological resources, collected from forests, grasslands, and prairies for personal, commercial, and scientific uses. As defined in the National Strategy, special forest products exclude sawtimber, pulpwood, cull logs, small round wood, house logs, utility poles, minerals, animals, animal parts, insects, worms, rocks, water, and soils (USDA Forest Service 1999b). The RPA commits the Forest Service to “develop these products to strengthen rural communities” (USDA Forest Service 1995, p. III-31).

“One of the most important ways the Forest Service can contribute to special forest products is to collect information” (USDA Forest Service 1995). This includes identifying and describing the ecosystems and habitats from which NTFPs are collected. Information is needed on defining what materials are collected, the methods of collection, and how much is collected. More

economic and market information on NTFPs is needed. Finally, the RPA recognizes the need for management strategies that include NTFPs to protect the health, diversity and productivity of forest ecosystems.

**National Strategy for Special Forest Products:** The Forest Service is developing a “National Strategy for Special Forest Products” (USDA Forest Service 1999b) that recognizes the need to manage for special forest products. The principles and priority areas set forth in the strategy are intended to provide “a solid conceptual foundation for an action plan” (USDA Forest Service 1999b, p. 3). To guide and direct management of the renewable resources that produce special forest products, the strategy established five strategic goals: 1) availability within ecosystem limits; 2) integration into forest management; 3) consistent and affective policies and plans; 4) inventory and monitoring of resources; and, 5) collaboration with stakeholders.

**National Legislation for Special Forest Products:** In February of 1999, the U.S. Congressional Subcommittee on Forestry and Public Land Management convened a hearing to explore opportunities and constraints on increased harvesting of non-timber forest products on national forest land. In October of 1999, there was national legislation in front of the President that could drastically change how the U.S. Forest Service manages national forests for non-timber forest products. The Bill (H.R. 2466 1999) provides for establishment of a pilot program to charge fees for the harvest of “forest botanical products” from National Forest System lands (H.R. 2466 1999, Sec. 339). Forest botanical products are defined as mushrooms, fungi, flowers, seeds, roots, bark, leaves, and other vegetation that grow on NFS lands, but does not include trees. The Bill requires the Secretary of Agriculture to determine sustainable harvest methods and levels and to establish methods to ensure that revenues from the issuance of permits for collecting these products reflect the fair market value.

Though the first round of forest plans did not, in general, address management of NTFPs, there is potential that these resources will receive greater attention in the future. The 1995 RPA provides explicit direction to the Forest Service concerning non-timber forest products. The national strategy on special forest products contributes to the institutionalization of management for NTFPs. The new legislation could provide further acceptance of these products in forest management.

### **3.3.3 Management Perspectives**

This section summarizes of interviews with Forest Service managers at different management levels. It reflects the thoughts and perceptions of the forest managers at the national, regional, forest, and district levels. The intention of this section is to provide perspective of forest managers’ perceptions toward NTFP management. As mentioned earlier, the source of direct quotes are not identified out of respect to the participants. This section is organized by management level and by the questions asked during the interviews. The first sub-section summarizes the responses of national level managers and presents their perspective on NTFP management. The next sub-section following national level presents the perspective of region level managers. After that perspective is a summary of the forest level managers. The final sub-section presents a perspective of the district level managers.

**National Level Managers:** A general perception of national level managers is that currently, the Forest Service has neither the mechanisms nor the resources to manage for NTFPs. The agency “does not know the magnitude of the problem” of collection of non-timber forest products from national forests. It is aware of the problem and opportunities, but it is slumbering on this issue. Some managers felt that as timber harvests decline, the agency will give more attention to these products.

Several national level managers suggested that the agency knows that NTFPs are removed on a commercial and recreational basis, but from a planning perspective, it has done little at the forest level to address these products. There have been no inventories of products or of the resources. There may be opportunities for local economic development and revenue generation.

Some National Forests are really increasing their efforts to manage for NTFPs. In some places non-timber forest products are on the radar screen of forest managers. For example, “the Gifford Pinchot National Forest has a huge NTFP business.” Experience of the national level managers indicates that Regions 5 and 6 have very active programs. For example, “in the summer of 1989, after the fires of 1988, there was a flush of mushrooms. There were thousands of people harvesting mushrooms. It was the new gold rush!”

The Forest Service minerals program has products that are similar in value and popularity to non-timber forest products. The “mineral laws really do not address recreational collection of geological resources.” There are small-scale suction dredging operations that remove significant amounts of mineral products. Demand for this type of collecting is growing.

The Forest Service is debating about the legislative authority over recreational mineral collection. The agency is working to make the existing legislation work, and then will develop additional policies, if necessary. In the 1999 appropriations bill, Congress required the Forest Service and other agencies to put together a report on this type of collecting. The report presents what the agency is doing, its authorities, and possible options for what is needed. The driving force behind this initiative was a growing awareness of the value of the resource.

The Forest Service does not have a strategy to manage for non-timber forest products. It “manages the permits and people, not the product,” nor the ecosystems. It has not done a thorough analysis to determine inventory and sustainable harvesting. “If someone comes in the door and wants a commercial permit for a plentiful product, they get it. But if they ask for a specific species that the agency knows little about, managers are unable to make a decision. Some District Rangers would give it away. Others would not.”

### **Is collection having an impact on forest health?**

In general the national level managers felt that, for the most part the Forest Service really does not know if NTFP collection is having an impact on forest health. They really do not know the ecological consequences of collecting. “We do not have enough information.” But, intuitively, some managers believe that the collection of some products, particularly for commercial purposes must be having an impact. For example, “collection of mushrooms can have very serious negative impact” on mushroom population health. Also, commercial collection of “moss

can have irreversible impact” on populations. But, there are “ways to collect these products with little negative impact to the population.”

### **Should the Forest Service actively manage for NTFPs?**

At least one national level manager feels that the Forest Service should be managing the NTFP resources, for “the simple reason that it needs to know the ecological implications of collecting.” Another feels that “anything associated with the national forests or grasslands is a natural resource that should be managed.” If the agency would “consider the extensive nature of the resource and its uses, it would be doing more on an organized basis.” The “problem is bigger than most people realize but the higher up the organization the less adamant they are about the issue.” The “forests are so diverse and productive that NTFPs are a tremendous growth area.” To some national level managers, non-timber forest products are just as important as trees in the ecosystem. As more “people start looking at the forest as more than a source of wood products then the agency will wake up to the full potential of the forest.”

According to one national level manager, “if using the criteria (value, widespread activity, resource impact, and issue of concern) the Forest Service can justify investing resource, then the agency should be managing NTFPs.” For example, the Forest Service can show that when paleontological resources became valuable, then it the Forest Service started to manage them. The Forest Service needs to look at the value of the resource. “With diminishing timber value we may find that these [non-timber forest products] are more valuable than wood.” “It may not take much to exceed the value of wood products coming off the national forests.” At least one national level manager felt that the agency does not “have good systems in place to even account for the value” of non-timber forest products. The agency “does not know what activities are out there.” Even if local units could recover costs, there is uncertainty of what would be fair market value.

Of course, the intensity of management depends on the level of activity. If the Forest Service increases its non-timber forest products activities, at least one national level manager feels that “it needs to put some good science behind them” [non-timber forest products]. There is probably a body of knowledge out there of traditional users who either have been collecting NTFPs or their families have been collecting for a long-time. Surely, there are “some adroit ways to manage the resource so that it can be beneficial to the gathering community.”

The Forest Service cannot achieve its goal of ecosystem management without addressing non-timber forest products. One national level manager feels that “If the agency is working toward maintaining ecological integrity, then recognizing and addressing NTFPs is essential.” The agency needs to manage for these products, as “they are part of the ecosystem.” They [NTFPs] are similar to other natural resource issues. Past experience suggests that people looking back 20 years from now may ask why the agency did not get on this issue sooner. This is just “another example of not getting on an issue until it becomes an issue.” “We should learn from the past and get on this one before it becomes an issue.”

## **Should NTFPs be included in forest management plans?**

For NTFPs to be included in forest management plans, the agency “needs to be aware that there is increased activity.” Most national level managers feel that there should be a section in the plan that addresses NTFPs. The lack of coverage is a symptom of a general lack of appreciation of the resource on the part of the managers. Any coverage of NTFPs in current management plans probably stems from one person who realizes the importance of these resources. That “passion translates into addressing NTFPs in management plans.”

The Deputy Chief has the authority, either by invitation or by edict, to make sure that NTFPs are included in the management plans. But with all of the other issues that face the agency, “NTFPs are not emerging as a high enough priority to see that the agency has some elevated and consistent approach to NTFPs throughout the U.S.”

According to one national level manager “the agency or administration can decide that the issue is important enough to include in management plans.” But “what seems to work best is to have some private entity to push for it.” It is easier for the agency to respond than it is to promote. Within the agency, “there are a lot of good people who want to promote an issue. But if the agency does the promoting then it is perceived as pushing. It works “better for the agency to have Congress recommend action.”

## **Does the Forest Service have the knowledge or capacity?**

There is a general feeling among some national level managers that the agency knows that NTFPs are an issue of concern, but management is hampered by a lack of knowledge. With the more popular species the Forest Service may have adequate experience, but in general, the agency “does not have sufficient knowledge nor the capacity to make sound management decisions” about NTFPs.

When “a National Forest has one botanist for millions of acres, it is difficult to build capacity to address this issue.” Some districts that have had active NTFP programs may have developed the skills and expertise to deal with the local situation. But many would not know if collection was harming the plant populations or associate species. There are “probably individuals within the agency that know a lot about managing for NTFPs.” But the agency “has not incorporated that knowledge and expertise into the management model.”

A general perception among some national level managers is that to address the issue of NTFP management will require “current as well as new knowledge.” The knowledge may exist for some species, but collecting that knowledge has not been a priority. There are “few examples where the rigor of research and monitoring has been applied” to NTFP management. For example, “we know very little about the population dynamics of mushrooms or the affect harvesting the fruiting body has on reproduction.” In general, there is very little knowledge about the sustainable use of these products.

The general feeling among national level managers is that the Forest Service “needs more information on the recovery of species and populations from collection.” It needs a “better

understanding of the sustainable harvest and use levels.” The agency should be able to “apply silvicultural questions to NTFPs.” “Plant physiology models might help to improve our knowledge,” as well. To move toward cultivation, the agency needs “information on propagation and reproduction biology.” The agency “has some good ecological inventory programs, but they may need modification to improve the inventory of NTFPs.” Further, the agency needs to “survey ecosystems for NTFPs and augment current databases” with this information.

### **Are the policies sufficient and/or consistent?**

The general feeling was that current policies are not consistent and may be too general. They may address a few products, those that are more visible, but are lacking for most NTFPs. There is a need to evaluate policies that impact NTFPs, and this need is going to become more imperative, but those skills are tied up in other issues, particularly the roadless issue.

There is a need nationally to clarify the agency’s position regarding NTFPs, and to determine the authorities and laws that guide management activities. At least one national manager feels that “until the agency gets a national policy we are going to make the current language work.” Another feels that there is a need “to allow flexibility but at the same time, there is a need for consistency,” as well. If you do not have national policy then “you have inconsistencies, misinterpretations or lack of interpretation. If NTFPs do not get national level attention, then every district may deal with it differently. Some districts will be effective at managing the local situation; others may not be as effective.”

Managers at the national level often hear the comment that “this does not warrant national attention.” According to at least one national manager, “three things are needed to justify national level attention. First, is the issue widespread, meaning is it affecting many regions? Second, is there a value and an impact to the resource? And third, is this something the agency wants to deal with? The Chief needs to decide to deal with the issue (e.g., roadless areas). When you work at the national level, you affect all regions. If you work at the regional level, and develop a regional policy you may impact negatively a forest.”

Some top-level managers feel that NTFPs are adequately addressed in current legislation. The Organic Act of 1897 establishes the purpose of the National Forests. The Endangered Species Act of 1973 requires the preservation of ecosystems and threatened species. The National Forest Management Act of 1974 requires the Federal government to protect the diversity and viability of species, including invertebrates.

Other managers feel that it would be “better for the Forest Service to manage without specific legislation.” Including NTFPs in the forest planning process would be more constructive. NTFPs “need to be elevated to the level of the other multiple uses, but national legislation may not be necessary.” National legislation is “not necessary to the agency to begin managing for NTFPs”. At least one manager expressed that “new legislation could confound the problem by requiring the agency to do things it is currently unable to do, due to a lack of expertise or funding.”

## **Should this be a priority issue for Forest Service?**

Some top management staff within the Forest Service feel that managing for NTFPs is a serious issue; In general, NTFPs are on their “radar screens.” But “compared to other issues, they are not a priority.” And some national level managers “do not see NTFPs becoming a priority issue for the agency, but perceive that leadership will come from the Forests.”

According to one national level manager, “in the full realm of resources for which the Forest Service manages, NTFPs are not viewed as a critical issue.” The agency does not perceive this as a critical issue, mostly because of the other issues that it is dealing with. It will “take the Forest Service a while to let go of the traditional focus of forests as supplying only timber, and realize that there is a whole lot more to a forest than wood.” Now, the Forest Service takes “an ad hoc approach” to managing for NTFPs.

If NTFPs are “to become a bigger issue for the Forest Service, the agency needs to figure out what happens if it does nothing. If the potential consequences of no action are great enough, then management for NTFPs will become an issue.” Another national level manager feels that “this is an ideal window to build into the forest health monitoring systems the means to measure the impact of collecting non-timber products.” If the agency is going to manage ecosystems it needs to know more about them. “We really need to know more about the people who are using the forests. At the same time, it [the agency] needs to examine the fair market value of the products.”

According to one manager “fundamentally, this is a budget priority issue.” Another manager suggests “the agency is way behind in recognizing NTFPs as an issue and to build them into the budget process.” “It takes time for issues to emerge into the budgetary structures.” With any issue you “need to identify the problem or opportunity in a way that people can understand.” The agency “needs a process to reach a solution for this issue that includes the public.” Currently, it would be “difficult to sell Congress to support management of greens or fungi when it is not a hot issue.”

