

FROM SHIPWRECKS
TO WOOD SOURCING:

The Research & Development Discoveries of *Maryland Dove*

by Kate Livie

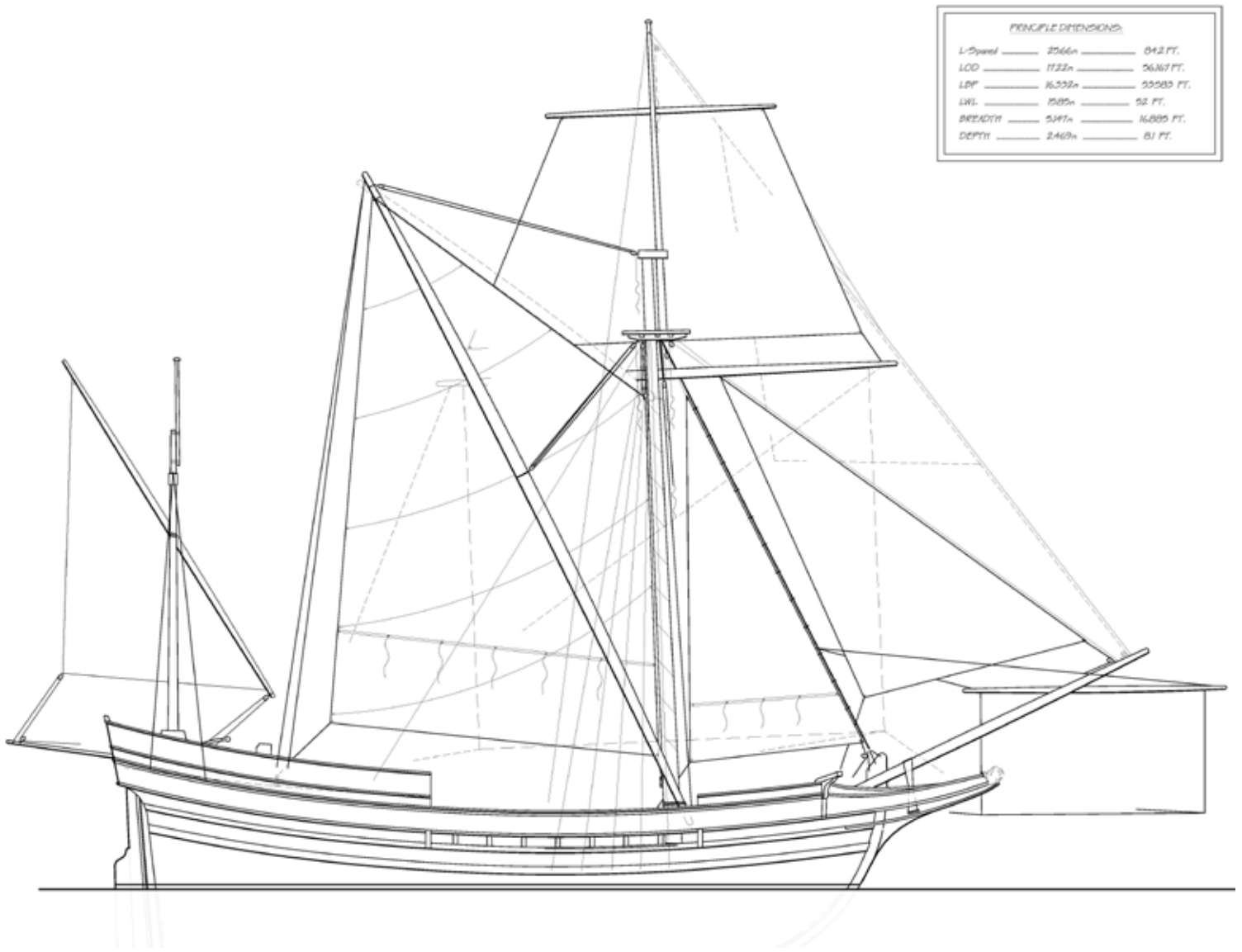
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Boat Yard



HOW TO MARRY THE ORGANIC ARTISTRY of 17th-century tall ship construction with the scrupulous standards and planning of the 21st? At its core, that is the greatest challenge presented by the Chesapeake Bay Maritime Museum's construction of the new *Maryland Dove*. Part slavish historical re-creation, part modern, Coast Guard-certified teaching and passenger vessel, *Maryland Dove's* build has posed a series of fascinating challenges for the CBMM Shipyard. From the evergreen forests of Washington State to Swedish shipwreck museums, the R&D phase of the build required a vast amount of inquiry, collaboration, investigation, outreach, and boots-on-the-ground sleuthing. The result? Inspiration and innovation for a truly groundbreaking project that has redefined and elevated CBMM's Shipyard's craftsmanship, sourcing, and research.



