HOW TO CROSS OCEANS WITHOUT GETTING WET OR GOING BROKE

Troller Yacht

Book

2nd Edition

George Buehler



This is the 21st century update of yacht designer George Buehler's popular The Troller Yacht Book, the guide to fuel efficient and safe offshore cruising powerboats. Loaded with detailed information about cruising design theory, building, and outfitting, it is even more essential reading than the original edition for anyone thinking about ocean cruising in a powerboat. Buehler's attractive, affordable, rugged, and ultra-economical powerboat designs are popular, and are cruising all the world's oceans.

The Troller Yacht Book How to Cross Oceans Without Getting Wet or Going Broke

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Second Edition

1. Ocean cruising in power boats?

When I was a kid my dad kept a fishing boat—an 18-footer with a cabin and a 35-horsepower "Big Twin" Evinrude—down in Florence, on the Oregon coast. We used to cross the Siusala River bar in that thing and troll for salmon in the open ocean. Every other trip the plugs would foul, but my father carried a spare set, and we never got stranded.

Of course back then it wouldn't really have mattered, because back in those innocent days the Coast Guard was out there every day with all the pleasure, charter, and small commercial boats, usually trolling for salmon too. But should a boat break down or the weather take a turn or the bar suddenly get dangerous, there was the Coast Guard. Sometimes they might have to land a salmon on the line first, but there they were! Dad and I never needed to be rescued, but I still remember how good it felt, knowing the Coasties were around in case we got into trouble.



A mural on the side of a building in Newport, Oregon, honoring the old motor lifeboats and their crews.

Once, one of our regulars, a charter boat operator driving a 30-foot cruiser, went out when he shouldn't have and his boat got smashed into kindling by a breaker on the bar. The Coast Guard guys took their boat right into the surf to save those people. They got to our friend first, but he waved them on to get his passengers. Unfortunately, they never

found him again, but they kept on looking, driving their lifeboats through the breaking surf.

Those old Coast Guard double-ended motor lifeboats were incredible sea boats, able to take pretty much anything. A few bought at surplus were turned into pleasure cruisers and commercial salmon trollers, and I still occasionally see one for sale.



A life boat converted to a cruiser-troller. You can still find one around!

Sometime in the late 1960s the old motor lifeboats were retired in favor of 44-foot steel boats. When the coast rescue service was founded the boats were launched from the surf and rowed out. When motors were developed the rowed boats evolved into the motor life boats, and many of them were launched from tracks that went out into a bay. They were essentially just a heavy duty version of the old surf dory. Although the Coast Guard retired them years ago, several west coast guard bases still have one sitting on land, as a monument, and there are still a few around, converted to pleasure or commercial fishing use.

By the early 1900s jetties were being built on river mouths, and new coastal communities sprang up, many building usable harbors near the ocean. Small commercial boats now had places to dock and hide from weather, and whole small boat industries such as fishing, building, repair, towing, and supplying, evolved.

In those innocent days the mission of the Coast Guard was to rescue working watermen and the odd pleasure boater if they needed it, and with the new harbors and the greatly increased number of small boats out on the ocean, a new Coast Guard boat evolved. Longer and narrower in proportion to the length than the motor life boats, built of steel so they could come down on a rock or sand without damage, much faster with bigger horsepower engines, these new boats were designed to be able to get up and plane: to slide across the surface of the water instead of push through it. They could get to the scene in a hurry and had the power to tow medium sized fishing boats if they had to. And now in the 21st century these fine boats are being surplused off, replaced with aluminum ones that are faster yet. Like all the rescue boats, these newest ones are self righting too, and can be completely rolled over and still keep going. I don't know if they'd survive hitting a rock though.

So while the last generations of Coast Guard boats are tremendous and the newest are interesting but not as dedicated a rescue boat, the low-speed efficiency of the original motor life boats is what's worthy of our study today. The new boats may also be tremendously seaworthy, but they could never carry enough fuel to power those big engines for long-range voyaging and don't have a hull form that is meant to go displacement speeds. It will of course, but that isn't the design criteria.

For small powerboats like the Coast Guard lifeboats including the newest ones, unbelievable feats of seaworthiness were almost routine, and for the most part they went unpublicized. We've all read books and magazine articles detailing the grand cruises of sailboat cruisers like Eric and Susan Hiscock, Lin and Larry Pardey, and Tim and Pauline Carr. But while the Hiscocks, Pardeys, Carrs, and all the others were out there sailing and writing, countless small powerboats were out there, too, their owners for the most part also earning a living, but not by writing for yachting magazines.

The Troller Yacht Book, 2nd edition



The new Coast Guard boats have little in common with the old timers...

