



# Heavy Air Boat Handling



-by Latane Montague

As most of us know (and have found out the hard way) the Hampton is challenging to sail in heavy air. The boat's design is optimized for the light to moderate air we most frequently encounter on the Chesapeake in the summer. The boat has a huge mainsail by any standard (which doubles as a spinnaker downwind) and a relatively modest rudder to minimize drag in optimal conditions. These features, when combined with the boat's hard chines, create a boat that requires much more skill to manage in a breeze than your average one-design.

These same features also make the heavy air Hampton sailing experience extremely rewarding. If you can handle the Hampton in a big breeze you can go like a bat-out-of-hell, and feel confident that your survival is proof that you are a damn good sailor with helmsmanship skills you can be proud of. In fact, if you can handle your Hampton in heavy air you can probably handle just about anything with sails.

## I. CAPSIZE 101 - WAYS TO FLIP

The first step in avoiding a disaster is to heighten your awareness of the many ways it can happen. As a veteran of many a crash, I am unfortunately qualified to start a list of ways to go down. The list below is in rough order of frequency of occurrence. To avoid each of these situations, you need to be able to visualize each situation described, and understand what can go wrong.

### A. Downwind

Each of the downwind variations can be traced back to not keeping the boat pointed down-wind. Remember, the boat will not flip over its bow.

#### 1. Jibe round-up

This flip occurs right after a jibe. In this crash-and-burn scenario, right after the boom crosses the boat and the main assumes the new jibe, the boat continues the turn that initiated the jibe until it is about a-beam to the wind. This over-steer usually catches the skipper by surprise and is accompanied by lots of heel to leeward. The heeling is often exacerbated by the skipper or crew not being ready and able to cross the boat quickly enough to keep it perfectly flat through the turn. This heel exacerbates the boat's rotation and also allows the tip of the boom to hit the water. Once the boom tip is in the water, your forward motion effectively sheets the main in until the main is loaded/sheeted enough to tip the boat over.

Solution: As you can see from this classic capsize, flipping over is always a multi-factorial process. In general, keep the bow pointing down-wind after the jibe. Specifically, after initiating the jibe by steering one way, you must give the tiller a little tug in the other direction after the boom goes over. This is often described as an "S" turn by sailing instructors. Another trick is to pick a point on the horizon where you want the bow pointed after the jibe. Always keep your head out of the boat and eyes on the horizon as you go through the maneuver to spot your new heading.

Also prepare yourself and your crew to move quickly and deliberately to the new high-side as the boom crosses. When the centerboard is all the way up (on the run) the first step in the jibe is to have the crew cross the boat to the new high-side first, before the boom crosses. There is no room between the board and the boom when it is up, and waiting for the boom to cross may be too late in certain windy conditions. Also consider having the crew assist in pulling the boom over so that the skipper can concentrate on the all-important task of steering. Generally, the skipper knows best when the progress of the turn will unload the main and allow the boom to come over easily. At that moment the skipper can call "jibe" to let the crew know when to help tug on the boom. The skipper should also help tug the boom over with the sheet to insure that it they are in-synch.

The skipper must be on his/her feet during the jibe and needs to be able to steer through the jibe without changing tiller hands until the boat is safely under control on the new jibe. Being able to steer through tacks and jibes without changing tiller-hands in mid-turn is something that can be developed in lighter air practice. Skippers who are on their knees or trying to slide across the boat on their butts during jibes are accidents waiting to happen.

Finally, when you are out in light and moderate conditions you can do everything wrong and have no problems with your jibes. This leads to weak technique that will only come back to haunt you when it is windy. When practicing, especially when working with new crew, you should always handle the boat the way you will need to when it is windy. Have the crew cross in advance of the boom, steer down after the jibe, skipper on his feet-steering behind the back, eyes out of the boat, etc.

## 2. Accidental crash jibe

This one can be ugly, because it always catches you by surprise. It starts out with the boat heading almost dead downwind, then either by virtue of a windshift or steering a bit to leeward, you end up sailing by-the-lee. By-the-lee means the wind is coming from the leeward side, (the side that the boom is on). The boat will sail like this just fine initially, but depending on how far out you have the main, eventually the wind can get behind the main and cause a quick and frequently unexpected jibe. While the crash jibe itself won't kill you, the associated "jibe round-up" maneuver described above, usually will, because it always catches you by surprise and on the wrong side of the boat.



