Huckleberry Market Analysis

A Business Planning Guide for Small Woodland Owners

Stephanie Vasquez
Lita Buttolph

Huckleberry Market Analysis

Edited by Eric T Jones, with copy editing by Lee Greer.

Many people generously contributed helpful information or reviewed this document including Rebecca McLain, Malcolm Dell, Danny L. Barney, Dennis Mitchell, Betty Shore-Foote, Tom Nygren, Justin Anderson, Amy Grotta, Ed Alverson, Pat Mooney, Ed Fletcher, David Wilsey, Robert Layton Beyfuss, Alan Pierce, Robin Suggs, Miles Merwin, John Zasada and Jerry Gardner.

A current version of this document and other nontimber forest product market analyses can be found on the Institute for Culture and Ecology website at www.ifcae.org/ntfp.

Funding for this project provided by:

United States Department of Agriculture
National Institute of Food and Agriculture

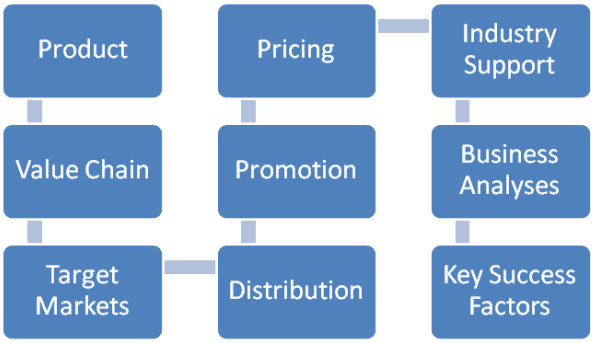
Cover Art: "*Cascades Bilberry*" by Adam Schneider. http://adamschneider.net/

Table of Contents

Huckleberry Market Analysis

Introduction

This analysis provides guidance in assessing the potential market value of various raw and value-added products derived from the production of huckleberry plants in a small, non-industrial forest setting. It has been structured to serve as an example for the small woodland owner entrepreneur seeking to develop a business plan that includes nontimber forest products in an integrated forest setting. This analysis does not address issues that would accompany commercial-scale production in an artificial or monoculture growing environment. Although this report focuses on one particular species of huckleberry, the information is generally applicable to many different huckleberry species and some other wild berries.



The fruit of a huckleberry plant can be harvested and sold in raw form fresh, frozen or dried, or canned. A multitude of value-added products are also available and the plant itself supplies the floral greens industry and propagators.

Product - Huckleberries

The product that is the focus of this analysis is the raw huckleberry. Raw Huckleberries can be sold fresh, frozen, dried, freeze dried or canned. In addition to this primary product, markets exist for various huckleberry-derived products, including:

Medicinal Products are products that the consumer believes will improve their physical or mental health, and so are subject to rules that other products are not, as detailed in Appendix A. Medicinal products made from huckleberry may include tinctures and teas made from the leaves or multivitamins made from the berries.

Consumer Products are products meant for everyday use. Consumer products made from huckleberries include jam, tea, wine, syrup, honey, candy, pies, muffins, pancakes, fruit filling, salad dressing, soaps, lotions, shampoos and candles.

Ecotourism is tourism driven by ecological attractions and activities. Because huckleberries grow naturally in forests, harvesting can be part of a vacation or day trip.


© Lindsey Koepke

Community Supported Forest Agriculture, a new term, is much like the popular Community Supported Agriculture. A community supported forest farm is supported by members who pay a fee to receive some tangible benefit. The small woodland owner uses the membership fees to offset forest management costs and produce a reliable revenue stream. See Appendix C.

A small forest-owner seeking to establish a profitable enterprise should consider whether and how the various secondary products can be leveraged to improve revenue.

Huckleberry Species

There are as many as twelve huckleberry species that grow in Oregon and Washington, though the work of Barney[1] and Vander Kloet (1998) indicates only nine are native to the Pacific Northwest. A few of these species are listed in Table 1, below. This document will speak to huckleberries generally where possible, citing examples specific to the various species where information is available and appropriate.

Table 1. Selected Pacific Northwest Huckleberry (*Vaccinium*) Species, with harvest season and elevation.

NPS via Far North Science
Alaskan blueberry (*V. alaskensis*). Harvest mid- to late-summer, when blue. Low to sub-alpine.

©Human Habitat Restoration
Red huckleberry (*V. parvifolium*). Harvest June, when red. Low to sub-alpine.

© AdamSchneider.net
Ovalleaf blueberry (*V. ovalifolium*). Harvest mid- to late-summer, when blue. Low to sub-alpine.

© Clay Antieau
Evergreen huckleberry (*V. ovatum*). Harvest fall (best after frost). Low, near oceans.

Multiple sources
Mountain huckleberry, big huckleberry (*V. membranaceum*). Harvest mid- to late-summer. Mid to high elevation (alpine).

© Lindsey Koepke
Cascade huckleberry, blue huckleberry, Cascade bilberry (*V. deliciosum* Piper). Harvest August through September, when blue. Sub-alpine to alpine.

Alaska blueberry (*Vaccinium alaskensis* Howell), Synonym *V. alaskaense* Howell
Alaska blueberry can be found in coniferous forests of Douglas fir, fir-spruce, and hemlock-sitka spruce. Its natural distribution ranges from the northern Oregon and Washington Cascades to Prince William Sound, Alaska. It is a spreading to erect deciduous shrub of up to 6 ft (2m) tall. Leaves are elliptic to oval, with thin twigs that are yellow-green in color and turning gray with age. Flowers are urn-shaped and bronzy-pink and occur singly in leaf axils on partially developed leaves. The fruit is a round, blue-black to purple berry that is edible and sweet. The berries are commonly used to make jellies and jams and, together with the ovalleaf blueberry, is the primary blueberry picked in coastal Alaska. (Matthews 1992).

[1] Barney, Danny L. E-mail to author Vasquez. March 18, 2010.

Red huckleberry (*Vaccinium parvifolium* Sm.)
Red huckleberry (also known as red whortleberry) can be found in mixed conifer forests in the coastal regions from southeast Alaska to central California. It is an upright to spreading deciduous shrub that ranges in height from 6 to 12 ft (1.8 to 3.6 m). It is the tallest of the Western huckleberries and can reach a height of 25 ft (7.6 m). Branches are thin and green, turning reddish with sunlight exposure and grayish-brown with age. Leaves are smooth, grayish to green, oval or elliptic and rounded at the tip and base. The young or juvenile leaves are evergreen and serrated, while mature leaves (which do not form until the plant is 3-4 years old) are deciduous and entire. The flowers are urn-shaped, waxy and yellowish-pink, whitish or greenish-yellow. Flowers are found at the leave axil. The fruit is a round translucent berry, red to pink in color. The berries are edible, but somewhat tart and sour, and commonly used to make pies, jellies, jams, and other preserves (Tirmenstein 1990c).

Ovalleaf huckleberry (*Vaccinium ovalifolium* Sm.)
Ovalleaf huckleberry (also known as ovalleaf blueberry) can be found in mixed coniferous forests from the Oregon and Washington Cascades to Alaska, as well as in Idaho and Montana. This species is also found is eastern Asia and northeastern North America. It is a deciduous shrub that can be bushy, tall, or spreading in form, and grows from 1.3 to 12 ft (0.4-4 m) in height. Twigs are smooth, thin and yellow-green, turning bright red when exposed to sunlight, and gray to grayish-brown with age. Leaves are oval to elliptical and rounded at the tip and base. Flowers are urn-shaped and pink and occur singly in leaf axils prior to leaf formation. The fruit is a round, blue-black to purple berry with a whitish bloom. The berries are edible and flavorful, but may be somewhat tart, and are commonly used to make jellies and wine (Tirmenstein 1990a).

Evergreen huckleberry (*Vaccinium ovatum* Pursh)
Evergreen huckleberry is found in coastal forests from British Columbia to central California. It is a multi-branched, bushy shrub that can range in height from 1.5 to 15 ft (0.5-4.6 m). Twigs are reddish-brown and hairy. Leaves are thick, oval to spear-shaped, glossy and dark-green with serrated edges. The underside of the leaves tend to be dull and lighter in color. Flowers are pink to white and are found at the leaf axils in clusters. Fruit is a small, round, shiny, purple to black berry. The fruit is edible and sweet, but can occasionally be "mealy" and musky in flavor, and is commonly used in pie fillings, wine, canned or cooked. The raw fruit is not as desirable as other species of huckleberry. (Tirmenstein 1990b).

Big huckleberry (*Vaccinium membranaceum* Douglas ex. Hooker)
Big huckleberry (sometimes referred to as mountain huckleberry, or mountain bilberry) is found in a variety of coniferous forests from Alaska to California, and eastward to the Rocky Mountains. Ranging in height from 1.5 to 3.5 ft (0.5-1 m), this shrub tends to form clumps. Current year twigs are yellow-green to reddish-green. The leaves are elliptical to oblong in shape, green, hairy on the underside, with serrated edges. Flowers are white to creamy or yellowish-pink. The fruit is a black to purple berry and can be eaten raw, dried, frozen, canned or made into jam. (Simonin 2000, Vander Kloet 1988).

Cascade huckleberry (*Vaccinium deliciosum* Piper)
Cascade huckleberry (also known as Cascade bilberry or blue huckleberry) occurs in the Pacific coastal mountain ranges from southern British Columbia to central Oregon. Cascade bilberry is a low, bushy shrub less that 1.5 ft (0.5m) tall. The branches are slightly angled; young branches are grayish and slightly hairy, turning purplish with age. The leaves are oval, 2-4 cm long, finely serrated, smooth, and rounded at the end. The flowers are solitary, pinkish, urn-

shaped blossoms in the axils of the leaves. The fruit is a blue to black berry that is edible and sweet. (Stephens and Darris 2000; Vander Kloet 1988).

