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Eastern National Forests

Managing for Nontimber Products

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ABSTRACT

Many products are harvested from the forests of the eastern United States that are not timber-based but originate from plant materials. Over the past decade, concern has grown about the sustainability of the forest resources from which these products originate, and an associated interest in managing for these products has materialized. A content analysis of the management plans of 32 eastern national forests revealed that seven of the plans addressed nontimber forest products (NTFP). We used interviews with USDA Forest Service district- and forest-level managers to convey their ideas about NTFP management and to identify critical issues that affect efforts to manage for these products.

Keywords: forest products; industry; national forests; policy

Many products collected from the forests do not fit clearly within the objectives identified and detailed in legislation guiding the management of the national forests. This guiding legislation, from the Organic Act of 1897 through the National Forest Management Act of 1976, requires that national forest

management plans address timber, recreation, range, watershed, fish and wildlife, and wilderness. But many people in rural areas collect medicinal and edible products from national forests for household consumption and to supplement their incomes. Products such as moss, grapevine, boughs, pine straw, and birch twigs are harvested

from national forests to supply the floral and decorative industries. Crafters collect wood for carvings, burls for bowls, and saplings for furniture.

The variety and number of products harvested from the forests of the eastern United States are significant. For example, millions of pounds of black walnuts are harvested each year, and estimates of the number of forest species in the eastern United States valued for their medicinal qualities range from 125 to more than 500 (Krochmal et al. 1969; Foster and

Above: Two ramp diggers in the Pisgah-Nantahala National Forest in North Carolina head home with sacks full of the wild leeks, which appear in early spring before the forest canopy closes.

Duke 1990; Foster 1995; World Wildlife Fund 1999). Over the past decade, forest managers have become increasingly concerned about the sustainability of collection activities and interested in managing for these and other nontimber products.

What Are Nontimber Forest Products?

Various terms (e.g., nontraditional, secondary, minor, nonwood, and special or specialty) have been used to describe forest products that are not timber-based. In many cases, these products are neither minor nor secondary, and they often are not specialty products but move through distribution channels as commodities. Many of these products have a long tradition in society; hunters and gatherers were collecting products from the forest long before they had the technology to cut timber. The USDA Forest Service (USDA-FS 2001) defines these products as "special forest products," although nontimber forest products (NTFP) is a more widespread term.

NTFPs are plants, parts of plants, fungi, and other biological material harvested from within and on the edges of natural, manipulated, or disturbed forests. They may include fungi, moss, lichen, herbs, vines, shrubs, or trees. Many different parts of the plant are harvested, including roots, tubers, leaves, bark, twigs and branches, 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 NTFPs include mushrooms, fruits, saps, resins, ferns, tubers, and herbs. Wood-based forest products are considered nontimber if they are produced from trees or parts of trees but not from commercially sawn wood. Floral and decorative products are used in flower arrangements and for wreaths, swags, garlands, and roping, as well as in the landscape industry. The Appalachian hardwood region is the principal source of the many medicinal plants, including *Chamaelirium luteum* (false

unicorn), *Actaea (Cimifuga) racemosa* (black cohosh), *Panax quinquefolium* (American ginseng), and *Sanguinaria canadensis* (blood root).

Although no formal estimates have been made of the overall value of the NTFP industry in the East, data illustrate the economic importance of these products. In 1996, collectors of black walnut were paid more than \$2.5 million (Jones 1998, pers. commun.). A company in rural southwest Virginia that specializes in pine roping had annual sales in excess of \$1.5 million in 1997 (Hauslohner 1997). We estimate that one volunteer fire department in western North Carolina generates approximately 35 percent of its budget from its annual ramp supper. Based on 2001 prices, we estimate that the average wholesale value of forest-harvested ginseng to collectors in a four-state region (Virginia, North Carolina, Tennessee, Kentucky) exceeds \$18.5 million. Certainly, the aggregate value of nontimber forest products to the southern economy far exceeds these examples.

