

# AMERICAN PAULOWNIA ASSOCIATION

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## **American Paulownia Association (APA) 2017 Annual Conference Report & Alabama Forest Owners Association (AFOA) 36th Annual Meeting**

During April 21-22, 2017 a combined annual conference was hosted by the APA and the AFOA in Columbiana Alabama. The activities took place at the 4-H state-of-the-art facility (yes the same 4-H club from your childhood). They had a very nice Lodge and hotel on the grounds that normally is home to 4-H club activities and a very large modern Auditorium that exceeded all expectations of the author. On Friday morning, after a brief 2-hour social and business meeting of the approximately ten APA members in attendance, all were free and encouraged to enjoy the day at the many AFOA arranged activities and the several field trips offered to the White City Nursery and the IndusTree Sawmill. Field trip reports, along with numerous photographs, are contained in this publication.

Friday evening encompassed the most memorable event of the day for me. The AFOA arranged for a sumptuous dinner reception with entertainment provided by the renown Tommy Sellers and the Hillabee Creek Band. Now this band was very good, not only entertaining the group with both local

and nationally popular music; but, successfully engaging the audience with sing-alongs, foot tapping and dancing. If their superior musical and artesian skills did not get you in-the-mood, the unlimited free-flowing wine sure helped to steer you in that direction.

I happened to have my Fender 60<sup>th</sup> Anniversary Paulownia Body Telecaster guitar with me and, about midway through



**Nyla Newsome  
Welcomes Members to Columbiana Alabama**



**IndusTree Sawmill &  
Stella-Jones Treatment Plant Entrance**



**Hillabee Creek Band with Tommy Sellers**

## President's Message. . .



Fellow Paulownia enthusiast, while the Board of Directors has decided on former APA President David Sutton's plantation located in Tennessee to host this year's conference, we still need your advance input in addition for you to plan now to attend. If you have a Paulownia fabrication craft that you would like to provide a "hands-on" demonstration, please contact David Sutton or Dan Blickenstaff for arrangements. One of the business topics this year will be to review our Association bylaws and practices. For instance, in this new age of Technology we could save a lot of the Association's limited resources by delivering the newsletters electronically, which allows for publication of many color photos in addition to savings for both the printing and postal cost. At the conference everyone will get a chance to voice their opinion on any future re-direction of the APA, so come and let your voice be heard.

Contained herein you will find a report of the conference last year. Since the Association currently does not have a formal Editor, both Dan Blickenstaff as Publicist and I have jointly combined efforts to prepare a representative summary of the activities, including comprehensive reports for both the 2016 and 2017 field trips. Enjoy this edition of the newsletter, and if you wish to become involved in the formal management of your Association, please contact me or any Officer on the Board of Directors and we will welcome you most appreciatively.

George Newsome

their performance, I offered it to the lead guitarist Randall Warren for a work out. And did he ever; he ran the cords on that Baby like I've never seen nor heard before. In fact, he never laid that Paulownia Fender Tele down after that and, I was concerned that he may even pop a string or two with all the intensity he was putting into it. After the concert concluded, I asked Randall for his impression of the Paulownia solid body guitar. He replied, "It is light and balanced, easy to play and is one mean guitar"! He even compared it to his standard use telecaster and stated he probably could not afford a Paulownia one. This was another example of the necessity for getting our Paulownia lumber and products directly to the public and introduce them to the many desirable characteristics of this impressive wood.



Hillabee Creek Band, Randall Warren  
& Fender Paulownia Telecaster

The lectures and presentations the following day were similar to our normal conferences; but from a much broader perspective, with the "experts" speaking about the various aspects of successful forestry. Since the AFOA is focused on forestry in general, unlike APA's primary Paulownia focus, the topics



APA Display, David Sutton & Alejandro Tesone

presented were more general than what we are normally accustomed. Therefore, following I have listed several of the memorable topics and a short synopsis of George Newsome's (GN) and my (DB) take-away from each.



APA Display, Whittler's Kits  
with Figurine & Fishing Lure



## ***Editor's Note. . .***

First I would like to wish each Association member, and all readers of this publication, a most continued safe and prosperous year.

Contained herein, you will find reports on our 2017 annual conference that was co-hosted with our member Alabama Forest Owner's Association in Columbiana Alabama, including two field trips one to a local seedling nursery and another to a large commercial sawmill. In addition, follow-up reports and discussions covering the 2016 field trips to members Harold Fink and Donald Bates Paulownia plantations are enclosed. Embellishing these articles are numerous pictures submitted by attending members.

Our next annual conference is scheduled for September 14 and 15, 2018, and will be hosted by Association Founder David Sutton at his Paulownia plantation in Parrottsville Tennessee. This year's conference will provide a "hands-on" craft oriented show including the fabrication and display of all things Paulownia, included but not limited to: water craft, artist carvings, guitar building, bowl turnings, and even bio-char production. You will receive a reminder notice and registration forms by postal mail later this year, once all arrangements have been finalized with the participating crafters. If there is a Paulownia wooden craft that you wish to display and/or demonstrate fabrication, contact me for vendor registration information. I encourage you to make tentative plans now to attend and be an active participant in our small but forward looking Association.

Discussion among our directors and officers is currently ongoing addressing the benefits of migrating several of our member services, including membership renewals and newsletter distribution, to more internet and digitally based systems. These opportunities will be presented for further discussion at our annual membership meeting held during the conference. We value your input and support as these options are considered in addition to the selection of officers and directors for the next 2 years. Enjoy this edition of our newsletter, and I hope to see each of you at our next conference in Tennessee.

