



JH Peterson photo

## Don't take (unnecessary) chances!

If you want to finish consistently near the top of your fleet, it's probably best to follow a conservative gameplan. In sailing, being conservative means that you minimize your risk, or exposure, by sticking to tactics and strategies that have a high probability of success. Of course, there are situations when it's all right (or even smart) to take chances, but your guiding philosophy should be to avoid risky decisions, maneuvers, tactics and strategies.

In any race, there are a number of things that can go wrong. You could get a bad start, go to the wrong side of the beat, hit a mark, foul a boat, have a bad takedown, break something . . . any one of these can result in a bad score that will ruin your regatta.

No sailor can avoid mistakes 100% of the time, but the best sailors get pretty close. They remove most of the risk from choices they make by not taking any course of action unless they're pretty sure it is correct. For example, they only start where they have a great chance of getting clear air and speed. They won't sail very far to either side of the beat unless they are quite sure it is the right way, and so on. By continuously making high-probability choices and avoiding risky options, the best sailors maximize their chances of doing well in each race. That's what it means to be conservative.

Of course, when you sail conservatively you may lose (at least temporarily) to some boats that take bigger chances. Every race has at least a few boats that guess right. The problem (for them) is that they often guess wrong. Your goal is to be in the top group consistently. That comes with conservative sailing, and it usually produces the best results over the course of a regatta or a season.



### BRAIN TEASER

## 'Be' the wind!

Here are 7 statements we sail in. For each one, choose the best answer: A. True B. False C. 'It depends'

1. The speed of your **apparent wind** (the wind you feel while sailing) is usually greater than the true wind speed.
2. In most wind velocities, a boat's **jibing angle** is narrower (smaller) than her tacking angle.
3. The presence of **wind gradient** is one reason why you may have to trim your sails differently on each tack.
4. A **velocity header** is caused by a lull, while a velocity lift is the result of a puff.
5. When the **wind shifts**, a boat that is closer to the new wind direction will gain on boats that are farther away.
6. When sailing upwind in **current**, you feel less apparent wind on the up-current tack than the down-current tack.
7. If you're sailing upwind and you have different apparent wind angles on each tack, this could be due to **wind shear**.

(The answers are on page 7.)

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# Be conservative by reducing risk

A risk is a chance you take on the race course. Sometimes, taking a risk results in a gain, or reward. More often, a risky move will cause you to lose something you have – boats, time, your standing in the series, a chance to catch up, etc. If you want to get more consistent results, you should generally reduce risk and be more conservative.

By itself, risk is not good or bad. It depends on your situation in a race or series and your assessment of the probable success of that risk.

However, a lot of risks are not worth taking. Many times you don't want to risk losing anything, or at least the reward you might get is not worth the risk you'd have to take. This is typically the case near the beginning of a race or series and when you are doing well.

To be successful in sailing, you must perform consistently well for entire races and for long series. In a sport like tennis or basketball, the down-side of taking a risk is that you'll lose a point. In sailing, a bad risk can put you so far behind you will never catch up.

This is why, as a racing sailor, you need to have a plan for managing risk. In most cases, the best plan is simply to reduce risk and

## A few definitions

**Conservative** – A conservative sailor is one who minimizes their risk, or exposure, by sticking to tactics and strategies that have high probabilities of success. This often means giving up a little top-end potential to reduce the chance of making costly errors.

**Risk** – A chance; the possibility of losing distance and/or boats; an action associated with a low or unknown probability of success.

**Reward** – A gain; the good result of an action; an improvement in your position in terms of boats, distance, time or all of these.



JH Peterson photo

**The starting line is one place where it's usually smart to be conservative. When the entire fleet is crowded together in one small area, it's a good idea to avoid risky decisions. Common mistakes are starting in a clump of boats and/or right at one of the ends. These high-risk moves have a low probability of success, and they don't usually set a good tone for the rest of the race. Instead, be more conservative by going for clean air away from the crowds.**

sail conservatively.

There are two requirements for doing this. The first is to figure out how conservative you need to be. For example, if you're on the last beat of the last race and you're not happy with your position, you'd probably be willing to take a large risk in search of a big reward.

The second thing you must do is evaluate the risk and reward that are involved with any decision you might make. For example, if you are thinking about doing a jibe set in a windy race, consider how much you might gain and then compare this with the possibility of losing. If the risk-to-reward ratio is too high, look for another option.

## How conservative to be!

Being conservative does not automatically improve your position in

a race. Though it's smart to avoid risk (especially big risks) much of the time, there are many situations where you might choose the less conservative option. The key is to understand how all the following factors affect your risk level:

**How much race is left?** – A good rule of thumb is to be conservative in the early stages of a race or series. There are two reasons for this: 1) At the beginning of a race (or series) the fleet is very tight and the cost of making an error is quite high, so it's smart to avoid risks; and 2) When it's early, you still have most of the race or series to improve your position.

As you get closer to the finish, however, you should generally be willing to take more risk because you are running out of time. Even if you are doing OK in the race, you

might consider some riskier options to improve your position since the fleet is usually spread out by then and the cost of making an error is probably not so great.

**How much do you have to lose?**

The better you are doing in a race or series, the more conservative you should generally be. When you are leading the race, for example, you obviously have a lot more to lose, and therefore a lot more at risk, than when you are in last place.

Being conservative is mostly about defending and protecting what you have, so when you are in the back of the pack (or in any position where you're not happy), there's not usually a strong reason to be conservative (except to protect a chance to catch up in that race).

**Strategic soundness** – When you are very sure that you're doing the right thing, being conservative is not so important. In fact, when you are very confident strategically be careful about being too conservative (because then you might not be doing what you know is correct). On the other hand, there are very few things that are 100% certain in sailboat racing, so if you have any doubt about what's the right move, consider the conservative option.

**Your boatspeed** – How are your speed and height compared to the other boats in your fleet? If you are faster than most of your competitors, you can be relatively conservative because you don't need to take risks to get to the front of the fleet. If you're slow, however, you may need to take more strategic risk in order to keep up.

**Potential for gain** – If you make a less-conservative decision, how much might you gain or lose? When the gain-to-loss ratio is pretty high, that might be a risk worth taking. For example, if you have a chance to catch five boats and the worst that could happen is losing two boats, this could be good. But if you have to risk three places in order to pass one boat ahead, that is probably a bad idea.

While you are racing, consider all these factors and then decide the level of conservatism that is

## Make 'high-percentage' decisions

*In every race you have to make dozens of choices about how to get to the finish line as quickly as possible. Your goal should be to make all of these decisions in such a way that each one has as high a probability of success as possible. If your success rate is only 50%, for example, half your decisions will be 'wrong.' The top sailors try to get their decision-making percentage consistently close to 80% or 90%. That's how they minimize the amount of risk they take.*

*Here is a chart that shows what happens when three boats (A, B and C) make two decisions during a race, and each boat has a different probability of making the 'correct' choices.*

BOAT 	DECISION* <b>1</b>	DECISION* <b>2</b>	COMBINED**
<b>A</b>	50%	50%	25%
<b>B</b>	70%	70%	50%
<b>C</b>	90%	90%	80%

\* The odds that this individual decision will be correct.  
 \*\* The odds that **both** of this boat's decisions combined will be correct. This is calculated by multiplying the probabilities for each decision. For Boat A:  $0.5 \times 0.5 = 0.25 = 25\%$

**Boat A** makes decisions that have only a 50% chance of working out. This might be because A is a risk-taker or because she doesn't have enough good information to make higher-quality decisions. When A makes two 50% decisions, there is only a 25% probability that both are correct. That is not usually a winning formula.

**Boat C** makes decisions that have a 90% probability of being correct. This might be because she is quite conservative and unwilling to take risks, or because she is very experienced and skilled, or a combination of both. When C makes two 90% decisions, there is an 81% likelihood that both are correct. That gives her pretty good odds of doing well.

**Long term vs. Short term** Probabilities are most accurate when applied over a long period of time that includes many racing decisions. In a twelve-race regatta, for example, Boat C has a much better chance of doing well than Boat A because C is consistently making choices that have a higher probability of being correct.

