NON-TIMBER FOREST PRODUCTS

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Introduction

Section Overview

Ecosystem management on public forestland is a complex effort to provide an optimal level of desired benefits to a human population while ensuring that critical ecosystem processes and functions are maintained on the landscape. The complexity of the task arises not just from the diversity and dynamism of the forest itself, but because many different people want many different things at many different levels from the forest ecosystem. Ecosystem management attempts to ensure that critical ecosystem processes and functions are maintained within this context.

Elsewhere in this plan, policies and guidelines have been laid out which will guide bureau management decisions in areas such as recreation, timber harvesting, and mineral extraction. In dealing with these large management issues, the bureau has several distinct operational advantages:

1. They are not new. For many of these "big" issues, effective guidelines and procedures have had time to "prove" themselves through the first century of the bureau's evolution. Many of them are rooted in the very purpose for the founding of the bureau and have received primary focus from both its managers and its stakeholders over the last century. This has lead to policies and guidelines with proven ability to meet the bureau's mission as a public land manager.
2. Stakeholder interests on such issues are usually well defined and access to stakeholder input and representative organizations is relatively efficient.
3. Such issues are promoted or supported by well-developed scientific disciplines, strong traditions of industrial or technical application, or well-established cultural or economic interests.

However, if it is to be applied effectively to meeting the bureau's goals, ecosystem management must be alert not only to fine tuning approaches to well established issues and processes but to outlining and defining emerging issues which provide potential operational challenges or opportunities. Perhaps no issue provides a more relevant case study for how to apply ecosystem management principles to a complex, potentially critical emerging issue than that of how to manage non-timber forest products on state forest land.

Non-timber forest products (NTFP) for the purposes of this plan, are those items harvested or removed from state forest lands for private use or for resale (excluding, saw timber, pole timber, game, natural gas, oil, sand, gravel, shale, and building stone - all of which are covered under other sections). They may be all or part of living or dead plants, lichens, fungi, or other forest organisms. NTFP, therefore, represent a diversity of potential products sought after by a wide variety of people on a continuum of scales and intensities. Because of the potential for this issue to have an impact on important components of the forest ecosystem as well as an opportunity to more effectively serve the needs of its stakeholders, it is critical for the bureau to develop a firm understanding of the issues surrounding NTFP in order to develop effective strategies for managing these resources. The goal of this section is to discuss the broad issues surrounding NTFP and their harvesting from state forest land and to outline policies, goals, and objectives that will promote a better understanding of the management context for NTFP on state forest land. This will in turn provide the foundation from which to further develop effective management strategies in this area that will coherently fulfill the bureau's mission.

NTFP's -- What are They?

According to the broad definition listed above - NTFP could be just about anything removed from state forest land. Practically speaking, however, NTFP are plants or plant parts that have perceived economic or consumption value sufficient to encourage their collection and removal from state forests. The Institute
for Culture and Environment non timber forest products database listed 695 plants, fungi, and lichens, which occur in Pennsylvania and have been or are being commercially collected as of 3/11/03

Perhaps the most familiar NTFP’s are herbaceous understory plants that are known or believed to have medicinal or tonic properties. Ginseng (Panax quinquefolius L.), goldenseal (Hydrastis canadensis L.), wild sarsaparilla (Aralia nudicaulis L.), and black cohosh (Cimicifuga racemosa L.) fall into this category. Many other species are valued for their decorative or ornamental value. Princess pine (Lycopodium obscurum L.), teaberry (Gaultheria procumbens L.), mosses, some fungi and lichens, pine knots, driftwood, and pine cones are often collected for ornamental purposes or for use in the construction of terrariums, crafts, or decorative items. Finally, some NTFP are used for food. Leeks or ramps (Allium schoenoprasum L.), and various species of mushrooms, berries, and nuts belong to this category.

While NTFP’s have perceived economic or consumption value for humans, they can also represent forms of biodiversity that are critical to maintain on the landscape from an ecosystem management perspective. Thus, NTFP are a conservation concern on state forest land when their sustainability as species or populations or the health of other components of the forest ecosystem is threatened by virtue of their value and corresponding harvest rates as NTFP.

