



# Great Falls Woodturners Newsletter

[www.gfturners.org](http://www.gfturners.org)

Volume 6, Number 3

October 2014

Happy  
Halloween



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## Help Needed

The Club needs your help. We need a couple of individuals to video the demonstrations and special events. Please help us out and volunteer.

## Club Demonstrations

Wayne Petrini – Sep 20<sup>th</sup>

As usual **Wayne Petrini** gave us an outstanding demo of taking a log and turning it into a bowl without a chuck. He started with showing us how to mount a chunk of log on a waste block using just the ordinary garage tools that almost everyone has. He went through all the steps to safely mount the piece and have it ready for turning tools.



He then went through the steps of turning the outside and shaping the bowl to include sanding.

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**Please Note the Change to the November Meeting.**



So, if you don't have a chuck or damage your chuck, you can press on turning that really nice piece of wood into a piece of art.

**Thanks Wayne** for a great demo.

## Tom Krajacich – Oct 7<sup>th</sup>

You've heard of Call of the Wild by Jack London; well, we had Call of the Ducks By **Tom Krajacich** at an excellent demo on Tuesday evening.

When he was satisfied with the outside he then turned the inside and completed it to the point of finishing the bottom. Remember, he did all of this without a chuck.



So now he needed to finish the bottom and did so by showing us how to make a jam chuck. He mounted the bowl in that jam chuck and completed the bowl.

Tom talked about the different methods he could use to mount his duck call blank in the lathe and lucky for us he chose a Collet Chuck. He showed us the various components of the chuck and the homemade shaft he used to turn the duck call.





He showed us the patterns he made to guide in the shape of the call and then demonstrated creating the turned portion of the call. The process included turning the blanks, sanding and applying the finish.



After completing the turned portion of the call, he assembled the remainder of the part obtained from Craft Supplies USA.



The finish process applying the EEE-Ultra Shine Paste Wax and the Shellawax Friction Polish which when completed put a great shine on the turned call.



Of course he tested it which was obviously successful.



**Roger Wayman** volunteered to demonstrate the effectiveness of the demo by turning and completing a duck call.

**Thanks Tom** for a great demo!

## *Club Meeting and Demo Schedule*

- \*\*Sat Oct 18**      Demo – Rich Charlson & Kelly Treat
- \*Wed Nov 5**      Meeting (Change due to Election Day on Nov 4<sup>th</sup>) - Demo – Paul Snyder
- \*\*Sat Nov 15**      Demo - Sam Sampedro – Turning a Three Point Bowl
- \*Tues Dec 2**      Meeting and Demo – Jay Eklund

There is no 3<sup>rd</sup> Saturday of the Month Meeting in December since it's too close to Christmas

### The following dates are tentative and are subject to change

- \*Tues Jan 3**      Club Meeting and Demo
- \*\*Sat Jan 10, 17, 24, 31**      Segmenting Classes
- \*Tues Feb 3**      Club Meeting and Demo
- \*\*Sat Feb 21**      Demo
- \*Tues Mar 3**      Club Meeting and Demo
- \*\*Sat Mar 21**      Demo
- \*Tues Apr 7**      Club Meeting and Demo
- \*\*Sat Apr 18**      Demo
- \*Tues May 5**      Club Meeting and Demo
- \*\*Sat May 16**      Demo
- \* 6:30 PM**              **\*\* 12:30**

## *Perpetual Bowl*

The 'Perpetual Bowl', turned by **Dave Manix** was won by **Chuck**

**Kuether** who will have the privilege of turning the bowl for the November 5<sup>th</sup> meeting.



Perpetual Bowl by Dave Manix

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*Thank You*

A very special THANKS to:



Thanks to **Tom Krajacich** for videoing the Sep 20<sup>th</sup> Demo.

Thanks to **Jay Eklund** for his donation of woodturning articles to the Bonus Disc. Also, the diagrams and instructions on making a drum sander.

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Thanks to **Barry Rockwell** for mentoring two of our fellow members during September. Barry contacted the folks and offered his knowledge, experience, and shop to further their turning abilities. It proves that mentoring is alive and well.

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Thanks to **Roger Wayman** for the wood donation. Also for participating in the demo by turning a duck call.



Thanks to **David Stratton** for videoing the Oct 7<sup>th</sup> Demo.

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**TIPS**

Information Tip – Sam Sampedro

While in Helena a couple of weeks ago, I stopped by Helena Hardwoods and made a purchase. While there I spoke with Dave Ashley who was most helpful and accommodating. He gave me their price list which is at the end of the newsletter for your information. We are working on a possible discount for club members.

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## Shop Tip – Creating a Foam Ball Sander – Roger Wayman

Would you like to create your very own Foam Ball Sander to do a great job on a bowl or anything concave? Go to the following site. If you want to download a PDF version of the Foam Ball Sander document, hold down the Ctrl key and click here: [Foam Ball Sander as an 11 page pdf](#).