But when you consider a shorter time frame with fewer decisions, the results are not always so predictable. In the two-decision example described above, Boat A will make two correct choices one quarter of the time. Boat C will make at least one wrong choice one fifth of the time. So in any given race it is possible that A could be ahead of C. But as the boats make additional decisions, it is more and more likely that C will move ahead. That's why being conservative has to be a long-term strategy. It doesn't always work in the short run, but it almost always works if you stay with it long enough for the odds to work in your favor.

*\* For simplicity I have assumed that racing decisions are either 'correct' or 'incorrect,' but there is certainly a large grey area between these extremes. There is also a huge range in the importance of decisions – an incorrect minor decision is not such a big deal but a wrong major decision can ruin a race or regatta.*



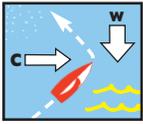
## CHECKLIST

# Ten ways to sail conservatively

Once you've decided to minimize risk by sailing conservatively, there are many things you can do to implement this philosophy. One good example is starting near the middle of your fleet. The ends of the starting line are generally risky places because they usually attract a crowd, so your chances of getting off the line cleanly there are relatively small. In addition, when you start at an end you instantly put yourself on one extreme side of the fleet. This is OK if you're sure

that side is better, but it's a big risk if you're not. Of course there are times when one end of the line (or one side of the course) is so obviously favored you need to start near that end, but this is more the exception than the rule. The conservative move is to start down (or up) the line a bit where there are fewer boats and better odds of getting a clean start. Here are a bunch of other ways to sail conservatively, many of which are covered in much greater detail in the following pages.

- 1. Know the rules.** Not knowing the rules is risky. This includes all the right-of-way rules, of course, but also the notice of race, sailing instructions (SIs) and any other rules that govern each race in which you sail. Before every regatta, read these documents carefully. This is an easy, foolproof way to minimize risk and avoid embarrassing mistakes that can cost you the series. Learning the right-of-way rules is also key to reduce risk – it will put you in a stronger position tactically and help you stay in control of your race (see pages 6-7).
- 2. Prevent breakdowns.** One easy way to lose a race or regatta is by having a major breakdown. Therefore, reduce risk by checking your boat carefully before every race. Pay special attention to areas of high wear and tear like the vang, hiking stick, hiking straps, etc. Checking over your boat is a no-brainer – it's free and easy to do and will help you avoid bad scores that happen when the boat breaks (see page 11).
- 3. Work on boatspeed.** Improving your boatspeed can require a bit of effort, but even a little bit of extra speed or height will give you a huge return, and there is no risk at all. Good boatspeed helps you sail more consistently near the front of the fleet, and it helps you recover from mistakes. As a result you can be more conservative – even if boats that take more risk get ahead of you, you'll have a good chance of catching them (see pages 14-15).
- 4. Practice boathandling.** Your team can always get better in maneuvers, so practice as much as possible. Good boathandling gives you more strategic and tactical options, and it will make you a little faster around the course. It also reduces the risk you take whenever you perform a maneuver. In heavy air especially, bad race scores are often due to poor boathandling; practice will help you be more consistent (see page 10).
- 5. Minimize close encounters.** You can't avoid other boats entirely, but try to stay away from them in general. This allows you to sail in clear air and maintain the option to go where you want. Plus it reduces the chance that you will break a rule and have to take a penalty.
- 6. Make a strategic plan and follow it.** A lot of risk-taking happens when sailors make decisions on the spur of the moment without much thinking. To avoid this, make a strategic gameplan and use this to guide you around the race course. Of course, you have to modify this plan as conditions change, but if you make tactical and strategic decisions within this framework you can avoid a lot of the mistakes that happen if you act impulsively.
- 7. Don't take 'fliers.'** A flier is an adventure you take by yourself. It could be sailing off into one corner of the windward leg or being the only one to use a particular tuning style. If you are the only one doing it, your chances of success are probably not so great (if they were, other people would likely have figured it out too). Occasionally a flier works, but the rest of the time it would have been better to make the conservative choice.
- 8. Obey basic rules of thumb.** A 'rule of thumb' is a tactic or strategy that has proven successful over the course of time. In other words, it is something that has a relatively high probability of success. That's important when you are trying to sail conservatively. For example, one rule of thumb is to avoid the laylines on a beat or run. Sometimes going to a layline works, but more often it is better to stay away. Therefore, unless you have a good reason, follow this rule of thumb (see pages 8-9).
- 9. 'Cover' the boats behind you.** A conservative tactic is to stay ahead of the boats behind you by positioning your boat between them and the next mark. This will minimize your risk of losing them.
- 10. Take your penalties.** No one wants to admit they broke a rule or do circles during a race, especially when they're not sure they were actually wrong. However, when you go to a protest hearing you typically have a 50% chance of winning or losing. So, if you really want to minimize risk, your best move is often to take a penalty at the time of the incident. When you make one mistake, be careful not to make two (by refusing to admit the first).



## STRATEGY

# A conservative plan in action

I recently sailed the Lightning NAs in a fleet of 60 boats. On the last day we had three races in a 10-to-15 knot northerly. It was the typical puffy, shifty breeze that you find on Long Island Sound after a cold front.

We began the day tied for third place and our goal was simply to be consistent. There were two reasons why this was important: First, there was not going to be a throwout race, so everyone would have to keep all their scores. And second, the shifty conditions meant it would be easy to have a bad race.

We did our homework before the first start and found the wind was oscillating over a range of about 30 degrees! Sometimes there were big puffs on the left side of the course, and sometimes the best pressure was on the right.

It was going to be difficult to predict which side might come out ahead on any particular beat, so we decided to be conservative by playing the middle. We started in the middle of the line in all three races and tried to stay on the lifted tack.

When the wind was in a left

phase, there would be 10 or 15 boats ahead of us on the left side. Then we'd get a right shift and 10 or 15 boats on the right side were beating us. But as we got closer and closer to the windward mark, the boats on the sides lost their ability to play each shift (because they were getting too close to a layline).

In all three races, three or four boats from one side (the left twice

and the right once) beat us to the windward mark. These boats had taken a lot of risk and were fortunate to have chosen the side that worked on that particular beat.

We were very happy to be in the top five without taking much risk at all. We finished the day 4-5-5 and ended up second overall. It was a great example of when it works well to sail conservatively.



Fergus Henderson photo

My team rounds a windward mark on the final day in a puffy oscillating wind.

## Probability or luck?

At the end of a race or series, it's not uncommon to hear someone say they did poorly because of bad luck, or that someone else did well because of good luck. Does 'luck' really play a big part in sailboat racing?

According to the dictionary, luck is defined as "chance, or fortune." If luck happened randomly, everyone would get an equal dose of both good and bad luck, at least in the long run. But that's not usually the way it works.

In sailing, the top sailors often appear to be lucky while the less experienced sailors are often unlucky. The reason for this, in my opinion, is that good sailors create their own luck by consistently playing the odds. That is, they usually put themselves in high-percentage situations and stay away from low-percentage gambles. By doing so, they get favorable windshifts more often than not. It may look like they are lucky, but their gains usually come from a conservative, play-the-odds philosophy of racing.

On the other hand, less-experienced sailors do not

consistently play the best odds, and they sometimes take chances top sailors would never take. Because of this, windshifts often don't go their way. It may look like they are victims of bad luck, but in reality the probabilities are just catching up with them.

A lot of what appears to be good or bad luck is simply a reflection of each boat's sailing strategy. In many ways the 'luck' you get is what you deserve based on your preparation and strategizing.

However, there are other times when boats experience random occurrences that are unpredictable or, at least, unlikely. For example, if everyone agreed there was a 90% chance that the wind would shift to the right but the wind actually shifted to the left, then the boats on the left side had good luck and the boats on the right had bad luck.

One thing about sailing is that you're never sure what will happen with the wind. All you can do is play the odds and you should be right (or 'lucky') most of the time. But if you pursue low-probability options, then you really will need luck, and that is never something you can (or want to) count on.





# Take the risk out of close encounters

Experienced racers often offer this advice about the rules: “Stay out of the protest room because no matter how confident you are about the situation, your chances in a hearing are always 50/50 – you either win, or you lose.” Any time you put your fate in the hands of other people you are taking a big risk, so avoid this whenever possible.

