Chapter 1

An Introduction to the Research

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1. An Introduction to the Research

Much of the ecology, economy, and culture of eastern United States is forest-based. Since this country was founded, rural people and communities throughout the region have realized a significant portion of their economies from the harvesting and trade of forest products. Their social and economic well being is dependent on the health and functioning of forest ecosystems. Non-timber forest products (e.g., culinary, decorative, medicinal, and specialty wood) were, and continue to be, important to rural Americans. The health and functioning of the forests that provide non-timber products depends on the sustainable management of the resources. The lack of management of these resources for non-timber forest products (NTFPs) is leading to the ecological and economic decline of rural communities.

Unfortunately, the forestry profession lacks much of the information and knowledge to make sound decisions concerning management of NTFPs resources. In this study, management for non-timber forest products is defined as the use of standards, guidelines, prescriptions, inventory and monitoring to ensure and enhance long-term production of these products. Unlike timber-based markets, the markets for NTFPs remain an enigma. In many cases, the only information available to forest managers relates to plant identification. In general, the ecological functioning of the plants and fungi that produce non-timber products are not clearly understood. Many forest managers have insufficient information concerning the population biology and silviculture of NTFP resources to craft management prescriptions. The lack of knowledge and understanding of the people who collect, trade and use NTFPs is especially acute.

Forest management of public lands is changing rapidly. The primary foci of the first national forest Land and Resource Management Plans (LRMPs) were the six major multiple-uses (i.e., timber, water, fish and wildlife, minerals, recreation and wilderness, and range) mandated by national legislation. Many critical issues identified and promoted by the vocal public were also addressed in the initial plans. Since their inception more than 20 years ago, the implementation of the LRMPs has been seriously constrained due to public concerns. At the end of the 20th century, the rules and regulations that govern the national forest management planning process were being modified to reflect knowledge gained over the last two decades. Community participation and ecosystem management are two emerging major forces behind the new planning process. Management for non-timber forest products is neither legislated nor surfacing through the new planning regulations.

There are three fundamental ways for non-timber forest products to be included in national forest management plans. New legislation could be enacted that requires the inclusion of NTFPs in the plans, such as that enacted in 2000 that requires the U.S. Forest Service to address NTFPs on a pilot basis, but not in the forest management plans. Also by law, the public must be informed and invited to participate in the planning process. Over the last decade this external force has become more important in ensuring that critical public issues are addressed. Unfortunately, there is no vocal public pushing for the management of NTFP resources. The third way for NTFPs to be included in national forest management plans is for someone within the federal government to either direct it (top down) or to push for inclusion (bottom up). The most direct internal forces are the decision-makers at the four major management levels (i.e., district, forest, region, and national) within the U.S. Forest Service. These professionals have the ability and authority to

ensure that resources and critical issues are addressed in forest management plans. Understanding their attitudes and perceptions is critical to determining obstacles and opportunities to include NTFPs in forest management, and is one of the major foci of this research.

This chapter presents a broad overview of the research, its justification, approach and methods. It reviews the latest knowledge and information concerning the major focal areas of the research. This includes a review of the current conditions concerning non-timber forest products and an assessment of emerging approaches in national forest management planning.

1.1 Problem Statement

While some forestry professionals may disagree, NTFPs are becoming an issue of great importance in forest management debates. Major newspapers and television networks are presenting analyses of these "other" forest products. International, regional and local conferences and workshops have been organized around issues affecting non-timber forest products. In 1998, the U.S. Congress began examining the potential of increasing revenues from harvesting non-timber forest products on public lands, while achieving sustainable management of the forest resource.

In the Department of Interior and Related Agencies Appropriations Act of 2000, the U.S. Forest Service is directed to develop a pilot program to charge fair market value for NTFPs collected from the national forests (H.R. 2466 1999). The Act requires the Forest Service to inventory and monitor NTFP resources to ensure that harvest levels are sustainable and equitable, and to develop growth and yield models. The protocols and procedures to monitor NTFP activities and impacts are needed. The value of NTFPs at the district, forest, regional, and national levels must be determined. Nonetheless, the scientific data required to achieve the newly legislated objectives may be lacking.

