
Potential for Expansion of the Special Forest Products Industry in the Northern Rockies

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ABSTRACT. *The special forest products industry has the potential of making substantial contributions to the troubled forest-based economies of the Northern Rockies. Comprised of floral greens, Christmas ornamentals, wild edible mushrooms, other edibles and medicinals, and Pacific yew segments, the industry has the potential to provide both full-time and part-time employment on a nearly year-round basis. The region's natural resource base and available labor supply seem well-suited to developing special forest products firms. The existing transportation system and business environment is also well suited to expansion of this industry. West. J. Appl. For. 10(4): 138-143.*

In recent years, economic and political changes have created acute economic and social difficulties related to job losses in many forest-based communities throughout the West (Blatner et al. in press). In response, many communities have attempted to attract companies to locate manufacturing facilities in their areas to compensate for job losses in traditional forest-based and other industries. Unfortunately, the ability of these communities to attract new businesses is limited by their low population, the distance to metropolitan areas, and inadequate infrastructure links.

The Special Forest Products (SFP) industry has been heralded as a partial solution to the unemployment problems resulting from the spotted owl/ancient forest controversy confronting forest-based communities of western Washington and western Oregon (Thomas 1993). However, the industry's potential for rural communities in the Northern Rockies¹ has received little attention, although most of the forces affecting areas west of the Cascades also affect the Northern Rockies. The following paper provides an assessment of the SFP industry potential to assist in the Northern

Rockies rural economic development. It is not our intent to provide an encyclopedic treatment of all potential special forest products common to the Northern Rockies. This article highlights products and business strategies with the potential for contributing to the establishment of an expanded SFP industry. It also provides an *initial* estimate of potential gains to regional economy from an expanded SFP industry.

Special Forest Products (SFP)

SFP include a variety of plants and plant parts that require distinct growing conditions needed to develop the characteristics desired by the SFP industry. Plant materials utilized by the SFP industry are obtained from both public and private forest and rangelands throughout the Pacific Northwest (Schlosser et al. 1992). The industry is divided into five major segments: (1) floral greens, (2) Christmas ornamentals, (3) wild edible mushrooms, (4) other edibles and medicinals and (5) Pacific yew (Schlosser and Blatner 1993). Each segment is characterized by small- to medium-sized businesses located primarily in rural communities. These businesses provide both seasonal and year-round employment and have become important contributors to local economies located

¹ The term *Northern Rockies* as used in this article refers to northeastern Washington, northern Idaho and northwestern Montana.

west of the Cascade Mountains (Schlosser et al. 1991, Schlosser and Blatner 1995).

Floral Greens

Floral greens are used by the floral industry to accent and compliment flowers in floral arrangements marketed worldwide. Schlosser et al. (1991, 1992) identified the most important floral greens species, the desirable characteristics of each species, markets, and potential availability by forest zone and habitat type.

Floral greens species with the greatest immediate potential for development in the Northern Rockies are those species common to both the Northern Rockies and the Western Cascades, or products growing east of the Cascade Mountains with established markets. These products include: beargrass (*Xerophyllum tenax*), Pachistima (*Pachistima myrsinites*), western sword fern (*Polystichum munitum*), baby's breath (*Gypsophila paniculata*), and various Oregon-grape species (*Berberis spp.*) (Schlosser and Blatner 1994).

Beargrass.—Beargrass is probably the best-known special forest product harvested in the Northern Rockies. Beargrass is harvested from temperate forests at higher elevations throughout the Pacific Northwest, commonly preserved and sold "naturally" or in dyed forms (Schlosser et al. 1993). Although beargrass is harvested throughout the Pacific Northwest, most beargrass is currently processed for final sale west of the Cascade Mountains (Schlosser et al. 1991). Only a small number of firms located in the Northern Rockies now process this product.

Pachistima.—Sometimes known as Oregon-boxwood, Pachistima is a floral greens species found throughout the Northern Rockies (Hitchcock and Cronquist 1981). It is marketed in various forms including: fresh product, dyed, or preserved and dyed (Schlosser et al. 1991). Although it has a noticeable likeness to evergreen huckleberry (*Vaccinium ovatum*) sprays, Pachistima has been used only minimally as a substitute for this species in its nondyed form (Schlosser et al. 1993). The limited amount of substitution probably stems from two factors: (1) buyers and retailers are familiar with handling evergreen huckleberry, but have less experience with Pachistima and/or (2) evergreen huckleberry supplies are sufficient to meet current demand.

