MONOHULL VS CATAMARAN

Who do you trust? The boating press? They have obligations to their advertisers. Did you ever see a bad boat review? Your friendly Boat Broker/Dealer? Why do their positions seem so aligned with their products? They sell Catamarans only? They're the best. They sell monohulls only? They're the best. How about your friend whose HEARD THINGS. But who has sailed monohulls for the last 20 years. He can certainly tell you about those Catamarans!

We sell and sail both Catamarans and Monohulls. We run charter companies featuring both. We hire captains who deliver both. Visit factories for both. Talk to designers for both.
This presentation will be based on our experiences with both types of boats.

We sell both about equally and have little to gain promoting one over the other. In addition to our personal experiences, I will relate what we're told by transatlantic delivery captains. By owners and charterers. By designers. I firmly believe that when something is right, it makes perfect sense. I hope that you will find that this discussion makes sense. In the end, you have to decide WHAT MAKES SENSE.
In this presentation, I'm talking strictly about boats that make sense for living aboard and offshore sailing. Not daysailors. Not racers. Serious cruisers… As I advocate or negate each category I switch hats. Talking from that camps point of view, but modifying my remarks with our personal experience. In all cases we assume a well designed state of the art boat oriented towards our purposes mentioned above.

JUST A NOTE ABOUT A COMMON MIS-CONCEPTION ABOUT CATAMARAN PERFORMANCE

Some less experienced sailors who have sailed catamarans report poor performance. When we look at sailing logs for deliveries for monohulls and catamarans from the Chesapeake to the Virgin Islands (about a 1,500 mile trip with varying conditions) we find that the catamarans of the same size average about 20% better passage speeds. Why does this performance discussion persist?

Presented by Eric Smith. Contact Atlantic-Cruising Yachts 410-263-2311

1. Catamarans are more sensitive to weight management, and those boats designed specifically for the Island charter trade are notoriously heavy, and end up sailing in an overloaded condition
2. Catamarans, size for size have more whetted surface and are very affected by how clean the bottom is. Even a light coating of slime can reduce speed by 20% or more--this is the state of many catamarans in the charter trade-where so many first experience a catamaran.
3. Cruising catamarans don't point as high as monohulls. True, generally. But what they do is maintain the same VMG when you allow them to sail at slightly wider angles. Look at the polars. Sail with someone who gets it. Many times, I have sailed out of Road Town on a mid sized catamaran along with another catamaran with an inexperienced sailor. He'll be pointed as high as a neighboring monohull (but going sideways. We're pointing lower, but going faster. By the time we're out in the middle of Drakes passage and need to tack to get to the Bight at Norman Island, We and the monohull are about equal, but our friend who was trying to point like a monohull is way behind.
4. If your bottom's clean, you're not overloaded, and you sail by the polars, performance to windward will be similar and overall passage performance will be slightly better and very comfortable. The feel? Because they don't heel, a catamarans helm has no feel. You have to get your sailing kicks by adjusting controls and seeing noticeable improvements in speed. If you love the feel of the wheel, the feeling of shouldering waves aside while sitting on the low side, and your significant other will let you--get a monohull--but do it for the right reasons... Personally I love sailing both. One's not better than the other, just different.

SOME RULES OF THUMB

- In the size range we're talking about, a catamaran has about the volume of a 10' longer monohull i.e. a 44' Catamaran has about the space of a 53' monohull.
- A refinement. Especially if you're considering load-carrying capability, for a monohull: subtract the ballast figure, plus about 15% of the total displacement (to allow for heavier rig and structure to carry the keel loads) and then look at Cats in the same displacement range as the result. Now you're comparing apples to apples!

TRIMARANS.

For now, we're leaving them out of this discussion. Quite simply, there are virtually no production boats that have the volume, except the Neel which is an unusual and interesting alternative. Talk to us if interested.

MONOHULLS

WE'RE NOT TALKING RACING. WE'RE TALKING BOATS THAT A COUPLE CAN HANDLE. PERHAPS WITH POWER ASSISTANCE. POWER WINCHES. FURLING SAILS. THE WORKS. BOATS IN THE 40' TO 55' RANGE, PERHAPS. OUR

BOAT IS IN THE MODERATE TO HEAVY DISPLACEMENT SIDE SO THAT IT CAN CARRY THE TANKAGE, STORES AND EQUIPMENT NEEDED FOR LONGER CRUISES.