Dan Blickenstaff, Maryland

### **\*Economic Impact of Ag & Forestry in Alabama by Dr. Lemme; AL Extension.**

Alabama has 70% of its land in forestry comprising approximately 22.9 million acres, with 44% soft wood and 43% hard wood with private ownership accounting for 94%. The State ranks 3rd nationally in forestry, employees 55K people in the forestry/timber/manufacturing businesses, and is increasing forest land at 22,000 acres per year comprised of 7,000 acres planted and 16,000 acres unmanaged native growth. Annual forestry generated revenue in excess of 2 billion dollars is made up of timber logging (\$1.1B) and forest products (\$1.12B). Further breakouts are: by volume at: 17% pulp, 25% pine timber, 58% hardwood; and, by value at 40% pulp, 44% pine saw timber, 9% hardwood. There are 75 paper related facilities in AL, 36 sawmills and 8 dedicated to engineered wood production. Bark beetle is a pest in 15 counties. Hunting provides additional economic benefits to Alabama with license revenue for small game of \$41K and large game of \$914K, ultimately resulting in \$1.8B of related gross retail sales. (DB)

### **\*Drone Recon for Forest Owners by Joe Clark; Forest2Market.com**

One of my favorite speakers in the main Auditorium was a professor from Auburn Univ. covering drone reconnaissance of crops in forest. These were specialized drones both fixed-wing and four prop models as you're probably familiar with on TV that had specialized cameras not to just take pictures for tree counts, but also took pictures in the infrared Spectrum for an immediate gauge on crop help. They also had geo-tagging so that when you looked at the high resolution pictures on the computer you could click any point

and it would give you GPS readings and you could walk to that spot in the field and determine what the problem was? Sometimes it was a water problem or insect infestation or maybe just a fertilizer deficit. He also pointed out that at this point it was not a business operation, but they were just doing occasional test in the field to verify the procedures and feasibility of the project. What really got my attention was when he said one of their drones unexpectedly crashed, and that drone cost \$20,000 even when they sent in the black box to the company they cannot explain the crash. \$20,000 seems like a lot of money for a glorified remote control toy size airplane. (GN)

**\*Tall Wood Buildings by Scott Lockyear; WoodWorks – Wood Products Council.**

This presentation aroused my interest in that the concept is relatively new and untested in the United States. The speaker did confirm that the effort is currently funded by softwood lumber producers external to this country. Focus of interest is in the following areas: Code Compliant Design, Non-Residential Construction, and Multi-Family Wood Buildings. I presented the following question, “What do you feel are the primary advantages of tall wood building construction verses other materials such as concrete, steel, and alternative manufactured materials”? The response I was expecting to hear was: “Wood is a local resource, it is bio-degradable, and has inherent advantages such as less environmental impact during the supply and construction phases and contains climate friendly HVAC properties.” To my pleasant surprise, Mr. Lockyear provided the following response: “Tall wood buildings have an economic advantage during construction approaching 10%. Their speed of erection is quick, the design concept produces less noise and other negative environmental impacts, and the material is lighter in weight.” He went on to inform the audience that there are currently two mills in the US that are producing “tall wood building” products, they are located in Oregon and Montana. (DB)

**\* Chainsaw Sharpening Demo by Greg West; West Forestlands.**

This presentation occurred during the morning coffee break, and was a “must-see” for anyone owning, using and/or maintaining a chainsaw. Greg first demonstrated how to hold a saw safely while starting the engine, carrying, cutting and sharpening. I will not go into detail here; but, a few tips were: never start the saw using the drop-pull method; always carry the machine with the engine off or at least ensure the chain is not turning and the bar is away from your body; do not forget to cut a relief (anti kickback) cut prior to completing the final cut; and, properly hold, brace and secure the blade when sharpening. He taught us how to inspect for chain wear, how to gauge the depth of sharpening, and demonstrated a few simple tools and methods to make an amateur like me produce results like a Pro. You missed a good one if you did not attend. (DB)



Greg West – Chain Gauging



Greg West – Relief Cut

**\*Solving Problems with Herbicides by Mark Thomas; Forest/Wildlife Integration, LLC.**

Herbicide usage and application training have been routine requirements for both my Paulownia tree farming operations and plant nursery business. Therefore, any opportunity to further my knowledge and

## Remembering Grady McIver

It is with both sadness and joy that we report the passing of our Friend and Life-Member Grady McIver. Grady passed from this life on September 27, 2017 after a long battle with cancer. We will miss Grady's laughter and smile and that strong warm handshake. Our joy comes from knowing that Grady went to meet his Savior and has no more pain. Grady never met a stranger and willingly shared all of the knowledge that he could for the Paulownia enthusiast. If there was a grower with an issue, Grady visited the site rolling up his sleeves to help. Grady served many terms on our Board of Directors, beginning as a State Director for South Carolina in 2000 until 2014. Our prayers go to his wife Peggy Ann and to his mother-in-law Edis Mae Hoffman.

Grady was buried with full military honors. He served in both the Korean and Vietnam wars and was a Chief Master Sergeant with the S.C. Air National Guard.



