

Patricia Campbell

By Bill Shellenberger

The 60-foot *Patricia Campbell* was designed and built for the Chesapeake Bay Foundation (CBF) to help restore oysters to the Chesapeake Bay. In purpose and form, she is one of a kind. Chesapeake oysters were once the Bay's most valuable fishery. These days the Chesapeake Bay oyster population is on hard times at less than two percent of its historic levels. Restoration is essential not only for oyster eaters and the seafood industry that supports the passion but, perhaps more importantly, to improve the quality of the Bay waters. The oysters in the Bay once filtered the entire body of water in three to six days. Today, the same task would take the Bay's remaining oysters almost a year.

In early 2001, The Campbell Foundation, founded by CBF trustee Keith Campbell, provided the funds to construct the boat. CBF returned the honor by naming her after Campbell's wife. Mike Kaufman was given the job to design her, and Midship Marine in Harvey, LA, near New Orleans, won the contract to build her. The boat was completed in August of 2002.

Captain Karl Willey, the boat's first master and commander, went to Louisiana along with first mate, Lloyd Lewis, to bring her to her Chesapeake Bay home. They avoided tropical storm Bertha during the transit by crossing Florida via the Okeechobee Canal and then pushing hard up the Atlantic coast to keep ahead of the weather. As they crossed into Maryland waters, they were met by a white-out rain storm with 40-knot gusts. "A classic summer squall to welcome the *Patricia Campbell* to her new home," recalls Willey. On August 16, 2002, they docked the vessel at Discovery Village in Shady Side, MD, where CBF maintains an oyster restoration center. Three days later, Willey and his crew were planting oysters in the Patuxent River.

Her fundamental design is based on elements from the oyster farming boats used in Virginia. However, she employs modern technology to be the most effective oyster restoration vessel on the planet. Capable of performing multiple functions that are essential to oyster restoration, she carries oyster shells and other materials used in the construction and augmentation of oyster reefs, and transports hatchery-produced seed oysters (spat) to sanctuary reefs.

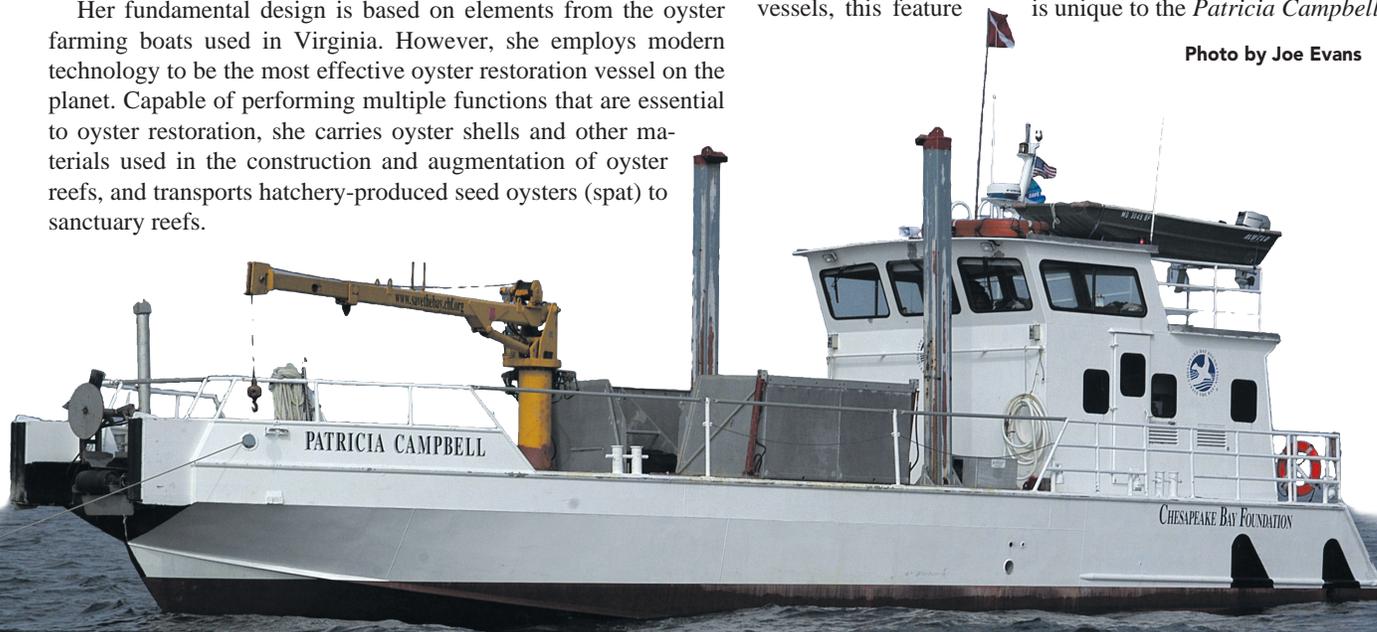
Below deck, in the sparkling-clean engine room, are twin 375 HP John Deere diesel engines and a 12 kW generator, which powers operations when the main engines are shut down. The 750-gallon fuel tank contains a 20-percent bio-diesel blend made from soybeans and petroleum, a Bay-friendly fuel that may become the fuel of the future if the price can be brought down. In fact, if low-sulfur diesel fuel is mandated in the future, as has been threatened, soy-diesel can provide the necessary lubrication for diesel engines that the sulfur provides in conventional diesel.

