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Domestic Market Opportunities for Alaska Lumber-Species Preferences by Secondary Wood Products Manufacturers in the Continental United States

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Abstract

New equipment, technology, and marketing efforts have allowed Alaska's wood products producers to consider opportunities previously unavailable to them. Until recently, the primary product produced by Alaska firms was rough, unseasoned lumber sold primarily within local markets. Given the purchase and installation of new drying and planing equipment, Alaska producers can now enter domestic and export markets for a variety of secondary wood products. Previously underutilized species, such as red alder (*Alnus rubra* Bong.), paper birch (*Betula papyrifera* Marsh.), and Alaska yellow-cedar (*Chamaecyparis nootkatensis* (D. Don) Spach) are also gaining in popularity and market potential. A detailed knowledge of species preferences for Alaska lumber, across business types and geographic regions, will be essential if Alaska producers are to be competitive.

Information for this paper was obtained from producers attending national and regional woodworking shows. Research objectives were to identify which Alaska species are preferred by selected wood products manufacturers in the continental United States. Manufacturing sectors investigated include cabinet, furniture, door and window, and moulding and millwork. A second objective was to determine which geographic regions of the United States have the greatest potential to purchase lumber produced from various Alaska species.

Furniture and cabinet manufacturers were the most common business types among survey responses, representing more than 80 percent of respondents. Overall, Alaska yellow-cedar was the most popular Alaska species,

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followed by Sitka spruce (*Picea sitchensis* (Bong.) Carr.) and western redcedar (*Thuja plicata* Donn ex D. Donn). Of the four business types represented, door/window manufacturers showed preferences for western hemlock (*Tsuga heterophylla* (Raf.) Sarg.), whereas moulding/millwork producers preferred Sitka spruce, Alaska yellow-cedar, and western redcedar. Both western hemlock and Alaska yellow-cedar were generally preferred by respondents from the Northwest region. However, the overall popularity of Alaska species was relatively low, with the most popular species (Alaska yellow-cedar) being used by only about 7 percent of all respondents.

Results of this study indicate a strong potential for development of niche markets by using Alaska species, in particular use of Alaska yellow-cedar by Pacific Northwest producers. Further opportunities could include substitution of Alaska species such as red alder and western hemlock within established markets in the continental United States. The high costs of producing lumber in Alaska (including transportation, labor, and equipment costs) will need to be considered in developing successful export programs.

Keywords: Wood products, Alaska, export, lumber, underutilized species, furniture.

Introduction

Aggregate lumber use in the United States has been well documented for a number of secondary manufacturing industries including furniture (Meyer et al. 1992a, 1992b), cabinets (Olah et al. 2003), and millwork (Briggs and Bialozynski 1995). More recently, strong housing markets have also contributed to increasing national expenditures for an array of secondary wood products, most notably those related to patios and terraces, kitchen improvements, and bathroom improvements (table 1). Despite the large volumes of lumber involved nationally (often in the billions of board feet annually), manufacturing within certain secondary wood products sectors is often done on a small scale, especially in Alaska. Cassens and Bradtmueller (1996) evaluated custom woodworkers nationally, and found that most companies were small (51 percent had three or fewer employees), and that cabinets were the most common product type.

In Alaska, the current domestic market for solid wood products, including lumber and timbers, has been estimated to be between 80 and 90 million board feet (mmbf) per year, and the demand for kiln-dried lumber to be 65 to 70 mmbf per year (McDowell Group 1998). Historically, many of Alaska's

Table 1—U.S. national expenditures for selected home improvement projects: 1994 to 2004 (by type of job, owner-occupied properties)

Type of job	1994	1996	1998	2000	2002	2004	Increase (2000 to 2004)
	----- Millions of dollars -----						Percent
Patios and terraces	790	1,006	687	1,606	1,090	3,685	129.5
Kitchen remodeling	3,716	2,738	7,720	3,636	6,608	10,555	190.3
Bathroom remodeling	1,407	2,086	2,708	3,744	4,492	7,231	93.1
Interior restructuring	3,651	3,778	4,428	2,120	3,588	9,481	347.2

Source: U.S. Census Bureau 2005.

sawmills have produced mostly rough-cut green lumber or cants. In calendar year 2002, actual mill production of softwood lumber in southeast Alaska was estimated to be 39.7 mmbf (table 2) (Kilborn et al. 2004). Although we have no data on the volume of secondary wood products produced in Alaska, the number of firms has grown consistently across product types (table 3) (Parrent 2000, 2004).