National level managers identified several factors required for NTFPs to become a priority issue for the Forest Service. The Forest Service “needs to identify and value the nature of the problem.” Managers need to know the value of the products to support management. “Put a value on NTFPs and they will get people’s attention.” A good analogy is the paleontological resources found on National Forests. Ten years ago “we started dealing with the loss of dinosaur bones from the National Forests. One skeleton could be worth millions of dollars. Today, the Forest Service has a better handle on managing these large resources.” The Forest Service “keeps a good handle on the value of timber, but not the other resources.” Experience with other products suggests, “we need to tie economics to management” of NTFPs.

At least one national level manager expressed that “decision makers need to be convinced that management of National Forests for NTFPs is important.” “The agency, the Administration, and Congress must be convinced” that management for NTFPs is a priority for the Forest Service. Within the agency there is “tremendous competition for resources.” One critical obstacle, suggested by national level managers is the “need to convince the agency that it is worthwhile to

shift funds from other management issues.” Shifting funds is much easier than asking for new moneys.

A second factor that would elevate the priority of this issue is to “have an increase in the requests from the districts and forests” to address NTFPs. The Forest Service national headquarters needs “to hear that collection of NTFPs is creating problems or challenges” for forest managers. The constituent group (NTFP stakeholders) that is most affected by management decisions “needs to be organized and have access to the power makers.” For example, the “berry pickers do not have an organization to voice their concerns. They need to be recognized as a legitimate stakeholder.” There is no one group advocating management for non-timber forest products.

### **What are the critical issues that affect management for NTFPs?**

The national level managers identified several issues that are critical to improving the management of national forests for NTFPs. First, the agency “needs procedures and protocol for monitoring the resources, the frequency of use, and the demographics of the users.” The “lack of knowledge on the species and the interrelationships with other species inhibits” efforts to manage these resources. Managers are reluctant to have a commercial program on species about which they know nothing. Further, the lack of knowledge concerning the ecological impact of collection impedes management decisions. The agency “needs to examine what is happening to the ecosystem.”

The Forest Service has not recognized the commonalities across the resource and between products. There is more commonality than not. According to one national level manager, “the agency should not be dealing with pinecones as pinecones, or mushrooms as mushrooms. It should deal with them like products, and then make sure to aggregate them as much as possible in future policies.”

**Regional Level Managers:** While the previous discussion presented the perspectives of national level managers on NTFP management, this next sub-section focuses on region level managers. Though the Forest Service “has a basic charge to protect biodiversity and to do extraction without injuring biodiversity,” some of its regional managers are concerned that the agency “really does not have a good understanding of collection activities on National Forests.” They concur with national level managers on many issues. Some region level managers really do not know the “the real affects of collection, nor how long current levels of collection can be sustained.” According to one region level manager “the wisdom from the field suggests that NTFP management is a significant issue, which the agency has given very little energy or attention.”

Some regional level managers believe that “there is a large amount of high valued products coming off the forests routinely, but no way of knowing how much.” NTFPs could be a significant issue for the National Forests. Throughout the southern United States, there is tremendous activity with non-timber forest products. Forest Service folks throughout the East indicated that the “collection [of NTFPs] is burgeoning”; that there is “an explosion of interest, in both variety of products and level of harvesting.” This is particularly evident in the Appalachians. But these products “have not surfaced as a controversial issue.”



The perception of some regional level managers is that the value of NTFPs is relatively small in economics terms. According to one region level manager “this may be true with regards to the system that the agency has for valuing the products, but not for the real value of the products.” Some managers believe that “the government has not received fair market value through the fees that have been charged for permits to collect NTFPs.” There has been “no economic analysis of true value of these products.” The Forest Service has “not looked at these products strategically, nor has it done the needed economic analysis” to evaluate their value.

At least one region level manager indicated that Forest Service “units receive none of the revenues generated from permits, and get no resources to manage for these products.” If the agency has “no way to returning revenues to the unit,” from which they were generated. The perception of at least one region level manager is that the agency “has no way of dealing with the problem of managing the resources and enforcing the laws regarding these resources.”

Region level managers concur with national managers that management of NTFPs is extremely inconsistent. The agency’s “overall approach has been to make sure that we are within the legal bounds of dealing with these products.” NTFPs “are referenced in the manuals but there is no strategy for their management.” At this time, “there is not a good definition of how to structure a program to manage for NTFPs.”

Region level managers see non-timber forest products as “a low priority.” The “management of these products has fallen through the administrative cracks.” They have been considered “other duties as assigned and not part of a program.” According to one region level manager, “the timber and forest products staff struggle with how to manage for these products.” Some regional managers perceive that “the silviculture and timber people are not interested in managing for NTFPs, and that they would prefer if the issue would disappear.” Currently, the Forest Service does not have the personnel needed to monitor NTFP collection.

Some region level managers describe the Forest Service strategy toward NTFPs as “benign neglect.” There are several reasons for this negligence. There has been “no formal recognition of NTFPs as natural resources.” Non-timber forest products are “an unfunded mandate.” The agency has not given extensive thought to elevating the importance of these products to get them funded or to get legislation to manage for them.

One real danger, identified by at least one manager, with the current approach to NTFPs is that the agency “has no way of knowing if it can sustain the products.” It “has no accurate assessment of how much of these products are available for collection, especially the medicinal plants.” But, some National Forests are working together to identify the products and determine the volumes that are sustainable. Examination of this issue may reveal, “the agency has significantly more volume collected than is actually permitted.” This type of information could stimulate decision makers to take action. The agency “could get the attention of decision makers if it could quantify the value of these products.” At least one manager felt that “the basic problem is insufficient investment in the natural resources on public lands.”

### **Is collection having an impact on forest health?**

Much like the national level managers, region level managers did not know the impacts of NTFP collection. A general perception was that “collection is not having much impact on overall forest health.” Some managers believe that NTFP collectors are, for the most part, taking understory plants that are not uncommon. A common perception is that collection is not having a big effect on the ecology of the whole forest. “Collectors are not modifying local environmental conditions.” At the same time, some region level managers feel that there may be cases where “collection may be having a local effect on biodiversity, especially medicinal plants.” Collection “may have some economic impact,” but the perceived impact is not significant. Fundamentally, it is “difficult to determine if collection is having an ecological or economic impact, because there is little or no monitoring.”

### **Should the Forest Service actively manage for NTFPs?**

In response to this question, some region level managers felt that the Forest Service “should be managing for these products, determining the markets, and developing appropriate programs that ensure revenues are returned to the units.” Most of the agency’s “efforts have been to encourage forests to pursue opportunities through the forest planning process.” Historically and culturally, people look at public lands as common property, from which they can collect as much as they want. Managing for NTFPs “will become more important as the demographics and values of the country change.” There is a critical “need to take a comprehensive look at the policies” that guide how the agency deals with NTFPs. The wisdom of one region level managers is that the “solution is transparent process, external involvement, community activists, and collaborative stewardship.”

The region level managers indicated that the Forest Service “knows the relative value of a stand of trees.” It “has the mechanisms to monitor and track economic indices and values.” According to the region level managers, the agency “can be reasonably assured that prices [for timber] reflect the market value, and that market prices come back into the system.” No such mechanisms exist for NTFPs. At least one manager felt that “the economic value of non-timber forest products needs to be reviewed, and then systems need to be developed that allow for tracking of these values.” The agency “needs to know what products are being collected, how much is being collected, and how much is available to collect.”

### **Should NTFPs be included in forest management plans?**

In general region level managers feel that NTFPs are not included in forest management plans, but they need to be. The responsibility of the Forest Service is “to maintain, improve and care for the land and everything on it.” For these reasons, NTFPs should be included in forest plans. At least one manager expressed that “management plans are really the only place to address these products.”

According to one manager, “currently, NTFPs are handled like any other loosely structured part” of the Forest Service. The agency “has very highly structured systems and process for timber sales, fire suppression, and road engineering.” But managers at the regional level feel that there

is “very little direction and few policies, or standardized approaches for NTFPs.” The “management of these products depends on local systems, process and protocols, which results in high variable between districts.”

One manager feels that “some NTFPs should be included in management plans, but not all of them.” Another expressed that NTFPs “do not need the same level of attention as timber.” The degree to which NTFP should be addressed in the plans “depends on the land allocation guidelines for each forest.” But, the “coverage should be fairly general comments.” At least one manager felt that “in most cases collection could continue without being included in the plan.”

While some region level managers suggest NTFP need only general attention in forest management plans, other think they require specific language. At least one region level manager felt that “as the agency moves from timber management to ecosystem management NTFPs will become more prominent in forest plans.” Forest managers “need standards and guidelines,” as well as “management area prescriptions” that include NTFPs. Now, forests managers “have only general references” in the manuals concerning management of NTFPs. Forest plans should “encourage active management, with designated collection zones, and standards and guidelines.”

Some of the new forest plans address non-timber forest products, especially the plans for the Croatan National Forest and the National Forests of Florida (NFF). According to one region level manager, “field technicians on the NFF are trained to measure amounts of saw palmetto and crooked wood.” National forests in southern Appalachia are working together as a result of the assessment efforts. According to region level manager the seven National Forests in the Lake State also are working together on these issues.

According to some region level managers, getting NTFPs included in forest plans will be “a matter of elevating them to a critical public issue.” Currently, “the botanists are the real driving force behind agency efforts to deal with NTFPs.” One suggestion by regional managers is that the agency “needs an interdisciplinary team to address the issue” of managing for NTFPs. Through the planning process, the agency “can provide specific standards by which NTFPs will be managed.” The Forest Service has a good legal foundation to deal with maintenance and viability issues.” But, “if viability is not a concern, then it will be difficult to manage for NTFPs.” One manager suggested that ‘if the specific product is threatened, sensitive or endangered, then [the agency] can take management action. But if the plant is plentiful, like galax, the agency will have difficulty doing anything.’”

### **Does the Forest Service have the knowledge and capacity?**

According to the region level managers, the Forest Service is “rich in expertise.” It “may have the expertise to manage for NTFPs, but not at the district or forest level.” At least one manager felt that “if the agency does not have the expertise, it knows where to find the experts” to provide management guidance. If the expertise does not exist within the agency, “it could be acquired in a short amount of time.” The Forest Service “has enough expertise to know what information lacking.”

Some region level managers felt that “managing for NTFPs is simply a matter of priority and funding.” According to some managers “the lack of expertise is not the problem.” The problem is “a lack of time and resources.” For some managers, the difficulty is the lack of funding to deal with these products. Without additional funding, they felt that “it is difficult to allocate people to work on NTFPs.”

### **Are the policies sufficient and/or consistent?**

Many regional managers feel that more legislation is not needed. According to one manager, the agency “has the necessary legislation and regulations to manage for these products.” The National Forest Management Act of 1974 talks about maintenance of biodiversity and sustainable levels of viable populations. The agency “needs to follow the direction provided in NFMA.” Sufficient national policies exist to mandate management for NTFPs. How the National Forests manage for these products should be determined in the forest plans, not legislation. At least one manager suggests, “the framework, directives and procedures are not in place to execute the policies.” Another manager argues that the Forest Service “needs to emphasize policy execution, not development.” Energy should be focused “on developing the management framework and methods to inventory and manage collection programs.”

Other managers at the regional level feel that not enough attention is being afforded to these products. They could “use a lot more direction from headquarters on national strategies.” They feel that “the policies are probably the minimum needed” and that NTFPs “warrant national recognition.” According to one region level manager, Forest managers “need some enabling language that comes from either the region or national offices, to empower local units.” One manager expressed that “local units have a responsibility to work with various collaborators, researchers, and community groups to address local problems.”

Region level managers indicated that they were getting no new policies on NTFPs. Current directives are buried in the forest products part of the Forest Service Directive System. The policies authorize forest managers to sell NTFPs and suggest how much to charge for permits. . But “the amount that is charged for permits to collect should be driven by local market conditions.” The markets are so volatile and changing rapidly, that determining fair market value is difficult. There is very little guidance on this issue. According to one manager, “there is no policy that says that NTFPs are important, and the agency needs to manage for them.” There is “no explicit language dealing with NTFPs and this is the kind of direction that is needed from headquarters.”

A general perception among region level managers is that “the policies and directives are not consistent throughout the East.” Some region level managers feel that it would be appropriate to have a group at the national level looking at this issue. According to one manager, the agency “needs to be consistent, nationally and across forests and districts.” There “needs to be consistency in accountability, law enforcement, and management.” The regional managers advocate “policy direction that starts and stops at a given place.” For example, “national headquarters would set the stage within national boundaries. Then regional directives would focus within regional boundaries. Each Forest would provide directives that are more specific to local situations.”

Some region level managers feel that non-timber forest products “should be dealt with at the level that encompasses the geographic range of the species” with which you are dealing. For example, “ginseng should be dealt with the same in Region 8 and Region 9.” Management “approaches may vary between forests and states, but strategies should be consistent throughout the species range.” A general perception of region level managers is that “there is a need for consistent regional policies that are implemented consistently on every forest.” There “needs to be flexibility, but consistency.” There will be “centers of activities, depending on ecological conditions.” For example, “it would hard to find a better place to grow frazier fir than North Carolina.”

### **Should this be a priority for the Forest Service?**

Region level managers concur with national level managers that NTFPs should be a priority. At least one region level manager feels that “for ecological and economic reasons, NTFPs should be a priority issue.” There is a “growing interest in nature crafts and natural medicines, and if it turns out that the Forest Service is a major source of these resources, then it has the responsibility to manage for them in perpetuity.”

The region level managers suggest there are two ways for NTFPs to become a priority issues. It “will require an external user or advocacy group to speak up, and to make management a public issue.” Or, the agency “could determine and demonstrate the true economic and ecological value of the products to decision makers.” Then management would become an issue. Currently, the agency is “aware of that collection is going on, but has not determined the magnitude nor the impact of this activity.”