Unfortunately, very little is known about the removal rates of NTFP’s from state forestland and even less is known about population inventories of the various species of plants used as NTFP. Further, much remains to be learned about the maintenance needs, life history characteristics, and natural distribution/abundance of many NTFP species before sustainable management guidelines can even be developed.

**NTFP - Who Collects Them?**

Individuals collecting non-timber forest products generally fall into five categories:

- Incidental collectors are those who collect a small quantity of a material for immediate consumption, usually on site. An example of this would be a camper who collects a handful of leeks to flavor the evening meal.
- Recreational collectors collect materials for home use and consider the collecting experience to be a recreational outing. Having a family picnic with the intention of also picking blueberries to take home for canning or pies exemplifies this group.
- Ceremonial collectors are those who gather NTFP to use in religious ceremonies or those to whom the harvesting of an NTFP in their traditional manner is part of religious or cultural custom.
- Subsistence collectors are those who rely on NTFP to provide a significant part of their, food, medicine, or shelter.
- Commercial collectors are those who collect, sell, or trade in NTFP either to provide supplemental income or as a principal form of employment or business.

From a sustainability standpoint, a critical question is how much NTFP are being harvested from state forest land. However, determining the level of removals of NTFP attributable to each type of collector is difficult since these groups are not well established or structured and since individuals may not wish to divulge information about their collecting activities for fear of having privileges constrained or alerting others to secret “foraging” spots for desirable NTFP. Without better information about the intensity and impact of harvesting impacts attributable to different collector groups, attempts to manage collecting activities is based entirely on assumptions which may not reflect reality and therefore fail to achieve sustainability.

For instance, there is an intuitive logic that suggests that commercial harvesting would result in the greatest chance of having an undesirable impact on a population of NTFP which can easily lead to the impulse to simply limit collecting activity to non-commercial levels. However, it is quite possible that routine, unregulated harvesting by "Incidental collectors" in an area with heavy recreational or other forms of high human presence may represent a greater threat to a certain specie of NTFP in that area than more periodic or regulated harvest of the same specie at a commercial level. Further, because access to
the state forest is open to the public, developing point-of-contact connections with those collecting NTFP on state forest land is extremely difficult and time consuming. What is known is that both market demand for certain NTFP and public pressure on state forest land (which may correlate with increased levels of all forms of collection) have both dramatically increased in recent years which further accentuates the need for attention to the issue of NTFP management on state forest land.

**NTFP management - Current Approaches**

Historically, the bureau has addressed NTFP harvesting issues primarily through its District Forester permitting system, the legal authority for which is provided in the State Forest Rules and Regulations Section 21.31-21.34. A mid 90's compilation of permits issued statewide showed 20 NTFP were being collected on state forest land. Five years later, the districts reported 40 products known to be collected from State forest lands. However, the permitting process as practiced provides little information on the volume of products removed, areas products were removed from, or the sustainability status of remaining NTFP populations. As concerns increase about potential ecological conflicts arising from NTFP collection and market demand for some products becomes more apparent, additional shortcomings of the permitting system as a mechanism for sustainably managing NTFP have become apparent.

Other management concerns not addressed through the permit system include:

- Establishing and securing fair market value for NTFP collected from the state forest to ensure fair compensation to the Commonwealth
- Maintaining fair and equitable access to NTFP to a full range of user or potential user groups interested in collection across a range of scales and intensities (or even interested in NTFP's for non-consumptive reasons)
- Provide an adequate mechanism for oversight and management of harvest techniques or harvest impacts on various NTFP
- One-size-fits-all approach is not appropriate to the diverse range and complexity of harvest/sustainability issues pertaining to specific NTFP species.
- Provide sufficient information, documentation, and categorization of collector in order to facilitate understanding, networking, information exchange, and monitoring of various collector groups and corresponding harvest impacts
- Address potential for collection of rare or endangered plants that are subspecies or closely related species of certain NTFPs (for example, endangered species of lycopodia are very difficult to differentiate from more common types - requiring both a magnifying glass and considerable knowledge of botany and taxonomy - and may readily and innocently be collected along with more common forms of lycopodia.)