The bridge layout is simple and utilitarian in the way of a serious working vessel. Instruments include a Furuno RADAR unit, Sitex GPS chart plotter/GPS, Sitex Depth Sounder, and a couple of VHF radios. The bridge also has a PA/loud hailer system to communicate with the deck crew and to make noise in the fog. Sleeping accommodations are spartan, consisting of just a wide shelf at the aft end of the pilothouse. Obviously, this vessel is not intended for long-term overnight accommodations. There is a head with a shower and hanging locker near the starboard bridge entrance. The shower is primarily intended for the use of divers. There is also a large dive platform off the stern.

The wide, forward deck is dominated by large bins, which can hold as much as 40 tons of oyster shells and spat. A three-ton water ballast tank in the stern of the vessel is used to counteract the weight of the shell and maintain fore-aft trim.

A two-ton, hydraulically operated crane in the middle of the deck is used to install and remove bins, load oyster shell, and set heavy concrete reef balls. Running down the middle of the deck is a conveyor belt leading to a large impeller in the bow that is used to spray the shell over an area 30-feet in diameter. Among all oyster recovery vessels, this feature is unique to the *Patricia Campbell*.

Photo by Joe Evans





With a draft of three-and-a-half feet unloaded and five feet fully loaded, the boat can work in shallow water. Amidships, on both sides, just aft of the crane and forward of the pilothouse, are two hydraulically operated metal pilings called spuds, which are used to hold the boat steady over a reef or, if only one is lowered, to pivot around the spud to dispense shell in a 60-foot circle. With the GPS/Chart Plotter instrumentation on the bridge, the exact location of the dispensed shell and spat can be recorded and subsequently revisited to monitor progress.

To understand how the operation comes together, it helps to start with the oyster's life cycle. In the beginning, free floating eggs and sperm combine. The fertilized eggs rapidly develop into free-swimming, microscopic larvae. In a couple of weeks, the individual larvae become spat, which attempts to attach to a hard surface, preferably a shell among others in a reef. There it will remain for the rest of its life, hopefully reaching adult size and reproducing in turn.

The critical point in the oyster's life is the attachment to an appropriate hard surface. If it fails to do so, it dies. That's where the Chesapeake Bay Foundation and the *Patricia Campbell* oyster restoration step in to assist. Rebuilding reefs and stocking them with oysters is a long-term project, clearly a high priority for the Bay.

Reef building is a complex mission. Scientists must first identify potential sites with stable hard bottoms in areas that historically supported productive oyster beds and where spat sets will be self-sustaining. The reefs must be designed and constructed so that they rise significantly from the Bay's floor to overcome problems associated with sedimentation. Of course, appropriate material must be transported to the reef site and set in place. Once stable, the reef can be planted with seed oysters or even with adult oysters bought from watermen or raised by volunteers.

Using larvae produced at the University of Maryland's Horn Point Laboratory, CBF has the capability to produce and distribute more than twenty million oysters per year. CBF maintains three 3,000-gallon tanks at Discovery Village, which contains Bay water and one-ton stainless steel cages upon which the spat can set and grow. Later, these cages are lifted aboard the *Patricia Campbell* for transport to reef sites. The spat is delivered to protected reefs where they cannot be harvested.

If oyster restoration is successful, everybody wins. For more information go to www.cbf.org/oysters or call (888) SAVEBAY (3229).

About the Author: Bill Shellenberger is a retired engineer and the author of, *Cruising the Chesapeake: a Gunkholer's Guide*, now in its third edition. <http://home.att.net/~gunkholer/>



Patricia Campbell Specifications

- * All welded aluminum construction
- * Length Overall – 60 feet
- * Beam – 19 feet
- * Draft – 3.5 to 5 feet, depending on loading
- * Crew – 2 to 3 people
- * Crane capable of lifting 2 tons (4,000 pounds)
- * Engines – twin 375 HP John Deere diesels
- * 12 KW diesel generator
- * Fuel capacity – 750 gallons of Diesel (20% of which is soy diesel)
- * Maximum tonnage – 40 tons
- * Top speed – 15.7 knots
- * Cruising speed 12.7 knots
- * Designed by Mike Kaufman
- * Built by Midship Marine, Harvey, LA
- * Bins and other components built by Mark Miller Machine Shop, Crisfield, MD