At least one region level manager felt that “getting NTFP management to be a priority issue of the Forest Service is going to be difficult given the intense competition for resources.” One manager suggested that one way to make this an issue is to “get more information about the inventory and the value of the products.” The agency should “do a cost benefit analysis to determine the value for each product.” If there is “sufficient value, then resources should be allocated to manage for these products.” Some region level managers felt that some forests may not need to manage, while others could have an active program, which would depend on product availability. Fundamentally, the agency “needs to show that collection is having an economic and ecological impact on forests and the communities.”

According to one region level manager, “the Forest Service is a great firefighting organization and responds well to crisis. Only when the situation with NTFPs reaches a state of crisis will the agency respond.” For NTFPs to become a priority issue, a region level manager suggests, “will require the agency to recognize that there is a problem, and then commit resources to deal with the problem.” There is a “need to have a critical mass of expertise within the organization that will encourage further efforts.”

## **What are the critical issues that affect management for NTFPs?**

Contrary to the national level managers, most of the region level managers felt that NTFPs did not come up on their “radar screens.” Overall “NTFPs are very low priority.” There are no special interest groups demanding that the Forest Service change its approach to NTFPs. One manager suggested, “perhaps the most critical issue is the lack of a constituency demanding action.” There needs to be a vocal constituency.

## **What message would you send up the ranks concerning management for NTFPs?**

One region level manager expressed that “the issue of managing for non-timber forest products is not going away.” The agency “needs to actively manage for these products, commensurate with the level of use.” The region level manager feels that “if the agency had studies of what and how much was coming off public forests, NTFPs would get the attention of decision makers at the highest level.” The U.S. “should be getting some return from these public resources.” Region level managers, in general, feel that national direction and support is needed for the regions to provide more direction and support to the forest and district levels.

Some region level managers expressed NTFPs “are part of the ecosystem and the Forest Service must take care of them even if they are unfunded.” The regional units “need some freedom and flexibility to use funds to manage for NTFPs.” The region level managers feel that the Forest Service “units need to have a better understanding of the volume and value of the products that are being collected.” The agency needs to “put some appropriate amount of money to get better information concerning NTFP management.”

**Forest Level Managers:** The general sense among forest level managers is that the agency would be surprised at the volumes of non-timber forest products that are being harvested from the national forests. The experiences shared by forest level managers suggested limited exposure to a thriving industry. Several examples illustrated the magnitude of the collection, the problems that occur on the forests, and the discrepancies between forests.

In some areas, bough collection is very big business. According to one forest level manager, “in a 30-mile radius of one district office, the bough industry is a multi-million dollar operation.” From September through November, many rural people make a substantial part of their earned income from collecting and selling boughs. It is “not unusual to see tractor-trailer loads of wreaths in transit from the area.” But, the forest managers admit that they do not have an accurate assessment of the volumes of boughs that are being collected.

Another forest level manager indicated that in his experience, the biggest demand was in Virginia. During his tenure as a District Ranger, “the greatest demand was for ginseng, but mountain laurel also was in demand.” This particular manager shared a bad experience with a moss collector. The collector was issued a limited permit to gather moss from dead and down logs. After investigating the collector’s practices, and finding that he had stripped every log and rock, the District Ranger issued a citation against the collector.

In the early years of one forest level manager's work, the agency did not allow any collection of non-timber forest products. He recalled that the Forest Service did not allow even the collection of pinecones. Over his career, the agency has relaxed its approach. Now, the Forest Service is willing to allow people to collect on a limited basis. This particular manager was unsure if collection is having a significant impact on forest health.

Some forests allow authorized use of all terrain vehicles (ATVs) anywhere on the forests, while neighboring forests restrict access. The Chequamegon National Forests is one of the few national forests that have unrestricted use of ATVs. This policy helps facilitate bough collection from remote areas. On the other hand, the Nicolet National Forest, which neighbors the Chequamegon, has a different policy concerning ATVs. The Nicolet is closed to off trail use of ATVs, which restricts access and reduces bough collection. One of the effects this policy difference is to increase demand on the Chequamegon for boughs. Currently, the Nicolet National Forest is managed under a different forest plan, and will be until the plan revision is complete.

The common impression among forest level managers was that the agency "takes a very light-handed approach toward non-timber forests products." Efforts to manage for these products, or to enforce collection requirements are minimal. Forest level managers expressed the concern that they seldom see any organized efforts to monitor and check collectors.

### **Is collection having an impact on forest health?**

A basic perception at the forest level is that there is not enough information to determine if collection is having an impact on forest health. Forest managers are "aware of an increase in demand for these products and changing demographics of the collectors," but they are "unsure if this is having an impact on forest health." For some products, such as boughs, the impression is that collection is not having an impact. For other products, such as moss and *Lycopodium* spp. (princess pine), managers are not sure.

At least one forest level manager expressed the concern that the major impact is not from collection of NTFPs, but from excessive recreational use. Forest managers were aware of serious compaction and erosion due to too much recreation. Some managers felt that "the extraction of NTFPs is inconsequential compared to recreation."

### **Should the Forest Service actively manage for NTFPs?**

Forest level managers differ in their perspective of what approach the agency should be taking toward NTFPs. At least one manager questions whether the agency "should be providing these products to the public." Another suggests that the Forest Service "may need to restrict collection of some species for 5 years." Still other managers feel that the agency could "manipulate habitats to stimulate natural regeneration."

There is no question, among many forest level managers, that the agency should be managing for NTFPs. If the agency is serious about ecosystem management it can no longer ignore these products. They are a natural resource that the agency should be managing. Several forest level

managers expressed that the agency “has a responsibility to manage the products that are coming off the forests.” “If the agency is going to allow extraction, then it has the responsibility to manage for those products.” The agency manages for timber, minerals and range. At least one forest level manager expressed that non-timber forest products “should be in the plans with the other resources,” which is similar to the perspective of some upper level managers.

Some forest level managers felt that the agency needs to develop and include standards and guides for NTFPs in forest plans. “Standards and guidelines do not have to be rigid; they can give direction as to what needs to be addressed.” According to one forest level manager, “the standards and guidelines would help provide an indication of what forest managers need to consider.”

Other managers felt that non-timber forest products should not be included in management plans at same level as other natural resources. At least one manager suggested that “issues, concerns and opportunities drive what is included in the forest plans, and NTFPs are not a major concern.” If the NTFP species are “considered threatened or endangered, then dealing with them is simplified.” Several suggested that no permits would be issued for collection of species that are considered threatened or endangered.”

Currently, some forest level managers believe that NTFPs will not be sufficiently addressed in the management plans revisions. They suggest that the agency needs to monitor collection, and if NTFPs are being harvested then they need to be managed. These managers suggest that the only way that NTFPs are going to get attention is if the regional office (or even a higher level) provides direction and funds.

### **Does the Forest Service have the knowledge or capacity?**

As was found at upper management levels, forest level managers indicated that what products and how much is being collected remains an enigma. Forest managers “do not really know the impact of harvesting.” They “may know what is being legally extracted, but beyond that, they had little idea of how much is being collected.” They agreed on the need to decrease non-permitted collection. The agency needs to learn how to sustain NTFPs. They are concerned that the agency “does not have the technical capability to manage for these products.” For some products, like firewood and Christmas trees, forest level managers feel that the management systems are highly developed and productive.

Forest level managers felt that, for the most part, “the knowledge exists to start collecting appropriate data to generate information needed to guide management.” In a short period, forest managers “could have competent interface with research that focuses on botanical resources and local systems.” Some forest level managers felt that “the relationships are in place with the state agencies and institutions to start addressing management questions.” But a general feeling among some forest level managers is that there is “no research on the shelf that provides the information needed to make sound management decision.” At least one manager felt that there are “no manuals that present prescriptions to manage for these products.”



Fundamentally, forest level managers feel that they “lack the staff needed to manage for NTFPs.” The “plan revisions, environmental and other assessments would require staff time that is not available.” Further, at least one manager felt that “the fiscal restrictions do not allow forest level managers to allocate staff time to activities that are not in the budgets.” Fiscally “nothing is in place to generate anywhere near the funds needed to do appropriate amount of technical management for non-timber forest products.” The agency is “not designed to manage for the NTFP markets.” At least one forest manager felt that someone will inevitably “question how the agency is financing or administering a NTFP program.”

One forest manager expressed concern that “the marginal benefits are not sufficient to warrant investing resources to manage for NTFPs.” Currently, there is “no way that forest managers could economically manage for these products.” Managing for recreation was never economical, until the introduction of the fee demo program. Now the Forest Service is “putting a lot more resources into the sites where money is generated.”

### **Are the policies sufficient and/or consistent?**

For the most part, forest level managers perceived a lack of information to know if the policies are sufficient. They indicated a need for more research and education on the impacts of collection, and then legislation would follow. Some suggested that it is “more important to mandate management for overall health of the ecosystem, than to legislate management for the products.”

The goal is to have consistency throughout each national forest. Some managers felt that the variation among districts is no more than other programs. They suggested that the national forests have been operating reasonably well at the district level. Other managers indicated “national forests are working to get consistency among districts, with the intention of having consistency based on common conditions.”

National headquarters leaves management decisions up to the forests. In general, the forests are being told to manage their own programs. Some forest level managers were uncertain about how much direction is coming from the regional or national offices concerning non-timber forest products. Some forest level managers indicated that they would benefit from national direction that indicated that NTFPs are important and need to be managed.

### **Should this be a priority issue for the Forest Service?**

In general, forest level managers felt that non-timber forest products will become a priority issue for the Forest Service in some areas, especially in Appalachia where NTFP demand is already high. National forests that are in areas with a culture that understands the use of the products will have to manage for them.

Some forest level managers feel that “for non-timber forest products to become an issue, the agency needs to realize significant ecological and economic affects.” They indicated that the Forest Service cannot spend resources needlessly, but to justify allocating resources to these

products, the agency “needs evidence that indicates that a lack of focus on NTFPs is causing long-term degradation or irreversible impact.”

Many forest level managers suggested that the benefit of managing for NTFPs may not be worth the effort because of the value and volume. They thought it would be difficult to convince the decision makers to promote non-timber forest products in lieu of timber. Many also thought the agency “is not prepared, technically, to change management strategies.”

### **What are the critical issues that affect management for NTFPs?**

As much as NTFP management may need addressing, the issue is not beating forest level managers over the head. They see other issues as much more important. In their eyes, “to make NTFPs more important would take a federal lawsuit or evidence of a major industry.” At least one explained that, “all else equal, other target-related, historical areas of forest health would dominate management plans, even if they were not the most critical.” Non-timber forest products won’t emerge as a critical issue by itself.

However, some forest managers agreed that “if demand for these products were great enough to create environmental changes, then the agency would really have to examine the process and plans more closely.” The general perception is that collection is not extensive enough, nor is the volume sufficient to make environmental differences in the forests. A high priced market, such as ginseng, would drive changes in collection patterns.

A major issue highlighted by several forest level managers is “the need to be consistent with activities presented in the management plans.” All “activities on the national forests must be consistent with the desired conditions as outlined in the management plan.” If the national forests are providing a product of some sort, whether that is timber or NTFPs, “they must fit within scenario presented in the management plan.

Some forest level managers feel that the most critical issues are “determining sustainability, the impact of collection on forest health, and determining permitted versus non-permitted collection.” The agency really “does not understand the ecosystem function of these products as it does for trees.” According to one forest manager, “this lack of knowledge makes analysis of the environmental effects from collection difficult.” This is “particularly true in terms of the role that a particular plant has in the overall ecosystem.” There just is “not enough information out there for environmental analysis.” For example, “the collection of pine straw is one area that is recognized, where scientific knowledge may be sufficient to suggest that potential environmental problems.”

Other forest managers felt that for many of the NTFP species “the most critical issue is simply the reproductive biology.” Forest level managers feel that there is a lack of knowledge on how to regenerate most NTFP species. The agency “needs to find out where they are collecting from, and put in some test plots to see if there is some effect.”

Forest managers also indicated that, “a lack of knowledge concerning the fair market value for non-timber forest products inhibits management.” According to one forest level manager, “the

permit system is more of an information-sharing tool, then a resource or fiscal management tool.” It is more of “a way to find out what’s going on, and provide some basic parameters for collecting.” The permit system is “not tied into to recuperating expenses.”

### **What message would you send up the ranks concerning management for NTFPs?**

In general, the forest level managers felt that the Forest Service needs to “look to the future and try to predict what is going to happen.” Some felt that the agency “has failed to do that all along, except for Smokey Bear.” Somehow, the agency “needs to develop a vision of potential emerging issues.” Some managers suggest that if the Forest Service “had just had the foresight to address previous issues (e.g. clearcutting) and educate people about these issues, it would not have many of the problems of today.” The agency “could be in the same position with non-timber forest products, as it is with other critical issues.”

One forest manager suggests that “if senior Forest Service managers are considering raising the price to fair market value in the private sector they should proceed slowly.” According to one forest level manager, “non-timber forest products are one of the greatest public resources.” They are “one of the biggest ways that the public comes in contact with the agency.” Forest level managers suggest that “of the permit prices get really high the public will be offended.” One manager suggested that non-timber forest products are “a resource that the Forest Service should provide to the public at a reduced rate.”

A general feeling among forest level manager is that the Forest Service is lacking the information to manage for NTFPs. One manager suggested, “research scientists are interested, and trying to get an answer to these problems. The agency needs to build its knowledge base. It needs to become a scientist in the area of NTFP management.” Some forest managers are comfortable with getting resources to the research stations to examine this issue.

**District Level Managers:** To some district managers there was “no valid explanation why NFTP activities differ between districts.” Other district managers felt that “NTFPs do not get the attention they deserve, because they do not have the demand.” The districts may have the products, but historically they have not had the demand. A general perception among some district managers was that people could easily get away with collection of NTFPs, and not get caught. In fact, many district level managers suspected that people might be collecting without a permit. Therefore the agency does not know how many products are being collected in total, with and without permits.