The United States Forest Service is the steward of more than 190 million acres of public forest and grasslands. Its original legislated mandate in 1890 was to manage these lands for a continued supply of timber and water. In the mid 1900s, this directive was expanded to include recreation and wilderness, minerals, range, and fish and wildlife (MUSYA 1960). With the National Forest Management Act of 1976 (NFMA 1976) and a concomitant increase in public participation, the Forest Service broadened management to include other issues of public concern. The agency now manages for diverse uses, including all-terrain vehicles, mountain bikes, horseback riding, hikers, turkey hunters, fly fishing, native plants, as well as the more traditional uses. Non-timber forest products, however is one area that has not received attention. No vocal public has demanded that the agency address NTFPs. Legislation was only enacted in fiscal year 2000 that will help the agency in its efforts to manage for NTFPs. Though the agency is beginning to address NTFPs, there is no consistent institutional approach to deal with these products. Part of the problem that hampers the Forest Service's efforts is a lack of knowledge and understanding about management of these resources.

The forestry profession has more than 100 years of data on managing forest resources for timber. Foresters know how to grow trees. The population biology of trees is fairly well understood.

Growth and yield models, inventory, and monitoring protocols for trees are well developed and in place. The depth of knowledge on wildlife management is not as great, but significant advances have been made in this area. The knowledge of how to manage for many game species is readily understood and available. The value of managing forests for hunting and fishing is clearly recognized. The science of managing forests for other resources, such as water, recreation, and wilderness, have also received considerable attention. The management of recreational opportunities is well understood, and is a recognized objective in multiple-use management plans. In contrast, the body of knowledge on managing non-timber forests products is fledgling and seriously inadequate.

Little information is available on managing the forests' ground cover, herbaceous plants, shrubs or trees for non-timber products. In many cases, not much more is known than the botanical and ecological descriptions of the plants and their environments. Anecdotal evidence can be found for species that have had an important role in American folk history. Some of the more popular forest herbs (e.g., ginseng and goldenseal) and trees (e.g., walnut and maple) have been the focus of scientific research. Few, if any, silvicultural prescriptions for natural forest ecosystems consider non-timber forest products. Some agroforestry models could incorporate NTFPs, but few do. In general there is a paucity of information on all aspects of non-timber forest products management. Much more work is needed to develop a comprehensive body of knowledge on how to manage non-timber forest products, just as other forest resources are managed.

The biological and ecological knowledge needed to make sound management decisions concerning NTFPs are lacking. The ecological parameters for some NTFP species may be understood, but for many of the plants, little is known about their ecological requirements. Certainly, very little is known about the relationships with associated flora and fauna. For many products, the response to collection and the rate at which these resources respond to collection must be determined to manage the resource sustainably. Further, the reproductive biology of many NTFPs is not clearly defined. Many forest managers may know that certain species exist within the forests, and skilled managers could find populations. But no inventories have been done, nor do the protocols exist to allow managers to inventory populations. Units of measurement are not standardized. The lack of knowledge about the markets for NTFPs is just as wanting as the knowledge about silvicultural management. And yet, management decisions are being made that could seriously impact use of this resource.

Currently, there is not a good understanding of the attitudes and perceptions of forest managers concerning non-timber forest products. A solid grasp of how forest managers perceive these products is needed to more fully integrate NTFPs into management plans. A positive attitude toward NTFPs and a perception that the plants that produce these products need to be managed are critical social factors that could improve the likelihood that non-timber forest products would become objectives in the management of public forests. A firm commitment to managing for these products is essential to successful implementation of policies and practices.

Much of the dialogue concerning managing for non-timber forest products is being driven by the western United States. Certainly, the West has experienced tremendous change in the collection, use and trade of these products. Over the last decade there has been enormous growth in the collection of NTFPs from western forests, resulting in increased social and ecological pressures.