**No contact** A boat that has the right of way will almost never be penalized in a hearing unless there was contact. So the conservative choice is clear – do not touch the other boat (see *Situation C*!).

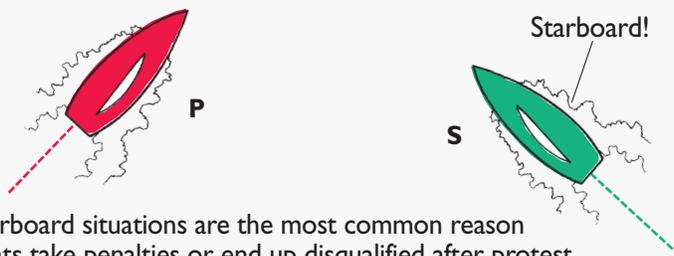
**Stay farther away** The closer you get to another boat, the higher your level of risk. So the easiest way to be conservative is simply to position yourself a little farther from other boats (see *Situation B*).

**Concede and protest** When you’re in doubt about which boat has rights, don’t force the issue. Concede to the other boat and then protest if you think they may have broken a rule. This way you won’t be taking any risk (see *Situation D*).

**Take a penalty** If you do break a rule, do a Two-Turns Penalty. This is always better than a DSQ. Even if you’re not sure whether you broke a rule, you can take a penalty as insurance (and still protest!).

Here are four common rules situations that demonstrate these principles.

### A. Converging on port tack



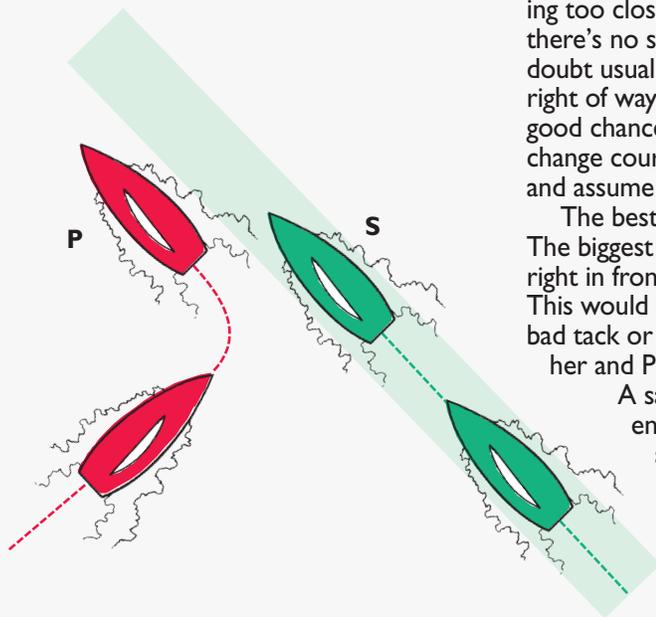
Port-starboard situations are the most common reason why boats take penalties or end up disqualified after protest hearings. So be conservative about crossing close ahead on port tack.

The reality is that if a close port-starboard incident goes to a jury, the port tacker (P) has a high probability of being penalized, even if the starboard tacker (S) did not actually have to change course. Unless there is a good witness, it will be one boat’s word against the other. If the jury feels that S had a “need to take avoiding action” (see definition *Keep Clear*), P will be penalized. There is no specific onus on P, but usually the right-of-way boat gets the benefit of the doubt.

Therefore, a conservative approach for P is to assume that if you make a very close cross you will be penalized. To be safe, duck S (if you really like the right) or do a lee-bow tack (if you like the left). If you’re far enough advanced that you can almost cross, a lee-bow will be very effective and you’ll soon have the option to get back onto port. Of course, P can try hailing “Cross or tack?”, but this is very risky unless you get a clear response from S.

Another strategy is to try making the cross and be willing to take a Two-Turns penalty if S thinks you were too close. This might be worth the risk near the finish when the fleet is spread out. But taking a penalty early in the race is usually costly and should be avoided.

### B. A close leebow tack



The second most common reason why boats get penalties is for ‘tacking too close’ (and breaking rule 13). This is another situation where there’s no specific onus on the tacking boat (P), but the benefit of the doubt usually goes to the starboard tacker (S) because she holds the right of way and has been steering a steady course. As a result, P has a good chance of being penalized even if S did not actually have to change course to avoid contact. Therefore, P has to be conservative and assume she will get a penalty if her lee-bow tack is very close.

The best way for P to minimize risk is to tack farther away from S. The biggest mistake that port tackers make when lee-bowing is to tack right in front of the starboard tacker (so they are blocking S’s path). This would be a strong tactical position, but if the tacking boat has a bad tack or mis-judges her timing, S will have to change course to miss her and P will be penalized.

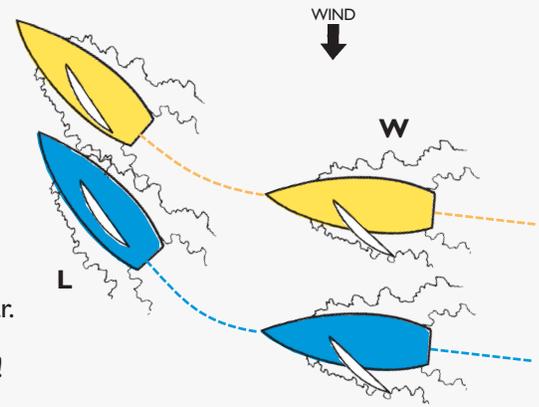
A safer maneuver for P is to tack a little earlier. She wants to end up as close as possible to S, but not in S’s path (the green area). This way if P makes a bad tack she won’t cause S to change course. Of course, tacking farther away makes P’s lee bow less effective (i.e. S may be able to remain on starboard tack and pin P), so P must choose the level of conservatism that fits her situation in the race.

## C. Luffing before the start\*

The starting line is one place where the risk of getting a penalty is relatively high because it's usually pretty crowded and there is much at stake. As boats make their final approach to the line on starboard tack, there's a lot of maneuvering in very close quarters and it's wise to be a bit conservative since a penalty here would be very costly.

When boats are luffing for position, there is risk for both the windward boat (W) and leeward boat (L). W is to windward so she must do everything she can to keep clear or she risks getting a penalty. The safest strategy for W is to proactively stay a safe distance from L. She can't let the boats converge so close that it becomes difficult for her to keep clear.

L, on the other hand, must give W room to keep clear whenever L changes her course. To be conservative, L must not have contact with W! Though W is the windward boat and is therefore at risk in this situation, the existence of contact instantly raises the possibility that L changed course and did not give W enough room to keep clear. In that case, L's prospects in a protest hearing are not much better than 50-50. If L thinks W is not keeping clear she should bear off and protest. But in no case should L risk having any contact with W!

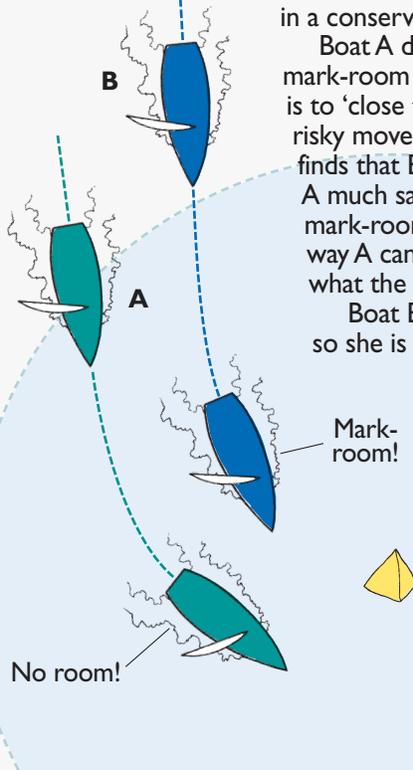


\* This scenario also happens after the start, but luffing in the middle of a race is not usually a smart move for either boat because both will lose distance to every other boat in the fleet.

## D. Giving or taking mark-room

Mark roundings are another place where boats make choices that involve lots of risk. When you have a chance for a big gain or loss, which happens at many marks, this often tempts you to suddenly change your thinking about how conservative you should be.