Value Chain

Perhaps the most important activity any potential business owner can engage in is the planning of all activities and required investments. Understanding the value chain of a product is important to the business planning process because it helps to identify the costs, equipment, resources and staff that will be required. It walks the small woodland owner through all steps, from production to sales.

The value chain of a product, such as raw huckleberry, is the path that a product follows from collecting the things needed to make it (production) through delivery to the final customer. A sample value chain diagram is provided in Appendix E. The sample demonstrates the inputs for a wild grown operation, as that is the simplest of huckleberry operations having the fewest inputs. Businesses with more processes, such as jam-making, will have more steps in the value chain.

This analysis is intended to promote the planning of wild and semi-wild cultivation within integrated forest systems. There may be techniques available to improve huckleberry yields in the small forest setting, but artificial environments, such as monoculture systems, are not recommended. Artificial environments are more expensive to maintain and come with environmental impacts that may require mitigation. Diagram 1 demonstrates the wide range of activities that exist between wild and artificially cultivated huckleberries.

At the far right of the spectrum would be a domesticated huckleberry, entirely reliant on human activities to continue to exist and producing very uniform results, much like corn has become. There has been some success in producing huckleberry plants that grow well in a commercial setting, though few species have been widely available to date. This lack of the commercial-scale productivity and availability that has been achieved with the blueberry adds to the appeal of huckleberry for consumers. Staying to the left end of the spectrum, with small-scale production in a low-maintenance and low-cost natural environment, produces a less uniform harvest that is more authentically wild.

Diagram 1. Continuum of growing methods.

Wild	Collecting where found. Nothing is done to improve yields, flavors or other features.
Physical Alterations	Pruning of the plant to increase yields.
Environmental Fostering	Addition of beneficial species, removal of competing species and organic soil amendments. These are activities that modify the plant's environment, rather than the plant itself, and may negatively affect the ecosystem.
Simulated Natural	Introduction of seeds or plants propagated in controlled environment to be grown and harvested in an otherwise natural environment.
Chemical Applications	Use of pesticides, herbicides and other chemicals. These activities negatively affect the ecosystem and are likely to disqualify the product from organic certifications.
Artificial Environment	Plants grow in a monoculture environment or propagated, grown and harvested in a controlled environment.

Preparation

The species that will best thrive in a given small forest depends on a number of factors including property elevation and overstory density. A survey of the property should be conducted to assess what species and conditions are present and the extent of management that will be needed. A useful reference guide for identifying species present is Dr. Sam Vander Kloet's 1988 taxonomy "The Genus *Vaccinium*."

Properties with an established huckleberry field will be in the best position to generate revenue quickly, as new plants take at least three years to produce a harvest and up to 15 years to reach maximum productivity (Dell and Dell 2000).

Cascade bilberry grows best in moist and shady conditions, and a study in Lithuania found that berry production was highest in middle-aged to old forests (Budriuniene 1993). For some other species, overstory significantly reduces production so open fields, such as clear cut or slash-and burn areas, are prime for huckleberry growth. A study in Russia showed that species there benefit from strategic reductions in overgrowth (Belonogova 1993). Because plants do not grow back for a year after a fire, productivity will not return until three years after the plants have been damaged (Minore et al. 1979, 16). Multiple studies indicate that managing a forest for age class distribution in a way that increases sunlight to the understory is a sustainable method of production for both timber and berries (Burton 2000, Minore et al. 1979).

A property with no established huckleberry plants should also be assessed for its soil pH and other plant species. One study showed yields of an unspecified huckleberry species are highest in a soil pH of 5.5 and when seven associated plant species are present (Minore and Dubrasich 1978), though the conditions promoting huckleberry growth will vary by region and species of huckleberry. Danny L. Barney, professor and researcher at the University of Idaho, who has done substantial research and publication on huckleberries, stated that the seven species referenced in that study were *Pachystima myrsinites*, *Sorbus scopulina*, *Abies lasiocarpa*, *Aster* spp., *Penstemon* spp., *Epilobium angustifolium* and *Lupinus* spp. He cautions against perceiving those species as beneficial to huckleberry growth, as species present vary by region, and those found with productive huckleberry patches may simply be flourishing as result of the ideal conditions they are found in.[2]

> Soil texture and bulk density, soil pH, soil moisture, duff and litter layer compositions and depths, the presence and composition of ericoid mycorrhizal species and alternate host plants, air temperatures throughout the year, overstory shading, snowpack depth and duration, prevalence of spring frosts, and spring and early summer thunderstorms and hail are a few important considerations (Barney March 9, 2010 e-mail).

The small woodland owner will need to determine the optimum conditions for their selected species, some of which are pictured in Table 1 with one common name and the scientific name. Each species may have multiple common names, while the scientific name always refers to the same plant. A local nursery or extension agent may be able to provide assistance in selecting appropriate species for your property. The above listed conditions will affect each species differently, and so yields may vary from 5-15 pounds per plant to 77-100 gallons per acre (Minore et al. 1979).

[2] Barney, Danny L. E-mail to Author Vasquez. March 9, 2010

Based on huckleberry plant productivity of a specific property, the small woodland owner should determine how many plants are necessary to make a huckleberry venture financially sustainable. This can be done by documenting the average yield per plant in the planning year and multiplying by the number of plants on the property to achieve an estimated annual yield per forest. Part of this calculation should include flexibility in case of unexpectedly low productivity caused by environmental factors.

Historically, commercial scale production of huckleberry has been limited due to the difficulty in propagating this plant vegetatively (Barney March 9, 2010 e-mail). Studies and research are ongoing in a number of states and universities. The University of Idaho College of Agricultural and Life Sciences has an active cultivar development program that seeks to develop commercially viable species (Barney March 9, 2010 e-mail).

If more plants are needed, the small woodland owner can follow the instructions from the USDA Natural Resources Conservation Service (USDA NRCS 2010) for propagation or purchase seedlings from a nursery. New plants can also be started for free from cuttings or seeds collected from public lands. Check with your local land management agency's district office (e.g., USDA. Forest Service) to see if a permit is required to remove plants or plant parts. Permit prices will vary by agency and district. For a commercial-scale planting, this option requires more labor hours and a longer wait to harvest than purchasing older plants from a nursery.

Insurance

Because this is a food product, the small woodland owner is advised to secure business and liability insurance during the Preparation phase. The US Small Business Administration provides on its website[3], an excellent overview of the various insurance types available to a small woodland owner including general liability, product liability, home-based business, internet business and worker's compensation insurances.

Production and Management

Prior to planting, or after plants have been well established, prescribed burns have been used to improve productivity by removing competing plant species and enriching the soil. Care should be taken to prevent burning of the huckleberry plants as any damage to the plant will reduce yields until the plant recovers. If prescribed burns are permitted in your area and you are interested in this technique, seek assistance from an experienced professional before attempting to do a prescribed burn on your own. Also insure that the proper permits, local regulations, and weather conditions are met prior to attempting a prescribed burn.
Minore, Smart and Dubrasich (1979) conducted a study to determine optimum management techniques for berry production. They compared various methods such as pruning, slash and burn, overgrazing by sheep and doing nothing. Of all methods in this study, doing nothing was the most productive management method for improving yields. Anecdotal evidence suggests that pruning may be beneficial for species that only produce fruit on new growth and the USDA recommends the practice after harvesting Cascade bilberry.

If huckleberry is planted in forests managed for timber, the small woodland owner may have difficulty protecting the huckleberry plants during logging. The issue has been addressed for blueberry fields in Canada by planting trees and blueberries in alternating rows. This may be a

[3] http://www.sba.gov/smallbusinessplanner/manage/getinsurance/SERV_INSURANCE.html

feasible strategy for huckleberries in Oregon, where prescriptive burns and logging are allowed (Cocksedge 2006, 54).

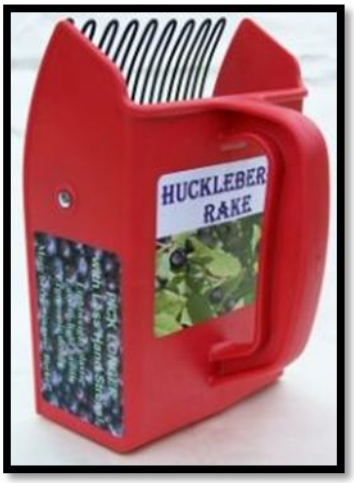
While forest management strategies have shown to affect huckleberries (Kerns, Alexander and Bailey 2004), additional research is needed to determine species-specific effects of measures. Few definitive management strategies for huckleberry have been documented and little of what does exist is specific to the Pacific Northwest (Belonogova 1993, Budriuniene 1993). Small woodland owners interested in advancing their business productivity with active management techniques should consider partnering with university extension offices to document their trials. This cooperation will promote industry growth and might supplement small woodland owner income with funding from grants, if available.

For further guidance on huckleberry plants, see "Growing Western Huckleberries" by Danny L Barney 1999.

Harvest

The normal harvest season for Cascade bilberry lasts from August through September (Fisher 2002), depending on seasonal conditions, when the berries are dusky blue in color. Other varieties and their harvest information are provided in Table 1.

While this document is provided as guidance for small woodland owners, it should be mentioned that harvesters on public lands and the property of others face additional rules. This may be relevant for the small woodland owner seeking to increase output to meet demand or to lease out land for harvesting by others. Harvesters should always take care to ensure that they have sufficient permission to harvest in the forest prior to entering. While public lands are generally open to all, boundaries between the public lands and adjacent private or otherwise protected lands are not usually marked. Oregon Revised Statute 164.813 "Unlawful cutting and transport of special forest products" details requirements for the harvesting, transport and sale of products, including huckleberry, collected from land other than your own. Local offices of the US Forest Service, local law enforcement and university extension offices should know which laws will apply to forests in individual regions.



© 2008 - Gourmet Innovations

Berries can be picked by hand to prevent damage to the plant or with a rake tool, also known as a comb, for speed. The harvester should consider plant height, as some on the Oregon coast grow as tall as 15 feet and may require the use of a ladder. Other tools that may be needed for harvest include harvesting buckets, large collection containers (such as cardboard boxes), absorbent material to line the larger containers and a vehicle to drive them out of the forest.