ADVANTAGES

- Tacks easily. The combination of weight with a homogeneous, relatively concentrated mass and with a keel to pivot on—this contributes to easy tacking.
- Goes upwind well. Ask to see polars. These revealing charts show the actual VMG of different boats under a variety of conditions with various angles to the wind. A demo sail by itself proves little. Anything compared to nothing is still nothing! You need to sail along side the boat you're comparing. You need two competent skippers and a bench mark boat. If you can't do that, get the polars!
- Large load carrying capacity. Adding a significant amount of weight to an already relatively heavy boat with a sail plan large enough to power this weight is relatively insignificant. (2000# added to a 40,000 # boat is only a 5% increase.) A SIDE BENEFIT? Relatively lower tech construction methods that are less expensive can be used because weight isn't as critical. These are proven methods, which appeal to our conservative nature. Choosing your monohull is like choosing your car. If you 're choosing a vehicle to go cross country, towing a trailer with amenities, you choose a big, rugged, 4 WD, heavy vehicle. For in town, something small and light and easy to handle. No one boat does it all, monohull or multihull. You have to decide on your priorities.
- Traditional good looks. Resale value. Appeals to the traditionalist, though some of the latest crop of monohulls could leave you wondering. There are more people that identify with monohulls and more of a mass market. Multihullers are making progress. This has been the fastest growing segment of the sailboat market for the last couple of years. If you've been to a major boat show lately—you know.
- Motion comfort. The concentration of mass, and relatively smooth hull sections (with a fairly deep, slack bilge section—we're talking about cruising boats here!) promote a comfortable motion at sea. By depending on ballast, not just form stability, you achieve a degree of motion comfort that many people are used to.

DISADVANTAGES

- They heel. It's true. However, modern sail handling options such as in-mast furling allow you to control the amount of heel by easily adjusting and balancing the sail area all from the cockpit. Bigger boats are less affected and the crease now found aft on the most modern designs promote more stability with no loss of performance.
- The rig is larger. In order to maintain performance with this heavier displacement, we need to have a bigger rig to supply power in lighter airs. This makes it more difficult for a couple to handle. Again, with modern equipment, electric winches, in-mast furling, etc. even the frailest of couples can handle a 50+ footer today. Truly, the age of push button sailing has arrived. (At the end of this presentation, take our test to see what kind of power aids you might need.) In the end, it all becomes a trade off of money for ease of handling and convenience—has it ever been otherwise?

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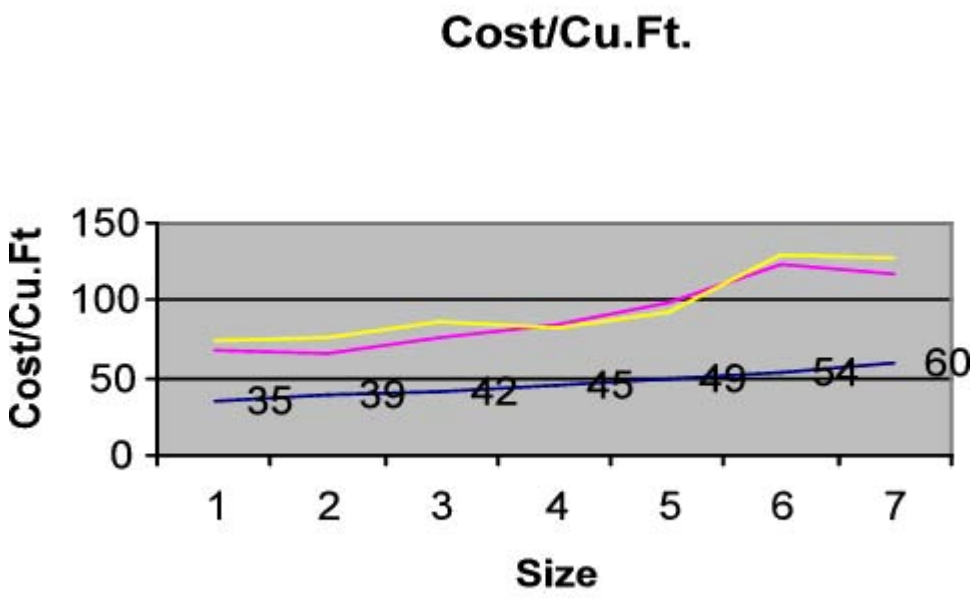
- Volume vs length? Displacement is the measure of volume. Longer length gives you more motion comfort, in general. You can have a short, heavy fat boat with the same volume as a long, narrow lighter boat and both may have similar volume, though the prices may be similar. I can assure you, though, that the longer, lighter boat will sail better and have a more comfortable motion. The days of the old heavy designs built in Taiwan or elsewhere are slowly drawing to a close with lots of kicking and screaming going on. However the obvious superiority of the more moderate displacement boats coupled with lighter weight amenities benefits both monohulls and catamarans! Remember, we're talking about boats designed for motion, sailing and live aboard comfort for a couple—not a cast of thousands.
- Safety. Now we've opened Pandora's box!. If a monohull has its hull seriously compromised, (that's slick talk for …gets a big hole in it) it will sink. While we could write a book on this, we don't need to. Several others already have. People who have spent time in life rafts and people who have limped home with jury-rigged repairs.
- Well designed Catamarans, generally, are unsinkable and, depending on the extent of the damage, can often just keep on sailing to get to port for repairs.
- Let's just say that getting a hole in your boat can definitely ruin your cruise no matter what kind of a boat you're sailing. All any of us can do is be prepared. There's more on this subject at the end of this…



