WYLIE'S WAY

After 40 years on the cutting edge of competitive sailing yacht design, Tom Wylie is now thinking more about his new boats' impacts on the environment than on the racing circuit.

ROSS TIBBITS

by Ross Tibbits

Above—*For Tom Wylie, pictured at the Watsonville, California–based company Wyliecat, the boats have varied, but his philosophy has stayed the same: "You have to start leaping in."*

Building yachts consumes significant material resources. Tom Wylie believes the way to get the most from those largely nonrecyclable resources is to create boats that will be on the water as much as possible. His latest designs are not just fast and easy to sail but also efficient, defined by resourceful use of construction materials, simplified sail plans, multiple purposes, small engines, low-operational costs, and high-performance hulls. Those traits are best exemplified by the 65′ (19.8m) sailing research vessel *Derek M Baylis* and a new, lightweight 40′ (12.2m) hull dubbed the Mini Baylis, in development.

"Actually, if I looked at all of my boats, even the Gemini Twins [wooden Wylie 31s] or Commodore's boat [*Flash Girl*], the number of times they are untied is a lot higher than normal—really high," he says. That's true on San Francisco Bay (about 20 miles/32 km from Wylie Design Group, in Canyon, California), where Wylie designs are seen racing in a high percentage of regattas each season.

His reputation for designing and building boats that are ahead of their time includes highlights such as *American Express*, his revolutionary 21′ (6.4m) boat that humbled the fleet in the 1979 Mini-Transat singlehanded race. In the '94 and '96 Pacific Cup races his sleek 70′ (21.3m) wave-piercing ultralight-displacement boat (ULDB), appropriately named *Rage*, broke consecutive records, eclipsing the past accomplishments of the famed *Merlin*. (Those boats and Wylie's earlier career are detailed by Steven Callahan in "Native Son," *Professional BoatBuilder* No. 75.)

Wylie did it again in 2001 with the Open 60 *Ocean Planet*, commissioned by ocean racer Bruce Schwab. Schwab's goal was to be the first American to finish the Vendée Globe, but without a title sponsor, he relied on fundraising via his Made in America Foundation. Limited finances led him to implement creative designs. Wylie's design narrowed the hull width significantly, reducing the cost, the weight, and the effort it took Schwab to manage the boat. Wylie also designed the 80′ (24.4m) unstayed rotating carbon fiber mast that had

significantly less sail area than the competitors' but required less effort to trim. And the hull was built with the core/veneer/epoxy (COVE) construction system (inner and outer skins of thin layers of wood with a structural foam core, laminated with epoxy). Ultimately, these innovations increased *Ocean Planet*'s overall efficiency and reduced its cost by as much as a third of that for a typical Vendée Globe yacht at the time.

"All designers almost to a tee find something early on in their career, and if it works and they win a race or two, they repeat it for 40 years, for the rest of their career," says Wylie, remembering advice from one of his mentors, Sausalito, California, boatbuilder Myron Spaulding. "What's nice for me is that I'm typecast to have cool water-people coming to me for boats. I think what I've been able to do is make people's adventures come true. That's been pretty cool."

Fast, Easy, Light

Wylie's passion for sailing began when he first held a tiller, after moving from Berkeley to Richmond, California. "I'd bicycle to the Richmond Yacht Club and people would take me sailing," he says. Relative to his professional peers, at 16 he was pretty old to be just getting into the sport. "I got addicted to sailing instantly. I don't know what it was. I was making motion with one hand with the wind, and the other hand with the stick. I never learned for the longest time it was called a tiller. I didn't care what it was called; I just wanted to feel the water with the stick…and I knew the stick was controlling the paddle, and I knew it was called a rudder sooner or later. But at the beginning I was just really intrigued with the coordination, and that I was on the interface between two major fluids."