National Forest Management Planning

Of the more than 82 laws affecting Forest Service activities on national forests, four laws provide the main direction for management practices (Floyd 1999). The Organic Act of 1897 initiated management of the national forests and directed that forests be established to "improve and protect the resources to secure water and to furnish a continuous supply of timber." More than 60 years later, the Multiple-Use Sustained Yield Act of 1960 (MUSYA) authorized and directed the secretary of agriculture to manage the national forests for multiple uses (e.g., outdoor recreation, range, timber, watershed, and wildlife and fish). The Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA) institutionalized management planning in the Forest Service and directed that plans address recreation and wilderness, range, timber, watershed, and fish and wildlife. Finally, the National Forest Management Act of 1976 (NFMA) amended the RPA to provide addi-



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Nontimber forest products take many forms. *Top:* Blood root is found among Appalachian hardwoods and is sought for its antiseptic and anesthetic qualities. *Middle:* Several species of moss harvested from forests are used in the floral industry and exported to Europe. *Bottom:* Goldenseal is sometimes called "poor man's ginseng" because of its reputed tonic effect on the body.

Table 1. National forests included in this study.

National forest	Year forest plan approved	Plan revision due*
Region 8 (Southern)		
Alabama	1986	2001
Chattahoochee-Oconee	1985	2000
Cherokee	1986	2001
Croatan-Uwharrie	1986	2001
Daniel Boone	1985	2000
Florida	1986	2001
Francis Marion	1985	1998
George Washington	1986	1993
Jefferson	1985	2000
Kisatchie	1985	1999
Mississippi	1985	2000
Nantahala-Pisgah	1987	2002
Ouachita	1986	2001
Ozark-St. Francis	1986	2001
Sumter	1985	2000
Texas	1987	1996
Region 9 (Eastern)		
Allegheny	1986	2001
Chequamegon	1986	2001
Chippewa	1986	2001
Finger Lakes	1987	2002
Green Mountain	1987	2002
Hiawatha	1988	2001
Hoosier	1985	2000
Huron-Manistee	1986	2001
Mark Twain	1986	2001
Monongahela	1986	2001
Nicolet	1986	2001
Ottawa	1986	2001
Shawnee	1986	2001
Superior	1986	2001
Wayne	1988	2003
White Mountain	1988	2001

*The National Forest Management Act requires that forest plans be revised every 10 to 15 years.

tional statutory direction for plans to include "coordination of outdoor recreation, range, timber, watershed, fish and wildlife, and wilderness." Together, these policies provide the major guidance for management of national forests.

The RPA and NFMA ensure that national forest management plans are uniform and consistent throughout the National Forest System. These plans outline the "desired future conditions" of the forest as well as for each management area. Multiple-use goals and objectives are established to guide program activities, and standards and guidelines are developed to be consistent with national standards and guidelines. Management prescriptions are prepared for each multiple-use management area to describe the specific activities for each unit. Lands suitable

for harvesting timber, as well as other natural resources, are identified and estimates made of the sustainable extraction levels.

Although the legislation may imply that national forests will manage for nontimber forest products, there is no explicit mandate to include these products in forest management plans and activities. Our research was designed to determine if NTFPs were included in forest plans and to examine the extent to which they were incorporated into these plans.

Research Methods

The goal of this research was to help broaden our understanding of issues affecting management for NTFPs in eastern United States. National forests in the East, rather than the West, were selected for study, as less attention has

been paid to NTFPs in this region. Also, eastern forests include NTFPs that are unique to the region. The forests of this region have been an important source of many NTFPs long before European settlers colonized this country. Yet most of the dialogue concerning managing forests for these products is being driven by the experiences of national forests in the western United States. Certainly, the West has realized tremendous changes in the collection, use, and trade of these products, and the eastern United States also has seen significant growth and concomitant pressures.

This study was limited geographically to USDA Forest Service Regions 8 (Southern) and 9 (Eastern). The research examined the first-round forest plans for 32 national forest management planning units, with the exception of the Francis Marion, George Washington, Kistachie, and Texas forest plans (table 1). The revised forest plans were used for these four forests because they had been accepted before the start of this study. Further, our research did not include the Caribbean National Forest (it is outside the continental United States) or the Midewin National Tallgrass Prairie (the plan was accepted after this research was completed).

This study adapted a methodology developed to analyze the content of newspapers, presidential speeches, and other printed material (Holsti 1969; Carney 1972; Krippendorff 1980) to determine the extent to which NTFPs were addressed in national forest management plans. The area of text in each management plan was measured for three general categories: legislated objectives, significant issues, and NTFPs. Legislation mandates that national forest management plans consider and include timber, range, minerals, recreation and wilderness, water, and fish and wildlife. Significant issues identified in the Forest Service Manual (USDA-FS 1998a) or that emerged through public input included roads, special uses, habitat protection, and facilities maintenance, as well as ecosystem management, biodiversity, and old-growth. The third category of text that was measured focused on NTFPs

Table 2. Coverage of the major management objectives addressed in national forest management plans that included nontimber forest products.