Solution: Don't leave the dock without telltales on your shrouds, positioned where you can keep them in your line of site while sailing. Watch your telltales carefully when sailing downwind, especially when nearing dead downwind (or by-the-lee). When you are forced to sail temporarily by-the-lee, say to work down to a mark without jibing, don't forget to tell your crew that a crash jibe is a possibility. Make sure your crew is not sitting on the boom or standing up at the mast in these conditions.

## 3. Deathroll

Although I am sure I have done it, to be honest, I am not really sure what this one is, but you will hear it discussed frequently in the bar or in beer filled parking lots. I think it refers to a downwind capsizes to windward. Most people who talk about this one don't have a real good idea of the mechanics because it happens so fast. The best way to "deathroll" is to start rocking back and forth and, as the crew races from one side to the next to dampen the roll, someone slips and the boom hits the water, initiating a capsize. With both crew on the high side and not enough pressure on the sail, the boat goes over to windward.

Solution: Don't sail too low, the closer you get to dead down wind the less stable the boat gets (by-the-lee can be even more unstable, even before your crash-jibe). If you are uncomfortable, try over-sheeting the main a bit, heading up a bit, and/or tighten the vang to get the wind flowing in one direction over the sail. Keep the crew low in the boat, and planted securely. Lowering the board a bit will also reduce the rocking.

As a matter of style, no matter how you actually flip over, you may want to call it a "death-roll" when you get back to shore, it just sounds cooler than saying that you got your tiller extension stuck in your underwear.

## **B. Upwind capsizes**

These all come back to not being in-synch with your crew or failing to keep the boat feathered/pinched up into the wind sufficiently.

### **1. Jib not uncleated during the tack:**

In heavy air, if the jib does not get uncleated before it gets backwinded a quick capsize is very likely. The jib can become very tough to uncleat when back-winded which can add to your problems. If you assume the new tack with the jib cleated on the old side, the jib works like a big airbrake and the boat will come to a halt. With the boat either slowed, or going backwards, the main will instantly be super loaded and will flip you almost no matter how quickly you uncleat the main. You have to get the main uncleated before the boom tip can get auto-sheeted when it hits the water.

Solution: The crew needs to understand the importance of failing to uncleat the jib during the tack. Discuss this issue with the crew



explicitly early-on. The skipper needs to take ultimate responsibility for not putting the helm hard-a-lee unless they know the sail is uncleated. I have been bitten by this one so many times, I have my crew yell "uncleated" or "go" when she gets the jib uncleated, which is always before I shove the tiller over. At a minimum the skipper has to keep his eye on what the crew is doing during the heavy air tack. I have also flipped where the jib recleated after initially being uncleated. The crew needs to be aware of this possibility so they can avoid stepping on the old sheet (which can recleat it) and generally keep it from recleating itself. I always calmly explain to the crew in advance that I reserve the right to squeal like a pig if I notice the jib is not uncleated and that it should not be taken personally.

### **2. Crew not unhooked from trapeze**

If the crew does not get unhooked from the trap before you tack, it is extremely unlikely that they will succeed after they have been hit in the face by the main and then sent repelling out off the low side into the water. To make matters worse, a crew being dragged through the water on the low side, is almost guaranteed not to get the jib uncleated. In fact, they are likely to be barefoot waterskiing to leeward and using the jib sheet as a towline. This will cause the "jib-not uncleated" tack/capsize described above.

Solution: Same as in #1 above – skipper/crew communication. The skipper needs to confirm that the crew is un-hooked before completing the tack - either visually or by having the crew yell "unhooked" in heavy air.

### 3. Big puff capsizes to leeward

This is probably the one most of us picture when you say "capsize." The puff hits, the boat heels, you fail to feather sufficiently and eventually you ease the main instead, but you're too late, the boom hits the water and over you go. This scenario is pretty rare, no one is gets surprised by this.

Solution: Feathering the boat to windward and then, if necessary, easing the main needs to become instinctive. Also make sure your can easily uncleat the main. Make sure you are happy with the cleat alignment, and practice popping the sheet out of the cleat quickly. If it won't pop out the first time, try more vang tension to takes some load off your mainsheet.