But the eastern United States has experienced significant growth and concomitant pressures as well. The use of migrant workers is prevalent in some NTFP segments in the East. Also, the eastern region has a much longer history and tradition of collecting and trading non-timber forest products. Furthermore, the cultural factors may differ significantly between the east and west, as do the species and habitats themselves. Policy makers need to consider these differences. To realize more balance in the policy dialogue that is encompassing NTFPs there is an urgent need to develop an eastern United States perspective on managing non-timber forest products.

This research was designed to improve the perspective of NTFP management in eastern United States, and to improve the understanding of forest managers' perceptions about managing national forests for these products. The ultimate goal is to improve the understanding of the issues, obstacles and opportunities that affect management of non-timber forest products in the eastern United States. These studies confirm that more knowledge is needed to better manage the NTFP resources. A basic premise of this research is that the attitudes of forest managers toward NTFPs are critical in developing appropriate policies and practices. The project strives to develop and present an eastern United States perspective on the issues that affect management of these resources.

1.2 Study Objectives

The issues, obstacles, and opportunities that affect management policies and practices are not clearly defined for NTFPs. Much of the dialogue concerning these resources originates in the western United States and may not reflect the needs and concerns of forest managers in other parts of the country. Sustainable forest ecosystem management will remain an unfulfilled strategic goal unless NTFPs are fully integrated into forest management, in a regionally appropriate manner.

The driving force behind this research was the perceived need to improve the understanding of the issues that affect management of NTFPs on public forests in the eastern United States. This recognizes a need to better describe the current NTFP market environment in this region and requires examining the current level of attention afforded to these products. Fundamental to improving our understanding is the need to assess the forest managers' attitudes toward management. The research also addressed a need to develop an eastern United States perspective. These are critical to developing national policies and practices that will lead to better management of these resources.

The objectives of this research are:

1. Determine the relative extent to which non-timber products have been addressed in forest management planning.

2. Identify and determine the perceived factors that constrain or encourage the inclusion of non-timber products in forest management planning.

3. Assess forest managers' intentions to include NTFPs in forest management plans.

The first objective requires analysis of the content of the U.S. Forest Service Land and Resources Management Plans for the national forests of Region 8 (Southern region) and Region 9 (Eastern region). It necessitates identifying and examining pertinent documentation that influences how the U.S. Forest Service deals with NTFPs. The second objective is critical in identifying the issues that impact decisions to manage for NTFPs and is fundamental to improving management policies and practices. Once these issues are identified, strategies can be developed to eliminate the obstacles and to promote strategies that are already successful. The final obejective is fundamental to developing a model that would predict the intention of forest managers to include NTFPs. The factors that influence forest managers' intentions and attitudes about NTFPs are examined to identify obstacles to changing perceptions. An efficient model could extend this assessment to other Forest Service regions.

Fundamentally, this research has the potential to alter how public agencies address the management of non-timber forest products. It will improve the understanding of the issues that impact management for these products. The research will help to identify critical issues that must be addressed to better conserve these products. And it will demonstrate a method to understand peoples' attitudes, which could lead to better representation and consideration of stakeholders and their needs. This method, though focused on non-timber forest products, could be expanded and modified to address other critical issues.

1.3 Research Approach

This investigation utilized a number of qualitative and quantitative methods common to social science and market research. Data were collected from primary as well as secondary sources. Historical as well as current documents were reviewed and analyzed. Discussions and interviews with stakeholders and experts were fundamental in identifying critical issues and in developing the survey instrument. The attitudes and perceptions of forest managers were estimated using original survey data. Semi-structured interviews with Forest Service staff at various management levels provided additional insight into perceptions concerning management for NTFPs.

A comprehensive review of the literature provided important background on the value of various non-timber forest products and their markets, the status of forest management planning on national forests, and the theoretical framework that was the foundation for much of this research. Using content analysis methods, it was possible to determine the relative coverage provided to NTFPs in the national forest management plans and plan revisions. A review of Forest Service documentation provided insight about the institutional strategic direction regarding management of NTFP resources.

