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White pine bark

White Pine Wood Properties

**Western White Pine Management
Conference**

June 17 – 18, 2008

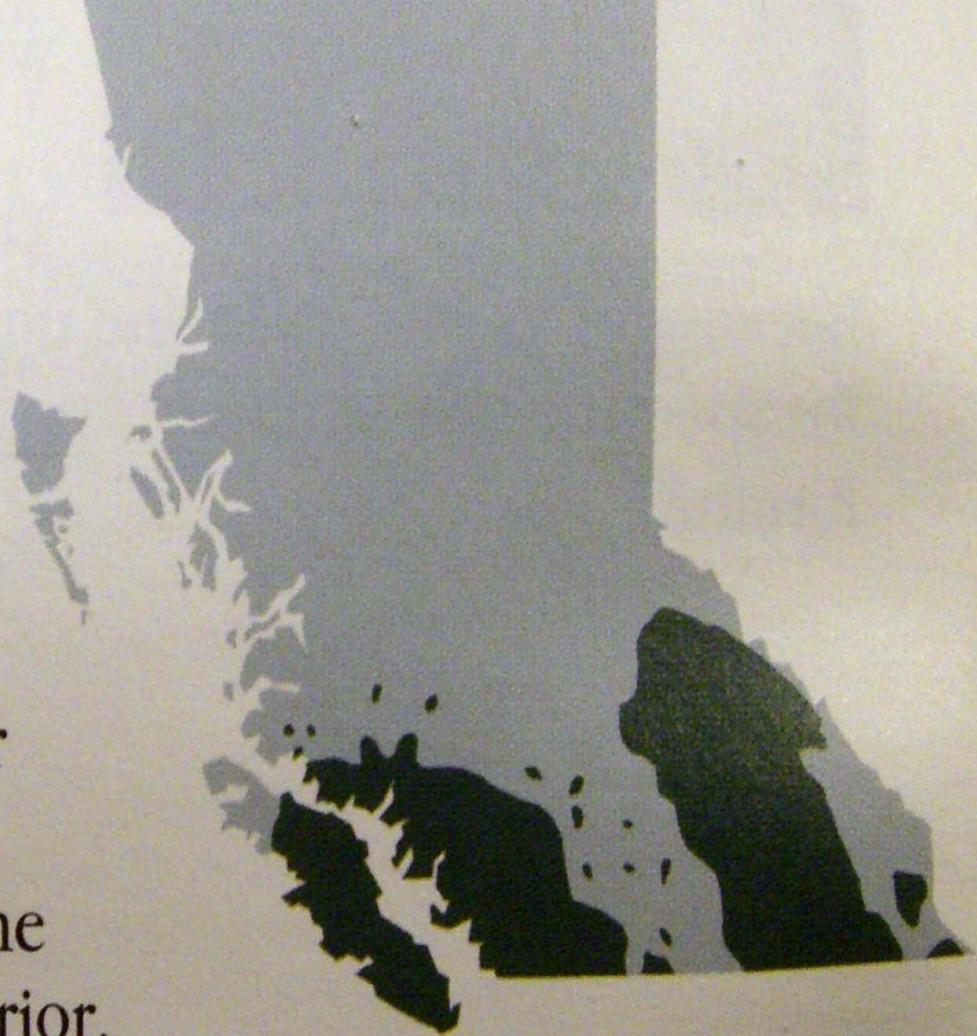
*Les Jozsa
Research Scientist Emeritus*

Distribution of Western White Pine in British Columbia

and greyish-green. It turns darker as it gets older and forms deep, vertical grooves, with small rectangular scaly plates.

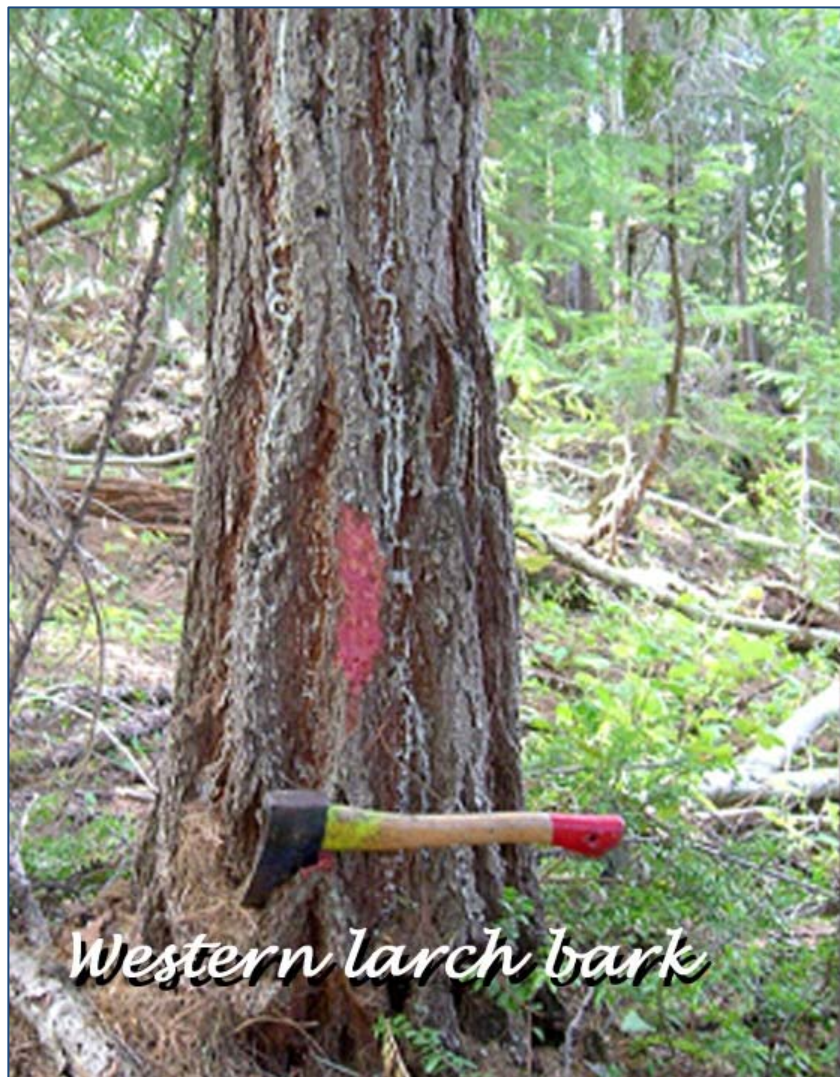
Where to find western white pine

It is commonly found in the drier parts of Vancouver Island, the adjacent mainland coast and in the wetter parts of the southern Interior, particularly at low elevations.



