

## **Briefing Paper**

### **Western Juniper Commercialization Project**

"Creating a New Industry to Help Implement Ecosystem Management Objectives"

Prepared for

*Improved Wood Utilization Opportunities for Meeting Ecosystem Management Objectives*

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By Larry Swan, Winema NF (Klamath Falls, OR.)

Western Juniper Project Liaison

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### ***What is the Western Juniper Commercialization Project?***

The Western Juniper Commercialization Project (Project) is an ad hoc effort to develop an integrated industry which uses western juniper (*Juniperus occidentalis*) to ensure long-term sustainability of the resource, benefit landowners and local communities, and fully utilize and add value to surplus raw material produced by ecosystem management activities<sup>(1)</sup>.

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### ***Why is It Necessary to Commercialize Western Juniper?***

There are approximately 3.8 million acres of western juniper woodlands within the species' primary range of eastern Oregon, northeastern California, and southwestern Idaho (10% canopy cover or more).

About 58% of this acreage is on public lands managed by the Bureau of Land Management, U.S. Forest Service, State, Indian tribes, and other Federal agencies, and about 42% is privately owned. There are literally millions more acres of scattered juniper and areas in which young juniper are just now becoming apparent on standard resolution aerial photography.

Western juniper is the least-utilized wood fiber resource in this region. Total woodland volume is estimated to be at least 691 million cubic feet, of which about 39% is on private lands and 61% is on public lands. Volume data for the most part do not include western juniper on forested lands which, according to industry, has the best commercial potential because of form and access.<sup>(2)</sup>

The area dominated by western juniper represents a three- to ten-fold increase since the late 1800s. The expansion and increasing densities of juniper woodlands greatly concern private landowners, government land managers, and scientists. Many juniper-dominated sites show clear

evidence of watershed degradation, loss of site productivity, decrease in forage production, loss of wildlife habitat, and overall-reduction in biodiversity.

Numerous private landowners undertake juniper thinning or clearing operations every year in eastern Oregon and northeastern California, affecting an estimated 5,000 to 10,000 acres per year. Due to lack of demand and markets, as well as economics, the juniper removed is often piled and burnt, or simply left to decompose after being knocked-down or cut (estimated to amount to 1.1 to 2.3 million cubic feet of juniper bole wood per year<sup>(3)</sup>). Government agencies are currently less active in clearing juniper than private landowners, due to concerns about legal challenges and lack of funding for such projects.

Landowner costs for simply knocking trees over with mechanical equipment, a common method used to thin juniper woodlands, average \$35-\$50 per acre. Manual falling, delimiting, and slash scattering can run as high as \$250 per acre. As one rancher puts it: "I feel like I'm buying my land a second time due to the costs of beating back the juniper."

Thinning and clearing operations are expected to continue whether or not a commercial industry develops for juniper, and despite a decrease in government subsidies. According to Tom Birch, a Forest Service scientist who summarized data from a national study of forested land owners and their harvest plans, there are probably at least 3,000 ranchers in Oregon and California who plan to thin their juniper woodlands within the next 10 years, at a minimum cost of more than \$13 million dollars.<sup>(4)</sup>

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### ***How Did the Western Juniper Commercialization Project Get Started?***

The Western Juniper Commercialization Project was begun as a result of feedback from a Forest Products Industry focus group run by the Winema National Forest (Klamath Falls, Oregon) in 1992. In

just 18 months, over 1,200 manufacturing jobs were lost out of a total regional manufacturing employment base of less than 4,000. Reasons for the large loss in jobs included a reduction in Federal timber supply and lack of privately-owned timber in the region (over 65% of the land in Klamath County is managed by either the Forest Service or Bureau of Land Management). The Forest Products Industry saw juniper as a potential new source of fiber and wanted to find cost-effective methods to utilize juniper cut down by ranchers to improve grazing lands.

