

Managing National Forests Of The Eastern United States For Non-Timber Forest Products

by

James L. Chamberlain, Robert Bush, A.L.
Hammett, Philip A. Araman (U.S. Forest Service)
Department of Wood Science and Forest Products,
College of Natural Resources, Virginia Tech,
Blacksburg, Virginia, USA
Tel: 1-540-231-3611, Fax: 1-540-231-8868
E-mail: jachambe@vt.edu

Abstract

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 stems from drastic changes in forest practices and policies in the Pacific Northwest region, 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 analysis focuses on the status of non-timber forest products in management plans of the national forests in eastern United States. Of the thirty-one national forest plans examined for coverage of non-timber forest products, only seven plans addressed the management of these resources. A review of national legislation that affects national forests reveals that non-timber forest products are not recognized as a management objective. But, they are considered as "special products" in key policy documents. There is legislation under consideration that could significantly change how these products are managed. This paper identifies and discusses key issues that could affect decisions to manage for non-timber forest products.

Keywords : Non-timber forest products, Eastern United States, U.S. forest service, Forest management.

Background

The early inhabitants to the eastern United States brought with them the tools and resources (food, seed, and medicine) needed to

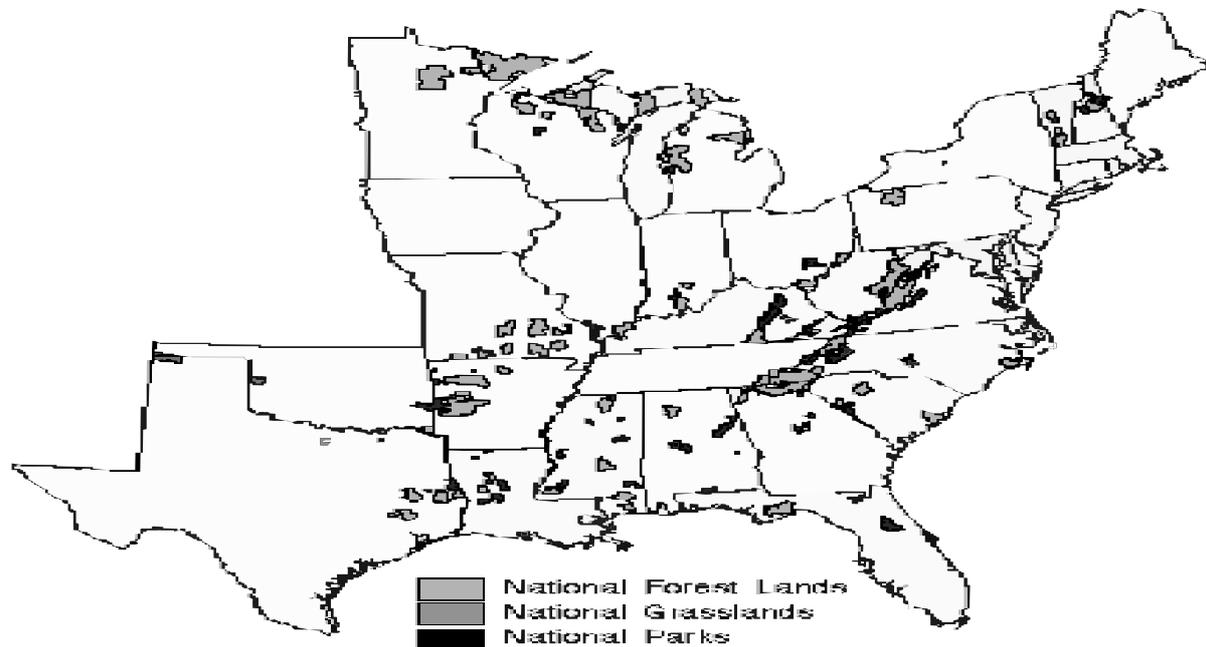
sustain their lives. When these stores were depleted, the settlers turned to the forests as the source for many of these essential items. The forests of eastern U.S. are still an important source for many non-timber forest products (NTFPs). Many of the species from which NTFPs are harvested, grow only in the region.

Concern for the management for non-timber forest products has increased, in-part due 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 on the forest resources could exceed the capacity to supply non-timber forest products, which could have unfavorable economic and ecological impacts.