Western America and Canada have some of the most and treacherous coastline in the world, with few protected anchorages--a trip to be attempted only by seaworthy boats and mariners who are prepared. Sailing yachtsmen who negotiate this coast make a big deal of it, and rightly so. But God only knows how many 30- to -50-foot fishboats, sometimes piloted by one guy, sometimes by two, sometimes by a husband and wife, sometimes by a woman alone, have gone up and down that coast routinely. Back in the 1960s, before government regulators killed off small family fishboats in favor of factory-owned ships, serious

fishermen would start the salmon season in Monterey or maybe San Louis Obispo, and follow the fish clear up the coast into Oregon or even

Washington. The wonderful old engine-powered halibut schooners ranged the entire coast. I watched one, the *Ancient Mariner*, unload a catch of squid in San Diego; three years later I saw it at the fisherman's terminal in Seattle.



A well kept schooner at Seattle's Fisherman' Terminal

At the end of one season my friends Fred and Mary cruised down into Mexico aboard their troller *Geo. Shima*. My friends Smitty and Lorraine built a 50 footer with two masts for sailing, but it also carried a 3-71 "Jimmie" diesel and 1,500 gallons of fuel. They cruised from

Washington to the South Pacific and back under power, only goofing around with sails if all the stars were in alignment.

Back in the early 1970s, my friend Jack Conway owned *Adios*, one of the most beautiful salmon trollers on the coast. The Pacific salmon trollers were some of the most beautiful small seagoing boats ever designed. Early one spring before the season opened, Jack installed

a new engine and decided to try it out, running up the coast clear to Alaska and back home to California. Now this coast is no place for small boats at that time of year. Jack said that he got into a storm, and once little *Adios* surfed a quarter mile on her side, but she got back on her feet and kept going.

The Troller Yacht Book, 2nd edition



I tried to buy this troller but the owner's wife had just read the first edition of this book. She told her husband: "you ain't selling my boat."



The ANN lives in Brookings, Oregon, and is maintained in yacht fashion.

I'll always admire those West Coast trollers, but it was an experience I had in Iceland a while back that really opened my eyes to the possibilities of the long-range cruising powerboat.

In 1980 I lived for three months on an island off Iceland called Vestmaneyer. It was late spring and the sun had suddenly stopped going down, which made it really hard for me to sleep. I spent a lot of time out walking and looking around. About two or three o'clock one morning, I was down at the docks when I saw something that stopped me cold: fish being loaded from a fish plant into a little fishboat.

I have been in and around small fishboats and fishing docks a good part of my life, and I can tell you that fish are supposed to go from boats into the plant, not the other way around. So I went up to the boat—a typical Icelandic trawler of the time: wood-built, beamy, around 40 feet, double ended and sexy as hell—and introduced myself to the captain. Everybody there speaks English you see.

"Sir, you seem to be loading fish. Shouldn't you be unloading fish?"

He explained that they were loading the fish to smuggle into England and trade for booze and electronics, both terribly expensive in Iceland. Keep in mind that this was spring in the North Atlantic, and this guy was nonchalantly going to drive his little powerboat on what the yachting magazines would call a major crossing. I later learned that little fishboats regularly chug back and forth across the North Atlantic from Iceland to England.

A few years later I made several crossings on a 45-foot Turkish motorsailor (without sails) that ferried people from Bodrum, Turkey, to the Greek island of Kos. The captain could have been Barbarossa himself. On the last trip I was the only passenger, and the Aegean was stirred up. Looking at the weather, I said what the hell; it's nice here in Turkey and we can go tomorrow. I'll never forget this man pounding his chest and saying, "I go every day!" The Turks are strong people, and this guy was indeed a manly man! Well, I figured I had the honor of America to uphold, so I went, and Barbarossa got us across just fine.

These are just a few examples of my experiences with small powerboats. And while *Cruising World* magazine only discusses sailboats, and today most people who think about "goin' cruisin" only

consider sailboats, the record is clear: Day in and day out, quietly and without attention, small seagoing powerboats prove time and again that they are proper vessels for venturing out to sea, keeping their crews safe and considerably more comfortable than they would be in a sailboat, with the crew sitting outside in the weather, trying to harness a wind that often either isn't there, or is too strong, or is blowing from the direction they want to go.

Modern advertising has taken the qualities that made the small ocean-going fishboats into good seaboats and played them up as selling points for yachts. The term "Trawler Yacht" describes a pleasure boat, theoretically based on a fishing boat, with a deep, non-planing hull that carries lots of fuel and has comfortable accommodations. "Trawler Yacht," in modern advertising lingo, implies strength, range, comfort, and quality. Well, the virtues of displacement and solid construction, of design based on long-proven ideas of what works and is safe on open water, *are* worth bragging about. But not very many new boats touted as Trawler Yachts actually meet the definition, often being too high and having too much glass to be safe in open water. At least one is advertised as "The trawler that planes" something total foreign to what a trawler is supposed to be. If you want a planning powerboat fine, but let's not pretend it's some sort of deep sea trawler even if topsides do look like a tug boat!

At the same time, advertising for contemporary production sailboats has gone mostly in the opposite direction. The very features that make a small boat, sail *or* power, safe in open water—displacement and heavy scantlings, reliable systems, and a seakindly hull—are today considered *undesirable* in sailboats by many contemporary designers and manufacturers. Today's maritime press considers traditional safe and rugged cruising sailboat designs "second rate," yet the same concept in powerboats is written up glowingly. I've given up trying to figure it all out.