Lumber drying and processing have been key elements of this expansion. Just 4 years ago it was estimated that there were 12 commercial dry kilns in Alaska, having total installed capacity² of about 94 mbf (Nicholls and Kilborn 2001). Today there are an estimated 21 dry kilns having total installed capacity of about 220 mbf. Adding to the state’s capabilities for secondary processing of lumber are an estimated five to six planers or moulders, which have recently come online. Indeed, some firms have constructed integrated wood products facilities that include some or all of the following: sawmills, planers, molders, dry kilns, lumber storage buildings, and wood energy facilities.

With the continued growth of the lumber drying and secondary wood processing industries in Alaska comes increased opportunities for lumber products to serve local needs as well as broader markets within the continental United States and internationally. The goal of our research was to determine which Alaska species are in greatest demand within various regions of the

² Installed capacity is the volume of dry kiln space available at any given time and represents a “snapshot” of all of the current kilns in Alaska, but does not provide information regarding how much lumber can be dried during a given period.

Table 2—Geographic range and estimated lumber production of commercially important timber species in Alaska

Species name (common)	Species name (scientific)	Geographic region(s) of Alaska	Estimated lumber production <i>Thousand board feet</i>
Western hemlock	<i>Tsuga heterophylla</i>	Southeast	21,416 ^a
Sitka spruce	<i>Picea sitchensis</i>	Southeast	11,555 ^a
Alaska yellow-cedar	<i>Chamaecyparis nootkatensis</i>	Southeast	1,192 ^a
Western redcedar	<i>Thuja plicata</i>	Southeast	5,354 ^a
Paper birch	<i>Betula papyrifera</i>	South-central and interior	<100
White spruce	<i>Picea glauca</i>	South-central and interior	4,000

^a 2002 calendar year production as per Kilborn et al. 2004.

Table 3—Number of firms in the secondary wood products industry in Alaska, 2000 and 2004

Business category	Alaska firms listed ^a	
	2000	2004
	<i>Number</i>	
Furniture	22	25
Moulding and millwork	13	18
Cabinets	8	15
Total	43	58

^a Source: Parrent 2004.

For Alaska producers to more fully realize opportunities within continental U.S. markets, information is needed regarding preferred species and product types.

continental United States. A secondary goal was to determine which types of wood products firms would be most interested in using lumber from Alaska species.

Study Goals and Rationale

Many Alaska species are known for their unique characteristics and features, which can include strength (Green et al. 2002, McDonald et al. 1997), tight ring spacing (Laroque and Smith 1999), and natural decay resistance (Donovan 2004). For Alaska producers to more fully realize opportunities within continental U.S. markets, information is needed regarding preferred species and product types. Market research in these areas as well as product

pricing is important because it allows producers to accurately target their customer groups, focusing on those that are most profitable.

Further, the unique qualities of Alaska species are being identified in order to justify the additional costs (including transportation, labor, and equipment costs) for Alaska-produced lumber to be exported to continental U.S. locations. By identifying preferences for Alaska species of industrial woodworking firms within several national regions, we hope to recognize those species having the strongest potential for export to these markets. In this paper, domestic markets refers to all markets within the continental United States (i.e., the lower 48 States), not including Alaska and Hawaii.

Alaska Species of Interest

Most of the commercial lumber production in Alaska is from six species, including five softwoods and one hardwood (table 2). Many of Alaska's larger commercial softwood sawmills produce primarily western hemlock and Sitka spruce. In southeast Alaska during calendar year 2002, actual mill production consisted of western hemlock (21,416 mbf), Sitka spruce (11,555 mbf), western redcedar (5,354 mbf), and Alaska yellow-cedar (1,192 mbf) (Kilborn et al. 2004) (table 2).