Grady McIver (3rd from left) & Board of Directors



Grady McIver (R) & Buck Mizzell (L)  
Big Paulownia Tree at Longwood Gardens

engage another specialist in the field is welcomed. Mr. Thomas provided the group with a few valuable tried-and-true herbicide application rate ratios for forestry management. Following are two mixing and application rates that utilize the herbicide Imazapyr to permit massive forest species re-colonization from seed after application. The first combination uses the herbicide Imazapyr (Arsenal) mixed with Glyphosate (Roundup) at a ratio of 20 oz/2 qt respectively to 10 gallons of water. To completely eliminate existing unwanted yearly seedlings from the site, a ratio of 16 oz/3 qt respectively is utilized. He suggested application of the cocktail "to wet", i.e. completely cover the foliage just prior to drip. He has also noticed that a mixture volume of 15 GPA (gallons per acre) provides the minimum volume necessary in most situations. Two additional tips suggested were to use a 50% herbicide rate for injection treatments, and the use of 2-4-D herbicide if the goal is to promote grasses. (DB)

### **\*Solar Farms – Opportunities & Pitfalls by Tony Hubbard; Lewis, Smyth & Ford, LLC.**

Solar energy has never been one of my favorite subjects because of the extreme upfront costs, relatively new technology, and questionable return on investment. The few times in the past that I have carefully examined this energy generation option, I decided that the proposed system under consideration

## WALNUT COUNCIL

We are an association of over 1,000 members representing foresters, researchers, and growers of walnut and other fine hardwoods in 45 states and 4 foreign countries. One of our objectives is to transfer forestry research and other useful information from the laboratory to the timber grower.

Wright Forestry Center, 1101 N. 725 W.  
West Lafayette, Indiana 47906-9431  
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was doomed to a lifecycle death before an economic recovery of my initial investment would be realized, much less any real savings over the long term. With the continued costs of the construction material and required equipment decreasing, the generating efficiency increasing, the willingness of some public agencies to offer tax credits, and the legal requirement for utility companies to purchase any excess energy generated, the economic advantages of a solar powered scenario has continued to improve. Mr. Hubbard provided us with a current “state-of-the-art” for that business sector, for which a few of the major issues are addressed below.

- 1) The solar and federal tax credit of 30% was extended in 2015 for 6 additional years; and, registration of the generating system is required to receive the credit;
- 2) It requires 5-8 acres to generate 1 mega watts of power, preferably from a south-southwest facing site;
- 3) The location may have a slope of no more than 5-7 degrees and requires access to a high voltage commercial utility line of 125-200 KV;
- 4) Revenues generated to the land owner, over the normal 30-35 year lease period, range from \$500-\$1000 per acre annually;
- 5) It is highly recommended to always require a strict warranty on the lease with an insurance guarantee, and a retainer bond secured by a line-of-credit;

In summary, Tony informed the audience that Wal-Mart has an ongoing initiative to go completely renewable incorporating 75 MW of annual usage. Alabama also has an established goal of 700-800 MW of solar generated power by the end of this year (2018). Perhaps it is time that the author relook the option of solar and the potential to keep a few of those hard earned dollars in his pocket?

As previously stated in numerous annual conference reports, if you did not attend last year’s conference, there is a great likelihood that you missed several very important presentations and shared knowledge that would have benefited you in your goal of being a successful forester/tree farmer. I look forward to seeing each of you at our next conference in Tennessee. (DB)

Dan Blickenstaff, Maryland and George Newsome, Alabama



**APA Display, David Sutton & Alejandro Tesone**



**APA Display, Whittler's Kits & Turkey Call**



**APA Display, Whittler's Kits with Hunter & Dog Figurines**



**Hillabee Creek Band & Entertainment**



**Hillabee Creek Band & Dancing**



**Hillabee Creek Band Sing-a-long**

## White City Nursery Field Trip

White City Nursery (WCN) and their associated seed orchards have been in operation for over 30 years, annually providing 20 to 30 million genetically advanced pine seedlings (mostly Loblolly pine) and various hardwoods for its customers. Since 1980 all tree breeding, testing, progeny selection work, and grafting has been performed in association with the North Carolina State (NCS) University Tree Improvement Cooperative. Three seed orchards produce genetically improved seed through controlled mass pollination for the coastal, piedmont, and mountain provinces of the Southeastern U.S.



White City Nursery Seedling Field Preparation

WCN continuously strives for the highest quality seedlings and transplant survivability possible. They attain this objective by attention to detail, in the methods utilized in planting, growing and harvesting. WCN uses a 16-row precision planter to plant seeds into a previously fumigated treated field, planted at the proper depth and density, maintaining uniform spacing for maximum seedling quality, uniformity, and vigor. Under-cutting is performed twice a year; once in the fall and at harvesting to preserve lateral root growth which is crucial for survival. Seedlings are carefully inspected, packaged and stored in a refrigerated cooler until pick up.

WCN has a continuous research & development program, they are a contributing member of the NCS Tree Improvement Cooperative, and work closely with the Alabama Cooperative Extensive System. Services provided include: genetic tree improvement programs and services; wildlife consulting; reforestation referrals; and resources availability. Natural resource enterprises are of specific interest to the WCN.