White pine and its associates in the Kootenays





Western larch bark



Engelmann spruce

Species Identification Field guide



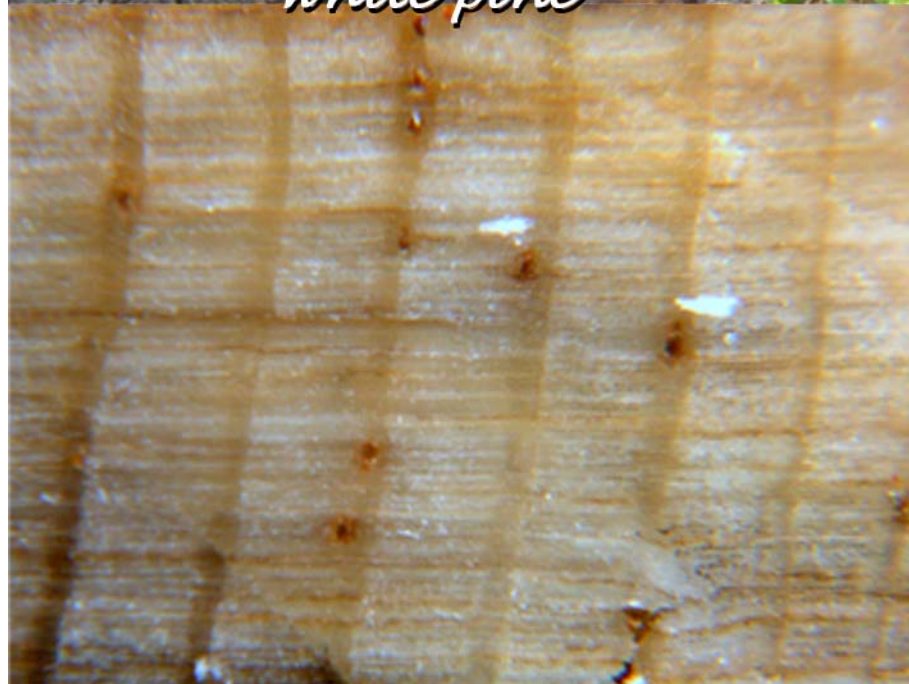
Sample preparation

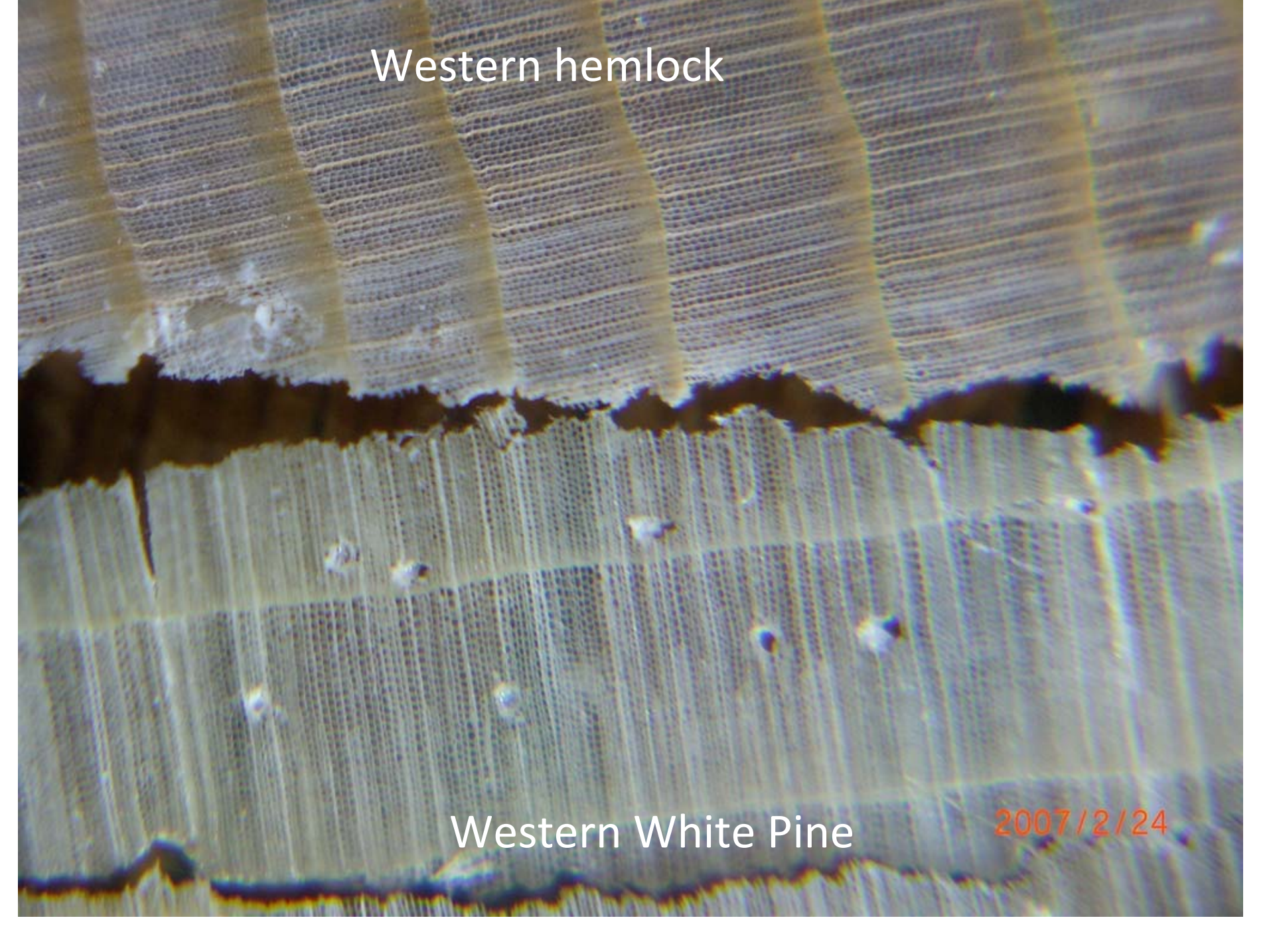


White pine bark



White pine





This is a microscopic image of a wood cross-section, showing two distinct types of wood. The upper portion of the image displays Western hemlock, characterized by its fine, closely spaced growth rings. The lower portion shows Western White Pine, which has much wider growth rings and a more pronounced texture. A horizontal line of separation, possibly a joint or a change in wood type, runs across the middle of the image. The wood is light-colored, with some darker staining or resin visible in the lower section.

Western hemlock

Western White Pine

2007/2/24

Then and Now



OLD-GROWTH

second-growth



What is Good Quality Wood?