Management objective	National forest						
	Chequamegon (Wisconsin)	Finger Lakes (New York)	Florida (Florida)	Green Mountain (Vermont)	Hoosier (Indiana)	Nicolet (Wisconsin)	White Mountain (New Hampshire)
Legislated							
Timber	25.6%	19.2%	19.3%	17.4%	6.3%	23.5%	15.7%
Fish and wildlife	12.2	13.4	10.4	12.9	2.4	20.2	12.4
Water	3.6	8.9	7.3	6.3	8.5	3.5	4.3
Recreation and wilderness	24.3	17.0	24.7	21.6	16.2	21.6	34.1
Range	0.9	6.1	3.5	0.6	0.0	0.4	0.2
Minerals	3.0	8.3	6.7	9.6	7.2	3.0	4.5
Total legislated	69.7	72.7	71.9	68.6	40.5	72.1	71.3
Nontimber forest products	0.4	0.6	0.1	0.5	0.5	0.5	0.2
Public issues*	29.9	26.6	28.0	30.9	58.9	27.4	28.6

*Public issues (e.g., roadless area, habitat protection, and biodiversity) are concerns that emerged through public comments as part of the p/an process.

as defined by the four major product categories described earlier.

The area of text within the management plans devoted to each of these categories was used as an indicator of the level of importance assigned to them. The percent coverage was based on the area of text devoted to a management objective relative to the total textual coverage. 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 many volume tables and figures. Further, the units of measurement of tabular data vary tremendously between management objectives, making usable comparisons difficult.

To provide further insight, we conducted in-depth, semistructured interviews with forest managers over a three-week period in early 2000. More than 28 national forest managers representing district rangers, forest supervisors, and forest planners were interviewed. The district rangers and forest supervisors are the ultimate decisionmakers at their respective management levels. At the forest level, the forest planner directly influences the priority given each aspect of the management plan. The planner coordinates the planning process and should be aware of the general feelings toward issues such as NTFP management. He or she also is in a position to advocate (or not) for the consideration of new and emerging issues.

NTFPs and Management Plans

NTFPs are not explicitly recognized in national legislation as natural resources to be included in multiple-use management. In the 1980s, when the first round of forest plans were developed, management for NTFPs was not a public issue. Although the markets for many of these products were established, demand on the resources was not sufficient to raise widespread public concern. Nevertheless, seven out of 32 national forest plans (approximately 22 percent) addressed NTFPs to some extent. Of those, six were located in Region 9 (Eastern). The management plan for the Florida National Forests (1985) was the only plan in Region 8 (Southern) to address NTFPs at any level. *Table 2* details the extent of coverage for each management objective addressed in the seven national forest plans that included NTFPs.

With the exception of the Hoosier National Forest Plan, the amount of coverage devoted to legislated management objectives exceeded 68 percent; public issues and nonlegislated management objectives commanded more than 26 percent of each plan. As we expected, the attention afforded to NTFPs is minimal by comparison; no national forest plan devoted more than 1 percent of text to them. In fact, the average amount was less than one-half of 1 percent.

The seven national forest management plans that addressed NTFPs varied in the type of coverage. In general,

coverage focused on recreational opportunities for NTFP collection and on research needed to better address these products. Providing areas for recreational collection of blueberries was an explicit goal of the management plans for the Green Mountain (1993) and Finger Lakes National Forests (1986). The Finger Lakes plan further established a "desired future condition" to boost recreational collection through active management, including prescribed burning to provide an ample blueberry crop. While the Green Mountain plan designated 30 acres for blueberries and indicated that more land would be identified to supply the growing demand, the Finger Lakes plan established a goal to manage five acres annually explicitly for blueberries. Blueberry production was important enough to these forests to warrant consideration of current and future demands.

Three national forest management plans identified research that would help improve management for NTFPs. The Florida National Forests (1985) plan acknowledged the need for research to develop systems to deal with the increasing demand for gathering forest products in general. The plan for the Finger Lakes National Forest identified the need for research to determine how to keep a desirable mix of different varieties of blueberries. Finally, the plan for the Chequamegon National Forest (1986) in Wisconsin expressed the need for research to determine how to restore

wild rice beds to their former abundance within five to 10 years. These national forests identified gaps in the knowledge based concerning management of specific NTFPs.