But I can answer the question posed at the beginning of this chapter: The long-range ocean-cruising powerboat can definitely be a sensible and cost-efficient way to cross oceans, especially when compared to the typical modern production sailboat. And this isn't a new concept, but one that has stood the test of time and is very

appealing today. It just takes the "right" sort of boat, the Troller Yacht, which is what this book will tell you about.



A salmon troller returning home in Newport, Oregon.

2. Aren't sailboats more practical and less expensive for long range cruising?

It's common knowledge that the most suitable boat for ocean cruising is a sailboat, right? Yes, that's a valid statement, but only in very specific cases. There's no question that from a strictly survivalist's viewpoint, a simple low tech sailboat is cheaper, easier to maintain, and more reliable than a powerboat for long-range ocean cruising. But I'm pretty sure few of you would care to go that way because, while it might sound glamorous, it isn't particularly easy or comfortable. At this writing I'm in my 60s, and in my life I've seen ocean cruising change from something rare and bold to become, today, commonplace. Back in the 1970s, when the Hiscock's wonderful Voyaging Under Sail was still the bible for ocean cruising, when the Pardey's were dreaming of cruises to come, when Cruising World magazine was first published, an ocean crossing in a small sailboat was sufficiently remarkable to make the local newspapers. A proper sailboat for ocean cruising in those days was moderate in beam, rig, and displacement. It was solidly built, with no elaborate and unreliable systems; sometimes it didn't even have an engine. It had an underwater shape that could take groundings and a sailplan that could be safely handled by one person. Today this is still the safest type of sailboat and the only type of sailboat many people can afford to own and still be able to take off cruising in for a few years. Oddly, it's totally out of fashion so most people are never exposed to so don't understand the concept of a sturdier and simpler cruising boat and as a result will never be able to go sailing.

It's sad so many people don't understand the above fact but it isn't their fault. The marine press rarely writes about this sort of boat. What was sensible and mainstream just 20 something years ago is rarely even mentioned in today's boating press. When it was first founded, *Cruising World* magazine was so exciting: those of us involved in the cruising life thought we had gotten a *base*, a mantra of sorts. I remember in 1972, anchored in Puerto Vallarta (it was a little different back then!), and being told about this new magazine devoted to ocean cruising! Who would have guessed that only 20 years later it would

become so establishment that it dropped its design column and would only write about new production boats, few of which its early subscribers, many who were actually experienced cruisers, could afford and even fewer would look twice at. I don't really mean to single out *Cruising World* here. The same can be said about most mainstream marine magazines.

When I was in my 20s, I went cruising in what today would be considered a "bottom-line" sailboat: simple and solid and absolutely reliable. There was no engine; if the wind didn't blow I had a long lifeboat oar that could move it into a harbor at a half knot, Failing that, I could tow it with the 7 foot skiff I carried on deck. Oh, the skiff used oars, not an outboard. At 26 feet it was a bit small, but that wasn't uncommon for a cruising boat in the 50s, 60s and 70s. It had no systems that couldn't be repaired on board, in the unlikely event they failed. It was simply and heavily built, and it was affordable. I built and paid for it while working a menial job over a two-year period, and I had the time of my life sailing it down to Mexico and across to Hawaii. It would work just as well today and I still sell the occasional plan to some dreamer who I always hope fulfills his dream, even though today you never see boats like it discussed in the mainstream press. Of course back then I cheerfully put up with all sorts of inconveniences and discomforts that I simply don't care to mess with these days. For instance, it only had about 5 ft. 6 in. headroom, and it used an alcohol two burner stove, one of the most useless pieces of gear ever sold for boats. But I wouldn't trade those years for anything. When I'm 108 and drooling, it'll be to those memories that I retreat.

While there's no question that the cheapest practical approach to ocean cruising is a sailboat, it isn't the kind of sailboat you see in today's magazines, with their elaborate equipment and labor-saving devices--and price tags amounting to more than many folks will ever earn in their lives. But a simple say 28 to perhaps 35 footer can be inexpensively and solidly built of plywood or steel, and it will take you wherever you want to go in safety. And because of its simplicity it will be more or less immune to the breakdowns and maintenance hassles that big-money production boats so often suffer through. Things are so basic you can fix anything that breaks yourself.



Home made wood 28 foot *EMILY* in Sweden. This design is a safe offshore cruising boat, within the ability of most amateurs to both afford, AND nail up.

As a means of propulsion, sail is inefficient and unpredictable; you can't always depend on getting where you want to go when you want to get there. But if a sailboat's engine throws a rod, eats a valve, clogs its injectors, bends a shaft, stoves up a prop, or any of the other things that are part of the powerboat owner's vocabulary, it won't stop you cold. In a straight powerboat, if you don't have the parts and skill to fix the problem, you are in trouble.

And powerboats will never replace the romance of ocean cruising under sail, of being completely dependent on the wind. For more than you care to learn about this, read *Voyaging Under Sail*, by Eric & Susan Hiscock. For more than you care to learn about building one, read *Buehler's Backyard Boatbuilding*, by me. I'll never knock this basic approach, because it works and it's the only way most young folks of modest means could ever go cruising. And those that do will either have the times of their lives, or be more miserable than they ever dreamed they could be.