Lumber from other species, such as paper birch, are produced by smaller sawmills in south-central and interior Alaska in limited quantities for local markets. There is currently very little lumber production from red alder in Alaska, although there is an inventoried growing stock in southeast Alaska (van Hees 2001a, 2001b). Although it is a relatively insignificant forest type in terms of board foot volume, red alder is often found in easily accessible areas, including roadbeds and previously harvested stands. In this study we consider not only primary timber species, but also underutilized species for which emerging opportunities and markets might be present.

Methods

Data were collected at three regional and national industrial woodworking events in California, Michigan, and Washington during 2003 and 2004. Attendees represented a broad cross section of secondary wood products firms that could potentially be interested in lumber from Alaska species. Respondents were screened only on the basis that they used lumber in a commercial woodworking enterprise; as such, the sample population did not include other users, such as home hobbyists or those employed by equipment manufacturing firms. Respondents were asked to indicate Alaska species that they had

used at least once in their commercial operations. Therefore, it is important to note that our study results were not based on aggregate (board foot volume) lumber use, but rather percentage of responding firms that had used a given species in any amount at least once. Geographic region of respondents was based on location of company headquarters, and are indicated by state in the appendix. The Southeast region is not included in our results, as very few respondents (approximately 1 percent of total) were from this region. Demographic information regarding company size, primary and secondary business categories, years in business, and state of headquarters was also noted.

Our primary comparisons of interest were between industry groups and between geographic regions for commercial use of the seven Alaska species. Comparisons among means were conducted by using ANOVA and Bonferroni procedures for multiple comparisons between means. The four business types evaluated in this study represent the four most common businesses sampled at the industrial woodworking events.

Results

Product Lines and Company Size

Furniture and cabinets were the most common product lines, representing more than 80 percent of the total responses (table 4). Moulding and millwork and doors and windows accounted for about 11 and 6 percent of responses, respectively. Cabinet producers were the most common business type in Northeast and Northwest regions, whereas in the Southwest, cabinet and furniture producers were equally represented. More than 51 percent of respondents had annual sales of less than \$500,000 (and median company size was five employees), indicating a preponderance of small businesses. These results are similar to a national survey of 168 custom woodworkers in which 54 percent had 10 or fewer employees (Cassens and Bradtmueller 1996). Southeast Alaska is also characterized by small firms, where 17 of 20 sawmills evaluated had fewer than 10 employees (Kilborn et al. 2004).

Alaska Species Preferences (by Region)

Seven Alaska species were evaluated: western hemlock, Sitka spruce, Alaska yellow-cedar, western redcedar, red alder, paper birch, and white spruce (*Picea glauca* (Moench) Voss). Relatively few respondents (about 16 percent) had ever used Alaska species commercially. There were statistical differences in species use by region for only two of these species. Use of western hemlock

Table 4—Primary business category of respondents, by region of company headquarters

Primary business category	U.S. geographic region			Total (all regions combined)
	Northeast region	Northwest region	Southwest region	
<i>Number of times listed (percent)</i>				
Furniture	44 (35.5)	29 (23.4)	51 (41.1)	124 (100)
Moulding and millwork	11 (29.7)	9 (24.3)	17 (46.0)	37 (100)
Cabinets	61 (38.4)	48 (30.2)	50 (31.4)	159 (100)
Doors and windows	9 (47.4)	8 (42.1)	2 (10.5)	19 (100)

was greater in the Northwest region vs. other regions (significant at the 0.05 level) (table 5). Likewise, use of Alaska yellow-cedar was greater in the Northwest region vs. other regions (significant at the 0.01 level).

The greatest regional use of any species was (by a large margin) Alaska yellow-cedar in the Northwest region (over 17 percent of respondents had used this species at least once). Alaska yellow-cedar was also the overall most popular species, followed by Sitka spruce and western redcedar.

