Hamilton Woodturners Club

Tutor's Tidings TT

No 21 - Friday 3rd July, 2015

We extend a big friendly welcome to DES *who enrolled in the Tuesday class this week.*

Des made a flying start on two projects: a knockout bar and a bud vase.

JAMES started this project off using a whole round log. As new cracks were found the potential dangers were chiseled away *until there's not much left of the original log. Frustrating eh!*

MALCOLM gets really enthusiastic with his turnings using the new DVR lathe. No belt changing, quiet, no vibration, easy-set speeds, torque and tough.

Now that's quite a lot to like about any lathe.

In a very short time **CHRIS** has advanced his turning skills to a point where he is turning using jamb chucks and making pepper mills.

***JAN** is onto a real winner here. This might even be her most ambitious project to date – a cleverly shaped bowl and an excellent choice of wood.*

BRIAN (that's him under the hat) has persisted in getting his Stage One, Module three project just right. Here's a turner developing a positive attitude and high standards. Well done Brian .

DAVID turns a set of skilfully-constructed kahikatea pepper mills using Easy Wood tools (rougher, finisher and the detailer)

The next 5-week, day session woodturning course starts next Tuesday <u>7th July.</u> Re-start or extend your hobby. Come join us, learn new turning ideas and enjoy the company of great people.

Tuesday's Gallery of completed projects

DAVID ROSE

RAEWYN JOHNSTON

BRIAN DALY

DAVID ROSE

TT's Information section

NEW ZEALAND TREES

MAHOE

Melicytus ramiflorus

(māhoe or **whiteywood)**

Melicytus ramiflorus

Māhoe

Mahoe is an excellent wood for turning projects.

Melicytus ramiflorus (**māhoe** or **whiteywood**) is a small tree of the family Violaceae endemic to New Zealand.It grows up to 10 metres high with a trunk up to 60 cm in diameter, it has smooth, whitish bark and brittle twigs. The dark-green "alternate" leaves are 5-15 cm long and 3-5 cm wide and their edges are finely serrated (although this feature is less pronounced in younger plants).The plants are dioecious and the small flowers are yellowish in colouration, between 3 and 4 mm in diameter and occur in fascicles, growing straight out from naked twigs- these flowers have a strong, pleasant fragrance. The berries are a striking violet colour when ripe and are more or less spherical with a diameter of between 3 and 4 mm. Flowering occurs in late spring (southern hemisphere)- and on into summer while the berries appear later on in summer and also in autumn.

The berries of this small tree are eaten by a number of native birds, including Kererū and Tui, while geckos of the genus Naultinus have also been observed to supplement their primarily insectivorous diet with consumption of these berries. Māhoe is ubiquitous throughout lower altitude New Zealand forests and is frequently seen in areas of regenerating forest.

Interesting article sourced from the internet

Boiling Green Wood
Effective Strategies to Reduce Drying Defects

Boiling Green Wood Overview: In the summer of 1999, several of my Internet woodturning friends urged me to begin a comprehensive series of timber drying tests. My goal was to reduce drying defects to the absolute minimum and to discover faster and more efficient ways to accelerate the drying process. This first article on boiling green wood will profile the results of my continuing drying tests with bowls, platters and hollow forms.

This report covers "plain paper bag drying" and pieces that were "boiled, then bagged" using my boiling green wood protocol. Future articles will cover freeze drying, microwave drying, live flame drying, dry heat assisted drying, steaming, vacuum drying, solar kilns and supplemental treatments. These include alcohol immersion baths, mineral spirit immersion baths and Pentacryl immersion baths.

Boiling Green Wood - Previous Experience

I first started experimenting with boiling green wood in 1996. At the time, I had a supply of green Madrone Burr in my studio. This burr is quite unstable when it is green. Drying defects typically include severe cellular collapse, gross deformation, numerous checks and corrugation. With a supply of the burr in stock, I began to experiment by boiling green wood to reduce its drying defects. The procedure I developed for boiling green wood was a tremendous success. From then on, I would periodically boil green wood timbers that were susceptible to significant drying defects. Last summer, I expanded the boiling green wood testing to include a large scale-drying test with several local timbers.

