

DOMESTIC WOODS MAKE FINE GUITARS

By Bob and Mary Lou Gramann

About 2 years ago, ASIA member Bob Gramann decided to build an all-domestic guitar – no pearl, no Rosewood, no Ebony, or any other imported natural product. Inspired by a mix of curiosity and challenge, Gramann wondered if he could stop worrying about the Lacey Act’s 2008 restrictions on imported agricultural goods, and yet make a guitar that still met his standards for both sound and beauty.

Gramann: “The intent [of the law] is good, but as it is written, it is almost impossible to interpret and comply with. The best way to comply is to have no contested woods, to only use woods I could vouch for, to avoid imports. I read the wording of the act and found it hard to translate into practical guidelines. That’s the problem, many of the regulators seem to rely on interpretations that can’t be predicted.”

His small Virginia workshop had seen plenty of Macassar Ebony (*Diospyros celebica*), East Indian Rosewood (*Dalbergia latifolia*), and other legal imports, but documentation requirements for importing exotic woods are making life increasingly difficult for small builders. Luckily, Gramann, as much of a wood junkie as most instrument makers, likes to try new things.

Gramann: “The success of my idea for a Maple inlay nameplate, replacing the traditional pearl, encouraged me to experiment. And I had heard of fellow musicians losing their instruments when shipped over borders, so I decided to get serious about the idea in early 2011.”

A Fingerboard without Ebony

Gramann: “I had to figure out the fingerboard problem first. Ebony and Rosewood, the most popular woods for fingerboards, are both imported. Maple is used for Fender electrics, Hophornbeam (*Ostrya virginiana*, in the birch family) is white like Maple, but will take stains from the fingers. Some guitar makers are using Osage Orange (*Maclura pomifera*), which I had never use for fingerboards, but both Mesquite and Persimmon looked more promising because of their hardness.”

Driving west in February to visit his son in New Mexico, Gramann looked for sources of Mesquite, a wood he had never seen. He saw plenty of growing plants, all quite small from a builder’s point of view. The best information he turned up, from a Texas supplier, warned that the harvested wood of the Western Mesquite (*Prosopis glandulosa*) is usually as twisted as any wind-buffed plant could be. A mess, he thought, but worth seeing and evaluating for himself. It never happened. He could not track it down. Time to move on.



aesthetically. It also lightened the bridge some and made it more flexible.

The wings are only 1/8 inch thick. It was discovered that using a small router for the bridge wings was practically impossible because it tends to shatter that little ball on the end when going against the grain. Some router jigs and a few laser operations resolved this issue.



The bridge wings with the 10-degree back angle just didn’t look right. So, after the main body was shaped, the wings roughed out and the whole bridge back angled, the final wing shape was cut out with a laser. Now the wings had perpendicular sides and a much more appealing look. At the same time, the recesses for the inlays were cut in. (photos 15,16,17) Although several bridges could have been made easily enough by hand in the amount of time it took to build jigs and fixtures, the ability to recreate them accurately was essential. A template is used to rout the finish off the top for gluing the bridge, so it was imperative that the bridges be consistently the same.

Extras: Back bracing, fretting and purfling. (photos 18-23)

Great Fun! We are glad we chose to take on this parlor guitar project. Not only was the resulting Petros parlor guitar exceptionally pleasing, both to play and to hear, but as is always the case with new projects, we learned and we grew. And in the process, we had great fun. □

Bruce Petros is a luthier from Kaukauna, WI. His guitars and unique line of purfling and fittings for instruments is ever developing. <http://petrosguitars.com/>



Persimmon fingerboard, bridge pins and endpin are all handmade

American Persimmon (*Diospyros virginiana*) grows along the Rappahannock River near Gramann's home in Virginia. Of the same genus as Ebony, its popular label is American Ebony. Not very big, but sufficiently straight, if he could find some that was large enough and hard enough to be useful. He compares the woods.

Gramann: "Ebony wears better, but some players like the sound Rosewood gives. I would expect Persimmon to last as long as the Rosewood fingerboards. And finding Persimmon was easier than I expected. A small supplier in southern Maryland, just 45 miles from Fredericksburg, claimed to have kiln-dried Persimmon in his barn. He told me to make an appointment and show up on a convenient day. It paid off."