While four national forest management plans provide general forestwide guidance for NTFPs, only two have specific prescriptions for maintaining or enhancing NTFP production. The Green Mountain National Forest provided forestwide standards and guidelines to maintain and increase apple and other fruit production for wildlife food and to increase blueberry production through prescribed burns. The forest plan for the Nicolet National Forest (1986) in Wisconsin established that district rangers would not grant permits for ginseng harvesting. On the other hand, the forestwide standards established for the White Mountain National Forest (1986) directed that applications for permits to harvest maple sap, Christmas trees, and evergreen boughs would be considered on a case-by-case basis. The plan for the Finger Lakes not only established forestwide guidelines for blueberries but also prescribed specific activities to promote production.

Although each of the seven forest plans included some coverage of NTFPs, no plan provided comprehensive coverage similar to that of other natural resources. It is interesting that the Finger Lakes National Forest, the smallest national forest in the eastern United States, provided the most complete coverage. It not only addressed research needs but also responded to public issues concerning NTFPs. The plan established a goal and a desired future condition for NTFP management on the forest and defined forestwide standards and guidelines as well as specific prescriptions.

Management Perspectives

The perspectives of forest managers toward NTFPs is based on extensive interviews with the managers. District- and forest-level managers have diverse experiences and a wealth of knowledge that must be considered in developing and implementing appropriate management policies and strategies for NTFPs. Their perspective can signifi-

cantly affect how national forests approach NTFP management.

Forest-level managers. The experiences and perceptions of forest-level managers with NTFPs are as varied as the products themselves. Some managers had been in situations where the products were plentiful and market demand was high, and they perceived that substantial collection was taking place. A general sense among forest-level managers was that the Forest Service would be surprised at the volume of NTFPs harvested from the national forests. A perception shared by many forest-level managers was that there is not enough information to determine if collection is having an impact on forest health. A common impression was that the agency "takes a very light-handed approach" toward NTFPs. A general view emerged that policies and practices were inconsistent across forests and districts.

Many forest-level managers indicated a concern that the agency "does not have the technical capability to manage for these products." For most NTFPs there are "no manuals that present prescriptions" to help guide management practices. There is "no research on the shelf that provides the information needed to make sound management decisions." But most managers felt that "the knowledge exists to start collecting appropriate data to generate information needed to guide management."

Perhaps the most critical issues include "determining sustainability and the impact on forest health, and determining and controlling permitted versus non-permitted collection." The lack of knowledge concerning the "reproductive biology" of the flora from which these products originate is perceived as critical to improving management. The agency really "does not understand the ecosystem function of these products as it does for trees." Further, forest managers indicated that "a lack of knowledge concerning the fair market value for NTFPs inhibits management." Clearly, the ecological and economic uncertainties are daunting to forest-level managers.

District-level managers. District-level managers are responsible for imple-

menting the policies and directives outlined in the forest management plans. They are the closest to the forest operations and activities and should know better than most about local NTFP activities and the implications of changes in management strategies. As expected, the perceived level of NTFP activities varied among district-level managers; some were aware of a great deal of collection, and others felt that little or no collection was taking place in their district. A general perception that emerged from the interviews was that NTFP collection is an integral part of local people's lives. District managers were aware of a variety of products being collected from the forests, including ferns, ginseng, ramps, evergreen boughs, moss, princess pine (*Lycopodium* spp.), firewood, and Christmas trees. Many district-level managers viewed these products more as "a service to the local communities than a revenue source" for the agency.

Perhaps the best way to summarize the district managers' perspective concerning the current management approach toward NTFPs is that "it is limited to the issuance of permits." District-level managers suspect that "only a small portion of the actual collection is permitted." It is perceived that more people are collecting without permits than with them. NTFPs have been "considered a nuisance" that the agency has tried to deal with through the permit system.

Some district-level managers felt that the agency may have "recognized that NTFPs impact local economies, but it has not dedicated resources to these products." Perhaps one reason that "NTFPs do not get the attention they deserve is because there is not the demand" for the products. In general, district managers perceived that the agency does not know how many products are being collected, nor does it have an "idea of how to get a handle on the situation." Some managers expressed the sentiment that "the agency would adjust the program accordingly if it determined more attention was needed on this issue." But there seemed to be agreement that "the Forest Service has not done sufficient studies to determine the impact" of collec-

tion and that district managers “did not have the data to determine any impact” from NTFP collection.