Us old folks won't find this approach quite as much fun. I've done it and believe me, I know what I'm talking about. The discomforts of

sitting out in a cockpit and drifting at a half knot all night in the rain doesn't bother you when you're 22. But today, well, I don't want to repeat the experience. In fact, I no longer want to sit out in a cockpit at night and drive a boat at all, rain or not, even with an engine running. Today I want a cruising powerboat with a snug pilot house and a diesel chugging along at no more than a fast idle burning a gallon or so an hour as it pushes me along at 6 knots or better. By the way, averaging just 4 knots an hour for 24 hours used to be a sailor's dream and I bet it still is, to those who don't turn on their engines when the wind dies. Believe me, to a traditional sailor, averaging 6 knots is a fantasy.

Cruising under power also can be pretty basic, straightforward, and trouble-free, as I hope this book will show. And luckily, just as with sailboats, the most trouble-free and reliable power cruisers are also the least expensive, which of course is why you don't see much about them in the magazines. Advertisements for inexpensive boats--power or sail-don't generate profits. You'll see articles about fiberglass powerboats in the 35- to 40-foot range with base prices (meaning unequipped) running past three quarters of a million bucks, and you'll see articles and ads for water makers and weather faxes and inverters and generators and bow thrusters and all the other modern "conveniences" that these boats are loaded down with, but you won't see much if any design section, where new ideas are explored and the search is for a better boat, not increased profits.

But to leave off raving—and remember I'm a designer, so I take this personally—I'll finish answering the question posed at the beginning of this chapter with an unequivocal yes and no. The cheapest way to go long-range cruising is in a bottom-line, survivalist-type sailboat. But if comfort, safety, reliability, predictability, and affordability for what you get back, assuming the just mentioned criteria matter to you in a long-range cruiser, you can be better off in a powerboat than in a typical modern sailboat. *If* it's the right kind of powerboat.

4. What Happens If the Engine Quits? The Case for Auxiliary Sail

The biggest fear folks, including I, have about powerboat cruising is depending completely on an engine. That's perfectly understandable. Over the years, practically everyone has had an outboard that wouldn't start and seen the occasional powerboat being towed home. As a matter of fact I just got an email from a friend off the Oregon coast in a 300 foot fishboat. They snagged the trawl net cables in the prop. There was 500 feet of cable and chain, weighing several tons, hanging from it, and they are dead in the water, anchored to the bottom of the Pacific which a week ago was NOT "pacific." He said they're praying the decent weather holds! A tugboat is on its way with divers to cut the steel cables wrapped around the shaft. Then they'll be towed all the way back to Bellingham, Washington, to the shipyard. It happens....

Many new boats, particularly sailboats, have engines crammed into a tiny space too cramped for easy maintenance, and their small, unprotected propellers are easily damaged by floating debris. If you've lived with that sort of nonsense, you'll be understandably cautious about putting yourself in a situation where you have to depend solely on your engine.

Back in the early 1970s, I met a guy who trolled commercially in a boat named *Raccoon*, a converted cabin cruiser completely unsuitable for open ocean work. The owner wasn't afraid of anything, though, and he took it far offshore searching for albacore and salmon. He told me a story I'll never forget.

He said he was several hundred miles off Los Angeles when his engine died. Ships and even other fishing boats were in the vicinity, so he wasn't worried. He got out his flare gun (back then many small boats didn't carry radios), and whenever he saw a boat he shot off a flare. Either nobody saw him, or nobody was willing to help him.

Several days went by, and he finally realized he was on his own. From the low mast that supported the trolling poles, he hung a makeshift sail made from bed sheets, towels, and whatever else he could find, but because his boat had absolutely nothing in common

with a sailing hull and had just a typical planning powerboat's little spade rudder, which only works when the prop is pushing water past it, he had absolutely no control and ended up going backwards at about one knot, toward the middle of Baja California. After several days of this a friend of his came over the horizon, saw this sight, and stopped to offer a tow. The guy said he was so pissed off about his situation and the previous lack of assistance that when he saw his friend's boat coming he went into the cabin and didn't want to come out. He had resolved to crash onto a beach in Baja then *walk* back to California. In the end, of course, he accepted the tow back to San Pedro.

Stories like these remind us that big problems can happen, but they can happen whether your boat is sail-dependent or power-dependent. Sailboats, *including* the one time popular unstayed sailing rigs, can be dismasted, despite the hype you read in the ads. A powerboat completely dependent on its engine can be stopped cold. A backup engine can be put out of commission by a tank of bad fuel—which is easy to encounter in far-distant ports. Sure there are chemicals that keep fuel from going bad, but they don't convert bad fuel into good fuel. Sure you'll be carrying extra filters and will have a fuel system designed so that you can clean it, but what do you do when the problem rears its head far from port and a source of new, clean fuel, and you're drifting helpless?

