



Corbin 39 – the weather helm issue

(rev 20 02 2020)



Synopsis

The subject of weather helm comes up repeatedly when discussing the Corbin 39 and not all of the folklore is justified. This note attempts to summarise the issue and to relate it to sufficient evidence, and to qualitative theory, that we can be reasonably certain of the situation.

Remember - It is possible to overpower a yacht and induce weather helm, what we are trying to do is identify excessive weather helm.

The key take-away is that the excessive weather helm was a genuine issue, which affected all the mk1 cutters irrespective of whether they were equipped with the taller double-spreader mast or the shorter single-spreader mast, provided that the mast was set in the intended aft mast position. Perhaps this was worse in the mk1 tallmast vs the mk1 shortmast, but we are not at all certain of that. All the mk1's that had the forestay relocated onto a 3-foot long bowsprit were later able to alleviate this to an extent. The mk 1's that have reduced the area of their main by shortening the mainsail boom & foot (or used in-mast furling) have reportedly completely eliminated this weather helm. All other versions including the mk1 ketches and all the mk2 cutters & ketches appear to be completely unaffected.

This is the first openly published version of this analysis. Previous drafts were incomplete and drew erroneous conclusions in some areas due to an absence of reliable data. That has now been overcome as further evidence has come forwards, and so there are material differences between this version and previous drafts. We are still trying to understand the extent to which there is a significant difference – or no real difference - between the behaviour of the original mk1 shortmasts and mk1 tallmasts, so more data is welcome. There are insufficient reports of the (one or two) skeg changes to draw conclusions.

Discussion

The primary original design appears to have been laid out for the single spreader 45' short mast. The initial mk1 design catered for both a short mast ketch and the short mast cutter, which accounts for the two positions for the mainmast, which were provided with the intention of keeping the rig balanced irrespective of which of the short rigs was selected. The available evidence suggests that this was successful in creating a balanced helm for the mk1 ketch version, but not for the mk1 short rig cutter versions in the aft mast position.

Furthermore the Corbin 39 is a heavy boat as you would expect from the construction. Given the weight of the boat this appears to make them somewhat underpowered in the short-mast version, and slow in the eyes of anyone in a hurry, so the option was included to have a taller double-spreader mast carrying more sail area, again in the aft mast position. This in turn meant that in the original tall mast mk1 design the centre of effort (CoE) of the sails is brought farther aft of the centre of lateral resistance (CoR) of the hull, inducing premature and excessive weather helm as the windspeed increases, especially so with the large area low cut 130% genoas vs the smaller area / higher cut 'yankee' foresail. To manage this the first reef in the main generally needs to go in at about 15-knots, rather than above 20-knots as one would prefer. This weather helm is also an issue in the mk1 shortmast cutter.

The affected mk1 cutter owners sought better coping strategies than reefing early, and so various approaches were taken including:



1. install a bowsprit braced with a bobstay to move the forestay and foresails forwards by approximately 3-feet (shift CoE forwards);
2. cut approximately 3' off the foot of the main boom (reduce from 18.5' to 15.5') and make a correspondingly slim mainsail (shift CoE forwards);
3. make underwater hull changes to increase the skeg area (shift CoR aft), though not enough people tried this to be sure if it worked;
4. move weight aft, lifting the bow higher in the water and shifting the CoR aft, which in practice did not work sufficiently;
5. flatten the main to move CoE forwards, this in practice did not work sufficiently (ref 9).

The late 1982 yard fire gave Marius Corbin the opportunity to rethink the design and he elected to add the 3-foot bowsprit (36") to all of the mk2's and to relocate the mast forwards by 32". These two actions moved the centre of the effort of the sailplan forwards. This was entirely successful and in the mk2's, even those with the taller double-spreader mast, the weather helm is nothing unusual or untoward and indeed the boat can be managed so as to create lee-helm if one were to desire. They also appear to have stopped offering the single-spreader short-mast version when they transitioned to the mk2.

For quantitative comparison purposes, and being extremely simplistic, moving the mast 32" forwards and the forestay 36" forwards will translate the entire sailplan forwards and so shift the CoE forwards by somewhere between 32" and 36", so say 34". Moving the bowsprit by 36" but not moving the mast forwards is a relocation of the forestay and genoa that is more complex, however it will likely move the CoE forwards by less than 18" (making some very crude simplifications). **So the full mk2 treatment results in approximately two or three times as much CoE change compared to the mk1 with bowsprit modification change.** This may account for why Marius elected to make the double change, and for why the anecdotal evidence in support of the mk1 bowsprit modification is hesitant in declaring it a complete fix.