Above: Shipwrights at the Chesapeake Bay Maritime Museum unload a shipment of southern live oak from Cross Sawmill in Georgia in April 2019, for use in the construction of the new *Maryland Dove*. These pieces will be used for the ship's futtocks/frames, and one portion of her stem.



The first hurdle, according to CBMM Lead Shipwright Joe Connor, was mindset. Coming fresh off the *Edna E. Lockwood* project, the team was in an organic, problem-solving mode, and they relished the prospect of sinking their teeth into a 17th-century challenge. “We had this romantic idea that they were going to let us build a 17th-century boat the way it would have been built in the 17th century,” Connor says. He and the Shipyard team anticipated working from a few compass strokes and creatively constructing the frame with a general sense of what the boat should look like—much like Jim Richardson had with the first iteration of *Maryland Dove* in the 1970s, and as British shipwrights would have in 1625.

It was not to be. Historic St. Mary’s City was clear that this version of *Dove* needed to accommodate passengers—namely the thousands of Maryland school children that will experience a slice of early colonial life aboard the vessel in the future. It meant that instead of the time-travel period project CBMM’s shipwrights

Above: Concept drawings from naval architect Iver Franzen show a general picture of what the new *Maryland Dove* will look like when completed.

were expecting, the new *Maryland Dove* would need to meet Coast Guard certifications and all the modern safety and compliance standards they entail. “In some ways,” Connor says, “Having a strict set of plans makes it easier. We know exactly how to proceed versus following this one-step process that is scaled up or down depending on the tonnage.”

Strict plans did not preclude the shipwrights from upping the ante, however, in true CBMM fashion. They doubled down, seeking to achieve not only Coast Guard certification, but the rigorous A1 Standard classification of Lloyd’s Register—the highest level of craftsmanship possible in wooden boatbuilding. But all of this scrupulous planning and regulation couldn’t strip away the seductive appeal of 17th-century techniques. Connor saw a way. Perhaps the history could be infused through joinery and big timber construction—a

trademark of CBMM's Shipyard and a missing component of the '70s *Maryland Dove*, which, according to Connor, "had been built like an oversized bugeye or buyboat, with small frames and galvanized boat spikes for fasteners."

Going period-correct on the hull construction provided an opportunity to incorporate groundbreaking historical research. Working in collaboration with the Historic St. Mary's City's research team, CBMM shipwrights reached out across the Atlantic and the centuries to the Vasa Museum in Sweden. *Vasa* was a 64-gun warship that sank on its maiden voyage in 1628. Excavated between 1963–1967, *Vasa* is now housed by its namesake museum, representing the only almost fully intact 17th-century ship that has ever been salvaged.

CBMM's team gleaned a wealth of construction detail from the curators at the Vasa Museum. "We picked up an incredible amount of information from the *Vasa*," Connor says. "I have an entire notebook full of extreme detail about how the backbone went together, how they traditionally sized the timbers, the scale of everything, the exact sailing rig and configuration, even how they belayed the lines on deck." Along with *Vasa*, another shipwreck, B-71 from 1624, provided other clues about material use.

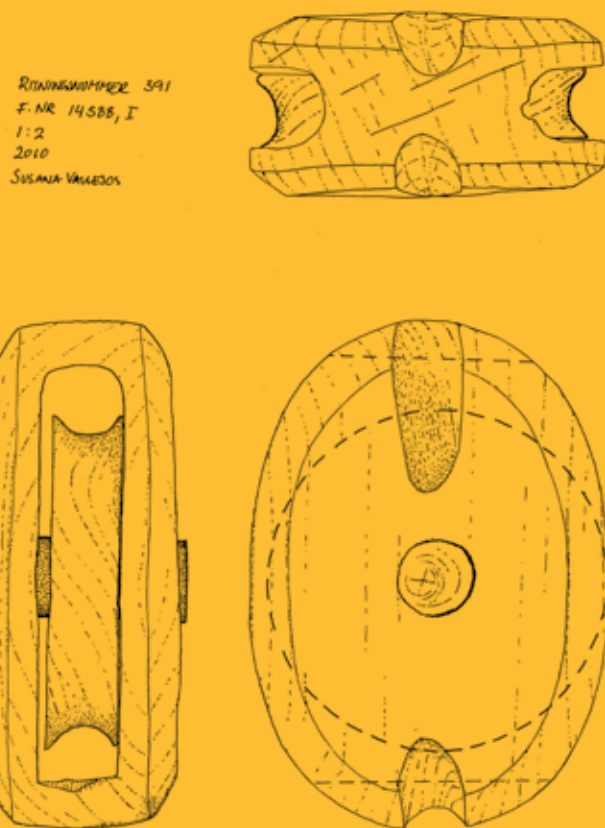
What all this research amounted to was wood—lots and lots of wood. "The opportunity was there for us to use true 17th-century boatbuilding methods in the hull," Connor says. "We'll peg/trunnel fasten all the way through. There aren't many chances to build a ship that's going to be 90% wood—wood fasteners, wood joints, big timber joinery—and that's where the artistry comes into the current build."

