Mallet "Master Class"

GreenWood Launches Bike Lathe 2.0 in Honduras

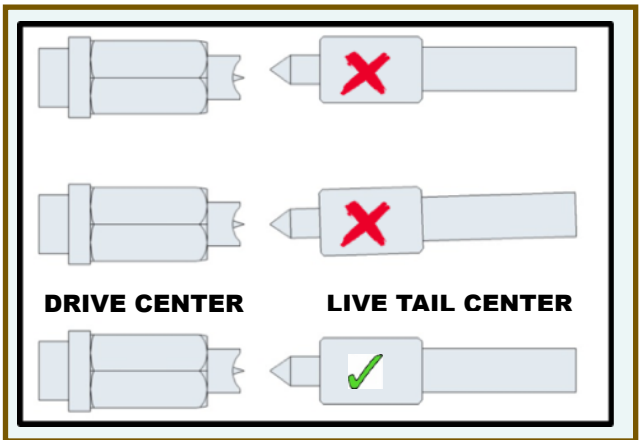
July 2017

Summary

Building on the bicycle lathe workshop Scotty Lewis led last year in Honduras, GreenWood returned to the North Coast in July to install a second bike lathe and conduct a training session in turned mallet production. The main event took place in the La Ceiba workshop of our partner organization Madera Verde, where we began by reviewing and tweaking the condition of the first lathe, following a year of service. Then, working with parts donated by the American Association of Woodturners (AAW), we built and installed a second bike lathe in Santa María del Carbon—the indigenous Pech community where GreenWood first trained artisan chairmakers in 1993. The construction and training, led by Lewis, focused on testing several lesser-known wood species and fine-tuning lathe skills, leading to the production of a line of prototype carving mallets, at right.

Lathe Repairs & Construction

An eccentric wobble had developed in the first lathe in the months preceding this workshop, and we attempted to troubleshoot the problem long-distance. We suspected the issue might relate to the main bearings, which had not been greased regularly since the lathe was built, so Scotty installed a new pair of bearings upon arrival. Not convinced that the bearings had failed, he inspected the drive and live tail centers more closely and determined they were slightly out of alignment, as shown at right. This was probably due to a combination of factors, including the wooden structure of the lathe itself, which is subject to normal movement and wear. The centers may also have become misaligned because the lathe bed had been flattened with a hand plane. A modest adjustment in the tailstock realigned the centers to correct the problem.



The assembly of the second lathe proceeded apace, alongside the tweaking of the original lathe. (The new flywheel construction is shown in the photos at right.) By the end of day two, both machines were up and running smoothly. We identified a number of issues with the new lathe parts, which should be considered in reproducing lathes from the published AAW plans, drawn from Scotty's original design. These issues are detailed in the addendum to this report.

Bringing Product to Market: More than Meets the Eye

The most basic question when it comes to mallets has to do with the wood. The choice of species is fundamental for most wood products, but it is crucial when the performance of the product depends on the density of the material and its resistance to compression and splitting. It's even more complex when a product that must sustain repeated percussive impact is comprised of two different woods—the handle and the head, in the case of a two-piece mallet—often having different densities and drying or gluing properties. Finally, wood selection becomes vastly more complicated when you're committed, as we are, to sourcing species that have been legally harvested under a management plan with a verifiable chain of custody. This is especially true in the tropics, where only a handful of commercial tree species are typically included in most management plans, despite the fact that there are hundreds of tree species in local forests.

For last year's workshop, we selected several of the heaviest woods found in the forest management plans of our community partners on the North Coast. These species are often harvested for local consumption, though you're unlikely to find them in the local lumberyard. Most of these woods are of moderate density and, after testing our first prototypes, we decided to explore some other, denser options. In so doing, we discovered two other denser wood species that make an attractive mallet stock: Guapinol (*Hymenaea courbaril*), also known as Jatoba or Brazilian Cherry, and Cincho (*Lonchocarpus castilloi*).

Both species have interlocking grain, a Janka hardness of about 2,700 and a specific gravity of roughly .70 lbs./cu.ft.—roughly twice the density and hardness of white oak. In fact, it's tough to tell the two woods apart, and we often had to use a loupe for identification. Although they are found in many local forests and fields, these woods have few local applications, beyond fenceposts. This is both a blessing and a curse, as they are rarely found in inventories or management plans, and they have no "off-the-shelf" drying schedules. We managed to process some dry stock for this workshop to about 15% moisture content, and we are exploring local management plans with an eye to future harvest and production.

