

RED ALDER POTENTIAL IN ALASKA

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Over the past several decades, red alder has established itself as a commercially important species in the Pacific Northwest. Once considered a weed species, red alder now commands respect within many markets, including furniture, architectural millwork, and other secondary manufactured products.

Although red alder's natural range extends to southeast Alaska, an industry has not developed there to utilize the material. Red alder in southeast Alaska is often found in abundance along roadbeds, as well as areas harvested during the region's pulp mill era which lasted from about 1955 to 1995. Many of these easily accessible stands are now reaching commercial sawtimber size. Rising interest in red alder could potentially lead to a range of new opportunities for entrepreneurs and Alaskan wood products firms, including export of logs, kiln-dried lumber, and/or secondary manufactured products (such as furniture, kitchen cabinets and moldings).

Key questions must be answered before entrepreneurs would consider start-up businesses sawing red alder (and/or existing businesses would consider adding alder lumber to their product lines). Among them are:

- What size tree is available and what size is economically feasible to harvest?
- What lumber recovery can be expected from different diameter classes?
- How does overall grade recovery of material in southeast Alaska compare with other regions?
- What is the sustainable volume of material available in a specific location in southeast Alaska?

STUDY OBJECTIVES

AU data for this study was collected in accordance with the terms of a Joint Venture Agreement between the USDA Forest Service, Pacific Northwest Research Station, Alaska Wood Utilization Research and Development Center in Sitka, Alaska, and the Ketchikan Wood Tech-

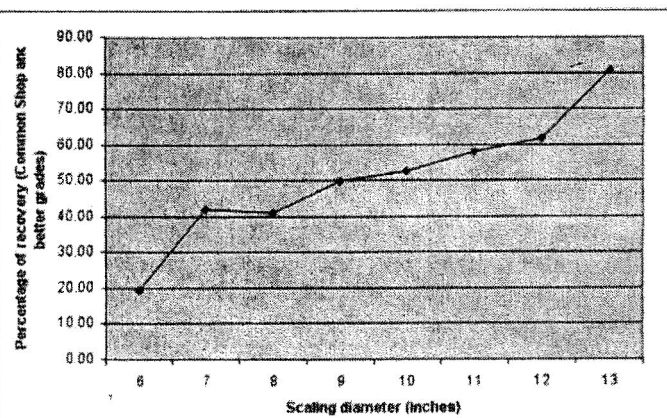
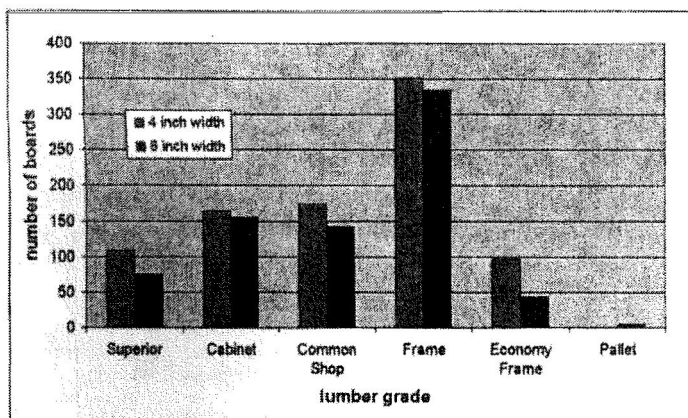
nology Center in Wards Cove, Alaska. The objective for this study was to evaluate the product recovery from red alder trees harvested in southeast Alaska using a thin-kerf portable bandmill, and to determine the suitability of this resource for use by regional wood products firms that typically use small portable mills. Specifically, we evaluated:

Table 1: Scale and tally by grade for 8- and 10-foot Alaska red alder sawlogs, accumulated by scaling diameter class of treelength sections

Tally								
Scaling diameter	Logs	Superior	Cabinet and custom shop	Common shop	Frame	Economy frame	Pallet	All grades
Inches	Number				Board feet			
6	41	0.29	0.88	2.48	10.17	2.61	2.41	18.85
7	39	1.99	4.03	4.75	11.84	1.98	1.04	25.63
8	38	2.18	4.59	6.46	14.65	2.68	1.73	32.29
9	23	4.30	7.71	7.26	16.63	1.93	0.91	38.75
10	17	4.90	10.82	9.40	19.72	1.92	1.05	47.81
11	12	6.50	14.15	10.61	16.56	5.01	1.22	54.06
12	8	12.25	17.48	10.56	17.63	4.92	1.73	65.25
13	5	26.87	26.14	9.53	13.40	1.00	1.33	80.27
Total	183							
Average values for all 8- and 10-foot logs								
8.2		3.69	6.39	6.11	13.99	2.56	1.53	34.29
		10.8%	18.6%	17.8%	40.8%	7.5%	4.5%	99.9%



Scaling full length red alder logs



1) lumber volume recovery of sawn red alder logs (by log diameter and scale class),

2) grade recovery of lumber sawn from red alder logs (by log diameter and scale class),

RAW MATERIAL

Forty-four red alder trees were selected from a single site located near Ketchikan, at an elevation of about 215 ft. The stand age was approximately 46 years, and the average diameter breast height of 50 measured trees was 11.32 in. The standing tree height was measured by eye, and averaged almost 69 ft. (with a range of 61 to 82 ft.).