\$1000 worth of wood, before carving

WRC Characteristics—

Natural durability

Dimensional stability

Free of pitch & resin

Straight grain

Uniform texture

Light weight but strong

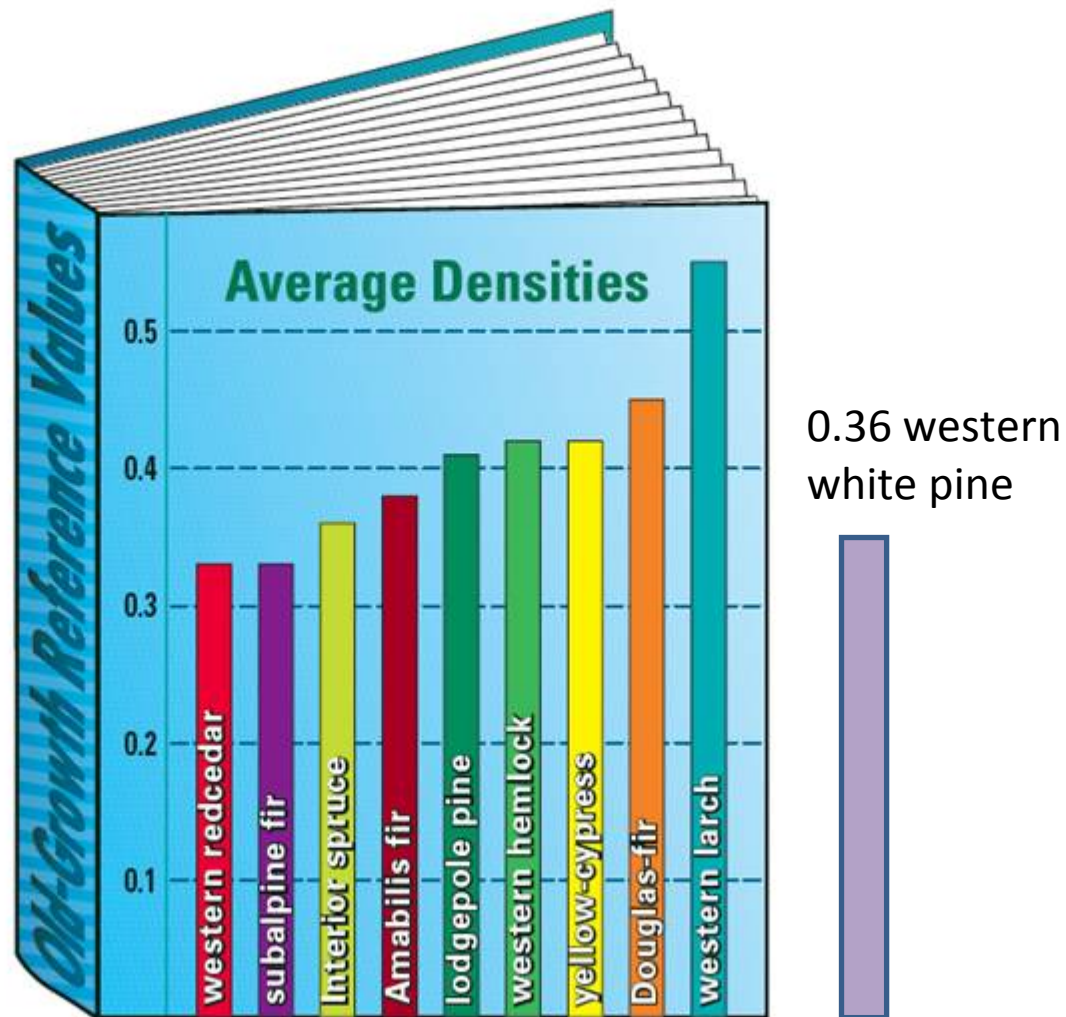
Resists the spread of fire

Good thermal insulator