A perfect example is the leeward mark rounding shown below. When the first boat (A) gets to the zone, she thinks that she is clear ahead of the next boat (B). B thinks she has an inside overlap. Their disagreement might be solved if they have time for a discussion, but that is not always possible, so often they approach the mark with differing views about mark-room. Let's look at how each boat can handle the situation in a conservative way.

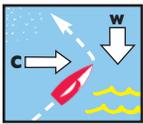


Boat A does not think she has to give mark-room to Boat B, so her first thought is to 'close the door' on B. But this is a risky move if B protests and the jury later finds that B did have an inside overlap. A much safer move for A is to create mark-room for B and then protest. This way A cannot be penalized, no matter what the jury finds as facts.

Boat B thinks she has mark-room, so she is inclined to force her way between A and the mark. But this would be very risky if A protests and the jury later decides that A was clear ahead at the zone. A much safer move for B is to bear off, round behind A and protest if she thinks A broke a rule. This way B will not be penalized, no matter what the jury finds as facts.

## TEASER ANSWERS (Page 1)

- 1. It depends.** If you are sailing upwind, this is true. But if you are sailing downwind, your apparent wind is usually less.
- 2. True** (or It depends). For most boats, in most wind conditions, the normal jibing angle is substantially smaller than their tacking angle. Possible exceptions are very light air, where boats sail high angles to maintain speed and certain fast boats (e.g. multihulls and skiffs) that sail wide angles.
- 3. False.** Gradient is a change in wind velocity at greater heights above water level. It affects both tacks equally, so by itself this would not require special sail trim from tack to tack.
- 4. True.** When you sail into a lull, your apparent wind temporarily moves forward and makes it appear as if you have been headed. Likewise, when you get a puff, your apparent wind moves aft and makes it seem like you've been lifted. This is true both upwind and downwind.
- 5. It depends.** If you're racing upwind, the boats closer to the wind shift gain because they jump to a higher ladder rung. But on a run the boats farther away from the shift gain because they move to a lower rung.
- 6. False.** The current affects your sailing wind equally on both tacks.
- 7. True.** Wind sheer is a change in wind direction at greater heights, which usually requires different sail trim on each tack.



## Conservative STRATEGY

# Sail the longer tack or jibe first!

On any beat or run, you always have to make a choice between two specific options – you can either sail on port tack or starboard tack. In most cases, the safer and more conservative option is to sail on the tack or jibe that is longer.

This is a trustworthy strategic rule of thumb that has worked for me many times. It's a simple, nearly foolproof guideline that is easy to use and often yields big rewards.

When you're racing upwind, the 'longer tack' is the one on which you must spend more time to get from where you are to the windward mark. There are many reasons why one tack may be longer than the other. Perhaps you simply sailed away from the middle of the course. Or maybe there was a windshift, a cross-current or a windward mark that was not set to windward.

In all of these situations, the safer bet is to sail the longer tack or jibe first. For example, imagine you are in the middle of the beat and the wind shifts to the right. Now getting to the windward mark will take you three minutes on port tack and six minutes on starboard tack. In this case the conservative move is to sail on the longer starboard tack (unless, of course, you know the wind will keep shifting right).

The longer tack is also the one on which your bow points closer to the windward mark. Sometimes it

is easy to judge this by looking at where other boats ahead of you are pointing on each tack. If you have instruments, or even just a compass, you can calculate the longer tack mathematically.

### When and why this works

'Sailing the longer tack first' is a rule of thumb that works most of the time. However, like all such guidelines, it is not meant to be a replacement for figuring out what the wind is doing and making your own strategic plan to handle the particular wind conditions you are facing. For example, if it's light air and you see more pressure to the left, you should probably sail that direction on starboard tack even if port tack is a lot longer.

However, when you are not so sure about what the wind will do next (which is the case even for top sailors much of the time), then you have to rely on rules of thumb like 'sail the longer tack first.' This principle works because when the wind might shift in either direction it's better to stay away from the layline. By sailing the longer tack first, you head toward the middle of the beat rather than the closer layline.

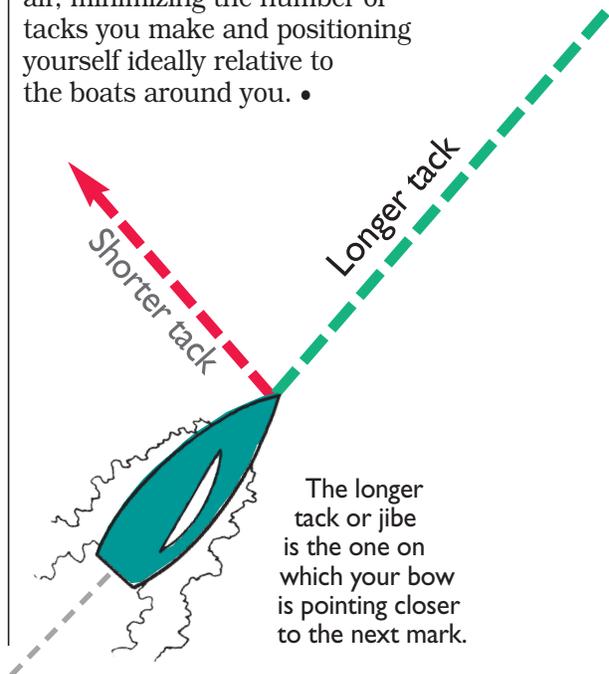
Over the course of many races in the past, this strategy has proven to work more often than not. It usually gives you a higher probability of success, which is very important

when you are trying to reduce risk and sail conservatively.

The benefits of sailing the longer tack first are greatest when:

1) **The distance you must sail on one tack is significantly longer than the distance remaining on the other tack** (see next page); and

2) **You are fairly far from the mark.** The closer you are to the mark, the less of an advantage you'll get from sailing the longer tack first. That's because the wind is less likely to shift during the short time before you round the mark. In this case it's often better to focus on other things like clear air, minimizing the number of tacks you make and positioning yourself ideally relative to the boats around you. •



**On this run to the finish, port jibe is much longer than starboard. That's why all these boats are sailing on port jibe first and saving starboard jibe (if needed) for later.**