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, even though the region includes more than 50 percent of the U.S. population and more than half the states. 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." Figure 1 illustrates the region defined as eastern United States. It includes 33 states, from Minnesota south through Texas and east to the Atlantic Ocean. The eastern states are the source of many forest resources. Most of the eastern States have a high percentage of forest cover and a low percentage of rangelands (USDA Forest Service 1980). All but four of the states have more than 25 % of the total land area in forest.

Figure 1. Eastern United States with National Forests and National Grasslands identified (Adapted from USDA Forest Service 1997)



More than 60 % of the states in the East have more than 50 % forest cover. While the region has low a percentage of land in range, the eastern U.S. forests produced 100 % of the wild-harvested ginseng in 1998, and eight states in the region supplied approximately 85 % (25,739 kg.) of total harvest (Robbins 1999).

Non-Timber Forest Products

Many important products are harvested from eastern forests that are not timber-based, but are plant or fungal 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 as long of a tradition in human society as do timber products. 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.

Eastern United States is the source of many non-timber forest products, some of which are found only in the region. Figure 2 illustrates the geographic distribution of *Cimicifuga racemosa* (Black Cohosh) and *Hydrastis canadensis* L. (Goldenseal), two important medicinal plants (Small and Catling 1999). 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).

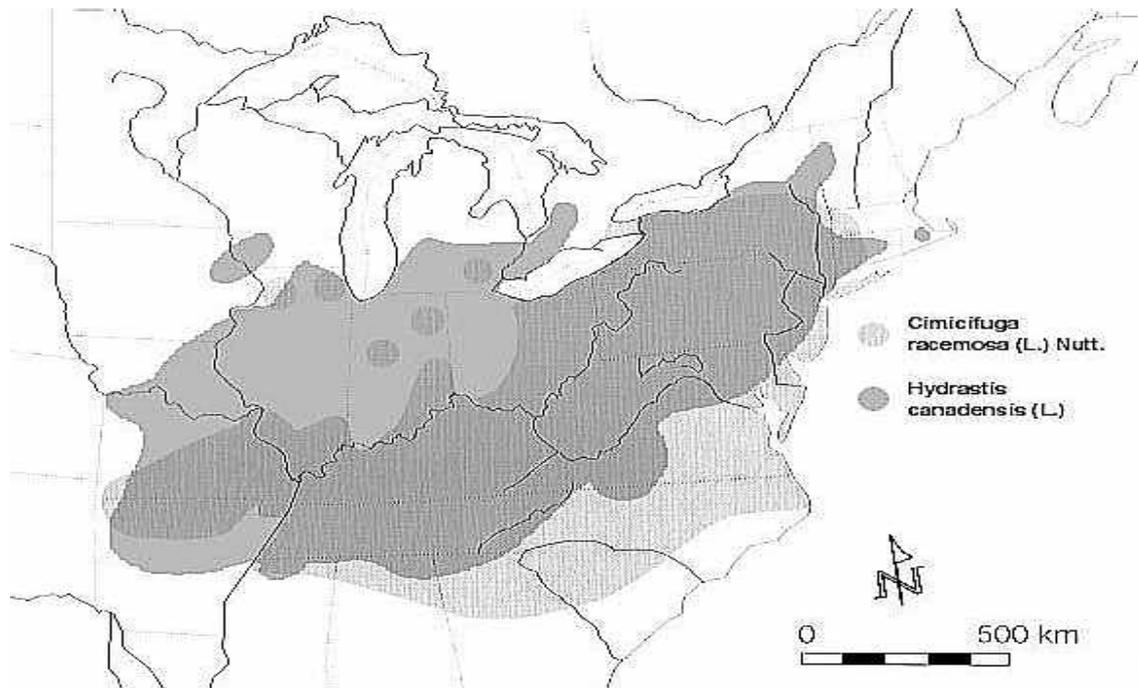
Many species are valued for their therapeutic qualities. Foster (1995) identifies more than 25 tree species, 65 herbaceous plants, and 29 shrubs that have been listed by the U.S. Pharmacopoeia for their medicinal values. More than 500 plant species with medicinal value have been identified in eastern 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) identify 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 in 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 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 % 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 annual rate of over 100% (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 % and 500 %, respectively (Brevoort 1998).