Given clean fuel, a modern marine diesel is almost completely dependable. If you pay attention to maintenance and religiously monitor the gauges (belts can break or cooling clog), these engines will run forever, with no problems you can't easily fix shipboard. 10,000 hours is considered a good time to do a preventative maintenance overhaul of a diesel but this doesn't mean you have to. I saw an ad for a salmon troller with 16,500 hours on its engine, and many are said to be reliable to at least 25,000 hours. A friend drives a 100 foot crab boat and says the GMC 16-V-71 in it is started and not stopped for two years which translates to 17,000 hours, then taken down and overhauled even though it's still running fine. After the overhaul they run it for another two years before repeating the process. Last but not least, the Cummins in my Dodge pickup has 320,000 miles and 18 years on it so far and at this writing, uses no oil, starts instantly, and has

never failed me. I know of another one with 900,000 miles on it! But if you stop and think about all the things that must happen to make your engine run—all the parts in there going up and down and round and round, squirting fuel and lube oil and circulating water and releasing gas and turning a shaft and prop that might at any second hit a log or wrap around some loose driftnet and bring everything to a stop—you'll just shake your head and wonder why in the world you ever thought of going to sea.

To my mind it just makes no sense to rely completely on engine power, which is why this book won't go into any detail about chain drives off the gen-set and so on; if you want to read about that stuff, NONE of which is fail safe, there's plenty of other sources, most who are trying to sell them to you. For instance, one you'll hear a lot of is "pony engine," which is a small diesel with a small prop, usually feathering, stuck off to the side of the main. The little prop will barely move a heavy boat in calm conditions so is essentially useless in any sea, and is stuck out in the open just waiting to be damaged by driftwood. It adds an easy \$25 to \$30K to the price of the boat though!

I want a top-quality marine diesel engine, easily accessible, with a religiously observed maintenance schedule, the best filters, a complete set of spares for the impellers, fuel lines, filters, belts, hoses, and whatever else I can fix without a machine shop, and a maybe even a set of spares for the spares. But I've still got to have one last backup that will never fail: *Sails*.

You can hang a sail on anything, but as my Baja-bound friend found out, that doesn't mean it will sail. Many modern cruising powerboats, especially "trawler" yachts, are so high, wide, and burdensome that their superstructure alone has more square footage than any auxiliary sail rig you could carry; sailing in any direction other than directly downwind would be almost impossible. And another common problem is that many have rudders too small to control them without a prop pushing water by them.

Our troller yacht is different: Even though it isn't specifically designed to be a sailing boat, its hull form isn't that far away from heavy-duty working sailboat design from the pre-engine days.

With a small auxiliary sail rig, a troller yacht could sail as high as 90 degrees into the wind, maybe more. So what if you can't short-tack up a channel; that is not what this rig is for. It's designed so you'll never be reduced to drifting backwards toward a beach 300 miles away. You'll have enough control, thanks to the big rudder and sailplan designed with off-wind propulsion in mind, to set a course and actually get where you want to go. And in port, you can use the boom to hoist aboard your skiff or motorcycle.

You may be thinking that the spar and boom and rigging for even a low sailplan creates an awful lot of windage. It does create some, but its benefits more than compensate. The mast and rigging's windage and weight aloft actually slows the boat's roll. At anchor, the spar itself will dampen the motion. At sea, a boat with a steadying sail set will roll far less than the same boat without one.

The original **DIESEL DUCK** had a mast and steadying sail smaller than I suggest, yet even that was enough to make the boat "comfortable" on a trip down the California coast with 11-foot seas. It was also enough to serve as a riding sail and would hold the boat's nose toward the wind when anchored or if the owners wanted to heave-to and fish. A lot of the lobstermen in Maine do this, setting riding sails off the stern of their 30- to 40-foot boats so the bow stays into the wind while they haul back lobster traps. You'd think the small West Coast crabber or shrimp-pot fishermen would rig this way, but they don't have the comparatively recent tradition of working sail that the Maine guys do. Although you'd think they'd have thought of it by now.

Some of the West Coast old timers do rig steadying sails on their deep-water fishboats. Once in a while you'll see one on a troller, and the big halibut schooners that every spring leave Seattle for the Bering Sea still carry two masts, both able to hoist a low sail.

The old-time rigs stand out against the big modern boats rigged with "flopper stoppers," called "paravanes." Paravanes are triangular shaped plates that dangle from port and starboard booms when the boat is at rest or underway; they do reduce rolling, but at the cost of windage (and expense) from the rigging and "according to Robert Beebe, legendary author of *Voyaging Under Power*," (International Marine Press) about a 10 percent reduction in range, from the drag of the vanes being towed through the water.

Flopper stoppers do dampen roll better than a sail if you're in a heavy swell with no wind. There's a partial solution if you're anchored: Tie a big weighted canvas bag, with a spacer to hold it open, to a 15-foot rope; attach that to the end of the boom, then swing the boom 90 degrees off the side of the boat. A 5 gallon bucket will work too! If you're underway, however, there isn't much you can do other than live with it. Or buy a motorhome. This is a boat after all!