Recognising a mk1 and a mk2

There is a whole section in the Corbin 39 Association of how to recognise a mk1 from a mk2, with photos. See <http://corbin39.org/uFAQs/recognising-a-mk1-and-a-mk2-or-even-a-mk1-5/>



#073, "Jakatar" is a mk1 PH-C on the left



#155 "Blue Run" is a mk2 on the right

		Mk1		Mk1 with modifications		Mk2	
Sloop/cutter	Double-spreader tall rig	48' 51'	Ref 5, 11, 14 (definitely weather helm)	Ref 10a, 10b, 16 (bowsprit only, has limited effect, not full solution)	49' 51'	Ref 2, 8, 12, 13	
	Single spreader short rig	46'	Ref 4a, 15a (definitely weather helm)	Ref 6 (no bowsprit, short boom or in mast furling = full solution)		? were any built ? (we think not)	
		Mk1		Mk1 with modifications		Mk2	
Ketch	Double-spreader tall rig	51'	? were any built ? (that were not modified)	Ref 3 (bowsprit)	49' 51'	Ref 7	
	Single spreader short rig	46'	(none of the ketches have reported problems)	(none of the ketches have reported problems)		? were any built ? (we think not)	

Table colour code

Definitely not a problem with weather helm.
Some weather helm, but not as much. Extent of improvement depends on exact fix applied
Need to reef early at about 15-knots due to excessive weather helm.

Evidence from anecdotal reports

In the anecdotal reports below see note 4 for an explanation of the hull numbers (e.g. #072) including the reason for use of #300-series temporary numbers for some boats.

Ref 1. Dennis Malcold, "Malina", #072 mk1, PH-C, Short Rig Single spreader Bowsprit

I had 135 genoa sail made from far east sailmakers with high cut. When genoa furled to 100 or less high clew allows for cutter sail plan with many way to tweek helm adjustment. One time when sailing with my son-in-law at helm, he asked how to engage auto helm I told him push down on the lever. After several hours of sailing 5 degrees up and down with speed from 6 to 4 to 6 it was noted wheel was locked but auto helm was not on. I found when the wind is below 10kn sloop is best when above 10kn stay sail cutter rig is best. My boat has inmast furling making mainsail foot length adjustments unlimited and between furling 130% high cut genoa and main sail over time you will learn what she wants to balanced helm. I have found her to be well balanced on most points of sail Definitely not a round the buoys boat but definitely good at long distance passages.



Ref 2 *Chenega, "Fascination", #333, mk2, (cutter with a double spreader tall rig & bowsprit)*

We own a Corbin 39 now for 3 summer seasons. After owning 14 boats over 30 years, from Cape Dory's to Morris Yachts, this is our boat we'll cruise with. It's an Mk11 factory finished boat. She sails well in light air, excels in wind 10-20 knots and is a dream to sail in winds to 30. She is able to sail a course as on rails in any condition. We've experienced weather to to mid 40's. She'll get you there in comfort and bring you home safely. In our opinion an ideal cruiser to go anywhere....

Ref 3 *Joe Bayne, "Jubilee", #076, tall rig double spreader ketch with bowsprit*

I have a 1981 hull Corbin39 the I set up as a ketch rig but with the tall mast and bowsprit. Admittedly I do not get much use out of the mizzen but I find it very well balanced on all points of sail. I have had the autopilot fail and not notice it for quite some time as it stay on track. I have sailed East coast of US up and down the eastern Caribbean and across the Pacific, I have hove to in several gales and just furling the sails and putting the helm up she rode comfortably. I experience very little current drain with the autopilot. Don't know about the cutters though.

Ref 4a *Paul & Christine, #058, "Quintana" mk1 short rig single spreader cutter, no bowsprit*

Having crossed the Atlantic, both ways, on our Mk1 Corbin 39, I feel qualified to comment. We sailed on autopilot, and on windvane, and the boat performed predictably at all times. Yes, they do have more weather helm than some boats, but it was never a problem. If you have an issue, especially on windvane, then reef the mainsail, and you'll be fine. We were equipped with a 110% genoa, a 100% jib, and a staysail on a boom. We used the jib for ocean work, and the genoa for near shore cruising. We had the shorter rig, and did not intentionally load the boat in any particular manner, regards CLR. We tried to keep the weight centred, as many folks do. We had a shaft drive, Pathfinder engine, located directly below the front pilothouse windows; a 200l water tank under the forward berth; 300 feet of 5/16 chain, and a 66 lb Bruce anchor at the bow; tools, workshop, and spare parts under the cockpit; Fuel tanks on each side of the pilothouse, below the side windows. The batteries were located in their own boxes, under the forward part of the pilot house floor, 600ah total. Head, shower, and holding tank were in the pilot house, aft. She really took us through some crap weather, and seas. Many times we'd hear folks complaining about how rough the seas were, and how they were having to slow down, or turn around due to the sea state. Meanwhile, we were only a short ways away, and were quite content with carrying on to our destination. She's not fast in the light stuff, but she'll carry on when many others won't. As a short addendum to my previous post. The weather helm on our Corbin 39 was not an issue, either for the autopilot, or the Aries windvane, until/unless there were strong gusts of 30 knots or so. If the wind was steady, then we'd simply trim for a neutral helm, and carry on. In heavy gusts, the weather helm would show, and we'd shorten sail to account for it, and carry on. If an Aries windvane can steer a boat without a problem, then the weather helm is not excessive. We used our Aries about half the time, and mostly in heavier weather. Granted, we are conservative sailors, and calculated for 100 miles per day for longer trips, and were seldom off by much. I did have one 16 hour period where I clocked 120 miles, using the windvane, but I was single handing and pushing the boat in 25 knots, steady from the East, to Grand Bahama from Nassau.