This Sycamore bowl, defect free when placed into a plain paper bag to dry, developed a catastrophic, full thickness fissure across the bottom of the bowl during the drying process.

Boiling Green Wood - Paper Bag Drying Experience

I have been drying my rough outs in paper bags since 1997. I have become quite fond of the plain paper bag drying method. It is a significant time saver after a long day roughing out production bowls. It is quick, cheap and I have had good luck with it using a variety of timbers. However, there are certain times when other methods like boiling green wood first and then bagging will work better. It really depends on the characteristics of the piece at hand.

Boiling Green Wood - Test Overview

In March of 2000, the first group of four hundred and fifty bowls and platters from the boiling green wood and paper bag testing were removed from drying production. All of these bowls and platters were dried in paper bags. Some of the rough outs were boiled for one hour and were placed into paper bags without end grain sealer. The balance was placed into the bag straight off the lathe, without end grain sealer. The species included in this analysis: Maple, Walnut, Mulberry, Sycamore, Pecan, Winged Elm, White Ash, Flowering Plum, Bodark, Sweet Gum, Black Ash, Cottonwood and a few others.

Boiling Green Wood - Subject Pieces

I chose to include some marginal pieces in the test (those with branches or rims very near the pith), because I like to "push the envelope." I usually make my chainsaw cuts to clear the pith, any checks and the smallest growth rings. This leaves a bit of turning stock from the center section, so it is not wasted. However, on smaller logs there is precious little room to do this and still get a nice size bowl.

Therefore, I began experimenting with making a single cut, directly through the pith. This offered minimal waste and gave the largest possible bowl blank (unless bandsawn). However, the small growth rings next to the pith are very prone to splitting during traditional air-drying. (The small growth rings in the test pieces that were boiled remained intact).

This small Sycamore bowl shows the typical failure of a "branchlet" when dried in plain paper bags. The dark black line is a split that opened up during drying.

Immature or overgrown branches (I call them "branchlets") are another thing that has challenged me over the years. Most of the Sycamore pieces in this test came from trunks that were approximately 30"-32" in diameter. Sometimes, these immature branches will dry intact, but most of the time they do not.

They tend to shrink and loosen when they dry and at times, even fall out. Liberal doses of thin CA will help, but even CA will not save them all. (All of the test pieces that contained branchlets dried successfully and remained tight in the timber.)

Boiling Green Wood - CAUTION: Do not load pieces into your pot that are near the same size as the maximum diameter of the pot. When the wood takes up water during the boil, it will expand in size. If the piece is near the same size as the pot's diameter when you place it in the pot to boil, the wood will swell, creating a tight fit, or plug in the pot, causing a build-up of pressure under the plug.

This is a dangerous condition that can cause severe injuries. For safety, always allow 6" of free space around your boiled pieces in the pot as a safety margin. For example, if your pot measures 24" in diameter, the maximum size piece you should ever boil is 18". If you need to boil larger pieces, get a larger pot, observing the 6" safety margin.

Boiling Green Wood - The Procedure

An open pot is normally used for boiling green wood, but you can also use a pressure cooker. A pressure cooker will reduce the overall cooking time considerably. The problem is getting a large enough pressure cooker to hold your bowls! **Whatever you decide to use, make sure you use a pot that you can dedicate to timber boiling. The extractives in the timber will quickly make a mess of your pot and you will not want to use it for anything else.**

My setup for boiling green wood. Propane fired burner with a cut-down 55-gallon drum as the cooking pot.

Placing some Pecan-crete bowls in the pot.

In the past, I boiled my rough outs with a full rolling boil for the entire cycle. I found out that this was not necessary and just wasted propane. Those Cajun cookers can really burn the fuel! Now, **I bring the pot up to a boil and place the bowls and platters into the "soup". I boil most of the items for one full hour, per inch of wall thickness, under a low to medium heat (not a simmer, not a full rolling boil).**

When boiling green wood, begin your one-hour timing (after placing the bowls into the pot) when your pot RETURNS to a boil! You must monitor the pot to insure it does not lose too much water. Periodically, you will have to replace some of the water lost during the boil. You can also cover the pot with a lid to help retain heat, water and conserve fuel. The hot water may slosh out and stain some surfaces, so take precautions to insure that you have suitable protection.