Semi-structured interviews were used to explore issues that affect non-timber forest products. Meetings were held with a number of different stakeholders to better understand various perspectives. These included facilitated discussions with ginseng dealers, economic development professionals, Forest Service research personnel, and National Forest System staff. Interviews were undertaken with National Forest System personnel at all management levels, including District Rangers, Forest Supervisors, Regional Foresters, and the Deputy Chief of the National Forest System. Though the primary focus of these interviews was the eastern United States, discussions were also held with people outside the region to capture other viewpoints.

The interviews were instrumental in development of the survey instrument, which was designed to examine forest managers' attitudes and perceptions. The instrument was reviewed by natural resource professionals and tested on Forest Service managers in Regions 5 and 6 to improve its reliability and validity. Because the target population (Forest Service managers in the eastern United States) for this research was well defined and readily accessible, it was possible to administer the survey using the Internet. This increased the ease of participation and decreased data entry problems. Follow-up interviews with representatives of the different management levels allowed for more in-depth insight.

A series of case studies across forests, regions, and agencies provided additional insight into nuances that could hinder or improve management. Using a case study approach, the research examined and evaluated an assortment of situations and identified similarities and differences between national forests in North Carolina, Arkansas and Oregon. The approach also allowed for comparisons of how the Forest Service and Bureau of Land Management address these products. The approach taken with the case studies included reviewing policies and directives that have been issued that affect management for NTFPs. In-depth, on-site interviews with key resource people provided additional understanding of government and non-governmental activities.

Overall, this research used a variety of methods to improve the understanding of issues that affect management for non-timber forest products. By using an assortment of approaches it is possible to build a balanced perspective. Further, the varied approaches provided valuable experience in different methods of examining the issue of concern.

1.4 Background

Non-timber forest products (NTFPs) originate from forest plants and fungi. Though they may be tree-based, NTFPs are not timber-based. The products may be collected from within and on the edges of natural, manipulated or disturbed forests. They include fungi, moss, lichen, ground covers, herbs, shrubs and trees. Every part of the plant may be collected, including roots, tubers, leaves, bark, twigs, fruit, fungi, sap, branches and burls.

Non-timber forest products provide valuable economic benefits to rural communities. At the same time, the biotic materials that produce NTFPs are critical components of healthy forest ecosystems. These products were selected for analysis because they have not been examined fully even though they provide valuable economic and ecological benefits. The eastern United States was selected as the priority geographic area because this region has not received sufficient attention concerning NTFPs. Although eastern United States is the source of many important NTFPs, it has been overlooked in the much of the debate, analysis, and deliberations regarding these products. Improving the level of understanding about NTFPs in the eastern United States is important to ensure a more balanced approach to dealing with these products. The research also focused on national forest management. Currently national forests are managed for a variety of resources, including timber, water, fish and wildlife, recreation and wilderness, and minerals. Though the national forests in the eastern United States are a major source of NTFPs, few management plans address these products.

1.4.1 Non-Timber Forest Products and National Forest Management

The national forests are the host of many diverse products, many of which are not timber-based. Over the last two years significant advances have been made to improve the management of non-timber forest products in national forests. A community of stakeholders concerned about the management of non-timber forest products is evolving. This community is beginning to examine the issues that affect non-timber forest products management. National policies and legislation are changing to better address these products. Independent of the legislation, some units within the Forest Service are actively addressing the issue of how to include NTFPs in forest management. Other federal agencies are beginning to recognize the need to better address NTFPs. Assessments are underway at the forest, region and national level. Pilot and demonstration projects are being implemented to explore management alternatives.

One of the latest, and potentially influential, national level gatherings of NTFP professionals occurred in April 2000. The Pinchot Institute for Sustainable Forestry hosted a 2 ½ day policy dialogue in Washington, D.C. to address the issue of managing for non-timber products. More than fifty professionals came from all over the United States to explore the obstacles and opportunities to improve non-timber forest management. Practitioners, policy makers, forest managers, the NTFP industry, researchers, developers, and collectors were represented. Facilitated discussions focused on three main themes: sustainability, access and equity. Principles and guidelines from this effort have the potential to radically influence management strategies.