According to the manufacturer, a harvester can collect four to 10 times as many berries per hour using a rake tool as by hand. Actual volumes harvested per hour will vary depending factors like species, hill incline and experience. The $15-20 investment of purchasing a rake tool may pay for itself quickly with savings in time spent harvesting. According to Danny Barney, "Huckleberry rakes, when used properly -- just like any tool -- do not damage wild

huckleberry bushes" (Dell and Dell 2008). Harvesters should be aware, however that "mechanical harvesting" with a picking rake is illegal on public lands in Washington (USDA FS 2009).

Dell recommends harvesters carry a locking top cooler while harvesting. As the rake tool fills, it can be emptied into the cooler. This prevents spillage resulting from traversing the uneven terrain so common where huckleberries are found.

If harvesting will produce more than what can be carried in a cooler, the harvester should establish a field processing station where collections can be deposited over the course of the day. An ideal station is dry, out of the sun and in a cool location to prevent spoilage. Wet berries can be placed in cardboard or paper-lined boxes to absorb the water until they can be moved to a dry location. If there is a lot of human or animal traffic through the area, there should be someone who stays with the harvest to prevent consumption by wildlife or theft.

Labor

Small woodland owners seeking to hire paid labor to harvest wild forest goods – such as huckleberry – will have a few options. Three different hiring arrangements are discussed here with their individual costs and benefits: contract labor, employees and staffing agencies.

Contract Labor, also referred to as pay-per-piece or independent contractors, are workers paid for what they complete, rather than how much time they spend working. The IRS generally defines the relationship as follows:

> The general rule is that an individual is an independent contractor if you, the person for whom the services are performed, have the *right to control or direct only the result of the work and not the means and methods of accomplishing the result.* (http://www.irs.gov/businesses/small/article/0,,id=179115,00.html, accessed 5/18/10)

For huckleberry harvesting, contract workers may be paid per gallon or pound of huckleberry harvested. This form of labor allows the small woodland owner to closely tie labor to profitability, as each gallon sold has a fixed harvesting cost. This labor arrangement protects the owner from paying too much for slow or unproductive workers.

Employees are harvesters paid per hour worked, regardless of productivity. Paying workers hourly allows a business owner to benefit from economies of scale, where workers whose harvesting skills improve with experience eventually harvest more gallons per hour, so the harvesting cost per gallon decreases over time. Employers are required to pay Social Security, Medicare, unemployment and federal taxes for their employees, and state taxes where applicable.

Staffing Agencies provide the simplest and safest solution, though it is also the most expensive. Temporary workers hired through a staffing agency are employees of the agency, which typically handles all of the employment-related paperwork, filings, taxes and insurance. The workers are typically paid minimum wage and the small forest owner pays a rate that is some percentage greater than the employee's rate.

The decision to use contract labor, employees or an agency will depend on the experience of the available harvesters, the expected number of gallons to harvest, the risk tolerance of the small woodland owner, the owner's tolerance for paperwork and other factors. The table below

lists some of the requirements for each type of worker arrangement. Items listed as not applicable (n/a) are often included in staffing agency agreements.

Some Requirements of Labor Type (incomplete list)	Contract	Employee	Agency
Form W-9, Request for Taxpayer Identification Number & Certification	Yes	Yes	No
Form 1099MISC – Miscellaneous Income	Yes	No	No
Family and Medical Leave Act[4]	No	Yes	n/a
Migrant and Seasonal Agricultural Worker Protection Act [5]	No	Yes	n/a
Hazardous Substances training (if used)	Yes	Yes	n/a
Employer Liability Insurance	Yes	Yes	n/a

Due to the complexity of employment law, the small forest owner may be inclined to seek professional assistance. A copy of *The Employment Law Guide*, issued by the United States Department of Labor, can be found on the web[6], and the IRS provides guidance online in the *Small Business and Self-Employment Tax Center.*[7]

The United States' agriculture industry relies heavily on migrant and immigrant labor, and the small woodland owner might expect that many of the workers in their local labor pool will be from other countries. Migrant and immigrant laborers are often dedicated, hard workers who may not be fluent in English. The small woodland owner should consider language barriers in their hiring decisions, preferably by identifying a field lead that is bilingual. It is possible to specify the ability to communicate in English when posting the position or working with an agency, but this may drastically restrict the number of applicants.

Sorting

While using a rake picks berries more quickly than by hand, berries picked in this manner will have to be sorted to remove foliage. Faster than sorting by hand, huckleberries can be sorted by rolling them down a long board or blanket that will capture leaves, stems and bugs while allowing berries to fall down to the catcher. Not all stems will come off in this process and they may need to be removed by hand gently, so as not to tear the skin. Berries should not be washed in this process as the water will reduce their shelf life. Dell also notes that some commercial buyers will pay less for washed berries under the assumption that the water has added weight[8].

Grading Quality

Overall appearance of the berry is only a consideration if it is to be sold raw to a buyer concerned about that, so consider your buyer's tastes. An upscale restaurant will want product that is both attractive and delicious, while shoppers at a farmers market may care more about the latter. While damaged berries may be edible if processed into a value-added product, they will need to be sorted out if attractive berries are destined for sale whole. This level of sorting should happen in a sanitary environment, not at the collection site.

The USDA Agricultural Marketing Service provides a Fresh Products Grading and Quality Certification (See Appendix F) as well as an organic certification for wild products. While

[4] Family and Medical Leave Act of 1993 (FMLA). (29 USC §2601 et seq.; 29 CFR Part 825). http://www.dol.gov/compliance/guide/fmla.htm
[5] http://www.dol.gov/compliance/laws/comp-msawpa.htm
[6] http://www.dol.gov/compliance/guide/index.htm
[7] http://www.irs.gov/businesses/small/index.html
[8] Dell, Malcolm. Interview by author Vasquez. Forest Grove, OR, February 6, 2010.

expensive, these certifications can be very useful for ensuring that transactions with large or distant buyers go smoothly. While the USDA sets the standards for organic certification, other organizations, such as Oregon Tilth, work directly with producers through the certification process.

Oregon Tilth is a nonprofit research and education organization that is accredited by the USDA National Organic Program to grant organic certification to growers, processors and handlers nationwide. The organization has provided organic certification services for over 30 years and is the most respected name in organic certification, working nationally as well as internationally. It provides fully integrated organic certification services to individuals, partnerships and cooperatives at multiple levels along the processing chain. Specifically, it provides organic certification to the following:

- Commercial producers of organic crops and livestock
- Processors of organic foods, feed and fiber
- Handlers of organic products such as packers, brokers, distributors and wholesalers
- Marketers of processed or co-packed organic products
- Restaurants and retailers specializing in organic fare

The certification process involves (1) submitting a completed certification application (Organic Management Plan), (2) initial application review, (3) on-site inspection, (4) certification decision and (5) continuation of certification.

Oregon Tilth has also developed a certification process for wild crops (Class OW Organic Wild-Crop Harvest). This covers the sustainable harvest of wild crops growing in a designated area that has been free of prohibited materials for at least 3 years. For more information about Organic certification under Oregon Tilth, refer to their website (www.tilth.org).

Packaging and Storage

Understanding the packaging and storage process is important because it affects how much a small woodland owner can expect to spend on packaging materials, refrigeration and equipment. The packaging you select, based in part on the form of berry you are shipping, will affect the way it can be shipped. Depending on the target customer, and "due to the unique nature of the these food products and the fact that few people are familiar with them…clear [packaging will permit]customers … to see the product right through the packaging, so they are not surprised when they open it" (Ochterski et al. 2005). Ecologically responsible packaging – such as biodegradable cellulose, cardboard cartons and glass jars – all provide this visibility while addressing environmental concerns.

New government regulations regarding traceability of food sources may affect wild forest products. Small changes, such as including batch numbers on packaging, may address these new rules.

Raw Berries. Packaging should be done to the specification provided by the buyer. Some prefer to receive huckleberries in one or four gallon bags, but sizes larger than that will crush

the berries and should be avoided. Raw huckleberries are delicate, so packaging of raw berries should be shallow enough to prevent smashing. Market customers may prefer packaging similar to the related blueberry, in plastic or cardboard pint-size containers packed into a 12 pint flat.

Raw huckleberries should be refrigerated, unwashed, to 41 ° Fahrenheit (5° Celsius) after picking to maintain freshness; washing prior to refrigeration reduces huckleberry shelf life, as the excess water accelerates decay[9]. Refrigerated raw berries should reach the buyer within two days of picking. Huckleberries last up to two weeks refrigerated after harvest (Still Tasty 2009).

The U.S. Food and Drug Administration does not require labeling for unprocessed raw foods such as huckleberries (USH&HS FDA Labeling 2009) The processor should seek assistance from the local county health department in complying with all local, state and federal food regulations.

Dried Berries. Dried huckleberries have a very long shelf life, much like raisins. Huckleberries are approximately 83% water (Stephens and Darris 2000), so significant weight and size is lost in the drying process. This is a value-added process that extends the usable life of the product, reduces the space needed to store it, eliminates the need for refrigeration and may increase the sales price. American Indians of the Columbia valley dried huckleberries to preserve them for winter use by placing them on a rotten log in a smoldering fire. Drying of huckleberries for commercial purposes, however, should be processed according to guidelines of the Food and Drug Administration and state Departments of Human Services and Agriculture (or other food safety governing agency).

The U.S. Food and Drug Administration has specific labeling requirements for most processed foods, including dried huckleberries (USDH&HS FDA Labeling 2009). Not only must certain products bear a Nutrition Facts label, but there are guidelines for the claims that can be made about the characteristics of a product, such as claims about medicinal value. The processor should seek assistance from the local county health department in complying with all local, state and federal food regulations.