Wylie went on to champion sailboat designs that are fast, easy to sail, efficient, fun, and don't typically break the bank. You only have to look at the practical yet spirited Wylie Wabbit, the popular 24′ (7.3m) sport boat he created in 1981. Even the name brings a smile to people's faces. Kim Desenberg's North Coast Yachts, in Alameda, built the Wabbits, as well as 16 Wylie 34s (10.4m) in the '70s. Wylie sold 32 of his Hawkfarm 28s (8.5m) in the same era, with North Coast Yachts building the last three.

Trained as a teacher of industrial design, Wylie learned yacht design empirically through extensive experience racing, sailmaking, building spars and boats, and reading available literature. The longevity and enduring competitive performance of many of his early boats have cemented his reputation as a great designer. Helping set Wylie apart in recent decades is Wyliecat, the Watsonville-based company he created in 1994 with his good friend Dave Wahle, a well-known Bay Area sailor, boat builder, and tester. Wyliecat boats' signature design element is their rig—unstayed carbon masts and wishbone booms. This uncluttered design is perfect for short-handed sailing and racing, making the 17′ to 66′ (5.2m to 20.1m) boats popular on San Francisco Bay and beyond.

"The Wyliecat rigs are special in that they require less strength to control, fewer headsail and spinnaker changes," says Wylie.

Rigs and hulls need to be designed to easily shift gears. Wylie has incorporated specific elements into his hulls to keep them from being, as he likes to say, "cranky." A cranky hull, for instance, might be balanced such that when going downwind the crew must sit as far aft as possible to maintain the boat's trim and speed. Or, when the boat heels going upwind, the helm becomes heavy, requiring a series of sail adjustments. Wylie's hulls sail efficiently upwind, resulting in light weather helm over a wide spectrum of heel angles and significantly easing the effort required by the skipper (or the autopilot) to steer the boat. When sailing downwind, the crew can focus on their tasks in the middle of the boat, where they are most needed, instead of trying to stand on the aft corner.

Lightweight designs are based on his experience in designing and ocean sailing, and on his knowledge of specific rules for various design parameters. His facility in designing and building in a variety of materials (glass, carbon, aluminum, and steel) enables him to put into the boat only

LESLIE RICHTER/ROCKSKIPPER.COM

Tim Russell's Wylie Wabbit, Weckless *(23.75′/7.4m), racing in the 2016 Commodore's Cup and Wabbit Nationals, on Huntington Lake, in California's Sierra Nevada.*

what is essential. He knows where he can conserve materials, say, by specifying 5⁄16″-thick (7.9mm) instead of ½″-thick (12.7mm) sheet steel, which will require smaller frames, save weight, and significantly reduce build effort. Lower weight also lessens sail area, rig size and loads, and horsepower and fuel needs from the engine.

Wylie's Philosophy

Speaking with Wylie about yacht design is akin to putting your finger on a small puddle of mercury. Almost immediately it disperses into numerous orbs seemingly impossible to corral—until eventually they all come back together. Wylie digresses from yacht design and efficient boatbuilding techniques to his love of the environment and environmental education, along with tales from his past and his profound hopes for the future. Yet it is precisely his varied passions, and his friendly demeanor, that make him one of the most notable yacht designers on the West Coast.

Wylie explains his philosophy: "It's not a matter of being a boat designer or anyone else for that matter. You have to start leaping in; you have to put the rubber to the road, as they say. That's why I'm picking what I'm doing environmentally. And I put Dave Wahle in a similar boat because we've ocean-sailed so much and because I happen to be a designer; that's why I'm picking to do a tiny carbon footprint by reducing the resistance on my sail and motorboat designs—because I know how. I don't think it's common among boat designers. I really believe that if you want your young children to not smoke as teenagers, you shouldn't be sucking on a Marlboro while you lecture them. 'Monkey see, monkey do' relates to humans, don't you think? I think I'm pretty different than designers or builders that way, just based on how much I've done on the subject.