National legislation was enacted in fiscal year 2000 that will directly impact how public forests are managed for NTFPs. Section 339 of the Department of Interior and Related Agencies Appropriations Act of 2000 (H.R. 2466 1999) requires the US Forest Service to implement a four year pilot program to develop and test a management system for “Forest Botanical Products.” The new legislation defines these products as “any naturally occurring mushroom, fungi, flowers, seeds, roots, bark, leaves, and other vegetation (or portion thereof) that grow on National Forest lands” (H.R. 2466 1999, section 339).

Under the pilot program, the Forest Service will address the issue of sustainable harvest levels, collect and distribute fees, and monitor and evaluate activities. The agency will determine the sustainable harvest levels, and will establish protocol for monitoring and modifying harvest levels for NTFPs collected from national forests. Special consideration will be made for personal use collection. In addition, the Forest Service will charge and collect fees for the harvest of NTFPs to recover all costs. To help cover the costs of administering the program, a portion of these revenues will be returned to the units that generated them.

Some Forest Service units are beginning to actively address the issue of managing for NTFPs. Non-timber forest products were a major topic of discussion at the recent U.S. Forest Service region 8 meeting of botanists and ecologists (USDA Forest Service 2000). The Regional Forester, in her opening remarks to the botanists, identified NTFPs as a priority issue. The recently revised management plans for the Croatan National Forest and the National Forests of Florida address NTFPs. The George Washington / Jefferson National Forest in Virginia is

initiating an environmental assessment for ginseng. Due to concern for the viability of local ginseng populations, the Forest Supervisor of the Ozark-St. Francis National Forest in Arkansas recently announced a 5-year moratorium on ginseng collection (USDA Forest Service 2000a). Other national forests also are considering implementing a ban on collection.

Perhaps the most notable stride toward successful NTFP management is the recently initiated pilot effort by the National Forests of North Carolina. The National Forests of North Carolina, independent of the new legislation, is undertaking a comprehensive analysis of significant non-timber forest products harvested from public forests. The program is geared to improving understanding of the ecological, social and economic impact of harvesting non-timber forest products in southern Appalachia. Also, the program is designed to provide inventories, define and track market trends, and identify and assess potential strategies to conserve the resource. It incorporates five major focal areas: product supply and demand, resource productivity, management practices, socio-economic needs, and education. The program identifies more than 45 products, the collection of which is managed through a free or fee-use permit system. Of these, the program will focus on nine priority products.

Other federal agencies are starting to recognize the need to better address NTFPs. The U.S. Fish and Wildlife Service (FWS), which has been monitoring ginseng trade for almost 20 years, recently took on the additional burden of monitoring goldenseal. The FWS is coordinating an advisory group that is focused on improving the conservation of medicinal plants. This group includes representatives from industry, government, non-government, and research. The U.S. National Park Service organized a workshop on NTFPs for its law enforcement agents in May 2000. The Park Service also is supporting research in the Great Smokey Mountain National Park to improve monitoring and tracking of priority medicinal plants.

An assessment of the resource base is integral to improving the management of NTFPs. On a more broad scale, the Institute of Culture and Ecology, in Portland Oregon is undertaking “The National Assessment for Non-Timber Forest Products” (McClain et al. 2000). This is designed to be the seminal piece on NTFPs in the United States and has the potential to significantly impact policy for the management of non-timber forest products. Unfortunately, the major focus of the Assessment is western United States. A review of the Assessment outline reveals sections on Alaska, California, the Midwest, the Pacific Islands, and the Caribbean. It does not appear that other regions are receiving reasonable attention.

At the same time, the conservation and development of non-timber forest products are being addressed in the forthcoming revision of “Income Opportunities in Special Forest Products” (Thomas and Schumann 1993). The new edition will address economic, social, and conservation issues that impact non-timber forest products. Further, it will provide a guide for the conservation and development of these products. The revised version has potential to increase the already burgeoning interest in non-timber forest products for economic development. It could promote further expansion of the demand for non-timber forest products.

A great deal of attention is being focused on non-timber forest products. The conservation development potential is being examined. The natural resource base is being assessed at a national and forest level. Some national forests are starting to address the issues that influence

management of NTFP resources. National legislation and policies are being prepared and implemented that will guide how the public forests manage for NTFPs. The dialogue among stakeholders, and resource professionals continues to expand. Still, much more effort is needed, especially concerning the social issues.