A flopper-stopper won't get you home if your engine conks out, and in most cases steadying sails not only dampen roll but also help propel the boat, saving fuel and greatly increasing range.

You can of course have both. The "flopper stopper" system requires a mast to support the outrigger poles and the sail's mast will be just right for that. But I don't think you'd use the Paravanes much and suggest you try the sail alone first. You can always ad the flopper stuff if you think you need it.

Some boats, especially those with deep, round, roly-poly hulls, try to reduce rolling with permanent fins, similar to sailboat bilge keels. I've talked with people who've added bilge keels to their hulls and the consensus is they don't really do much. I wouldn't spend the money for them. Here's photos of systems people who never tried sails have used.

Some trawler yachts even have hydraulic stabilizers, similar to those seen on cruise ships. A hired captain I know told me he won't take the 72-foot yacht he runs offshore without the stabilizers, because the boat is so top heavy he's afraid of it. "Active" (as moving fin stabilizers are called) stabilizers are being installed on many new boats. These are just one more complicated and expensive system to buy and maintain and break down at the wrong time. For instance, I know one boat that had one of its hydraulic fins jam. Luckily he was in the harbor. All he could do was motor in a circle; the fin overpowered the rudder. The things can even sink you if they hit something and get torn out of the hull, which has happened.

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\$60,000 hydraulic stabilizer on a 44 ft. boat.

They aren't cheap either. In 2010, a guy told me putting them in his 44 foot hull cost \$60,000. And like flopper stoppers—and unlike a simple steadying sail—they're no help at all if you want to heave to and ride out a storm, or simply drift and fish, or, of course, get back to shore if the engine dies.

I've been promoting sail assist for cruising powerboats since the first **DIESEL DUCK** was launched back in 1989. The first edition of this book came out some years after that and to my surprise, since then the **DIESEL DUCK** designs, all with sail rigs, have become almost cult items. So at the risk of sounding quite pompous I think there is a connection between the popularity of the **DUCKS** and the fact that we're seeing sail rigs offered on a number of new trawler yachts these days. Don't get me wrong. I certainly didn't *invent* sail on a powerboat!

I'm just saying that seeing it offered on a few production powerboats is a recent occurrence.

Unfortunately, most of the production companies blindly follow recreational *sailboat* design ideas with their so called auxiliary sailplans, and they're no good for cruising *powerboats*.



This goofy looking system is bolted into the hull and would do wonders for catching crab pots, kelp, driftwood and whatnot. A sail is more effective!

Most of the sailplans on sail AND powerboats you see these days are designed for efficient pointing. Obviously it's desirable for a sailboat to have pointing ability, which means the ability to sail into the wind. A decent sailboat has to be able to do it to a certain extent, and a racing sailboat has to do it well. But the flip side is that a rig that is designed for pointing is inefficient OFF the wind, and it's off the wind sailing we're doing. To do that efficiently requires a different kind of rig design.

The typical modern sailboat rig is tall and narrow, or "high aspect ratio" as it's called, which means in the most simplistic terms, it is designed to have a long "luff" which is what the front of the sail is called. When heading more into the wind than with the wind, it creates sort of a sucking action that sort of pulls the boat along. Doesn't make sense but that is more or less how a sailboat sails "to weather" and why a tall narrow rig of "X" square feet goes to weather better than the same square footage in a low and broad ("low aspect ratio") shaped rig. On the same token, the low aspect rig works better running with the weather because the sail catches the wind and shoves you rather than sucks you along, which is what happens when you're going "off" the wind. Going more or less into the wind is called "going to weather" and going more or less with the wind is called "off the wind."

In my opinion it doesn't make sense to put a high aspect rig on a sailboat designed for ocean cruising and it makes even less sense to put it on a powerboat. Why, and you won't read this in the marine press, but here's what happens. You try to sail to weather into any kind of moderate trade wind or especially a blow in the open ocean and you'll get beat to death by the motion, the boat will be heeling over on a sharp angle, and you'll be stopped cold by the waves. One or probably all three of them. In other words, you'll get nowhere fast and be very uncomfortable getting there, and that's why people don't cruise to weather if there's much weather to beat into.

Production companies are putting this same high aspect rig on a number of the new trawler yachts on the market which makes little sense because their boats for the most part are so high and fat they'll have even a harder time going to weather in a blow, even under full power, because of all the extra windage from the rig! They have a sail rig and they will "sail", so they look fine in the ads. But their large rigs are not easy to handle, aren't efficient off the wind, and aren't a practical sail assist solution. They ARE expensive to install though! The elaborate ketch rig the owner designed for his new 50 foot **DIESEL DUCK** cost him \$70,000 in 2008 dollars.

Our troller yacht is a powerboat first, not a sailboat, and not a motorsailor, a term that is hard to define. It used to mean a sailboat that had a larger than normal auxiliary engine, a bit smaller than normal sailplan, and often but not always a somewhat more "burdensome" hull (beamy and higher freeboard) than typical sailboats of the day. They still looked a lot like sailboats though. Just with a bit of a pilothouse.