Frozen Berries. Huckleberries have a frozen shelf life similar to that of blueberries. Berries can be vacuum-sealed and frozen or individually frozen on trays prior to packaging, depending on the desired appearance upon defrosting. Berries should be frozen as close to harvest as possible. As with any food processing, if the berries are destined for consumption by others, then the processor should follow Food and Drug Administration guidelines.

The U.S. Food and Drug Administration has specific labeling requirements for most processed foods, including frozen huckleberries (USDH&HS FDA Labeling 2009) The processor should seek assistance from the local county health department in complying with all local, state and federal food regulations.

Other Value-Added Products. Opportunities to create value-added huckleberry products are limited only by the proprietor's imagination. A short list of products available for purchase at grocery stores or online retailers includes jam, tea, wine, syrup, honey, candy, pies,

[9] Mitchell, Dennis. Interview by author. Forest Grove, OR, November 3, 2009.

muffins, pancakes, fruit filling, salad dressing, soaps, lotions, shampoos, candles and even kettle corn. Processing, packaging and storage of these products is beyond the scope of this analysis, but the equipment and materials required should be included in the planning for a potential entrepreneur. *Some sample images of value-added huckleberry products are included in Appendix B.*

Sales

The small woodland owner may seek to enter sales agreements with their buyers, though most small sales have only a transaction receipt. A sales agreement is a document written prior to the transaction that details the product being sold and how it is being paid for. A sales agreement is not necessary for small transactions, but large, long-distance, international or recurring sales should have one for the protection of both parties.

> ***Terms and Conditions of Sale.*** The sales agreement should detail the terms and conditions of the sale that must be met to satisfy each party. These include unit of measure (pounds, flats or other), price per unit, payment terms, how to grade quality, delivery timing, mode of transportation, transportation charges or fees and any other conditions, as applicable.
>
> ***Payment terms*** should be arranged in advance and the small woodland owner should only extend credit if they are confident of the buyer's ability to pay. Payment terms include the currency of payment (for international transactions), acceptable payment form (credit card, cash, money order, personal check, etc) and payment due date.

For a fee, the USDA Agriculture Marketing Service can provide pre- and post-shipment inspections. According to the *Schedule of Fresh Products Branch Programs User Fees,* fees as of October 1, 2008 (Appendix F) ranged from $69 to $151 per batch of 50 or 51 packages, plus inspector hourly rates and mileage.

In addition to tax purposes, the small woodland owner should keep a record of huckleberry transactions for legal purposes. Some states, for example the state of Washington, require commercial buyers and sellers to register all sales transactions of huckleberry (USDA FS 2009), regardless of where those berries were harvested. University extension offices or local US Forest Service should be aware of applicable huckleberry laws, while the federal and state departments of revenue should know any income tax rules. Small woodland owners should also check with the local chamber of commerce.

© Caroline Cummins

Target Markets

Marketing of huckleberries, like any product, can be accomplished in a number of ways, each with different levels of profitability. Least profitable of these methods is consolidator sales, where the harvester takes their huckleberries to a buying station and receives commodity prices, which fluctuate.

The small woodland owner will benefit from customer relationship management: developing relationships with buyers that lead to equitable pricing and repeat business. While this kind of business relationship can take some time to establish, in the long run it can be quite profitable.

The small woodland owner should identify their target market(s), as this will help them determine the best way to reach potential buyers with marketing efforts and to understand the costs associated with serving them. A customer in Japan may be more expensive to reach, but the right message might make that sale more profitable than sales to a consolidator. Who the small woodland owner chooses to target is also largely a function of the time available for business activities and knowledge of specific markets.

Restaurants and Resorts

Restaurants and resorts that source their ingredients locally are good potential customers for wild forest goods such as huckleberry. When talking with them it is important to emphasize the things about your product that will appeal to them, such as flavor, consistent quality and on-time delivery. Restaurants don't want to spend too much time sourcing their ingredients because they have a lot of other things to do. Providing a modest sized sample for them to taste or providing delivery and quality assurances that you can deliver on may help earn business.

Of course, reaching the decision-maker is often difficult and may take additional networking skills, but a small woodland owner who is confident of their product's quality should be willing to try a few times. Restaurants and resorts may have seasonal specials that include, or even focus on, regional foods. Ask the wait staff about their specials and look at the menu. When talking with the potential buyer, emphasize that the berries were harvested from the wild locally if that appears to be important. Frozen huckleberries are less likely to appeal to this market, given that the berries do lose some flavor when frozen, though restaurants may use frozen product to make sauces or compotes.

Specialty Grocers

Grocery stores and cooperatives that cater to the sustainability concerns of their customer base are a growing market and an excellent prospect for potential sales of fresh, frozen and dried huckleberry as well as value-added products. Dried huckleberries are particularly popular for use in cereals and in snack mixes popular with hikers and campers. Most specialty grocers have a medicinal section stocked with natural alternatives and so touting the health benefits of huckleberry will resonate with the grocer and end user. Seasonal sales of value-added products, particularly for holiday gift-giving, are also an opportunity through this channel.

Store management in specialty grocers usually have the autonomy to make sourcing decisions and so are the best first contact to make. Of primary concern to these grocers is keeping product in stock, so frequent and reliable delivery is paramount. Like restaurants and resorts, reaching the decision-maker and getting them to buy may be difficult and take a few visits. A

small woodland owner who is confident and persistent will have better luck than one who makes just one phone call.

An excellent guide to marketing and selling special forest products to retailers can be found in the publication "Marketing Special Forest Products in New York State" (Ochterski et al. 2003). Though its title says New York state, the talking points, customer considerations, selling strategies, promotion ideas and other content are relevant for all markets nationally.

Farmers' Market Shoppers

Open farmer markets provide a forum for directly educating consumers about all the wonder that is huckleberry. Attending a farmer's market is, for most, an enjoyable outing. Customers are relaxed and open to learning about the sustainable nature of small woodland owner huckleberry operations, the nutritional and medicinal characteristics and the recipes that the owner has to offer. This opportunity is unique in that customers who have never eaten huckleberries can be presented with samples of raw berries, value added products and recipes using berries.

Many consumers at a farmers market are motivated by LOHAS, an acronym for "lifestyle of health and sustainability". LOHAS consumers may even be interested in paying for the experience of harvesting their own huckleberries on the small woodland owner's property. These same customers are also good candidates for membership in a Community Supported Agriculture enterprise.

Gourmet food enthusiasts often scour farmers markets looking for fresh and local ingredients. These consumers may be attracted to tables providing samples of foods made with huckleberry or with brochures emphasizing the variety of foods and wines they might go with.

Most farmer markets charge a table fee and that fee should be balanced against the expected volume per day. The small woodland owner can consider sharing a table with other harvesters to reduce costs, if necessary to maintain profitability.

The small woodland owner should have educational and informational materials to hand out to potential customers. The materials should have the owner's contact information and information about the products available, as well as anything else that may be of interest such as the history of the small forest where the huckleberries were harvested or recipes for cooking with them.

Direct Web Sales to Domestic Buyers

One of the most prolific marketplaces for huckleberries and huckleberry-derived products is the Internet. It is an opportunity to connect directly with the customer. The small woodland owner's website could be an opportunity to secure members for a Community Supported Forest Agriculture project or just a way to promote value-added products and raw berries.

Online customers are very savvy and may arrive at the small woodland owner's website highly educated about what products are available and how much they should cost. For this reason, the owner should research online prices to be sure their own prices are competitive. Berries have been known to sell at a premium in forums like Craigslist, making it a good place both to do pricing research and to sell product.

There are a number of places to get help creating a website. If you have limited experience with websites, you may do best asking a local extension office for help finding a professional. A small woodland owner with more Internet experience could use a free service from Google or Yahoo! or pay for one from any number of online providers.

Tourists and Gift Shops

Both in-state and out-of-state gift shops are excellent targets for local consumer products. Tourists enjoy items such as huckleberries that are not readily available in their hometown. Visitors from out of town may be delighted by the unique flavor and novelty of a new berry. Tourists who have a long flight or drive ahead of them are a good target market for dried huckleberry, and those who are looking for souvenirs may be interested in any number of value-added products. This customer is motivated by novelty and convenience, so products that are packaged to travel and that appear to be characteristic of the area will be more likely to convert their attention into a sale. Made in Oregon is a gift shop with 10 locations state-wide and online sales targeting the tourist demographic and may be receptive to new value-added products made of huckleberry.

Farm to School Programs

In an effort to improve student health, foster local economies and educate students about their diets, many schools are now running programs that bring locally grown foods into their cafeterias. Public schools are very likely to be concerned with the total cost of the products being sourced, consistent quality and reliable delivery. Though this customer may have some high standards for a low cost, the volume could potentially be very high. To find a Farm to School program near you, visit the non-profit's website: www.farmtoschool.org.

Consolidation Buyers

These buyers consolidate purchases from numerous producers to fill large orders from corporate buyers. This is the simplest of arrangements. The buyer sets commodity pricing and the small woodland owner brings in the goods. Consolidators purchase from many harvesters to fill large orders that individual harvesters are not capable of filling alone. Some consolidators are cooperatives, owned and managed by the members, and some are simply for profit enterprises. While prices are not as high and the small woodland owner has no ability to influence that price, the revenue is more predictable, there no expenses associated with marketing and less overall time is involved.

Processors

Processors are similar to consolidation buyers in that they purchase from multiple harvesters. Product is purchased for value-added processes like canning, drying or making preserves. They are more difficult to find, however, and often have an established set of suppliers. The small woodland owner may have to offer cleaner or cheaper huckleberries to sell to existing processors. Processors sometimes also buy other nontimber forest products, such as mushrooms, and may be found through those channels.

International Sales

Sales to the foreign equivalent of any of the above target markets will bring additional concerns. In addition to the language, cultural, currency exchange and time differences, each international market operates under its own import and produce regulations. Even the

smallest shipments of produce are usually subject to rules intended to prevent the spread of disease and pests.

