

# Sustainable Use of Non-Traditional Forest Products: Alternative Forest-based Income Opportunities

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*Abstract:* For generations, residents of Central Appalachia have supplemented their income by processing and marketing non-traditional forest products (NTFPs) gathered from forest lands. The NTFP business is growing rapidly—perhaps faster than that of timber. Some estimate that NTFP markets had grown nearly 20 percent in the last few years. The size of Virginia’s NTFP industry has been estimated at \$35 million. In 1991, Virginia exported nearly 6.5 tons of ginseng collected from its forests, worth more than \$1.8 million.

However, little is known about the extent of harvesting or the long-term effects of extraction. Much less is known about the multitude of products found in our forests but not widely marketed. Information is needed that draws attention to critical issues related to non-traditional forest products. Recent increased demand for NTFPs may have serious long-term effects on the forest ecosystem and will slow efforts to ensure sustainable management of the region’s forests.

Virginia Tech has embarked on an effort to learn more about these products and how they would support increased incomes for landowners in the region. Through interviews with stakeholders, and structured and unstructured focus meetings with local communities, we have begun to gather the data needed to better understand this burgeoning forest use. Before developing policies to sustain forest resources, local management practices, the value and volume of products traded, and the scope of NTFP markets need to be documented. Those who gather, market, and manage NTFP resources are involved at all stages of the research. Early indications show that NTFPs offer good opportunities for increased income in rural areas, especially in those hard hit by recent declines of traditional timber industry and the region’s coal mining, and should lead to the sustainable management of forest resources.

*Keywords:* non-timber forest products, special forest products, forest-based economic development

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## INTRODUCTION

Several opportunities for improved rural development are linked to non-traditional forest products (NTFPs). In many areas, rural populations have traditionally depended on local forest resources to provide additional income through collection and marketing of NTFPs. Where employment opportunities from traditional industries are declining, workers looking for alternative income sources often turn to collection of these products from nearby forests. This is particularly noticeable in the Pacific Northwest where employment in the logging industry is declining rapidly. It is just as critical in

Southwestern Virginia where the declining coal industry has increased the average unemployment rate to 3-4 times higher than the state average.

Unemployment will continue to increase until sustainable alternative employment opportunities are developed. Local pressure on forest resources to provide NTFPs will increase without sustainable forest management programs.

Non-traditional forest products provide important employment and income opportunities in several regions. Throughout the United States, interest in collecting NTFPs is growing rapidly. The floral sector employs thousands in the Pacific Northwest

to collecting moss, ferns, and grasses. In southern Florida, hundreds of seasonally displaced agricultural workers collect Spanish moss for export to Europe. With little or no documentation of resources and products, the full impact on the environment and employment potential of these products has not been estimated. Less is known about managing forests for NTFPs than for traditional timber products, even though NTFPs contribute significantly to rural and regional economies. The following discusses, in more detail, these products and their importance and describes an effort at Virginia Tech to learn more about how these products can be useful as tools for economic development.

## **WHAT ARE NON-TRADITIONAL FOREST PRODUCTS?**

Non-traditional or non-timber forest products are biological and generally not cultivated. They are not timber; but can be made of wood. Collected in natural forests, these products are usually harvested and processed in small amounts. These products fall within four general categories: edibles such as mushrooms; medicinal and dietary supplements, including ginseng, floral products such as moss, grape vines, ferns, and other plant products used for decorations; and specialty wood products including hand crafted products such as carvings, utensils, and containers.

Mushrooms, are perhaps the most well-known edible NTFP - but we also include in this general category many other food products gathered from the forest. Since most of these products are not traded widely and are usually collected and consumed by the harvesters "themselves, it is difficult to assess their economic magnitude or potential for increased returns to landowners. These products include ferns, berries or other fruits, nuts, ramps (wild onions), herbs, and spices.

The second major category of NTFPs, medicinal and dietary supplements, includes plant-based products that are processed into medicines outside the region for the U.S. and international markets. Beginning in the late-eighteenth century, over 100 plant species indigenous to the U.S. were commonly accepted for their medicinal properties. The majority are wild-harvested from the

Southern Appalachian mountains and are widely traded as botanical products—many to overseas markets (Foster 1995). Examples of these include products manufactured from sassafras, goldenseal, mayapple, slippery elm, black cohosh, white oak bark, and scores of other species.

Floral products include pine boughs, grape vines, ferns, and other plant products used for decorative applications. These unique forest products may appear in floral arrangements, dried flower decorations, and ornaments or packaging. Common examples include products made from pine boughs, grape vines, moss, ferns, flowers, cones, mistletoe, and holly. Several widely marketed products are made from pine boughs collected in the forest or from trimmings of commercial Christmas tree plantations.