Figure 2. Geographic distribution of two popular medicinal non-timber forest products (adapted from Small and Catling 1999)



Management Agency for National Forests

As steward of the national forests, the U.S. Forest Service has a responsibility to manage for all natural resources found on national forest lands, 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, 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). The

U.S.F.S. Eastern Region (Region 9) includes 20 north-central and northeastern states. In Region 8, the NFS contains 35 National Forests and 2 Grasslands. These are organized into 17 forest land management planning units (USDA Forest Service 1984). The National Forest System in Region 9 includes 16 National Forests that are organized into 15 management planning units (USDA Forest Service 1983).

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 practice of forest management of the national forests was initiated by the Organic Administration Act of 1897 (U.S. Code 30 Stat. 35). The act directs that forests be established to improve and protect the resources to secure water and to furnish a continuous supply of timber (Organic Administration Act of 1897, U.S. Code 30 Stat. 35). More than thirty 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 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).

The stimuli for this research are the growing interest in non-timber forest products, and the fact that the forests of eastern U.S. are a major source of many valuable NTFPs. With the full support of the USDA Forest Service, this research is designed to improve our understanding of the status of NTFPs in the management of national forests. The objectives are to determine the extent that NTFPs are addressed in the forest management plans and,

to examine policies and legislation that affect management of national forests, for opportunities and constraints to include NTFPs in forest management.

Research Methods

This research adapted a methodology developed to analyze the contents of newspapers, presidential speeches, and other printed material (Holsti 1969, Carney 1972, Krippendorff 1980). The content analysis focused on the forest management plans for the national forests in eastern United States, and measured the area in square centimeters (cm²) devoted to the management objectives or problem issues identified in the LRMP. Measurements were limited to the discussion (text) devoted to each objective or issue. Measurements were not made of tables and figures, 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 (USFS FSM 1998) or as a major public issue, and; 3) Non-timber forest products. Legislation mandates that national forests be managed 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 (USFS FSM 1998). These 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.

The research first examined the forest management plans for 31 national forests in eastern United States. Plans that addressed NTFPs to some extent were selected for more in-depth analysis. Forest plan revisions also were examined for coverage of NTFPs. The investigation examined current and proposed legislation and policy analyses that impact national forests management.

Findings

Non-Timber Forest Products in Forest Management Plans

Non-timber forest products are not recognized in national legislation as a natural resource 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.

Approximately 23 % 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 LRMP 1985).

Table 1 describes the extent of coverage for each of the management objectives addressed in the seven national forest plans that included non-timber forest products. 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 %, with the exception for the Hoosier National Forest Plan. Problem issues commanded more than 26 % 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 extent of coverage. In general the coverage focused on the recreational opportunities and the research needed to better address these products. Berry production and collection were 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: This plan for this forest, which is located in Wisconsin, devoted approximately 0.4 % 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.

Table 1. Percent coverage for each management objectives addressed in national forest plans.

Management Objectives	Chequamegon NF (Wisconsin)	Finger Lakes NF (New York)	Florida NF (Florida)	Green Mountain NF (Vermont)	Hoosier NF (Indiana)	Nicolet NF (Wisconsin)	White Mountain NF (New Hampshire)
Legislated							
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%
Total Required	69.66%	72.74%	71.89%	68.59%	40.52%	72.11%	71.25%
Non-Timber Forest Products	0.40%	0.64%	0.08%	0.49%	0.54%	0.54%	0.16%
Not Legislated							
Lands	4.26%	2.94%	9.87%	8.12%	9.83%	6.12%	2.18%
Transport (Roads) Protection	10.52%	5.41%	0.79%	6.73%	6.58%	10.02%	8.72%
Facilities	4.67%	7.96%	10.78%	8.82%	7.21%	8.25%	2.40%
Special Use	0.53%	0.70%	4.66%	1.56%	2.53%	0.15%	4.42%
Public Relations	0.19%	2.11%	1.25%	1.88%	2.14%	0.12%	0.32%
Research	0.48%	2.70%		0.34%	1.32%	0.38%	0.52%
Economics	0.60%	0.44%		0.55%			0.42%
Cultural	2.80%						0.84%
Environmental Mgt.	0.36%	2.07%		1.34%	4.00%		1.10%
Energy	5.37%					1.28%	
Vegetation Mgt.	0.16%			1.58%	9.21%	0.57%	
TE&S Species		2.00%			1.51%		0.78%
Human Resources		0.28%	0.70%		2.49%	0.45%	0.29%
Ecosystem Mgt.					0.54%		
Visuals					6.72%		4.17%
Biodiversity					4.87%		
Firewood							2.40%
Total Not Required	29.94%	26.62%	28.03%	30.92%	58.95%	27.35%	28.58%
Total Coverage	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

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 %) 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 purposes (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 % 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 %) is a result of these efforts. At the same time, substantially more coverage is afforded to problem issues in the Hoosier plan (58.95 %) 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 %. 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 % 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 1985) Non-timber forest products are addressed in the discussion (0.16 %) 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 have submitted a “Notice of Intent” to revise the forest plan prior to August of 1997 (USDA Forest Service 1999a).