The Oregon State Department of Agriculture Agricultural Development and Marketing Division works with Oregon producers to make marketing connections and may be a source of assistance for small woodland owners interested in marketing huckleberry internationally. Similar programs may exist in other states. Nationally, the USDA Agricultural Marketing Service also provides assistance with international exports.

Distribution

Shipping

Huckleberries can be transported in a number of ways, depending on the form, volume and distance. If the berries are raw or have been frozen, any transport should be temperature-controlled to prevent spoilage. Small dried or raw shipments can go economically by mail, though raw berries should be expedited to arrive within two days of picking and packed according to the section of this report on *Packaging and Storage*.

The seller should become familiar with all available modes of transport, as any number of events could make one or more either unavailable or cost-prohibitive. Any of these modes can be found with a search online or in the phone book.

Overnight carrier – Many gourmet markets receive huckleberries overnight through carriers like FedEx and USPS. Rates charged for overnight service vary by carrier, distance, weight, product being shipped and other factors.

Ground (Motor Vehicle) – Harvesters delivering in small volume may find it most economical to deliver product using their own vehicle and deducting the mileage as a business expense or shipping via a ground service such as FedEx or UPS. The best choice of personal vehicle is an air conditioned transport van, which protects cargo from the elements and provides cool air to prevent spoilage.

Refrigerated Transport – Refrigerated trucks can be hired to transport a Truck Load (TL) or Less Than Load (LTL). Affordable Storage Containers and Great Western Transportation are two companies providing shipping in the Pacific Northwest that were found with an Internet search. Refrigerated transport is more expensive than conventional ground shipping and not as fast as shipping by air.

Passenger Ground Transport – Amtrak passenger rail and Greyhound bus lines are a couple examples of passenger ground transportation services that also carry small shipments. Though Amtrak does not ship perishable goods, other goods may be shipped through "Amtrak

Express Shipping."[10] Greyhound's service is called "Package Express" and online quotes are available. For other services, contact the local train or bus station for details on shipping rules, restrictions and costs.

Railway – A number of freight rail options exist in the Pacific Northwest and this may be a good shipping option for transport from rural areas to urban customers. Shipments can vary in size from a single pallet to a full container load if coordinated through a shipping consolidator. The small woodland owner will still need to plan for transport from their facility to the station and from the destination station to the customer. Each carrier varies in the types of freight they will carry, as some carry only frozen fruits, while other specialize in lumber.

Commercial Airlines – This mode is fastest for transport of fresh berries, ensuring higher quality upon arrival at destination when the flight is short. A 2006 study found that flights up to 8 hours had no effect on strawberries, while a 14 hour flight induced a stress response in cucumbers and strawberries, reducing quality (Laurin 2006). Many carriers post their rates online, with US Airways charging from $0.30 to $0.56 per pound for minimum size food shipments, depending on distance and shipping class (US Airways). As with rail shipments, transport must be arranged to the departing airport and from the destination airport to the customer.

Maritime – Shipping over water is unlikely to be the most cost-effective method for domestic sales, though it may be a good option for international sales of frozen, dried or value-added products such as preserves. Consolidators will sell container space per square foot, or per 20' or 40' container.

For those seeking to export huckleberries or other agricultural products, the USDA AMS publishes the *Agricultural Export Transportation Handbook* (Welby and McGregor, 2004), which provides useful information on numerous considerations that are specific to international sales.

Promotion

New foods are intimidating to some, so building interest and credibility through some familiar source is an excellent way to facilitate market growth. A savvy individual could get the local ***television*** network to use huckleberry in one of their weekend cooking specials.

© WILDBEARY
Orofino, Idaho

Customers also appreciate ***educational materials*** when they consider new foods. A pamphlet or brochure should be created to tell customers about the product, its uses and benefits, and even where and how it is harvested. This brochure could serve multiple target markets, from farmer's market shoppers to specialty grocers, and could easily be created with commonly available computer software templates. Materials that make customers feel as if they are closer to their food source, perhaps even talking about the small woodland owner, will have great impact. Because LOHAS customers are one of the target market end-users, promotional materials should emphasize terms like *local* and *sustainable*, in addition to the characteristics of the product itself.

[10] Emails from Amtrak customer service. April 17, 2010 and April 20, 2010.

Other recommendations from "Marketing Special Forest Products in New York State" (Ochterski et al. 2003) include:

- Show images of your product being used
- Include a teaser recipe or some way your product can be used
- Make sure your contact information is included in several places
- While three-fold brochures are standard, customers may appreciate variety
- Use one main font style, and try to use original photos and graphics, rather than clip art
- Use "available for pre-order" rather than "sold out" on price lists to show you are ready to meet buyer expectations

Personal selling will be a key promotion vehicle for the target market of chefs. The small woodland owner should identify talking points and practice their sales technique prior to reaching out.

Word of Mouth advertising is personal selling done for you by new or loyal customers. Keeping customers happy with good product and service is a marketing strategy in its own right. You can move the process along by providing free samples to friends and neighbors (Ochterski et al. 2003) or just asking customers to tell their friends about your product.

Classifieds are a proven way to move excess product. Harvesters have had success both in local newspapers and on websites, such as Craigslist. There is little expertise required to promote in this way, and it is a low-cost option.

Websites are a valuable tool for reaching out to potential buyers of value-added products. Websites are an opportunity to provide richer content that engages the target market, for example cooking demonstration videos and greater detail than will fit on a brochure. This channel also provides a method of accepting credit cards through online merchant services.

A very good example of a website designed to promote a semi-wild farm organization can be found in the Taylor Shellfish Farm website www.taylorshellfishfarms.com/. Not only does the site promote the product, but it builds brand awareness for the farm, provides pricelists and contact information, enables online purchases, identifies retail locations and encourages visitors. Engaging in this way people who have an interest in your product builds a customer base for future purchases.

Websites do require technical ability that not all small woodland owners possess, but there is no shortage of professional *web developer*s who can be contracted to do this work. An Internet search should provide a list of local professionals, but the small woodland owner should also check with their local extension office for information on other resources.

Events such as the Fancy Food Show[11], in San Francisco, or the Better Living Show[12], in Portland, provide an opportunity to showcase product to a large audience. A booth at this venue type will be more expensive than at a farmer's market and so may be a better forum for selling value-added products unless the small woodland owner has a large raw inventory.

[11] Fancy Food Shows http://www.specialtyfood.com/do/fancyFoodShow/LocationsAndDates
[12] Better Living Show www.betterlivingshow.org

Promotional materials should be brought, in addition to having product available to sample and buy, to lead interested potential customers to the farm's website.

Community Newsletters are a good way to reach out to potential customers with a predisposition for local products. Many church and neighborhood newsletters rely on local advertisers to support their publications, and the readers tend to be aware of the need to support the advertisers.

Pricing

Specific prices are provided below – without guarantee of accuracy – to assist the business plan developer in identifying all relevant and possible costs and revenues associated with a for-profit nontimber forest product enterprise. Individuals should conduct their own pricing research, particularly for the purposes of forecasting.

What Affects Pricing?

A number of factors affect the price that a small woodland owner can command. Working with a buyer in advance will help to identify some of these variables so they can be planned for.

- Reliability is important for some buyers, such as restaurants. This target market often is willing to pay a premium price for deliveries that come at the expected time in the predetermined condition.
- Cleanliness of delivered product is universally helpful, as product that does not contain sticks and leaves means each pound of berries has more actual berries and less work for the buyer.
- Frozen berries weigh 40-60% more than raw berries, and prices are expectedly lower to reflect that.
- A gallon of berries weights about five pounds to 5.5 pounds. Because processors often pay per gallon and not by weight, heavier gallons will benefit the buyer rather than the harvester.
- Seasonality affects pricing, in that the first and last sellers of a harvest season will get the best prices. When many sellers are in the marketplace at the same time, customers have more options and so can get a lower price.

Historical Pricing through Existing Channels

Part of the business planning process is to do research that will identify historical pricing of the product. Commodity markets exist for common raw materials like oil, wheat and metals. Huckleberry does not trade at such high volumes as these materials, and so there is no common market for the small woodland owner to reference in this planning process.

Information about huckleberry pricing can often be found at sources listed in the table to the right Buyers may be willing to share historical data for the chance at building up additional local supply.

Sample Huckleberry Product Prices, November 2009

Form	Price/unit	Huckleberry Source
Fruit, Raw	$6-8 / lb	www.Opb.org/programs/oregonstory/harvest/market/page_2.html
Fruit, Frozen	$13.33/lb	NWWildFoods.com
Fruit, Frozen	$11/lb	OregonMushrooms.com
Plant, Young	$3	2009 Energy Trust Better Living Show
Plant, 1 yr	$5	2009 Energy Trust Better Living Show
Plant, Mature	$10	2009 Energy Trust Better Living Show
Syrup, 8 oz	$7.99	OregonMushrooms.com
Jam, 10 oz	$7.99	OregonMushrooms.com
Plant, 4" tall	$9.50	RainTreeNursery.com

In some areas there will be no source of huckleberry and in these cases the small woodland owner may look to ***substitute products*** for pricing guidance. A substitute product is one that has the same form and function as the product being discussed. Blueberry is a substitute product for huckleberry in many recipes; though huckleberry may demand a slightly higher price due to its better flavor and limited availability, blueberries are a useful gauge of current prices.

Industry Support

Cooperatives

For small woodland owners seeking access to larger markets and customers but lacking in business expertise or substantial volumes demanded by large buyers, cooperatives are an attractive option. Cooperatives are organizations formed by their members – in this case small woodland owners – who pool their resources, equipment and skills. This collaboration allows individuals to contribute what they have, from marketing expertise to sorting equipment or cold-storage and to benefit from shared resources. Usually these cooperatives achieve non-profit or corporation status for tax benefits and other legal protections that they would not otherwise have.

Oregon Woodland Cooperative (OWC) is one example of such an arrangement, with 50 member properties and 20,000 acres. OWC plays a significant role in helping small woodland owners with all phases of nontimber forest product management and production. Their website, http://www.orwoodlandco-op.com/, provides numerous examples of members benefiting from the organization of sales for firewood and boughs, grant support and industry events.

