



Alaskan Grown

A Guide to Tongass Young Growth Timber and its Uses



+ The Guide

Young-growth timber is an emerging resource in Southeast Alaska that offers an opportunity to produce quality wood products while improving economic and environmental sustainability throughout the region. One of the keys to successfully capturing this opportunity is developing better markets for, and knowledge of, local young-growth wood products.

This guide is for builders, woodworkers, consumers, resource managers, and others interested in learning more about the quality of Tongass young-growth timber and how it can be used.

The purpose of this guide is to support this effort by shedding light on the quality and usefulness of young-growth timber from the Tongass National Forest. To do so, we explore a range of species and uses, and share lessons learned from builders, millers, woodworkers, consumers, and researchers involved in projects across the region.

We hope to uncover practical insights and information that will help businesses and

consumers make more informed choices about using Tongass young-growth timber.

+ Background

In 2010, the U.S. Forest Service announced a "Transition Framework" policy aimed at diversifying the Southeast Alaska economy and shifting the timber industry to young-growth harvest and management. Since that time, the U.S. Forest Service, USDA Rural Development, local businesses, conservation groups, and others have been evaluating how the region can develop a locally based, properly-scaled young-growth industry that provides greater economic security for local communities, builds regional knowledge and skillsets, and restores critical forest habitat in the Tongass.

In order for the young-growth transition to be a long-term success, certain key milestones must be met. These include reducing regional energy costs, investing in small-log processing equipment, developing local facilities for secondary wood processing, improving local and non-local markets, and improving the overall understanding of young-growth timber quality and products, particularly in Southeast Alaska (Alexander et al., 2010). This work will require extensive cooperation between government agencies, non-profits, private businesses and residents to support local innovation and larger long-term efforts.

+ The Basics

The most common species of young growth on the Tongass are Sitka spruce, western hemlock, and red alder. Timber from young-growth trees is not the same as that from old growth -- perhaps the biggest difference is the clarity of the grain -- but it has the strength, elasticity, and other properties required for common products such as light framing lumber, round and milled logs for cabins and homes, flooring, furniture, cabinets, and more.

There are currently around half a million acres of young growth on the Tongass National Forest, half of which are in the timber base. Most of these trees are between 30 and 50 years old, and about 1.5% are over 60 (Wolfe et al., 2010). There are approximately 8,500 that may be candidates for commercial thinning within the next decade. Experts predict that economically sustainable young-growth management could be possible as early as the



2030s. The expectation is that all harvests will eventually be sustained in young-growth stands (Alexander et al., 2010).

As young-growth matures, forest restoration both within and outside the commercial timber base is essential. Without thinning, overgrown young-growth eventually blocks sunlight from the forest floor, damaging local subsistence resources and impeding its own development. Although not typically an economical source of wood, restoration and pre-commercial thinning projects are one way by which local harvesters and processors can gain the experience needed to take advantage of future commercial young-growth opportunities.

+ Challenges

One of the most critical challenges to the young-growth transition in Southeast Alaska is the high cost of energy for processing and transportation. These costs inhibit the local production of finished wood products, and make it difficult for local processors to compete in broad, lower-value markets (Barbour et al., 2005).

Another challenge is the high cost of retooling an industry for small-log capabilities, which is something that will not likely be tackled by the private sector alone. One recent study estimated the cost of retooling a sawmill on Prince of Wales Island at \$12 million (Beck Group, 2009).

In addition to the higher costs associated with doing business in Southeast Alaska, under-developed knowledge of Tongass young-growth markets, quality, and products limits consumer demand and discourages investment in new infrastructure (Alexander et al., 2010).

You come to the conclusion that if you want young-growth spruce or hemlock logs, they work great.

- Allen M. Brackley, Director, PNW - Sitka Wood Utilization Center

Uncertain supply, including the need for a better understanding of current and future young-growth timber availability, also leaves many local harvesters and processors hesitant to invest in new equipment and market development.

The scale of these challenges demonstrates a critical need for strategic investments, resourceful and creative thinking, and collaboration across public and private stakeholders to build upon opportunities for a sustainable, locally based young-growth industry.

+ Did you Know?

- Tongass young growth has the strength, elasticity, and other properties suitable for structural lumber.¹
- The average diameter at breast height of 60-year-old young-growth stands is 10.5," expected to reach 14" at maturity.
- There are about 250,000 acres of young growth in the Tongass timber base.
- Young growth can be used for light framing, round and milled cabin logs, flooring, furniture, cabinets, millwork, and more.