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### ***How is the Project Coordinated and Funded?***

Project activities are coordinated by an ad hoc Steering Committee made up of industry, landowners, university extension, government agencies, and non-profit economic development organizations. Logistical support and facilitation of the Steering Committee and its projects are a combined effort of the Forest Service, a retired private business consultant hired by the Steering Committee, a local non-profit economic development organization, Oregon State University Extension, and the Northwest Wood Products Association.

Western juniper commercialization start-up activities were funded by a combination of Forest Service and State of Oregon programs. About \$50,000 total was expended in the first two years (1993-94) to gain manufacturing and marketing experience, and establish commercial potential. Forest Products Industry and private landowner interest led to two State of Oregon Multi-Region Strategy Governor grants (1995 and 1996).<sup>(5)</sup>

Cash and in-kind contributions have totaled over \$1 million dollars over the last five years (1993-97): About \$250,000 came from a mixture of Federal, Forest Service, and university programs; \$360,000 from the Oregon Multi-Region Strategies Program; and approximately \$500,000 from private industry. Forest Service technical assistance has been critical in generating grant funding from non-Forest Service sources.

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### ***What Has Been Accomplished?***

Commercialization of a previously non-commercial species is complex. The Western Juniper Steering Committee has pursued projects in 12 key strategic areas:

- Inventory;
- Stimulating Private Business Interest & Motivation;
- Markets/Products & Distribution Channels;
- Science;

- Harvest;
- Management;
- Primary Processing;
- Secondary Processing;
- Technology Transfer;
- Public Awareness, Input, and Involvement;
- Government Agency Awareness, Input, and Involvement;
- Integrating Activities and Interests, and Building a Sustainable Organization.

Examples follow for selected areas:

Primary and Secondary Processors - There were probably three to five cottage industry-size businesses who produced and sold juniper products on a part-time basis when the Project began over five years ago. Total lumber production averaged less than one thousand board feet (MBF) per month. There are now over 35 companies who manufacture juniper on at least a part-time basis, with total lumber production averaging more than 12 MBF per month.

Business Interest - Over 100 different partners have participated in commercialization activities. About 50 of these were Forest Products Industry companies. The support of the agriculture industry, especially the Oregon Cattleman's Association, has been critical in maintaining project momentum.

Biological and Forest Products Science - There were large knowledge gaps about western juniper from both a scientific and commercial perspective six years ago. Although gaps still exist, there has been progress. For example, biological and rangeland science research projects underway have increased from about 10 in 1993 to over 20 today (most of the projects are focused on key management issues).

Forest products research assistance comes from various institutions. For example, the Forest Products Laboratory was instrumental in evaluating exterior finishes and fiber suitability for composite products. Considerable progress has also been made in defining basic physical and mechanical properties of western juniper, as well as its drying and manufacturing characteristics. Over 50 commercialization projects have been completed, of which about 50% have formal written reports.

Marketing - The Project is actively working to expand both log/lumber and fiber markets. The marketing emphasis for log/lumber products has changed during the last couple of years from commodity products (e.g. fencing and decking) to specialized niches (e.g. gifts and novelties, architectural accents, store displays, and custom log and timber frame homes). Although on a small scale, western juniper products are being nationally distributed and are in one retail store chain coast-to-coast (Pendleton Woolen Mills).

In terms of fiber markets, semi-clean juniper chips (less than three percent bark content) have been accepted since 1992 by a hardboard plant which uses a dry process to manufacture exterior siding. Very little juniper is utilized though, due to low chip prices (\$45-\$55 per bone dry ton in the Klamath Falls area) and the high costs of juniper harvest. Other commercial applications for western juniper fiber and

oils are being investigated by a unique consortium of research interests at Oregon State University, involving five different departments and schools.