Grading and scaling of full length stems and bucked logs were conducted by trained personnel from the USDA Forest Service, Tongass National Forest, Ketchikan Ranger District. All logs were scaled according to cubic log scale rules and also Scribner west side log scale rules. Outside bark diameter measurements were then taken at four foot intervals, with an extra measurement two feet from the large end.



Log deck with bucked red alder logs (red tags are used to identify individual logs).



Horizontal band saw processes a clear red alder cant.

SAWMILLING

Primary log breakdown was done using a commercial thin-kerf band saw mill. Primary breakdown of logs was done by first sawing either one or two

"jacket boards" from the best opening face. Logs were then turned 90 degrees and one or two additional boards were sawn. Logs were again turned 90 degrees and all remaining boards were live sawn from this position. All lumber was sawn to a nominal thickness of 3/4 in., and then edged to a nominal width of 4 or 6 in. The lumber was then trimmed to lengths of 5, 6, 7, 8, 9, or 10 ft. (with about 90% of the boards being trimmed to either 8 ft. or 10 ft.).

DRY END

All lumber was dried in a commercial, low-pressure steam dry kiln. The lumber was dried at a dry bulb temperature of 140° F throughout the drying cycle, and was dried to a final target moisture content of 9% (oven-dry basis). A five day drying cycle was used, with wet bulb depression ranging from 5 to 15° F. Lumber was planed to a final thickness of 0.75 in., and stored in a dry location.

LUMBER GRADING

Lumber grading was done by a trained grader, and was adapted from industry standard rules for red alder (National Hardwood Lumber Assn. 2007), modified to recognize grades commonly used by the industry. Each board was identified according to log and tree number, and then assigned one of the following grades:

- Superior
- Cabinet & Custom Shop
- Common Shop
- Frame
- Economy Frame
- Pallet

DISCUSSION

Hardwood lumber is graded not on the size or distribution of defects, but rather the percentage of board area in clear cutting. Thus, even large, strategically located defects could be present in a board without reducing its grade.

In our study, 44 trees produced a total of 6,273 board feet of lumber. A total of 1,742 boards were sawn from red alder logs. Based on count, 58% of the boards were nominal 4 in. and 43% were nominal 6 in. stock. When tally was considered, 46% were nominal 4 in. and 54% were nominal 6 in. stock. Forty-seven percent of the material was in Common Shop or better grades of lumber. The bulk of the remaining production (almost 41% of total) was in Frame grade material which is com-

monly used in locations where it is not visible, such as supporting structures of upholstered furniture Table 1).

Superior grade lumber, the highest value lumber, represented less than 11% of total volume sawn. One clear trend was that for smaller diameter logs (top scale diameter less than 10 in.), frame grade predominated whereas for larger diameter stems there was a more even distribution between Superior, Cabinet & Custom Shop, and Common Shop grades. Another clear trend was that the yield of Superior grade was considerably greater for 12 in. and 13 in. scaling diameters vs. smaller stems. In general, as the scaling diameter increased, so did the percentage of recovery of Common Shop and better grades of lumber.

SIGNIFICANCE

The overall lumber value at the time of the study (January 2007) was \$822 per thousand board feet of tally. We found that the highest grade of lumber (Superior grade) accounted for more lumber value than any other grade (32% of total), despite representing only 10.8% of the total volume.

Low grade material can also be cut into planks for use in cooking "planked salmon." The total market for such "novelty" products is poorly understood, but it represents niche marketing opportunities that local producers can consider to increase the value from low grade material and residuals.

Many of the small sawmills in rural locations have the ability to saw red alder, although lumber yields would likely be lower when using circular saws (versus the band saw used in this study). Existing markets for red alder lumber will accept either rough, green or dried lumber. Therefore individuals with an interest in red alder production should research alternatives and plan to maximize return, based upon the equipment mix of breakdown saws, drying and planing equipment they plan to use for production.

This research was conducted in accordance with a Joint Venture Agreement between the USDA Forest Service, Pacific Northwest Research Station, Alaska Wood Utilization Research and Development Center in Sitka, Alaska (Dr. Allen M. Brackley, Team Leader) and the Ketchikan Wood Technology Center in Wards Cove, Alaska (Dr. Kevin Curtis, Director). References available upon request by contacting David Nicholls, Forest Products Technologist, USDA Forest Service, Pacific NW Research Station, 907-747-4313; e-mail: dlnicholls@fs.fed.us.