Click on the following site address to go to the Foam Ball Sander site:

<http://www.davidreedsmith.com/Articles/FoamBallSander/FoamBallSander.htm>

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## Shop Tip – Barry Rockwell

Have you experienced stabilizing wood using a vacuum pump and Catcus Juice?

The internet site that has a definitive explanation and tutorials on how to do that is: **Turn Tex Woodworks**. This site contains excellent information about the complete process to stabilize that

punky wood that you would normally pitch in the fireplace. Take a look at:

[http://www.turntex.com/index.php?option=com\\_virtuemart&Itemid=121](http://www.turntex.com/index.php?option=com_virtuemart&Itemid=121)

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## Shop Tip – Randy Gazda

Hey pen turners, have you ever turned a Tree Ring Pen. Here are examples of tree ring pens. Interesting use of local wood, showing the tree rings/date.

Please see the photo after the Instant Gallery.

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## Club's Appreciation

**Editor's Comment:** My thanks to the following individuals who helped with the content of this newsletter:

**Roger Wayman**  
**Barry Rockwell**  
**Randy Gazda**

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# Instant Gallery

## Photos

(Great Photos by Paul Snyder)



Jay Eklund



Jay Eklund



Jay Eklund



Rich Charlson (To be demonstrated on Oct 18<sup>th</sup> by Rich Charlson & Kelly Treat)



Rich Charlson



Rich Charlson



Terry Hill



Terry Hill



Terry Hill



Barry Rockwell



Barry Rockwell



Dell Johnson



Del Johnson



Don Taylor



Sam Sampedro



Del Johnson



Paul Snyder



Sam Sampedro



Sam Sampedro



[Photo submitted by Randy Gazda](#)

# Great Falls Woodturners

## 2014 Turning Club Meetings/Demos

Sat Oct 18	12 to 4 PM	Demo – Rich Charlson & Kelly Treat
Wed Nov 5	6:30 to 9 PM	Meeting (Change due to Election Day on Nov 4 <sup>th</sup> ) – Demo – Paul Snyder
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<b>Sat Mar 21</b>	<b>12:30 to 4 PM</b>	<b>Demo</b>
<b>Tues Apr 7</b>	<b>6:30 to 9 PM</b>	<b>Club Meeting and Demo</b>
<b>Sat Apr 18</b>	<b>12:30 to 4 PM</b>	<b>Demo</b>
<b>Tues May 5</b>	<b>6:30 to 9 PM</b>	<b>Club Meeting and Demo</b>
<b>Sat May 16</b>	<b>12:30 to 4 PM</b>	<b>Demo</b>

(This page is provided for printing)

# Understanding Wood Grain and Fiber Development in Tree Growth

by Ian Kirby



Ian Kirby examines the end grain of a piece of lumber with a 10x magnifier, the grain of the wood is shown on the right.