1.4.2 Forest Management and the National Forests

Forest management planning on the national forests is undergoing radical changes. The national legislation that formalized national forests management planning more than 25 years ago is being scrutinized and questioned. Recommendations from a group of world-renowned scientists to the Secretary of Agriculture have long-term implications on how the U.S. Forest Service will manage our public forests. Already they are having a direct impact on the rules by which the agency develops and implements management plans. The paradigm that has guided forest management planning is evolving from a multiple-use commodity orientation to a focus on managing the health and functioning of the ecosystem with active community participation.

The National Forest Management Act of 1976 standardized forest management planning in the US Forest Service. The Act commanded that each national forest establish a management plan that integrated the social, ecological and economic aspects for multiple-use. The multiple-uses recognized by the NFMA and integrated into the plans are outdoor recreation, ranger, timber, watersheds, fish and wildlife, and wilderness. Management plans would assess the current situation, define desired future conditions, establish standards and guidelines for the various uses, and prescribe activities for management areas in the forests.

The NFMA also requires that all management plans be revised every 10-15 years. Over the next five years, more than 150 million acres of the National Forest System will be involved in the planning process (Quinn 1999). In compliance with the National Forests Management Act of 1976, all national forest management plans in the eastern United States must be revised by 2002 (Appendix 1.1). According to the schedule, most management plans should be completed by 2000. Progress on plan revisions was halted in September 1997 when the U.S. Congress placed a moratorium on forest plan revisions until new planning regulations were established. Only national forests that had published in the Federal Register a Notice of Intent, prior to September 1997 could proceed with the revision process.

That same month, the Secretary of Agriculture, Dan Glickman, appointed a Committee of Scientists to develop guidance for the Forest Service in its struggle to revise the forest management planning process. After more than a year of deliberation, extensive discussions, and detailed analysis the Committee called for a fundamental change in the Forest Service's mission. This committee recommended that ecological sustainability be the standard by which national forests are managed.

The Committee of Scientists (1999) recommended several strategic modifications to the Forest Service's management planning approach. They called for the Forest Service to collaborate more with stakeholders throughout the planning process. The Committee directed the agency to use science-based knowledge to improve the decision-making capabilities of stakeholders and

managers. Finally, the Committee recommended that the budget be more fully integrated into management plan implementation.

In late 1999, the U.S. Forest Service published its proposed new planning regulations (USDA Forest Service 1999). The proposed rules describe the framework for National Forest System planning. They create requirements for implementation, monitoring, evaluation, amendment and revision of Land and Resource Management Plans. The new regulations focus on four areas: public involvement, ecosystems sustainability as the driving force, science-based management, and dynamic and adaptive planning.

The proposed planning rules expand the vision of the Forest Service to become a facilitator and engage the public in a dynamic dialogue from the beginning of the planning process. The Forest Service would collect, analyze and provide science-based information to stakeholders, with the objective of helping to better define desired goals for the national forests. The proposed rules make sustainability the foundation of management planning and decisions. Meeting today's needs without compromising those of future generations is the driving force behind the proposed rules. In the context of the proposed rules, sustainability embraces social and economic aspects, but emphasizes long-term ecological viability. The new rules direct the Forest Service to rely more on science in management planning. The agency would actively engage the scientific community in resource assessments and monitoring. New forest management plans would be dynamic and respond to new information and market changes.

Since the early 1990s the fundamental forest management paradigm employed by the U.S. Forest Service has shifted away from a commodity and multiple-use focus. The new and evolving model embraces two approaches that directly affect non-timber forest products. The first focuses on managing the forests as whole ecosystems, emphasizing the health and functioning of the forests. Jack Ward Thomas (1994), then Chief of the Forest Service, defined ecosystem management as a "holistic approach that focused on forest landscapes to integrate the human, biological, and physical dimensions for the sustainability of all resources." The basic goal of ecosystem management is to find solutions that are "ecologically sustainable, socially acceptable and economically viable" (Gilmore 1997). Fundamental to this approach is the need to consider and include the human aspects of managing the forests. Ecosystem management strategies must deal with the growing concerns for property rights, forest-based employment, traditional uses, as well as the demand for products (Christensen et al. 1996). To realize the goal of ecosystem management, strategies must embrace all biological and social components of the ecosystem. This includes the biotic material from which NTFPs are harvested, and the people who collected this material for their livelihood.