Communication and Technology Transfer - The mailing list for the *Western Juniper Newsletter* has increased from 150 in 1994 to over 800 today. About one-third of the mailing list is composed of government agency employees. Hundreds of people attended two "forums" sponsored by the Steering Committee, as well as management field training sessions. Two western juniper web sites now exist - one for private industry and commercial gain ([www.westernjuniper.org](http://www.westernjuniper.org)), and one run by Oregon State University Extension for science and management topics ([juniper.orst.edu](http://juniper.orst.edu)). An Oregon State University Wood Products Extension Agent now spends at least 50% of his time on juniper issues.

Integrating Interests and Activities, and Building a Sustainable Organization - The ad hoc Steering Committee was recently recognized for its partnerships and progress towards creating a new industry with the State of Oregon's *Governor's Cup Award for Industry Excellence*. Western Juniper Industry members also recently adopted a voluntary assessment to sustain marketing, technical assistance, and communication. Over \$15,000 is expected to be generated by the "voluntary assessment" the first year. The stated goal of the Steering Committee is to generate \$150,000 per year, which is needed to support a small association and continue marketing and technical assistance activities.

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### ***What Has Worked?***

Active Forest Service Involvement - The Forest Service has taken an active role in commercialization activities and Steering Committee facilitation. Assistance ranges from designing industrial and marketing trials to grant writing. Forest Service technical assistance has been critical in generating almost \$500,000 of grant funding from non-Forest Service sources. Sustained involvement has also established credibility with industry, land owners, and funding sources.

Utilizing Forest Service Organizational Resources - The Forest Service plays a unique role in the commercialization process because of its mission and organizational resources, which allows it to straddle biological and forest products research, land management activities, and rural community assistance issues. There is no other government agency or private organization which can straddle the multiple goals of ecosystem management like the Forest Service.

Stimulating Private Industry Interest - The Project was begun as a series of manufacturing and marketing trials designed to stimulate industry interest. The underlying premise is that someone has to make a profit to help make ecosystem management more affordable. Rural job creation and retention are critical to attract public economic development funding support.

Collaborative Partnerships and Communication - Close attention is given to identifying, clearly defining,

and nurturing partnerships with those who have "the most at stake". This has resulted in strong relationships with individual private companies, forest product industry organizations, private landowners, the agriculture industry, and universities. The ad hoc Steering Committee, with a membership composed of a cross-section of affected interests, has been critical in generating and sustaining partnership projects.

Hiring an Industry Facilitator and Private Business Consultant - A Western Juniper Industry Facilitator was hired with special State of Oregon grant funding to facilitate and connect small private businesses to fill orders for juniper products. This was critical for an industry which lacks established infrastructure and consistent orders, and when orders over a couple of hundred board feet often require linking raw material, primary processors, dry kilns, and secondary processors. A large part of the success of the Project over the last 12 to 18 months can be attributed to the Industry Facilitator.

A retired private business consultant was retained by the Steering Committee to assist with Steering Committee logistics, and business planning and marketing projects. This freed-up Forest Service Project Liaison time for assisting in areas where private business was not as experienced, such as organizing grant proposals and commercialization projects.

Integrating Commercial Objectives and Ecosystem Management - Development of a new forest products industry based on material produced from ecosystem management activities is complex. Twelve critical, interrelated strategic areas have been identified for commercialization success (see previous section - *What Has Been Accomplished?*). The integrated commercialization strategy is used in a variety of ways, ranging from project issue analysis to organizing articles for the *Western Juniper Newsletter*.

Project Start-Up Funding - Active Forest Service involvement and a small amount of Forest Service and State of Oregon project funding (less than \$50,000 during the first three years of the Project) helped kick-start partnership projects with industry, private landowners, and government agencies, and stimulate commercial interest. Start-up projects provided a core of private partners and track record necessary to compete for public economic development funding.

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### ***Major Challenges Facing Development of a Sustainable Western Juniper Industry?***

Relevant and Compatible Resource Inventory - Western juniper inventory data from Forest Service Research are sparse and sometimes incompatible from one state to the next. There are also differences in how juniper data are collected on National Forest System lands in the Pacific Northwest.