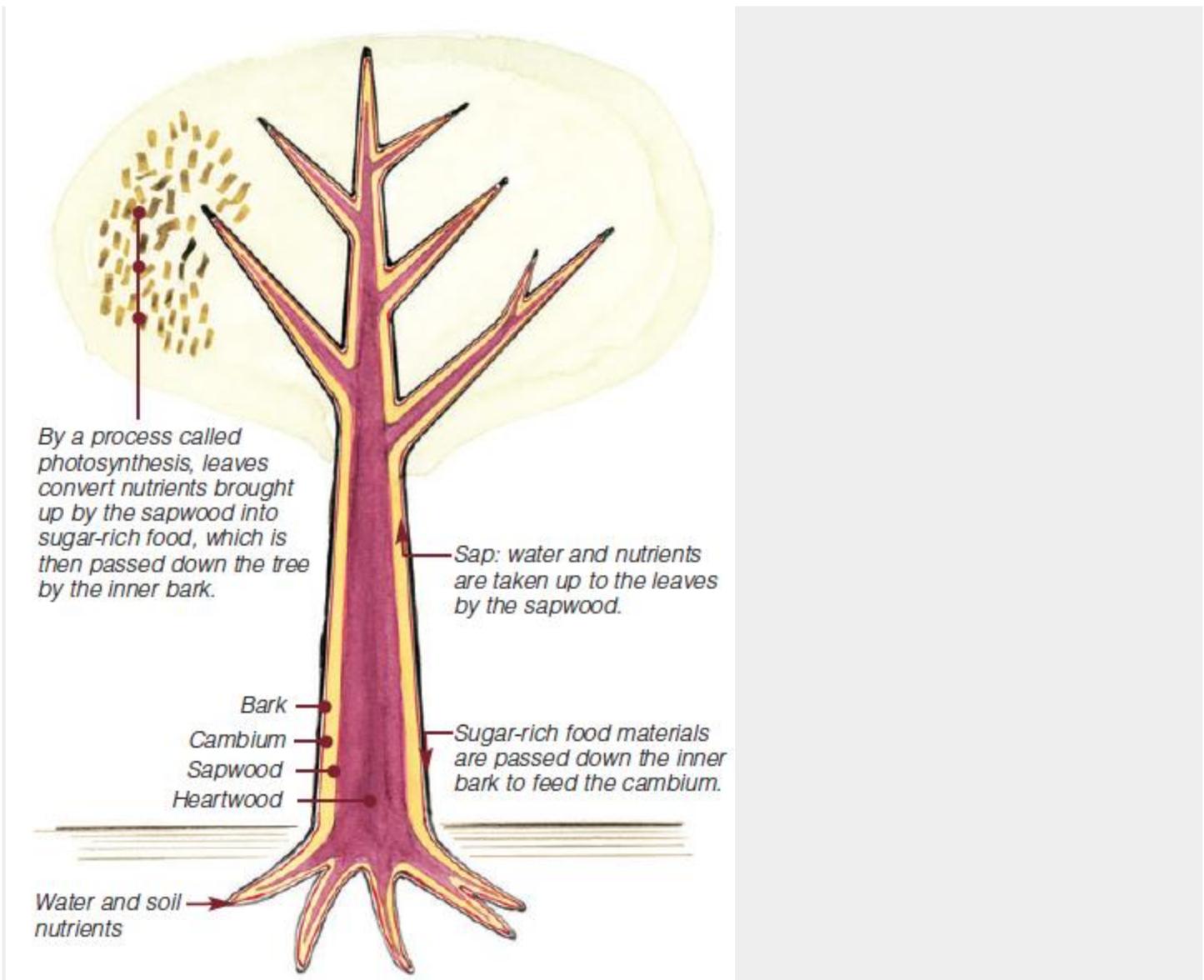
Because the wood in most workshops exists primarily as lumber, purchased dimensioned and planed, it's easy to forget that each piece originally came from some part of a living tree. Perhaps even less obvious is that the qualities that prompted your purchase in the first place — color, grain, luster, weight, hardness — are open to explanation, one that begins at the cellular level. In the first article of a two-part series, I will discuss some details of wood anatomy and function knowable only through study by a powerful microscope and relate them to what can be seen by the naked eye and a 10x hand lens.

## **The Growing Tree: Roots, Trunk, Leaves**

A tree has three parts, each with a particular function. The roots secure the tree in the ground and take in groundwater containing mineral salts from the soil. The trunk transports this solution, called sap, from the roots to the leaves; it stores food; it holds the living cell layers essential to the growth of the tree; and it provides rigidity to the crown — the smaller branches and twigs on which the leaves grow. The leaves absorb

carbon dioxide from the air, give off oxygen and by photosynthesis enrich the sap with sugars which are passed down the inner bark and used to promote growth.

## Wood Formation



This diagram shows the basics of how wood and where wood is formed in a tree from the beginnings of the process.

Just below the bark is a microscopically thin layer of living cells called the cambium that sheathes the tree from ground to crown. The cambium cells grow and divide. One half of the cells make either wood or bark; the other half remain in the cambium to grow and divide again. New cells on the inside of the cambium become one of the woody elements. Cells on the outside become bark, which is divided into two layers. The inner bark carries the sugar-rich sap down from the leaves to feed the cambium and roots. The outer bark protects the fragile cambium from invasion by insects, fungi, animals and extremes of heat and cold.

## **Variable Growth**

Despite the woodworker's ardent hopes to the contrary, trees do not exist to provide us with useable, straight-grained flat material — and many of its growing characteristics attest to this contrariness. For instance, due to a host of factors, including soil, weather and the proximity of other trees, trees do not grow at the same rate.

Some trees grow in a spiral form. You can observe this in the surface cracks on a wooden utility pole. The rate of spiraling varies. Many large tropical trees will spiral in one direction for, say, six growth periods, then spiral in the opposite direction for several more. Laminating the trunk in this way must surely increase its resistance to stress, but it also poses problems for the woodworker when machining the converted board.

If for some reason the felled tree shows asymmetric growth — the heart being closer to one edge rather than centered — it is usually discarded. Boards made from it are prone to sudden breaking, and it distorts beyond use as it dries.

## **Sapwood and Heartwood**

After five to 10 years of growth, the wood in the center of all trees undergoes a chemically complex change. In most trees, the transition from sapwood to heartwood is obvious because of the color change. In some, the pale color of the heartwood is hardly distinguishable from the pale color of the softwood. The chemicals that cause the change are difficult to identify and are known collectively as extractives.

Tyloses occur during this transition phase, although not in all species. They appear as glistening, fine film material that blocks the vessels. What happens is that a thin membrane that was once a part of the vessel wall collapses through tiny apertures called pits into the cavity of the vessel due to pressure differences in the tissue.