Ref 5 *David Salter, #050, "Opportunity" mk1 tall rig cutter, no bowsprit.....*

I tried the effect of reefing the Genoa before the Main, to move the Centre of Effort forward but I don't think it helped with the weatherhelm and just meant less sail area than occurs with the first reef in the Main. Reefing the Mainsail. This is still our primary way to reduce weatherhelm and we have to take in the first reef at about 14 knots true wind speed when beating.

Ref 6 *Vince Salese. (#005, Witch of the Wave) mk1 cutter (? Tall rig, definitely converted to short boom)*

As most Corbin owners are aware, the excessive weather helm issue has always been a topic of concern. Late last season, I brought my local sail maker out to the Witch to observe her handling first hand. His first observations that the rig was "well tuned" and balanced then led him to look at the main itself. His observations led us to what I thought at the time was a radical suggestion – cut the foot by three feet. Though I was sceptical, I ordered a new mainsail and Dutchman system with a 13' foot. This spring I installed a new boom from US Spars with all lines led internally. The main went on, the Dutchman system was tweaked and I was very anxious to see if we'd done the right thing. To my delight, I can say the Witch has never sailed better or faster. In winds up to 14 knots and the sails well trimmed, the helm is balanced to the point that I can actually let go of the wheel and she'll continue to track well. We've carried full main and 130 genny right up to 20 knots with no more than a half turn of weather helm on the wheel. Beyond that we've rolled in about half the headsail and dropped the traveler to leeward to maintain balance. My instrumentation records the highest speed attained during a sail and I've gotten readings consistently over 7.5 knots. Still not a race horse but that's not too shabby. In fact I'm consistently gaining on and passing other newer, lighter, and statistically faster boats. I know part of the new performance is from a fresh new mainsail, but I also feel the Witch is far more settled and under control I also should mention that I made a major change to my main sail configuration. In an effort to get some relief from the ever present weather helm, I reduced the boom length from 18.5 feet to 15.5 feet. The new main fitted with a Dutchman system has made a HUGE difference. Over the last two seasons since, we've increased our boat speed, comfort and control considerably. The Witch balances much better now and we can carry full sail up thru 18-20 knots or more without being over-powered as before with the old main. I. The new main fitted with a Dutchman system has made a HUGE difference. Over the last two seasons, we've increased our boat speed, comfort and control considerably. The Witch balances much better now and we can carry full sail up thru 18-20 knots or more without being over-powered as before with the old main.

Ref 7. *Tom & Melody Taylor #167, (Tiaga), mk2 double spreader tall rig ketch*

The rake of the main mast changed the helm from weather helm to lee helm. Corbin's specified 14" rake of the mast seemed to have zero helm in light to moderate winds and when we installed roller furling that changed the rake to more vertical and that produced more weather helm.

The first mk1 Corbins had the shorter 45 foot single-spreader masts. We're not sure when exactly but fairly soon after the first few were built the mast spec was changed to the taller double-spreader 48 feet mast. After the factory fire in late 1982 they changed to the 50 foot masts for the mk2. Marius wanted the taller mast because he took his boat to all the boat shows up & down the East Coast & had a ton of sales brochures on the boat at all times. He wanted as much speed as he could get because of the deadlines to be at the shows & because of all the weight on the boat his was always very low in the water - we actually never had our waterline stripe submerged & we were generally pretty loaded when we left.





Ref 8. *George Weeks, #155, "Blue Run", ex "Reverence", tall mast double spreader cutter*

"Blue Run" is a mk2 PH cutter with in-mast furling. The mast is a bit longer than the standard tall rig. Because the mainsail was designed to be furled it has no roach.

Having used 150 and 135 genoas for three or four years each I finally tried the 95% high cut jib. All three came with the boat as well as a storm staysail. Of the lot I find the 95 to be the most satisfactory for the conditions I sail in. Wind speed can vary from near zero to 30+ knots through the day and the 95 handles the range better than the genoas.