But some felt that NTFPs are just not worth the time and expense of monitoring. Many felt that most of the collection areas are very accessible. Some perceived that in no way are NTFPs endangered. Others were concerned that “similar species may not be identifiable, and could be rare and problematic.” At least one district manager indicated that, “wild ginger was extirpated from the forests.” For some the biggest products of concern were balsam boughs, the demand for which is increasing.

In some districts ginseng was probably the biggest demand. In other district ramps (wild onions) are significant. The main products in one district were moss, ginseng, galax, and rhododendron.

At least one indicated that “medicinal plants are just starting to kick in.” Many districts sell saplings, firewood, and posts. In one district there were “requests for ferns.” In another, there were “requests for iris and wild ginger.” The perception of one district is that “there is some blue cohosh, and bloodroot, but no collection” of these products.

The principal products in one district were “boughs (mostly balsam fir), firewood, Christmas trees, maple syrup, princess pine, mosses, lichen, posts.” At least one district sold “a significant amount of pine and spruce cones.” Some district managers perceived that most of the products stay within the area. A perception among some managers was that much of the “NTFPs are collected for landscaping within the community.”

Some managers perceived NTFP collection as an integral part of people’s life styles. A general perception was that non-timber forest products are “a large part of the services that agency provides.” Some managers in the Forest Service look at NTFPs more as “a service to the local community than a revenue source.”

The perception of some district managers was that most of the customers are within the districts. They “used to be the old-timers, now they are mostly recreational and some commercial.” A perception was that the younger people are not as interested in collecting NTFPs. In some districts the rural economy is quite poor, and many people have relied on collection for generations. Some district managers suggested that a lot of people gather products just to have an excuse to go out in the woods. Some districts “get requests from fire departments” and that, “it would be difficult to charge these groups for ramps when they support the Forest Service fire efforts.”

Some district managers were aware of NTFP buyers in the area. Others perceived that the NTFP market is an important income producer for local folks. At least one district manager suggested, “probably 90 percent of the harvest was coming off of federal lands.” A general perception among many district managers was that “only a small portion of the actual collection is permitted.” And, the agency has “no idea how to get a handle on the situation.”

Other district managers suggested that people would dig anyway. At least one believes that “collection is decreasing, not because the Forest Service is not issuing permits, but because the plants are not available.” The perception of some district managers was that “sales of NTFPs have declined over the last five years.”

One district manager perceived that “a couple of years ago they were issuing several hundred ginseng permits each year.” When they got more restrictive on ginseng, collection slowed down. Other managers perceived that “the policy for ginseng has shifted from no collection to allowing collection.” Some indicated that there was no forest-wide policy on NTFP collection. At least one indicated that there was a forest-wide policy on no ginseng collection. In other words, district level managers’ perception of ginseng policies varied widely.

Some district managers perceived a small local market for NTFPs. In other districts the perception is that there is a lot of NTFP activity. Some districts have “a very active seasonal program, selling several permits each week during the spring and summer.” A perception is that

some districts are selling tons of moss, while other are selling very little. Some districts have noted that “collectors strip the moss clean and now restrict moss sales to areas where there will be a disturbance.”

A perception shared by some managers is that the Forest Service does not allow collecting in designated recreation and wilderness areas. At least one district “does not allow collection in semi-primitive areas, which may not be consistent with other districts.” Some districts have recognized that moss collection from old growth forests could have significant environmental impacts, and have taken efforts to restrict collection from those areas. Others have rotating areas that are designated for moss collection. Some districts designate collection areas for the bigger commercial things like rhododendron, or digging live plants. These products are “run like a mini-timber sale, because they are really having an impact.”

The perception of one district manager was that the “sales of some products are intrusive on the landscape.” A perception of some district managers is that some NTFP products may have an environmental impact when harvested. Yet, “these renewable products, which require close administration, are never provided the manpower that is needed.” But, the agency “does not have the personnel to closely administer the operations.”

A general district level perception was that for the Forest Service to address NTFPs would require resource specialists to examine collection areas. One problem is that “the units do not get funded to work on NTFPs.” As demand for these products increases “the units will need to have to funds to address the problems and administer a management program.” It takes resources to keep up with NTFPs. District level managers felt that the collection of some plants need to be controlled because “you might lose them.” “Endangered plants in particular need some kind of control.” But “people request permits to collect grapevine and pine straw, as well. If the agency is going to promote NTFPs, it needs to fund the units to administer a program.”

### **Does the current level of harvesting have impact on forest health?**

Some districts perceived tremendous growth in NTFP activities on the national forests, but did not perceive that NTFPs are being wiped out. Others perceived more and more of the plants as time goes on. At least one district manager feels that “NTFP collection is not having any impact.” Some did not perceive any negative impact from collection activities. The general perception of other district managers was that “the agency is nowhere near seeing areas that are totally void of the NTFP.”

The experiences of some district managers suggest that the impacts are not great. For example, “a permit was issued to dig laurel. When the manager checked, the site was pock marked with holes left unfilled. But, a short while later the manager returned and the site was over grown, and the visual impact was gone.”

District managers seemed to agree that “collection may be having an impact in a few isolated incidents, but not a significant impact overall.” In some districts the only possible impact was from balsam bough collection. One district manager suggested that “breaking the branches without following recommended collection techniques may impact regrowth.” Another district

manager was concerned that “habitat for the other plants (Canada yew, hemlock and cedar) is being negatively impacted from bough collection.” This district manager suggested that, “if you take the bottom half of the tree it has to affect wildlife habitat.” Also “the aesthetics of an area may be negatively impacted from excessive bough collection.”

The perceived ecological impacts from collection vary among district managers. Some district managers “have found Black cohosh so plentiful that they would be surprised if collection was having an impact.” Other district managers have noted “a decline in Black cohosh populations as a result of collection activities.” One local unit “used to allow grapevine collection, but stopped this practice based on recommendations from wildlife specialists.” Others would like to see more removal of grapevine.

There may be potential that some products may be having problems. In one district, the manager wondered about the impact from moss collection. Some districts perceived a decline in products, particularly ginseng and moss. But they noted, “the Forest Service has not done sufficient studies to determine impact.” The district managers “do not have the data to determine any impact.”

In some districts, NTFPs have a big economic impact. Local folks use them for extra income. NTFPs provide good seasonal employment. In some districts “lots of folks generate Christmas spending money from NTFPs.” A general perception was that NTFPs have a negative economic impact on local Forest Service units. They spend time on these products, but do not get paid to do that work. But some district manager perceived opportunities to realize economic benefit from getting people to do Timber Stand Improvement while harvesting NTFPs.

### **How would you describe the Forest Service’s approach to NTFPs?**

Some district level managers suggested that NTFP management is limited to the issuance of permits. The “demand on districts for non-timber forest products varies tremendously.” Some local units occasionally get “requests from people who just want to do a little gardening.” These units speculated that the number of requests to collect is not more than a half dozen, annually.” Other districts in both regions do a thriving NTFP business. On some districts, the demand is seasonal. For example, “there is a major increase in bough collection from September through November. Some units generate revenues in excess of \$10,000; one local unit generates more than \$50,000 annually from NTFPs.” On some districts, moss and ginseng are the only products for which permits are requested. One local unit “only issued 4 native plant, and 4 rock collection free use permits in 1999.” Another local unit “issued only 23 ginseng permits in one year.” Some local units were not aware of collectors living in the area. Some district managers did not perceive that local people are trying to supplement their income from the trade of non-timber forest products. Their perception was, however, that “neighboring districts may have significantly greater demand for NTFPs.” The level of collection disturbs some district level managers.

The perception among many district managers was that the level of management is satisfying the public and meeting the needs concerning non-timber products. “No one has complained about management efforts.” One district level manager felt that “if the local unit tried to charge for blueberry collection the public would complain.”

One perception among district managers was that the users are very different. Some folks are collecting for personal use, and some really need the money. Other collectors are serious business people. The perception of some district managers was that “the people who dig azalea and lady slippers, are not doing so for commercial purposes.” Another perception is that the “same collectors come back every year for permits.” For example, “one district noted that a local woman has been coming in every year for the last 20 years for a collection permit.”

Some district level managers felt that the units are doing sufficient monitoring and evaluation for the local demand. In these situations, the demand does not require more management efforts. Local units allow personal free-use collection of a small amount of plants, and indicate that the allowable amount is stated in the manual. In general, “local units use Permit Form 2400-1 for free use collection. If the products are for resale, then there is a minimum size permit that can be purchased. A company can not get a permit and then have employees collect the products.” Some local units have lists of plants that can be permitted, and are able to track ginseng and ramps. Some units do not require permits for ramps, blackberries, huckleberries, or other consumables.

District managers noted that they are “supposed to use the Timber Information Management System (TIMS) to report NTFP collection activities.” Some local units were skeptical that anyone examines the permits that are organized and summarized monthly. Others did not “see the benefit from the use of TIMS.” Some were not using TIMS, because of technical difficulties. The perception was that the TIMS software is not functioning well. Some units continue to issue hardcopy permits and then reenter them later into the computer.

Some local units were making prescriptions for management areas. They felt that they have an exceedingly good handle on what’s going on with NTFPs. “The problem is that Congress does not provide the funds to monitor collection activities.” Another problem that constrains current practices is that “the agency does not have fair appraisals on the prices for non-timber.”

The perception of some district managers was that the costs for permits should be left up to the local units. Each location has its own circumstances and factors that determine the levels of use, values, and income. Some are opposed to charging for firewood because of its negative impact on the lower segments of the economy.

A general perception was that “there is more illegal than legal collection.” Some district level managers have caught ginseng collectors in wilderness areas. But catching someone would only be coincidental. The perception of some district managers was that law enforcement is getting the same amount of communications about medicinal plant collection as the district managers. The main perceived problem is that “law enforcement is stretched very thin.” Some forests have one law enforcement officer. One district has “only two law enforcement officers that can issue citations.”

Some local managers felt that the national forests are a reservoir of products that are not common elsewhere. One district level manager suggested that, “the national forests are a gene bank for these species.” The agency “needs to emphasize that these are renewable resources, and use

scientific management practices to sustain the collection.” Some district managers felt that the Forest Service does not have a strategy to deal with NTFPs. A general perception among many district managers is that the agency has not fully recognized the value of NTFPs. Some district level managers felt that the agency “recognizes that NTFPs impact local economies, but it has not dedicated resources to these products.”

At least one district manager felt that unless NTFPs become critical to the national welfare, they should be harvested from national forests. Some felt that NTFPs are “considered a nuisance that the agency has tried to deal with through the permit system.” In some places NTFP activities have gotten fairly major. Some felt that the agency “could diversify into the non-timber product lines.”

One district level manager pointed out that, “the Forest Service has 100 years of data concerning trees, but for princess pine it has nothing.” A common perception among district managers was that they “could manage for NTFPs if they had more information.” Many feel that they are basing decisions on incomplete knowledge. One district level manager suggested that, “maybe the agency will reinvent itself through NTFPs.”

Several district managers think that NTFPs warrant legislative language that mandates management. Some felt that non-timber forest products require similar attention as other natural resources. Some managers felt that “plans should address NTFPs.” If NTFPs “continue to grow, programmatically, then the units need support to manage.” It is becoming clear that a significant part of the public relies upon NTFPs. For that reason, “the Forest Service needs to address these products.” Not all management areas will address NTFPs, and collection may be restricted from other areas. District managers felt that the Forest Service needs to allocate resources to determine the status of NTFP activities, forest-wide. The agency “should not attempt to manage for NTFPs without an inventory of the resources.”

At least one local unit felt that the agency is doing enough to manage for NTFPs. “The agency would adjust the program accordingly if it determined more attention was needed on this issue.” Some district managers felt that NTFPs are sufficiently covered in management plans. The “current approach to managing for NTFPs allows collection over the entire forest.” The perception was that this reduces pressures on the whole forests and assuages any potential adverse impact from collection. Issues that the District Rangers perceive to be unhealthy, or adverse, are being addressed. “There is no need for them [NTFPs] to be in management plans, if the local units monitor the trends and determine the likelihood of adverse impacts from collection.” Some district managers felt that NTFPs should not be regulated to management areas. They felt that one major strength of the Forest Service is the decentralized management, which provides District Rangers the ability to address local needs. “If the agency loses line officers at the local level then it will lose the ability to address local trends.”

Some district managers felt that the Forest Service should not get more involved with NTFPs. Others felt that, “if the Forest Service is going to offer products, then it needs to be managing for them.” “The agency needs to be sure it can sustain the products.” Non-timber forest products are a viable part of the ecosystem. “If the agency wants all parts to be sustainable, then it needs to view NTFPs just like trees, and manage them accordingly.”



The advice of some district managers was that if appropriate dollars or fees came back to the unit, they could undertake studies to gather information to improve management. The district managers do not have the information to determine and monitor impacts. Policies need to be scrutinized and improved where necessary. If the units had some money to do conservation strategies, they could answer some management questions. “The Forest Service needs to allocate some law enforcement resources to address NTFPs.” But the agency “would have to move a lot of products to warrant allocating resources to keep track of NTFPs.”

### **Does the Forest Service have the knowledge or capacity to manage for NTFPs?**

A general perception among some district manager was that collectively, the agency has sufficient knowledge and capacity to manage for NTFPs. “An interdisciplinary team could manage for these products.” At least one district manager feels that “the knowledge exists about ecosystem functioning to make sound management decisions.” For some products, like firewood, the Forest Service has lots of experience. Though “the knowledge may exist for some products, for other products the knowledge and capacity is lacking.” The Forest Service “has the expertise, or has access to the expertise to make sound management decisions concerning non-timber forest products.”

NTFPs are an evolving issue and it may take time before specific prescriptions are developed. Some district level managers wondered if the agency can technically manage for these products. “Foresters are not trained, silviculturally, to manage for birch bark or twigs.” For example, “some managers believe that the national forests in Southern Appalachia could write up standards and guidelines that would improve what they are doing.” They noted that “agency knows enough to take rudimentary action.” A general perception among district managers was that the Forest Service could develop standards and guidelines for NTFPs.

