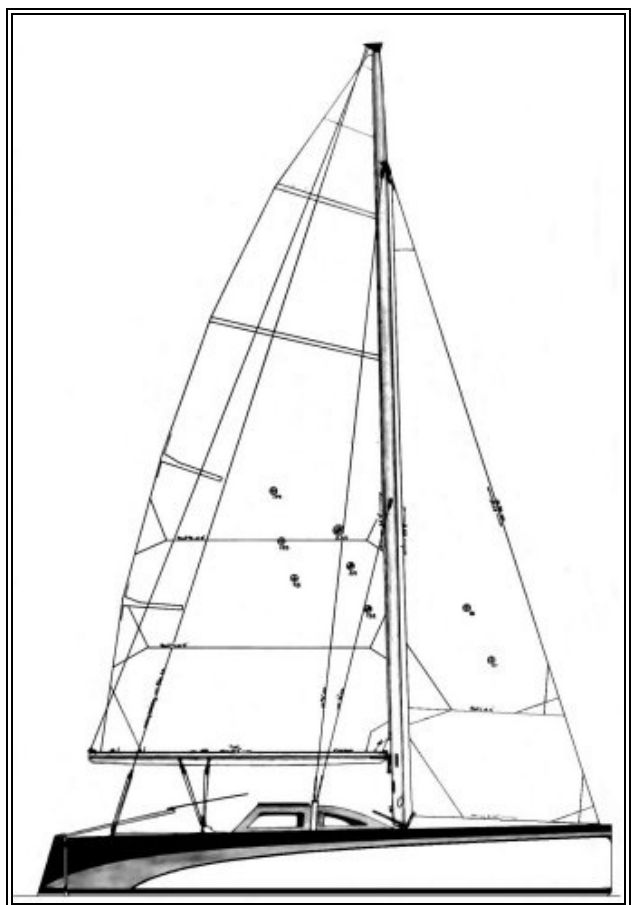


Mr. Toad

A Simply Built, 20-Foot, Sport-Cruising Catamaran

written by Steve Callahan, © January 2011; photos as credited
For Website Home Page, click <http://www.stevencallahan.net/schome.html>



The rig of Mr. Toad, a 20-foot skiff-catamaran with big mainsail and small, self-tacking jib still fit the norms of catamaran design.

Mr. Toad, a skiff catamaran, resulted from a confluence of my interest in multihulls, growing up seeing 110s racing in Massachusetts, and a *Cruising World* magazine design contest. Her rig, beam, high bridge deck and forward beam, and other features allow her to remain looking fairly contemporary although now more than 30 years old.

When I drew her in 1978, I'd spent a decade messing about in multihulls. I'd built major components of 40- and 50-foot trimarans and built a 28 footer as well on which I had lived for a couple years and sailed to Bermuda a couple times. Halfway through Westlawn's course in boat design, I'd been drawing multihulls voraciously, and I was bopping about the bay on a 14-foot proa, appropriately named *The Junker*, that a pal and I had whacked together in 40 hours for 40 bucks using recycled materials. Although far from accepted by the yachting community, multihulls had revealed to me enormous benefits for many sailors, including enhanced performance, greater stability, shallow draft, and unsinkability.

Cruising World was looking for a simply built camp-cruiser, with enough

"accommodation" to sleep a couple over a weekend. In my view, this was a vision ahead of its time, especially as cruising boats grew in size and complication towards the end of the last millennia, demanding higher budgets and more maintenance as well as restricting their crews from many of the wonders of voyaging that have only been re-discovered in recent years by those going far afield in craft as simple as kayaks.

For the contest, I thought a lively boat was in order, something that, although small, might have the range of much larger craft. The liveliness of a small craft allows one, in fact, strongly encourages one, to live close to wind and water, to be engaged in the act of sailing, which provides great thrills and immediate rewards. The boat should be able to stay out for days, but at the same time, to offer the crew at the end of each day, at least the minimal comforts at anchor, including a snug, dry berth. A nice benefit would be shallow draft, and the ability to at least transport her home for the off season, or to a new cruising ground. *Mr. Toad* was my answer.