Sourcing all of this wood posed another challenge. Since the 17th century, forests have dwindled while populations have grown. CBMM shipwrights are unique in their attention to wood sourcing—and given the limited quantity of big stands of timber on the Eastern Shore, that can involve shipwrights taking literal walks in the woods to find the perfect trees. For *Maryland Dove*, that sourcing reconnaissance became supersized, reaching across the watershed and, in some cases, far beyond.

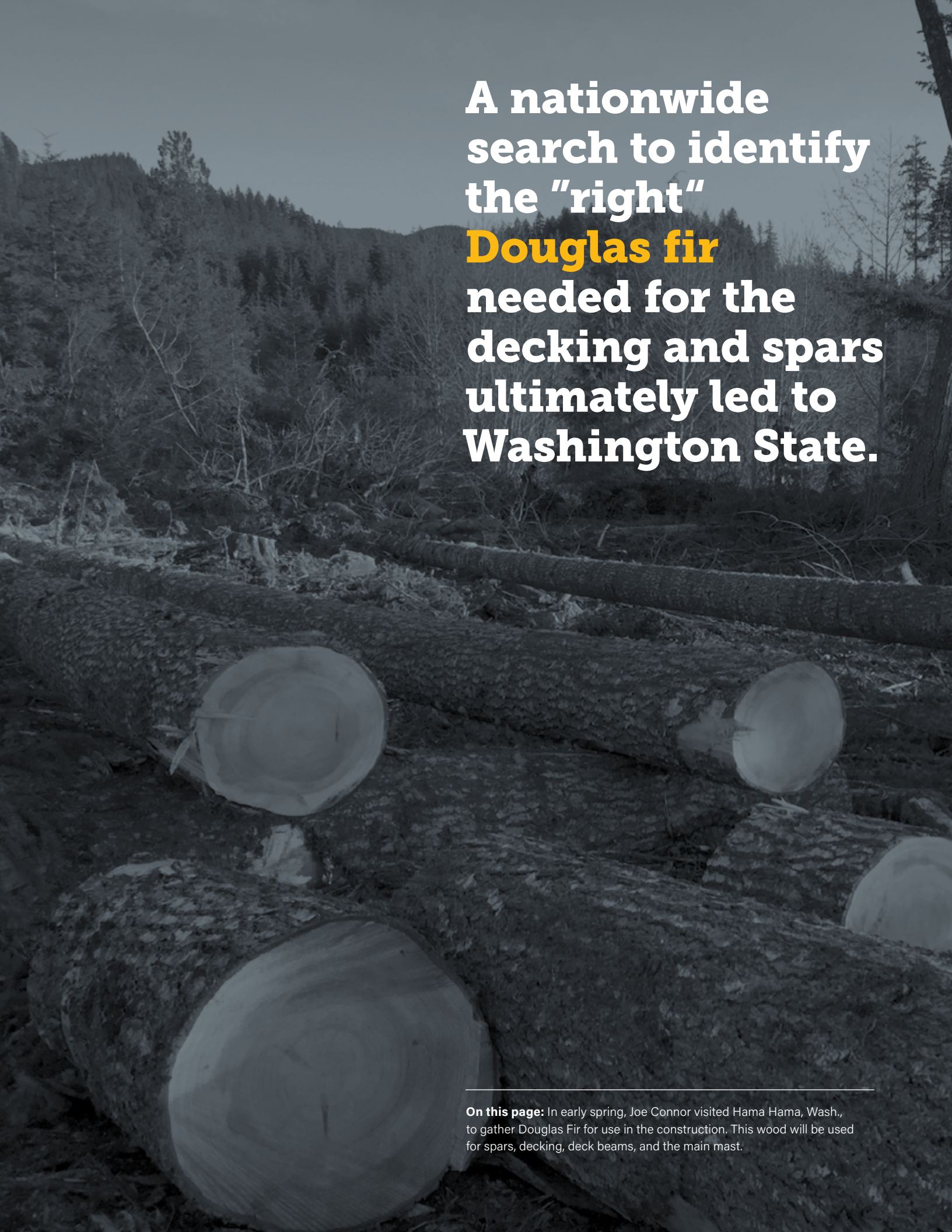
For trunnels and blocks, Connor was able to reach out to Rick Carrion, skipper of the historic racing yacht *Elf* and a longtime friend of CBMM. Connor was invited to Carrion's family farm in Cecil County, where he selected black locust and ash trees for harvest that were logged, transported, and then milled in-house at CBMM.