District managers felt constrained in their ability to manage for NTFPs by a lack of information. At least one district manager felt that “the agency has the type of skills, but the lack of demand does not warrant management.” Others believed that districts have access to knowledge and expertise, but not the flexibility to manage for non-timber forest products. Some felt that the agency was not positioned to manage for NTFPs because they lack biological inventories. A general impression was that intensive inventory of the resources is needed, but out of the question due to current funding levels. Another general perception was that the knowledge exists for the traditional plants (e.g., firewood and boughs), but not for medicinals. “The potential problems caused by bioprospecting for pharmaceuticals were daunting to many district managers.”

The Districts need research and analytical support. They acknowledged NTFPs as a future research area. Some were concerned about the amount of soil being removed from digging of transplants. “It may not be significant, but many are unsure of the impact that collection has on the forest ecosystems.” District managers indicated that they would benefit from assessments and inventories of NTFPs. The Districts need to know how much collecting can be sustained. They would benefit from research on the recovery rates for NTFPs. District managers need an evaluation of the permits to provide a better understanding of the level of collection. They would

benefit from improved monitoring of the trends in the edible and botanical industries. Some district managers said that it is not necessary to wait until research is finished to begin managing.

### **Are the policies sufficient and/or consistent?**

Some district level managers contended that NTFPs are already included in national legislation, particularly in the National Forest Management Act (NFMA). Some district managers expressed that the value of NTFPs is not equal to timber, recreation and range, and thus it is not worthy of more attention. Some district manager stated that the new focus on ecosystems would ensure that non-timber forest products are included because they are part of the system.

At least one district level manager “fails to see that national legislation would improve the management system of having the rangers on the ground.” Some district managers felt that more policy direction would be harmful. At least one district manager felt that “there is no value for a national policy.” A perception among some district managers was that forest-wide policy could adversely affect one district. “To have a decree from the top would be the worst thing the agency could do. As long the district are capable of managing local resources there is no need for legislation.” District level managers felt strongly that they need the flexibility and autonomy to address local issues.

Although many district level managers thought there is plenty of legislative direction, most agreed that policies should be carried out more consistently. Most identified that policies are not consistent across districts and administrative boundaries, but they should be. But some district managers felt that there may be some local variation, but for the most part, districts are consistent in their approach to managing for NTFPs. Others felt that implementation of policy should be consistent at the forest and regional level. For example, “the southern Appalachian forests should have a consistent approach. Management should be based on ecological regions and demography.”

Some district level managers remarked that non-timber forest products have not gotten the policy attention they need. At least one district manager thought the “nation needs to establish some policy that sets broad general guidance and mandates management for NTFPs.” Another manager indicated that, “the policy that is lacking is that which would provide funds for management efforts.” Some district level managers noted a need for regional direction guided by forest input. Other district managers felt a need for more direction from the Forest level. Still other managers consider that the issue is still emerging, and found it difficult to express appropriate policy levels.

### **Should this be a priority for the Forest Service?**

A general perception among some district level managers was that the Forest Service has already prioritized NTFPs at the optimal level. At least one district manager did not see the merit in NTFPs becoming an issue. Another district manager did not want NTFPs elevated to a higher level. One district manager suggested that NTFPs are already a critical issue, but not urgent. “Compared to the other issues, NTFPs are minor. When you think about all of the issues, including the future of the Forest Service this just does not surface.”

Several mentioned that because of the current mechanisms to monitor collection activities, most district managers do not see NTFPs as a major concern. A common opinion was that the agency would never fund NTFPs to a level that would allow districts to monitor a program. But many remarked that the agency is supposed to be providing a service to the public, and priority should be placed on trying to accommodate public requests.

One district level manager indicated that there are three ways for NTFP management to be come a priority issue. First, the Chief could initiate and present the issues to the committees with which he deals. Before this first scenario could occur, stakeholders would have to meet with the Chief, his deputies and the regional foresters to raise their level of awareness of the intensity of NTFP activities, and the need for Forest Service action. In a second scenario, the constituents who rely on NTFPs could band together to influence Congress to start asking questions of the Forest Service. Third, a crisis could make NTFPs a priority, especially if the crisis concerned more than one region.

Many expressed that, the timing is important; “right now the agency is covered up with a number of critical issues: forest plan revisions, the roadless area initiative and timber harvesting.” “Because of the current turmoil, this may not be the best time to bring this issue up.” Some district managers offered that perhaps when the agency gets through this period, it could look more strategically at NTFPs. “The agency needs to think strategically about the timing for implementing a new program.”

### **What are the critical issues that affect management for NTFPs?**

In general district managers noted a lack of awareness of the value of the industry. Many expressed that significantly more demand for the products is needed for this issue to become a priority. Most agreed that lack of knowledge about the markets and market trends for non-timber forest products constrains management efforts.

At least one district manager stated that the priority should be to “enhance the habitats, and to implement a management program to ensure that populations do not decrease.” Many suggested that resource inventories and botanical impact studies would be a good use of new funds. One of the major questions that district managers have concerns the impact of forest management on NTFPs. Some district managers placed a high priority on improving the management for moss and ramps. Most identified a lack of knowledge on the basic biology of most NTFPs.

District managers often raised the point that the agency does not have the personnel to manage the NTFP resources. For some, the most critical issue was the lack of support for the administrative costs to cover staff time to address this issue. “Having a person on the ground to work with industry for better management would be useful.” At least one district manager felt that new funds should be directed at a combination of administration, monitoring and enforcement efforts.

## **What message would you send up the ranks concerning NTFPs?**

One district manager suggests that, “the agency has an important suite of resources that are being robustly used by the public, which need to be managed.” “The agency needs to recognize the growth of the NTFP industry, provide more leadership as stewards of the public land, and determine how it is going to manage the NTFP activity.” At least one manager suggests that, “Congress needs to appropriate more money to focus on research that would benefit all managers.”

District managers noted that from a national perspective NTFPs may not be that important; but from a local and regional economic perspective they can be very important. “Local units need the flexibility and fund to be able to manage NTFP programs.” Many district managers hoped that they will maintain some local say in the matter. The local units expressed the need for some money to look at this issue. “Let the local units keep some of the moneys that are generated from NTFP sales.”

### **3.4 Issues and Implications**

Based on this review of forest management plans and policies, a number of key issues are identified that could significantly affect how the national forests manage for non-timber products. Societal pressures on how, and for what purposes, national forests are managed continue to intensify. Economic issues are driven by demand for the products and include questions of macro and micro scale. Environmental concerns range from the impact that harvesting has on the species to the impact on the ecosystem from where the products were collected. There is a wealth of knowledge on how to manage for timber, wildlife, recreation, and water resources, but in general there is a lack of technical information and expertise for managing for non-timber forest products. How to incorporate NTFPs into the ecosystem management paradigm remains an issue. Institutional barriers must be removed to improve how NTFPs are managed.

#### **3.4.1 Social**

The collection of NTFPs is an intricate part of many peoples’ lives. For the most part, the collectors of NTFPs are under-represented stakeholders in the planning process. They are not organized nor represented by any group, but are individuals who may be apprehensive of getting involved in government activities. They may not want others to know how much nor where they collect. But none-the-less, the collectors are stakeholders in how the national forests are managed, as management decisions can drastically affect these people’s livelihoods.

For some collectors the income gained from the sale of NTFPs could be a major portion of their annual income. Certainly, for many collectors, income generated from NTFPs is “extra money” and is an important component to the overall household budget. A ban on collection of NTFPs, or an increase in permit costs could have significant impact on the collectors’ lives. Special efforts are needed to identify the collectors and to get their input. Forest managers may be able to learn from traditional users ways to manage for NTFPs. The sustainable management of NTFP resources will require understanding how these people view and use the resource.

Currently there are not advocacy groups pushing for the management of NTFP resources. The constituency group that is most affected by management activities concerning NTFPs need to be organized and have access to decision makers. They need to be recognized as legitimate users of the national forests, and encouraged to participate in the planning process. Until this occurs, management activities will not reflect their concerns and needs. Nor will it reflect the knowledge and experience that this group has to offer.

### **3.4.2 Economic**

Unlike timber, the economic value of non-timber forest products, in general, is not well defined. Though the overall value of some sectors (e.g., herbal medicinal) may be documented, little information is available on forest-harvested products (e.g., forest-harvested medicinal plants). Defining the value of non-timber forest products at the forest and district levels is necessary to determine sustainable management levels. Though demand figures for some products (e.g., ginseng) are available, in general very little is known about the demand for most products. As a whole, very little information is available on the supply of non-timber forest products. Forest inventory data for NTFPs is generally non-existent. Without accurate information on the supply and demand for non-timber forest products, it is difficult to determine sustainable economic harvest levels.

The economic impact to local Forest Service units constrains management, as well. There is no fiscal mechanism for units to receive revenues that are generated from the sale of NTFPs. Local units are not funded to manage for these products, and therefore cannot allocate resources to address this issue. Forest managers do not have the flexibility to shift funds from other programs to manage for NTFPs. Though there is a need to determine fair market value for NTFPs, district managers are concerned about the impact this could have on local collectors.

### **3.4.3 Environmental**

There is not enough information to determine the impact that collection has on forest health. Some managers feel that collection could be having very localized, but insignificant, impact. With the current mechanisms to monitor and track collection activities, there is no way of knowing if collection is having an ecological impact. But, for the agency to address NTFPs more aggressively, decision makers at the highest level within the organization needs to have this information.

The environmental issues, if not addressed, could result in a management strategy based on protection of the NTFP resources, and not conservation or utilization. If the population of a NTFP species degrades to a level that initiates the statutes of the Endangered Species Act (ESA) the Forest Service would be required to pursue a protection strategy. To manage for conservation and utilization the status of NTFP species can not drop to the level that requires management under ESA. The effect that harvesting has on local plant populations, as well as the impact on the associated ecosystem is an issue that truly affects how the Forest Service manages these resources.

### 3.4.4 Institutional

In general, the Forest Service does not view non-timber forest products as natural resources that require management. The agency has not examined NTFPs strategically and needs to clarify its position on management for these products. For many managers NTFPs have been considered “other duties as assigned” and not part of any program. Until there is formal recognition that the NTFP resources need managing they will continue to fall through the administrative cracks.

The agency does not have the mechanisms or resources to manage for NTFPs. Many consider non-timber forest products an unfunded mandate. There are no systems to account for their value, nor to monitor or track collection activities. The agency has not incorporated the knowledge or experience that exists concerning NTFPs into its management programs.

The Forest Service does issue permits for the collection of NTFPs. The permit system is one of the few mechanisms that is in place to monitor collection activities. But, a general perception is that it is inadequate to track actual collection. The permit system does not provide sufficient information concerning collection activities. No one really knows how much is being collected. Many managers perceive that non-permitted collection far exceeds that which is permitted. The illegal collection from national forests may surpass the legal collection. Until this issue is resolved, the sustainable management of these resources will be unattainable.

The knowledge may exist to improve management practices, but it has not been identified, organized, or consolidated into a useable format. To manage for NTFPs will require creating new information through research, broadening horizons beyond traditional forestry, and expanding the expertise involved in management. The research needed to develop the knowledge on how to manage for NTFPs is boundless. In general, there is a lack of information within forestry on how to manage the NTFP resources. But, expanding the inquiry to include knowledge of herbal medicine and organic gardening could provide valuable information on reproducing some NTFPs. The management of NTFPs will require more information on the status, characteristics, and requirements of the habitats and species. To include NTFPs in forest management will require developing the expertise to understand the ecology (biological and social) and botany of the natural resource.

From an institutional standpoint, the economics of management must be defined to determine the investment needed to ensure sustainability of the resource. Over the last decade revenues from timber sales, as well as appropriations from the U.S. Congress have decreased. The decline in fiscal support has put tremendous pressure on the Forest Service to deal with the most important issues. One of the major issues that has impeded management of national forests for timber products is concern that the agency cover all costs involved in providing these products. The issue of “below-cost” management could seriously impede Forest Service efforts to manage the NTFP resources. At this point, the costs of managing NTFPs may exceed the revenues generated from the sale of collection permits. To incorporate NTFPs into forest management will require either additional fiscal support or a shift of funds from other management objectives.

There is a general perception that the current policies that affect NTFPs are neither consistent nor sufficient. At the same time, there is no agreement that they require more policy directives. This

discrepancy leads to uncertainty on how the agency manages for the products. The policies and directives that affect how the units manage for NTFPs need to be examined, critically, and modified accordingly. For many managers the problem may be that the framework, protocols, and procedures are not in place to execute the policies.

National legislation is being developed that would lead to increased revenues from the sale of collection permits and development of sustainable harvest levels. But, until NTFPs are recognized as a natural resource, “more important” issues will subsume the amount of effort devoted to managing them. Legislation that recognizes NTFPs as a management objective for national forests, along with those identified in current legislation would institutionalize management for these products.

### **3.5 Conclusions**

Non-timber forest products are economically and ecologically important. The collection and sale of NTFPs from the forests of eastern United States have local, regional, national and international economic impact. Collection of these products may also have significant impact on the health of the forests of the region. To realize the maximum possible economic benefits and to have the minimum ecological impact, the natural resources that produce NTFPs need to be managed.

In the 1980s, when the first round of national forest plans were developed, non-timber forest products, were not generally recognized as a management objective nor as an issue of public concern. A few national forests identified NTFPs as a resource and incorporated them into management plans. The coverage devoted to NTFPs was insignificant compared to other management objectives. Much of the coverage focused on recreational collection and research needed to conserve the resource.

There are many inconsistencies between the national forests of eastern United States on how they manage for NTFPs. In general there is not a good understanding of how the agency is to address these products. Inconsistencies are found at every management level, among districts, forests and regions. There are differences in the practices, procedures, and perceptions of forest managers. The opinions of forests managers concerning the need to include NTFPs in forest management differ drastically.