"I think the larger picture," he says. "I have a pretty darn good renaissance education, which means you are a master of nothing, but I did get a good science education at college. And all this [environmental information] is just biology, physics, and chemistry, and the problems are real. The ocean really is going to be 30% more acidic in 100 years. And we are not going to be able to afford to know it to five decimal points, because it's happening so quickly. And Dave and I have ocean-raced long enough to see the difference in the oceans." Although there is a lot of pressure on industrial fishing companies, for instance, to build larger nets and to strip the oceans of even more species of fish, "I believe that as a business person you are supposed to leave something for the future generations as far as ethics."

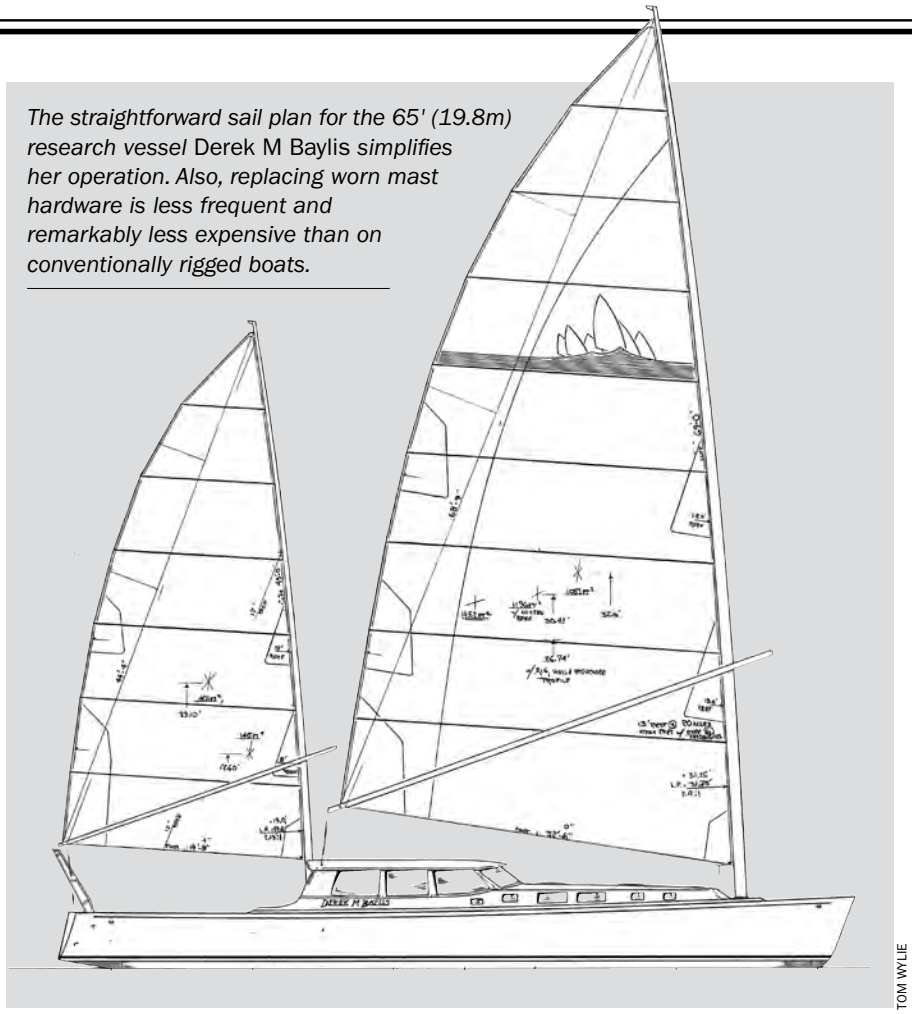
The *Derek M Baylis*

While incorporating many elements from Wylie's past designs, the *Derek M Baylis* embodies the designer's vision of the future of sailboat design, with a focus on the health of the planet's oceans. Launched in 2003, the 65′ ketch-rigged yacht is likely one of the most versatile sailboat designs on the water: she's a competitive racer, a remarkably comfortable and efficient cruiser, and an environmentally friendly, wind-powered ocean research-and-education vessel. You don't often come across descriptions like that.