Some of the smaller items may require a weight to prevent floating. A brick, or a large rock works great for this. In unusual circumstances, I will continue boiling green wood for two hours if the piece warrants more time. However, all of the items in this particular test were boiled for approximately one hour. **When I remove the pieces from the pot, I let them air-dry overnight to reduce some of the excess water and bag them the next day.**

In extreme cases (like green Madrone Burr), put the items into cool water and then bring it up to a boil SLOWLY, over the course of two hours. When the water begins boiling (2 hours from the start), boil for two to three hours. When this cycle is up, (4-5 hours from the start) turn off the burner and let the piece sit in the pot until the next day. Then, remove the items from the water and air-dry them for one day before bagging. However, most timbers do not require this extra effort.

Sometimes, the design will limit the amount of pieces you can put in the cooking pot. For example, semi enclosed bowls, hollow forms or tall roughed out vases etc. However, I load as many pieces as I can fit in the pot. You can load quite a few platters into the pot, because they stack so well.

Boiling Green Wood - Deciding When to Use the Protocol

Does the piece include branchlets in the sides/bottom? Is there wild grain on one side and straight grain on the other? Is the rim/bottom of the bowl near the smaller growth rings (closest to the pith)? Is the species well known for gross distortion or cellular collapse during drying? Does the species exhibit "honeycomb" degrade or severe corrugation when dried? If so, then I would suggest you augment your "plain paper bag" method (rough out placed in the bag without alteration of any kind) with a boiling cycle. Here's why...

The Elm platter (left) was dried with the plain paper bag method and developed full thickness separation through the crotch figure. The Pecan platter (right) was boiled, then bagged, and dried without degrade.

Boiling Green Wood - The Results

Of the four hundred and fifty bowls and platters included in the analysis, the largest amount of drying defects were in the plain paper bag test group. **The least amount of drying defects were in the boiled, then bagged test group** which had little to no drying defects (splits, fissures etc.) and exhibited significantly less gross distortion, warp, twist or other undulations in the test samples. Species with the largest amount of defects present when turned were Sycamore and Pecan, followed by Sweet Gum. For example: Several of the Sycamore and Pecan pieces had branchlets in the sides or bottoms of the test pieces.

The Pecan bowl (left) was dried in a plain paper bag and developed full thickness separation in the long dark streaked area. The Pecan bowl (right) was boiled, then bagged, and dried successfully.

Of the twenty bowls in the plain paper bag test group containing these branchlets, sixteen showed splits through the branchlets. Most of the splits were limited to the diameter of the branchlet in twelve bowls. The four remaining bowls had splits that extended well past the branchlet boundaries. All of the branchlets received an initial application of thin CA glue before going in the bag.

Twenty -one bowls and five platters in the boiled, then bagged test group revealed NO splits in any of the branchlets. Gross distortion on the rims of the bowls and platters was significantly less on the boiled pieces as well. They still warped a bit, but the overall rate was significantly less than the plain paper bag tests group.

Other comparisons demonstrated similar results. Twelve Black Ash bowls contained heartwood (wild grain) and sapwood in the same piece and were boiled, then bagged. These showed significantly less gross distortion than the plain paper bag test pieces. All of the Black Ash test pieces that were boiled, and then bagged had no splits. Of the ten

The Pecan bowl (left) was boiled

pieces in the plain paper bag test group, two revealed minor splits.

Bowls turned with rims or tops very close to the pith also exhibited similar results. Of the forty- five bowls and twelve platters in the boiled, then bagged test group, only one bowl contained a split. Of the forty bowls and fifteen platters in the plain paper bag test group, thirty-one of the bowls and twelve of the platters exhibited numerous split defects at the rims.

and then bagged. Although numerous defects were present, it dried successfully without degrade. The Sycamore bowl (right) was defect-free when placed into a plain paper bag to dry. It developed a full thickness separation/fissure across the bottom during drying.

Boiling Green Wood - Summary and Advantages

This testing clearly demonstrates that the addition of a boiling cycle helps to prevent or eliminate many common drying defects. For me, I plan to boil, and then bag much more often! I will reserve the plain paper bag method for pieces whose grain character and overall defects are within the demonstrated success profile. Other pieces that exhibit various defects or possible grain/growth ring compromises will get a "hot water bath."