O.K. BEFORE WE LOOK AT MULTIHULLS, LET'S UNDERSTAND RELATIVE COSTS...

Per foot, Catamarans cost considerably more. 1 44' Cat costs much more than a 44' monohull. However, when you figure the relative volume in the respective types, and compare prices per cubic foot--the prices are remarkably aligned. This is even more amazing when you consider that the Cats often have redundant systems. i.e. 2 engines, alternators, etc. Sets of hatches. And so on. So, look at the charts above to see the comparisons. First cost per foot. Then cost per cubic ft.

THE MULTIHULL…

There are two main issues to consider with cats. Form Stability and lightness.

FORM STABILITY:

Monohulls depend on ballast and form stability. Build a monohull with excessive beam and a hard (squareish) bilge section and you have a clumsy boat that has a very uncomfortable motion—but lots of form stability. Ballast provides the ultimate stability and, of course, the ability for a monohull to right itself from a knockdown—or even a summersault! (My son actually experienced this on an S2 36)

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In a multihull, we're totally dependent on form stability. If we go wider (overall), we get better stability up to higher wind ranges but the trade off is that the boat is harder to maneuver and harder to find a dock for. Also, if we go wider in the individual hulls, we get more stability and load carrying ability, but at some sacrifice in performance. If we decrease the overall beam or beam of the individual hulls, we improve the above, but have to start nervously eyeing the sheets at even moderate wind ranges of 15-25 knots. The alternative, for a narrower hull, is to reduce sail area giving up light air performance or keep the area and place higher demands on the competence of the skipper (something manufacturers are less and less willing to do in today's litigious society). It behooves you to find out what your designer had in mind, and what you're up for in terms of keeping vigil!

The mass market builders tend to be somewhat conservative and seem to choose good overall designs with the right compromises.

LIGHTNESS:

Does it matter? Yes, in a cat. We have more surface area, more stability and more motion comfort (when the weight is kept out of the ends). (**See Good Cat, Bad Cat**--) This allows us to average about 20% better passage speeds overall. To be a stable platform and have good motion comfort. However, all advantages are lost if we over indulge in weight. We're looking for comfort and a degree of luxury here. So how do we achieve it?

Fortunately, the aircraft and other industries that have a lot more money to spend have provided some of the new technology at lower cost. You may have heard the terms:

- Scrimp construction
- Injection molding
- Vacuum bagging.
- Cored construction
- High tech resins and clothes

AND MORE…

These technologies are more expensive and require consistent skilled labor. I mention this because small companies who come and go all the time, often tout high tech construction, but don't do enough volume to maintain a consistent high tech labor force. Also, too much emphasis on technology can be a marketing ploy for the HAVE-NOTS. In talking to some of the best designers and manufacturers we have come to realize that moderate, high-tech may be a better answer. We don'' want the same thing racers want. They want an un-yielding hull that translates every force into more speed. We want our boat to flex when it bounces off a

piling! As in all of life, look for a conservative middle ground and longevity in the business!
Other ways we maintain load-carrying capability for people and gear…

- Use a water maker. Smaller, lighter on board tanks and quicker turn over give a healthier water supply.
- Sophisticated refrigeration system instead of lugging ice.
- Lightweight generators, alternators, A/C systems with air-handlers and more.

In the end, in both monohulls and catamarans we want to increase the hull length per person to increase the load carrying capacity. And then be smart about it. Certainly, today, the technology is there. Trade offs. That's the game we always play. Within the limits of what you can handle and how much you can spend or count on power handling equipment, the longer the hulls, the better!