Operated by Wylie Charters, the *Baylis* is offered to various organizations and individuals for a variety of purposes. Her functionality and efficiency shine when you read her specifications. Displacing 35,000 lbs (15,876 kg), the *Baylis* has a Subchapter T certification from the USCG, allowing her to carry up to 49 guests and a minimum of two crew. With a combined sail area of 2,000 sq ft (185.8m^2), she's recorded a top speed of 22 knots. Were a client to run her 100-hp (75-kW) Yanmar alone, it would consume only 2 gal (7.6 l) per hour at 10 knots, or 1.6 gal/hr (6 l/hr) at 8 knots. Range is a whopping 1,100 nautical miles.

The *Baylis*'s substantial aft work deck is 22′ (6.7m) long and averages 12′ (3.7m) wide, for 264 sq ft (24.5m^2) overall. To access her expansive "garage" under the work deck, there's a 40″ x 23″ (101.6cm x 58.4cm) cargo hatch. An equally large hatch provides ingress/egress to the engine compartment. Carrying capacity is approximately 10,000 lbs (4,536 kg).

According to the spec sheet, her mizzenmast's boom can be used as a crane to "lift, deploy, and retrieve equipment on and off the vessel to and from the sea in conjunction with the A-frame and/or wishbone as well as the electric primary winches." When used in either combination, the boom has a SWL (safe working load) of 600 lbs (272 kg).



The straightforward sail plan for the 65′ (19.8m) research vessel Derek M Baylis *simplifies her operation. Also, replacing worn mast hardware is less frequent and remarkably less expensive than on conventionally rigged boats.*

TOM WYLIE

ROSS TIBBITS (BOTH)

Left—*The uncluttered deck layout, raised cabintop, and sleek hullform are signature elements of Wylie's designs.*
Above—*The* Baylis *also features built-in attachments on the aft deck that can secure a variety of equipment, be it shark cages or the auxiliary research vessel shown here and on page 78.*

ROSS TIBBITS

Left—*The* Derek M Baylis *returns from a shark-tagging operation in the Gulf of the Farallones, off San Francisco.*
Facing page—*Her spacious deck and minimal crew requirements make her particularly well suited for water-based education.*

The *Baylis*'s small crew makes her a versatile racer. For instance, she recently competed in the Three Bridge Fiasco's doublehanded spinnaker division (108 [PHRF rating system] and under) in January 2016. Alexander "Zan" Drejes and Alex Mehran won the 32-boat division by just under four minutes. "To be able to sail to 30 seconds a mile [rating] with one main and one mizzen and zero other sails to forget at the loft or repair," says Wylie, "the hassle factor just evaporates."

The efficiencies of sail and small crew carry over to chartering as well. As with business, individuals are looking for higher productivity of services and product and less payroll. "So when you are sailing with your friends of six or 12 and just piss and moan about all the sandwiches they eat on a Saturday, that's one thing," says Wylie. "But when you are doing 40 hours a week for six or 12 [people] and we are sailing a 20-ton vessel with one skipper and one crew, it's a lot easier for us to make a price point for the kids for education or for scientists doing research, just because of that payroll, which actually transfers to maintenance costs."