White City Nursery Field Sprayer



White City Nursery Viable Seed



White City Nursery Seed Storage Barrels



White City Nursery 16 Row Seed Planter



White City Nursery Mobile Seedling Grader & Packaging Station



White City Nursery Production Seedlings



White City Nursery Seedling Inspection



White City Nursery Packed & Stored Seedlings



## Field Trip Report: IndusTree Sawmill & Stella-Jones Treating Plant

### Introduction, History & Background:

- IndusTree Sawmill & the Stella-Jones Treating Plant specializes in the following: timber purchasing, harvesting, processing, manufacturing and distribution. Founded in 1994, long-term working relationships with wood-consuming mills throughout the Southeast make the company knowledgeable and a resource for timber procurement and management operations in the region. These developed relationships and their own manufacturing facilities ensure landowners viable markets even during the difficult economic times.
- Included in IndusTree's services are teams of dedicated skilled professionals who have expertise in all segments of the forest products industry, from seedlings to log harvesting to sawmill operations and beyond. There are 16 full-time procurement representatives in territories serving parts of Alabama, Georgia, Florida, and Tennessee. In addition a network of 40 PLM certified logging contractors can arrange for and conduct efficient performance of any type of harvest including clear-cut, select-cut, thinning, and wet ground conditions, harvesting and transporting over 1 million tons of product annually. The company owns 4 manufacturing operations in addition to utilizing an integrated truck and rail transportation network. Post-harvest services are also provided including such functions as post-harvest-site-prep and replanting and development of custom sustainable management plans that meet landowner goals and objectives.
- The IndusTree Timber, Logging, Manufacturing, and Properties divisions—can handle all forest industry operations, from basic land management to high volume lumber and railroad cross-tie output. IndusTree's advantages come from vertical integration at all levels of the forest products industry supply chain, providing the company deeper insight into forest products market conditions and trends and more leverage during negotiations and transactions. IndusTree's long-term relationships with major players throughout the forest products industry mean landowners who work with IndusTree get the best timber prices possible. Major worldwide forest products companies such as Georgia Pacific, International Paper, John Hancock Timberlands and West Fraser are all customers who continue to benefit from an IndusTree relationship utilizing top quality management, harvesting and transportation services. Since its founding in 1994, IndusTree's focus on relationships hasn't changed at all. Cutting timber can be a once in a lifetime decision, and IndusTree does not take that lightly. All landowners can be 100% confident when working with IndusTree.



IndusTree Log Delivery



IndusTree Log Yard

**Field Trip Reflections:** We had the choice of two field trips during the convention, one was to a pine seedling nursery and one to the Stella Jones Treatment plant that made Railroad cross ties, I chose that latter. The adjoining IndusTree Sawmill milled all of the ties that went to the Stella Jones plant where they impregnated them with creosote and made the final cross tie products. Some were more complicated than your average cross tie; for instance, switch ties are a lot longer and they had ties with blocks of wood on one side which allow one side of the track to be elevated permitting the train to go around curves without derailing. This was an expensive and large site with the sawmill occupying approximately 5 acres and the cross tie mill on an adjoining 20 acres. Adjacent to these two operations was another 20 acres of stacked cross ties, and when I say stacked I mean stacked 30 feet high, it was quite a sight. We were informed that



cross ties are made of almost any hardwood and they even allow Pine cross ties as long as they meet certain criteria. I think the main criteria was six growth rings per inch average so they only want the slow growth, dense Pine.

On a side note, since the field trip, it turns out there has been a lawsuit filed by Norfolk Southern against the previous owners. Norfolk Southern alleges that Boatright Timber Products sold them fraudulent and defective cross ties between 2009 and 2014. Boatright bought the cross tie business from Seaman timber in 2009. They claim not only were the cross ties of inferior quality, but the biggest problem was creosote preservative was not used, but another oil byproduct called AFDO-50 incorporated in the treatment. This preservative appears not to be as effective, and creosote alone should have been used. Now, Norfolk Southern claims they have to replace almost 5 million cross ties and have sued for 50 million dollars. If you're interested you can read about the lawsuit at this link:

<http://www.shelbycountyreporter.com/2017/10/31/railroad-sues-for-millions-due-to-allegedly-fraudulent-rail-ties/>

I will say that during my trip the employees, which are the new owners of Stella Jones, were very professional and there was a strong smell of creosote in the air. (GN)



IndusTree & Stella-Jones Rail Siding



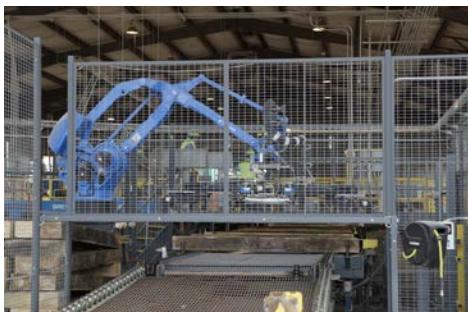
IndusTree – Log Debarker



IndusTree – De-barked Logs



IndusTree – Band Sawmill



IndusTree – Plant Operations



IndusTree – Endcut Saw



IndusTree & Stella-Jones Cross Ties

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## The James Budi Kayak

*by George Newsome*

Anyone who attended the 2016 APA convention in Maryland will never forget the great workmanship on exhibit. Crowds gathered around a handmade kayak which appeared to be more a work of art than a racing kayak which was its intended purpose. The almost seamless wood strip construction was also very light and was on par with super expensive carbon fiber racing kayaks. This kayak was made by member James Budi. Even after the convention, I stayed in touch with James and found out that he and his Paulownia kayak won three of the first races entered, so it was not only beautiful, but a very effective racing kayak. As much as I like to promote Paulownia, I will say much credit must go to James' kayaking abilities.