I have also found that boiled timber dries an average of fifty percent faster than non-boiled timber. Another advantage comes when you sand the piece. **Species that tend to clog the sandpaper when traditionally air-dried, offer little to no clogging when they are boiled.** In addition, most unwanted guests are eliminated in the boil cycle. This is especially important if you dry your bowls inside your home and you want to stay out of divorce court!

It is clear that boiling green wood does have benefits for marginal, as well as sound pieces. It is my guess that the process relieves or relaxes much of the internal stresses. The area around the branchlets on dry (boiled) pieces was very tight and showed no separation from the surrounding timber. **I believe that the combination of the heat and hot water loosens the lignin bond between the cell walls.** The internal stresses then relax a bit when boiling green wood and when the piece cools, the lignin bond "cures" (for lack of a better word) in the new relaxed state.

Wild grain and other defect prone areas are therefore, brought under control.

Most of the platters in this test were crotch pieces and the feathers on the boiled pieces were tight and free of checks. By contrast, the plain paper bagged pieces did contain some minor checking in the crotch feather areas. Even very thin platters (3/8" thick) showed very little rim movement in the boiled samples. By contrast, the non-boiled group had some pieces that looked like a potato chip!

Boiling Green Wood - Final Thoughts

Some turners say that the reason they do not like to boil is the inherent color loss. In my experience, the outer 1/16" or so WILL lose color, but below that, the color is unaffected. I have carefully compared the color in air dried and boiled pieces many times. In my opinion, there is no detectable difference between color, shading or tone values in boiled timber and that of traditionally air-dried timber. If your rough out is only 1/8" or less in thickness, you have a valid point regarding color loss.

However, on a 12" bowl with a wall thickness of one inch, the point is moot in my opinion. Obviously, nothing works in every situation, with every timber. I would encourage you to try this protocol on some of your problem bowls and platters before bagging them. The process for boiling green wood is easy and relatively quick and offers amazing results.

Boiling Green Wood - Additional Information

Many woodturners who read my initial report on boiling green wood titled "Reducing Timber Drying Defects by Boiling" have requested more information on how long it took for the various timbers in the test to reach equilibrium moisture content (EMC). In addition, many have asked for guidelines on how long it will take for other boiled timbers to reach EMC, after they are bagged.

Honey Mesquite salad bowl with Mineral Oil finish. Stable timbers such as Mesquite do not need this protocol.

Nearly all of my rough outs are dried indoors, in a controlled environment that is heated and air-conditioned year round. When the blanks have reached EMC, they are moved outside and stored in a part of the studio that is not temperature controlled. The dried rough outs remain in the post-dry staging area of the studio, until they are selected for final turning.

Most of the four hundred and fifty pieces in the boiled vs. bagged test, reached EMC in approximately two to three months. Some took a bit longer, depending on the species. On average, boiled rough outs will reach EMC approximately 50% faster than traditionally air-dried and bagged pieces.

Curly White Ash salad bowl. White Ash is another timber that does not need any special protocols to dry successfully.

Timbers included in the boiled vs. bagged test included: Maple, Walnut, Mulberry, Sycamore, Pecan, Winged Elm, White Ash, Flowering Plum, Bodark, Sweet Gum, Black Ash, Cottonwood and a few others.

Unfortunately, there is no "rule of thumb." I can give you for determining when various boiled rough outs will be ready for finish turning. There are just too many variables to give a hard and fast rule. I can tell you, that your boiled rough outs WILL dry approximately 50% faster, than non-boiled timber.

Many variables influence the length of time required for boiled timbers to reach (EMC). These include, but are not limited to the particular species, the wall thickness/uniformity of the piece and the percentage of post-boil free/bound water contained in the subject piece. In addition, the length

This round bottom Sycamore salad bowl with a Mineral Oil finish was boiled for one hour.

In my studio, I do not use a moisture meter to determine when the blanks are ready for final turning. I rely on close visual observation in the shape of the tennon boss. When the boss is sufficiently oval, it is ready to give it a go. In thirteen years of turning, this system has never let me down. It does, however, require a substantial knowledge of the particular timbers drying characteristics.

of time the blank is allowed to air dry before it is placed in the paper bag, can impact the time required to reach EMC.