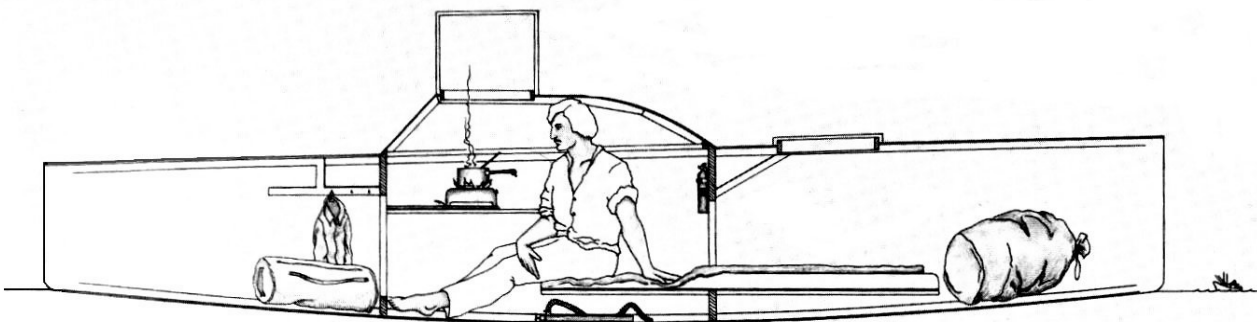


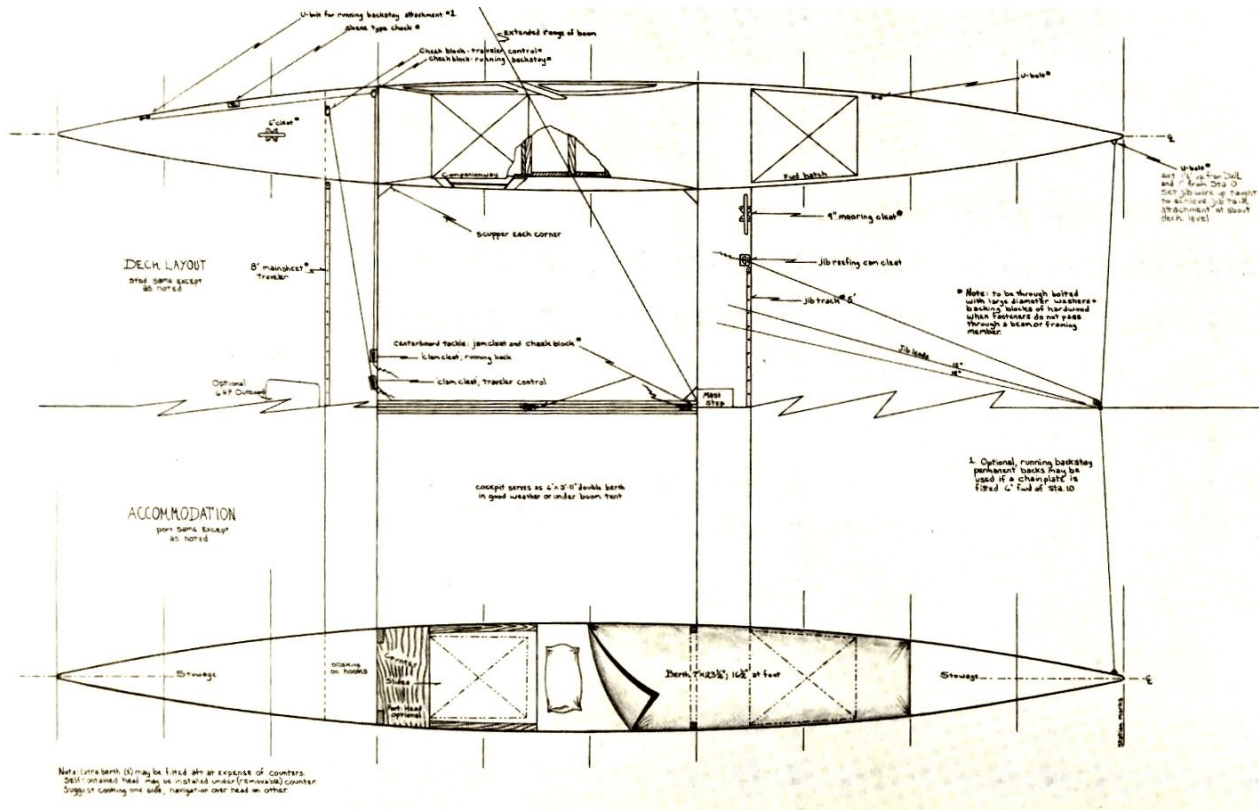
Anyone who grew up in New England waters would know the 110 and her bigger sister the 210, slab-sided, flat-bottomed, skinny, deep-keeled sea razors from the board of Ray Hunt. Their performance is legendary for the type. I thought a catamaran with similar hulls would work well enough, with a similar weight but much greater



Above: A Mr. Toad built by MultiMar in Brazil showed that easily built, flat-sided and flat-bottomed hulls still can perform and maintain an aesthetic appeal, much like their 110-class monohull inspirations. Photo: Eugenio Junqueira Neto

righting moment and ability to carry sail, as well as narrower hulls to drive. I believed, at higher speeds, the flat bottoms might help even a very narrow hull to plane, an enhancement because, even though the cat hulls would be much narrower than a monohulls, they still would be kind of beefy for a catamaran at an L/B of 10:1. I needed 2 feet of beam to squeeze in a minimal-width berth in each hull, along with enough space for a minimal cooker and, perhaps, a head. I figured the berths and cabins would be handy primarily to keep stowed gear dry, and so somebody could get out of the weather, warm up, and even take a nap during a wet ride. The accommodations below would truly be sparse, but it would be the platform between the hulls that would serve the primary in-port living space. To each side of a central swinging centerboard, the cockpit platform can sleep two or provide space for lounging about, cooking, or whatever under a boom tent.