### 4. Big puff-capsize to windward

Here, the big puff hits and you over feather/pinch, the jib backwinds, the crew gets tea bagged, the skipper gets distracted, lets the boat tack unexpectedly and over you go.

Solution: Don't feather the boat too much. Never feather the boat until it is all the way head to wind. This is why you feather initially, then ease the sheet as a secondary puff response in they extra big puffs if the initial feathering is not sufficient to keep the boat flat. Getting the combination of feathering and easing the mainsheet is also the key to going fast upwind.

In very rare conditions, it may also be necessary to have the crew ease the jib in a huge puff. Easing the jib is the third level of gust response, that is only triggered where you need to ease the jib in order to keep the bow pointed into the wind. In a big and sustained monster-puff, where the jib is kept sheeted tight and the main is well eased, the bow can get blown off the wind (un-feathered) which can lead to a capsize if the boom tip hits the water and is auto sheeted. This can only happen when you are moving fast and heeling too much, but it can certainly happen.

### 5. Oversteering through tack

Here you tack and steer too far and wind-up on a broad reach heading on the new tack, but the sails are sheeted tight for beating, and over you go.

Solution: In all conditions, uncleat the main every time you tack, keep your eyes out of the boat and on the horizon. Better yet, pick a spot on the horizon before you tack and don't steer past it as you go through the wind. In heavy air, think about steering the boat through the wind slowly, so that you and your crew have time to get over to the new highside before loading up the sail. The faster your crew can deploy on the trap the more quickly you can assume the regular up-wind heading on the new tack. If something goes wrong in the tack, (someone slips or the jib does not uncleat) just keep the boat feathered until you are ready to complete the tack.

### 6. Stopped by a wave during tack

In really big wind and big waves, you need to make sure the boat keeps moving forward during the tack. The amount of speed you maintain into the new tack determines how much you can fall off, onto your ideal new-tack heading. The

slower you are going the more pinched/feathered you need to keep the boat on the new tack until you get moving and depressurized the sails. In really big waves the boat can be completely stopped by a wave, the very next wave can start you moving backwards.

Solution: This is reason #57 why you must uncleat the main in every tack. Steer all the way through the wind so you don't get stuck head to wind, cross quickly, and sheet in when you and your crew are ready to hike. If you do find yourself moving backwards, you need to be instantly aware so that you can start using reverse rudder articulation to control the boat, this usually means steering to make sure the boat stays on the new tack, since this is the tack that your crew is anticipating and it's the way you wanted to go. Keep the main uncleated and sheeted in your hand until you resume forward progress. A given amount of wind will have a surprisingly amount of heel force when your boat is not moving forward so you may have to ease quite a bit if you assume the new tack with no speed.

## II. PREVENTION 201 –GENERAL PRINCIPLES

All capsizes can be avoided by keeping the boat under control. Control in this context requires two things: keeping the boat flat at all times, keeping the boat pointed in the direction you want/need it to go, and being able to trim or ease the sails instantly. The keys to prevention are probably pretty obvious from the description of how each capsize scenario unfolds above. But these are some general principals to keep in mind. Not only will these principles keep you upright, but they will also get you around the course faster.

### A. Know Your Gust Response



Every point of sail and each wind velocity range dictates a different solution to excessive heel. I call this the “gust response.” The gust response needs to be instinctive. One way to make sure your instinctive reaction is correct is to consciously identify what your proper response should be for every change in course or breeze. This way you are much more likely to respond properly when the gust catches you by surprise.

In moderate air, upwind the gust response is to simply feather the boat up into the wind with the rudder. In heavy air with strong puffs, the feathering needs to be supplemented by easing the mainsheet in the bigger puffs. In extra big puff where you can't keep the bow pinched you should also ease the jib a bit.

On reaches and runs the response is to bear off and ease the sheets. Unlike the beat, every time you bear off when off the wind, there needs to be a corresponding ease of the mainsheet to maintain speed. On the transition from reach to beat, this can get confusing, the proper response will be dictated by where you are trying to go. Here it is particularly important to mentally rehearse the response before you let your reflexes go it alone.