Specialty wood products include handicrafts, carvings and turnings, musical instruments, as well as utensils and containers. In general, specialty wood products are considered non-traditional if they are produced directly from trees, and not from lumber or timber purchased from mills or retail establishments. Because wood crafters may purchase logs or collect trees directly from the forest, often little is known about the impact they have on forest resources. Often produced from trees or logs collected from the forest and processed by the crafter, but products common in the Appalachian region include handicrafts, carvings, turnings, utensils, and containers (baskets), and special furniture pieces. Raw materials may include cypress knees, willow branches (for weaving), yellow poplar bark, or forked dogwood pieces.

## **WHY THIS INTEREST IN NTFPS?**

Sustainable environment and economic development depend directly on the diversity of investments and diversity of the ecosystem. The Appalachian region has some of the most biodiverse ecosystems in the world.

"The most ecologically diverse region in Virginia is home to more than 400 rare plants and animals" (The Nature Conservancy 1996). In the Eastern United States, The Nature Conservancy is supporting "ecologically compatible development" through the formation of the Center

for Compatible Economic Development (CCED). One of three pilot programs is focused on Virginia's Clinch River valley and creating jobs in environmentally friendly small businesses, including wood products, but not NTFPs. In the Pacific Northwest, non-traditional forest products are considered to be the most viable option for strengthening those rural communities suffering from the decline in timber harvests from government lands. There is an urgent need to examine the markets for these products and to integrate these findings into land-use planning and Extension programs.

## **HISTORICAL PERSPECTIVE**

Native Americans traditionally used plants and plant products for food and medicine, and shared this knowledge with early settlers. They used the bark of trees for housing, branches and stems for utensils and other household products, and the wood for containers and other useful items. These traditional forest products became an integral part of rural economies and many techniques are still in use today.

In the 1990's, there has been a dramatic increase in demand for natural products, including those made from non-traditional forest products. This can be traced to a number of factors, including a growing interest in alternative medicines and homeopathy. Environmentally conscious and responsible consumers actively seek ecologically friendly and socially correct products. The potential for non-traditional forest products as alternative income sources to a timber-based economy is expanding tremendously. These products will continue to play an important role in economic development of communities-especially those depressed by the decline of traditional industries such as timber in the Pacific Northwest and coal in Central Appalachia.

The collection and processing of these products at the local level can help under-employed and displaced workers. Processing and marketing often requires low capital investment, but can employ or give partial support to thousands.

## **RESOURCE BASE**

Non-traditional forest products are found on all timberlands. The increasing market demands for these products often exceed the capabilities of many public and private agencies to provide sustainable supplies of these products. As more than 75 percent of the land in Virginia is held by non-industrial private landowners, it is easy to postulate that much of the NTFP resources are found on private lands.

The eastern deciduous forest, much of which is located in the Central Appalachian region, provides the habitat for most of the American medicinal plants used in commerce today. One of the more popular eastern species, *Podophyllum peltatum* (mayapple), is found in forests from southern Quebec, south through the Appalachian region to Florida. "No other region in North America hosts so much living diversity, than Appalachia," notes Constantz (1994). Some estimate that the temperate hardwood forests of Southern Appalachia may be one of the most diverse forest ecosystems in the world (Johnson 1996). More information is needed on this great diversity and its potential to produce NTFPs on a sustainable basis.

## **VALUE AND GROWTH OF THE NTFP SECTOR**

Markets for non-traditional forest products and the capacity for NTFP enterprises to add value at the local level are not well known, but are thought to have significant impact on rural economies. A few of the edible forest products are prominent enough to generate national economic data. In 1993, the United States exported about 77 tons of wild harvested American ginseng, worth more than \$21 million (Foster 1995). Two years earlier, Virginia exported about 6.5 tons of ginseng collected from its forests, worth more than \$1.8 million (O'Rourke 1993).

The commercial U.S. herbal medicine market has been estimated to account for \$970 million of the global market, which is worth more than \$60 billion. In the Pacific Northwest, mosses, ferns, grasses and other plants have sustained the commercial floral products industry and contributed more than \$125 million to the region's

economy. According to Nan Vance, a U.S. Forest Service research scientist who studies non-traditional forest products in the Pacific Northwest, "American exports of commercial moss and lichen amounted to \$14 million" in 1995 (New York Times 1996). Most of the sheet moss used by the floral industry comes out of Tennessee and West Virginia (Thomas and Schumann 1993). Apparently, the Netherlands alone imported moss valued at \$8 million in 1995, to use for natural packing floral products—many of whom are exported to North America. Many new opportunities for value addition exist.