It is common knowledge that carbon fiber construction is extensively touted in today's press, but it does have its limitations. When one is making a strong beam or a wing spar, the main supporting member of an airplane wing, carbon fiber and modern-day composites have no equal. But when it comes to making a thin light structural sheet or covering, it tends to fall short of Mother Nature's natural fibers. If one wanted to cover an airplane wing or a racing kayak frame, or almost any vehicle including cars with a thin skin, then plywood or wood strip construction likely wins out over artificial fiber composites. For instance, in order to make the skin strong enough to resist buckling, carbon fiber construction weighs a lot more than wood fiber construction. Therefore, carbon fiber may be strong, but for such an application it may be inappropriate. That is how James was able to make an almost entirely Wooden Boat using Paulownia wood with the exception of a thin layer of fiberglass cloth and resin on the outside and inside for protection against abrasion and adding a little extra strength (Note: James also adds the same fiberglass layers to his Western red cedar kayaks for the same reasons). Even with the addition of this fiberglass and resin, his Paulownia kayak still came in at about 31 pounds which is equivalent to custom made carbon fiber racing kayaks costing several thousand dollars. James says most of the competition kayaks made of carbon and Kevlar fiber composites are hitting the scales at 27 to 35 lbs. It's also interesting to note that James has built 18 ft. kayaks from Western red cedar and they weigh a full 10 pounds more than a kayak made of Paulownia.



James Budi Paulownia Kayak

**A Background on Wood Strip Construction:** Strip built boats are made of small strips of wood and this method is often called cedar strip, because the wood used is typically cedar. However any straight grained, light-weight wood can be used, such as redwood, pine, and mahogany as well as Alaskan cedar, Western red cedar, northern white cedar, and Atlantic white cedar, and of course our favorite Paulownia. The main reason you want straight grain is because you will be bending the wood around forms. This construction stress will break wood with poor grain or structural defects such as knots. Knots cause weak spots and are also hard to smooth out when you start fairing the boat. You want a light weight wood, because you want a light boat.

**Why Cove and Bead Wood Strips?** Cove and bead strips are similar to tongue and groove, but allow the beads to nest neatly into the cove ensuring a tight joint even when glued at an angle. Advantages to this are: 1st a water-tight joint; 2nd the surface stays smoother because the joint assures that neighboring strips stay at the same elevation; and, 3rd the cove accepts the bead even when it comes in at an angle, and a tight joint is assured even around fairly tight corners. You can find several sources for cove and bead cutting router bits and methods on the internet.



James likes to make his own wooden strips. They can be purchased ready-made, but if you're going through the trouble of building your own wood strip kayak or canoe then you're likely the type person that wants the satisfaction of having done it all yourself. So you would probably want to make your own wood strips. Historically, popular choices of wood to use for this purpose have been Western red cedar and Alaskan yellow cedar. All the readers of this newsletter already know that Paulownia possesses most of the good qualities of both these woods and with some added advantages such as; being lighter, easy to work with, and more readily available to people on the eastern half of the United States. A common way to make the wood strips is to saw them 1/8-1/4 inch thick out of a finished three quarter inch board so that the final strip would be one-eighth to one-quarter inch thick by 3/4 of an inch wide by however long the board is. You would then add the bead to one edge and the cove to the other. James mainly uses a table saw to cut the strips and a shaper to add the bead and cove, although a table mounted router would do the same job.

For anyone interested in building their own Paulownia kayak, James recommends a book on kayak construction called "Strip Built Kayak" by Nick Schade. James uses system-three epoxy. There's also a DVD by Newfound Woodworks on glassing a boat. It covers squeegee fiber-glassing techniques. I hope everyone interested in woodworking or a family project will build one of these kayaks, I plan to.



**James Budi Paulownia Kayak**



**James Budi L. Comp.  
Paulownia Kayak Cockpit**

## **The James Budi Kayak Construction Techniques, History & Performance** *by James Budi*

Paulownia advantages in composite construction (the building method of using multiple dissimilar materials): Paulownia combined with epoxy and reinforcing fiber cloth creates a material which is greater than its parts. Strip plank boat construction utilizes those advantages in creating a light strong durable boat.

\*Wood epoxy history. The Gougeon brothers of Bay City Michigan were some of the early pioneers in using what they described as the Wood Epoxy Saturation Technique, i.e. the W.E.S.T. System in boat construction. Wood, as an engineering material, is strong, lightweight, stiff and resistant to fatigue. Paulownia adds other desirable characteristics such as rot resistance, dimensional stability, and weight savings.

Most woods' strength properties increase dramatically with a decrease in moisture content. A minimum application of two coats of epoxy on wood results in an adequate moisture barrier, which in turn prevents added weight and movement from moisture absorption. Preventing moisture absorption also stops the growth of fungus which prevents rot.

The process of strip construction is not new. Adirondack Guideboats, for instance, were being built in the mid 1800's. To navigate the myriad waterways of the Adirondack lake region, there was a need for a



**Budi & Law & Kayak**

lightweight portage able craft. Reinforced glass fabric revolutionized strip construction by supplying cross grain strength and thus eliminating the need for closely spaced, laboriously made and fitted frames as are used in traditional boat construction such as the Adirondack Guideboat. Compared to framing, the glassing process is simple. “Strippers” are planked on temporary building frames which are afterwards removed. The strips of wood are then sandwiched in resin reinforced fiber with the resultant vessel’s shape becoming monocoque in structure.