Western Sword Fern.—Although not harvested on a large scale in the Northern Rockies, western sword fern has the potential to be harvested to a higher degree (Schlosser and Blatner 1994). Harvest of this species from forests in western Oregon and western Washington is significant (Schlosser et al. 1991), but as demand increases or if the harvest is restricted on westside lands, the pressure to harvest western sword fern in the Northern Rockies will probably increase.

Oregon-Grape Species.—Dwarf Oregon-grape (*Berberis nervosa*) accounts for a small, but significant annual harvest in the floral greens industry (Schlosser et al. 1991). Although dwarf Oregon-grape does not grow in the Northern Rockies,

two related species do grow in the region: tall Oregon-grape (*Berberis repens*) and creeping Oregon-grape (*Berberis aquifolium*) (Hitchcock and Cronquist 1981). Neither species is currently harvested on a commercial level; however, both sport the holly-like leaflets of their dwarf Oregon-grape cousin and are logical substitutes. There are morphological differences in the species, such as color, length, and rigidity; but these characteristics may provide unique marketing traits as opposed to product deficiencies (Schlosser and Blatner 1994).

Baby's Breath.—Although baby's breath would more appropriately be called a "special range product," it is generally included in discussions of SFPs because it is marketed through the same distribution channels as other floral greens (Schlosser et al. 1991). Baby's breath is a herbaceous perennial, of Eurasian origin, that was introduced around 1888. It has naturalized as a noxious weed across much of the Inland Northwest where soils and climate have been conducive to the plant's growth (Darwent and Coupland 1966). A well-established market for baby's breath already exists with processors located west of the Cascades purchasing over \$5 million worth of this product in 1989 alone (Schlosser et al. 1991). Purchases of baby's breath by processors located east of the Cascade Mountains have not been surveyed to date.

Christmas Ornamentals

Evergreen boughs are utilized during the Christmas season for manufacturing wreaths, door charms, and swags. Common Northwest species used in the production of Christmas ornaments include: Noble fir (*Abies procera*), subalpine fir (*Abies lasiocarpa*), Douglas-fir (*Pseudotsuga menziesii*), western red cedar (*Thuja plicata*), western white pine (*Pinus monticola*), lodgepole pine (*Pinus contorta*), western juniper (*Juniperus scopulorum*), and incense cedar (*Libocedrus decurrens*) (Schlosser et al. 1991). Except for noble fir, western juniper, and incense cedar, every species of tree utilized as Christmas ornaments is found in the Northern Rockies (Harlow et al. 1979).

Evergreen boughs are harvested almost exclusively during fall and winter for use in Christmas decorations. Although noble fir is the preferred product for evergreen wreaths, swags, and charms west of the Cascades, subalpine fir is also commonly used. Western red cedar is used in the manufacture of garland chains and as additions to wreaths and charms. Douglas-fir provides inexpensive material for lower valued wreaths, charms, and swags. Western white pine is a highly valued bough product used to accentuate the other bough products. Other products commonly harvested for use in the production of ornaments include holly and cones of various species (Schlosser et al. 1991).

Based on informal conversations with many of the processors located in the Northern Rockies, it is evident that the amount of evergreen boughs harvested in the Northern Rockies is minimal compared to the areas of western Oregon and western Washington. There are a limited number of businesses in the Northern Rockies that employ one or two individuals for the manufacture of wreaths, swags, and charms. Very few processors in the region employ as many as a dozen individuals.

² Products that have their stem bases placed in preservative chemicals, such as glycerin, that slows the deterioration process and increases leaf retention to branches. Sometimes dyes are placed into the preserve chemical to color the plant material.

Wild Edible Mushrooms

Wild edible mushrooms are edible fungal species native to forested areas and harvested for commercial or personal consumption. Although over 25 species of wild edible mushrooms are harvested in the Pacific Northwest for resale, only a few species are harvested on a large scale. Those species include morels (*Morchella* spp.), chanterelles (*Cantharellus cibarius*), matsutake (*Armillaria ponderosa*), spreading hedgehog (*Hydnum repandum*), cauliflower mushroom (*Sparassis crispa*), and boletes (*Boletus* spp.) (Schlosser and Blatner 1995).

Wild edible mushrooms are currently harvested throughout the Northern Rockies. The most widely harvested and marketed species in this region is the morel. Also harvested from this region are matsutake, boletus, cauliflower mushroom, black picoa (*Picoa carthusiana*), and spreading hedgehog. Unknown quantities of these and other mushrooms are also harvested for personal consumption by recreational harvesters throughout the region (Schlosser and Blatner 1995).