## **Growth Rings**

The vessels of many tree species that grow in temperate regions where there is a distinct growing and resting period form a growth ring clearly seen on the transverse section. We call these trees ring porous.

Some temperate region species, such as birch, poplar and sycamore, as well as most tropical hardwoods, such as mahogany, are diffuse porous. That is, the vessels appear in random fashion throughout the growth period.

## **Grain, Texture and Figure**

Some confusion surrounds what is meant by grain, texture and figure when used to describe the wood surface. A good guide is that grain refers to the wood fibers relative to the length of the tree on the faces and edges of a piece of timber. Texture is the

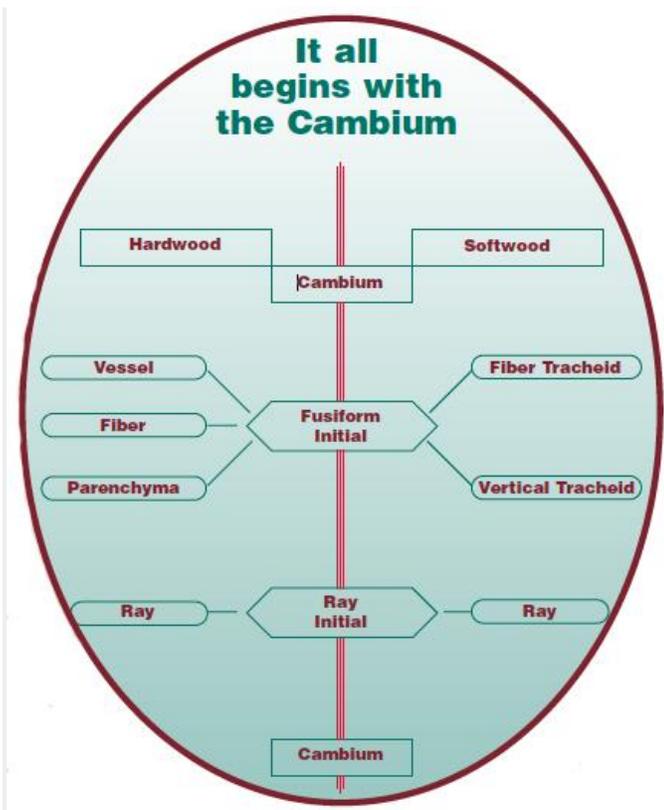
relative size and variations of the elements. Figure refers to the pattern on a board caused by the arrangement of the different elements and the nature of the grain.

## Softwoods and Hardwood

Trees are popularly divided into softwoods (needle-leaved) and hardwoods (broad-leaved).

It's believed that softwoods preceded hardwoods on our planet, because their structure is simpler and more primitive. Unlike hardwoods, inspecting softwoods with a 10x lens doesn't reveal much more than can be seen by gross inspection. Closer inspection, however, shows important similarities: both of them are composed mainly of cellulose, and both go through a sapwood to heartwood growth phase.

## Elements in Softwood



The cambium is a microscopically thin layer of living cells that sheathes the tree from ground to crown. The cambium cells grow and divide. Half of the new cells make either wood or bark; the other half remain in the cambium. New cells on the inside of the cambium become one of the woody elements (fiber, parenchyma, rays, etc.). The outside cells become bark

The cells in the cambium which divide and form wood tissue are initials, so-called because they initiate the formation of the specialized progenitor cells after cell division.

There are two types of initials: fusiform initials and ray initials. In a typical softwood, the fusiform initial makes only one type of element called a tracheid. Tracheids come in varying types and comprise the vast bulk of softwood. In the main, they are 80 to 100 times longer than their diameter. They also vary greatly in wall thickness, depending upon when they are deposited during the growing season. In this way, they perform the tasks of transport and support.

Ray initials in softwood are complex, because they can function to store and provide food for some time in the growing season after other elements have completed their growth. Most rays are only one cell wide and not visible by gross inspection.

## **Elements in Hardwood**

In hardwood, the fusiform initial makes three different elements called vessels, fiber and parenchyma. The ray initial is responsible for only one element, rays.