The following is a quote from epoxyworks.com addressing the stiffness of hull VS performance:

**The Importance of Stiffness in Small Boat Performance** by Meade Gougeon

“One of the little known or understood characteristics of modern fiber-reinforced plastic composites is the loss of some initial stiffness capability after repeated cyclic loading. Loss of stiffness can be significant enough to cause a noticeable effect on performance, depending upon laminate makeup and degree of cyclic loading. The only problem is that the laminate has lost some part of its original stiffness, which may be enough to affect the desired competitive performance of the structure. Wood .....nature’s great composite has one outstanding characteristic that is not fully appreciated. In cyclic loading, wood loses no stiffness up to the point of failure. Loads can be a very high percent of wood’s ultimate capability over many cycles. A good example of wood’s natural ability to maintain its original stiffness can be found in the 17’ Thistle class racing sailboat designed by Sandy Douglass just after World War II. Several hundred of the original boats were hot molded of mahogany veneer in war surplus giant autoclaves. Fifty years later, many of these boats (most restored with WEST SYSTEM® epoxy) are still racing with no loss of stiffness; they are highly sought after because they continue to maintain their competitive edge over their more recent fiberglass sisters that tend to become a bit soft over time.”

\*The Importance of Weight in Paddle Craft: Shawn Burke Ph.D, in a piece entitled “The Science of Paddling, The Intersection of Physics, Paddling and Paddle Sport Part 1”, did an analysis of the physics of boat speed as it relates to both paddler power and vessel weight. Paulownia’s strength/weight advantage makes it a super power in this regard. Summing up five pages of theorems, graphs and lecture, Dr. Burke made predictions on the effect of increased boat speed with the decrease in paddler/vessel weight that predicted a 1% increase in speed is attributable to a decrease of 10 lbs in paddler/boat weight. Though that may not sound like much, for a typical one hour race, that time savings is equivalent to between 33 and 38 seconds. Where races are often won or lost by a few seconds, such time savings are a game changer.



James Budi L. Comp. Kayaks

The John Winters’ designed Lady’s Composition (L. Comp.) Fast Sea Kayak (FSK) built using Paulownia resulted in weight savings of 11 lbs over the earlier Western Red Cedar model of equivalent length and beam. Here are two of the kayaks, both planked 3/16 inch, one overlaid with carbon fiber and the other fiberglass. My wife’s has 5.6 oz carbon fiber on the hull and mine has about 7 oz fiberglass cloth on the hull. Her’s came out two pounds lighter than mine, 34 lbs vice 36 lbs. Carbon fiber at 5.6 oz is pretty but an over kill. In that carbon fiber by itself is incredibly light, you can imagine how much more resin it took to fill the weave than say a 6-7 oz fiberglass cloth? Until a year ago, I could not find anything lighter in carbon fiber. Then I had the most incredible breakthrough after talking with the guy who builds and designs the U.S. Olympic boats, Ted Van Deusen. He introduced me to the exotic “spread tow” carbon fiber cloth.



James Budi Glass Fiber, Spread Tow (L) & Twill (R)



The most recent Lady's Composition, using 1/8 inch Paulownia strips and a revolutionary type of carbon fiber, shaved off another 9 lbs for a finished weight of 27 lbs, i.e. twenty one pounds less than the original western red cedar boat. For the record, the weights mentioned include seat, foot steering peddles, and rudder assembly. For direct comparison, the most common production FSK design, with the "ultra" vacuum bag lay-up of carbon fiber/Kevlar over Nomex honeycomb core, weighs in at 39 lbs. However, in another racing class described as "unlimited" and/or "surfski", it is not uncommon to see these longer, narrower vessels in the 20 lb weight range by using today's modern materials and factory building techniques. The L. Comp. would possibly get closer to those numbers using the factory technology of vacuum bagging and pre-impregnated cloth.

\*L. Comp.'s Design Parameters: John Winters, author of the authoritative tome on paddle boat design entitled "Shape of the Canoe", created the shape of the L. Comp by using sound hydrodynamic principles. John Winters modeled the custom L. Comp. after the success of his earlier swift and efficient sea kayak designs. These include the U.S. manufactured QCC production boats and the one of race design, Komp 1. The Komp 1 has been raced successfully in many USCA National Championships by Steve Rosenau. In addition Mr. Winters introduced in the L. Comp. a number of paddling ergonomic features such as a cutaway sheer (knuckle) that allows a close entry for the paddle. The closer the pull on the paddle to the centerline of the vessel, the more efficient will be the transfer of the paddler's power in the direction of travel. This feature is further accentuated by the L. Comp.'s "Swede" form which is the placement of the widest beam of the boat aft of the cockpit. The request to Mr. Winters was for a light displacement kayak, one in which the volume of the boat would be less than the industry standard of one-size-fits-all. The L. Comp's narrower waterline and smaller volume increases paddler/vessel performance for those weighing 170 lbs or less. Another change in the L. Comp. from the earlier Komp 1 was affected in the shape of the vessel's bow and stern sections for better ocean performance. Specifically and overall, the boat design better fit the demands of the premier East Coast offshore race called "The Blackburn Challenge". This race is a 20 mile, mostly open water, circumnavigation of the Gloucester Massachusetts peninsula.

\*Paulownia's Sea Kayak Race Debut: The first seasons of racing the L. Comp. demonstrated the success of both the kayak's design and the weight savings in construction. In the Fast Sea Kayak Class, the L. Comp took first overall in the Southeast Paddle Sports Championship Series; First overall in NECKRA'S New England Championship Race; First in age group at the USCA National Championship; and, First overall in The Blackburn Challenge. In the Gloucester race, the Paulownia stripper increased the Komp 1's earlier two minute victory to more than a 14 minute advantage.