Specific concern for the sustainable management of NTFP on state forest land has been an incremental process within the bureau. Certainly, from the earliest institution of the agency, bureau foresters were concerned that the state forest and its ecological components not fall fate to the "tragedy of the commons" - in which resources held in trust for the long-term benefit of all are overexploited and exhausted for the short-term benefit of a few. More recently, with the more explicit focus on ecosystem management and its recognition of how specific market and cultural forces can lead to reduction of biodiversity, discussion on the NTFP issue has become more focused and urgent as recognition has grown of the scarcity of information currently available on which to base management decisions.

With the commencement of the present planning period, an internal decision was made to include NTFP as a specific section of the new management plan. Concurrently, a subcommittee was formed within the Ecosystem Management Advisory Committee to specifically explore and address the issue of NTFP management within the state forest management context. Following early discussion and exploration of the issue and based on concerns about NTFP’s expressed from many different levels within the bureau and among its various constituents and advisory groups, a moratorium was placed on issuing permits for ginseng. Further, district foresters will approach issuing permits for other NTFP with potentially critical
Future Management Approaches

The current moratorium on permitting for certain forms of NTFP is seen by the bureau as a short term, stop-gap measure to relieve harvest pressures on certain species being sought as NTFP until more suitable management approaches can be developed. A major concern with relying on the restrictions of permitting as the sole means of managing NTFP, is that there is already inadequate enforcement of non-permitted collecting and a lack of information on non-permitted harvesting levels on state forest land. Long term reliance on the restriction of permits simply increases the likelihood for non-permitted collection. Obviously, a more proactive, integrated approach to NTFP management is needed.

While the treatment of the NTFP issue in this section will be cursory and general in nature since the bureau is still in the early stages of defining the issue, the sustainable management of individual species of NTFP on state forest land must become more specific to individual species over time. In general, this process will necessitate a two-staged approach. Categorization and stratification of NTFP on the basis of ecological importance (and/or risk) and market demand coupled with the development of population inventories, identification of collectors, and establishing current harvest rates are components of the first phase of this approach. The development of management guidelines, procedures, and regulatory and monitoring processes on a species by species basis constitutes the second phase. While primary focus must be placed on ensuring the sustainability of those populations most at risk or important ecologically, opportunities to develop ecologically desirable and economically valuable resources in NTFP on state forest land should not be overlooked.
History

The gathering of NTFP is as old as the human species itself. Wild foods and other items from the forest provided food, shelter, medicine, and materials for ceremonies and worship. When people began to domesticate plants and animals they became less dependent on wild foods and other forest materials. With the introduction of European style agriculture to the Americas, the cultural dependence on foraging declined rapidly. Families and individuals continued to gather berries, greens and other items for wild crafting. These outings eventually became more important to most people for preserving traditions, bonding, socializing, and communing with nature than for subsistence. However, commercial collecting continues to fluctuate with the latest trends and fads.

Since 1929, State Forest Rules & Regulations have stipulated that individuals must receive written permission to remove any living or dead plant or plant part from state forests. Historical records show that the Bureau of Forestry started issuing permits for individuals to collect NTFP in the early 1950's. Collecting is regulated by the State Forest Rules and Regulations (revised in 1999), and the Wild Resource Conservation Act enacted in 1982. Activities associated with rare, threatened and endangered plant species are controlled by the Department of Conservation and Natural Resources through the provisions of the Wild Resource Conservation Act, P.L. 597, No. 170.