He liked what he saw and bought 7 board feet of the clearest piece to get a small amount of usable wood. Gramann then cut five fingerboard blanks and carefully weighed each one, leaving the Persimmon to dry in his humidity-controlled workshop. In the next 8 weeks, each blank lost only 3-4 grams and then stabilized. (Photo #1 "FB and pins" shows how different the color of persimmon will be, as compared to an ebony.)

Back and Sides (Photos 1, 2)

Gramann had previously used Osage Orange and American Sycamore (*Planatus occidentalis*) for backs and sides. Each wood had its own distinct tone, and he liked them both. He had plenty of Osage Orange from King George County, Virginia, harvested from a huge fallen tree on a friend's farm. Its nickname, Hedge Apple, refers to the tree's spiky thorns that once helped define farm boundaries. His supply of Sycamore had been grown in Virginia, too.

Gramann: "Osage Orange wood makes great guitars; each note of a chord sounds clearly when the finished guitar is played. The other option was American Sycamore, which is easy to work and has a rich sound. Rather than the mellow tone of traditional Rosewood, it has a clear tone and a fullness in the bass that impresses many players."

In spring 2011, Gramann began work on his domestic wood guitar with the Sycamore. All his guitar models are named after rivers in Virginia, and he chose the mid-sized Rappahannock pattern for its loud clear voice. After a quick check to make sure his Basswood (*Tilia americana*) linings were of U.S. origin, work on assembling the American Sycamore Rappahannock was underway.

Historic Timing

Meanwhile, controversies over the Lacey Act heated up. Gibson Guitars was first raided in 2009 for allegedly illegal Ebony and Rosewood from Madagascar. The company was raided again by U.S. Fish and Wildlife agents in August, 2011 because of a batch of Ebony from India. Gramann followed the case closely and continued with his domestic wood project.

In a New York Times op-ed on October 25, 2011, Kathryn Marie Dudley summarizes the problems caused by "...the Lacey Act, a law originally enacted in 1900 to prohibit the interstate sale of poached game. In 2008, the act was amended to combat illegal logging around the world. Protections for endangered plants were extended to cover trees logged in violation of foreign law; and importers of wood were required to declare the species and country of harvest for all commercially traded timber, sawed lumber and finished wood products."

She goes on to point out that: "The Lacey Act amendments were well intended – few people wish to encourage illegal logging overseas – but the act was aimed at bulk freight and industrial inventory, not the practices of luthiers, who hand-select small quantities of wood and season it for decades, often passing it from one generation to the next. ...Their inability

to document the source and age of their materials exposes them to bankrupting fines and confiscations.”

While the article goes on to discuss Brazilian Rosewood, Gramann had already solved the problem of woods for backs and sides, and he could go back to well-documented imports for future guitars. Ebony was not as sure an option at that point, so the Persimmon became even more important.

Top and Neck (photos 1, 2)

After talking directly to tonewood suppliers, Gramann bought some even-grained Alaskan Sitka Spruce (*Picea sitchensis*) for the top. With careful attention to his Spruce bracing and Osage Orange bridgeplate, he glued up the top with hot hide glue.

Gramann: “Later, and way too late to change things, I found out the Spruce bracewood was Canadian! So now I am careful to say all-North-American, in spite of all my efforts and good intentions in finding domestic U. S. woods for the guitar.”

Like many builders, Gramann had a supply of domestic Rock Maple (*Acer saccharum*) that had yielded many beautiful necks over the years. Harder to carve than the darker and slightly softer Mahogany, it gives a crisp sound that makes the extra work worthwhile. Its blond color also made a good match for the wavy light patterns of the Sycamore.

Polished Black Walnut (*Juglans nigra*) for peghead, endcap and binding was repeated in the rosette, which Gramann made with Maple and Walnut veneers for contrast. (Photo #2 shows the woods of the rosette.) Too bad the bridge couldn't match as well, he said. It would look more traditional in Walnut, more



The Walnut heelcap and binding of the guitar show up well against the light wavy patterns of the sycamore



Gramann's all-domestic-wood guitar features a persimmon fingerboard and bridge on an Alaskan Sitka top with a Walnut and Maple rosette

like Ebony, but the bridge wood had to be hard enough to catch vibrations, not muffle them; it needed to be Persimmon.

Bridgepins and Tuner Buttons (photos 3, 4)

Gramann: “I wanted wooden bridgepins, not plastic or bone, but with no Ebony or Rosewood, I had to carve my own. It really tried my patience. I turned the first Persimmon bridgepin on the lathe in 20 minutes; the next one went faster but did not really match the first. After an hour and a half, I had six, and another six the next day. None of them really matched.”