"We picked up an incredible amount of information from the *Vasa*."

Joe Connor, Lead Shipwright



Above: To ensure the new *Maryland Dove* is as historically accurate as possible, CBMM and Historic St. Mary's City have worked closely with the Vasa Museum in Sweden. *Vasa* was a 64-gun warship from 1628 that was excavated between 1963–1967, representing the only almost fully intact 17th-century ship that has ever been salvaged. Drawings of single and double blocks, deadeyes and euphroes provided to CBMM by Fred Hocker, director of research at the Vasa Museum, have given shipwrights an idea of how to get started on the new ship's blocks and rigging. Drawings by Susana Vallejos, courtesy of Vasa Museum.



A nationwide search to identify the "right" Douglas fir needed for the decking and spars ultimately led to Washington State.

On this page: In early spring, Joe Connor visited Hama Hama, Wash., to gather Douglas Fir for use in the construction. This wood will be used for spars, decking, deck beams, and the main mast.

Osage, with its natural curve, supreme hardness, and durability, was identified as the ideal material for the knees, which strengthen and support deck beams and keels. CBMM forged a partnership with the Maryland Department of Natural Resources and Maryland State Foresters, with the goal of canvassing the state's public forest networks to locate and source lodging and hanging knees in the next few months.

For bigger curved timbers, "the difficulty is finding solid wood pieces we're not going to have to laminate or glue up," Connor says. In particular, the curved compass timbers—used for the stem, deadwood, apron, frame, and some knees—required sourcing just the right materials. During the heyday of U.S. wooden ship construction in the 18th and 19th centuries, southern live oaks were particularly prized for use in compass timbers due to their natural curves and superior rot resistance. Huge forests of live oaks in South Carolina and Georgia were felled to meet the demand. But today, most ships are constructed from steel, leaving many of those forests to replenish over the past century. Connor himself did the legwork on sourcing exactly the right trees, heading to Cross Sawmill in Iron City, Ga., armed with mylar patterns of *Maryland Dove's* frames so that he could hand-select the right live oak compass timbers.

Connor continued his national search as he sought the right Douglas fir for the decking and spars, eventually identifying appropriate timbers in Washington State. "The Hama Hama Logging Company allowed me to join their logging team in order to locate suitable trees for the solid wood spars," Connor says. "The trees came from their fourth-generation oyster and timber farm located on the Hood Canal on the Olympic Peninsula."

Although the search had already been exhaustive, sourcing needed to go further still. While 60 percent of the construction (mostly above the waterline) could be sourced through North American timbers, Historic St. Mary's City needed the new iteration of *Maryland Dove* to last as long as possible—and that meant looking much farther south than Georgia for the tropical hardwoods that the project required.

"Conventional wisdom calls for the use of tropical hardwoods, because they will last the longest for planking and below the waterline," says Connor. "But it was also important to us to make sure that wood was sourced ethically. We wanted to avoid wood that came from clearcutting rainforests." After a lot of

phone calls and emails, CBMM found a small South American sawmill in Suriname. More than 80 percent of Suriname's landmass consists of unspoiled rain forest, thanks to the country's rigorous conservation of its natural resources. The sawmill that partnered with CBMM sources logs ethically, from succession on Suriname government-owned land, ensuring that the completed *Maryland Dove* will be both environmentally sound, and built to last.

The discoveries during the research and development phase of the new *Maryland Dove* have been numerous, and they've pushed the limits of the CBMM shipwrights' abilities and comfort zones—breathing an energy and zeal into the Shipyard for the many months of work ahead. Connor can't wait to bring it all to the table. "We're getting a chance to use all the right materials, start with a really good design, and cut joints and install pieces that will outlive the craftsmen making them," says Connor. "This is a once-in-a-lifetime opportunity—and it's incredibly exciting to be a part of that." ★

Building partnerships is key to CBMM's operations and success. Through the *Maryland Dove* project, CBMM is creating a lasting partnership with Historic St. Mary's City, and, in the process, helping them educate around 25,000 Maryland school children who visit the ship each year.