Excellent acoustic prop's

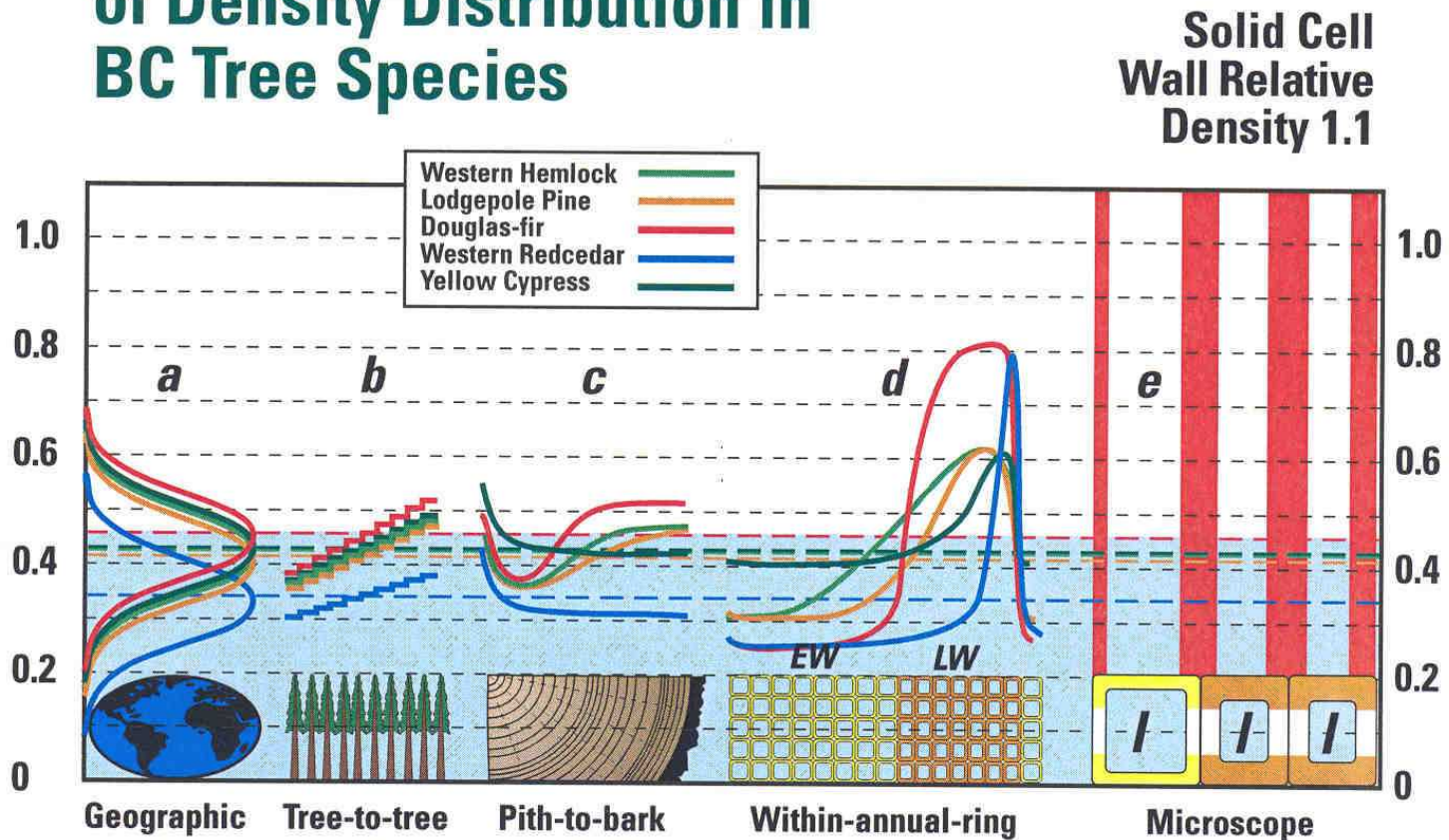


Old-Growth Wood Density Values



Perspective on Second-Growth Wood Density

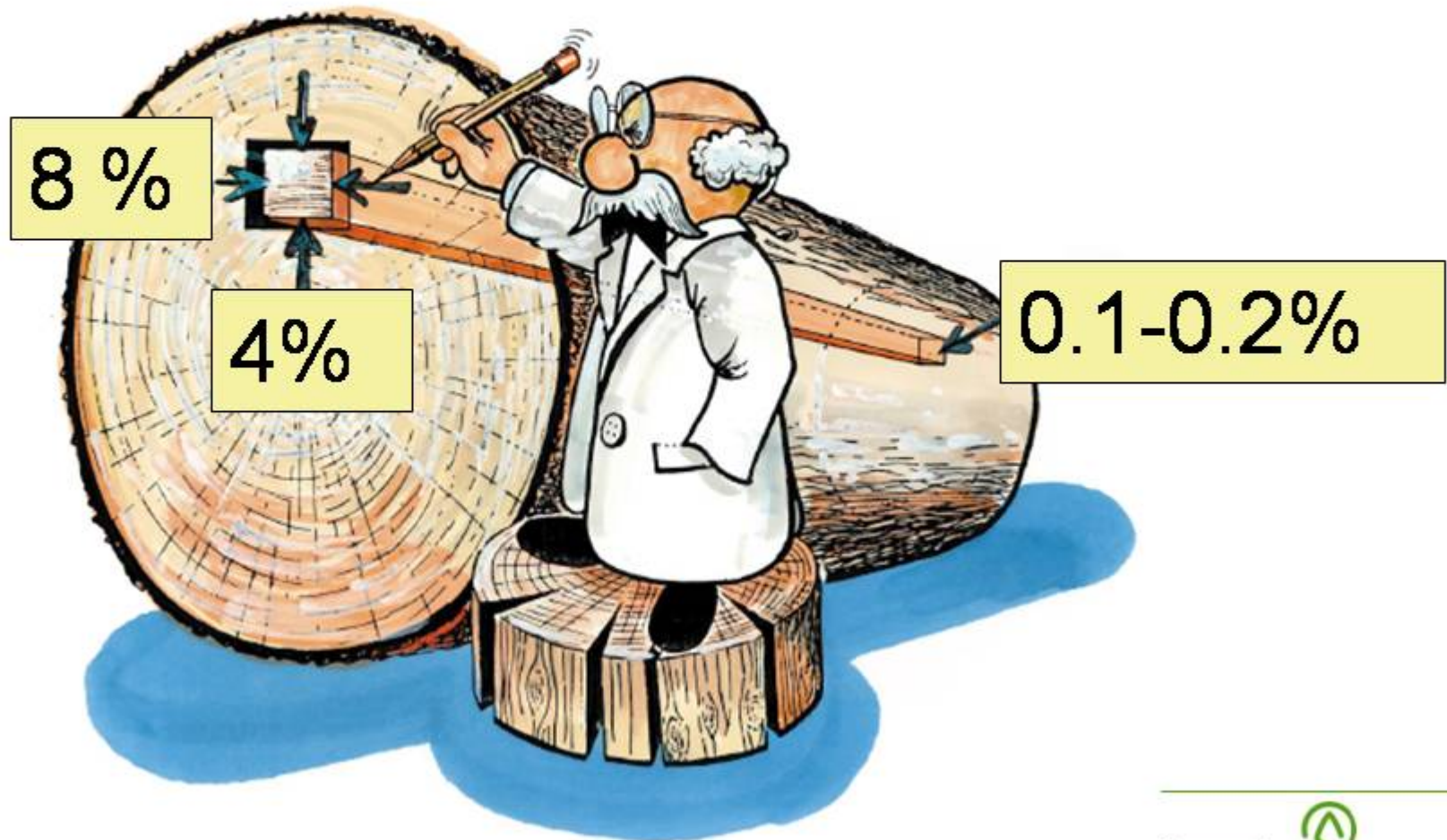
Global to Microscopic View of Density Distribution in BC Tree Species