Fergus Henderson photo

Windward mark



## How much longer is one tack than the other?

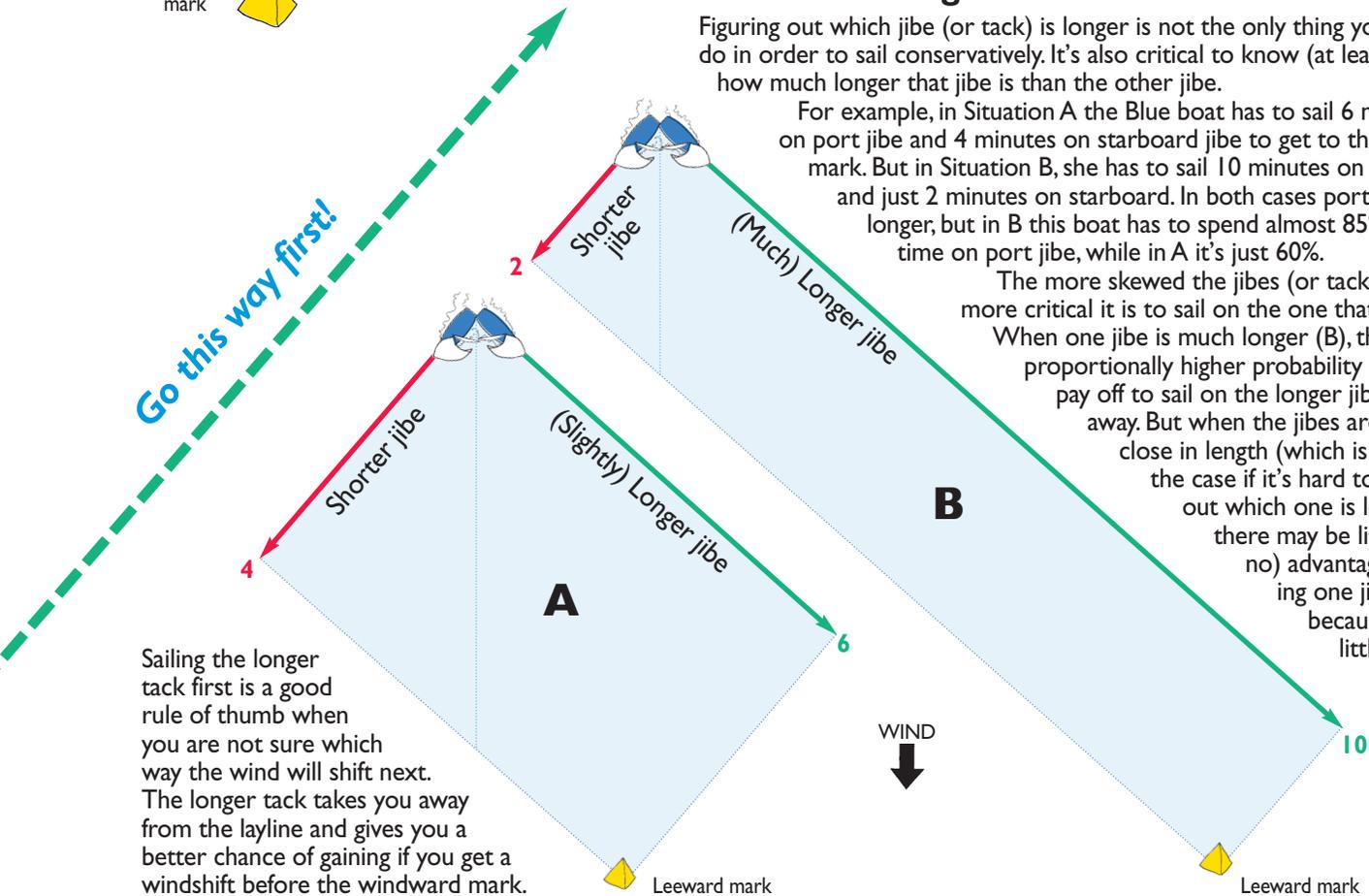
Figuring out which jibe (or tack) is longer is not the only thing you need to do in order to sail conservatively. It's also critical to know (at least roughly) how much longer that jibe is than the other jibe.

For example, in Situation A the Blue boat has to sail 6 minutes on port jibe and 4 minutes on starboard jibe to get to the leeward mark. But in Situation B, she has to sail 10 minutes on port jibe and just 2 minutes on starboard. In both cases port jibe is longer, but in B this boat has to spend almost 85% of her time on port jibe, while in A it's just 60%.

The more skewed the jibes (or tacks), the more critical it is to sail on the one that is longer. When one jibe is much longer (B), there is a proportionally higher probability that it will pay off to sail on the longer jibe right away. But when the jibes are very close in length (which is probably the case if it's hard to figure out which one is longer), there may be little (or no) advantage in sailing one jibe just because it's a little longer.

Go this way first!

Sailing the longer tack first is a good rule of thumb when you are not sure which way the wind will shift next. The longer tack takes you away from the layline and gives you a better chance of gaining if you get a windshift before the windward mark.



## When in doubt, stick with basic rules of thumb

A *rule of thumb* is a general guideline for success that evolves from many experiences over time. It is a rule that provides guidance to successful behaviors and actions, and also a 'tried and true' principle that, during numerous applications for a long period, has proven to work most of the time.

In sailing, a rule of thumb is a strategy that consistently has a high rate of success and minimal risk of failure. That's exactly why rules of thumb are so valuable for conservative sailing.

As I explained earlier (see page 3), you have to make many decisions during the course of a race. This leads to two typical problems: 1) You often have no clear idea which choice is better; and 2) It is difficult (or impossible) to fully consider every choice before you make it because you just don't have time. That's where rules of thumb come into play – they offer reliable guidelines and a shortcut to good decision-making.

In situations where you might otherwise have to make a 50-50 guess about the right thing to do, you might improve your chances of success to 80% or 90% by using a guideline (i.e. a rule of thumb)

which works most of the time for that situation.

For example, imagine that you are sailing up the first beat of a big race and you have lost track of what the wind is doing. Instead of tacking aimlessly back and forth, get onto the tack where your bow is pointing closer to the windward mark. By **'sailing the longer tack first'** you will increase your chances of getting to the next mark sooner, especially if one tack is significantly longer than the other.

Ideally, you would never need a rule of thumb. Instead, you'd look at each unique situation on the race course and develop a custom plan to take advantage of the existing conditions. For example, when you are certain that the right side of the beat is favored you should go right, even if that means you are sailing on the shorter tack first.

However, when you're not sure what to do next, rules of thumb can be very helpful. In most cases they will give you a fair chance of success without the need to take much risk. Though rules of thumb don't always work (because they are general solutions to common situations), they can be invaluable ingredients of a conservative approach.



# Minimize risk in crew maneuvers

When you follow a conservative gameplan, don't forget about boathandling maneuvers. Every time you tack, jibe, duck another boat, hoist the chute, take it down or round a mark there is a certain risk involved. Many races are lost because of capsizes on the run or spinnakers that went in the drink.

In heavy air especially, your goal must be to minimize the risk associated with boathandling. Here are a bunch of ideas on how you can accomplish this:

**Organize** – Treat everyone on your boat as integral members of a team. Make sure everyone knows their job during each maneuver so they can work together efficiently. On bigger boats, a good way to do this is with a written job description that can be handed to each person before a regatta. On smaller boats, just practice every maneuver a lot. After each race, review boathandling with the team to make sure everyone is happy and on the same page.

**Communicate** – No teammate can do a good job if they are kept in the dark or taken by surprise. So

never begin a maneuver before all crew understand what is going on. A bad mark rounding is often due to lack of communication from the tactician or helmsperson.

**Anticipate** – Thinking ahead is probably the most important key to successful maneuvers. Conservative boathandling means avoiding knee-jerk decisions that are made at the last second. Impulsive choices are often wrong and seldom give the team enough time to do a good job.

Instead, try to make decisions as early as possible. Use contingency planning to make this easier. For example, if you're going downwind and there's a boat right behind you, say something like, "If they jibe we will match their jibe." This gives everyone on the team a fair amount of warning and allows maneuvers to happen quickly.

**Do it early!** – A big percentage of boathandling mistakes occur because maneuvers happen too late. So when you're deciding when to begin your next spinnaker take-down, err on the early side. Time always makes things easier.

### Reduce risk on windy runs

Broaches and capsizes are slow, so be conservative. This means throttling back a little to reduce the chances of a major disaster.

- *Sail higher than normal* – It's hard to sail dead downwind in lots of breeze; head up just enough to stabilize the boat and take a windward broach out of play.

- *Overtrim your main* – Pull in the sail slightly to reduce area exposed to the breeze and minimize side forces at the top of the sail.

- *Keep the vang tight* – A loose vang increases main twist and destabilizing side forces up high. So keep the vang fairly tight, but be ready with a quick release in case the boom end goes in the water.

- *Move weight aft* – In breeze and waves you want to sail the boat on its flatter aft sections; if the bow digs in it will cause the boat to turn and be unstable.

- *Overtrim your guy and sheet* – Strap the chute in a bit to keep it from swinging back and forth across the bow, which creates side forces and is destabilizing.



JH Peterson photo

Leeward mark roundings often show clearly the costs and benefits of boathandling maneuvers. By flying a spinnaker until the last moment, it is sometimes possible to gain the few feet you may need to gain or break an inside overlap. However, this also increases the chance of a bad take-down and the related costs.

My opinion is that the reward of a last-second takedown is not normally worth the risk, for several reasons:

- 1) Dropping the spinnaker early doesn't usually hurt speed too much;
- 2) Keeping the spinnaker up late will make a difference only when boats are very close (and in that case the rules onus is on the boat that breaks or gains the overlap).
- 3) The cost of having a bad take-down is potentially very high. The amount you can lose by failing to get the spinnaker down is almost always much more than the amount you will gain by flying the spinnaker a little closer to the mark.



# Don't let a breakdown ruin your regatta

The purpose of sailing conservatively is to score consistently good results and avoid big disasters. That is exactly the opposite of what happens when something on your boat breaks.