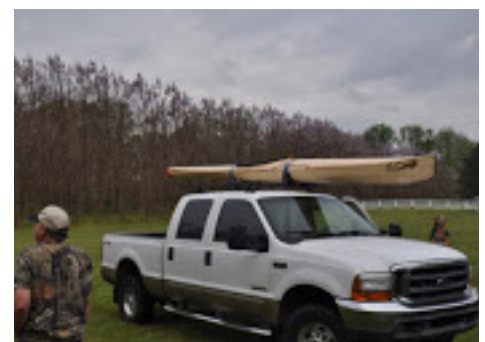
**James Budi L. Comp. & Carbon Fiber**



**James Budi L. Comp. with Spread Tow Fiber**



**James Budi & L. Comp. Awards**



**Budi Kayak at Fink Plantation**

## Field Trip: Harold Fink Paulownia Plantation

Following our formal conference proceedings in Queenstown Maryland during 2016, the group made its way to the nearby Paulownia plantation of members Harold and Gina Fink located in Church Hill Maryland. Here we were met by the Fink Family, introduced to the plantation's history, provided with a tour, and ended with a question and answer session.



**Fink's Plantation Tour Introduction**

The plantation is a combination of approximately 1 acre of 20 year-old trees established by the former owner, and a more recent grove of another acre planted by the Finks. The initial planting originally contained 450 trees spaced on a grid 9 feet x 10 feet. The second planting consists of a heavily managed crop established by use of a surface irrigation system and containers. During 2004, the author conducted an extensive site analysis, of the then 8-9 year old trees, and provided recommendations for plantation management. The visiting group's primary focus was to tour the mature planting, discuss the signs of stunted growth and tree mortality, and address any harvest and market options available.



**Fink's Early Paulownia Plantation Establishment**



**Fink's Plantation Backdrop View**

Upon entering the property, it became quickly apparent that the backdrop consisting of the oldest trees were devoid of most blossoms and leaves, and were in a state of grave decline. The Finks informed the group that the recommendations for plantation management, previously provided in 2004, was not conducted and that the tree grove had been declining rapidly during the last 2 years. Some harvest efforts had already begun by removal of dead and toppled trees to permit continued mowing; however, efforts to locate a buyer remained allusive. After the field tour, the group reassembled to discuss findings and offer opinions and advice. Following is a synopsis of the attendees' comments and suggestions:

- The original planting was spaced too tightly and caused overall growth to be stunted once the tops and roots of the trees became intertwined and competitive;
- Trees are toppling likely because the tap roots have died for lack of nourishment or possibly a high water table starving the root system for needed oxygen;
- Markets for the timber are limited because of the average tree's small girth (11") and the highest-and-best-use may be to conduct a "clear-cut" harvest maximizing the available saw logs and chipping the rest. As of this date there are no known local veneer mills interested in Paulownia logs;
- Possible markets in addition to any dimensional lumber that could be milled include; wood chips for the landscaping industry, chipped and shredded wood fiber for horse stable bedding, and a bio-char product.





**Fink's Early Paulownia Trees – 1**



**Fink's Early Paulownia Trees – 2**



**Fink's Early Paulownia Trees – 3**



**Fink's Early Paulownia Trees – 4**



**Fink's Plantation Specimen Trees**



**Fink's Specimen Tree, Law (R) & Blickenstaff**



**Fink's Plantation Edge Trees**



**Fink's Trees, Sutton (L) & Law**



**Fink's Plantation Center Trees**



**Fink's Mature Tree Mortality**

**Update:** Late during the following year 2017, I was able to locate a buyer for a small harvest from the Fink's plantation. The buyer required 8/4" milled lumber of random width & length (4" width minimum by 48" length minimum) and would accept any lumber without structural defects. It was an additional requirement that the milled lumber be kiln dried to 8% MC and made acceptable for export outside the US (heated to 145 degrees F for a minimum of 72 hours and certified pest free). In addition to trees previously removed and sawed into logs by the Finks, an additional 35 trees were tagged and harvested ranging in size from the smallest of 11" diameter to 7 trees that were in the 15"-16" girth DBH. Since the harvested logs included stock from dead and toppled trees and were of questionable quantity and grade, the Finks were willing to defer payment for the sale until final reconciliation was completed for both the harvest and milling. The final lumber count came in at 5340 BDF total which averaged 74 BDF per tree. Once the lumber was processed to buyer specifications, i.e. ends cut square and removal of all structural defects, the final shipment contained approximately 4800 BDF, a 90% recovery rate of sellable lumber from the rough milled stock. The only concern expressed post sale by the buyer was the excessive bark remaining on one face of some smaller width boards. This was determined to be a direct result of harvesting many smaller girth trees making it difficult for the mill to completely clear all four faces of bark from the log before the normal through-and-through milling. The same buyer has since refined their future purchase specifications to exclude lumber containing bark, whether face bark or wane (edge bark).



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## Field Trip: Donald Bates Paulownia Plantation

Following the field trip to the Fink's plantation located on the Eastern Shore of Maryland, individual members made their way across the northern neck of the Chesapeake Bay to the Paulownia plantation of members Donald and Nancy Bates, located in Forest Hill Maryland. A short lunch stop at the rustic local Hickory Lodge provided the opportunity to reconvene the group, refresh ourselves and compare notes. Upon arrival at the plantation, the group was graciously welcomed by Don, Nancy and Floyd, their Goldendoodle (Poodle & Golden Lab Retriever hybrid). The attendees were introduced to the plantation's history, including that of a previous visit during our "Spring Fling" trip eleven years earlier in 2005, provided an inter-active tour of the plantation, including a visit to Don's shop where he fabricates articles made from Paulownia for family and friends.