The accommodations of Mr. Toad are fairly spartan, but allow the crew to snag a rest, cook, or navigate underway while protected from the elements. When at anchor, under a boom tent, the crew can set up house on the solid wing platform. A couple can sleep to either side of the centerboard trunk. The shallow draft allows easy beaching, anchoring in very shallow waters, and trailering options.

The kick-up centerboard and rudders would allow very easy beaching, and she would sit very happily on a mud flat when the tide went out. Goodbye the need for deep and unsheltered anchorages. Hello to the security of little nooks and shallows, with lots of scope for the anchor with very little rode out.

She couldn't be trailered exactly, but she could be easily hauled on nearly any beach, and then dismantled to be taken by trailer in pieces home or to storage. With a bit of work, one could load all the pieces on one trailer and take her on the road, or stuff her in a container and take her abroad.

I was not sure that an overall beam of 60% of overall length would work. It was much higher than most cats at that time when many cats even much narrower had problems coming about. The beam gives the boat enormous stability. There can be a point where diagonal and longitudinal stability are of more concern. As John Suttleworth said long ago, "When you don't know whether the boat will capsize or pitchpole first, you probably have the ratio about right." An overall beam of 60 percent would eventually approximate the norm for racing cats and offshore cruising machines. *Toad* also featured the large mainsail and small jib that has become the norm. The jib is self-tacking, another feature becoming more common as years roll by.

Despite a wide stance, *Toads* built seemed to have maneuvered well enough according to their builders. One owner who had modified *Toad* by adding an extended raked bow, reported that *Toad* easily sailed into the mid-teens and reached 20 knots. He often sailed against a Reynolds 21, a

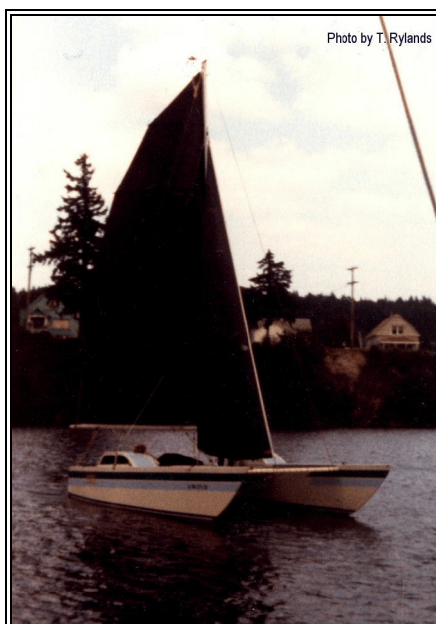
production sports cat of the era. *Toad*'s owner reported that *Toad* was a bit slower than the Reynolds in light airs, no doubt because of her added wetted surface, but in heavier winds *Toad* would sail away from the Reynolds. Unfortunately, I never got to sail on a *Mr. Toad*. Several were built, but all too far away for me to reach at the time.

To simplify building, I chose to bend longitudinal chine logs over two frames per hull, and join the chine logs to stem and stern pieces. There would be no complex transom to build, and the plywood skins could be simply glued and screwed to the framework without having to torture it or cut it into complex strips for laminating as would be required for rounded hull forms. As much as possible is square rather than curved, making it ideal for neophyte boat builders.

As it turned out, *Toad* did not win *Cruising World*'s design contest, but even in that conservative era, the editors chose to publish the design as an inspiringly different approach to their criteria, which led Bob Wallstrom to drop me a line, generously welcoming me to the "neighborhood." With boat plans under my arms, I went to see Bob, a master draftsman. We ended up working together off and on for many years. At his design office, we would complete the designs of several conventional, modest-displacement monohull cruisers in the 30 to 50 foot range, make design modifications, and survey boats of all types. Through the mid-1980s, we also worked to evolve his Yacht Design Institute (YDI; later incorporated into Westlawn) into an accredited degree program in Small Craft Naval Architecture with both correspondence and residential programs. I'd author YDI's new text on multihull design, draw a few other multihulls, and have the pleasure of getting to know and profiling many of the world's best multihull designers, as well as sailing on their amazing boats. See our publications page to find articles about other multihulls.



This owner reported that Toad "is very fast and maneuverable. We have timed her with a calibrated speedo at 20 knots, and she often does 15."



Vital Statistics

LOA: 20 ft.

LWL: 19 ft. 8 inches

Beam Overall: 12 ft.

Beam Each Hull: 2 ft.

Draft board down: 2 ft.

Draft board up: 7 inches

Displacement half load: 1,600 lbs.

Pounds/inch immersion: 300lbs.

Sail Areas

Mainsail: 174 square ft.

Jib: 81 square ft.

Sail Area/Displacement: 29.72

Displacement/Length: 89.25

Sail Area/Wetted Surface: 2.96