Because wild edible mushrooms fruit at different times of the year, buyers often travel hundreds of miles to acquire needed supplies of specific species. Harvest normally begins in the late spring and early summer in the Northern Rockies (Schlosser and Blatner 1995). The most important commercial species harvested during this period are morels. The mushroom harvest is usually suspended during the hot summer months, since few species fruit during this period. Harvest resumes in the fall with a variety of species being harvested (Table 1) (Arora 1986).

Other Edibles and Medicinals

Other edibles and medicinals include various species of edible huckleberries: dwarf huckleberry (*Vaccinium caespitosum*), blue huckleberry (*Vaccinium globulare*), big huckleberry (*Vaccinium membranaceum*), dwarf bilberry (*Vaccinium myrtillus*), and western huckleberry (*Vaccinium occidentale*). Other edible berries include: black berries (*Rubus* spp.), and elderberries (*Sambucus* spp.) (Patterson et al. 1985).

The harvest and processing of wild berries, particularly edible huckleberries, has received increased attention in recent years, because of various cottage industries focusing on production of specialty jams and jellies. In addition, late summer drives through the Northern Rockies are often highlighted by signs advertising huckleberries and huckleberry based products for sale. The edible huckleberry harvest

season is highly variable beginning in midsummer and dwindling down by late fall.

Medicinals include: quinine conk (*Fomitopsis officinalis* [Vill.: Fr.] Bond et. Sing [*Fomes officinalis* (Vill.: Fr.) Faul]), cascara bark (*Rhamnus purshiana*), roots, herbs, and other similar products (Miller 1988). However, the total scope of this segment of the industry has never been adequately documented. Recently, a preliminary list of nearly 200 medicinal plants and their uses, harvested throughout the Pacific Northwest for sale in health food and natural medicine stores, was compiled as a part of an ongoing research effort (J.R. Freed, Special Forest Products Advisor, USDA Forest Service, Olympic National Forest, Pers. Comm., February 15, 1995 with Keith A. Blatner).

Pacific Yew—Taxol

Bark harvested from Pacific yew (*Taxus brevifolia*) is a unique special forest product. The bark of Pacific yew is used in the development of taxol, a cancer treatment. Pacific yew bark is harvested on public and private forestlands throughout the Northwest. The acquisition phase of the production process is very labor intensive. Pacific yew trees are felled, the bark is stripped, chipped, dried, and delivered to the processor (Anonymous 1993).

Potential for Industry Expansion

We believe the SFP industry has the potential for expansion in the Northern Rockies. The region boasts an abundant supply of floral greens species, Christmas ornamentals, and wild edible mushrooms, as well as other edibles and medicinals.

A major factor limiting the growth of the SFP industry in the Northern Rockies is the lack of processing facilities. It is unlikely that the industry will become well established if products continue to be shipped out of the region for primary processing. In addition, the region's labor supply is not specifically trained in product harvest. However, this limitation should cause only minor delays as individuals become more interested in employment in this industry.

Businesses interested in SFP harvest and primary processing in the Northern Rockies are unlikely to encounter as many regulations as those located west of the Cascades (e.g., a SFP harvest permit is required in Washington and Oregon but not in Idaho or Montana). However, businesses should recognize that if the harvest of these products increases in the future, increased regulation will probably be required to avoid po-

Table 1. Harvested volumes, processed volumes and values of wild edible mushrooms in Idaho during 1992.

Species	Scientific name	Volume harvested in Idaho	Volume processed from Idaho	Value processed in Idaho
		(lb)		
Black Picoa	<i>Picoa carthusiana</i>	1,150	1,000	\$ 73,000
Cauliflower	<i>Sparassis crispa</i>	1,150	500	3,500
Boletus species	<i>Boletus</i> spp.	47,700	8,050	54,900
Matsutake	<i>Armillaria ponderosa</i>	99,100	16,000	300,000
Morels	<i>Morchella</i> spp.	344,550	143,500	951,125
Truffle species	<i>Tuber</i> spp.	1,000	575	17,250
Spreading hedgehog	<i>Hydnum repandum</i>	1,000	500	2,000
Total		495,650	170,125	\$1,401,775

tential over harvesting and negative interactions between humans and wildlife (e.g., human-grizzly bear interactions during the harvest of huckleberries).

Although business expenses may be slightly lower due to lower costs of employment, higher transportation costs can be expected to move products to market. A likely method for industry expansion into this region will be through franchises or other marketing agreements with established businesses from western Washington and western Oregon; these firms have established markets, contracts, and access to needed capital.

Combinations for New Businesses

The new business locating a SFP processing facility in the Northern Rockies region will face a complex set of opportunities and decisions. For example, any new business will have to decide on which segment(s) of the SFP industry it should concentrate.