This shallow Pecan-crete bowl was boiled for one hour.

Currently, I have over 1,500 rough outs that have reached EMC and are ready for finish turning. Having a constant supply of dried bowls coming out of drying production is invaluable for a production turner. Obviously, not every turner can maintain such a large store of dried rough outs. We all want to have bowls dried on demand! Few of us care to wait the several months necessary, for nature to take its course.

This quartersawn Sycamore bowl with a Mineral Oil finish was boiled for one hour.

In my next phase of timber drying tests, I will cover Pentacryl treated timbers and timbers that are dried from the green state in a microwave oven. Microwaving can significantly speed up the drying process and yield excellent results, if proper care is taken.

Over the last three years, I have had excellent results with microwaving various timbers. Using my proven process as a starting point, I intend to "push it to the limit" to discover how fast I can dry a bowl, without any drying induced degrade.

Pentacryl is a liquid compound of siliconized polymers that can help to reduce drying degrade and speed up the drying process. I will test several methods of applying the Pentacryl including, soaking, brush on, spray on and vacuum assisted infusion. The results of Phase-2 timber drying testing (Pentacryl treated and microwave drying) will be published in a future issue of "Lathe Talk" Phase-3 testing is scheduled to cover freeze drying and live flame curing.

This Honey Mesquite salad bowl with a Mineral Oil finish was dried in a plain paper bag.

Acknowledgement: Steven Russell

BEWARE! WARNING!

A note of caution to all wood turners

In the pursuit of good quality wood for turning projects it should be remembered **not to cut down too many trees**

Why? (go to the last page of this TT to find out why)

THURSDAY'S SESSION

DYLAN Ranstead, the club's first junior member started his turning journey tonight. Dylan brought along a bowl made from laminated rimu wood that he had recently completed on a lathe at his school. As this piece of wood turning indicated he is already some way along the skills continuum, Dylan was placed directly onto the club's sequential stages programme. Good one Dylan and welcome to the team.

There were several absences tonight but we did get a surprise visit from **NIGEL** who has been a member of the group in the past. NIGEL is now free from a work commitment once again on a Thursday evening so we hope he can re-join the group.

- **Spencer** continued his efforts to make his own turning tools (check out the gallery section of this TT)
- **Stephen** took an engineer's approach to designing and making a jamb chuck for his egg making projects. A careful turner getting great results.
- **Christine** made excellent progress with her small macro bowl achieving a smooth finish by persistently "rubbing the bevel". Good one Christine!
- **Andre`** beavered away with the difficult task of removing the centre of his huge kanuka wood bowl. Andre` placed a large quantity of wood on the club's storage shelves but much of this will need further processing.
- **Murray** continued his turnings with a wood he has yet to identify.
- **Following** his interesting demonstration of air brushing **Robert** soon shaped yet another masterpiece using ash wood.
- Dylan was introduced to the Sorby roughing gouge to reduce a square section to a cylinder in the process of making a knockout bar.
- **Dave** fitted a ferrule (thanks Spencer!) to his scraper handle, drilled the long hole for the tang, and prepared to scraper profile.

FUNDRAISER WOOD SALE

I have placed four boxes of useful ready-to-use turning wood at the front of the workshop. Please support this fundraiser in order to purchase a boxed set of top quality metric drill bits. I expect this desirable item to cost no less than $150 so hopefully the sale goes well.

(Our current drill bits are a mishmash of sizes and quality)

Thursday session highlight

*Special thanks to **ROBERT,** a fellow club member, who provided a special and interesting talk at the Thursday session. This demonstration involved the techniques he uses for adding colour to his turnings.*

See you on Sunday 5th July at the Robert Sorby tool demonstration at our workshop 1.00pm - 4.00pm

Gallery of turnings completed by the Thursday team members

STEPHEN *used Briwax to achieve such a high lustre on his beautifully crafted bowls from kauri wood.*