Because they are readily accessible to the public at large, the State forest lands have become favorite outing grounds where people go to gather NTFP. State forest managers are becoming increasingly concerned with the sustainability of these non-timber resources. This concern is not without reason. In the earlier part of the twentieth century, Pennsylvania's forests were mainly sapling sized due to the recent clearing. With a great deal of light coming through, to the forest floor, conditions were ideal for wildflower growth. Trailing arbutus (Epigaea repens L.) was sought out by those who lived in the mountains. It was common practice to gather and sell it in little bunches at urban and farmers markets. Even though the bunches were priced at only a nickel apiece the volume moved was significant. The result was that trailing arbutus was exploited nearly to the point of extinction from Penn's woods. Today, populations of trailing arbutus are maintained due to decrease in collection pressure.

A native plant of Pennsylvania, Ginseng (Panax quinquefolius L.) was historically abundant on state forest land. Because of its value and importance as a national commodity, the export of ginseng is regulated by the US Fish & Wildlife Service. Ginseng has been listed as a vulnerable species in Pennsylvania due to this demand and suspected over harvesting. Since 1985, the Department of Conservation and Natural Resources is the regulatory agency for the trade and export of ginseng harvested in Pennsylvania. In cooperation with the US Fish & Wildlife Service, DCNR issues vulnerable plant licenses to authorized ginseng dealers and maintains the dealers' harvesting and trade records. The harvest and trade information is then compiled annually and submitted to the US Fish & Wildlife Service for review and statistical analysis.

Generations of state forest users have gone to state forests on seasonal outings to pick berries, mushrooms, leeks, etc. for personal use. Harvesting, consuming, and enjoying the resources of state forests is a long established tradition in Pennsylvania. Within limits and with proper management, future generations of users will be able to continue these long established and cherished traditions of gathering NTFP from state forest land.
Inventory

No dedicated NTFP inventory currently exists. The intent of the plan is to initiate a workable inventory and monitoring system for NTFP. In many cases field personnel can record NTFP data while performing other duties.

The amount of NTFP harvesting reflects economic and cultural changes within local, regional and national markets. Customary markets will fluctuate as well. When the market changes, the product and the volume harvested fluctuates with the market trends. Because of these rapid changes in demand, any inventory system will have to be flexible enough to respond to new trends in harvesting. Products never used before may suddenly become valuable requiring the rapid assimilation and analysis of information in order to define the sustainable level of harvest.

Potential sources of inventory information are:

- Pennsylvania Natural Heritage Program (PNDI)
- Bureau of Forestry inventories
- Bureau of Forestry landscape exams
- Bureau of Forestry permitting records
- Modified FIA plots
- Coincidental discoveries which are made while performing other duties
- Local knowledge
- Dealer records
- Institute for Culture and Ecology (IFCAE)
- NTFP database
- USDA Plant database
- Publications such as "The Plants of PA" (Rhoads & Block, 2000) and "The Vascular Flora of PA: Annotated Checklist and Atlas" (Rhoads & Klein, 1993)

Prior to utilizing any of these sources much ground work needs to be done. We will explore contracting for inventorying. NTFP inventorying will be a work in progress.

Policy Statement

The sustainability of each non-timber forest product and overall impacts to forest ecosystem health, will determine the species or products and the amounts and methods allowed for harvesting from state forest lands.

Goals and Objectives

Goal 1: To inventory NTFP to identify and monitor populations and to determine potential sustainable harvest levels.

Objectives:

- Inventory ginseng (Panax quinquefolius L.) and golden seal (Hydrates Canadensis L.) populations and estimate sustainable harvest levels in each forest district.
- Stratify NTFP into critical and non-critical components. Prioritize the development of specific guidelines and actions for species/products on considered critical.
- Investigate the use of appropriate information from the state forest inventory and other existing sources to determine population levels of some species.
  - Investigate correlations between individual or groups of NTFP and readily
available information such as forest type, slope, aspect, soils, or elevation to increase the efficiency of our inventory efforts.

- Investigate remote sensing techniques which could be used to inventory or monitor NTFP populations.
- Identify and incorporate appropriate measures into the state forest inventory and landscape exams to develop base-line information and trends both locally and within ecoregions.
- Develop a list of NTFP which are likely to occur in specific districts or on specific blocks of land to streamline the training required to inventory NTFP.
- Develop monitoring protocol to assess sustainability of harvested populations
- Continue to investigate and develop new inventory and monitoring techniques.
- Encourage research and cooperate with universities and others to determine current NTFP activities and/or sustainable levels of production for non-timber forest products.