It's hard enough to be consistent when your boat stays in one piece. But when you are sailing at less than 100% it's much more difficult, and sometimes a breakdown means you get a DNF ('Did not finish').

The sad part of most breakdowns is that they are

entirely preventable. By working hard on your boat and checking it over carefully before every race, you should be able to avoid most problems. This is a key component of any conservative approach to sailboat racing.

Preventing breakdowns is a no-brainer, and it should be easy. You don't have to play the windshifts perfectly, figure out how to point higher or even get a good start – you just have to take care of your boat. Here is a list of priorities for where you might begin.

- Boom vang.** The vang takes a lot of abuse, so be sure to check it frequently for wear and tear. Look for frayed line or wire and problems at the attachment points on the mast or deck and boom.
- Hiking straps.** These are near the top of the list because this is a common disaster. How many times have you seen or heard about someone going overboard because their hiking strap broke or, more likely, simply came untied? Check all your straps for wear and carefully inspect the attachment fittings, lines and knots.
- Rubber hiking stick universal.** If you have a tiller with a rubber universal, check this for cracks. Use the type that has an internal wire in case the rubber part breaks. Rub sunscreen on the universal to slow aging and drying due to sun and heat.
- Mainsheet turning block.** A common failure occurs with the shackles or clevis pins that hold this block to the boat. Often the ring pin simply comes undone and the clevis pin wiggles out. Prevent this by checking the attachment points frequently and taping them.
- Halyards.** Broken halyards are another common failure. Check the full length of halyards for chafe, looking especially at points where the hoisted halyard sits on the sheave and where it connects to the shackle. Put a 'full-hoist' mark on each halyard so you don't pull the sail up into the sheave.
- Spinnakers.** Even a small hole in a chute can turn into a blowout, so inspect your spinnakers carefully for holes, tears and bunched-up seam threads.
- Turnbuckles and mast fittings.** Make sure all turnbuckles and pins are tight and secured. Tape tightly around all fittings and sharp edges to keep them in place and prevent tears and injuries.
- Battens.** Check your mainsail and jib battens to be sure that a) they are not missing or broken; b) the correct (more flexible) ends are inserted first; c) the inboard ends are centered in the elastic; and d) the pockets are securely closed at their outboard ends.
- Rudder fittings.** Gudgeons and pintles are common heavy-air victims, so be sure these are secured tightly. Inspect each closely for stress cracks.
- Outhaul.** Examine the wire or line closely. In strong breeze, I recommend tying a small piece of line from the clew to the end of the boom as a safety (unless you have a flattening reef) in case the outhaul breaks.
- Winches.** Clean and lubricate your winches on a regular basis, especially before sailing in heavy air. The last thing you need is to have one of your primaries seize up just after the start of a windy race.
- Spare equipment.** One of the best and quickest ways to repair a breakdown is with a spare, so consider carrying an extra winch handle or spinnaker pole (especially in heavier air when breakdowns are more likely and extra weight won't hurt your speed so much).
- Tool bag.** Carry the minimum tools and supplies needed to fix the problems above. Also include basic first aid supplies: bandages, ibuprofen, instant ice packs on larger boats, etc.



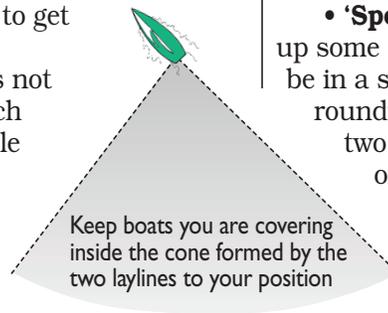
# Position your boat to minimize risk

The goal of a sailboat race is to beat the other boats. This means you have to figure out the wind and current so you can develop a good strategic plan to get around the course quickly. You also need good tactics; that is, you must consider what the other boats are doing and position yourself smartly relative to the fleet.

When you are ahead of other boats and you're generally happy with your position in the race, this is the time to be conservative. Focus on defending what you have by staying ahead of the boats behind. It's OK to think about passing boats that are ahead of you, but don't take big chances to do this. Here are some thoughts on how to be tactically conservative.

• **Cover the boats behind** – The most common way for boats to pass you is by getting 'leverage' (separation) and then a favorable windshift. The farther a boat is able to separate from you, the smaller a windshift she needs to get ahead. For example, if a boat is 5 lengths to one side of you, she may need a 20° shift to pass you. But if she is 20 boatlengths away from you, she may need only a 5° shift to get past. Obviously, she is much more likely to get a 5° shift than a 20° shift.

The lesson for the boat ahead is not to let the boats behind get very much leverage to either side. The basic rule of thumb is to stay between the boats behind and the next mark. A good guideline is to keep the boats you are covering inside the cone formed by your wake



and the opposite-tack layline to your boat. If a boat crosses your wake or gets her bow ahead to leeward, she may have more leverage than you want to give her.

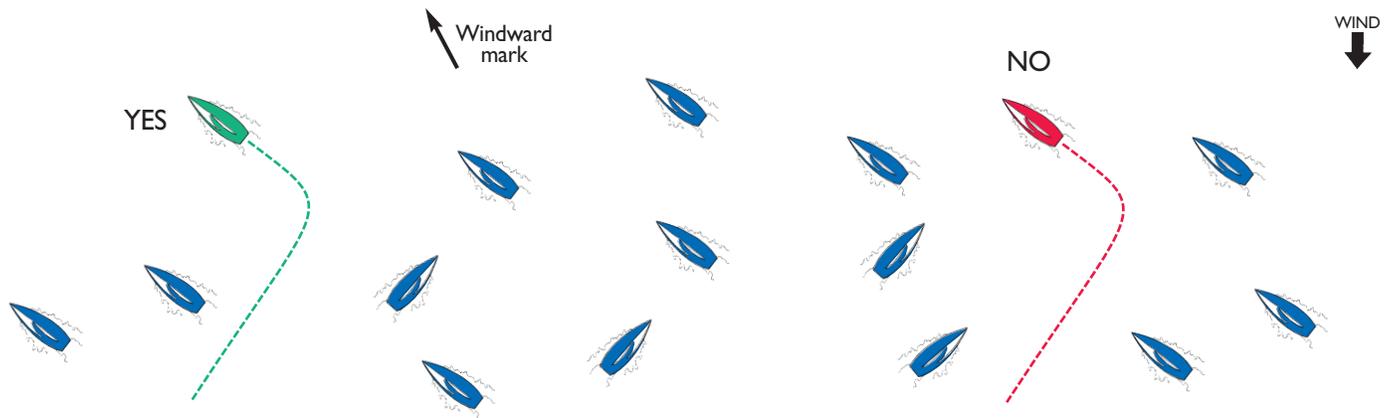
By staying between other boats and the next mark, you reduce the chances that they will get by you on a windshift. This is classic covering strategy and is very effective and safe, especially when the wind is steady.

• **Don't try to win the race!** – If the goal is to beat other boats, why shouldn't you try to win? It's not that you don't want to get the gun – it's just that often the winning boat had to assume more risk than you should be willing to take. In a long series, her scoreline is likely to look like a roller coaster.

You don't need to take that much risk in any race to do well in, or even win, the series. Instead of thinking you should finish first, aim for third or fifth or seventh. Don't worry about the handful of boats that hit the corner in every race – one of them may win this race but they could easily be third to last in the next one. Take a more conservative approach and keep sailing fast and smart. This will work in the long run.