With the above in mind, here is the thought process I use when designing a troller yacht's sailplan.

1) Simplicity. We want a very simple sailplan that is easy to handle, with reliable systems. The mast and boom will be stout enough where the boom can be used for hoisting a skiff on deck if you want. There won't be spreaders because the mast isn't so high it needs them. The only winches at all necessary are halyard winches, and you can get by without them.

2) Efficiency OFF the wind. We're in a cruising powerboat, not a sailboat. We use an engine to go to weather. We also mostly use an engine to go *with* the weather; we're a powerboat! We carry the sail to dampen the roll, get us to land if the engine quits, and in the right conditions to "motor sail" or even just sail, to extend our range. We do NOT short tack up narrow channels nor do we want a rig that is good for that.

So, with those points in mind, I use two basic sail designs, the one used depending on the size of the boat. 46 to 48 feet is a cutoff where both can be used, but I'd probably prefer the two masted rig once I got to 48.

The Single Mast Rig:

There is almost always a breeze from the shore out to sea early in the morning and working sailing craft and yachtsmen without engines would use that breeze to get off shore. Almost every afternoon the breeze shifts back toward shore and the inshore sailing craft would use it to come back in. As recently as the mid 1970s I've seen square sails on hollowed log sailing fishing canoes in Mexico that used this fact of nature to sail at the crack of dawn way out in the ocean after fish, knowing they could rely on the afternoon shift to get home in the evening. So in the simplest form, a square sail does work. The problem

is in larger size craft in particular, it is awkward, and it isn't very versatile. While some sort of square sail was likely used everywhere since the first caveman rigged the first log that crossed a bog, it's interesting that the dhow type, or "lateen sail" as it is "properly" called, is seen in almost all cultures. The Europeans almost gave it up in favor of schooners and sloops but right up to the introduction of engines there was still the odd Lateen sail seen on harbor and coastwise craft.

The Arabs and the South Pacific Islanders used it exclusively because it is ideal for their unique conditions. Monsoons blow one predictable direction in a specific season. The ocean traders would load their boats and go more or less with the winds outward, then turn around and sail home when the season changed. The lateen sail will "point" somewhat but that isn't what it is ideal for. It's a good compromise between efficient off wind ability, simplicity, with some ability to go to weather.



While you won't often see a dhow under sail in the Arab countries any longer, sailing ships like this are still almost common in Malaysia and parts of Africa.

We don't want a real lateen rig. We don't need the power of a large sail. We don't want a sailboat! What we want is a sail assisted POWER boat!

I place the mast behind the pilothouse and rig it with a big headsail and a small main. I call it a "Modified Dhow" rig, and people coming from a sailing background think it looks goofy. They say the mast is to far back and the main is to small. But there's a reason why this is what I want.

As I keep repeating, we are not short tacking up channels. While, yes, this rig will sail somewhat into the wind, it's purpose is to conserve fuel on passages, reduce roll, and in a worst case, get us to land if the engine kicks the bucket.

The mast is aft of the house because if it is forward of the house the boom will be to high for you to reach the sail easily, and the boom will strafe the roof of the house and take out antennas, lights, exhaust, and the radar when you change tack or need to swing it over. As designed, the boom can double as a cargo hoist and with the mast aft the boom can easily be used for hoisting a skiff, motorcycle, or what-have-you to the back deck which is where you'll likely carry things. The boom is short and heavy. A friend used his as hoist to lift a small diesel out of a sailboat in the marina.



This Seahorse built 44 *DUCK* cruised from Hong Kong and through the Red Sea. This jib would be a better off wind sail if it was cut lower and broader.

Is the mast to far aft to support "flopper stoppers" if you want to use them? I don't think so. I also think there's no need for floppers when you have the small main up except maybe in the case of big swells and no wind, a not unusual but still not common situation. But even here the sail reduces rolling except it flaps loudly which can be annoying.

This aft position of the mast allows a big and very low aspect headsail to be used. Again, people coming from sailboats don't like it, saying it isn't "self tending" which means it won't easily flop to the other side of the boat when you tack. They also don't like the shape, saying the "angle of the dangle" (the front) is to shallow and the base is too broad.



Some folks rig their boats more conventionally like this Seahorse built 382 **DUCK** shows. All sails are roller furling, and you can't have a boom because you couldn't reach it from the deck, and, it would sweep clean the pilothouse roof. I think the "modified dhow" is more efficient off the wind.

Not to be too repetitious, but people worrying about short tacking don't seem to get that we DON'T short tack. While the main can be left

up full or with a reef in it, sheeted in hard almost all the time, you normally won't bother with the headsail unless you're headed on one course for a while. Unless you're playing of course, or really stingy about burning fuel. When it comes to changing course, dealing with it is simple. Swing the boat to the other course, release the "sheet" (sail control rope) and walk it around the pilot house. "Sheet" (tie it) off on the other side of the hull. Much simpler than what the poor lateen guys had to do to swing that big boom over. They couldn't. If they wanted to tack they had to turn in a complete circle to keep the boom on the same side of the boat in the new direction., which is why they tried to tack, other than some harbor maneuvers, just every 6 months. In fact, most harbor maneuvers, unless they had plenty of sea room, were handled by towing the big boat with row boats.