With the genoas, particularly the 150, weather helm gets significant at over 15 knots and is much more than I like at 18-20 knots, requiring about a third of a turn on the wheel. That's with the full main. I did not find this to be much different from other boats I have sailed on that had 150's.

Using the 95% jib the helm is neutral or with slight weather helm up to 15 knots and stays well balanced up to about 20 knots with the full main. At 30 knots on a close reach the weather helm is tolerable although I should probably reef before the wind speed gets to 25 knots.

In very light wind, less than 3 knots, lee helm can be annoying if there is current taking the boat in the same direction as the lee helm.

Ref 9 *David Salter, #050, "Opportunity" mk1 tall rig cutter, no bowsprit*

(this was an experiment carried out before shortening the boom. In summary it did not work sufficiently well)

Minimize heeling by flattening the mainsail draft. I had draft stripes added to the mainsail which greatly improves the visibility of the maximum draft location. Increasing the vang tension has helped keep the draft forward. Less heeling means less weatherhelm. However, I have a feeling that my mainsail is too full and may need recutting/replacing! Minimize heeling by flattening the genoa (yankee). My genoa track and turning blocks are set and I do not want to move them! Possibly as a result of having my genoa furling drum fairly high off the deck, I cannot get sufficient foot tension on the sail when closehauled with the genoa lead car at its farthest aft position. I have improved the sheeting angle by tying-on a subsidiary sheet and leading it through a snatchblock on the rail, just forward of my primary winch. This is a bit of a nuisance, but it works and we can now sail closer to the wind and flatten the sail more. I have a hydraulic backstay tensioner (Sailtec brand) and I have been cranking this up more (to about 2000 lb) on the advice of my consultant rigger. This limits fall off for the headstay and certainly improves Genoa shape.

(then the same thing again, but with a differently cut main, and a similar result)

The new mainsail worked well and we could point higher. There was certainly some reduction in weatherhelm but it is still noticeable. The full battens help to give the sail shape even with light wind. We did have some trouble keeping luff tension at the bottom section of the sail each time it was hoisted and had been up awhile. We reduced the tension on two of the full battens late in the season after Eileen noticed that their sliders were pressing on the sail track a lot more than the other sliders and, no doubt,





contributing to the hoisting friction. I am going to replace the main halyard as it has been in service and in the sun for quite a while. Then I won't feel so reluctant to add more tension with the halyard winch.

David Salter (s/v #050, Opportunity)

Ref 10a. *Tall rig 48' cutter with bowsprit and rudder skeg change*

(Ed by DS : this is one of the pieces of feedback on both bowsprit and on skeg, but unless I can identify exactly what is the boat I am less keen on trusting it. I'm not actually sure if this was the double spreader or the single spreader rig. There was another boat (the mk2 #312, Stella) with a 7" skeg enlargement as told in Canadian Yachting by Paul Howard but since that had the full mk2 treatment the forwards skeg extension is less relevant.)

I have no bowsprit on #041, Jemsa II and am hesitant to invest in one. I have some feedback from a close friend who also owns a Corbin 39, who sailed to Europe and back in 1999-2001, without any modification to his rig or boat (his Corbin has a pilot house and a mast of 48 feet per original Corbin specs). Two years ago, he installed a bowsprit without moving the mast forward. He also modified the skeg by roughly doubling its surface from the original size. He completed the work last year and sailed from Montreal to Martinique with a short stop in Bermuda. He spent the winter on his boat sailing from one island to the next. He kept his original stay and was able to compare the bowsprit efficiency by moving the head sail from one configuration to the other. To his surprise, the boat did not react much differently. He claims that he did gain a couple degrees on weather helm but not due to the bowsprit but to the skeg modifications. He claims that his boat still manoeuvres easily. My opinion is that the bowsprit may not be an efficient solution to weather helm if the mast is not moved forward. Moving the mast is major work as new chain plate anchors must be built and laminated in and most of the existing ones may require serious modifications (they are located at suitable location, but their angle or direction is incorrect for the new rig). For a lot of us, the new mast position implies modification to the table and seating arrangement. The septic tank may also be in the way. Modifying the skeg is relatively cheap and if it does correct some weather helm, we should all consider it. This has been feedback from a friend plus my two cents [worth]. The skeg I am referring to is the structure which holds the rudder below the water line (fixed portion facing the propeller). The skeg surface extension helps counteract against weather helm. Because the skeg is fixed into the hull, the existing propeller + shaft may diminish the skeg potential expansion as some minimal distance between the prop and skeg must be respected. I have not looked into the specifications but in my mind, 6" is a minimum distance. In my case (the centre cockpit configuration) this modification is more complex as the propeller angle and distance to the skeg is less than most pilothouse models. Regards, Eric Mongrain (#041, Jemsa II).