The floral greens segment of the SFP industry has one of the longest harvest seasons in the industry. Although plants used as floral greens can be harvested throughout the year, winter and spring pose problems. Many products are not harvestable during the winter months when snow covers the plants or makes roads impassable; this may preclude harvest for three or more months each year. During the spring growing season, plant tips are very fragile and do not react well to harvest, transportation, or storage (Schlosser et al. 1992).

The harvest of evergreen boughs and manufacture of wreaths and similar products begins after the first sustained fall frost and ends in December, depending on product orders. Harvest typically begins in late October to early November west of the Cascades. Along the Cascades it may begin in mid- to late October. However, in the Northern Rockies, the harvest could begin in early October and continue throughout most of the season. The earlier starting time could be an important competitive edge to companies locating in the Northern Rockies.

The mushroom segment of the industry is dependent on a highly variable growing season. Some years support a large mushroom harvest while others offer only a minimal harvest. Any wild edible mushroom business locating in the Northern Rockies will likely process morels given the large volume of morels harvested in the region. Boletes could also be an important product in many areas. Given sufficient capital, companies could extend their procurement efforts outside the Northern Rockies (Schlosser and Blatner 1995).

Harvest seasons for other edibles and medicinals vary greatly, depending on the specific products harvested. The timing of the edible huckleberry harvest (midsummer tapering off by late fall) could help companies bridge the summer gap in the mushroom harvest. Conversely, mushrooms and edible berry products are marketed through different distribution channels, and marketing both products could increase overhead costs. Also, if berries are processed into specialty jams and jellies, the company would incur additional costs for processing equipment, licenses, and the need for specialized knowledge concerning the production of jams and jellies.

One labor force could harvest and process both mushrooms and Christmas ornamentals, because their harvest seasons would not greatly overlap in the Northern Rockies. Similarly, a business might specialize in floral greens, Christmas ornamentals, and locally available mushrooms. While a floral greens business could take the full efforts of an entrepreneur, the addition of the Christmas ornamentals and mushrooms would provide the diversification needed to overcome poor product/market years in any one segment.

Horizontal integration is very common in the SFP industry (Schlosser et al. 1991). However, it is unlikely that a new business locating in the Northern Rockies would open a fully integrated operation initially because of specific needs: capital, developing a trained work force, establishing needed market linkages, and other factors. A business would most likely open as a floral greens processor, then incorporate additional segments as harvesters and employees become familiar with the industry and as other business obstacles are overcome. Conversely, a business owner might choose to open as a mushroom business, then add Christmas ornamentals and still later add floral greens.

Labor and Employment Results

Assuming the SFP industry expands in the Northern Rockies, there will be a demand for more harvesters, facility employees, and infrastructure support businesses or contractors. Harvesters are primarily self-employed and are not obligated to sell their product to a specific processor; although many choose to develop informal business ties with a few processors. Facility employees are individuals hired by the processing facility to handle the raw materials, process them for specific orders, and prepare the shipments for delivery. These individuals are generally employed by the processor and are under the direct supervision of the management of the facility. Infrastructure support businesses include individuals that transport the final product from the processing facility to the retail outlet or to a transfer point, such as an airport, seaport, railhead, or truck transfer station. These individuals may also be employees of the processing facility, although only the bigger businesses tend to have their own transportation support system. More often, these individuals are contractors that periodically pick up and deliver products as specified by the management of the facility (Schlosser et al. 1991, Schlosser and Blatner 1995).

Potential Contributions to Regional Economy

Floral Greens and Christmas Ornamentals

There is currently no published information on the size of the floral greens and Christmas ornamentals industry in the Northern Rockies. However, extrapolation from the 1989 survey of the floral greens and Christmas ornamental segments of the industry in western Washington, western Oregon, and British Columbia (Schlosser et al. 1991) provides a preliminary estimate of the potential contribution to the Northern Rockies economy of expanded SFP industry.

The average floral greens and Christmas ornamentals processor in western Oregon, western Washington, and western British Columbia, employed 12 full-time, year-round

employees with an additional 71 part-time, seasonal employees, on average. Businesses purchased materials from an average of approximately 50 full-time, year-round harvesters, and 50 part-time, seasonal harvesters during 1989. An average of \$397,000 in wages and benefits were paid to these individuals during the same year. The cost of purchasing materials during 1989 averaged approximately \$795,000 per business. Hence, the contribution to the regional economy by the average floral greens and Christmas ornamentals business in western Oregon, western Washington and western British Columbia during 1989, was approximately \$1.53 million (Schlosser et al. 1991). While it is impossible to predict if, and how long it would take for new companies locating in the Northern Rockies to reach this size, the highly competitive nature of the industry suggests that contributions of this magnitude to the regional economy are possible within 20 years of operation, if not sooner.