There are several reasons for the differences in management practices among districts. First, the markets are often significantly different among units. Units that have favorable forest ecosystems might have greater demand for these products. The knowledge about how to manage for these products is also not uniform across the region. Units that have active NTFP programs may have the expertise to begin addressing the issues.

These inconsistencies are constraining current and future NTFP management activities. Interviewees at all levels believed that the Forest Service has the knowledge and capacity to eliminate these obstacles. The agency has a wealth of knowledge and experience in managing the other natural resources on national forests. Many noted that the agency has access to the best trained natural resource management professionals, within the agency or through research

facilities around the world. The technical knowledge may not exist to manage for NTFPs specifically, but the organizational knowledge is well developed on determining what is needed to manage for NTFPs. The Forest Service has been figuring out how to manage the national forests for multiple products for decades. The challenges presented with NTFPs are not insurmountable.

Interviews revealed that non-timber forest products management is not a priority issue for the U.S. Forest Service in the eastern United States. The need for management of non-timber forest products is minor compared to the myriad of other natural resource management issues that affect the Forest Service. Other issues were identified as far more pressing than NTFPs. But these other issues have been examined, scrutinized, and debated far more than the issue of managing NTFPs in national forests. More resources have been allocated to these other issues than to the issue of NTFP management. The understanding about these other issues is far greater than about NTFPs. Unfortunately, much less is known about the full implications NTFP harvesting from national forests. The potential ramifications from this lack of knowledge could be devastating on native plant populations throughout eastern United States. At the same time, loss of NTFPs could have significant economic impact to local collectors.

The general wisdom of the U.S. Forest Service managers in eastern United States was that NTFP management is an issue that needs to be addressed. Unfortunately, some forest managers felt that it would take a federal lawsuit for NTFPs to receive adequate attention of policy makers. But the majority of the forest managers believed that for NTFPs to receive sufficient attention would require: 1) an organized and vocal group that represents the collectors of NTFPs; 2) determining and monitoring the economic and ecological impact of NTFP activities; and 3) building the awareness and support of policy makers at the highest levels for sustainable forest management for NTFPs.

Fundamentally, the Forest Service needs to take a proactive approach to managing for NTFPs. This will require an expansion of how the agency perceives these products and the need to manage for them. This is an opportunity to reach out to the collectors; a segment of the U.S. population that traditionally has been unrecognized and often overlooked in forest management planning. This segment of the U.S. population has a tradition and a culture of collecting NTFPs and a unique set of values that need to be considered in national forest management. These social factors need to be understood and considered in forest management decisions. Further, local knowledge of plant ecology should be incorporated in the development of appropriate silvicultural practices. Support of this group in formulating Forest Service forest management would help build harmony within the local community.

At the same time, the people who purchase and use the products may be supportive of sustainable forest management. There may be opportunities to reach out to these people to support sustainable forest management for NTFPs. The segment of the U.S. population that purchase herbal medicinal products from health food stores may be more inclined to support certified forest management for NTFPs. Certainly those who purchase organic foods and herbs may be inclined to support certified non-timber forest products.



Over the last decade, interest in and concern for NTFPs has increased drastically. Today, NTFPs are receiving a great deal of attention in natural resource policy dialogue. The U.S. Forest Service can play a leading role in defining how public forests will be managed for non-timber forest products. A great deal of research, analysis and support is still needed to have NTFPs fully integrated into national forest management plans and practices.

A general perception of the forest managers is that the U.S. Forest Service should be managing for non-timber forest products, simply because they are a natural resource that is found on public lands. If the agency is going to allow extraction, then it must manage the resources. It has a basic charge to protect, manage and extract forest products. NTFPs should be included in forest management plans, but the extent to which they are addressed in the plans is still debatable.

The Forest Service strategy of managing national forests as ecosystems can not be fully realized until NTFP resources are sufficiently integrated into management plans and activities. The goal of sustainable forest management will remain elusive if NTFPs are not considered an important natural resource. The attitudinal information collected in this research will help to improve multiple-use management and expand forest plans to include these important forest products.

### 3.6 References

- Brevoort, P. 1998. The Booming U.S. Botanical Market: A New Overview. *Herbalgram*. 4:33-45.
- Carney, T.F. 1972. Content Analysis: A technique for systematic inference from communications. University of Manitoba Press. Winnipeg, Canada. 344 p.
- Chamberlain, J., R. Bush, and A.L. Hammett. 1998. "Non-Timber Forest Products: The Other Forest Products." *Forest Products Journal*. Vol. 48(10):2-12.
- Chequamegon NF LRMP. 1986a. Land and Resource Management Plan for the Chequamegon National Forest. U.S. Department of Agriculture, Forest Service. Eastern Region, Milwaukee, WI. 100 p. + Appendices.
- Constantz, G. 1994. Hollows, Peepers and Highlanders: An Appalachian Mountain Ecology. Mountain Press Publication, Missoula, MT. 264 p.
- Croatan NF LRMP, Draft. 1998. Land and Resource Management Plan for the Croatan National Forest. U.S. Department of Agriculture, Forest Service. Southern Region, Atlanta, GA. 150 p. + Appendices.
- De Graaf, R.M., V.E. Scott, R.H. Hamre, L. Ernst, S.H. Anderson. 1999. Forest and Rangeland Birds of the United States: Natural History and Habitat Use. <http://www.npwrc.usgs.gov/resource/1998/forest/table1.htm> (September 27, 1999).
- Eisenberg, D.M., R.C. Kessler, C. Foster, F.E. Norlock, D.R. Calkins, and T.L. Delbanco. 1993. "Unconventional medicine in the United States." *New England Journal of Medicine*. 328(4):246-252.
- Finger Lakes NF LRMP. 1986. Land and Resource Management Plan for the Finger Lakes National Forest. U.S. Department of Agriculture, Forest Service. Eastern Region, Milwaukee, WI. 100 p. + Appendices.
- Florida NF LRMP. 1985. Land and Resource Management Plan: National Forests in Florida. U.S. Department of Agriculture, Forest Service, Southern Region. Atlanta, GA, 100 p. + Appendices.
- Florida NF LRMP. 1999. Revised Land and Resource Management Plan. National Forests in Florida. U.S. Department of Agriculture, Forest Service, Southern Region. Atlanta, GA.
- Foster, S. 1995. Forest Pharmacy: Medicinal Plants in American Forests. Forest History Society, Durham, NC. 57 p.
- \_\_\_\_\_ and J.A. Duke. 1990. A Field Guide to Medicinal Plants: Eastern and Central North America. Houghton Mifflin Company, New York. 366 p.

- Floyd, D.W. (editor). 1999. Forest of Discord: Options for Governing Our National Forests and Federal Public Lands. Society of American Foresters. Bethesda, MD, 84 p.
- Freed, J. 1994. "Special Forest Products: past, present, future." *in*: Dances with an Elephant, Proceedings of the Conference, The Business and Science of Special Forest Products. C. Schnepf (editor). Western Forestry and Conservation Association. Portland, OR, p.1-11.
- Genetic Engineering News. 1997. Germany moves to the forefront of the European herbal medicine industry. 17(8):14.
- Green Mountain NF LRMP. 1993. Land and Resource Management Plan for the Green Mountain National Forest. U.S. Department of Agriculture, Forest Service. Eastern Region, Milwaukee, WI, 100 p. + Appendices.
- Guldin, Jim. 1999. personal Communication. Unit Leader. Research Work Unit 4106 -- Managing Upland Forest Ecosystems in the Mid South. U.S. Forest Service, Southern Research Station. Monticello, AR.
- Harlow, W.M., E.S. Harrar, J.W. Hardin, and F.M. White. 1991. The Textbook of Dendrology. McGraw-Hill Series in Forest Resources. 7<sup>th</sup> edition. McGraw-Hill, Inc. NY 501 p.
- Holsti, O.R. 1969. Content Analysis for the Social Sciences and Humanities. Addison-Wesley Publishing. Menlo Park, California. 235 p.
- Hoosier NF LRMP. 1991. Amendment to The Hoosier National Forest Land and Resource Management Plan. U.S. Department of Agriculture, Forest Service. Eastern Region, Milwaukee, WI, 100 p. + Appendices.
- H.R. 2466. 1999. Department of the Interior and Related Agencies Appropriations Act, 2000 (Enrolled Bill (Sent to the President)), U.S. House of Representatives Bill sent October 1999.
- Krippendorff, K. 1980. Content Analysis: An introduction to its methodology. Sage Publications. Beverly Hills, CA. 191 p.
- Krochmal, A., R.S. Walters, and R.M. Doughty. 1969. A Guide to Medicinal Plants of Appalachia. USDA, Forest Service Research Paper NE-138. Northeastern Forest Experiment Station, Upper Darby, PA. 291 p.
- Le Bars, P.L., M.M. Katz, N.Berman, T.M. Itil, A.M. Freedman, and A.F. Schatzberg. 1997. A placebo-controlled, double-blind randomized trial of an extract of *Gingko biloba* for dementia. *Journal of American Medical Association*. 278(16):1327-1332.
- Mater Engineering, Ltd. 1992. Analysis and development of a conceptual business plan for establishing a special forest products processing plant. Report to the USDA, Forest Service, Region 6, Sweet Home, OR 233 p. + Appendices.

- \_\_\_\_\_. 1993. Special forest products market analysis. Report to Saskatchewan Timberlands Division, Weyerhaeuser Canada, Ltd., Prince Albert, Saskatchewan. Project No.3017. 94 p. + Appendices.
- \_\_\_\_\_. 1994. Minnesota Special Forest Products: A market study. Report to the Minnesota Department of Natural Resources, St. Paul, MN. 200 p. + Appendices.
- MUSYA, 1960. U.S. Code 74 Stat. 215. Multiple Use and Sustained Yield Act of 1960, 74 United States Statutes at Large. p. 215.
- NFMA, 1976. U.S. Code 90 Stat. 2949. National Forest Management Act of 1976. 90 United States Statutes at Large. p. 2949.
- Nicolet NF LRMP. 1986. Land and Resource Management Plan for the Nicolet National Forest. U.S. Department of Agriculture, Forest Service. Eastern Region, Milwaukee, WI. 100 p. + Appendices.
- Powell, D.S., J.L. Faulkner, D.R. Darr, Z.Zhu, and D.W. MacClearly. 1993. Forest Resources of the United States. General Technical Report. RM-234. U.S.D.A. Forest Service. Washington, D.C. 132 p.+ Appendices.
- RPA, 1974, U.S. Code 86 Stat. 476. Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974, 86 United States Statutes at Large. p. 476.
- Revised Florida NF LRMP. 1999. Revised Land and Resource Management Plan for National Forests in Florida. USDA, Forest Service, Tallahassee, FL. February. 100 p.
- Ricketts, T.H., E. Dinerstein, D.M. Olson, C.J. Loucks, et al. 1999. Terrestrial Ecoregions of North America. World Wildlife Fund. Island Press. Washington, D.C. 483 p.
- Robbins, C. 1999. "Ginseng Dealers Surveyed, Conservation Measures Addressed." *TRAFFIC Bulletin*. World Wildlife Fund, Washington, D.C,18(1):3-5.
- Small, E. and P. M. Catling. 1999. Canadian Medicinal Crops. NRC Research Press. Ottawa, Canada. 240 p.
- Stix, G. 1998. "Plant matters." *Scientific American*. 278(2):301.
- U.S. Code 30 Stat. 35. 1897. Organic Administration Act of 1897, United States Statutes at Large, p. 35.
- U.S. Congress, Office of Technology Assessment. 1992. Forest Service Planning: Accommodating Uses, Producing Outputs, and Sustaining Ecosystems. OTA-F-505. Government Printing Office, Washington, D.C. 206 p.

USDA 1999. U.S. Agricultural Exports. United States, Department of Agriculture. Washington, D.C. October 28.

USDA Forest Service. 1980. An Assessment of the Forest and Range Land Situation in the United States. U.S. Department of Agriculture, Forest Service. Washington, D.C. 631 p.

\_\_\_\_\_. 1983. Regional Guide for the Eastern Region. Eastern Region. Milwaukee, WI. 100 p.+ Appendices.

\_\_\_\_\_. 1984. Regional Guide for the Southern Region. Southern Region. Atlanta, GA. 100 p. + Appendices.

\_\_\_\_\_. 1995. The Forest Service Program for Forest and Rangeland Resources: A long-term strategic plan. Draft 1995 RPA Program, Government Printing Office, Washington, D.C. 80 p. + Appendices.

\_\_\_\_\_. 1997. Forest Service Organizational Directory. U.S. Department of Agriculture, Forest Service. Washington, D.C. FS-65. 249 p.

\_\_\_\_\_. 1998. Analysis of the Management Situation: Special Forest Products. Chequamegon and Nicolet National Forests, Wisconsin, Eastern Region, Milwaukee, WI, Unpublished Draft. 12 p.

\_\_\_\_\_. 1998a. Forest Service Manual (FSM) Title 1100, Directive System. U.S. Department of Agriculture. Forest Service. Washington, D.C. 50 p.

\_\_\_\_\_. 1999. Charting our future: A nation's natural resource legacy. Government Printing Office, Washington, D.C. 72 p.

\_\_\_\_\_. 1999a. <http://www.fs.fed.us/form/nepa/reg8.html>. (October 1, 1999).

\_\_\_\_\_. 1999b. Draft National Strategy for Special Forest Products. U.S. Department of Agriculture, Forest Service, Washington, DC. Draft Unpublished, 10 p.

Wayne NF LRMP. 1988. Land and Resource Management Plan: Wayne National Forest. Eastern Region. Milwaukee, WI, 100 p. + Appendices.

White Mountain NF LRMP. 1986. Land and Resource Management Plan: White Mountain National Forest. Eastern Region. Milwaukee, WI, 100 p. + Appendices.

World Wildlife Fund, TRAFFIC North America. 1999. "Medicine from U.S. Wildlands: An Assessment of Native Plant Species Harvested in the United States for Medicinal Use and Trade and Evaluation of the Conservation and Management Implications. Unpublished report to the National Fish and Wildlife Foundation. World Wildlife Fund, Washington, D.C. 21 p. + Appendices.