PHOTOS

Cover (L-R, top-bottom): red alder on False Island; red alder bedside table; hand-scribing young-growth spruce; young-growth timber on Prince of Wales Island; custom young-growth spruce joinery and framing (credit: Sean Nielson).

Opposite: A University of Alaska Southeast log cabin workshop student hand-scribing young-growth Sitka spruce cabin logs.

Next page: Sitka High School Industrial Arts instructor Randy Hughey with the beginning of a local alder bedside table.

¹. Sidebar data from Christensen et al., 2002; Barbour et al., 2005; and Beck Group, 2009.

+ Opportunities

Young growth is a durable, attractive material that can meet most wood product needs while helping to reserve old-growth timber for high-value niche markets. Although the Tongass young-growth resource is a few decades away from being able to support a region-wide industry, local harvesters, processors, builders and others are building the skills, knowledge, infrastructure and demand needed to capture emerging opportunities. These include:



- » **Forest Restoration and Stewardship.** Young-growth restoration byproducts are not suitable for large-scale commercial use, but provide a small source of material for local harvesters and processors to gain experience working with young-growth wood.
- » **Demonstration Projects.** Young-growth building projects throughout the region are being funded by government agencies, small businesses, conservation nonprofits, and private homeowners to improve knowledge among local harvesters, processors, contractors, and consumers. They demonstrate practical uses for young growth, and encourage further investments and innovation.
- » **Everyday Products.** Tongass young-growth spruce, hemlock, and alder can be used for a wide variety of common products such as light framing, round and milled logs for cabins and homes, flooring, furniture, cabinets, and millwork.

- » **Local Markets – Public.** Annual demand for wood products to build and maintain all structures on the Tongass National Forest, including cabins, bridges, and trails, is about 1.3 million board feet per year. Only about 23% of this volume is currently supplied by local sources; if this were to improve, demand for local lumber would increase substantially (Cantrell, 2005; Alexander et al., 2010).
- » **Local Markets – Private.** Quality local timber such as young-growth hemlock and alder is excellent for flooring, furniture, millwork and more, yet markets for these woods are largely untapped in Southeast Alaska.

The wood cuts easily and makes beautiful boards. I could see it being used for almost any kind of building material.

- Mel Cooke, Last Chance Enterprises, Prince of Wales Island

With the right investments and creative thinking, Southeast Alaska can develop a young-growth industry that benefits local communities, supplies new local and non-local markets, supports forest restoration, and integrates a variety of products to ensure the most innovative and economical use of the resource.

As consumers come to understand the quality and versatility of Tongass young growth, and producers increase their processing capabilities, young-growth timber should be able to support an economically and environmentally sustainable industry in the heart of one of Alaska's most wild and cherished landscapes.

Species + Uses

Sitka Spruce



Sitka spruce is a moderately soft and lightweight wood with a high strength-to-weight ratio. Old-growth specimens can produce long, clear, straight-grained pieces prized for high-end niche markets such as aircraft and musical instruments. Although young-growth Sitka spruce does not offer the clarity and strength required for specialty products, it suits most common uses. Sitka spruce lives 500-700 years, reaching 5-8 feet in diameter.

Great for: lumber, furniture, flooring, light framing, log construction, and millwork. Takes paint, glue, and varnish.

Western Hemlock



Western hemlock is a moderately strong and lightweight hard wood, with moderately high shrinkage and very low decay resistance. Although it is not commonly used in Southeast Alaska, it is a beautiful light rose-tinted wood, and excellent for many common home applications. Western hemlock has a life span of 200-500 years, reaching 2-4 feet in diameter.

Great for: lumber, furniture, flooring, cabinets, light framing, posts and beams, laminated beams, and molding and trim. Takes paint, glue, and varnish well.

Red Alder



Red alder is the most common hardwood on the Pacific coastline. It is moderately lightweight, with intermediate strength and relatively low shrinkage. Red alder grows quickly in disturbed areas such as floodplains and roadsides. It has a life span of only 60-100+ years, and reaches 4-25 inches in diameter. Red alder should be dried relatively slowly to minimize warp.

Great for: furniture, cabinets, molding, sash and door panel stock, and other millwork.