Ref 10b. Richard Bacon, #43, "Balmacara" *Tall rig double spreader mk1 cutter with bowsprit change*

Sailed around the world for 9-years in this configuration. "We had an extended bow sprit that helped but could not totally solve the [weather helm] problem. We always sailed up wind with one reef in the main. That solved the problem."

Ref 11, Horatio Marteleira, #073, *Jakatar, tall rig double spreader mk1, aft mast position, no bowsprit*

Jakatar (50 ft double-spreader mast in the aft mast position and no bowsprit) starts to reveal excess weather helm at about 15 kt wind and keeps getting worse as the wind increases, which is improved only by reefing and depowering the main in gusts.





I suspect that a baggy main will intensify the problem, along with weight aloft from a heavy mast and all the 8 and 10 mm shrouds and stays which increase heeling and thus weather helm.

When I added a 48 m2 genoa I thought that would shift the centre of effort forward but I didn't notice any palpable improvement.

I find it annoying but never really bothered to analyse it too closely...I reef as needed and forget about it.

Ref 12, Cesar Marteleira, #126, "Lapu Lapu", mk1 CC-C with tall double spreader mast, but with fwd mast position & the bowsprit.

(via Horatio Marteleira) I know that my late brother's boat, now Scott's, was well balanced even in heavy conditions. He placed the mast in the fore mast position and has a bowsprit. Don't know the length of his mast. (*Ed: it is the tall double spreader*).

Ed note: in sailing terms this is a mk2 as it has the tall double spreader mast, the fwd mast position, and the bowsprit. From a superstructure perspective it uses the mk1 centre cockpit mouldings without the fwd pilothouse, but that does not affect sailing.

Ref 13, Brian Tennant, #312, "Stella", mk2 tall double spreader mast, and an extra 7" on leading edge of skeg

I don't get weather helm, at 10 knots of wind with full canvas she will sail herself with my 125 Genoa, I guess with any yacht she sails well when sails balanced esp on wind vane, in some conditions of course goes better with nip out of reef, things change of course with 150 Genoa and gennaker,, only sailed her as cutter once from NZ to Vanuatu, realised not really any advantage but was trying things out , and had to use storm sail a lot up east coast of north island NZ, only used the 90 % Genoa one trip, new Caledonia to NZ , very rough trip , performed good in up to 50 knots.

Ref 14, Craig Rowdon, #97 "Grace", (mk1, tall mast, no bowsprit, aft mast location)

"I reef the main at the first whitecaps or start that way if it's going to blow but she keeps speed pretty well reeled. I think my Yankee cut foresail helps however. Keeping that pull higher up seems to negate some of the weather helm but I have little proof other than running the old sail first then using the Yankee high cut. The make 6.5 KTs all day and that is plenty for my needs."

Ref 15a, Chris Reynolds, #083, "Tamalmar" a mk1 short-rigged, single-spreader, cutter rig.

First, my experience sailing hull 083, Tamalmar launched May 1981, a short-rigged, single-spreader, cutter rig. Mast was build to original plan at 46'5" to fore and back stay pins above deck, stepped at the aft deck location. Hull, Deck, and chain plates were all factory completed as part of the Plan C package. The stem-head was a standard fitting from Metal Masters in Toronto, Ontario, fit tight to the bow, no protrusion forward of the deck. The staysail was loose footed. The headsail was a 130% Yankee cut. All three sails were made of heavy Dacron (8 oz.) by Sobstad Storer sailmakers in Innisfil Ontario (maker of many original suits of sails for Corbins). The boat was sailed extensively on Lake Ontario, where winds typically blow 5-10 knots, rarely up to 18-20 knots sustained (excepting storm conditions).

The following describes sailing close-hauled to a beam reach. In the normal light-air conditions of Lake Ontario, the staysail was too heavy to be useful, and so it typically was not flown. In less than 10 knots apparent wind, the boat had moderate weather





helm, and holding the rudder 5-8 degrees downwind counteracted it. In 10-15 knots apparent wind, the weather helm became more pronounced and approx. 15 degrees of downwind rudder was needed to hold a course. In 15-20 knot apparent wind, the weather helm was significant and the helmsperson had a fight to maintain course without significant downwind rudder (with significant cost speed made good). Above 20 knots, the main would be reefed but this happened so rarely that I don't have sufficient experience to comment.

The boat sailed to Bermuda but at most times the wind was above 30 knots and the boat ran under triple reefed main and staysail only. The course was almost exclusively a broad reach. No relevant data re weather helm to report from this voyage.

Ref 15b, *Chris Reynolds (see 15a), but now talking more generally as a co-op member and as a rigger.*

Second, my experience as a rigger at a time when many Corbins were being initially finished in the Toronto Area by members of the Ontario Boatbuilders Cooperative. I believe there were roughly 15 of us building at the same time. In the early 1980s I worked with many Corbin owners to rig their boats and I attended many Coop monthly meetings with them during this period, where their initial sailing experiences on their Corbins were constant topics of discussion.