### 3.7 Tables

**Table 3.1 Coverage in national forest plans of eastern United States.**

<b>Management Objectives</b>	<b>Chequamegon NF (WI)</b>	<b>Finger Lakes NF (NY)</b>	<b>Florida NF (FL)</b>	<b>Green Mountain NF (VT)</b>	<b>Hoosier NF (IN)</b>	<b>Nicolet NF (WI)</b>	<b>White Mountain NF (NH)</b>
<b>Legislated</b>							
Timber	25.60%	19.19%	19.32%	17.43%	6.29%	23.46%	15.72%
Fish & Wildlife	12.24%	13.35%	10.41%	12.95%	2.44%	20.19%	12.41%
Water	3.60%	8.86%	7.31%	6.33%	8.45%	3.46%	4.32%
Recreation & Wilderness	24.31%	16.96%	24.67%	21.61%	16.18%	21.57%	34.07%
Range	0.87%	6.11%	3.52%	0.64%	0.00%	0.42%	0.23%
Minerals	3.05%	8.27%	6.66%	9.64%	7.16%	3.02%	4.51%
<b>Total Legislated</b>	<b>69.66%</b>	<b>72.74%</b>	<b>71.89%</b>	<b>68.59%</b>	<b>40.52%</b>	<b>72.11%</b>	<b>71.25%</b>
<b>Non-Timber Forest Products</b>	<b>0.40%</b>	<b>0.64%</b>	<b>0.08%</b>	<b>0.49%</b>	<b>0.54%</b>	<b>0.54%</b>	<b>0.16%</b>
<b>Not Legislated</b>							
Lands	4.26%	2.94%	9.87%	8.12%	9.83%	6.12%	2.18%
Transport (Roads)	10.52%	5.41%	0.79%	6.73%	6.58%	10.02%	8.72%
Protection	4.67%	7.96%	10.78%	8.82%	7.21%	8.25%	2.40%
Facilities	0.53%	0.70%	4.66%	1.56%	2.53%	0.15%	4.42%
Special Use	0.19%	2.11%	1.25%	1.88%	2.14%	0.12%	0.32%
Public Relations	0.48%	2.70%		0.34%	1.32%	0.38%	0.52%
Research	0.60%	0.44%		0.55%			0.42%
Economics	2.80%						0.84%
Cultural	0.36%	2.07%		1.34%	4.00%		1.10%
Environmental Mgt.	5.37%					1.28%	
Energy	0.16%						
Vegetation Mgt.		2.00%		1.58%	9.21%	0.57%	
TE&S Species		0.28%			1.51%		0.78%
Human Resources			0.70%		2.49%	0.45%	0.29%
Ecosystem Mgt.					0.54%		
Visuals					6.72%		4.17%
Biodiversity					4.87%		
Firewood							2.40%
<b>Total Not Legislated</b>	<b>29.94%</b>	<b>26.62%</b>	<b>28.03%</b>	<b>30.92%</b>	<b>58.95%</b>	<b>27.35%</b>	<b>28.58%</b>
<b>Total</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

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3.8 Figures

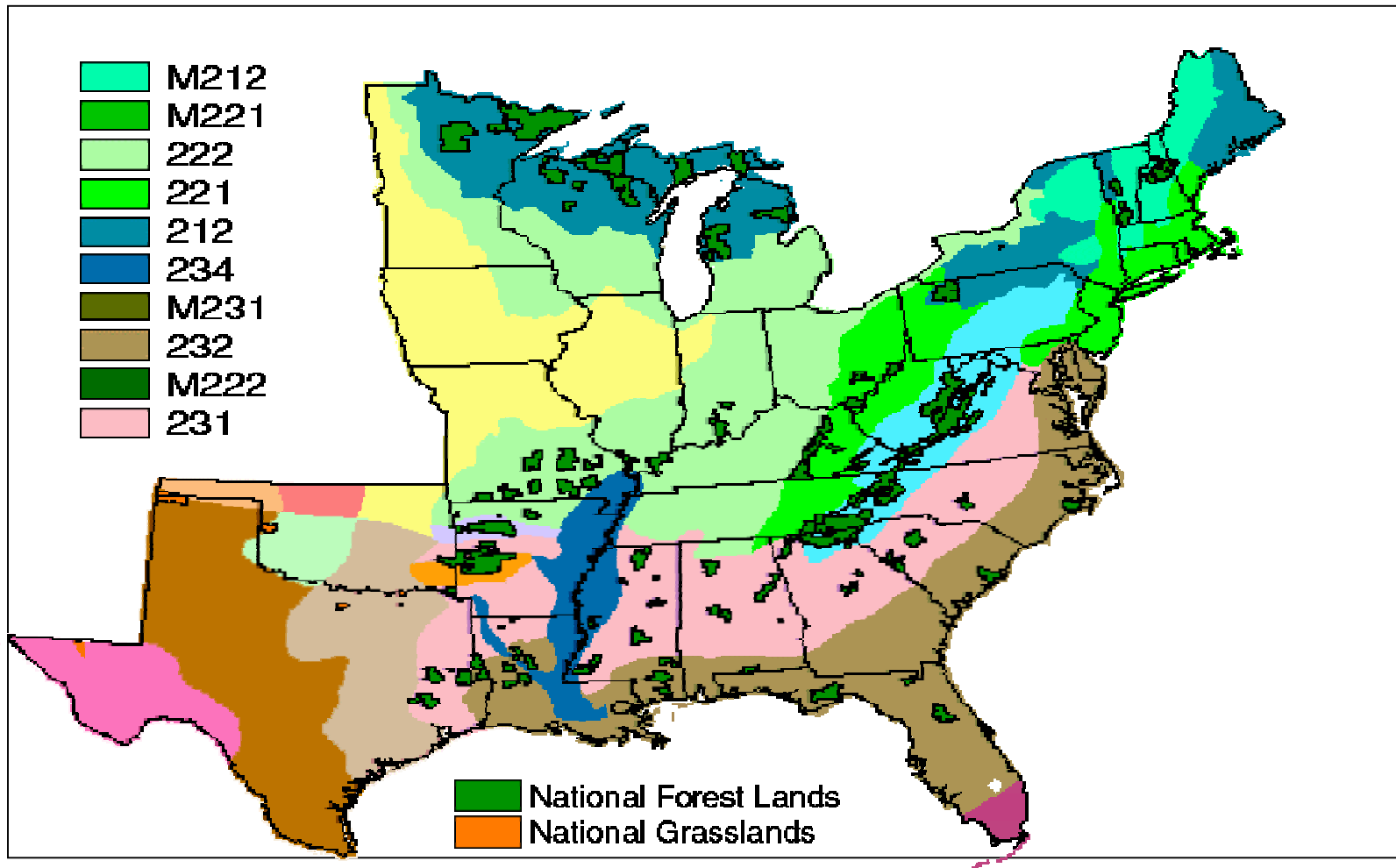


Figure 3.1 Forest Ecoregions of Eastern United States<sup>1</sup>  
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<sup>1</sup> Source: Bailey 1995.



**Figure 3.2** Percent of total land area that is covered with forest.<sup>2</sup>

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<sup>2</sup> Source: USDA Forest Service. 1980.



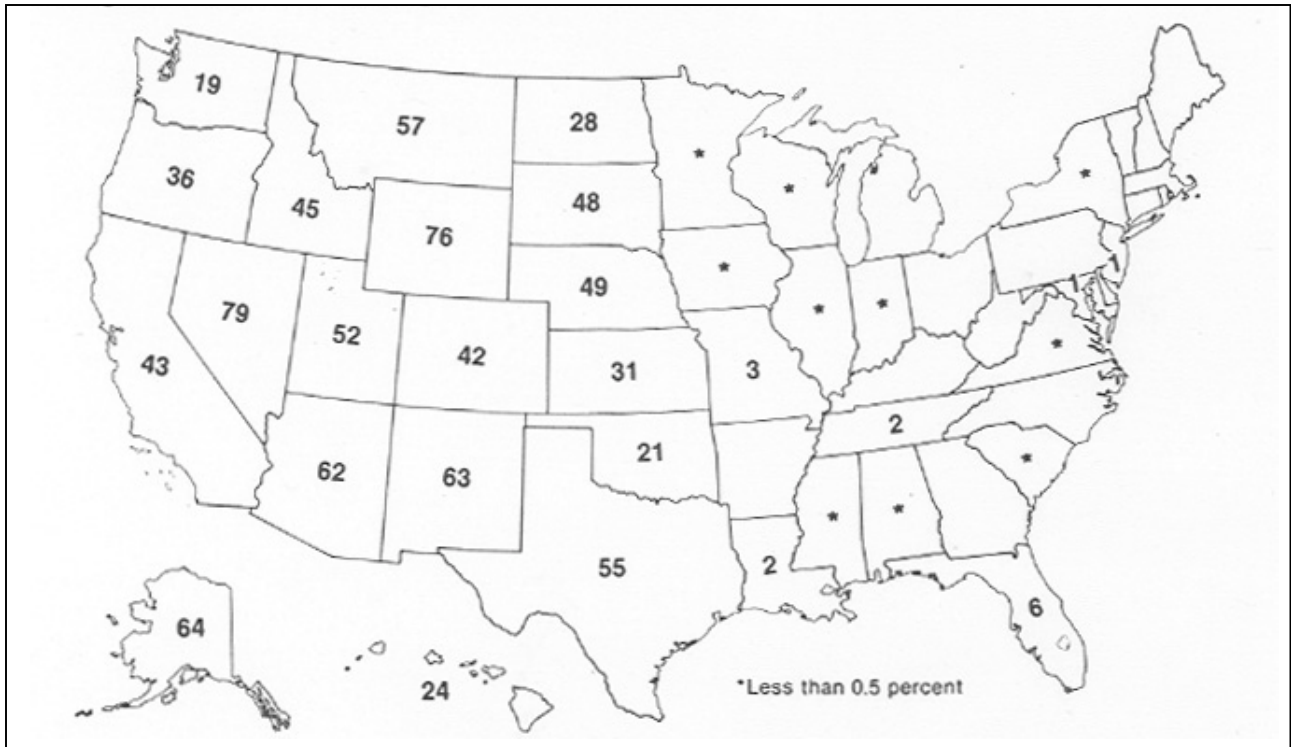


Figure 3.3 Percent of total land area that is considered rangeland.<sup>3</sup>

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<sup>3</sup> Source: USDA Forest Service. 1980.

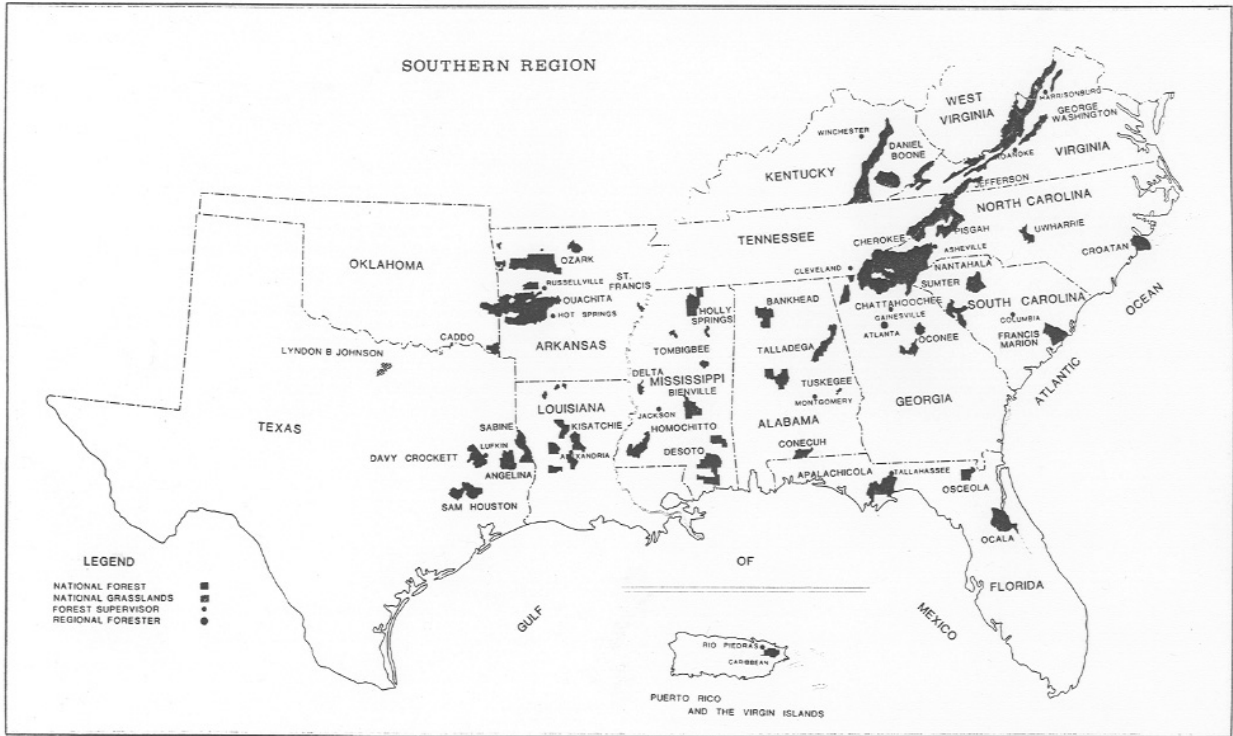


Figure 3.4 The U.S. Forest Service Region 8 (Southern Region).<sup>4</sup>

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<sup>4</sup> Source: USDA Forest Service. 1984.