MULTIHULL ADVANTAGES…

- Minimum heeling. This is great. Your wife may actually love you again. Sailing fast and upright. Flying by monohulls on a reach. Set your coffee on the table, put the autopilot on auto tack and tack the boat by yourself. The coffee's still there when you get back to it!
- Speed. Checking our captain's logbooks, we find that on a passage where winds are of mixed directions, catamarans average about 20% greater passage making speeds compared to comparable monohulls.
- Volume On deck. Lots of cockpit and deck space. The right boat for a party. Lay on the nets. Sit on the swim platform. Lounge in the cockpit or inside (not below—everything's at the same level) with wrap around windows. Lots of space and connection with the environment.
- Privacy. In addition to room to spread out on deck, the sleeping accommodations are totally separate. Located in each hull, in opposite corners. True privacy. Separate head access. Lots of storage. Ventilation planned for the tropics. Comfortable.
- Handling. The rig's smaller because of the lower displacement. It's easier to get around. Put the auto-pilot on, tack, and you can casually let off one sheet and take in the other with no help, and the crew/guests continue reading or eating, or whatever without even realizing that you tacked.
- Safety. You're unsinkable. See the discussion.

DISADVANTAGES…

- Tacking. With a cat you're like a light displacement monohull. You don't have displacement to carry you through. You have to carve a turn. Easy, but a different technique.
- Upwind. A cat cannot generally point as high as a monohull. Does this mean you can't go to windward with a monohull? No. If you're racing, you may lose some tactical advantage. (This may be what your friends talk about when they denigrate a cat.) However, once you understand the concept of VMG you

realize that you can take advantage of a cats natural inclination for speed off the wind. With polars in hand (we'll show you!) you simply crack off a few degrees and sail enough faster to make up the distance and arrive with or ahead of your monohull counterparts.

- Load carrying. Critics claim you can't carry the loads. They're right. But you can take advantage of modern technology to reduce the dead weight of the boat, and the weight of equipment and still end up with all of the amenities, and the performance that a cat offers. We'll show you how!
- Resale. Times are a-chang'n. In the old days, demand wasn't there and Cats were a hodge podge of goofy designs. Now, the pendulum has swung. Cat demand outstrips supply. We've sold many used cats recently for near or more than the owner's originally paid. Relatively, cats sell for a greater per cent of their original purchase price than monohulls. Ask us and we'll show you actual statistics!
- Docking, where will you keep them? Yes, in some areas you can't find a traditional slip. First of all, with a hard bottom dingy in davits you can take a mooring or anchor and have your own water taxi. One you don't have to drag around in between ports. Next, we've found that because your cat has such shallow draft, it often qualifies for shoal space right up close to the parking lot at many marinas—areas often devoted to small power boats that don't earn the marina owners much money. They're happy to make more on a cat and often charge you less than normal rates per foot. When you're a transient, you can generally tie up at the end of "T" docks with no problems. New Marinas have parallel docks you can tie to. Often these were set up for big power boats, but work great for cats. Bottom line? In 4 years of sailing cats we've never had a problem finding a place to put them. In transient, or for a season. Neither have our customers. In fact, I'LL GUARANTEE IT. If I can't help you find a place for your cat in the proximity of where you want to sail, I'll give you your deposit back!
- Daggerboards, rotating rigs, Flybridges and other ideas better suited to our racing brethren, or power boats are discussed in detail at our Good Cat, Bad Cat article: http://bay-yacht.com/good-cat-bad-cat
- Return to index... OR Contact us

THE SAFETY ISSUE..

Which is safer? This is a frequent question.
It's simply not true that Cats don't make passages. There are just so many fewer cats that you don't hear about them as often, though you do more and more. (Also, the Yachting Press tends to report on the much bigger monohull market where most of their advertising comes from!) In the last couple of years, however, Catamarans have been the fastest growing part of the sailboat market, growing over 20% faster in each of those years!) In fact, most of our cats start their life with a transatlantic delivery trip from France! (Quite a shake down!) How many Monohulls can make the same claim?
The bottom line is that there is no one answer. Here's the facts (concerning well designed monos vs well designed Cats.)

COMPARING APPLES AND APPLES

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The most common problem in the ocean is floating debris (recent articles in OFFSHORE MAGAZINE, SOUNDINGS and others have pointed to the frequency of containers falling off container ships and remaining afloat) or, some say, basking whales.
If a monohull hits a submerged object, and holes it's "EVERYONE IN THE LIFE RAFT"--if you have time. The ballast keel makes it impractical to make a monohull unsinkable.