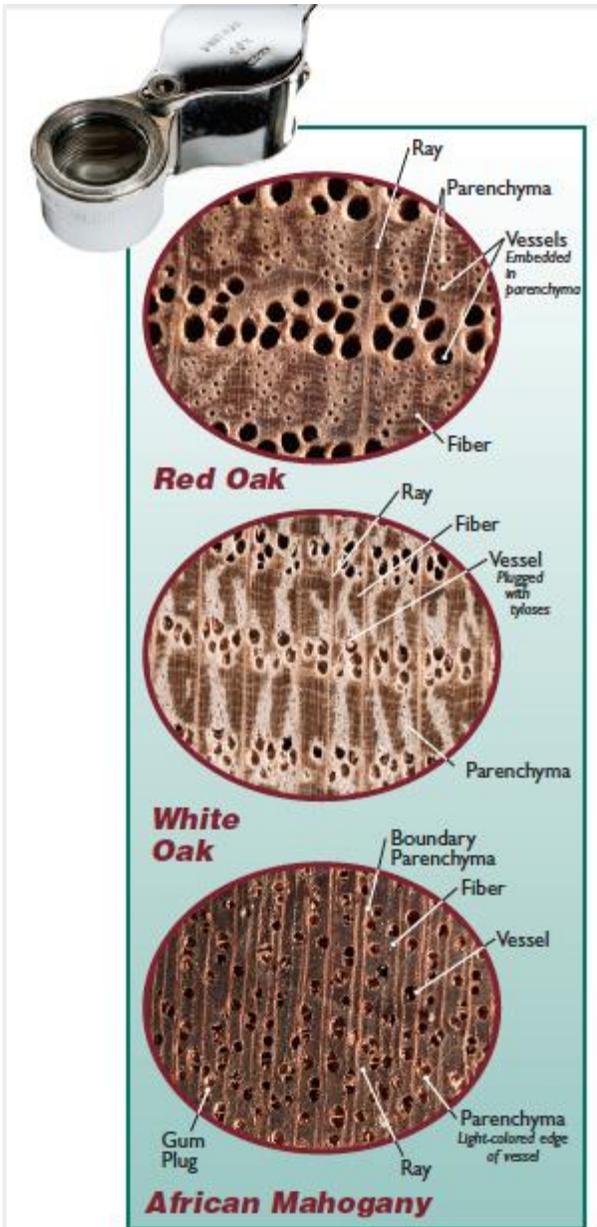
Each element plays a specific role in the tree, and each is sufficiently well-defined that it can be identified with the aid of a 10x hand lens when viewed on a transverse section. Vessels conduct water and nutrients from roots to leaves. They are long tube-like elements with thin walls and large cavities. Although each vessel is short, they are connected in vertical series and can extend for quite some distance up the tree.

Fiber is the mechanical or support element of the wood. It's laid down in the later part of the growing season. You can describe this element as the reverse structure of a vessel. It's short and has a pointy end, a thick wall and a small cavity that isn't visible with a 10x lens.

Parenchyma is essentially storage tissue. It's deposited vertically in different species in a variety of ways throughout the tree's growing season.

Rays are the most complex of the four elements. In some cases, they continue to function as the growing season progresses to provide or store food. Their size, shape and number varies enormously according to species. In a few species, such as poplar and willow, the rays are only one cell wide and therefore not visible. In the majority of species, rays are easily visible. Rays in oak are relatively huge structures, hundreds of cells high and tens wide. Seen on the transverse section, rays radiate outward like spokes on a wheel. When you split a log, it generally splits along a series of rays. You can then see them on the split side of the log in their front elevation or as a plate.

## Reading the End Grain



Here, you can see the differences in parenchyma, fiber, vessels and rays in three different types of wood.

Because the four elements found in hardwoods —vessels, fiber, parenchyma, rays — are uniquely represented in each species, the ability to analyze these differences is the key to being able to identify the type or species of any wood. As an introduction to wood identification, I've chosen three well-known and widely used species: red oak, white oak and African mahogany.

- **Vessels:** It is the early wood large vessels that form the concentric rings. These are the large-cavity, thin-walled transport elements needed at the onset of the spring/summer growth period. They typically get abruptly smaller, although in both oaks they continue to be made and used throughout the growing season.

The major difference between the oaks is that vessels are free of any inclusions in red oak, whereas the vessels in white oak are plugged with tyloses. (We will see the effect of these when we look at utilization in Part 2.)

Vessels in mahogany are smaller and consistent in size. Some are arranged in twos and some in threes. The white deposit in some vessels is a common feature and is likely some form of gum deposit.

- **Parenchyma:** In both oaks the parenchyma is the tissue that surrounds the large vessels. It's easy to see in white oak because of its white color and typical flame-like shapes; in red oak, it's a shade of brown, and entirely surrounds the smaller vessels, which are much easier to see than in white oak. Parenchyma is very sparse in mahogany, visible only as the light-colored edges of some of the vessels.

- **Fiber:** The fiber in each photo is the dark background material. At this low magnification it's never possible to see the thick-wall, small-cavity elements as separate items. In both oaks, you will see very thin light-colored lines running horizontally through the fiber. This is parenchymatous material.

In mahogany, fiber is the red ground that is neither rays nor vessels.

- **Rays:** In each photo, the rays are the lines running more or less vertically. They are profuse in white oak, less so in red oak. In both oaks, there are very fine rays between the larger ones.

In mahogany, the rays are more or less the same thickness. They are little more than two-vessel diameters apart, and they bend around the vessels.