Does this Modified Dhow rig work? You betcha! Here's a letter I got from Benno & Marlane Klopher, out cruising in a 41 **DIESEL DUCK.** They built her in Canada and circumnavigated South America (emailing me from Cape Horn) and at this writing are hanging around the Caribbean.

Marlene and I are very happy with the DD 41 and her performance, even under sail alone: Between Martinique and St. Lucia a nice 15 knot breeze over the port quarter invited us to cut the engine and let the sails take over. The duck moved along with 4 knots having George's original design of 400 sq.ft. jib and main up. Not bad, isn't it? A nice get me home rig, not designed for winning a regatta, but a good stabilizer and extra speed to save fuel. Whenever we have the chance, the sails are up to smooth the roll.

To those who have never cruised a sailboat, let me tell you that actually traveling at 4 knots in the direction you want to go is not only NOT common, but to do it for 24 hours (the legendary 100 mile day) is a rarely fulfilled dream. REGARDLESS of what the marine press may say!



Here's what a "proper" modified dhow sailplan looks like. Low and broad, boomed main, multiple reef points. This is what Benno & Marlane's boat uses.



The Two Masted Rig

I spec two masts on the larger boats; how large is the point where you want two masts? I dunno. I have some designs in the mid 40s that show both. It all depends on where and how you're going to be using her. If you frequent high latitudes or expect to be short handed cruising there, or just like the look of it (a perfectly valid argument), the two masts offer a more broken up sailplan that would be easier than a one mast rig to handle.

I pattern my two masted sailplans after the old pilot schooner type, which is two masts the same height, a boomed sail off the aft mast (the "main" in schooner talk), a loose footed sail (no boom) called the "foresail" off the front ("foremast") mast, and one big sail in front ("headsail") which might or might not have a boom. The main is handled just like the single mast rig. It's left up most of the time, sheeted in tight. It does a lot to reduce roll and is your riding sail at anchor or reefed down when hove-to.

The fore is loose-footed so it can be big enough to overlap the pilot house and be low enough to handle. If it had a boom it would have to be high enough off the deck to clear the pilot house, and then you couldn't deal with it. It is a big loose footed sail and is handled just like the headsail on the single masted rig; walked around the pilothouse and re-sheeted when you change direction.

A headsail with a boom is easier to handle than one without but the boom can get in the way so it's all a tradeoff. I suspect I'd want the boom because in light winds or when the ship is rolling, you can "guy" it out with a line which keeps it filling efficiently rather than spilling the wind. It also makes it easier to reef (reduce) the size of the sail if the wind comes up.

Once again, these boats are NOT sailboats. Yes, the hull type isn't much different from many old time working sailboats; if we lost the pilot house and lowered the freeboard some, we could make a sailboat because our underwater shape is pure sailing boat; long deep keel and big rudder.

The Troller Yacht Book, 2nd edition



The 71 foot *ALCA* is more sailboat than motorsailor. She has to much sail to be a "sail assisted power yacht.

You could possibly call these "Troller Yachts" motorsailors, but that implies more emphasis on sail than they have. The larger ones with two masts probably could be called an under canvassed motorsailor. But not quite! The sail area isn't much because I didn't want the expense or windage of having a serious sailing rig. So, as they are now, they still ain't sailboats, which is why I call this rig idea "Sail Assist" rather than "Motor Sailor." It's not just semantics; it's a different intended use than what is behind a boat that is actually a "motorsailor." A partial exception is the "Bubak Versions," which Paul Bubak dreamed up. It features a junk rig forward and a marconi aft, and is more "motorsailor" than the single mast versions.



Here's the 46 **DUCK** with both sailplan versions. By the way, it works. A guy in San Francisco tried it on a 38 **DUCK** and said it did OK.

None of the sail rig ideas I've discussed are anything at all like what we're seeing stuck on many new Trawler Yachts. But if you think of it as what it was designed to be, a "Sail Assist and Emergency Propulsion Rig," then you'll see how much sense what I'm describing makes. The boat WILL sail at least 90 degrees to the wind, will roll much less than without the rig, and will have an extended range. And of course, should your engine blow, you won't be left stranded bobbing about like a dead whale. You'll be able to set a course for land somewhere off or down wind, and you will get there.

The Troller Yacht Book, 2nd edition



A junk rig on the original 38. The owner said it works fine! Looks a bit small to me but it would be very easy to handle.



This is the 21st century update of yacht designer George Buehler's popular The Troller Yacht Book, the guide to fuel efficient and safe offshore cruising powerboats. Loaded with detailed information about cruising design theory, building, and outfitting, it is even more essential reading than the original edition for anyone thinking about ocean cruising in a powerboat. Buehler's attractive, affordable, rugged, and ultra-economical powerboat designs are popular, and are cruising all the world's oceans.

The Troller Yacht Book How to Cross Oceans Without Getting Wet or Going Broke

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