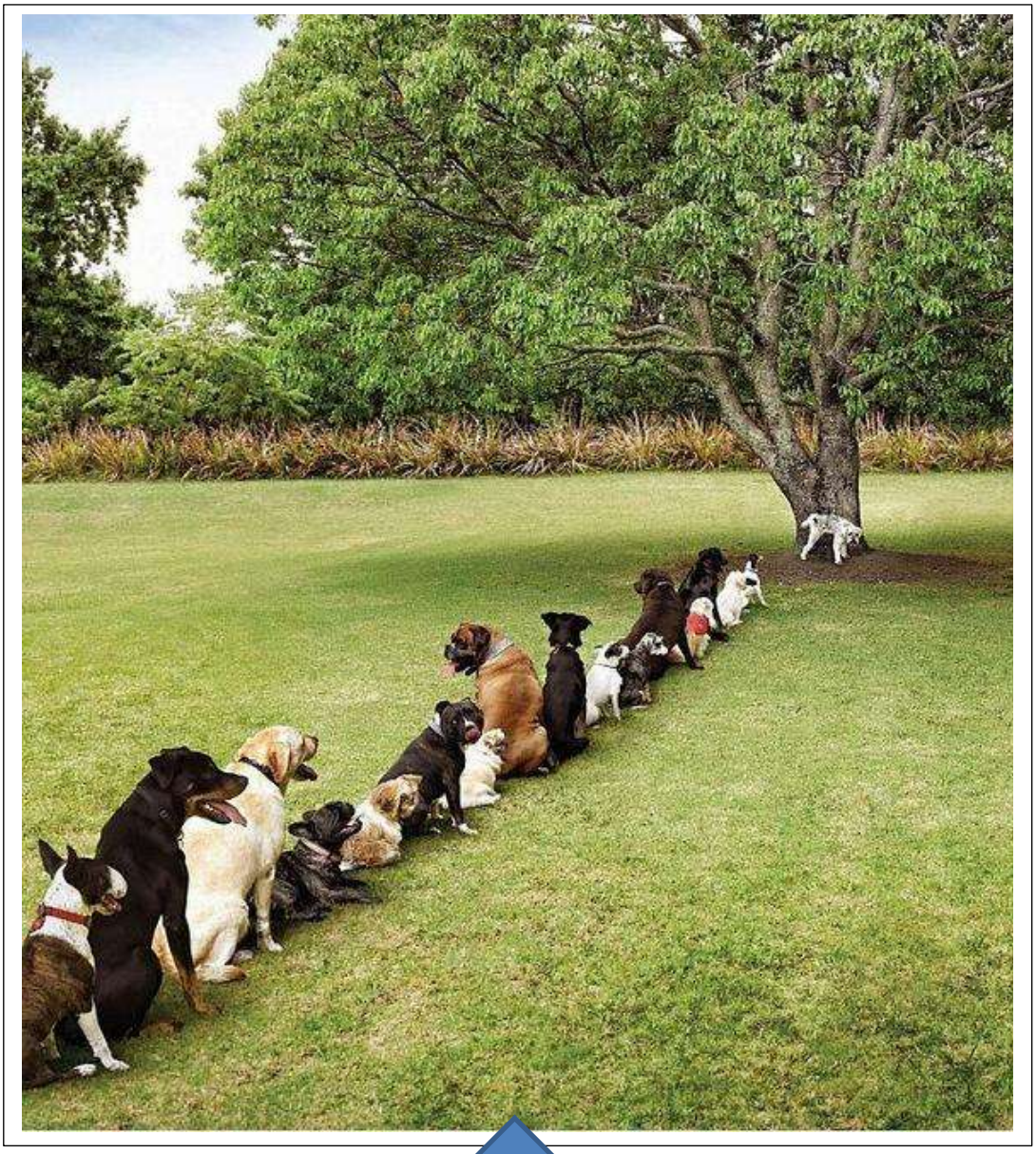
Paua has been set in resin as a central feature of his work.

SPENCER *used black maire wood to make a handle for his 6mm mini-tool. The woodcut tip has a bowl gouge profile and will be useful for those smaller jobs.*

Sound and solid construction here!

DYLAN, *our newest (and only junior member so far) brought his laminated bowl to his first club class. This turning work provided some insight to Dylan's capabilities and was used as a determinant for his club programme.*

Laminated rimu bowl. Skilled work here!



This is why you shouldn’t cut down too many trees

OK That’s it for this week.

Productive turning and remember to keep those gouges sharp. Clive