(Source: "Common Trees of Alaska," USDA Forest Service, 2009)

Sitka High School Industrial Arts Sitka, Alaska

Red Alder Bedside Tables

This project, funded by the National Forest Foundation and Sitka Conservation Society, is one piece of a broader effort to explore and demonstrate the performance of Tongass young growth in a variety of interior and exterior applications.

+SPECS

Date: 2012

Wood: red alder from False Island

Age: 20-30 years, 10-15" DBH

Cost: \$1.90/bf (planed, kiln-dried), vs. \$1.75 for poplar

Notes:

- » Kiln-dried for two weeks
- » Color is rosy pink to light brown
- » Occasional dark streaks and spalting
- » Clear sections can be considered superior in look to poplar
- » Fairly soft, with frequent and often loose knots
- » Should be dried more slowly to minimize warping, cupping, and splitting
- » Great material for flooring, cabinetry, and finish-work, but is more labor-intensive than conventional lumber (requires removing more imperfections)

Using red alder harvested and milled on False Island, Sitka High School industrial arts instructor Randy Hughey compared the local alder to imported poplar as a material for both education and general woodworking purposes. His classes made nine bedside tables out of red alder, and twenty-three out of poplar.

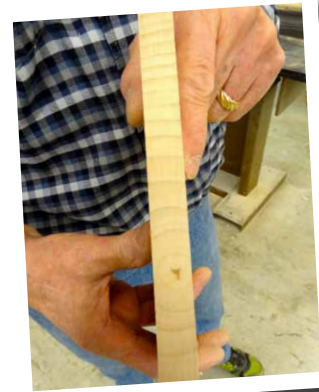
Todd Miller of TM Construction, who harvested, milled, and kiln-dried the alder in the Sitka Ranger District, partnered on the project to learn more about the quality and potential marketability of the material. From a business perspective, Miller and his team gained



Sitka High School Industrial Arts Sitka, Alaska

Red Alder Bedside Tables, cont'd...

valuable experience milling and drying a wood that is fast-growing and abundant, but not commonly used in Southeast Alaska. They found that having a variety of possible uses in mind is key, including biomass, because often only about 15-30% of an alder tree is suitable for milling. Flooring is one of the most cost-effective applications for red alder because it does not require specific lengths and can accommodate the removal of knots and other imperfections.



For his part, Hughey observed that the red alder is "a beautiful wood, in my opinion superior to poplar, but we wasted a lot of it cutting out loose knots and warped portions. If one were going to use local alder as a cabinetmaking wood, it would have to be either by significantly selecting out the knots to achieve a clear grade, or by marketing it as a rustic sort of product."



Spring 2013

Young Growth Spruce Bike Shelter

This semester, SHS industrial arts students are using young-growth Sitka spruce harvested on Prince of Wales Island (POW) to construct a three-sided bike shelter for the Sitka Sound Science Center. The spruce was milled into studs, rafters, beams, roof decking, and wall sheathing by Mel Cooke of Last Chance Enterprises. Old-growth red and yellow cedar, also from POW, will be used for the floor, siding, and shingles.

The project will offer students a chance to become familiar with using local woods, and provide the community with a practical demonstration of local young-growth spruce as dimensional lumber. Mr. Hughey and his students will share their observations and lessons learned at an open house celebration when the shelter is complete. This project is being funded by the National Forest Foundation, the Sitka Conservation Society, The Nature Conservancy, and the Sitka Sound Science Center.

Pioneering Projects

Starrigavan Creek Cabin

Sitka Ranger District, Alaska



The Starrigavan Cabin, completed in 2008, was the first young-growth recreation cabin on the Tongass National Forest. It is now the most popular cabin in the system. The project was made possible through the combined efforts of the Sitka Ranger District, Pacific Northwest Research Station, University of Alaska, Sitka Conservation Society, and Southeast Alaska Career Center, to explore the durability and versatility of young-growth spruce through hands-on education.

Logs for the 16x20' structure were harvested from overgrown stands in the surrounding Starrigavan Valley and processed by students at the University of Alaska Southeast during a two-week log home workshop. Participants learned traditional techniques such as hand-scribing and carving custom joinery. About 95% of the cabin is constructed out of young growth, and the base logs are protected from rain and rot by a generous overhang.

Today, the cabin offers useful insight into using young-growth spruce for round-log construction. Allen Brackley, Director of the Pacific Northwest Research Station, has monitored the cabin for the past four years and reports that,

"It is a good, tight building that is stabilized and weathering nicely.... You come to the conclusion that if you want young growth spruce or hemlock logs, they work great. It's a beautiful cabin."