Wild Edible Mushrooms

In contrast to the floral greens and Christmas ornamentals segments of the industry, a 1992 study of the mushroom industry in Idaho, Oregon, and Washington included much of the Northern Rockies region within its study area (Schlosser and Blatner 1995).

Mushroom processors in Idaho, Oregon, and Washington processed an average of 45,000 lb of mushrooms per business during 1992. Idaho processors processed slightly fewer pounds, averaging approximately 34,000 lb per business. The average business in the three state region employed approximately 5.6 individuals to process mushrooms, with an average of 112.2 harvesters per business supplying the raw materials to these facilities. The Idaho processors employed approximately 1.5 individuals per business with an average of 47.5 harvesters completing the mushroom harvest during 1992.

The typical business in Idaho was open 100 days during 1992 and purchased \$279,400 (34,000 lb) of mushrooms (Table 1). The average facility spent about \$8,550 to employ facility personnel during 1992. The combined payroll and product acquisition costs for 1992 totaled approximately \$288,000 per business. Adding the expenses of overhead, advertising, and profit, each mushroom processor in Idaho contributed approximately \$328,000 to the gross state product of Idaho for a total contribution of approximately \$1.6 million during 1992 (Schlosser and Blatner 1995).

The potential for increased employment from the processing of mushrooms and associated gains to the economy of the Northern Rockies is evidenced by the volume of mushrooms harvested in Idaho for resale as compared to those processed in Idaho. Of the nearly 500,000 lb of mushrooms harvested in Idaho in 1992, only 34% or approximately 170,000 lb, were purchased by processors located in the state. The out-of-state processing of mushrooms grown and harvested in Idaho represents a loss to Idaho's economy of \$ 3.1 million. Although no similar data exists for the rest of the Northern Rockies, the limited number of companies located in these areas suggests that the Northern Rockies are being used primarily as a source of supply for companies located outside the region (Schlosser and Blatner 1995).

While most wild edible mushroom processors buy mushrooms within the multistate area to extend their business season, a similar comparison of harvesting and processing in Washington and Oregon showed that Washington companies are roughly in balance and losses/gains to the respective state economies from out-of-state purchases are limited and variable. This is obviously not the case for Idaho and probably is not true for the Northern Rockies in general (Schlosser and Blatner 1995).

Employment Niches

Small businesses, such as those in the SFP industry, add relatively few jobs per company per community, and many of the jobs are likely to be lower paying and offer less benefits than traditional forest industries. Also, small businesses generally exhibit a high rate of failure. However, the overall size of the SFP industry suggests that some firms have been very successful (Schlosser et al. 1991, Schlosser and Blatner 1995).

In addition to jobs generated in the buying and processing of SFP, the industry provides a regular source of income to thousands of harvesters on either a part-time or a full-time basis. Many harvesters combine the harvest of floral greens, Christmas ornamentals, and mushrooms into a nearly year-round source of income. Others combine the harvest of SFP with other seasonal jobs in the area (Schlosser and Blatner 1995). While harvest of SFP is often tedious and difficult, it requires only minimal training, some form of transportation, and the ability and willingness to work outdoors in almost any type of weather.

Loggers and other on-the-ground forest workers throughout the West appear to be at risk of being "left behind," both by reduced employment opportunities and by economic development strategies that emphasize nonphysical skills. Unlike their counterparts in sawmills and log yards, these workers tend to place great value on being free from the indoor work settings and close supervision (Carroll and Lee 1990, Lee et al. 1991). Work in the SFP industry may provide an acceptable alternative or a partial alternative for some of these workers, as well as other unemployed workers in the region.

Implications

On balance, while the harvest and processing of SFP does not offer a panacea, the potential expansion of the SFP industry in the Northern Rockies could represent an important source of jobs in small rural communities which typically have a difficult time attracting new businesses. The jobs created appear well-suited to rural individuals who are highly motivated, independent workers, but whose skills are not otherwise in great demand in the information-age job market. Communities also benefit from the entrepreneurial efforts of individuals working in this industry through increased tax revenues and the reduced need for social services. The growth of small enterprises, such as those of the SFP industry, also serve to diversify the local economy.

Conversely, expansion of this sector of the economy will raise numerous social, economic, and biological is-

issues, which must be addressed if the industry is to reach its full potential while minimizing the risks of increased social conflict and the sustainability of the region's natural resources. While resource managers are often not directly involved in economic development efforts, it is important to recognize the potential for the expansion of the industry in the Northern Rockies and its potential impact on the resource management.

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