Mastering Mallets

The core of our workshop was dedicated to fine-tuning the turning skills of Juan Vigil (right), the artisan we're cultivating to manage mallet production, with oversight from Madera Verde staff and consultants. At the same time, we aimed to provide an opportunity for Oscar Cervando, shop teacher from El Carbón, to familiarize himself with the lathe, which he will introduce in his curriculum. To support Juan and Oscar and the Madera Verde staff in their ongoing lathe work, we developed a detailed series of Spanish-language guides for turning one- and two-piece mallets, maintaining the bike lathe and turning safely. Eventually, we would like to reproduce these in a video format, which would be more accessible to artisans throughout Latin America.

Juan produced a combination of solid (one-piece) and two-piece mallets, joining Cincho or Guapinol heads with handle stock from smooth-grained, moderately dense local hardwoods, such as Huesito (*Macrohasseltia macroterantha*). The mallets were finished with wipe-on polyurethane, yielding the selection of mini, medium and large mallets shown on page one.

At the conclusion of the main workshop, we packed up the lathe for the school in El Carbón, about a four-hour drive from La Ceiba. We installed the new lathe in the school workshop and demonstrated its operation to a group of enthusiastic student woodworkers, shown at right.

Several of these students continue to make Windsor and ladderback furniture, shown at left. These are based on designs and instruction that Curtis Buchanan and Brian Boggs first introduced in Santa María del Carbon nearly 25 years ago.

Prototypes to Production

Following the workshop, we charged Juan Vigil with an order to produce 20 prototype mallets in a variety of sizes and wood species. The initial results, which are being shipped north for testing and introduction to the market, are shown in the photo at the bottom of this page.

Donor Support

GreenWood gratefully acknowledges the donation of B.J. Hatcher's lathe, which was displayed at the 2016 annual symposium of the American Association of Woodturners (AAW) in Atlanta, Georgia (www.woodturner.org). Hatcher is a member of the Georgia Association of Woodturners. We also appreciate the contribution of sandpaper rolls from Performance Abrasives of Cincinnati, Ohio (www.performance-abrasives.com), shown in action at left. The workshop was funded by the U.S. Forest Service/International Programs.

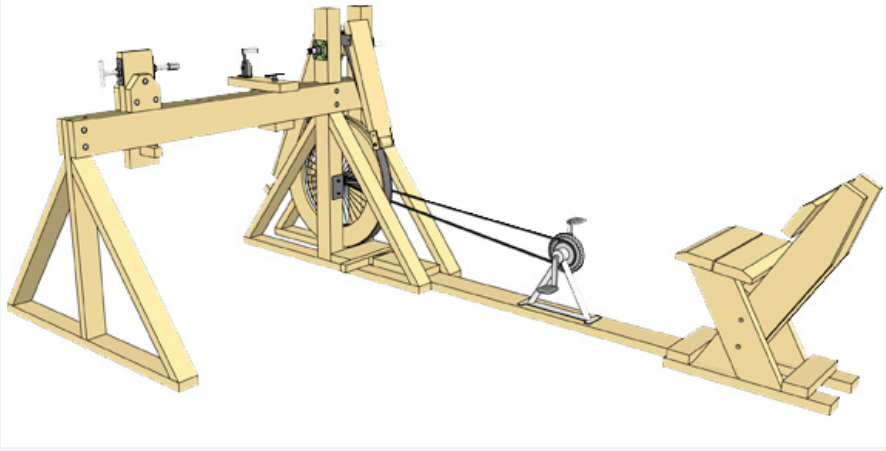
GREENWOOD

◇ *Building* ***strong communities*** *and* ***healthy ecosystems*** ◇
through ***sustainable forest enterprise***

Check us out: www.greenwoodglobal.org

Construction Tips: Based on the Assembly of Lathe 2.0

- The base of the **bicycle sprocket assembly** of the new lathe was 3/8-in. steel, making it very heavy to ship. Lathe parts should be as light as possible, without sacrificing structural integrity.
- The **drive belt** on lathe 2.0 was shorter than the one in the original AAW plan. We were able to mount the flywheel higher on the lathe frame to accommodate the difference, but if the belt had been any shorter it would have reduced the swing of the lathe, limiting the diameter of stock turned on the lathe.
- The new drive belt was joined with a metal clip or staple, making a repetitive clicking sound at each revolution. Lathe 1.0 uses a continuous, **heavy-duty timing belt** from a transport truck, which runs more smoothly and should function well for many miles.
- The custom-threaded **drive spindle** on the new lathe does not fit smoothly on standard faceplates. This must be machined carefully to match commercial threads.
- The **tool rest** has a square post, which is difficult to adjust. It is also missing the "banjo assembly" illustrated in the original AAW plans.



Original Scotty Lewis lathe, drawing by David Heim, AAW.