Specialty wood product markets are not well-defined. The size of the retail handicraft market is projected to reach \$600 million in 1996 (Bureau of Census 1993). However, in support of this sector, woodworkers spend heavily each year for the purchase of equipment, raw materials, and supplies.

The NTFP sector is growing rapidly, perhaps faster than the timber industry, and is expected to grow more in the future. According to Catherine Mater (New York Times 1996), "the market for forest products other than trees has mushroomed by nearly 20 percent annually over the last several years." The U.S. herbal medicine market is growing at an estimated annual rate of 13-15 percent with sales of medicinal herbs forecast to reach \$5 billion in the year 2000 (New York Times 1996).

### **FOCUS ON ALTERNATIVE FOREST-BASED INCOME OPPORTUNITIES**

A study based at Virginia Tech is exploring opportunities for NTFPs in Central Appalachia. After completion of our modest case study in Southwestern Virginia, we expect to apply lessons learned in a statewide study for Virginia. Next, we will expand throughout the Central Appalachian states of West Virginia, Kentucky, Ohio, and Tennessee. This study is very timely. There are many organizations in the region seeking to learn more about these products and their role in economic development and sustainable forest management. The region shares a common forest-based culture and forest vegetation. In addition, economic conditions are common with

income levels below national average, subsistence-based economies, and lower local employment opportunities with the decline of traditionally dominant industries,

The work in Southwestern Virginia seeks to identify market opportunities for development of non-traditional forest products. We also wish to increase awareness of NTFPs on the part of the users and those who manage timberlands. This should demonstrate the significance of NTFPs in sustainable forest management.

Lastly, we hope to involve communities in the planning for and implementation of local forest resource utilization and management programs.

### **Project Approach**

We have built on international experience of developing plans for sustainable marketing of NTFPs for areas dependent on forest resources. This experience has helped us handle the often sensitive issues surrounding NTFPs. Collectors are reluctant to share information about their harvest sites and income gained from NTFP collection. In addition, use of participatory rural appraisal methods increases the likelihood that solutions found will be accepted and sustainable. The work includes the use of focus groups and other community-based activities that solicit the help and input of those living in or near the forest. We have partnered with several organizations based within the study area to build our credibility with local communities. This avoids the "outsider syndrome" that sometimes occurs when larger organizations attempt to conduct programs in small, rural localities.

Less is known about how to manage forests for non-traditional forest products than for more common timber products. Overall, management and marketing NTFPs remain an enigma; very little information exists on the management systems or market channels for these products. But, the collection and processing of NTFPs may provide valuable employment opportunities. To learn more about these opportunities, extensive field visits to meet stakeholders in the study area are necessary.

The project embraces the notion that economic development is critical to the sustained environmental management of Southwestern Virginia, and throughout Central Appalachia. This area was selected due to its high level of unemployment, strong dependence on a single industry (coal) and the extreme pressures on the forest resources. The area is very similar to other areas in the region in terrain and level of isolation. It has some of the most species diverse forests in the Eastern United States and is representative of the forests that cover the entire Appalachian region.

### **Project Activities**

The study is based on the fundamental assumption that market opportunities exist for non-traditional forest products that can sustain economic development of the region and still conserve valuable forest resources.

However, before this can occur, much more knowledge is needed on all factors that influence NTFP resources. To date, information has not been collected on the distribution and management of the region's NTFP resources, and the nature of and extent to which these products are harvested, processed, and used. The conspicuous lack of information on the scope and value of these markets is a major obstacle to the sustainable development of NTFP resources.

Understanding the needs of the stakeholders, those involved in managing and marketing these products, is most critical. Forest landowners, NTFP harvesters and processors, and policy makers all greatly influence how the NTFP resources are used and whether suggested policies will be successful. Their collaboration is essential to improve our understanding on how the NTFP resources are managed, and hold the key to successful implementation of any suggested changes. We seek to document local knowledge on all aspects of these products, to identify local needs for policy changes, and to collect suggestions of inputs required for improved management and marketing.

Several steps are needed to determine the scope of NTFP resources, products, and markets. The goal is to recommend strategies for the sustained

management of these resources. As critical forest resources are identified, management schemes for sustainable management are being suggested in consultation with forest biologists and ecologists, and collaborating agencies including the U.S. Forest Service, the Virginia Forestry Department, and The Nature Conservancy.