Most of these builder-owners had aspirations of long blue-water voyages, so they tended to opt for short rigs. Having said that, there were a few who thought the tall rig would give the heavy-displacement boat an advantage on long passages. They all (except for the one ketch owner I know of), stepped their masts at the aft location, as per the mark I design spec. Time after time, I heard from these owners that they noticed more weather helm on these boats than any other boats they had sailed before. The weather helm issue was significant enough that Marius Corbin was consulted with. His answer (presumably in consultation with Dufour, the designer) was to suggest a short bow sprit. At one point, the Coop asked Metal Masters of Toronto, Ontario, to design and quote on delivery of said sprits to interested Coop members. These owners had both short and tall rigs. Initially, many owners did not do the conversion, due to a combination of scepticism and cost. Once the Mark II design came out, there was more interest in retrofitting bow sprits on Mark I boats. Hull 083 "Tamalmar" did not undergo a bowsprit retrofit during our time owning her. Mark Is were beginning to be converted about the time that hull 083 went south and I lost touch with the community.

Ref 16, *Kerry Black, #92, "Vision Quest", a mk1 tall mast, cutter, with aft mast position and bowsprit*

In 1997 we launched the boat and we were advised by our sales consultant to attach a bowsprit before we got our sails and rigging. We attached a bowsprit, got a furling headsail, a staysail and a Doyle Stackpack mainsail with battens. During our 1st year, we did not have an autopilot. I recall crossing Lake Ontario and back and the boat balanced with sails and barely any steering was required. We did add in an autopilot with wind and course modes. We had a great sail downwind across the Lake in 40 kt winds, using wing on wing. It was quite comfortable and I was surprised to learn of other boats which reported some incidents. I have seen a lot of boats that only sailed with a headsail. We found the mainsail to be an important part of balancing the boat. The mainsail had a Jiffy reefing system which simplified reefing and we used it to deal with various wind and water





conditions. When there were wind warnings for 20 kts, we were glad to take out our Corbin. Of the Corbins that I saw in the Toronto area, the majority had bowsprits.



Supplementary Notes

Note 1: In respect of mast positions the mk1 design option made provision for both a double-masted ketch rig and a single-masted cutter-rigged sloop. If you look at the deck and internal hull structure layout on all the mk1's and indeed all the mk2's you will observe that there are two locations that the mainmast could be sited which are spaced 81cm (32") apart. Initially, in the mk1, the design intent was for the mainmast of the ketch to go in the more forward position, whereas in the cutter-rigged sloop the original design intent was for the mainmast to go in the more aft position. Viewed externally the more forward position lines up just forwards of the three main-saloon hull portlights, and (in the aft-cockpit pilothouse layout) is just in front of the fwd pair of the four main saloon deck windows/hatches. Viewed internally the more forwards position of the mast is easily identifiable by the closeness of the compression post to the normal position of the main transverse bulkhead of the saloon. In contrast internally the mk1 compression post plunges straight through the centre of the normal position of the saloon table.

Note 2: When referring to mast heights there are actually quite a few different nominal mast heights floating around, presumably because of the different spar suppliers in use. However the short masts are typically approx 45-46 feet and single spreader, whilst the tall masts are typically 48 – 51 feet and are always a double spreader.

Note 3: None of this takes proper account of forestay sag, or sheeting angle, both of which are primarily upwind performance issues. That is a whole 'nother can of worms, but is also relevant. See <http://www.cruisersforum.com/forums/f47/corbin-39-how-do-i-like-it-so-far-114791.html> . I think #145, Luff Shack / Saw Whet had the skeg change but that is only on the basis of memory at this point.

Note 4. The hull numbers are given above (e.g. #126) as well as the boat names. This is to assist in identifying boats as names have often changed. Where a #300-series hull number is stated this is a temporary designation as the actual hull number is not known. The Corbin hull numbers are believed to terminate at #201, hence selecting the #300-series as temporary identifications.





Original FAQ entries

The text below represents the original FAQ entries on this subject, most of which were collected in the period 2000-2015. Some of them have been interrogated and reproduced in the analysis above, but all are below for a complete historical record.

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What is the best way to reduce weather helm? I have some weather helm; am thinking of adding to the forward edge of the skeg. Can anyone tell me of their experience in doing this? Any details or sketches?

Dave Lundin (#074, Romana)

a. Weather helm is corrected by moving the sail area forward, e.g. with a bowsprit. Later Corbins were finished this way, probably by the owner/builders' initiative. Moving the mast forward is not really practical as all the chainplates are installed for the "standard" position, at least on my era boat (1980). Bonding the chainplate [knee supports: Ed. Note] to the hull is a very critical operation. Trying to do this after the hull resin has cured completely is called "secondary bonding" and reportedly this operation does not give such a strong bond.