Government and Non-Governmental Organizations

University extension offices, the US Department of Agriculture and individual state agriculture offices all have departments dedicated to the support of emerging entrepreneurs. These offices provide research, product development support, marketing support and business development services for the agriculture sector and are enthusiastic in their services. The small woodland owner is highly encouraged to engage their services at each stage of their participation in nontimber forest product markets.

Several national and regional nonprofit organizations, such as the International Wild Huckleberry Association, have also dedicated efforts to support a growing local food movement and many provide assistance to individual producers. Online communities also facilitate connections between buyers, sellers and service providers. The Oregon Forest Industry directory (www.orforestdirectory.com) , maintained by Oregon State University, and Ecotrust's FoodHub (www.ecotrust.org/foodhub/) are just two examples.

S.W.O.T. Analysis

S.W.O.T. is an acronym representing the four parts of an analysis that reviews the **S**trengths, **W**eaknesses, **O**pportunities and **T**hreats of a given business. It has been used here to look at the strengths and weaknesses of huckleberry as a product and how those might be affected by the opportunities and threats posed by the produce marketplace. The analysis will help a small woodland owner decide if the balance of risks and rewards is acceptable. By reviewing these strengths, weaknesses, opportunities and threats in this format, the small woodland owner can brainstorm ways to mitigate threats and take advantage of opportunities.

Strengths of Huckleberry

- Many parts of the plant have value
- Can be managed alongside other forest species
- Good after-fire crop, as many species thrive without overstory
- Doesn't require pesticides or herbicides
- Grows wild in Pacific Northwest forests
- Does well on tree farms or in forests dedicated to timber production where trees are felled carefully
- Can be part of a comprehensive portfolio that includes a different product for every time of year

(c) Danny L Barney, University of Idaho

Weaknesses of Huckleberry

- Labor-intensive harvest
- Delicate fruit, complicates shipping
- Difficult to grow from seed in artificial setting
- Vulnerable to damage from the harvesting of timber if trees are not felled carefully

Opportunities in the Marketplace

- Plenty of opportunity exists to develop new products and reach new customers
- Consumers are increasingly concerned with sustainability, prefer responsible products like local foods
- International and domestic markets present opportunities for growth
- Large number of industry support organizations, from business to non-governmental and governmental

Threats in the Marketplace

- Locally adapted transplants are rarely available from any commercial source
- If Forest Service indicates overharvesting is an issue on public lands, buyers may not buy in that region without assurances that berries were legally harvested from private lands.
- Harvesters may not be comfortable with engaging in sales activity and seek intermediaries or middlemen. Options that place someone between the harvester and buyer will reduce profits for the harvester while increasing sales price to the buyer.
- At the time of this writing, the trucking industry is experiencing a shortage of drivers, which is likely to affect pricing for that mode (Produce Marketing Association 2009).
- Fluctuating exchange rates in international sales. The seller should be careful in wording of contracts to prevent committing to a pricing structure that is vulnerable to exchange rate fluctuations.

Cost Analysis

A thorough analysis of expected costs will be required for any business plan that will represent a significant source of expenses or income for the small woodland owner, particularly if the plan will be presented to a bank. Each potential cost category is listed here with details, but the small woodland owner should conduct research to determine actual pricing. See Appendix G for a sample cost worksheet.

Labor – Huckleberry is a labor-intensive crop. The small woodland owner should calculate the number of annual hours needed per labor type (crop planters, crop maintenance, harvesting, sorting and processing, packaging) and the cost per hour of each laborer.

Shipping – Shipping costs will vary by sales type. Internet sales will have a higher shipping cost overall because of the smaller volumes, but those costs may be charged back to the customer. If a shipping company is used that does not provide the shipping containers, those should be factored in as well.

Packaging – Whether the product is raw or canned, dried or candied, it will need to be packaged for shipping. The small woodland owner should consider how many berries will be harvested per year and how they will be processed, to determine the annual packaging costs. Examples of packaging include pints, flats, jars, plastic bags and cardboard boxes.

Refrigeration – If the small woodland owner plans to hold raw product for any period of time beyond a day or two, there should be a plan for refrigeration. Commercial volumes of huckleberry will not fit neatly into a kitchen refrigerator. The cost-effectiveness of options will depend in part on expected volumes. Small woodland owners could invest in commercial upright or walk-in refrigerators and coolers, which run several thousand dollars, or pay a logistics company for off-site refrigerated storage.

Equipment – How much equipment will be required depends in large part on how much processing will be done prior to sale.

- Truck or cargo van – for transporting the harvest. A van is preferred, as it protects the harvest from the rain and direct sun, which will accelerate spoilage, and it can be climate controlled.
- Cooler or bucket – for collecting the berries. A cooler with a closing lid is preferred, as it will prevent the harvest from tumbling out.
- Picking rake (recommended) – dramatically reduces time spent harvesting
- Three step ladder (optional) – while difficult to drag around, will help in reaching higher branches
- Computer, with Internet (recommended) – it is much easier to start a website, find buyers and manage shipping, among other business tasks, if it can be done in the privacy of a home or office. The local library often has computers for public use, if needed.

Supplies – Supplies are items purchased for use that will have to be replaced completely. These include pens, paper, stamps and envelopes.

Key success factors

- Having a plan. Many of the steps in the value chain have only a couple of days, at most, to be completed. Knowing what to do in advance will reduce spoilage and increase profitability.
- Having a market. It is essential to know before the berries have been harvested where to take them. The small woodland owner should spend time identifying and talking with customers, preferably securing agreements, prior to harvesting. Once the berries are packaged there is a small window of time to transport them before they spoil.
- A willingness to do the work. Harvesting and cleaning huckleberries are the two most labor-intensive steps in the value chain.
- Keeping good records. Having sales receipts that document business income and the expenses incurred to earn that income will make tax time much easier. Keeping good records also means creating records, such as purchasing agreements, to ensure prompt payment by customers. Small woodland owners who hire employees must also plan for filing human resources related paperwork and for tracking wages paid.
- Understanding the customer. What is done to the product affects who will want to buy it and why. While fresh berries have many uses, they don't travel well, so the buyers should be close. Processing berries adds buyers from far away, but limits sales to a more specific purpose. Drying huckleberries may make them great for trail mix or for putting in cereal, but eliminates the possibility of using them for making preserves.
- Understanding applicable laws. Laws govern all areas of business including health and safety of employees, harvesting and transport of special forest goods, food safety and income.
- Knowing the business's revenue needs and planning to meet them.
- Knowing the time and resources required for the value chain and being prepared with these prior to the first harvest.

Appendix A: Medicinal Huckleberry Products

In the early 1990s the botanical trade for wild and cultivated medicinal plants became a multibillion dollar industry in the United States, largely driven by the herbal supplements boom. North America represented 12% of the global sales of medicinal herbs in 2001 (Strategic Reports Inc 2003). The markets have generally remained strong but U.S. businesses in the wild harvesting/cultivating and raw processing parts of the supply chain saw a major downturn as the industry quickly turned to foreign suppliers. With renewed consumer interest in natural remedies and local suppliers, there is opportunity for regional sales growth, particularly if paired with partnerships between government, doctors, expert botanists and herbalists to promote education and use.

Unprocessed huckleberry natural medicinals, such as huckleberry leaves for tea, are classified as dietary supplements by the US Food and Drug Administration (USDH&HS FDA Supplements 2009). One of the regulations imposed on dietary supplements includes labeling and marketing.

> FDA regulates dietary supplements under a different set of regulations than those covering "conventional" foods and drug products (prescription and Over-the-Counter)... Generally, manufacturers do not need to register their products with FDA nor get FDA approval before producing or selling dietary supplements. Manufacturers must make sure that product label information is truthful and not misleading. (USDH&HS FDA Supplements 2009)

Not all huckleberry leaves can be used for tea, as *Solanum melanospermum F. Muell* is listed in the FDA Poisonous Plant Database. The USDA Plant Guide for Cascade bilberry (*Vaccinium deliciosum* Piper) does indicate that studies have shown consumption of the leaves of this particular species provides health benefits:

> The leaves and berries are high in vitamin C. The leaves and finely chopped stems contain quinic acid, a former therapeutic for gout said to inhibit uric acid formation but never widely used because of mixed clinical results. The leaves have been widely used to lower or modify blood sugar levels. Many herbalists maintain that bilberry-leaf tea may be useful in stabilizing blood sugar levels in cases of diabetes, and medical research has shown that consumption of the leaf extract decreases blood sugar levels shortly after administration. Taken on regular basis, bilberry tea will gradually help alleviate both glycosuria and hyperglycemia and has a benign but useful effect as an adjunct treatment to diabetes mellitus. The leaves are believed also to stimulate appetite, and have astringent and antiseptic qualities that are useful in urinary disorders. (Stephens and Darris 2000, 1)

This author did not identify any studies citing scientific studies with human or animal trials of the medicinal properties of *Vaccinium deliciosum* Piper. The small woodland owner is encouraged to seek legal and medical professional guidance prior to marketing any huckleberry products as having medicinal qualities. The American Herbal Products Association may reference studies of the medicinal properties of huckleberry plants and their parts.

Appendix B: Consumer Products

Huckleberries can be used as an ingredient or input for any number of consumer products. From traditional food products, such as jams and muffins, to personal care products such as soap, uses for huckleberry are limited only by the imagination. Making added-value products takes more time and skill than selling raw huckleberries, but can also be more profitable if the products are well made and marketed.