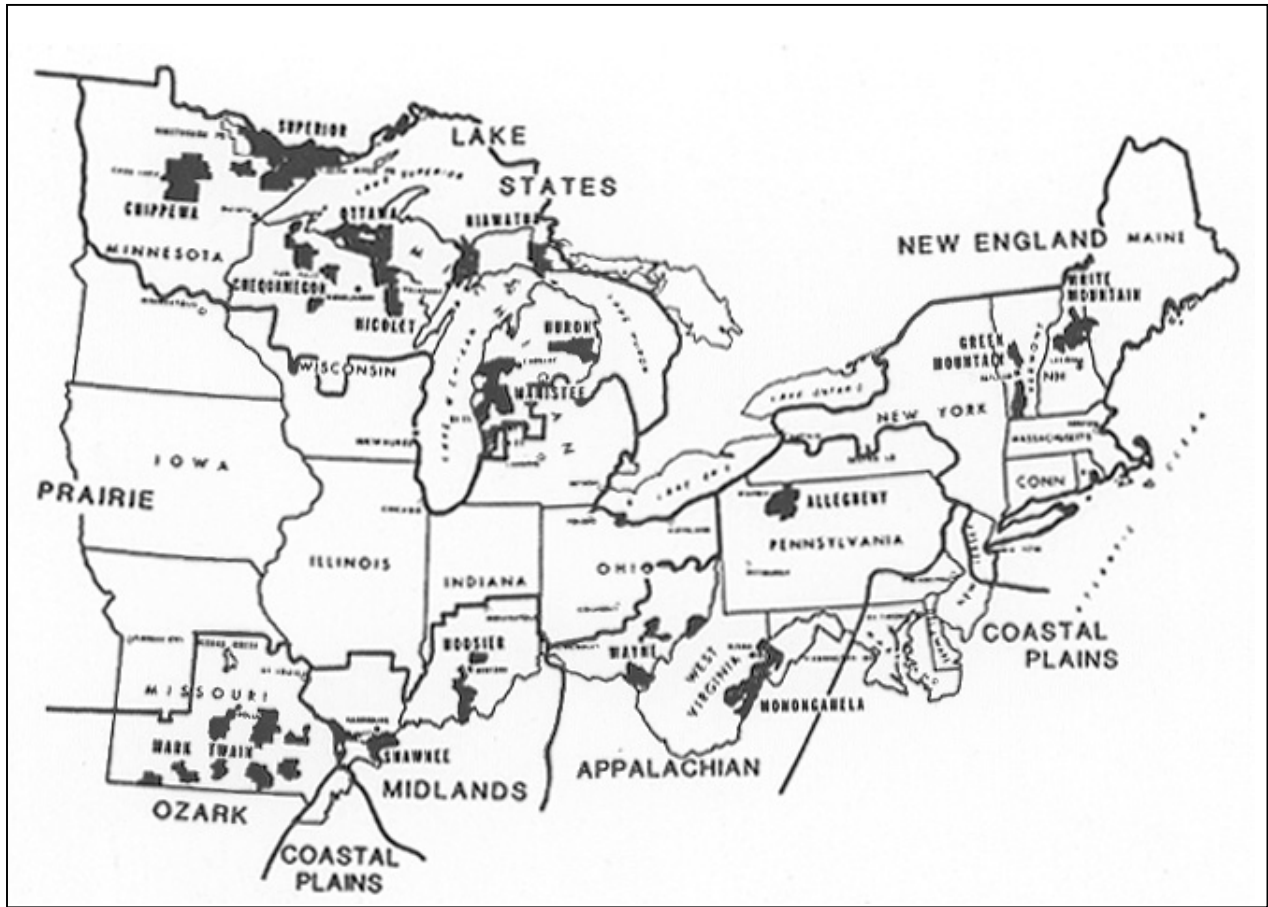


Figure 3.5 The U.S. Forest Service, Region 9 (Eastern Region).<sup>5</sup>

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<sup>5</sup> Source: USDA Forest Service. 1983.

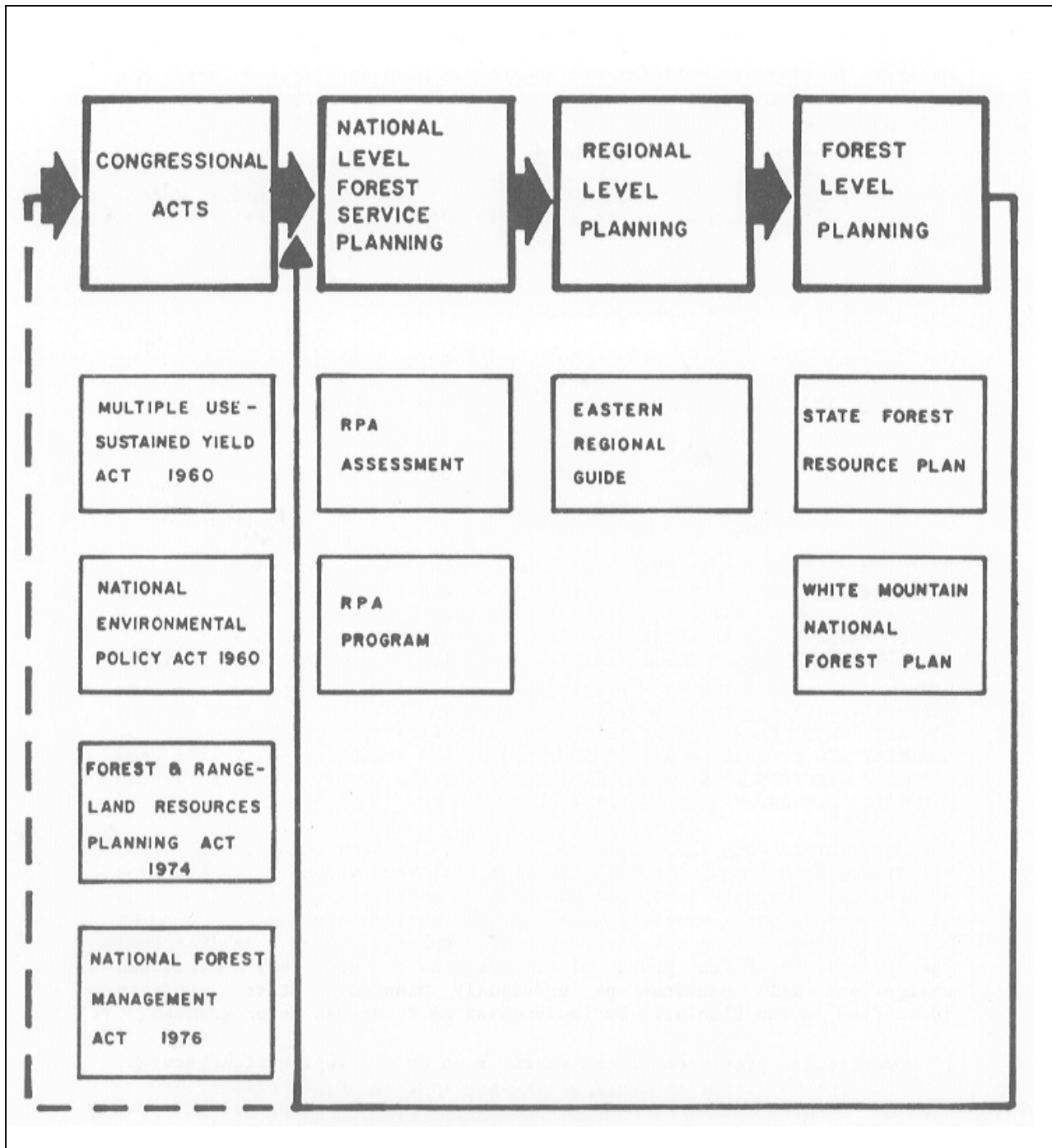
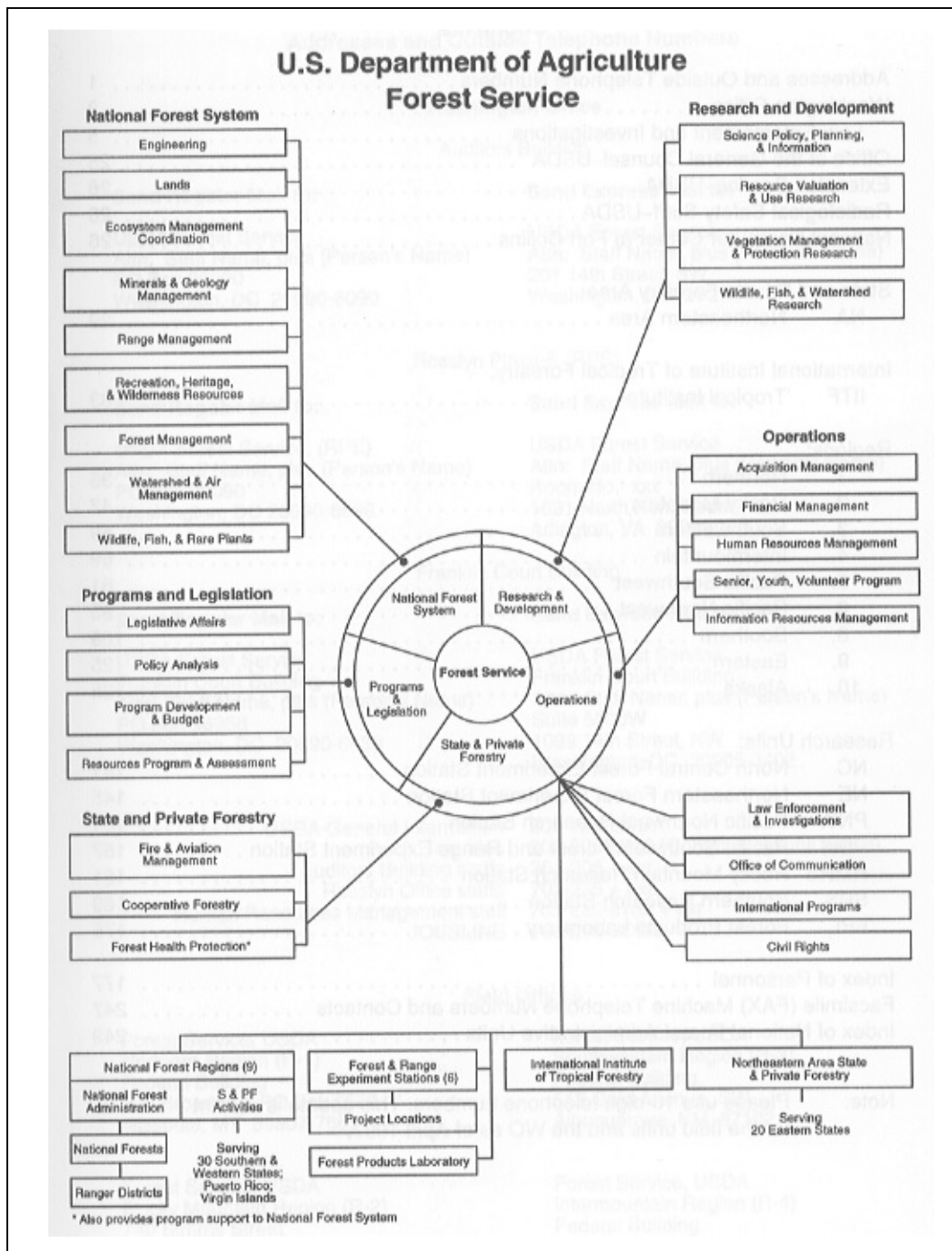


Figure 3.6 National forest management planning structure.<sup>6</sup>

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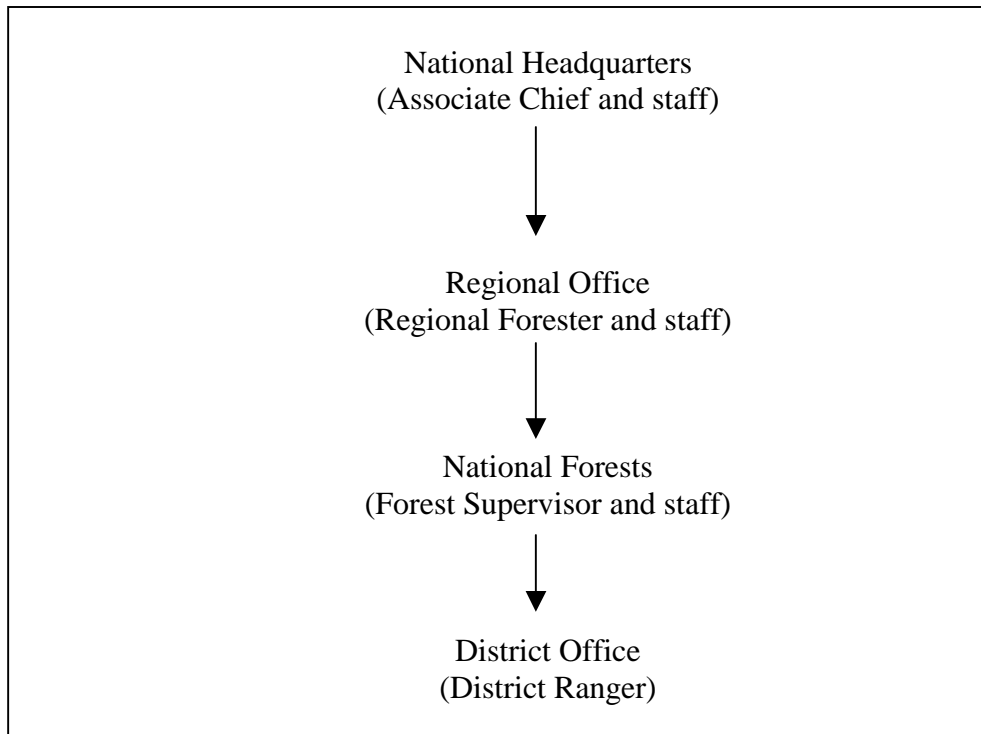
<sup>6</sup> Source: White Mountain NF LRMP, 1986.



**Figure 3.7 Organizational structure of the U.S. Forest Service.<sup>7</sup>**

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<sup>7</sup> Source: USDA Forest Service, 1997.



**Figure 3.8** Chain of command for the USFS, National Forest System.

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