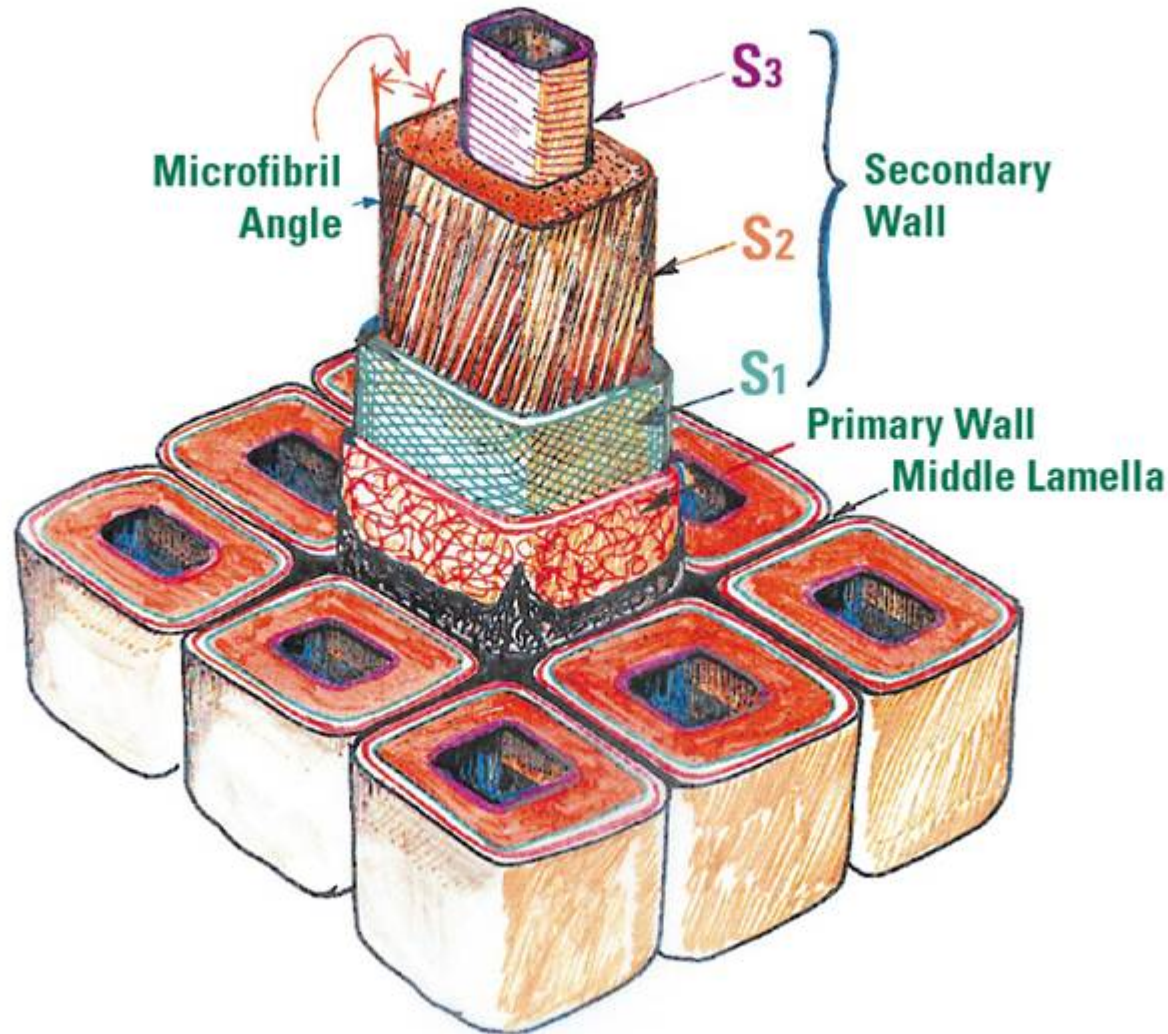
Wood-Moisture Relationships....Shrinkage