It is difficult to convince private industry to invest significant capital without better inventory data. From a business perspective, key inventory questions are: 1) How much is there?; 2) What is the quality?; 3) Where is it located?; and 4) How accessible is it (considering physical, geographic, legal, and social factors)? There is also a critical issue of how to inventory early stages of woodland development, which

cannot be seen using standard resolution aerial and satellite photography but are the most cost-effective to treat (\$5 to \$10 per acre for prescribed burning versus \$50 per acre for mechanical thinning).

Developing Markets and Industry Infrastructure - Higher juniper sales volume and more consistent orders are needed to establish and maintain an industry infrastructure, linking raw material suppliers, manufacturers, and markets. An Industry Facilitator, funded for two years by a grant from the State of Oregon, has successfully put together multiple "flexible networks" to fill orders, however, future public funding support is problematical and time consuming to pursue. Identification and development of fiber markets, besides sawn product markets, are critical not only to develop industry infrastructure, but also to make progress in reducing the estimated one million acres of over-stocked juniper woodlands.

Industry Sustainability During Early Stages of Development - Public funding for complex, commercialization projects tied to ecosystem management is difficult to obtain. Industry members of the Western Juniper Commercialization Steering Committee recently authorized a "voluntary assessment" program, to begin generating revenue to continue marketing and communication activities without public subsidies. There is expected to be a three to five year gap, however, before sufficient revenue can be produced to sustain current efforts.

Obtaining Base-Level Funding for Biological and Wood Science - Although biological and rangeland habitat field research have been on-going for years, published results are sparse. More focused efforts are in-progress, but much researcher time is taken-up by fund raising. Both BLM and National Forests contribute, but not in a coherent or coordinated fashion. In addition, funding support for wood science and technology issues is expected to decrease drastically from current levels as the novelty wears off juniper commercialization activities,

Reducing Harvest Costs and Improving Slash Dispersal - Harvest costs and appropriate harvest equipment remain critical issues (harvest costs are about three times that of other commercial species). Efforts are underway to put together funding for operational prototype harvest equipment specifically designed for juniper, which may also be adaptable to other low-commercial value tree species. Methods and equipment also have to be refined to better disperse slash, which is critical to meet the goal of improving rangeland habitat through commercial harvest.

Increasing and Maintaining Public and Government Agency Awareness, Support, and Participation - The Forest Service Project Liaison has been successful in obtaining the support and participation of private industry and landowners. However, it has become obvious that maintaining communication and organizing funding support from public agencies and non-profit environmental organizations is another full-time job. Decentralized decision-making authority is good for some things, but plays havoc with large, regional, multiple-state efforts, such as the Western Juniper Commercialization Project.

Maintaining Communication and Networking - Communication and information exchange do not take place without someone to organize them. Besides personnel time, a small amount of baseline project funding is needed. It is almost impossible to finance large-scale communication methods, such as

newsletters and conferences, without some public support.

1. Mission statement of Western Juniper Commercialization Steering Committee (1994).
2. A significant portion of forested lands which have western juniper in their understory are within National Forest System boundaries, and are not included in Pacific Northwest Research Station Oregon and California field sample plots.
3. Assuming 10,000 ac./yr. at an average of 225 cu. ft./ac = 2.25 million cubic ft. (cubic foot per acre estimate provided by Don Gedney, Pacific Northwest Research Station, Portland)
4. Key assumption is that ranchers who intend to thin their woodlands over the next 10 years will treat 25% of the average 350 woodland acres/landowner, at a minimum cost of \$50 per acre.
5. Multi-Region Strategy Governor grants are part of a state economic development program which uses a highly competitive process to choose projects which will create or sustain family-wage jobs in rural Oregon, and benefit more than one region. It is funded by Oregon lottery dollars.

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