Should the Forest Service decide to begin managing for NTFPs, district-level managers voiced a concern that currently the agency “does not have the personnel to closely administer the operations” needed to manage for these products. The Forest Service may have sufficient knowledge and capacity to begin managing for NTFPs. It “has the expertise, or has access to the expertise to make sound management decisions” concerning these products. Although “foresters are not trained, silviculturally, to manage for birch bark or twigs,” the agency “knows enough to take rudimentary action” to manage for these resources. The districts may have access to the knowledge and expertise needed to manage for NTFPs, but they do not have the flexibility to shift funds and personnel to work on this issue. If NTFPs “continue to grow, programmatically,” the local units will need support to implement management strategies. The lack of resource inventories and ecological impact studies impede even the most fundamental management activities.

Conclusions

Forest plans naturally reflect legislative mandates, so the lack of coverage provided to NTFPs is not surprising. In the mid- 1980s when the forest plans were developed, NTFPs were neither an issue of public concern nor a management objective recognized in national legislation. Although only a few plans in our study addressed NTFPs and the extent of coverage within those plans was inadequate, several conclusions are possible.

First, much more comprehensive coverage is needed. The Finger Lakes National Forest management plan is the most inclusive, but no plan covered all of the elements (e.g., supply-and-demand analysis, research needs, response to issues, goals, desired future conditions, forestwide standards and guidelines, and management area prescriptions) that make up the plan. Second, all national forests would benefit from more supply-and-demand analy-

sis. This type of scrutiny would provide the foundation for other parts of the plan, particularly the management goals and desired future conditions. Third, several important research needs are identified that would improve management efforts, but much more research is needed to provide forest managers the knowledge base from which to make more informed decisions.

Although the forest managers’ perspectives varied, one clear message emerged from our interviews with them: “For NTFPs to become an issue, the Forest Service needs to recognize significant ecological and economic effects” from collection activities. If the agency wants all parts of the forest ecosystem to be sustainable, it needs to emphasize that these are renewable resources and use scientific management practices to sustain the collection. But to justify allocating resources to manage for NTFPs, the Forest Service needs evidence that a lack of focus is causing long-term degradation or irreversible impact to the resource. Inclusion in the forest plans with “standards and guidelines” would help provide an indication of what forest managers need to consider. District- and forest-level managers could manage for NTFPs if they had more information, support, flexibility, and personnel. Fiscally “nothing is in place to provide anywhere near the funds needed to do the appropriate amount of technical management NTFPs.”

The comments of forest managers suggest that NTFPs are of greater importance than indicated in the forest plans. They identify a number of critical issues hindering efforts to improve forest management for these products:

- Lack of knowledge about the biology and ecology of the flora from which these products originate.
- Diverse nature of the products and of the collectors.
- Lack of market knowledge.
- Insufficient personnel and fiscal resources to assign to NTFP management.

These issues are formidable but not insurmountable. It is highly likely

that NTFPs will be better represented in future national forest management plans. 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.” Of the seven national forest plans that addressed NTFPs, four were in the process of or had recently completed the plan revision. The revised plan for the Florida National Forests (1999) includes forestwide standards and guidelines for special forest products. The Chequamegon and Nicolet National Forests, who are combining efforts to produce one plan for two forests, have the most comprehensive “analysis of the management situation” for special forest products (USDA-FS 1998b). The draft forest plan for the Croatan National Forests (1998) provides forestwide management direction concerning production of pine straw.

In addition, new and emerging policies could significantly change how the Forest Service deals with NTFPs. A bill (HR 2466, section 339), which passed as part of the 2000 Appropriations Act, established a pilot program to improve the management of “forest botanical products” from the National Forest System. It requires the secretary of agriculture to determine sustainable harvest methods and levels of these products and to establish methods to ensure that revenues from the issuance of permits for collecting these products reflect the fair market value, and also that a portion of these revenues are returned to the local units from which they were generated. The Forest Service recently published a national strategy to guide and direct management of NTFP resources in the National Forest System and to assist state and private forest managers in their efforts to improve management for these products (USDA-FS 2001). These initiatives are an encouraging signal for the improved management of national forests for NTFPs.

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