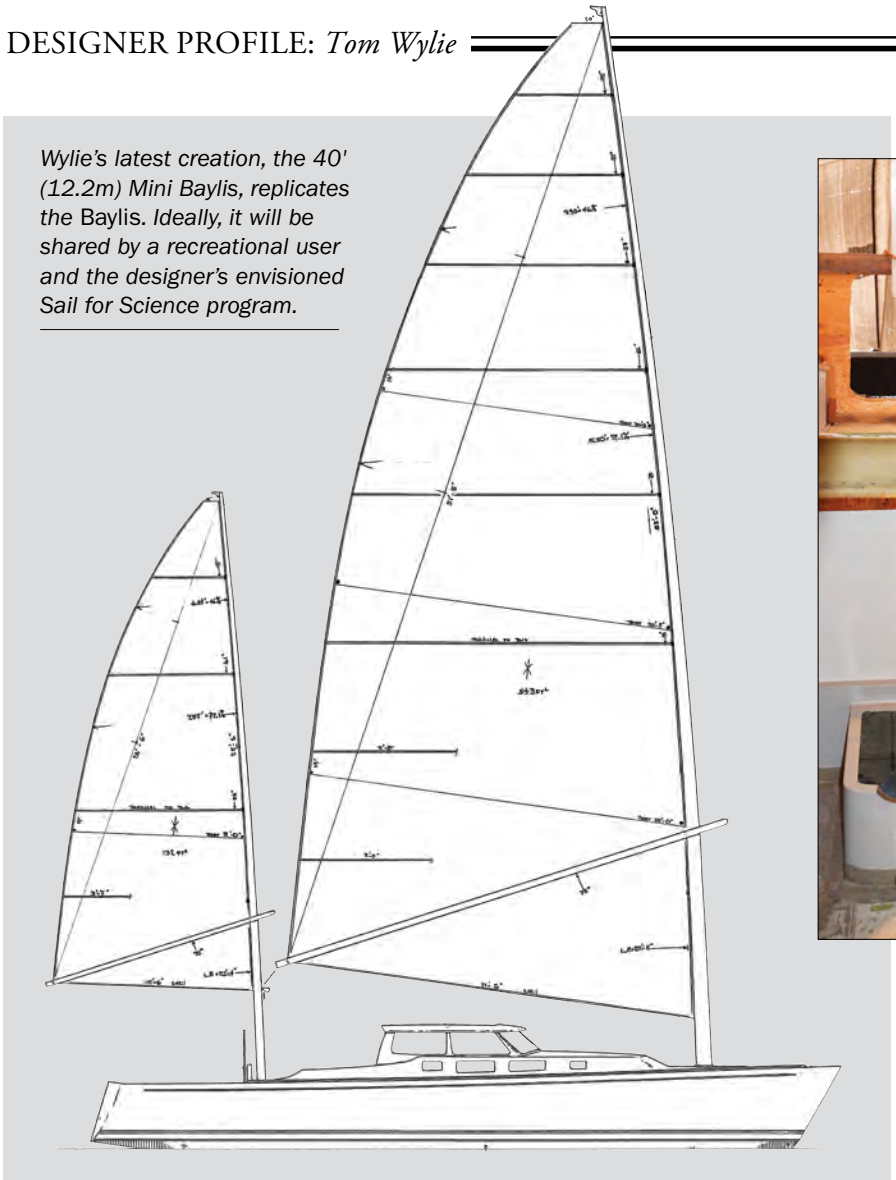
TOM WYLIE

Overall maintenance costs are significantly reduced. "When you go to rerig the *Baylis* in 13 years, it's a bunch of machine screws and sail tracks. It's essentially costless. A comparable yacht, say a Santa Cruz 52, would arguably cost upward of $75,000 every 10 years whether you bought it new or used."

Wylie Charters is working directly with the Romberg Tiburon Center for Environmental Studies, in Tiburon, California, to provide the *Baylis* as a research vessel. The center is San Francisco State University's marine and estuarine research facility, which gets federal grants to do ocean-based environmental research. The *Baylis* was also involved in mapping the ocean floor off Coos Bay, Oregon, for a seabed-floor turbine-energy farm. Her relatively low acoustic profile was ideal for this operation, as was her functional deck layout. About two years ago the *Baylis* was chartered by Cascadia Research Collective, based in Olympia, Washington, to research Cuvier's beaked whales in Southern California. And, this past September, she was used for the thirteenth year in a row to tag great white sharks off the California coast.