Typical Shrinkage Values for Normal Wood



The layered structure of cell walls



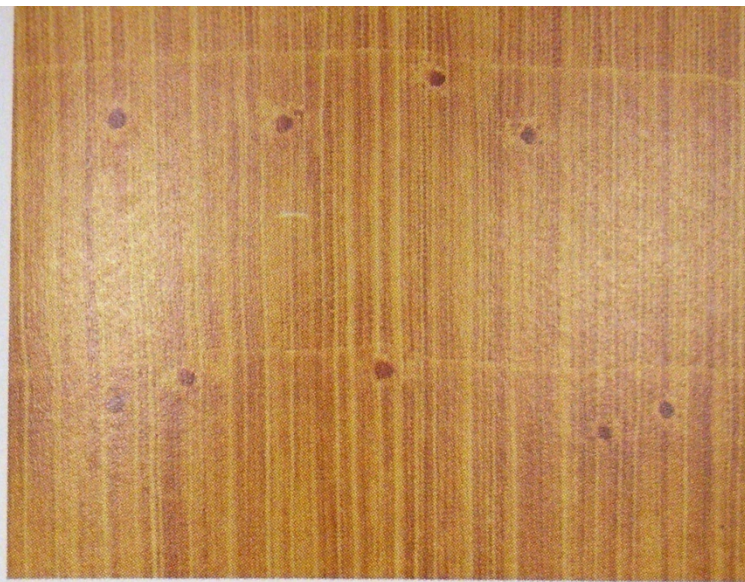
Western White Pine

(Idaho white pine)

Pinus monticola Softwood

Light in color, it varies from nearly white to pale reddish brown and darkens with exposure. A moderately soft, even-textured, straight grained, light-weight wood. It is famous for its workability across or with the grain. Valued for millwork, patterns, paneling and interior trim. Also used for furniture, boxes, siding and construction.