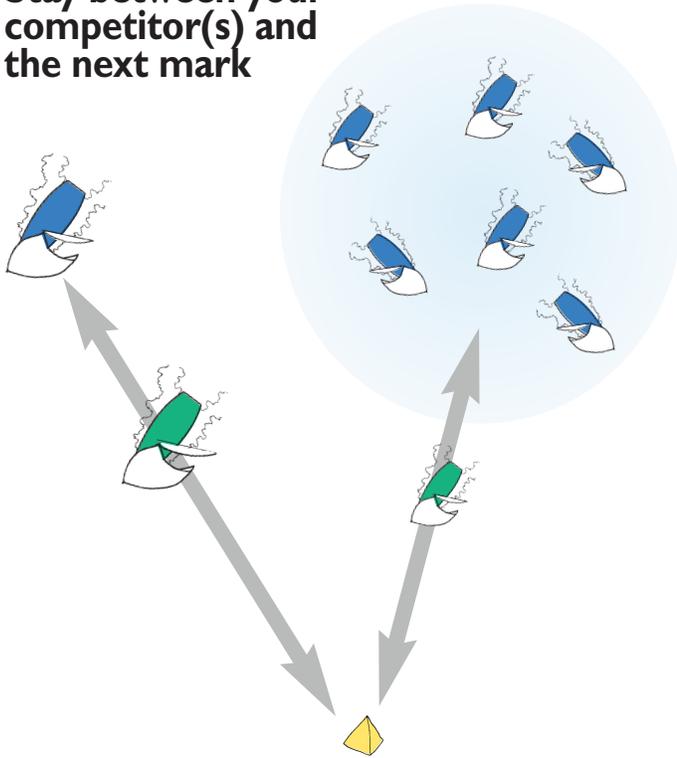
• **'Spend your lead'** – Sometimes it's worth giving up some of your lead (on boats behind you) in order to be in a stronger defending position. For example, after rounding the leeward mark, you might want to do two tacks so you will be directly upwind of (and on the same tack as) the next boats that round the mark. This is a pretty conservative move, but often it puts you in a stronger position that is worth the distance you lose by doing two extra tacks.

## Set up ahead and to leeward of the fleet on the longer tack



When you're racing upwind, it's generally better to position yourself between the bulk of the fleet and the middle of the course. In other words, you want to be to leeward and ahead of the fleet on the longer tack to the windward mark (starboard tack in this example). This is a conservative position because you are free to sail on the longer tack to the mark and you are not as close to the layline as all the boats on your windward hip. If you get a header you will gain and if you get lifted you won't be overstanding and you may actually fetch the mark. Of course there are times when it's favored to go all the way to the side of the course, but most of the time the Green boat will have a better chance of success than the Red boat.

## Stay between your competitor(s) and the next mark



When you are defending against one boat (left), stay between that boat and the next mark. This makes it difficult for them to beat you to that mark. When you are protecting your lead against a group of boats, stay roughly between the center of that pack and the next mark (right). This conservative tactic works both upwind and downwind, but on runs you have the added challenge of avoiding the wind shadows of the boats you are covering.

- **Pass one or two boats at a time** – When you are trying to play catch-up, don't go for all the marbles at once. If you try to make one gain that is big enough to pass many boats ahead, you will probably have to take too big a risk. Instead, look to make a number of smaller gains so you pass one or two boats at a time. The chances of making small gains like this are much better than making big gains.

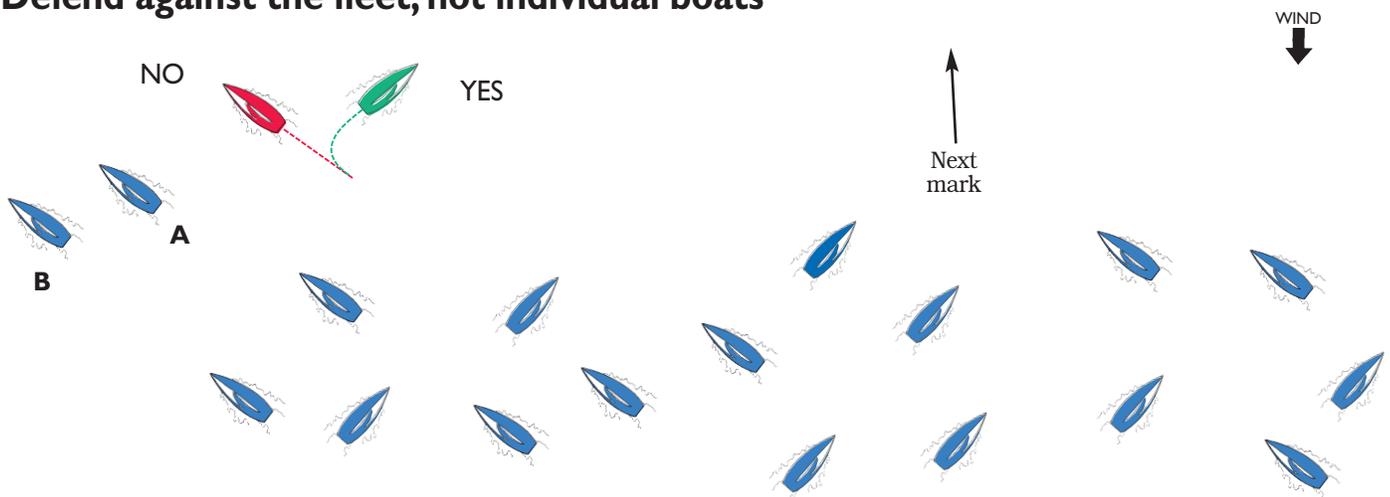
By being slightly conservative, you can move up through the fleet slowly without a big risk of losing the boats behind. As you get closer to the end of the race, reconsider this strategy. Are you satisfied with your position in the race? If not, you might need to take bigger risks to catch up before the finish.

- **Defend or attack?** – Here's a simple and valuable question to ask yourself occasionally during a race: Are you happy or unhappy? At any moment you should know whether you are generally satisfied with your position in the race, or unsatisfied. If you are happy, then you should sail conservatively. Your main focus will be defending your position against the boats behind. If you can sail within this framework and still catch a few boats ahead, that's even better.

If you are unhappy with your position, you cannot sail so conservatively. Your primary focus will be on attacking the boats ahead of you. In order to catch them, you will probably have to choose some options that don't have such a high probability of success (unless the boats ahead go the wrong way). This means you also have a higher risk of losing boats behind.

During the course of a race, you should always know whether you are a defender or an attacker since this will have a big impact on your tactical positioning.

## Defend against the fleet, not individual boats



When you are positioning yourself to protect a lead (or any strong position), consider all the boats in the fleet. It's easy to focus on the boat(s) that are closest to you (e.g. A and B), but in a big fleet one or two boats are not usually too important. Don't cover them if this means giving a lot of leverage to other boats. The key thing is to consolidate your position relative to the fleet – A and B may pass you, but that is much better than losing 10 boats from the other side of the course. It's a little like buying insurance – you are willing to pay a small deductible (losing A and B) as long as you are protected against big disasters (losing 10 boats). This is especially important early in a race when the fleet is bunched together (and it's relatively easy for a lot of boats to pass you). Later in the race, when the fleet is farther behind, it might make sense to cover A and B.



# Make it easier to sail your boat fast

Sailing conservatively is a philosophy that can be extended to all aspects of sailing fast around the race course, including boatspeed. In the course of a race, the fastest boat is not necessarily the one with the highest top-end speed, but rather the one that has the highest average speed. This means you may need a compromise (conservative) set-up that might not allow you to reach 100% of your speed potential but will keep you at a steady 95%.

The key is to trim your sails and boat so that you can stay in the upwind (or downwind) 'groove.' The 'groove' is a place where it's easy to keep the boat going fast and feeling good. Here are some things you can do to create a wider groove and to improve your average speed.

**Make your sails fuller** – It's hard to keep flat sails going fast all the time. Imagine sails that are like boards, literally. They would point very high and have little drag, but they would stall easily and provide very little power. Flat sails can be very fast for short time periods in just the right conditions, but it's

hard to keep them going fast when you hit waves, lulls and shifts.

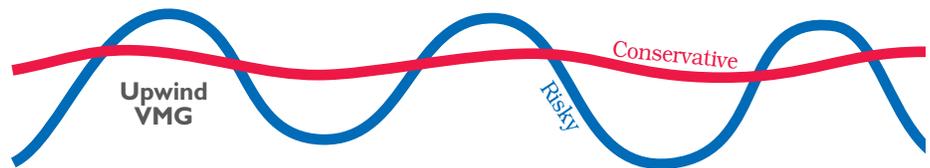
To be conservative, add shape and fullness to your sails. Ease the backstay, outhaul and luff tension. A deeper sail won't point as high, but it will provide a lot more power, and this makes it easier to keep the boat going fast through changes in the wind and waves.