Developing the Wylie 40

During my visit in June 2016, the 40′ Mini Baylis was approximately half-finished and sat on the hard just outside Wylie's shed, under tarps at his Watsonville facility. Wylie began renting the industrial property in Watsonville back in 1992 just prior to



TOM WYLIE

Wylie's latest creation, the 40' (12.2m) Mini Baylis, replicates the Baylis. *Ideally, it will be shared by a recreational user and the designer's envisioned Sail for Science program.*

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Wylie below deck in the unfinished 40-footer.

launching *Mustang Sally*. He still does a lot of drawing and layout design and building projects at his original facility, nearby in Canyon, where he built the first Wabbit. There he has a 950-sq-ft (88.3m^2) shed with another 1,500 sq ft (139.3m^2) outdoors for construction under large tents.

Wylie Design has incorporated all the benefits of the *Baylis* into a smaller, more-efficient, lighter-weight hull, based on the highly regarded Wylie 39's (11.8m) platform. The hull has attracted sailors like Warwick ("Commodore") Tompkins Jr. (*Flash Girl)* and Jonathan Livingston (*Punk Dolphin*) because it is "well mannered" and "light enough that you don't have expensive gear," says Wylie.

"This is part of the reason we've learned long ago that if you have a lighter-displacement boat, you have smaller rigging, and you have a smaller engine. And even if you are buying a used boat…if you buy a used heavy boat, you are buying a heavy engine to push the heavy boat." The environmental and financial cost of running this boat over a span of 30 years is significant in Wylie's mind. So you build a boat that is "light, durable, and strong."

The hull comprises varying layers of laminate from the centerline to the sheer. The thickest area (multiple plies of biaxial fiber and resin creating a 1″-thick [25mm] solid laminate) is laid up between the front of the keel box and just beyond the middle of the engine box. "If this boat's keel hits a rock going forward, [the leading keelbolt] wants to pull this whole boxed area though the hull, and the trailing edge tries to push the engine up through the cockpit. If you have thicker glass in this area, the boat can take 'the hatchet effect,' as I like to call it, much better. This design is inherently solid, and closer to the deck, thickness decreases to ¾″ [19mm]." Wylie's use of materials is fundamentally practical. There are no extravagant uses of carbon fiber, and all the accommodations work in harmony with the hull and vice versa, which again speak to efficiency of design and his approach to cost. The starboard side of the cabin is challenging "for the simple reason that we are trying to get a chair, a nav station, and a stand-up head in 6′ [1.8m] of length." To do this, Wylie designed a custom seat that slides out from under the nav station, and he envisions the head doubling as a sea locker for hanging foulies when racing the Pacific Cup, for instance.

For Wylie, efficiency begins with the

build specs and good communication. "What's available on the shelf is not the same as what's available to the engineer. And the builder and the engineers need to communicate, because right now the engineer can request certain specifications, but finding that spec may prove difficult for the builder." This emphasizes the need for "better paperwork," as Wylie says. "Dave and I have never been super strong with the paperwork. But now with [vastly improved computer technology] you will be able to see immediately what the cost of materials is when spec'ing out the boats."

To that end, he's also aided by Randy Sharp, a 20-year commander with the U.S. Coast Guard, who Wylie says is a very good sailor. He's Wylie's go-between for gathering information and communicating with the USCG. "He's like an interpreter. He can speak pure Coast Guard and knows what all the regulatory changes mean, and knows who to talk to about getting the right answer. This bureaucratic streamlining greatly reduces the time and the cost of developing future boats.

"Washington, D.C., is the center for any Coast Guard–inspected vessel. Once you have the female mold measured, all the paperwork for [a vessel-based classroom] anywhere in the U.S. plummets to virtually a button on the computer." The first boat will have the standard, and significant, number of Coast Guard inspections. But after two or three hulls have been built, all that will need inspecting are the through-hulls, wiring, and other systems, assuming the weight of the vessel remains close to the original. This vision of creating ocean-based classrooms/research vessels encompasses many aspects of Wylie's ultimate goal of blending smart building techniques, vessel efficiency, and environmental education.