If a Catamaran gets holed, it has several watertight compartments and not only won't it sink, but it can probably continue on to a repair port safely! Of course if all compartments got holed, it is unsinkable, and makes a h... of a lot better life raft, even with some water sloshing around than a 6X6 raft or whatever!
True, Monohulls are generally self-righting, and so long as all the ports are closed and the hatches (main, cockpit & deck) fully dogged down and secure they can roll completely over, or get tumbled in large waves and re-right themselves (generally sans rigging). If they don't take in too much water, they can be pumped dry and await rescue. (Like with Cats, this kind of tumbling is more likely from huge waves than wind.)

Occasionally you see a picture of a catamaran upside down (and still floating). Invariably when you check, it's a RACING BOAT. The problem is that because a Cat is so light and buoyant, if you don't slow it down in large waves (with drogues or whatever) the boat can surf down the wave, plunge it's bow into the wave in front and flip. Racers don't slow down much. They to maximize advantage. But let me ask you this. If you were coming off a 65-MPH highway onto a sharp curving 25-MPH exit ramp would you insist on taking it at 65? If you did, you would probably roll your car! The point is, if you got caught in huge 40' + seas, you would take prudent steps to slow down. We've talked to captains who rode these kinds of seas to sea anchors and were able to keep a cup of coffee level on the table! (Don't try this trick at home, though!) Also, with the generally higher reaching speeds of a Cat, and modern radio and communication equipment, you get word well in advance of approaching storms and can sail (on a fast reach) at right angles to an approaching storm and ultimately avoid the large waves associated with them. Storms typically advance at about 10-15 knots, while you can easily sail a cat on a reach at these same speeds rapidly changing your bearing away from these storms.
And so what if you screw up. You go too fast and flip your Cat? Well, at least it doesn't sink. All Offshore Cats that meet offshore cruising requirements have appropriate REENTRY HATCHES which allow the crew to re-enter the overturned hull to retrieve water, food and gear while they sit on a large, upside down platform with their EPIRB turned on awaiting rescue. The overturned Cat is a lot easier to find (and photograph, unfortunately) than a tiny life raft!

The bottom line is that there is no second chance in a monohull that gets holed and this is an uncontrollable, more and more frequently encountered event. You do have control of your speed in a multihull in large waves and so can prevent capsizing and, you do have a second chance if you're either holed or capsized!<
Hope this puts the safety issue in perspective. See **GOOD CAT BAD CAT** for more specifics on good catamaran design for offshore sailing.

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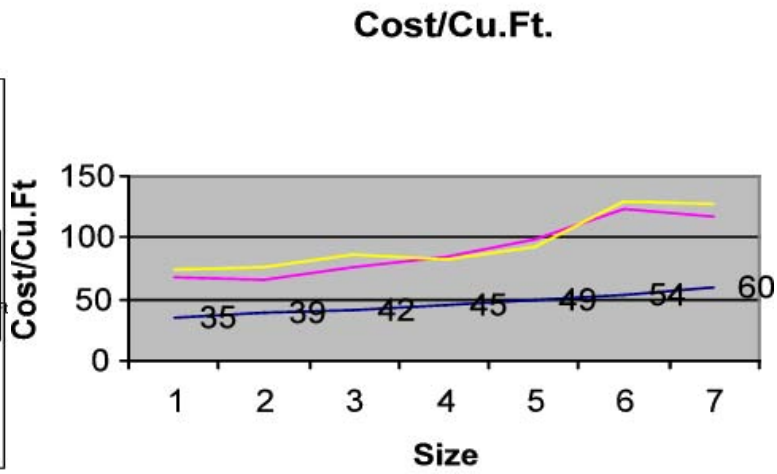
SUMMARY

So, in the end, there's no absolute right answer--that's life, isn't it? There's always trade offs. I sincerely feel that once you share your expectations with me, I will be able to give you the information and insights that you need to make a decision—whether you're planning to buy, or charter. One aside. A straw poll of our captains who deliver both monohulls and catamarans transatlantic, comes out overwhelmingly in favor of catamarans. Ease of handling with a short crew and comfort are generally sited as the primary reasons. You go figure... Call me….

BOTTOM LINE ON PRICE...

Here's an interesting graphic I came up with comparing the cost: size for size, and volume for volume. When you look at the cost per cubic foot, it's about even. You can get a considerably smaller catamaran to get the same volume as a larger (longer) monohull. Then, there's all the rest to consider...



Thanks for sharing time with me. We have Monohulls and Catamarans, new and used—for Sale, charter, ASA Sailing courses and for Try-Before-You-Buy. Please get in touch if you're on a serious quest to pursue your cruising dreams

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