David Salter (#050, Opportunity).

b. We reef the mainsail.

Kathy Thompson (former owner of s/v #051, Wenonah).

c. I reef the mainsail. The extra tall mast (60' from the keel) provides for an extra large headsail. With one reef in the mainsail the center of effort is shifted forward enough to eliminate any excessive weather helm. Also, most of my working anchor chain (3/8ths) is located aft of the mast.

Lester Helmus (#010, Insouciance)

d. I bought my Corbin as salvage (due to an engine fire) and she has the mast set back. My research located the article about #?, Stella and the weather helm. A navy engineer buddy of mine, (Brendan Dobroth who designs Dobroth racers) came and measured the boat. Because the previous owner had put on a bowsprit for anchors, the analysis determined if I moved the front stay from the stem to the end of the bow sprit, this would correct the weather helm. Also, he explained that the hydraulic solution to the skeg would have a more effective result since it pushes water versus air. #091, Blue Moon will be ready for launch Spring of 2003 after a six year total renovation. Good luck.

Stanley Parks (s/v #091, Blue Moon)

e. I have just heard back from Steve Killing Yacht Design. He has studied the Corbin drawings and my photos. He does NOT recommend that the skeg be enlarged. The main recommendation is to move the sail plan forward and since it is not feasible to move the mast the alternatives are: 1. Add a bowsprit/bowwalk, which you already have, and move the headstay forward. 2. Recut the main sail with a shorter foot or less roach. I will be looking into the latter, but I am not confident that it will make much improvement unless the sail is drastically reduced in size.

David Salter (s/v #050, Opportunity) [See subsequent update from same author below]





f. Can a forward-move of the Center of Gravity help eliminate a weather helm problem? (as posed to Ted Brewer Yacht Design). His answer: “Moving the CG forward would make the boat trim down by the bow. This would then move the Center of Lateral Plane forward and would make the weather helm worse.”

Ted Brewer

g. I have just been reviewing the Q&A for weatherhelm and I would be interested in getting more dialog if possible as it is such a big factor for us, with the need for early reefing of the main and the rudder drag at high angles. This season I have been working at the following:

(1) Reduce “bow down” attitude to move Centre of Lateral Resistance aft. I now have only 1 anchor on the bow rollers, a 45 lb CQR, having moved the 20 kg (44 lb Bruce) off. I had 225 ft of 3/8” BBB chain in the chain locker, which is under the middle of the Fwd Berth, about 7.5’ aft of the stem, as I have an angled hawsepipe. This chain weighs about 375 lb. I have now installed a 1 1/2” PVC tube from the chain locker to just forward of the mast. This has enable me to pull about 100 ft of chain, weighing 165 lb, to the bilge area near the centre of the keel. The chain is still connected in one piece and can be pulled forward fairly easily for anchoring in deeper water when needed. My second anchor sits on top of this chain.

(2) Minimize heeling by flattening the mainsail draft. I had draft stripes added to the mainsail which greatly improves the visibility of the maximum draft location. Increasing the vang tension has helped keep the draft forward. Less heeling means less weatherhelm. However, I have a feeling that my mainsail is too full and may need recutting/replacing! Minimize heeling by flattening the genoa (yankee). My genoa track and turning blocks are set and I do not want to move them! Possibly as a result of having my genoa furling drum fairly high off the deck, I cannot get sufficient foot tension on the sail when closehailed with the genoa lead car at its farthest aft position. I have improved the sheeting angle by tying-on a subsidiary sheet and leading it through a snatchblock on the rail, just forward of my primary winch. This is a bit of a nuisance, but it works and we can now sail closer to the wind and flatten the sail more. I have a hydraulic backstay tensioner (Sailtec brand) and I have been cranking this up more (to about 2000 lb) on the advice of my consultant rigger. This limits fall off for the headstay and certainly improves Genoa shape.

(3) Reefing the Genoa. As I have a 135% Genoa there is a fair bit aft of the mast. I tried the effect of reefing the Genoa before the Main, to move the Centre of Effort forward but I don’t think it helped with the weatherhelm and just meant less sail area than occurs with the first reef in the Main.

(4) Reefing the Mainsail. This is still our primary way to reduce weatherhelm and we have to take in the first reef at about 14 knots true wind speed when beating.

(5) Use the Staysail. I have read that the staysail is most effective when broad reaching and beam reaching. This certainly helps to move the C of Effort forward. It is not effective when beating as the slot is too narrow. Additionally, if tacking, it takes a lot of effort to tack two fore sails and re-set the mainsail traveller for each tack!