## B. Know the vulnerabilities

Overall sailing the Hampton in heavy air requires the same techniques required of any other dinghy or keelboat. The key to control (and speed) – in both a straight line and through the turns is keeping the boat flat. At this level of generality, sailing the Hampton is just like any other dinghy. However, in the Hampton's case the importance of keeping the boat flat is magnified by size of the sail plan and the fact that the boat has hard chines. The large sail plan means that the rig tends to load up very quickly when the boat stops or is slowed by a poorly executed jibe or tack. The boat's hard chines mean that if you let the boat heel, it will rather quickly start to turn. Submerging the chine causes the boat to turn away from the side that is submerged. If the leeward chine is dipped the boat turns to windward. This is usually helpful going up wind, it means that as the boat heels, it naturally tends to head up into the wind and feather itself in the puffs.

Going downwind this turning tendency is a problem. Going downwind, the helmsman's puff-response needs to be to head downwind. When the boat heels going downwind, it will tend to head up, the wrong direction. To counter this, you need to do three things: 1) anticipate this and steer down before the wind-up progresses too far; 2) Hike to keep the boat flat; and 3) ease the main to reduce heel and make the turn easier. While these responses are listed in rough order of sequence, you need to be prepared to do all three almost instantly for the bigger puffs.

## C. Gear problems

Broken gear is always slow, but it may make sense to pay extra attention to gear failures that can get you wet.



Breaking any part of your rudder can lead to a capsize. If you don't lock it down on the gudgeons with a clip or bungy, it can ride up and twist the pintles off, or simply come off in your hand. If the tiller extension universal snaps you have instant loss of control. I will never forget the time I was leading Charlie McCoy for the first time (Elizabeth City 1990). Coming into the last leeward mark the tiller pulled out of the rudder head. Before I could get it shoved back in, the boat started to turn and as I moved to the low side to follow the rudder hole, the turn accelerated until over we went, in the Albemarle Sound. Note to self: Always pin your tiller into the rudder.



If you can't get the mainsheet undone in puff or to duck a starboard tacker you can also have trouble. The ergonomics of the cleat must be right, a strong boom vang and a main sheet ratchet will also go a long way towards reducing the load on the mainsheet and making it easier to uncleat on command. Usually, this will only keep you from steering down and perhaps running into some one. (executing a duck or falling off around a windward mark).

Another hazard is a jib cleat system that chronically recleats itself in a tack or is generally difficult to uncleat in the first place.

Another key is to be able to ease the vang before you bear off around the windward mark. Too much vang tension can make the boom tip more likely to hit the water when you bear off or when you jibe. This can cause a capsize

#### D. Communications

The crew and skipper must work together. The skipper should always carefully explain to the crew what they will need to do in each maneuver before you begin the maneuver. During the maneuver, as mentioned above, it is frequently helpful to yell out signals to each other during tacks and jibes. The skipper can remind the crew to cross the boat before the boom comes over and call for a tug on boom at the right moment. The crew can call out when the trapeze is unhooked and when the jib is uncleated. I frequently describe what is going to happen from the crew's perspective as we approach a mark, start or maneuver. "O.K. you're going to pull the pin, bag the barbers, stow the pole, then I'll make a left turn, jibe the boom and you'll sheet and trap as fast as you can. For the Gipper, on three . . ."

### III. CAPSIZE RECOVERY

Flipping over is part of the game of dinghy racing. There are simply going to be conditions or circumstances which will cause any of us to flip no matter how careful or experienced you are. The inevitability of this drama is what makes dinghy sailing a true adventure. I have not capsized the Hampton enough in all conditions to be an expert on capsize recovery. There is more than one way to do it, and different conditions may require different techniques. Here are some ideas.

The first step in a good recovery occurs before you have finished going over. If it is physically possible, one member of the crew should try to wind up on the center-board before the mast even hits the water. This is usually pretty easy if you flip over to leeward and tougher to achieve if you flip to windward or in mid-maneuver. If one person can get on the board quickly, they can almost always prevent turning turtle, and sticking the mast in the mud. If no one gets on the board, or if the capsize survivor just hangs out on the side of the boat to keep their feet dry, it will turtle (go mast down) pretty quickly. If that happens you will need a bit of good luck to get back up with a straight stick in any water under 24 feet.

