**Working and turning Pacific Madrone**
**By Dale Larson (May 4, 2003, updated June 10, 2007)**

Pacific Madrone (Arbutus menziesii) is an evergreen broad leaf tree that grows along the Pacific coast from California to British Columbia. Its primary use has been for firewood. This beautiful reddish colored wood has traditionally not been used in woodworking because the wood warps and cracks as it dries.

In 1995 a friend called up and said a neighbor had taken down a Madrone tree. He asked if I would like some of the wood. Knowing the wood was unstable I hesitated then asked him to bring some of the Madrone over.

I had read about a man down on the Oregon coast that cooked Madrone logs in big veneer boiling vats to stabilize the wood. I got my mom's old pressure cooker out. I then roughed turned the Madrone into bowl blanks. I put the bowl blanks in the pressure cooker and covered them with water. I cooked the wood under pressure for two hours. I let the bowls cool in the water (if you take them out too quick the water inside the blanks will boil off and the blank will crack). I then dried the blanks like any other wood.

I waited a few months and then finished turned the bowls. What a wonderful wood. It is moderately hard but not brittle at all. My description is that it cuts like butter. It does not dull the tool edge. I was able to get very smooth cuts with my tools. I could shear scrape the bowl to the point I just about didn't have to sand it. It is not a dusty wood at all. The color goes from pale tan to deep red.

Since that time my dad has removed several Madrone trees and stumps. The prettiest wood is in the stump burls. That is also where the rocks and dirt are. We learned to spend a lot of time sharpening our saws. Madrone has a wide and deep crotch pattern. The crotch is generally bark free. Some of the prettiest bowls come from the crotch area. It is some of the deepest red wood. Madrone seems to hold its red color over a long period of time. I have a burl bowl I turned in 1999. It is still deep red in color.

In 1998 I had my brother weld up a stainless steel tank. (An iron tank could cause a reaction with the tannic acid in the wood and discolor the wood). I now rough turn the bowls and put them in the tank. I cover the bowls with water and start a fire using my scrap wood. I boil the blanks for 2 to 3 hours and let them cool in the water. This process is much easier and safer than the pressure cooker. I can do bigger bowls and I'm not dealing with steam pressure. The water that comes out of the cooker is deep red and will stain anything it touches.

Drying the bowls takes some extra care. I do not wax the end grains on bowls I have boiled. The wet blanks want to spault. The spaulting is a dull brown color and not desirable in my opinion. Once out of the boiler I use dry stickers to stack the bowls on the floor of my shop. If you allow wet wood to touch each other it will spault. I will check the bowl blanks almost daily for a couple of weeks and then less frequently after that.

Because the time of the year varies and where you are varies, here is how I gauge the drying rate: If the bowls start to mold, they are drying too slowly. If I see mold starting to form on the surface, I spray it with a mixture of 50/50 water/household bleach. The bleach will kill the mold but it will not discolor the wood below the surface. I put them in a heated and dehumidified room for a few hours. I may repeat this move several times over a few days. I watch until the surface of the wood is dry. It generally will not spault after the surface is dry.

If the bowl blank starts to crack it means the wood is drying too fast. I put thin CA glue on the crack. Then I put the bowl in a plastic bag with dry chips for a few days. The bowl wants to crack because the wood has un-equalized moisture content between the surface wood and the interior wood. Putting it in the plastic bags allows the bowl blank to re-equalize its moisture content. A bowl that wants to crack may go in and out of the bag several times. Some trees want to crack, some don't. I have not figured out this answer.

It takes about 6 weeks for the rough Madrone bowls to become stable. They are not dry but they will not crack after this. I then put them up on a shelf and forget about them. In 6-8 months they will dry down to 12-14% moisture content in my unheated shop. I then move them to my drying room, which I keep at 70 degrees (Fahrenheit) and dehumidified year round. They dry down to 6-8%. At this point they are ready to finish turn.

You have to be willing to spend a little extra time watching and handling Madrone. I have learned that once Madrone is cooked it behaves like other woods. The cooking must take the stress out of the wood. It may crush the cell walls or affect the lignin. If I was more of a scientist I would find out why it works and experiment with boiling times. I simply know that it works for me. I have found that this boiling method also works to successfully dry bowl blanks of fruit cherry wood. Especially cherry blanks with sapwood in them. I have also been successful with apple wood blanks. (Boiled cherry blanks are more likely to spault.)

The bowls turned from dried Madrone are beautiful and have remained stable over time. It has been fun to learn how to work with this fine Pacific coast hardwood.