Choosing carefully, he found the best of the dozen (See Photo #1, “FB and pins.”). A five dollar value on the retail market, he ruefully admits, had taken several hours to plan and produce – not an unusual trade-off in the custom building business. Gramann later found he could get a gross of perfectly matched, machine-made bridgepins, spit out at a rate of 7 per minute, simply by sending a piece of the Persimmon wood to Michael Gurian.

Metal parts for the guitar, on the other hand, could not be homemade. His preferred metal tuners come from Japan, but he decided to replace their shiny metal buttons with Walnut to match the peghead. Like bridgepins, the ideal set of buttons would be matched and be easy to use.

Gramann: “Making Walnut buttons for the tuners was another challenge – getting a nice uniform shape for something that small. I made a rod with the outside shape of the buttons, marked it, and drilled 6 holes along the rod to fit the shaft size of the tuners before I sliced them apart.”

Getting a high gloss on the buttons was a problem, too, but inspiration came from the old rock-polishing tumblers of childhood. He replicated the process with a drill, a jar, and some of the pumice used for polishing bodies.

Gramann: “The pumice worked pretty well as the abrasive, but



Persimmon fingerboard, bridgepins and end pin are all handmade

I should have started with a higher grit to wear down the edges a little faster. And when the drill sped up, all of the pumice stuck to the sides of the jar and stopped polishing the wood, so it took me about 48 hours to polish those buttons.” (Photo #3 shows the polished Walnut heel cap; the tuner buttons have much less gloss.)

Finishing the Guitar

After another web search and a trip to PetSmart failed to turn up domestically supplied bone, Gramann finally drew the line and cut the bridge and nut from his store of imported instrument-grade bone. (Domesticated animal bone is not restricted under the Lacey Act.) Over the next few weeks, he sprayed finish for the body and prepared to string up the guitar in mid-September. After 8 months of planning, building and problem-solving, the Rappahannock was ready to leave the workshop. (Photo #4 shows the finished instrument.)

Gramann: “The wood had been stable at 40% humidity in the workshop, but normal Virginia humidity is 55 to 100% in the late summer and fall. The Persimmon proved to be very sensitive to changes -- just 3 weeks out of the shop, the fingerboard expanded along its length. Ebony doesn’t do that! The relief changed as well. I pulled the neck back into place with a quick truss-rod adjustment each time the weather changed. It stabilized, but I think the Persimmon will always react more to humidity changes than Macassar does.”

Aftermath

Gramann posted pictures of his completed All-North-American-Wood Rappahannock on the Musical Instrument Makers’ Forum, MIMF. (#5 summarizes the woods and dimensions). He got a flurry of comments about using local woods, and several guitar makers suggested additional woods for him to try and ways to promote non-tropical materials. Networking with other builders and tonewood suppliers, Gramann also continues to learn more about woods available that comply with the Lacey Act.

Gramann: “I’m really kind of relieved, after talking to

suppliers, that some of the stuff I like to use is ok and it’s no problem because it is documented. I can still use [Ebony] my favorite fingerboard wood. But I’m not finished experimenting with domestic woods. Since that first attempt at an all-domestic Sycamore, I’ve also completed a beautiful jumbo. It has Black Walnut back, sides and neck, with Adirondack Spruce (red spruce, *Picea rubens*) top and an Osage Orange fingerboard and bridge. The sound is wonderful – it’s deep and clear.

“I’m currently thinking of producing more domestic guitars in Sycamore and Black Walnut. Black Locust (*Robinia pseudoacacia*) is also a great wood – I’ve made guitars from Black Locust in the past that were very satisfying. I’m convinced that domestic wood guitars sound as nice as any built with exotic woods.” □

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The Rappahannock



#75
 Back/Sides: Sycamore
 Top: Alaskan Sitka Spruce
 Neck: Maple
 Trim: Black Walnut
 Fingerboard, Bridge: Persimmon
 Nut/Bridge/Scale:
 1 3/4"/2 1/4"/24.9"
 Price: \$ 2499

The Rappahannock has a body size very close to a Martin OM/000. This one is made from all domestic woods. The tuner buttons are black walnut. The bridge and end pins are turned from persimmon. Like many Sycamore-bodied guitars, it has a pleasing sound with a full bass.

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