Concurrently, the project strives to identify and document non-traditional products generated from the forests of Southwestern Virginia. During this stage, we hope to identify which plants or plant products are collected, how these products are used, the volumes collected, and the season(s) in which they are harvested. The products' value and prices at each stage of the marketing chain need to be documented. Local methods for processing and other pertinent information associated with the products also will be gathered.

We are also documenting the distribution networks for non-traditional forest products. Representative products from each of the four general product groups will be selected and traced through the market. These examples will illustrate the breadth and depth of the markets for NTFPs. We are illustrating the extent to which these products are marketed, showing that the markets are significant at local, regional, national, and international levels. This will verify the tremendous market potential for many of these products.

Once the body of knowledge on the resources, products, and markets has been analyzed and documented, recommendations for sustainable management and development of NTFP resources will be drafted. These recommendations will be presented to local focus groups for comment and suggestions. The draft recommendations will be modified to reflect the input received from collaborators and other stakeholders.

Finally, we expect to present our findings to local, regional, and state agencies concerned with the management and marketing of NTFPs.

### **Anticipated Results and Applications**

The project is beginning to examine, define, and develop information on the NTFP resources, products, and markets. This information had not

been documented or organized. It is crucial to establishing guidelines for the sustainable management of forests for non-traditional forest products. The results will have applications far beyond the geographic scope of the project.

We are producing a market profile for each of several example NTFPs to illustrate how widely these products are distributed. From these opportunities for improved management, potential new markets, and technologies appropriate for the sustained economic development of Southwestern Virginia will be identified. All recommendations should be ecologically sound and based on criteria that conserves the ecological integrity of the region. We seek a balance for management of these resources that provides the maximum benefits to the local people while conserving the forest ecology.

There is significant potential to improve the economic conditions of the people involved in the non-traditional forest products. The value of these products to Virginia's economy was estimated to be about \$35 million, in 1995, and growing at an annual rate of 25-30 percent. By the year 2000, with growth continuing at this rate, the value of the NTFPs to the state of Virginia, would be in excess of \$1.05 billion. Certainly, it is unrealistic to think that this tremendous growth will continue, but if the markets for these products grow at 50 percent of this projection, the potential benefits to the people Virginia are still significant. If a small section of the state, such as in Southwestern Virginia, could realize 5 percent of this value, the additional benefits to the region's economy would be about \$5 million annually, by the turn of the century.

Perhaps the most fundamental benefit to NTFP stakeholders will be a better understanding of the importance of non-traditional forest products to the local and regional economy. Stakeholders throughout the region will benefit from improvements in the management and marketing of NTFPs. Local communities will further benefit from the increased involvement in determining how to best manage their forest resources.

The knowledge gained from this project will support economic development policies that reflect community needs and are based on ecological principles. It will help promote sound

ecological development in many depressed areas of Virginia. This information will enable policy makers and program managers to make better decisions on the use of these important resources.

## DISCUSSION

For generations, many families of Central Appalachia have supplemented their income by gathering and marketing non-traditional forest products. Increased demand for NTFPs may have serious long-term effects on the forest ecosystem. The integrity of the environment and economic development in many rural areas depends on the sustained management of the forests.

Less is known about managing forests for NTFPs than for timber products, even though NTFPs contribute significantly to rural and regional economies. Clearly, these resources are valuable and their sustainable use must be maintained. Yet, little is known about the extent of or the long-term effects that extraction of these products has on our forests. There is a severe lack of information on all aspects of non-traditional forest products, particularly on their markets.

We have begun gathering the requisite data needed to understand this burgeoning forest use (Hammett and Chamberlain 1997). This knowledge is essential for developing policies to sustain the forest resource. Little is still known about markets and marketing of NTFPs in Appalachia. But, perhaps more importantly, little is known about the environmental impact of gathering NTFPs. For instance, uninformed collectors may over-harvest or kill the plants. Already, ginseng and goldenseal have been over-harvested and are now listed as endangered. To assess the local processing and markets for NTFPs, one must canvas local collectors and buyers. These and others involved in NTFP trade are often reluctant to give information vital to formulating plans for sustainable marketing of these products and management of forest resources.

To achieve sustainable use of non-traditional forest products, there are still many questions left to answer. What is the value added chain for NTFPs? Are we managing these resources so they will be available for future generations? How do

local crofters get and process enterprise management and marketing information? Or even more important to local economic developers, what market information is needed and how can it be best provided to local producers? What new value added and product market opportunities exist? When provided increased markets and processing, what issues arise from increased use? It is obvious that these products have been overlooked for decades by Extension and economic development programs.

Focus on these products will bring numerous opportunities for landowners to gain income. Clearly, their time has come!

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