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 (Revised 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).

1995 Resource Planning Assessment

The 1995 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. 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 (National Strategy 1999). 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” (National Strategy 1999) 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” (National Strategy, p. 3). To guide and direct management of the renewable resources that produce special forest products, the strategy establishes five strategic goals: 1) availability within ecosystem limits; 2) integration into forest management; 3) consistent and effective 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 US Forest Service manages national forests for non-timber forest products. The Bill (H.R. 2466) 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, 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 legislation that is under-consideration could provide further acceptance of these products in forest management.

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 are managed 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 allow NTFPs to be well managed.

Social

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 is collected nor the collection location. 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. The sustainable management of NTFP resources will require understanding of how these people view and use the resource.

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) is 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.

Environmental

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 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.

Institutional

To address the issue of technical management of the NTFP resource 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 gardening could provide valuable information on reproducing some NTFPs. The technical 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. The issue of “below-cost” management could 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.

National legislation is being considered 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 of non-timber forest products.

Conclusions

In the 1980s, when the first round of national forest plans were developed, non-timber forest products, in general, were not recognized as a management objective nor as a issue of public concern. A few national forests identified NTFPs as a resource and incorporated them into management plans. Still, 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 base.

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 is leading the way on defining how national forests will be managed for non-timber forest products. A great deal of research, analysis and support are still needed to have NTFPs fully integrated into national forest management plans and practices.

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

The Forest Service strategy of managing national forests as ecosystems can not be fully realized until NTFP resources are sufficiently integrated into management plans. The goal of sustainable forest management will remain elusive if NTFPs are not managed as a natural resource. Certainly, the paradigm of multiple-use management needs to be expanded to include these forest products. Perhaps, the ecosystem management paradigm needs modification as well.

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SUB-PLenary SESSIONS
VOLUME 1

XXI IUFRO WORLD CONGRESS
7-12 August 2000
Kuala Lumpur
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International Union of Forestry Research Organization

FORESTS AND SOCIETY: THE ROLE OF RESEARCH

SUB-PLenary SESSIONS
VOLUME 1

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Published by the Malaysian XXI IUFRO World Congress Organising Committee
The papers published in these proceedings have been invited and accepted by the Division
Coordinators in accordance with the IUFRO procedure. The editors are not responsible for
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Copies available from:

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A-1131 Vienna, Austria
Telephone: +43-1-8770151
Telefax: +43-1-9779355
E-mail: iufro@forvie.ac.at

AND

Forest Research Institute Malaysia
Kepong 52109, Kuala Lumpur
Malaysia
Telephone: (603) 6342633
Telefax: (603) 6367753
E-mail: rahimnik@frim.gov.my

Perpustakaan Negara Malaysia Cataloguing-in-Publication Data

Forests and society : the role of research : XXI IUFRO World
Congress 7-12 August 2000 Kuala Lumpur Malaysia /

Edited by Baskaran Krishnapillay... [et al.]

(Contents : vol. 1. Sub-plenary sessions. – vol. II. Abstracts
of group discussions. – vol. III. Poster abstracts).

ISBN 983-2181-08-9 (vol. 1)

ISBN 983-2181-09-7 (vol. 2)

ISBN 983-2181-01-0 (vol. 3)

1. Forest conservation. 2. Conservation of natural resources

3. Forest management 4. Forest and forestry. I. IUFRO

World Congress (21st : 2000 : Kuala Lumpur)

II. Baskaran Krishnapillay

634.9

Cover photographs provided by Dr. E. Soepadmo-Front: Natural Forest

Back: *Zingiber spectabile*

Cover designed by Mouse Studio Sdn Bhd

Printed in Malaysia by Pramaju Sdn. Bhd. July, 2000