**Green turning Wooden Bowls**
**by Dale Larson October 10, 2000 (updated June 10, 2007)**

"Green turning" a wooden bowl starts with a piece of wet wood. I rough out a bowl, let the piece dry, then remount the bowl and finish turn it. Sounds easy. Here are a few tips that will help you through the process.

The process starts at the tree. I want to get the wood as soon as the tree is cut. If you wait, especially in the summer, the tree will end check and radially check. And bugs will move in and start eating the wood. So the first rule is to get the tree as soon as it is cut. The wood never gets better over time (except for spaulting in some species). As soon as you cut the block, put end sealer on the end grain (Anchorseal, Sealtite 60). If you wait very long micro cracks will start and the sealer will not work as good.

The next step is to rough out the bowl as soon as you can. A big block of wood will want to split and crack as it starts to dry. A roughed out bowl can "move" to relieve the stress and is less likely to crack as it dries.

After the bowl is roughed out mark the date and source of the wood on the bottom of the bowl. This will allow you to track all the bowls from a given tree over time. When one bowl is ready to turn, generally all the bowls from the same tree are.

How thick to leave the bowl when you rough it out? That answer depends on the wood. The general rule is that the larger the diameter the bowl the ticker to leave it. A 16" bowl maybe 1 1/4 to 1 ½". A smaller bowl would be less. But the answer also depends on the species. Stable woods like Black Walnut can be left thinner. Because, it generally doesn't move much. Madrone burl and Apple move a lot. You need to leave it thick enough that when it drys there will still be a "round" in it. The problem with leaving it too thick is that it may not let the bowl "move" and the piece will crack.

After I rough out the bowl I use cheap paste wax on the end grain on both the inside and the outside of the bowl. I don't use Sealtite liquid wax at this stage because it soaks into the end grain. When the bowl dries the wood that the Sealtite has soaked into will have to be turned off. Paste wax does just as good but doesn't penetrate.

The drying process starts by stacking the bowls on dry stickers in the coolest place in my shop, the floor. If you stack wet bowls touching each other they will mold and spault. Separate them with dry wood stickers. For the first couple of weeks I might check the bowls every day or two. It I find small cracks in the end grain or on the foot I immediately use thin CA glue to seal up the crack. (Bill Luce uses thick CA glue and sawdust to build a "scab" over the crack. The advantage here is that the thick CA glue doesn't soak into the end grain of the wood which will have to be turned off later.) The cracks tell me the bowls are drying too fast. I then put them in garbage bags with dry chips. This slows the drying process and lets the wood re-equalize its moisture content. The blank cracks because the wood on the outside of the blank is drier than the wood further inside the blank. The dry chips will absorb the moisture from the blanks.

Every couple of days I'll take out the damp chips and put in dry chips. The bowls may go in and out of the bags several times before they are stable. I leave them in the bags 3 to 4 days then put them back on the stickers on the floor.

If the bowl starts to mold it is drying too slow. I move the blanks into the heated part of my shop. I want to get the surface moisture off the blanks. But be careful because too long in a warm dry location can crack the blank at this stage. I also spray the blanks with a mixture of 50% household bleach and 50% water. This kills the surface mold. Mold is the first step of spaulting and I generally don't like the effect at this stage. The bleach doesn't penetrate enough to affect the wood color.

As time goes on I check the bowls less often. Generally, after six weeks the bowls are stable and won't crack after that. They are not dry at this time and will continue to move. I then move the bowls up on the racks around my shop and forget about them.

How long does it take to dry the blanks? Depends. Depends on the time of the year. Depends on the species of wood. Madrone burl (that has been boiled) and Big Leaf Maple dry in as little as 4-6 months in the summer. Oregon White Oak and California Black Oak take 18 months to two years.

Time of year to green turn. I like to do my green turning during the cool damp part of the year (late October to early May). This allows the blanks to dry slowly while it is cool. They are stable before it gets hot. I will rough out bowls in the summer time if that is when the wood is available but it is a lot more work to successfully dry them without cracking.

In this area (Western Oregon) roughed out wooden bowls will dry down to 13%-15% moisture content in the unheated part of my shop. Once they reach this point I can move them into my drying room. I keep it at 70 degrees f. and 60% humidity year round. The bowls will dry down to 6% - 8% in there.

The bowl is then ready to remount on the lathe. Remember that the bowl has "moved" during the drying process. The old center that the bowl was roughed out on may not be the new center. A quarter-sawn bowl will move more on the sapwood side as it drys. A flat-sawn bowl will end up longer with the grain and shorter across the grain as it drys. Burl and some woods like Apple will move in all kinds of directions. I measure across two points and locate the new center. I put the faceplate on and slowly rotate the bowl on the lathe. This will tell you if it is centered or you need to move it a little. And you may want to adjust the faceplate depending on how the grain pattern is in the bowl or to remove flaws on one side of the blank.