# Helena Hardwoods

October-14

3290 Centennial Dr. Helena, MT 59601 - N. side of US 12, 1.3 miles E. of I-15 (across US#12 from Subway)

495-1066 9 a.m. - 5:30 p.m. M - F

## LUMBER - KD

	Bd Ft
Alder (Superior)	
4/4 (15/16")	3.55
5/4 (1-3/16")	4.05
6/4 (1 - 7/16")	4.25
8/4 (1 - 15/16")	4.45
<b>Knot Alder</b>	
4/4 (15/16")	1.94
4/4 (13/16" SLR)	2.52
8/4 (1-15/16")	2.36
<b>Aromatic Cedar</b>	
4/4 (15/16" SLR)	2.68
<b>Ash (FAS)</b>	
4/4 (13/16" & 15/16" SLR)	3.45
5/4 (1-3/16" SLR)	3.68
8/4 (1-15/16" SLR)	4.45
<b>Basswood (Sel/Btr)</b>	
4/4 (15/16")	3.05
8/4 (1-15/16")	3.55
<b>Birch (Select &amp; Btr)</b>	
4/4 (15/16" SLR)	5.15
4/4 (15/16") SLR R x R	4.22
5/4 (1-3/16" SLR)	5.68
6/4 (1-7/16" SLR)	6.45
8/4 (1-15/16" SLR)	6.65
<b>Cherry (FAS &amp; S&amp;B)</b>	
4/4 (#1C, 15/16") SLR RxF	2.85
4/4 (13/16"/15/16") SLR F#	6.40
5/4 (1-3/16") SLR FAS	8.35
6/4 (1-7/16") S & Btr	8.55
8/4 (1-15/16") S & Btr	7.65
8/4 (1- 15/16") SLR FAS	####
<b>Hard Maple (FAS)</b>	
4/4 (13/16"/15/16") SLR)	4.05
4/4 (15/16") R x R SLR 6'	3.12
5/4 (1-3/16")	5.45
6/4 (1-7/16") SLR	5.65
8/4 (1-15/16")	5.95
<b>Hickory (S&amp;B)</b>	
4/4 (13/16"/ 15/16") SLR	4.04
5/4 (1-3/16" SLR)	4.55
8/4 (1 - 15/16") SLR	5.63
<b>Poplar (FAS)</b>	
4/4 (13/16"/15/16th SLR)	2.59
5/4 (1-3/16") SLR	3.12
6/4 (1-7/16) SLR	3.36
8/4 (1-15/16") SLR	3.53
<b>Red Oak (FAS)</b>	
4/4 (15/16" SLR) #1 C R x R	2.45
4/4 (13/16"/15/16" SLR)	3.69
4/4 (9/16" SLR)	4.37
5/4 (1-3/16" SLR)	4.65
6/4 (1-7/16" SLR)	4.99
8/4 (1-15/16" SLR)	5.24

## LUMBER (cont)

	Bd Ft
<b>Red Oak Qtr. Sawn</b>	
4/4 (15/16") SLR	5.67
8/4 (1-15/16) SLR	8.05
<b>Red (Soft) Maple</b>	
4/4 (15/16") SLR	4.15
6/4 (1-7/16") SLR	4.35
8/4 (1-15/16") SLR	4.67
<b>Walnut (FAS)</b>	
4/4 (13/16" & 15/16" SLR)	6.58
4/4 (15/16") Unsteamed	8.98
5/4 (1-3/16")	9.42
6/4 (1-7/16")	10.85
8/4 (1-15/16")	11.65
<b>White Oak (FAS) Plain Sawn</b>	
4/4 (13/16" & 15/16" SLR)	4.28
5/4 (1-3/16") SLR	5.79
8/4 (1-15/16") SLR	8.37
<b>White Oak Qtr. Sawn</b>	
4/4 (15/16") SLR	5.94
4/4 (15/16") Curley SLR	8.35
4/4 (15/16") #1C R x R SLR	3.73
5/4 (1 - 3/16") SLR	6.32
6/4 (1 - 7/16") SLR	7.63
8/4 (1-15/16") SLR	8.56
<b>E. White Pine Furniture Grd</b>	
4/4 (15/16") SLR	3.25
<b>Vertical Grain Fir</b>	
4/4 (rough) 1 x 4"	4.24
4/4 (rough) 1 x 6"	4.65
4/4 (rough) 1 x 8"	5.18
8/4 (rough) 2 x 6"	6.73
(S4S Available)	
<b>MELAMINE</b>	
<b>(2 Sided White 49 x 97")</b>	<b>Sheet</b>
3/4"	31.75
1/2"	31.95
1/4"	26.15
1/4" 1 sided 49" x 97"	20.35
(add 20% for Almond)	
<b>PLYWOOD</b>	<b>Sheet</b>
<b>African Mahogany</b>	
3/4" A-1 CC PS/PS	104.35
1/4" A-1 MDF PS/PS	75.65
<b>Alder</b>	
3/4" A-B CC, PS/PS	116.05
3/4" B-B CC, PS/PS	107.25
3/4" CC, PS/PS	87.75
1/2" B/C CC, PS/PS	87.35
1/4" A-B (MDF), PS/PS	95.35
1/4" B-C (MDF), PS/PS	69.15
<b>Arom. Cedar 5.2 mm</b>	51.25
<b>Ash</b>	
3/4" A-1 VC, Rotary Cut	86.25
1/4" A-1 VC, Rotary Cut	48.25
1/4" A-1 MDF	49.55