Regards, David Salter (#050, Opportunity)

h. I have no bowsprit on #041, Jemsa II and am hesitant to invest in one. I have some feedback from a close friend who also owns a Corbin 39, who sailed to Europe and back in 1999-2001, without any modification to his rig or boat (his Corbin has a pilot house and a mast of 48 feet per original Corbin specs). Two years ago, he installed a bowsprit without moving the mast forward. He also modified the skeg by roughly doubling its surface from the original size. He completed the work last year and sailed from Montreal to Martinique with a short stop in Bermuda. He





spent the winter on his boat sailing from one island to the next. He kept his original stay and was able to compare the bowsprit efficiency by moving the head sail from one configuration to the other. To his surprise, the boat did not react much differently. He claims that he did gain a couple degrees on weather helm but not due to the bowsprit but to the skeg modifications. He claims that his boat still manoeuvres easily. My opinion is that the bowsprit may not be an efficient solution to weather helm if the mast is not moved forward. Moving the mast is major work as new chain plate anchors must be built and laminated in and most of the existing ones may require serious modifications (they are located at suitable location, but their angle or direction is incorrect for the new rig). For a lot of us, the new mast position implies modification to the table and seating arrangement. The septic tank may also be in the way. Modifying the skeg is relatively cheap and if it does correct some weather helm, we should all consider it. This has been feedback from a friend plus my two cents [worth]. The skeg I am referring to is the structure which holds the rudder below the water line (fixed portion facing the propeller). The skeg surface extension helps counteract against weather helm. Because the skeg is fixed into the hull, the existing propeller + shaft may diminish the skeg potential expansion as some minimal distance between the prop and skeg must be respected. I have not looked into the specifications but in my mind, 6" is a minimum distance. In my case (the centre cockpit configuration) this modification is more complex as the propeller angle and distance to the skeg is less than most pilothouse models. Regards, Eric Mongrain (#041, Jemsa II)



i. The new mainsail worked well and we could point higher (see picture of the new mainsail with logo*). There was certainly some reduction in weatherhelm but it is still noticeable. The full battens help to give the sail shape even with light wind. We did have some trouble keeping luff tension at the bottom section of the sail each time it was hoisted and had been up awhile. We reduced the tension on two of the full battens late in the season after Eileen noticed that their sliders were pressing on the sail track a lot more than the other sliders and, no doubt, contributing to the hoisting friction. I am going to replace the main halyard as it has been in service and in the sun for quite a while. Then I won't feel so reluctant to add more tension with the halyard winch.

David Salter (s/v #050, Opportunity)

j. * also see separate Q&A in regard to the Doyle Stac Pac fit on #050, Opportunity.

k. I also have some information about some modifications we've made recently. As most Corbin owners are aware, the excessive weather helm issue has always been a topic of concern. Late last season, I brought my local sail maker out to the Witch to observe her handling first hand. His first observations that the rig was "well tuned" and balanced then led him to look at the main itself. His observations led us to what I thought at the time was a radical suggestion – cut the foot by three feet. Though I was sceptical, I ordered a new mainsail and Dutchman system with a 13' foot. This spring I installed a new boom from US Spars with all lines led internally. The main went on, the Dutchman system was tweaked and I was very anxious to see if we'd done the right thing. To my delight, I can say the Witch has never sailed better or faster. In winds up to 14 knots and the sails well trimmed, the helm is balanced to the point that I can actually let go of the wheel and she'll continue to track well. We've carried full main and 130 genny right up to 20 knots with no more than a half turn of weather helm on the wheel. Beyond that we've rolled in about half the headsail and dropped the traveler to leeward to maintain balance. My instrumentation records the highest speed attained during a sail and I've gotten readings consistently over 7.5 knots. Still not a race horse but that's not too shabby. In fact I'm consistently gaining on and passing other newer, lighter, and statistically faster boats. I know part of the new performance is from a fresh new mainsail, but I also feel the Witch is far more settled and under control I also should mention that I made a major change to my main sail configuration. In an effort to get some relief from the ever present weather helm, I reduced the boom length from 18.5 feet to 15.5 feet. The new main fitted with a Dutchman





system has made a HUGE difference. Over the last two seasons since, we've increased our boat speed, comfort and control considerably. The Witch balances much better now and we can carry full sail up thru 18-20 knots or more without being over-powered as before with the old main. I can't wait to get the new genny in the mix this year. The Witch will be in her glory.

Vince Salese (#005, Witch of the Wave)

I. The new main fitted with a Dutchman system has made a HUGE difference. Over the last two seasons, we've increased our boat speed, comfort and control considerably. The Witch balances much better now and we can carry full sail up thru 18-20 knots or more without being over-powered as before with the old main.

Vince Salese. (#005, Witch of the Wave)