The second fundamental shift in forest management is the active and engaged participation of local communities. Community-based decision-making is emerging as a means to develop collaborative forest management strategies (Carey et al. 1998, Baker 1999, Gray and Kusel 1998) that address public concerns and needs. Stimulated by the 7th American Forest Congress and spurred on by the Committee of Scientists, community participation is becoming a critical factor in national forest management planning. Well-organized, funded and vocal public interest groups are having a major impact on the creation and implementation of national forest management plans. Unfortunately, there are no public interest groups organized around non-

timber forest products. The collectors, traders, and users of NTFPs are not represented in the planning process. For NTFPs to receive adequate attention in national forest management plans, this segment of the public needs to be represented in the process.

National forest management is undergoing radical changes. No longer can the U.S. Forest Service consider only the management objectives mandated by law. Public issues and concerns have become some of the major considerations in management planning. How, and to what extent, NTFPs get addressed in national forest management plans is still debatable. The natural resources from which these products are harvested need to be recognized and acknowledged. Also, the community that enjoys the many social and economic benefits of NTFPs need to be fully integrated into the planning process.

1.4.3 The Eastern United States

The eastern United States has a long history of utilizing valuable non-timber forest products, many of which are found only in this region. Many citizens of this region have enjoyed the benefits of harvesting, trading and consuming non-timber products collected from the vast and diverse forests. The forests of the eastern United States are some of the most productive and diverse forests in the country. The hardwood forests in this region are some of the most extensive of this type in the world (Ricketts et al. 1999).

The USDA Forest Service divides the eastern United States into two regions – Southern and Eastern (USDA Forest Service 1999a). The Southern Region (Region 8) covers 13 states: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia. The Eastern Region (Region 9) covers 20 states: Connecticut, Delaware, Illinois, Indiana, Iowa, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, Wisconsin, and West Virginia.

The national forests in the eastern United States cover more than 24 million acres (USDA Forest Service 1999b). In Region 8, the National Forest System encompasses less than 4 percent of the approximately 323 million acres of commercial forest and rangelands in this region (USDA Forest Service 1984). In Region 9 the National Forest System embraces approximately 6 percent of the 151.6 million acres of commercial forestlands (USDA Forest Service 1983). In the southeastern United States, non-federal forests account for more than 90 percent of the total forestland. In the same region, non-industrial private forest landowners hold more than 70 percent of the forest land-base (USDA Forest Service 1983).

Because the proportion of public forests to private holdings in relatively low in the eastern United States, managing these holdings on a sustainable basis is critical. As private forestland is cut and transformed for other uses, greater demand is put on the remaining public forestlands. The public forests may soon become the last refuge of biotic material from which non-timber products are harvested. Finding ways to manage for these products is critical to the sustainable health and well being of the communities that depend on them. Understanding forest managers' attitudes and perception toward managing national forests for these products is critical to developing appropriate management strategies.

1.5 Justification

The management for non-timber forest products is one of the major emerging forestry issues of the 21st century. The economic and ecological values of these resources are being examined and evaluated. These natural resources are significant contributors to the health and well being of the human and forest communities with which they are associated.

People have benefited from NTFP resources for generations. Many folks continue to use these products for food, decorations, tools, instruments, and medicines. Some rural people throughout the eastern United States have a deep family tradition of collecting and trading NTFPs. The sustainable economic development of the communities involved in the collection and trade of NTFPs depends on managing the forests for these products. To ensure that the traditions continue, it is essential to fully integrate non-timber forest products into forest management.