Sail for Science

The 40's engine box is huge, and behind it lies what Wylie calls the garage, a large storage space below the elongated cockpit, with access via hatches. Crew can stand inside the garage and pull out anything, from crab pots to research equipment or scuba gear. The *Baylis*'s garage, for instance, carried sonar equipment to map and research the San Andreas Fault. "The purpose of this boat is not to hold up docklines. The purpose is versatile, versatile, versatile."

To maximize its time on the water, Wylie wants Wylie Charters to allow the yacht to be shared by a recreational user and a nonprofit. "I would actually like to build the 40-footer for a client who would eventually turn it over to our envisioned nonprofit, Sail for Science. The client would use it, and they would get a tax deduction via the

ROSS TIBBITS (BOTH)

Left—*The "garage" in the Wyliecat 40 can hold a significant amount of equipment, easily accessible from the deck above.*
Right—*The* Baylis *has a removable transom cover so that support craft can be loaded onto her aft deck. The mizzen boom acts as a hoist.*

nonprofit for their berth rent. It would definitely be a time-share mentality."

Wylie envisions the Sail for Science program as far more than just taking kids out sailing to learn about science and the environment. It starts with building a standardized, USCG-compliant hull (the 40-footer) and encompasses high school vocational programs where students would essentially learn modern boatbuilding skills by building out the boats that would then be used as educational platforms. "So that the basic parts—vacuum-bagged hull, deck, and laminates—come out of these small shops that Santa Cruz has historically always had," says Wylie.

Once the hulls were complete, high school students would outfit them.

"What I kind of like about it too, though, is that if the kid screws up [outfitting a galley table for instance], so what? You learned something. You take it off. It doesn't affect the strength or safety of the boat. You go back and make it different so it fits, right? And that's the hope of it. It doesn't mean you couldn't take the boat and have it finished professionally. So it's a form of a kit boat, but I would love it to be a vocational training [opportunity]." In his vision, students would have opportunities to become apprentices at boatyards, too. "Because of their talent, highly skilled student apprentices would be assigned a project, say, to build a pilothouse or a rudderpost in prepreg. The kids are young and talented at what they do. And they are getting paid to do it." The goal is to create a "more modern boatbuilder of the world, while not being critical of the retrofitters. Ultimately, the goal is teaching people how to work on a boat in a boatyard; it's easy to talk about, but it's talk."

And Wylie loves to spread the word to folks willing to listen. Call it a mission, not necessarily about him but ultimately about a small niche where the planet Earth and boat designers and builders come together, and what he thinks must ultimately happen to the boating industry to make boats more environmentally acceptable. While he's doing that, he's trying to teach kids the sailing lessons learned over a hundred years ago, tying the past to a clear vision of the future.

He explains by telling a story about another of his mentors, Commodore Tompkins, renowned as a great sailor, who was four years old when his father famously sailed the family around Cape Horn the "wrong way" aboard a 105′ (32m) former German pilot schooner, *Wander Bird*, built in 1883.

"I remember [Tompkins] telling me one time when he pulled down my hood from behind me, 'This is the tool, right here.' And he says you can really feel changes off the top of your ear.

"Those kind of tools really tie the 19th-century sailing workboat [experience] and what we are trying to do with 21st-century sailing workboats—literally being able to, with two sails, run a rating with two people at 30 seconds a mile on a 65-footer. . . and go map the San Andreas Fault." PBB

About the Author: *Ross Tibbits, a lifelong sailor from San Francisco, California, has been writing about sailing and many of its colorful characters for more than 12 years. His writing career grew out of an interest in technology and his endeavor to understand new developments in yacht design.*