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Alaska Species Preferences (by Business Type)

There were no statistically significant differences in species use between business types (table 6); however, some general observations are noted:

- Western hemlock was favored by door and windows manufacturers.
- Use of Alaska yellow-cedar was generally strong, and consistent across business types.
- Use of western redcedar was favored by moulding and millwork manufacturers.
- Door and window manufacturers indicated no use of white spruce, red alder, paper birch, or western redcedar.
- Molding and millwork manufacturers indicated no use of white spruce or red alder.

Considerations

We offer the following considerations for Alaska producers wishing to increase shipments of lumber and secondary wood products to the continental United States:

- Target the Pacific Northwest and California markets, and establish distributor relationships.

Table 5—Lumber use of Alaska species, as indicated by number of respondents at regional industrial woodworking events who had used a given species at least once

Species	U.S. geographic location			Total (all regions combined)	F-value
	Northwest region	Northeast region	Southwest region		
	----- Percent -----				
Alaska yellow-cedar	17.17ab	2.22a	5.84b	7.45	6.910**
Paper birch	5.05	0.74	5.11	3.46	1.684
Red alder	5.05	0.	3.65	2.66	2.192
Sitka spruce	8.08	2.96	3.65	4.52	1.382
Western hemlock	5.05a	0.a	.73	1.60	3.544*
Western redcedar	7.07	1.48	5.11	4.26	1.652
White spruce	2.02	.74	1.46	1.33	.265

Note: Values sharing the same letter are significantly different at the 0.05 significance level by using the Bonferroni post hoc test.

* Significant at = 0.05 level by using ANOVA analysis.

** Significant at = 0.01 level by using ANOVA analysis.

Table 6—Lumber use of Alaska species, as indicated by respondents at regional industrial woodworking events (percentage of respondents who had used a given species at least once)

Species	Business type				Overall average	F-value ^a
	Doors and windows	Moulding and millwork	Cabinets	Furniture		
	----- Percent -----					
Alaska yellow-cedar	8.33	8.11	6.63	6.20	7.11	0.02
Paper birch	—	5.41	4.82	2.33	3.19	1.72
Red alder	—	—	2.41	3.88	2.45	.76
Sitka spruce	4.17	8.11	3.61	4.65	4.41	.43
Western hemlock	8.33	2.70	1.20	0.78	1.47	2.21
Western redcedar	—	8.11	3.01	3.88	3.92	.85
White spruce	—	—	1.20	.78	1.23	.75

^a There were no significant differences between business types found by using ANOVA analysis.

- Focus lumber sales efforts primarily on furniture manufacturers and cabinet manufacturers.
- In Pacific Northwest markets, emphasize Alaska yellow-cedar, western redcedar, and Sitka spruce.
- In all geographic regions (Northwest, Southwest, Northeast), emphasize Alaska yellow-cedar.
- In all business categories, emphasize Alaska yellow-cedar.
- Develop methods to advertise Alaska forest products in target markets.
- Attend trade shows that draw visitors from target markets; display Alaska lumber and secondary products at these shows.

- Adopt quality programs designed to ensure target lumber thickness between 1 and 2 inches; emphasize 1-inch thickness.
- Be prepared to provide wood samples of Alaska species to prospective purchasers.

Discussion

Alaska yellow-cedar, Sitka spruce, and western redcedar were the most popular Alaska species among firms in the continental United States; however, relatively few firms had used any Alaska species commercially. Our study found statistically significant regional differences between species for only western hemlock and Alaska yellow-cedar. When considering the seven Alaska species and three geographic regions of the continental United States that we evaluated, the strongest opportunities appear to be for use of Alaska yellow-cedar lumber by producers in the Northwest region. Further, Alaska yellow-cedar had strong and consistent use across the four primary business categories, suggesting that it could be used to produce a variety of secondary products (including furniture, cabinets, doors and windows, and moulding and millwork).