**Move the draft forward** – You can widen your sailing groove by making the front (luff) of your jib rounder. Do this by adding sag to your headstay and pulling a little extra tension in the luff of the sail. A round entry (i.e. a wider leading edge angle) helps the wind to stay

attached to the sail even when the conditions are changing.

A flat entry (narrow leading edge angle) allows you to sail closer to the wind in good pointing conditions, but if anything changes (e.g. you sail into a wave or lull) the wind flow will more easily 'unattach' from the leeward side of the sail and the jib will stall. This means you fall out of the groove and you have to start all over to build speed and height.

**Ease the sheets a bit** – When you're in doubt about whether the main or jib is trimmed too tightly upwind, ease the sheet (an inch or so depending on the sail). Trimming your sails tightly can help you point



In this graph of upwind VMG, the Blue boat is very fast some of the time, but in order to achieve peak performance she has to set up her sails in a way that makes it hard to keep going fast all the time. As a result, she has VMG 'crashes' when she hits waves or lulls or other changes in conditions. In contrast, the Red boat is set up for good all-around performance. She doesn't reach the top-end speed of Blue, but her conservative trim allows her to avoid big crashes and maintain a higher average VMG.

**A conservative approach to speed means setting up your sails and boat so you are able to sail close to full speed most of the time. What you don't want is a setup where you can sail at 100% for a short time, but then you hit a wave or lull and fall out of the groove.**

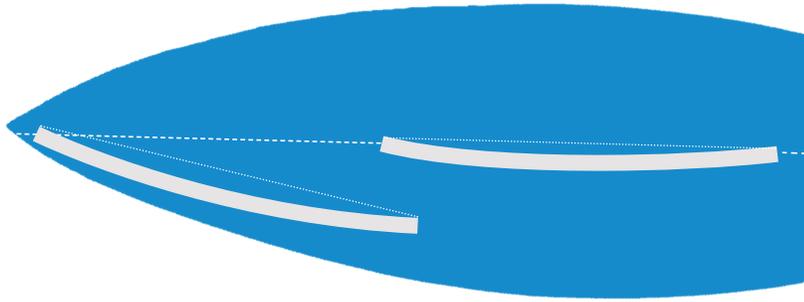
This means making certain compromises in your theoretical ideal trim, especially when you have waves, light air or changing wind. In these conditions, give the helmsperson a wider steering groove by making the sails fuller, easing the sheets a little more than usual and moving the draft forward in the sails. Add a little extra heel for better feel in the helm, and don't pinch!

This setup won't give you the greatest speed, but it will likely provide the best overall performance over time.



JH Peterson photo

## 'Critical' sail trim (risky)



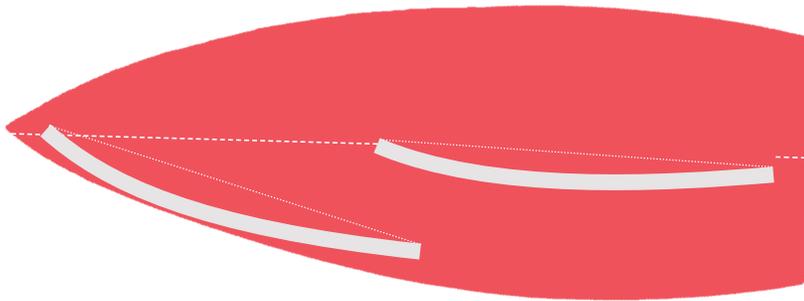
These sails have relatively flat shapes and are trimmed tightly (closer to the boat's centerline) with a straight leading edge (narrow entry angle).

This sail setup is good when you have moderate wind and flat water, and when your helmsperson is experienced and skillful. The flat sail shapes, narrow entry angle and tightly trimmed sheets are great for pointing high and for sailing fast when the boat is easily driven.

However, this setup is 'critical' (and therefore risky) because it has a narrow groove. It's easier to fall out of this groove when you have waves, a change in the wind or a helmsperson error.

This setup provides the best performance in terms of height and speed, but it can be hard to keep the boat going at that level consistently, especially in changing conditions.

## 'Forgiving' sail trim (conservative)



These sails have fuller shapes and are eased a bit (farther from the centerline) with their draft forward and a curved leading edge (wider entry angle).

This conservative sail setup is good when you have changeable wind or sea conditions, or when your helmsperson is not so experienced. The full sail shapes, wide entry angle and loosely trimmed sheets are great for providing the power to keep the boat going fast forward.

This setup is called 'forgiving' because it has a wide groove. It's relatively easy to keep the boat in that groove even when you have waves, a change in the wind or a helmsperson error.

This setup does not provide the top-end height and speed of sails that are flatter and more tightly trimmed. However, it is easier to keep this boat in the groove consistently, so the boat's overall average performance might actually be higher.

higher, so I constantly try to trim my sails a little tighter.

However, it's easy to go overboard. Tight sheeting makes the boat more critical, which means it is harder to stay in the groove if the conditions change at all. For best performance during the entire race, it's better to keep the sheets a little too eased than a little too tight. Unless you have ideal pointing conditions, don't trim either sail beyond the point where the top batten is parallel to the boat's centerline.

**Foot, don't point** – Pinching works great when you have flat water and moderate wind. But in other conditions sailing a little high slows the boat and makes it harder to stay in the groove. This is especially true when you have waves. Therefore, the conservative option is to err on the footing side for sailing upwind. This keeps the boat going fast, which is always a safer bet than getting slow.

The corollary for downwind is that you should err on sailing the higher (i.e. faster) angles. Sailing

lower may increase your VMG temporarily, but it also increases the risk of a speed crash.

**Add a little heel** – Most boats (except for some with certain hull shapes like scows) go faster upwind when they are sailed relatively flat. With the mast close to vertical and the boat sailing on its designed hull lines, you'll have maximum power in the sail plan and good speed through the water. In addition, a flat boat reduces windward helm to a minimum. This is good for speed because the rudder will be straight and drag at a minimum.

However, sailing the boat without much windward helm is tough, especially in light air and/or when you have waves. Without the tug of the wheel or tiller to keep the boat right on the wind, it can be hard to stay in the groove. Therefore, it is often a good idea to add a bit more heel than what is ideal theoretically. This will increase helm a little and give the helmsperson more feel, which makes it easier to stay in the groove more of the time. •

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## GOOD ADVICE

# When it's risky to be conservative

For the reasons discussed in the rest of this issue, it's usually a good idea to approach each race conservatively. Choose options that have a high-probability of success and try to minimize your risk of making big errors.

However, being conservative is not always the right strategy. Here are three times when it might work better to be less conservative:

- **You are behind** – The idea of conservative sailing assumes that you have something to lose, and therefore something to protect. That's why when you are near the front of the fleet you sail conservatively by covering the boats behind.

But if you are at the back of the fleet, or in any position where you wouldn't be happy to finish, you have less reason to be conservative. In fact, you might actually seek out the riskier options in an effort to catch boats ahead.

- **You know which way to go** – Seldom do sailors know exactly what the wind will do in the future, and part of being conservative is protecting yourself against the next shift. It's similar to buying insurance: you do have to pay something, but if things go wrong you won't be in such bad shape.



Fergus Henderson photo

**It's good to be slightly conservative at most starts since being early is usually a lot worse than being a little late. However, don't be paranoid. The start may be the most critical part of a race, so you need to be in, or at least near, the front row. Starting several lengths behind is not much better than an OCS.**

Sometimes, however, you know exactly what the wind is doing, or at least you know which side of the course is paying off. In that case, you don't really need to think about being conservative because you know what you need to do. For example, if you were 100% sure that the far left side will pay off big, you would sail all the way in that direction and not be 'conservative.'

- **Shifty winds** – When the course area is filled with puffs, lulls, lifts and headers, every boat will be sailing in a different breeze. Because of this, you have to do

whatever is right for the wind that you happen to have at any moment.

It can be very risky, for example, to cover the boat(s) behind you. While this conservative tactic works well in steady breeze, it often backfires in shifty wind. If the boat behind you is doing the right thing for the wind they have, matching them means you will likely be doing the wrong thing for the wind you have.

In these conditions, the best defense is a good offense. In other words, playing the shifts you have is probably the best way to stay ahead of the boats behind you. •