The U.S. Food and Drug Administration has specific labeling requirements for most processed foods, including dried huckleberries ("Labeling & Nutrition"). The processor should seek assistance in complying with all state and federal food regulations. Most consumer products are governed by some oversight agency, so regulations should be well understood prior to starting business.

www.nwwildfoods.com

www.madeinoregon.com

www.greencastlesoap.com

www.killiankorn.com

Appendix C: Community Supported Forest Agriculture

Community Supported Forest Agriculture (CFSA) enterprises are an opportunity to bundle huckleberries with other nontimber forest products. In this model, customers purchase a share of the farm or forest and receive a monthly harvest. Customers buy it to support "lifestyle agriculture" and other benefits such as sustainability. The harvest may be just huckleberry or may include any variety of nontimber forest products available in the small forest, from truffles and mushrooms to boughs and floral greens. Products follow the seasons and connect the consumer to their local natural areas and their bounty. Often included is some form of newsletter that builds the customer's relationship with the small woodland owner. Some CSA models include member harvesting days, though coordinating large group foraging trips would require more planning than harvesting on a conventional farm.

Appendix D: Huckleberry Floral Greens, Seeds & Transplants

Seeds and Transplants. A number of western huckleberry species have very recently been cultivated for nurseries by the University of Idaho Sandpoint Research & Extension Center (Barney) and are commercially available. There may be an emerging market for seeds and transplants for reforestation purposes. With a growing market for huckleberries, other small woodland owners or federal land managers may seek transplants or seeds for scattering in recently burned or clear cut areas.

Floral Greens. Few florists use Cascade bilberry leaves for their greenery. Evergreen huckleberry is the primary floral green species, as the red foliage is popular at Christmas time for wreaths. Even that species, however, is not always preferred to Oregon Boxwood. The two plants are very similar in appearance, but Oregon Boxwood lasts longer, holding water for years if preserved with glycerin-supplemented water or for 2-3 months in a cooler. Despite this, there is still a market for huckleberry cuttings, as Oregon Boxwood is not found in all areas.

One interviewee priced a fresh cut bunch of Evergreen Huckleberry at $1.10-$1.40 (November 2009). Fresh huckleberry cuttings will last up to two weeks if kept in a cooler at a temperature of 36 to 38 degrees Fahrenheit. It loses all value due to leaf loss as it dries out. Keeping the cuttings in a vase may extend shelf life, though it causes leaves to shed more quickly.

Red Huckleberry is also harvested for cuttings in winter when the plant has lost its leaves, as the twigs are used in wreaths. The twigs can be dried or preserved by adding glycerin to their water source or by complete immersion in glycerin.

Harvesting. Evergreen huckleberry can be harvested for foliage at any time of year except mid- to late-spring, which is the growing season (Schlosser, et al 1997). The harvester should consider the needs of the florist prior to cutting huckleberry branches, as differently shaped cuttings are required for various purposes. While regular floral uses require a straight cut, branchy cuts are better for wreath-making. In all cases, it is best to avoid cuttings with berries, new growth, diseased or yellow leaves, bug bites, fungus and discoloration, as those will take additional time to clean. Green leaves are best and are less likely to occur in nitrogen-deficient soils. A good harvester can collect between 10 and 20 pounds an hour.

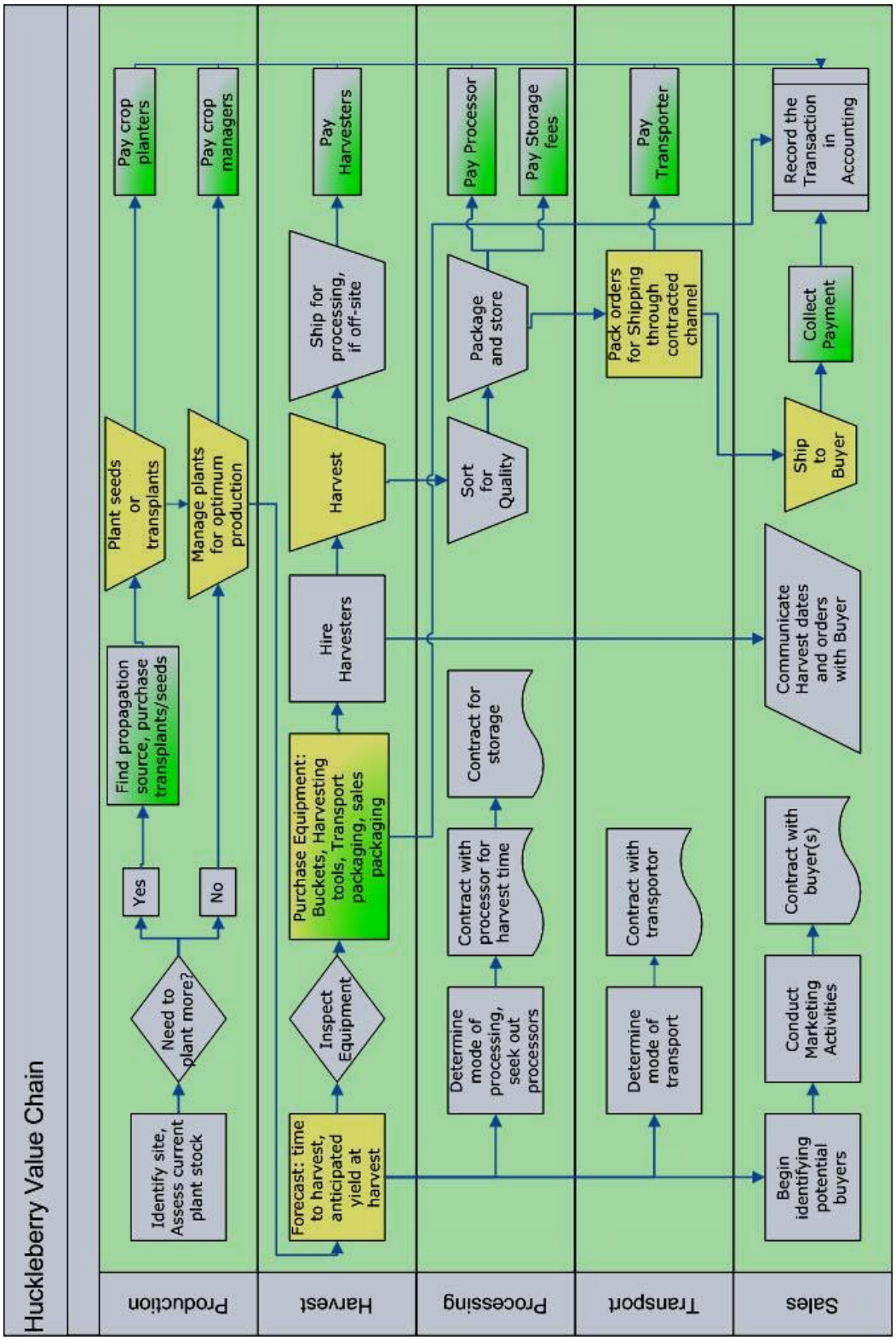
Management. Evergreen huckleberry grows the best foliage under a forest canopy, though red huck is common in open plantings. Nitrogen fertilizers are known to promote growth (Schlosser, et al 1997), though application of fertilizers will have negative ecological impacts and disqualify the stand from organic certifications. Likewise, chemicals to address insects and fungus will likely have negative impacts on other nontimber forest products, like truffles. It is also possible that managing a plant for its foliage could have negative impacts on its ability to produce fruit.

Target Customers. Sales in the domestic market happen at two levels: florist-direct and consolidation buyer. While florists will by one estimate pay 2-3 times more per bunch, a consolidator is seeking to fill large customer orders and will be capable of purchasing as much as ten times the volume of an independent florist. One should consider how much time and resources (for example, fuel) are required to serve florists individually and determine how the additional revenues will offset the additional time and expense. There are sales opportunities

in foreign markets, and interested harvesters can contact the USDA Marketing Service for more information by visiting their website at http://www.ams.usda.gov.

Shipping. Florists often buy by the bunch, while consolidators often purchase by weight and prefer bales. Cuttings for bales are a little longer, about 2 feet. Bales weigh from 10 to 80 pounds, depending on the buyer. The cuttings are usually durable enough to endure baling, but should not be left that way for more than a few days in ideal, raining conditions. One truck ride on a hot and sunny day will ruin an entire harvest unless they are protected. One recommendation for a short trip on a hot day is to place Douglas fir boughs over the huckleberry cuttings, wet them, and then place a tarp over it all.

Appendix E: Huckleberry Value Chain



Appendix F: Schedule of Fresh Products Branch Programs User Fees for Inspection Services By USDA Agriculture Marketing Service, 2009 (USDA AMS 2009)

Inspection Services*	Current Fee
Quality and condition inspections of products each in quantities of 51 or more packages and unloaded from the same land or air conveyance:	
• Over a half carlot equivalent of each product	$151.00
• Half carlot equivalent or less of each product	$125.00
• For each additional lot of the same product	$69.00
Condition only inspections of products each in quantities of 51 or more packages and unloaded from the same land or air conveyance:	
• Over a half carlot equivalent of each product	$125.00
• Half carlot equivalent or less of each product	$115.00
• For each additional lot of the same product	$69.00
Quality and condition and condition only inspections of products each in quantities of 50 or less packages unloaded from the same land or air conveyance:	
• For each product	$69.00
• For each additional lot of any of the same product	$69.00
Rail car lots and/or lots not unloaded from a single conveyance in excess of carlot equivalents will be charged proportionally by the quarter carlot.	
Dock side inspections of an individual product unloaded directly from the same ship:	
• For each package weighing less than 30 pounds	3.8 cents
• For each package weighing 30 or more pounds	5.9 cents
• Minimum charge per individual product	$151.00
• Minimum charge for each additional lot of the same product	$69.00
Hourly rate for inspections performed for other purposes during the grader's regularly scheduled work week - Hourly rate for non-carlot equivalent inspections such as count, size, temperature, container, etc. or work associated with inspections such as digital image services will be charged at a rate that reflects the cost of providing the service	$74.00
Overtime rate (per hour additional) for all inspections performed outside the grader's regularly scheduled work week	$38.00
Holiday hourly rate	$74.00
Hourly rate for inspections performed under 40 hour contracts during the grader's regularly scheduled work week	$74.00
Rate for billable mileage	$1.32
Audit Verification Services**	
Hourly rate for audit verification services	$92.00