There is growing concern that demand for many products may exceed the ecosystems' capacity to provide these products. Over the last decade, the demand for NTFP resources has increased tremendously. This increased demand has lead to greater pressure on the forests that supply these products. This is most obvious in the significant increase in demand for herbal medicines. Of particular concern is *Panax quinquefolius* (American ginseng) which is perhaps the most popular, and certainly the most well known, medicinal plant. Some professionals believe that there are no viable populations of American ginseng in southern Appalachia. Field observations from botanists and ecologists suggest that many populations are being negatively impacted from over-harvesting. A growing number of NTFP species are considered threatened and endangered and some products are listed in the Convention on International Trade of Endangered Species.

Sustainable forest and ecosystem management are prominent strategies for managing forest resources. These strategies focus on integrating all resources into management activities. Management prescriptions consider the short and long-term impact of the prescribed activity on all components of the ecosystem. Sustainable forest management focuses on maintaining the health and functioning of these ecosystems, while using and conserving the resources. Ecosystem management strategies strive to manage for the health and well being of all the pieces of the ecosystem. To be successful, these strategies need to incorporate the resources that provide non-timber products. It is not enough to manage for bats and other non-marketed products; the forests must also be managed for moss, lichen, and other important resources. To realize the goal of managing the entire forest ecosystem, strategies must incorporate non-timber products.

The well being of rural communities throughout eastern United States will suffer if their access to NTFPs is restricted. But without some drastic measures, the well being of some NTFP-dependent communities will suffer from over-harvesting and loss of viable plant populations. The ecological and economic consequences of not managing NTFPs are potentially catastrophic. Many professionals perceive that the ecological consequences may far outweigh the economic impact. This research is timely and vital to improving the understanding of the diverse and complicated issues that impact decisions to manage for non-timber forest products.

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1.7 Appendix

Appendix 1.1 National forest management planning schedule for eastern United States[1]

National Forest	Region	Initial Plan ROD	NFMA Revision Due	NOI for Plan Revision	DEIS NOA	Revised Plan ROD
Alabama	8	3/1986	3/2001	8/1996		
Allegheny	9	4/1986	4/2001			
Caribbean	8	2/1986				4/1997
Chattahoochee/Oconee	8	9/1985	9/2000	8/1996		
Cherokee	8	4/1986	4/2001	8/1996		
Chequamegon	9	8/1986	8/2001	6/1996		
Chippewa	9	6/1986	6/2001	8/1997		
Croatan	8	6/1986	6/2001	10/1996		
Daniel Boone	8	9/1985	9/2000	6/1996		
Finger Lakes	9	1/1987	1/2002			
Florida	8	1/1986	1/2001	7/1992	1/1997	2/1999
Francis Marion	8	4/1985				3/1996
George Washington	8	9/1986				1/1993
Green Mountain	9	1/1987	1/2002			
Hiawatha	9	10/1986	10/2001			
Hoosier	9	9/1985	9/2000			
Huron-Manistee	9	7/1986	7/2001			
Jefferson	8	10/1985	10/2000	8/1996		
Kisatchie	8	9/1985	9/2000	8/1993	10/1997	8/1999
Mark Twain	9	6/1986	6/2001			
Midewin National Tallgrass Prairie	9	New plan	6/1998			
Mississippi	8	9/1985	9/2000			
Monongahela	9	7/1986	7/2001			
Nantahala/Pisgah	8	4/1987	4/2002			
Nicolet	9	8/1986	8/2001	6/1996		
Ottawa	9	10/1986	10/2001			
Ouachita	8	4/1986	4/2001			
Ozark-St Francis	8	7/1986	7/2001			
Shawnee	9	11/1986	11/2001			
Sumter	8	8/1985	8/2000	8/1996		
Superior	9	6/1986	6/2001	8/1997		
Texas	8	5/1987				3/1996
Uwharrie	8	6/1986	6/2001			
Wayne	9	1/1988	1/2003			
White Mountain	9	4/1986	4/2001			

Key: ROD (Record of Decision); NOI (Notice of Intent); NOA (Notice of Availability); DEIS (Draft Environmental Impact Statement)

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[1] Source: USDA Forest Service 1999a