Bates Plantation – Group Tour Introduction



Bates Plantation – Corner View

The plantation was originally comprised of approximately 10 acres of P. "tomentosa" trees spaced on a grid approximately 12 feet x 12 feet. During 2011-2012, the author conducted a select harvest of trees 20-22 years of age, comprised mostly of larger diameter border and outlying trees wished to be removed by the Bates. If memory serves me well, a total of approximately 170 trees were harvested (24K BF Doyle) resulting in 18.5K BF of milled lumber of all grades with an overall recovery rate of 77.5%. Review of my notes, indicate the lumber graded out as follows: 21.8% Premium; 37.2% No. 1 grade; and, 41% No. 2 grade including unmarketable material.

The primary objectives of this field trip were to tour a previously harvested planting and examine the re-growth characteristics of the released boarder trees, discuss signs of continued stunted growth to the interior trees, and address current harvest and market options. In advance of the field trip, Don and I selected and cut two trees representative of those that were released by results of the previous harvest; i.e. subsequently exposed to sunlight with adjacent tree competition eliminated. These two trees demonstrated that individual annual growth rings for the past 4 years had increased in width by approximately 50%. Therefore, conducting a selective harvest and or thinning may increase annual biomass production by 50% or more and reverse the trend of interior trees to become stunted.



Bates Plantation – Larger Re-growth Tree

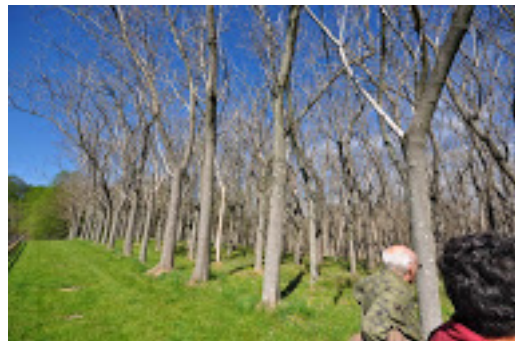
Many of the deep interior trees continued to show signs of stunted growth and even the beginnings of mortality of the smaller weaker trees. Don informed us that these were removed as they fell and disposed of for personal use firewood. In addition, extensive mowing was performed where previous border trees were harvested to prevent the re-growth of root suckers. This appeared to be successful and no signs of unwanted

suckers were present after 2 years according to Don. As mentioned on the previous Fink field trip, efforts by both Don and others to locate buyers for the smaller girth timber remained allusive. After the field tour, the group reassembled to discuss findings and offer opinions and advice. Following is a synopsis of the attendees' comments and suggestions:

- The original planting was spaced too closely and resulted in growth to the interior trees to be stunted and remained that way until a release harvest was conducted;
- Smaller interior trees are continue to die for lack of sunlight and nutrients;
- Markets for majority of the timber are limited because of the average tree's small girth of under 13". As of this date there are no known local veneer mills interested in Paulownia logs and the highest-and-best-use may be to continue a select harvesting program maximizing the available saw logs while waiting on future veneer opportunities.



**Bates Plantation – Harvested Edge 1**



**Bates Plantation – Harvested Edge 2**



**Bates Plantation – Harvested Edge 3**



**Bates Plantation – Center View**





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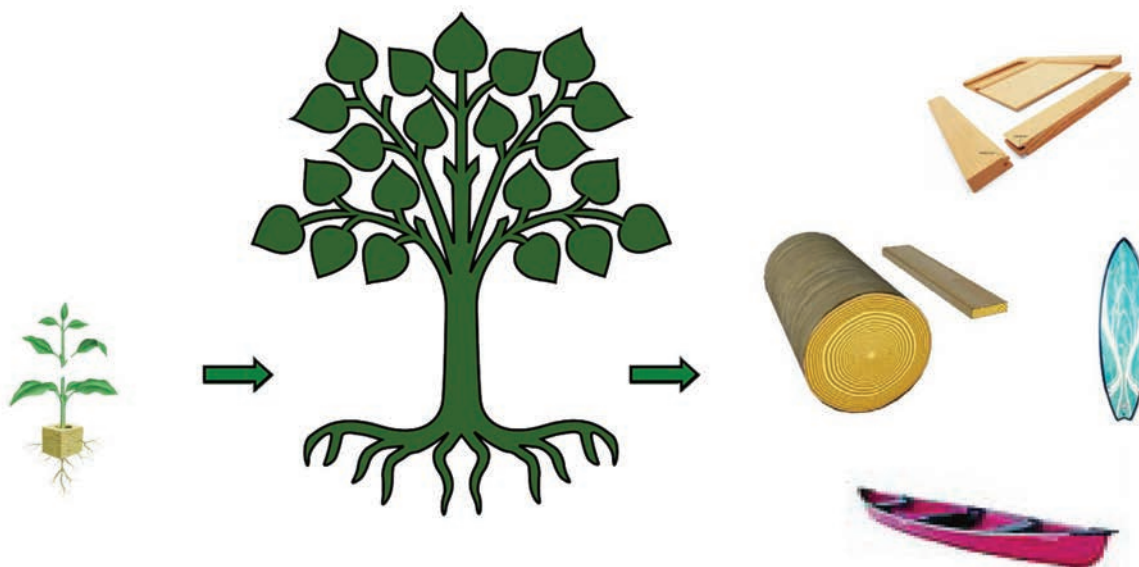
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