WESTERN WHITE PINE

P. monticola

Average Specific Gravity: 0.38

Odor: Pleasant, piney

Heartwood: Distinct, darkening with age

Grain Appearance: Fairly even

Earlywood/Latewood Transition:
Gradual

Resin Canals: Large, numerous, mostly solitary, evenly distributed

Cross-Field Pitting: Windowlike

Ray Tracheids: Smooth-walled

Epithelial Cells: Thin-walled

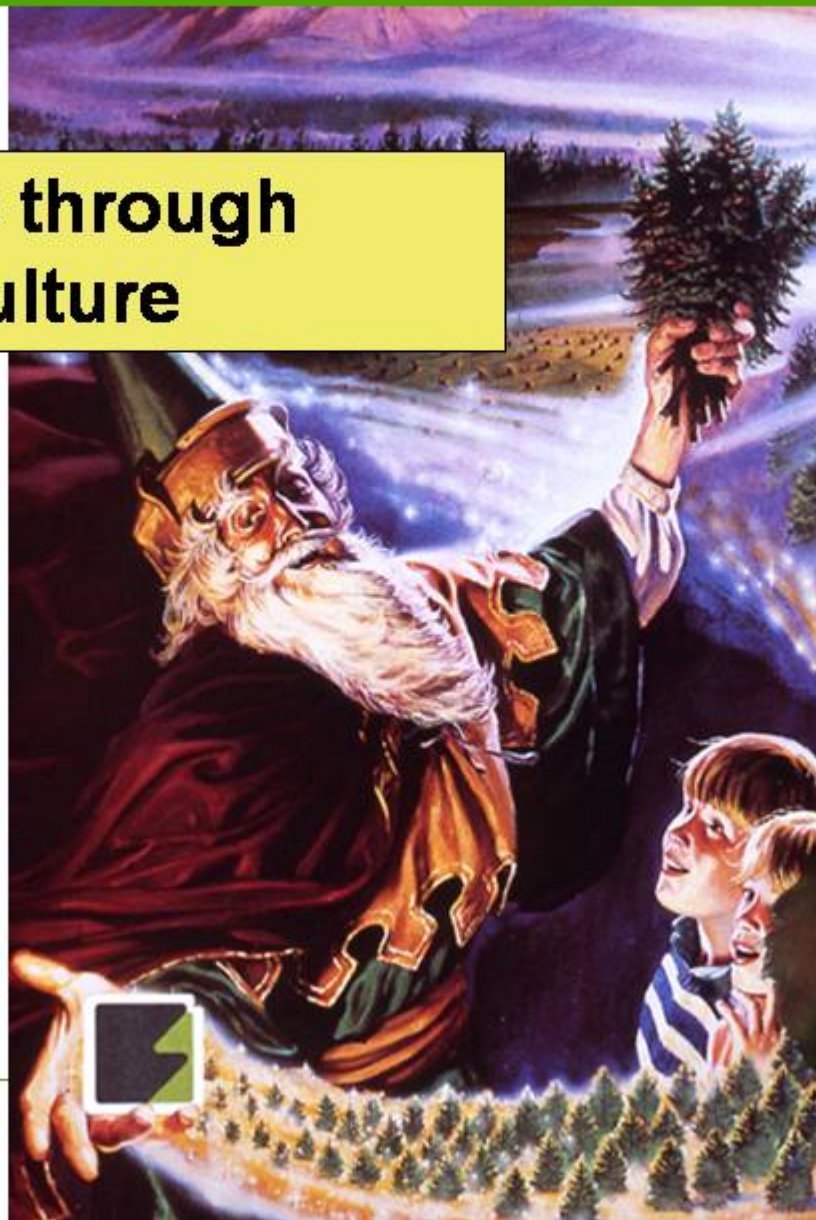
Longitudinal Parenchyma: Absent

The Resonating Property of 14 BC softwoods

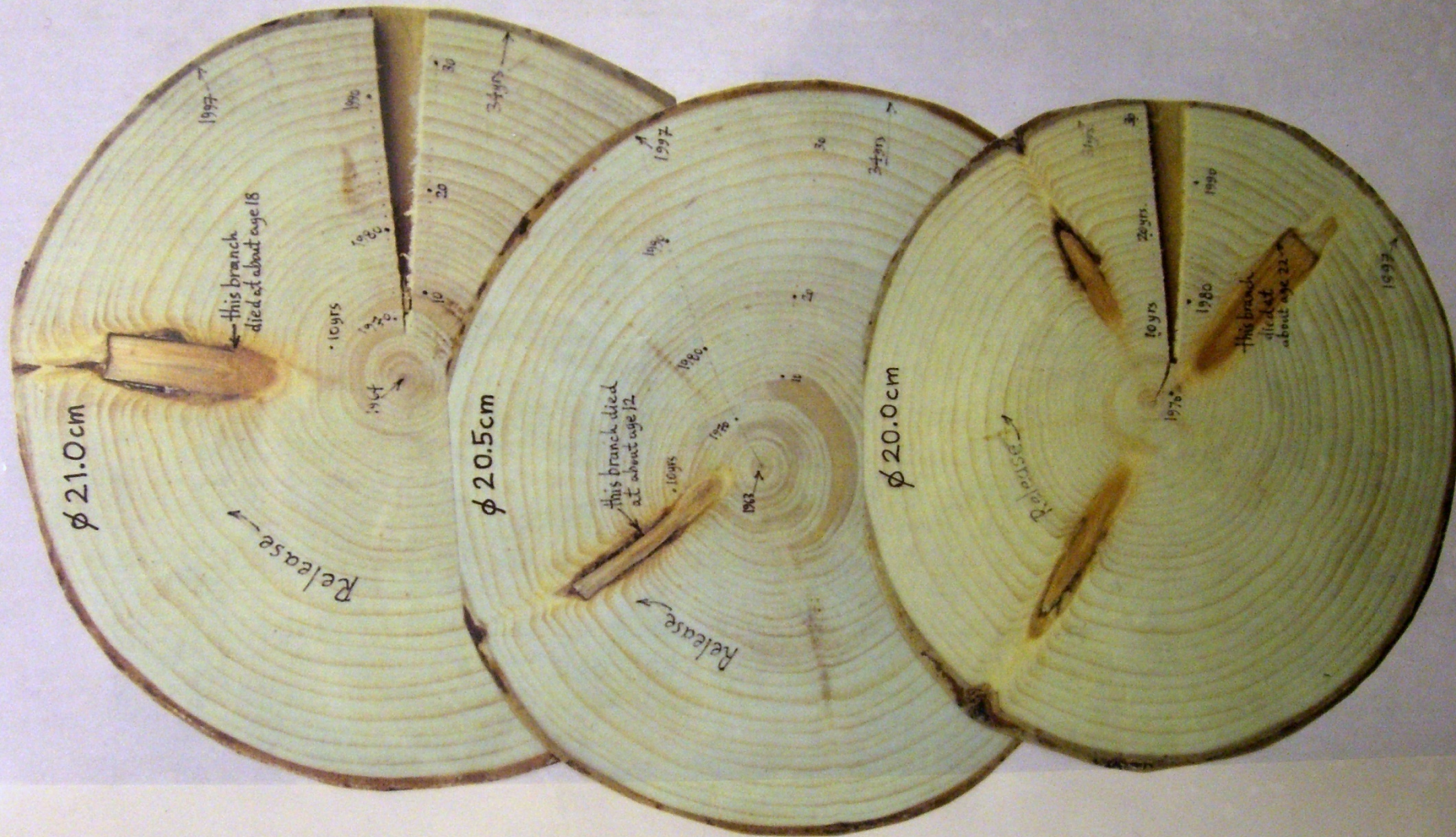
Common Name	Scientific Name	Number of Trees Tested	Relative Density (Oven-dry)	Modulus of Elasticity (Mpa)	Ability to Resonate ²
Cedar, western red	<i>Thuja plicata</i>	12	0.338	8,270	463
Cypress, yellow	<i>Chamaecyparis nootkatensis</i>	17	0.462	11,000	334
Douglas-fir	<i>Pseudotsuga menziesii</i>	78	0.510	13,500	319
Fir, sub-alpine	<i>Abies lasiocarpa</i>	11	0.360	10,300	470
Fir, Amabilis	<i>Abies amabilis</i>	26	0.412	11,400	404
Hemlock, western	<i>Tsuga heterophylla</i>	21	0.470	12,300	344
Larch, western	<i>Larix occidentalis</i>	17	0.640	14,300	234
Pine, lodgepole	<i>Pinus contorta</i> var. <i>latifolia</i>	13	0.455	10,900	335
Pine, western white	<i>Pinus monticola</i>	17	0.398	10,100	400
Pine, Ponderosa	<i>Pinus ponderosa</i>	17	0.489	9,510	313
Spruce, black	<i>Picea mariana</i>	32	0.445	10,400	343
Spruce, Engelmann	<i>Picea Engelmannii</i>	11	0.425	10,700	373
Spruce, Sitka	<i>Picea sitchensis</i>	14	0.394	11,200	428
Spruce, white	<i>Picea glauca</i>	43	0.393	9,930	404