## PLYWOOD (cont)

	Sheet
<b>Baltic Birch (5' x 5')</b>	
18 mm - 3/4"	49.63
15 mm - 5/8"	43.92
12 mm - 1/2"	31.66
9 mm - 3/8"	33.32
6 mm 1/4"	24.48
3 mm - 1/8"	19.72
<b>Birch</b>	
3/4" A-1 CC, Rotary Cut	75.98
3/4" A-1 MDF, Rotary Cut	82.25
1/2" A-1 VC, Rotary Cut	64.75
1/4" A-2 VC, Rotary Cut	51.25
1/4" A-4 VC, Rotary Cut	43.25
1/4" A-2 MDF, Rotary Cut	51.95
<b>Cherry</b>	
3/4" A-1 CC, PS/PS - Red Back	112.75
1/2" A-1 CC, PS/PS	106.55
3/4" Shop VC	91.95
1/4" A-4 MDF PS	72.65
1/4" A-2 MDF PS/PS	82.65
<b>Honduras Mahogany</b>	
1/4" A-1 VC	102.25
<b>Hickory</b>	
3/4" A-1 CC PS/PS	100.85
1/2" A-1 CC, PS/PS	89.35
1/4" A-1 MDF, PS/PS	78.05
3/4" Rustic, Classic Core	86.25
1/2" Rustic, Classic Core	76.75
1/4" Rustic VC	67.45
<b>Knotty Pine</b>	
3/4" A-1 CC	93.65
1/2" A-1 VC	85.15
1/4" A-1 VC	72.75
<b>Maple</b>	
3/4" A-1 Classic Core WPF	96.25
3/4" Shop VC	64.95
3/4" A-2 MDF	96.95
3/4" Prefinished	76.75
1/2" Prefinished	58.95
1/4" Prefinished	47.15
1/2" B-2 VC	73.85
1/4" A-1 VC	68.65
1/4" A-4 VC	62.65
1/4" A-1 MDF	73.95
<b>Red Oak</b>	
3/4" A-1 CC Rotary Cut	82.55
3/4" Shop VC Rotary Cut	65.35
3/4" A-1 MDF Rotary Cut	82.35
3/4" A-1 C C P/S, P/S	83.95
1/2" A-1 VC Rotary Cut	59.95
1/4" A-4 VC Rotary Cut	38.05
1/4" A-1 MDF Rotary Cut	53.25
1/4" A-1 MDF P/S	64.95

## Sheet PLYWOOD (cont) Sheet

<b>White Oak</b>	
3/4" A-1 PS/PS CC	92.90
1/4" A-1 MDF PS/PS	71.75
3/4" A-1 MDF	102.35
3/4" AA-1 (Qtr, CC, 2 Side	114.75
1/4" AA-1(Qtr, MDF 2 Side	113.95
1/4" A-4 Qtr MDF 1 side	74.25
<b>Walnut</b>	
3/4" A-1 PS/PS CC	120.25
1/4" A-1 PS/PS MDF	97.45
<b>Vertical Grain Fir</b>	
3/4" A-1 CC	120.25
1/4" A-1 MDF	95.35
<b>Bending Luan (3/8")</b>	
4 x 8 and 8 x 4	45.65
(5%-10 Sheet Plywood Discount)	
<b>Ipe Decking</b>	
Decking, EbTy, Anchorseal	
<b>Moldings - Oak, Hickory,</b>	
<b>Cherry, Maple - Crowns,</b>	
Corners, Counter facings,	
Stair Nose, Reducers, etc.	
<b>Hick., R Oak, Pop. Strips</b>	
1 x 4"; 1 x 6"; 1 x 7" add 18%	
<b>Veneers/Edgeband</b>	
Oak, Maple, Cherry, Birch, VG Fir.	
Mahogany, Walnut, Hickory, K. Pine,	
Qtr W. Oak, Beech and Ash	
<b>Door Skins</b>	
Red Oak, Birch	
<b>Thick Wood - 12/ &amp; 16/4</b>	
Cherry, Maple, R. and W.Oak, Walnu	
<b>Flooring/Stair Treads</b>	
Call for Quote	
<b>Exotics/Dowels</b>	
27 species - 4/4 and 8/4	
<b>Definitions</b>	
<b>SLR</b> - Straight Line Ripped 1 Edge	
<b>MDF</b> - Med. Density Fiber	
<b>VC</b> - Veneer Core	
<b>CC</b> - Classic Core	
<b>R x R</b> - Row by Row	
<b>Prices May Change w/o Notice</b>	
<b>Add Ons</b>	
<b>15% on 10"+ boards</b>	
<b>25% on 12"+ boards</b>	
<b>10% - 14"; 15% - 16'</b>	
<b>QTR W./ R. Oak,</b>	
<b>and QTR Sycamore</b>	
<b>add 15% for 8"+ Boards</b>	
<b>add 20% for Alder</b>	
<b>Deducts</b>	
<b>Tally after SLR</b>	
<b>Ask for R x R pricing</b>	