Because the center can change during the drying process I rarely use chucks to hold the bowl on the lathe for finish turning. I use face plates and screws. When I rough out the piece I try and leave an extra ½ to 3/4 inch extra scrap on the bottom to hold the screws. I generally use a chuck during the green turning. If you put screws into the wet wood during green turning the

tannic acid in the wood and the iron in the screws will react and leave a black spot in the wood that will have to be removed when you finish turn the bowl. After the bowl is dry I can move the faceplate around on the scrap part until I find the new center or where I want the center of the bowl to be. A chuck prevents adjusting for the new center. I also find that most chucks are too big and get in the way when I am turning the bowl down around the foot. A faceplate allows for more clearance down around the foot of the bowl.

You are now ready to remount and finish your bowl.

Green turning has some major advantages over turning dry wood. 1. It is easier to turn wet wood. 2. There is less dust. 3. Finding large pieces of dry wood free of defects and flaws would be hard. 4. I can use wood species and sizes of wood that are not found on the commercial market.

There is a final reason and probably the most important reason to use green wood: I get to control the wood blank. If I go out and buy bowl blanks I've let someone else make all the artistic decisions. Michael Elkan's book "Reading the Wood" says it all. How I cut the bowl blank out of the tree determines what the finished bowl will look like. If someone else cuts the bowl blank out of the tree, they make the artistic decisions. I want to make these decisions on my bowls. I want to "Read the Tree" and cut my blanks out. I am then responsible for what the finished bowl looks like. I want to cut for the prettiest bowls not the most bowls out of a given tree.

I encourage you to join the American Association of Woodturners. It is an organization dedicated to the education of woodturning. It is a great resource for skills, tools and mentors. Learning how to read and work wood has been a good path in life. I encourage you to walk down this path. Besides, everyone can turn a bowl.

**Other methods of drying wood bowl blanks.**

Boiling. I turn a lot of Pacific Madrone. This wood is generally not used because it cracks and wraps wildly as it dries. One artist that uses the wild movement to his advantage is Christian Burchard. Christian turns green madrone very thin (in the area of 3/32") and lets his baskets move as they dry. I turn functional bowls and want my wood stable. After I rough out my green turned bowls I boil them for a couple of hours in my stainless steel tank. After the water cools down some I take the bowls out and air dry them as I do other wood. I do watch the bowls closely for about 6 weeks. Some burls like to crack and some are easy to dry. I have also used boiling on several fruit woods like apple and cherry. Cherry sap wood is very prone to cracking as the bowl blanks dry. However, I quit boiling cherry because the boiling clearly takes out the anti fungal elements in the wood. Boiled cherry "pin" spaults almost immediately and I don't like this spaulting.

Alcohol. I have not tried this method of soaking wet wood in alcohol to accelerate the drying. In talking to friends, they have taken wet wood and made it dry in a very few days by soaking it in alcohol and then letting the alcohol evaporate. I have two concerns with alcohol. First, it is very flammable and accidents happen. Second, in talking to two friends from England, both said that alcohol drying makes the wood harder, and thus more difficult to finish turn.

Soaking in soap. I have talked with several people who have taken green turned bowls and soaked them in soap water. After soaking the blanks they are taken out and air dried. Again, I have no personal experience with this method. My only concern would be with possible soap residue in the wood. Soap attracts water. Would the soap residue in the wood continue to attract water after the bowl is finish turned? I am not enough of a scientist to answer this.

Microwave. I think this method is best used on thin projects and you would like to get some nice movement in the wood. I have used it to hasten drying of green roughed out bowls. But it takes a lot of messing around with. I used three minute cycles. I let the wood cool down between cycles. It will take several days of these cycles to dry the blank so I only use it if I have a special call for a bowl. Remember, a microwave dries the wood from inside out. If you see smoke coming out you have probably burned the inside of the wood. And if you try to dry it too quick it will end check.

Kilns. There are many types of kilns. The most popular for woodturners are the converted refrigerators. These have been described elsewhere. Phil Lapp in our club built one and uses it to dry his rough bowl blanks. Phil said it takes about two weeks to dry a batch of 12" bowl blanks and less for smaller items. Phil said he turns the blanks a little thinner than if he was going to air dry them. Phil likes this kiln method. The only downside to kiln drying I have heard was from my professional friends in England who said that kiln drying wood makes it harder, thus not as nice to cut with tools as air dried wood.