Alaska producers should develop marketing strategies targeting select geographic regions, for example, California, which continues to be one of the strongest housing markets in the Nation. Although the annual demand for California housing is between 230,000 and 250,000 units, owing to regulation and a poor business environment, California housing starts lag substantially behind demand (Frith 2004). Therefore, housing starts should remain strong in California to support this state's increasing population. Alaska producers could find strong opportunities by targeting California markets in addition to markets closer to home (e.g., the Pacific Northwest). For these and other markets, Alaska producers could ship larger quantities to stocking distributors rather than smaller quantities shipped directly to end users. Other strategies for reaching niche markets within various regions could include creating industry advertising cooperatives (in which multiple producers are listed and ad costs shared), and attending regional trade shows. Although not considered in this study, product pricing and perceived value (and the relation between price and value) are important considerations for Alaska producers entering new markets.

An important consideration not addressed in this study is lumber grade. Alaska producers will need to recognize the lumber grade requirements of their customers to develop successful marketing programs. For example,

Our study found statistically significant regional differences between species for only western hemlock and Alaska yellow-cedar.

within the kitchen cabinet sector, it is estimated that close to 95 percent of hardwood lumber purchases require No. 1 Common or Better grade (Olah et al. 2003). Over the long term, opportunities could be greater for Alaska lumber producers (both hardwoods and softwoods) who have established lumber grading procedures. Other options could include developing proprietary grading rules to account for features common to Alaska species (Nicholls et al. 2004). Lumber thickness is another important consideration, and this study indicates a strong preference (close to two-thirds of total used) for 1-inch-thick lumber (table 7).

All seven of the Alaska species we considered in this study are also grown within the continental United States, at locations considerably closer to primary markets. For Alaska wood products firms to reach these distant, yet substantial markets, the unique qualities of Alaska species—including decay resistance, tightness of growth rings, strength, and machinability, among others—must be identified and successfully promoted. Several positive trends within Alaska’s wood products industry all bode well for increased lumber exports—including greater dry kiln capacity, quality lumber drying practices, and greater control of final product dimension (through new planing, profiling, and moulding equipment). However, in-state production of kiln-dried lumber is still considerably less than in-state market demand. With increased lumber manufacturing in Alaska, firms will need to decide between meeting growing in-state demands vs. opportunities within regional and export markets.

Table 7—Lumber thickness by business type (percentage of total lumber used, by respondent)

Preferred lumber thickness	Furniture	Moulding and millwork	Kitchen cabinets	Doors and windows	Total	F-value
<i>Inches</i>	<i>----- Percent -----</i>					
4/4	56.73c	54.24b	75.14abc	50.33a	64.94	11.98**
5/4	16.71	16.86	11.75	25.62	14.88	2.91*
6/4	8.49	10.25	4.64	5.76	6.65	4.05**
7/4	1.57	3.08	.87	.76	1.34	0.96
8/4	11.94a	10.71	5.45a	15.14	8.88	5.49**

Note: Values sharing the same letter are significantly different at the 0.05 level using the Bonferroni post hoc multiple comparison test.

* Significant at the 0.05 level using ANOVA analysis.

** Significant at the 0.01 level using ANOVA analysis.

Metric Equivalents

When you know:	Multiply by:	To get:
Inches (in)	2.54	Centimeters
Feet (ft)	.3048	Meters
Square feet (ft ²)	.093	Square meters
Cubic feet (ft ³)	.028	Cubic meters

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Appendix

States making up the geographic regions used in this study.

Northwest Region

Alaska
California (north)
Idaho
Iowa
Minnesota
Montana
Nebraska
North Dakota
Oregon
South Dakota
Washington
Wyoming

Southwest Region

Arizona
California (south)
Colorado
Hawaii
Kansas
Missouri
Nevada
New Mexico
Oklahoma
Texas
Utah

Northeast Region

Connecticut
Delaware
District of Columbia
Illinois
Indiana
Kentucky
Maine
Maryland
Massachusetts
Michigan
New Hampshire
New Jersey
New York
Ohio
Pennsylvania
Rhode Island
Vermont
Virginia
West Virginia
Wisconsin

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