+SPECS

Date: 2008

Wood: young-growth Sitka spruce

Age: 30-40 years, about 16-18" dbh (note: this is less than the typical age of a feasible commercial thin on the Tongass)

Uses:

- » Round logs: 3.5-4.2 mbf
- » Heavy timbers: 0.4 mbf
- » Dimensional lumber: 3.6 mbf

Notes:

- » The logs were straight and easy to work with
- » The cabin today shows no rot and minimal cracking
- » The wood is strong, few knots



Pioneering Projects

Middle Ridge Cabin

Wrangell Ranger District, Alaska



Sparked by the success of the Starrigavan Cabin, the Middle Ridge Cabin on Wrangell Island became the second young-growth recreation cabin on the Tongass National Forest. Built in 2009 to demonstrate how young-growth spruce can be utilized, the cabin was constructed with logs thinned from the upper Starrigavan Valley, and completed in under 8 weeks.

The Middle Ridge Cabin resulted from an impressive community effort involving volunteers from the Southeast Alaska Guidance Association (SAGA), staff from the Wrangell Ranger District, and local residents. The cabin was constructed and then disassembled in a two-week-long class at the University of Alaska Southeast in Sitka. The instructors were a father/son contracting team from Fairbanks who also led the Starrigavan Cabin class.

High school students from Wrangell built furniture for the cabin, and the Stikine Sportsmen's Association sponsors its maintenance. Like Starrigavan, it is open year-round and accessible by vehicle in the summer months, with snow machine access in the winter. It is the most popular cabin on the District.

Keith Appleman, Recreation Staff at the Wrangell Ranger District, says that projects like this are important for building the local interest and knowledge needed to support fuller young-growth markets as trees mature over the next 20-30 years.



+SPECS

Date: 2009

Wood: young-growth Sitka spruce

Age: 30-40 years, about 16-18" dbh (note: this is less than the typical age of a feasible commercial thin on the Tongass)

Uses:

- » Round logs: 3.5-4.2 mbf
- » Heavy timbers: 0.4 mbf
- » Dimensional lumber: 3.6 mbf

Notes:

- » The logs were an ideal size for small cabins, but may be too small for houses
- » The logs were straight and easy to work with, few knots

The cabin is aging well, and the U.S. Forest Service is looking forward to learning how the young growth spruce logs will withstand the higher altitude weather over the long-term.

The Bosworth Home

Gustavus, Alaska



Rob and Koren Bosworth's cabin is one of the first private homes constructed predominately from Southeast Alaska young-growth timber. The Bosworths are conservationists and buy-local advocates who hope to encourage the expansion of local markets by demonstrating the versatility of young growth and other local woods. Their story highlights the emerging demand for Tongass young growth and a new model for local economic development.

About 75% of the Bosworth's 1,500-square-foot cabin is constructed of 50-60 year-old young growth Sitka spruce and western hemlock from Prince of Wales Island. The rest is old growth red and yellow cedar, much of which was salvaged. The cabin features hand-cut dovetailed joinery, squared-timber walls, and the use of 6x8-inch red-cedar timbers for the entire south-facing wall, entryway, windows and steps.

"We hope our cabin project helps inspire more conservation-minded approaches to buying and using local wood."
- Rob Bosworth

Bill and Carolyn Thomason, the builders and mill owners who harvested the wood and built the cabin, saw an opportunity to invigorate the market for young-growth timber products in the region. Harvested as part of a U.S. Forest Service habitat restoration thinning project from 2008-2010, the trees were sold under the authority of a stewardship contract designed to explore the potential economic value of restoration by-products. Although the project was a success, much of the wood has yet to be sold.

The Bosworths hope that their home will be an example of how local woods, especially young growth, can be used and marketed for value-added products right here in Southeast Alaska.



+ SPECS

Date: 2012

Wood: 75% young-growth Sitka spruce and western hemlock

Age: 50-60 years old

Uses:

- » Young-growth spruce: 6x8" square timber walls
- » Young-growth hemlock: floors, interior stairs
- » Old-growth redcedar: windows, trim, outside stairs, entire south-facing wall and entryway
- » Old-growth yellow-cedar: outside deck

Sources + Contacts

Sources

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Project Contacts

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+ Starrigavan Creek Cabin

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+ Middle Ridge Cabin

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For more information about these and other local wood projects, contact the Sitka Conservation Society at (907) 747-7509 or info@sitkawild.org.



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