Once the boat has been stabilized on its side with one crew hiking out on the board to prevent turtling, the next step is to insure that both the main and jib sheets have been uncleated. If the wind is strong, then it is also a good idea to swim the bow of the boat directly into the wind before attempting to right the boat. Having the bow into the wind will keep the boat from re-flipping immediately after you right it. In lighter winds you might get away without this step. The boat can be rotated by a swimmer or crash boat pulling on either the mast tip or the bow. The mast tip can be a good place for the crew to be since the buoyancy of their life jacket is easily enough to keep the mast tip from going to the bottom. You can also get a lot of leverage out there to turn the boat's bow into the wind. The downside is you have to swim 24 feet to get back into the boat after it comes up. Once the bow is pointed into the wind the boat will come up pretty easily if it has not turtled. If the mast tip has spent some time under water it will get quite heavy and then it will be necessary to have both crew on the centerboard.

Once the boat is up-right the boat will be very unstable initially. While the boat is full of water, all the buoyancy in the inner hull wants to escape upward and will make the boat want to re-flip. Its kind of like sitting on an inflatable pool-toy, if you get crooked, the buoyancy below the floors will flip you. As the water drains out of the boat, it will progressively get more stable, so the name of the game is to work hard to keep it upright during the precarious first few minutes. One crew hanging off each side, or perhaps one crew keeping the bow into the wind are helpful tricks. The crew should carefully get back into the boat, one at a time, being mindful of the initial tenderness. Likewise, sail cautiously at first, until most of the water drains out. Generally, the sails do not need to be taken down to right the boat and doing so can increase the complexity of the recovery. However, in extreme conditions, go ahead and take the sails down early at the first indication that you may not be able to keep the boat upright after the capsize. The heavier the conditions and the colder the water the more conservative you should be, and in some cases you may decide to take down the sails immediately to eliminate the possibility of re-flipping.



Always wear a life jacket, unless heat and lack of wind make it its very own health hazard. If it is super windy, get fully dressed before you start sailing. Consider getting a wet suit for sailing in the Spring on the Potomac. It can dramatically improve your comfort, confidence, strength, buoyancy and longevity in a cold water capsize. Don't let shrouds go forward down wind if it is too windy. Make sure boat is water-tight. Watch out for centerboard trailing edge. And mind that trap harness hook on my new paint job. Don't hesitate to take command of the situation when approached by powerboats. Don't let them get too close. Only let them help you if you can't get the bow into the wind, or if you have gone turtle. Instruct them to approach slowly and to come no closer than necessary to heave a long line. If possible they should approach from down-wind so they won't blow on top of you when they put it in neutral. They should not try to come along-side, parallel to your boat. It is better to nose-in with the bow so they can back away with the prop far away from you and your boat. Have them throw you a line that you, not they, will attach to your bow. Explain in advance what you want them to do after they start pulling, because they won't be able to hear you once they are at the end of your towline. Explain that they should pull the bow into the wind (explain where that is) and tell them to continue pulling at 2-5 Kts after the boat comes up and to only stop if the boat recapsizes or if you tell them to stop. The motorboat needs to keep powering in order to keep the boat into the wind. The forward motion will also make the boat more stable once righted.

If you are in a wooden boat, you will need to further explain to the motorboat that they must keep pulling until the water has been allowed to drain out through the suction bailers. Explain that you will gradually signal them to increase (or decrease) speed with hand signals to optimize the self-bailing process. Keeping the power on is very counter-intuitive for the motorboat, so you will need to explain this in advance. In a woody, the motorboat will need to tow you pretty fast to drain the water out efficiently, so you should dictate the speed with hand signals.

If your boat has gone turtle, and the centerboard has disappeared, then you may have to have a line tied to the shroud to assist in righting the boat. You need to be very gentle here, especially if the mast is in the mud.

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The key to good boat handling in heavy air, is heavy and medium air sailing experience. Time in the boat in the specific kind of conditions you want to master is essential. Start in the light-stuff and work your way up to heavier air, adjusting your wind thresholds depending on: the presence of other sailboats or crash boats, the weight/experience of you crew and the water temperature. Time in the boat should be spent practicing good/fast/safe boat handling. To practice good technique you need to understand the pitfalls described above. If in doubt, ask more questions.