***Inspection Services Fee Increase- Effective March 1, 2008**
****Hourly rate for Audit services-Effective October 1, 2008**

Appendix G: Sample Cost Worksheet

COST ANALYSIS (*see notes)*	Unit	Price per	Qty	Annual	Irregular
Gallons per year (1 gal = 5 lbs)			500		
Pounds per year			2500		
Production					
Site Assessment	each	$ 1,500	1		$ 1,500
Transplants	each	$ 50	100		$ 5,000
Harvest					
Cargo Van	each	$ 25,000	1		$ 25,000
Fuel - Harvest	gallon	$ 3	50	$ 150	
Picking rake	each	$ 25	3		$ 75
Transport					
Ladders	each	$ 40	1		$ 40
Collection Buckets (cooler)	each	$ 15	3		$ 45
Packaging (250-1 gal ziplocks)	case	$ 35	2	$ 70	
Storage fees (one unit)	month	$ 60	3	$ 180	
Sales				$ -	
Shipping (direct sales)	lb	$ 0.3	2500	$ 750	
Shipping (consolidator sales)	trip	$ 50	10	$ 500	
Marketing (web and flyers)	total	$ 250	1	$ 250	
Labor				$ -	
Labor - Planting crops	hour	$ 12	80		$ 960
Labor - Crop management	hour	$ 12	120	$ 1,440	
Labor - Harvest	hour	$ 12	480	$ 5,760	
Labor - Processing, Packaging	hour	$ 12	80	$ 960	
Labor - Shipping (loading)	hour	$ 12	25	$ 300	
Federal Payroll taxes	percent	15%		$ 1,269	$ 144
State Payroll taxes	percent	10%		$ 973	$ 14
Management					
Internet, Phone	month	$ 50	12	$ 600	
Insurance	month	$ 30	12	$ 360	
Computer	each	$ 1,000	1		$ 1,000
Printer	each	$ 300	1		$ 300
Professional Tax Services	return	$ 200	1	$ 200	
Cost of Goods Sold (CGS)					
Year 1 *(includes start up costs)*	Annual	$ 47,840		*$ 13,762*	*$ 34,078*
Years 2 and beyond	Annual	$ 13,762			
Revenue (sales)					
Raw Berries	pound	$ 20	2500	$ 50,000	
Profit					
Revenue *less* CGS	Year 1	$ 2,160	profit		
Revenue *less* CGS	Year 2+	$ 36,238	profit		
Breakeven	(years)	2			

Notes: All Amounts listed for demonstration purposes only and should not be used for business planning purposes. Labor is calculated as hourly staff. Please seek professional accounting and tax assistance in creating your own cost analysis.

Sources

Barney, Danny L. 1999. Growing Western huckleberries. University of Idaho. http://info.ag.uidaho.edu/Resources/PDFs/BUL0821.pdf. Accessed 11/20/09.

Belonogova, Tatyana. 1993. Changes in bilberry and cowberry yields under the influence of forestry measures. Aquilo Ser Bot. 31: 17-20. Forest Research Institute, Karelian Research Centre, Russian Academy of Sciences.

Budriuniene, Danute. 1993. Changes in Vaccinium myrtillus conenopopulations in oligotrophic pine stands of different ages. Aquilo Ser Bot. 31: 13-16. Vytautas Magnus University.

Burton, P. 2000. The Wilp Sa Maa'y Harvesting Co-operative and wild berry research in Gitxsan traditional territory. In: Gayton, D., ed and compiler, 15-19. *Non-timber Forest Products Workshop: Creston, BC, 22-24 May 2000* Southern Interior Forest Extension and Research Partnership, File Report 00-2. http://www.forrex.org/publications/other/filereports/fr00-2.pdf

Cocksedge, Wendy. 2006. *Incorporating non-timber forest products into sustainable forest management: An overview for forest managers*. Victoria, B.C: Royal Roads University.

Dell, Malcolm and Sandy Dell. 2008. Wild huckleberry picking rake. www.Huckleberryrake.com. Accessed November 20, 2009.

Fisher, Andrew. 2002. Case study - Making peace in the berry patch: The 1932 handshake agreement and the promise of cultural use zones. In *Nontimber forest products in the United States.* Eds. Eric T. Jones, Rebecca J. McLain and James Weigand. Lawrence: University Press of Kansas.

Laurin, Emilie. 2006. Post harvest response of fresh produce to low-pressure stress occurring during air cargo transportation conditions: A simulation. Quebec: Laval University. http://www.tiaca.org

Matthews, Robin F. 1992. Vaccinium alaskensis. In: Fire Effects Information System, [Online].U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer).Available: http://www.fs.fed.us/database/feis/. Accessed April 23, 2010.

Minore, Don and Michael Dubrasich. 1978. Big huckleberry abundance as related to environment and associated vegetation near Mt. Adams, Washington. Cited by Danny L Barney in March 2010 email.

Minore, Don, Alan W. Smart and Michael E. Dubrasich. 1979. Huckleberry ecology and management research in the Pacific Northwest. U.S. Department of Agriculture, Forest Service. http://plants.usda.gov/java/profile?symbol=VADE

Ochterski, Jim, Robert Breyfuss and Monika Roth. 2005. Marketing Special Forest Products in New York State. Cornell University Cooperative Extension.

Oregon Department of Agriculture – Agricultural Development and Marketing Division. http://www.oregon.gov/ODA/ADMD/index.shtml. Accessed April 15, 2010.

Produce Marketing Association. 2009. Issues: Transportation http://www.pma.com/issues/transportation.cfm. Accessed November 20, 2009.

Schlosser, William E. Cindy Talbott Roche, Keith Blatner, and David M. Baumgartner. 1997. A guide to floral greens. Washington State University Extension. http://cru84.cahe.wsu.edu/ItemDetail.aspx?ProductID=13710. Accessed March 20, 2010.

Simonin, Kevin A. 2000. Vaccinium membranaceum. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/. Accessed April 23, 2010.

Stevens, Michelle and Dale C Darris. 2000. Plant Guide: Cascade bilberry, *Vaccinium Deliciosum* Piper. U.S. Department of Agriculture, Natural Resources Conservation Service. http://Plant-Materials.nrcs.usda.gov. Accessed November 9, 2009.

Still Tasty. Food Storage – How Long Can You Keep… Huckleberries – Fresh, Raw. 2009. http://www.stilltasty.com/fooditems/index/17427. Accessed November 15, 2009.

Strategic Reports, Inc. 2003. Analysis of the economic viability of cultivating selected botanicals in North Carolina. Jeanine Davis and Jackie Greenfield.

Tirmenstein, D. 1990a. Vaccinium ovalifolium. In: Fire Effects Information System, [Online].U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ Accessed April 23, 2010.

Tirmenstein, D. 1990b. Vaccinium ovatum. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/. Accessed April 23, 2010.

Tirmenstein, Debra A. 1990c. Vaccinium parvifolium. In: Fire Effects Information System, [Online].U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/, Accessed April 23, 2010.

U.S. Department of Agriculture. Forest Service (USDA FS) 2009. Gifford Pinchot National Forest http://www.fs.fed.us/gpnf/recreation/huckleberries/. Last updated 16 March 2009. Accessed December 23, 2009.

U.S. Department of Agriculture., Natural Resource Conservation Center, (USDA NRCS). 2010. The PLANTS Database. http://plants.usda.gov. National Plant Data Center, Baton Rouge, LA 70874-4490 USA. http://plants.usda.gov. Accessed February 23, 2010

U.S. Department of Health & Human Services, Food and Drug Administration (USDH&HS FDA Supplements). 2009. Dietary Supplements. http://www.fda.gov/Food/DietarySupplements/default.htm. Last updated 6/18/2009. Accessed December 30, 2009.

U.S. Department of Health & Human Services, Food and Drug Administration (USDH&HS FDA Labeling). 2009. Labeling and Nutrition. http://www.fda.gov/Food/LabelingNutrition/default.htm. Last updated 10/21/2009. Accessed December 30, 2009.

United States Department of Agriculture – Agricultural Marketing Service (USDA AMS). www.ams.usda.gov. Accessed November 20, 2009.

US Airways. "Domestic food SCR 2000". http://www.usairways.com/en-US/Resources/_downloads/traveltools/Domestic_food_DSCR2000.pdf

Vander Kloet, S.P. 1988. The genus *Vaccinium* in North America. Ottawa: Research Branch, Agriculture Canada;1828.

Welby, Ellen M. and Brian McGregor. Agricultural Export Transportation Handbook. 2004. United States Department of Agriculture – Agricultural Marketing Service (USDA AMS). http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELDEV3009368

Additional References

Barney, Dan. 2009. Prospects for commercial production of huckleberries and bilberries. International Wild Huckleberry Association. University of Idaho. http://wildhuckleberry.com/2009/06/10/prospects-for-commercial-production-of-huckleberries-and-bilberries/. Accessed September 28, 2009.

Barney, Danny. Nd. Huckleberries and bilberries. University of Idaho College of Agricultural and Life Sciences: Sandpoint R&E Center. http://www.cals.uidaho.edu/sandpoint/Huckleberries%20and%20bilberries.htm. Accessed February 24, 2010.

Cocksedge, Wendy and Michelle Schroeder. 2006. *A Harvester's Handbook: A guide to commercial non-timber- forest products in British Columbia*. Royal Roads University, Center for Non-Timber Resources. Victoria, BC: Royal Roads University.

Kerns, Becky, Susan Alexander and John Bailey. Huckleberry abundance, stand conditions, and use in Western Oregon: Evaluating the role of Forest Management. *Economic Botany* 58(4) pp. 668–678. 2004. The New York Botanical Garden Press, Bronx, NY.

Vance, Nan C., Melissa Borsting, David Pilz and Jim Freed. 2001 *Special forests products: species information guide for the Pacific Northwest*. Gen. Tech. Rep. PNW-GTR-513. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. http://www.fs.fed.us/pnw/pubs/gtr513/.