# Helena Hardwoods

N. side US #12, 1.3 miles East of I - 15 (across US #12 from Subway)

495-1066

Hrs 9 to 5:30 M-F

## Exotics/Unusuals

Summer, - 2014

### Lumber

	<u>Price (Bd Ft)</u>		<u>Price (Bd Ft)</u>		<u>Price (Bd Ft)</u>
<b>African Mahogany</b>		<b>Goncalo Alves (Tigerwood)</b>		<b>Shedua</b>	
4/4 Ribbon (15/16") and SLR	6.95	4/4 (13/16"/15/16")	8.55	4/4 (SLR)	11.55
5/4 (1-3/16" SLR)	6.25	<b>Holly (turning blocks/planks)</b>		<b>Spanish Cedar</b>	
8/4 (1-15/16")	6.68	<b>Honduras Mahogany FAS</b>		4/4 (15/16")	7.35
<b>Aspen</b>		4/4 (13/16"/15/16") SLR	11.65	<b>Sycamore (Quartered)</b>	
4/4 (13/16") SLR	3.95	8/4 (1-15/16") SLR	13.15	4/4 (15/16") SLR	6.85
<b>Beech (Steamed Euro)</b>		4/4 (rough) Pattern	13.15	8/4	Various
4/4 (15/16) SLR	4.85	<b>Lacewood</b>		<b>Teak</b>	
<b>Bloodwood</b>		4/4 (15/16")	13.25	4/4	25.75
4/4 (15/16") SLR	14.85	<b>Makore</b>		8/4	29.85
<b>Bocote</b>		4/4 (15/16") SLR	6.95	<b>Wenge</b>	
4/4 (15/16")	33.00	<b>Maple (Birds Eye)</b>		4/4 (15/16") SLR	17.95
<b>Bolivian Rosewood</b>		4/4 (15/16") Light	8.75	8/4 (1-3/4")	19.45
4/4 (13/16")	22.50	Heavy	11.75	<b>Wormy Soft Maple (Serpentine)</b>	
under 3"	17.85	8/4 (1-15/16")	10.25 - 14.25	4/4 (15/16") SLR	4.97
<b>Brazilian Cherry</b>		<b>Maple (Soft) Curley</b>		5/4 (1-3/16") SLR	5.22
(Jatoba)		4/4 (15/16")	8.75	8/4 (1-15/16")	6.95
4/4 (15/16") SLR	7.25	8/4 (1-15/16")	12.85	<b>Zebrawood</b>	
5/4 (1-3/16) SLR	7.85	<b>Padauk</b>		4/4 (15/16")	19.35
8/4 (1-15/16") SLR	8.15	4/4 (rough)	7.35	8/4	29.75
<b>Bubinga</b>		8/4 (rough)	7.95		
4/4 (15/16") SLR	13.55	<b>Peruvian Walnut</b>			
8/4 (1-15/16") SLR	13.95	4/4	11.95		
<b>Butternut FAS</b>		<b>Purpleheart</b>			
4/4 (15/16) SLR	10.45	4/4 (15/16") SLR	7.95		
<b>Cypress</b>		8/4 (1-15/16" SLR)	8.15		
4/4 (15/16")	4.15	<b>Sapele</b>			
<b>Wormey Chestnut</b>		4/4 (15/16") SLR	7.15		
4/4 (13/16")	15.95	8/4 1-15/16" SLR)	7.25		
<b>Cocobola</b>		<b>Sassafras</b>			
4/4 - 16/4	38.00	4/4 (15/16") SLR	5.95		
<b>Gaboon Ebony</b>		<b>Satinwood</b>			
4/4	125.00	4/4	12.95		

WOW!!!!!! 5/4 Figured Teak  
WOW!!!!!! 5/4 Qtr Sycamore

Over 10" widths add 15%  
We cut to length  
for a modest fee  
Good Tally...after SLR

Some material available Row  
x Row basis - ask for quote

**We stock Ash, Box Elder, Catalpa, Cherry, Maple, Paulownia and English and American Walnut Live Edged Slabs - perfect for bar and counter tops!**