Goal 2: To develop guidelines and procedures that assist forest managers in establishing restrictions, management activities, and determining remedial activities if restoration is needed.

Objectives:

- To develop guidelines that consider local, regional and statewide factors to assist forest managers in making management decisions relating to NTFP.
- Utilized modified permitting process in case study approach within the districts to explore its applicability for gathering baseline information on NTFP management context
- To develop training for all bureau management and field staff on the ecological habitat requirements and identification of specific non-timber resources.
- To cooperate with CFM efforts to promote the sustainable production of NTFP on private forests

Actions:

- Enforce the State Forest Rules and Regulations
- Restrict permits to specific geographic locations and limit harvest time periods to allow for monitoring of resource depletion and permit enforcement.
- Develop fixed harvesting areas for the most sought after products to aid in controlling the harvest and monitoring populations.
- Develop a reporting form to be issued with each permit to be returned to the district. The form will provide information on the quantity, quality, uses and location of their harvest.
- Develop a questionnaire to gather local knowledge of NTFP for use by public contact personnel including rangers and CFM foresters, to gather use information from forest users and surrounding residents.
- Develop a database to hold information returned by dealers and permit users.
- Develop a list of non-timber products that have traditionally been and are being harvested from the state forest or are likely to become in demand.
- Develop a reporting and tracking system to would allow staff to report and track NTFP occurrences and harvests they might encounter while performing routine duties.

Goal 3: To develop guidelines and procedures that assist forest districts to enforce Pennsylvania's Vulnerable Plant regulations.

Objectives:

- Develop training materials for Bureau of Forestry staff and other law enforcement agencies.
- Create web site for dissemination of information about legal and regulatory processes
associated with Pennsylvania’s Vulnerable Plants.

- Link to the State Forest Rules and Regulations

**Goal 4:** To provide outreach to the public to inform them on the importance of non-timber resources to the forest ecosystem.

**Objectives:**

- Develop area specific training materials to be used in staff training and public contact situations.
- Collaborate with other agencies and organizations to meet the public education goal.
- Identify critical audiences.
- Develop and distribute a brochure related to harvesting, licensing and reporting requirements of NTFP on state forest land.
- Cooperate with CFM efforts to promote sustainable production methods for NTFP on private forestland and to link landowners with market infrastructure.

**Goal 5:** To develop methodologies for capturing the fair market value for ginseng (*Panax quinquefolius* L.) and other commercially valuable products gathered from state forest land while maintaining fair and equitable access.

**Objectives:**

- Utilize EMAC NTFP subcommittee to explore and analyze available methods and models for NTFP permitting, leasing, or sale procedures.
- Develop greater linkages with dealers and collectors by leveraging available legal and regulatory authority for the collection of names and addresses of collectors.
- Support research and monitoring activities within academic and other organizations that provide market monitoring and infrastructure development within the commercial NTFP communities.

**Monitoring**

**Indicators:**

- Annual permitted removal of NTFP
- Tabulate harvest quantities and value of production of NTFP using FM-T-15 permits and reporting forms.
- Revisit sample of known harvest areas and NTFP populations to assess population health and harvest impacts.
- Monitor law enforcement/public contacts, citations issued, prosecutions and monetary amount recovered from illegal activities on state forest land.
Critical Research Needs

- Initiate research on NTFP to determine sustainable population harvest levels.
- Investigate market potential and production techniques for agriforestry of NTFP on private lands.
- Investigate the impact of NTFP harvesting on their associated eco-systems.
- Inventory species on key list to identify populations and evaluate harvest areas.
- Identify barriers to sustainable production of NTFP on state and private land.
- Monitor animal/pest/disease impacts on NTFP species (especially widely endemic impacts such as deer and acid deposition).

Investigate the relative impact of different harvesting techniques on NTFP.