Fast-Grown Second-Growth Wood

**Magic through
silviculture**



Spaced, fertilized, and Pruned White Pine



φ 20.5cm

Release →

this branch died
at about age 12

10 yrs

1980

1970

1963 →

1990

1997

16

20

30

34 yrs

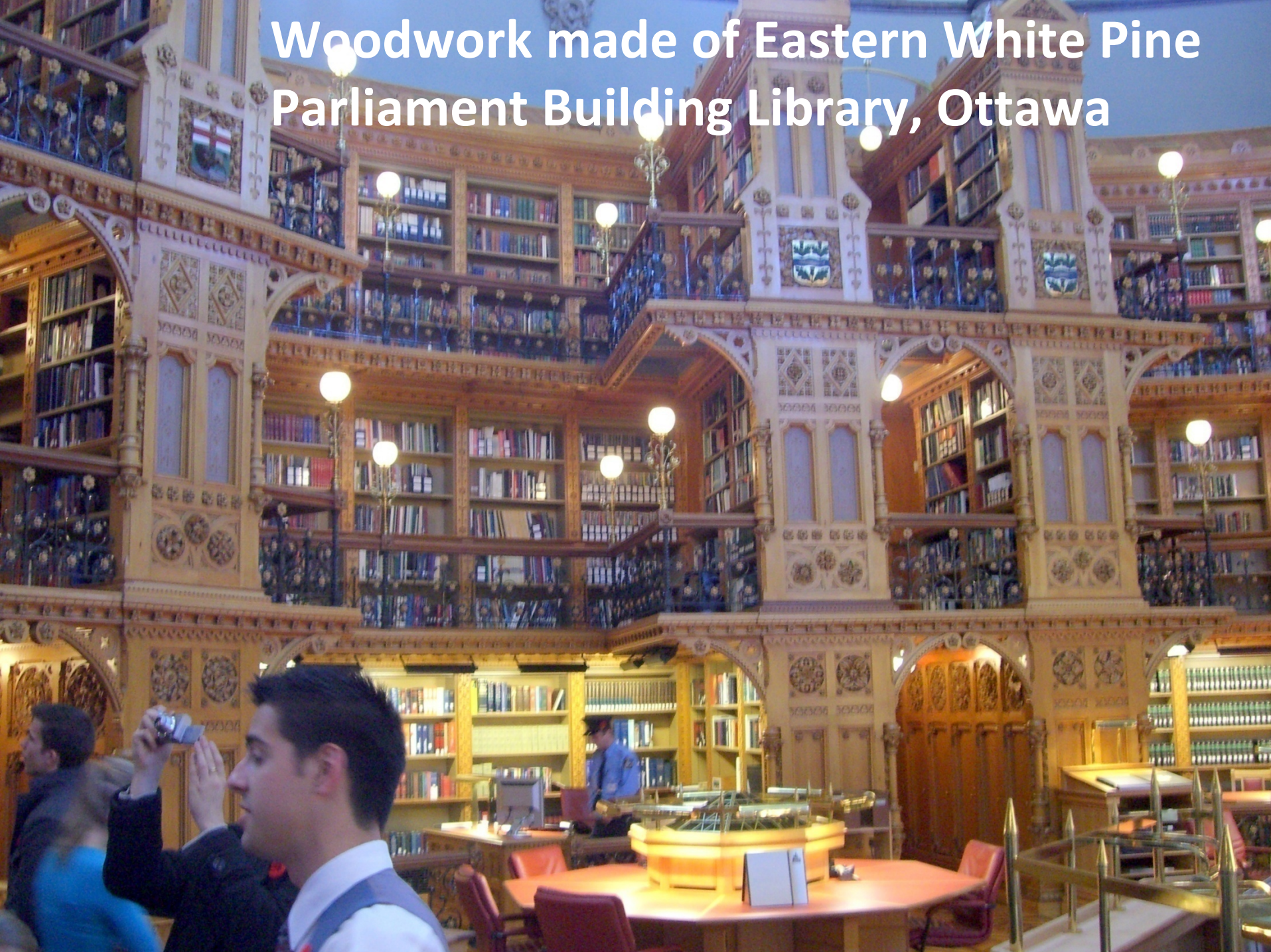
φ 20.0cm

Release →

Parliament Building Library and its Eastern White Pine Woodcarvings



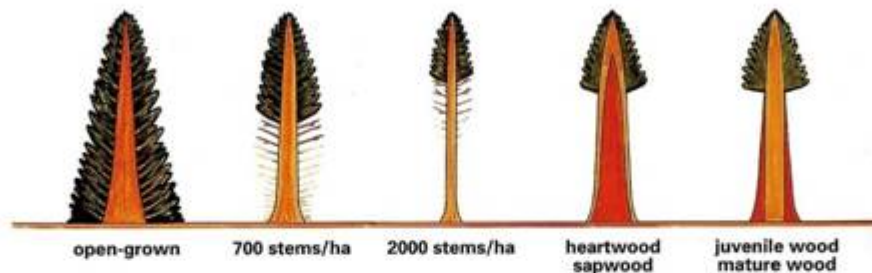
Woodwork made of Eastern White Pine Parliament Building Library, Ottawa



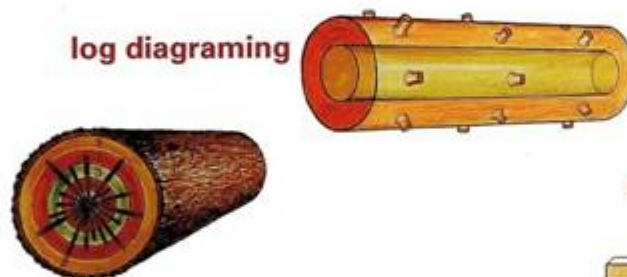
Veneer-Wrapped Lumber



Wood Quality is Related to Traits Measurable at Different Scales

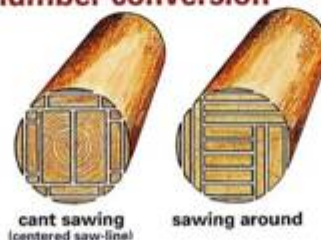


log diagraming

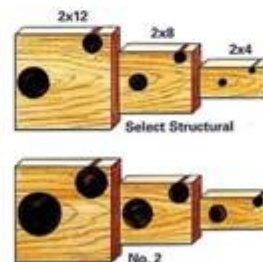


- 1) clear: \$1,250 - 4,000/M
- 2) near clear: \$600 - 1,000/M
- 3) appearance: \$450 - 800/M
- 4) structural: \$350 - 500/M
- 5) low grade: \$250 - 350/M

lumber conversion



lumber grading



Wood Quality is Related to Traits Measurable at Different Scales

