



Sailing the **WAVES** in Hayling Bay

Hayling Bay, relatively shallow and obstruction free in classic southerly sea breeze or south westerly gradient winds, is renowned by keelboat and dinghy sailors around the world, for the exhilarating ride over the Bar in wind against tide conditions, and for the exciting surfing offered in the bay in an onshore breeze. Olympic coach *Mark Rushall* gives some useful tips for using waves to improve rather than hinder your performance

For those of us who spend most of our weekends racing in the harbour, the annual trophy race in the waves can be somewhat daunting. Understand the concepts involved, and crack the techniques to suit the different wave patterns, and you may find yourself canvassing for all club races to be held outside: you'll certainly be looking for the biggest wave, wherever you are racing, on which to execute that painless heavy weather gybe! Many of the techniques described can also be used in the more exposed parts of the harbour.

Every wind and tide combination brings a different mix of waves. Though race winning wave techniques vary with the boat's speed, size and shape, wave principles remain the same whether racing cruisers, keelboats, dinghies or skiffs

Rig set up

To drive the boat upwind through the

waves we need more power. But the power available from the wind varies depending on which part of the wave we are on, and which way our rig is moving at the time. The sailing wind direction and speed change as we sail over the waves: we need a set up which copes with all this change with minimum tendency to stall.

We are aiming for a powerful rig but one that will cope with the constant change, and is kind to steer to.

Keeping the boat flat - or in a keelboat, at its optimum angle of heel - by hiking extra hard or easing sheets/traveller momentarily in the power surges enables us to quickly power up in the lulls. Rake, rig controls and foresail choice are therefore made for the minimums, not the maximums.

We sail with deeper, more twisted sails than we would in flat water: boom as close as possible to the centreline, top telltale streaming most of the time: ➔

foresail twisted to match, with a nice clean parallel slot. The extra depth could come from an extra chock, more strut or lowers, spreaders forward, or very slight outhaul ease. A deeper jib will also give a nice wide 'groove': coping with the direction changes and allowing us to steer the boat around the waves as much as possible without a stall.

Technique

One way to analyse upwind wave technique is to appreciate the different sorts of wave patterns we are likely to experience in Hayling Bay.

The southerly swell. The waves are typically regular, and are travelling directly downwind. Similar conditions might occur in an easterly or south westerly, especially in wind over tide conditions.

The water in the waves moves in a circular motion: downwind at the top, upwind at the bottom. Luffing as we climb the face of the wave gives as little time as possible in the peak; we bear off as we cross the peak onto the back of the wave. The bigger the waves, the more extreme

the steering needs to be. This is the basis of sailing upwind in regular waves: it is worth taking any opportunity to watch the fast sailors sailing smoothly over the waves, and to spend time on the water practising getting 'in phase'. In moderate winds the crew concentrates weight together as much as possible, to reduce the amount of power needed to lift the bow over each wave.

Even with a regular swell, there is always a lower wind limit where it is simply not possible to steer around the waves in the way described above. The waves just shake the boat and rig around; the rig stalls; and the boat bounces up and down going nowhere.

In light winds the power lost through a bouncing, stalled rig is far more significant. Separating crew (in the fore/aft direction) will help reduce the bouncing. With even more twisted sails, we sail as free as is necessary to keep the boat moving forward, with rig and foils working. Once moving forward, we can sheet on and sail higher to make the most of any flatter patches of water. We

minimise the effect of the really bumpy bits by easing the jib a touch and steering slightly freer as they approach, until safely through.

The helmsman's focus needs to be on the water about 5m in front of the bow

Watch out for the 'slammers'. However regular the waves, there is always the occasional extra-short one that can't be steered over: the bow slams firmly into the front of the next wave, shaking fillings loose and killing speed. It is possible to recognise these: calling the 'slammer' as it approaches enables sheets to be eased, bow put down, and the damage minimised.

Watching other boats, both before the start and during the race, may give some clues

Wind against tide: short, irregular waves. With wind against the tide, the waves tend to be higher and shorter: they also become more confused as they pass over the bars and encounter outgoing stream at either side of the

bay. The wash from 'spectator craft' adds to this confusion.

The peaks and troughs are not regular or obvious: steering becomes more of a damage limitation exercise. However there are always high and low spots in the walls ahead. The helmsman's focus needs to be on the water about 5m in front of the bow: steering for the obvious low spots as they appear, and avoiding the biggest highs. The larger the differences between highs and lows, the further it will be worth deviating from the mean course to minimise the slowing effect.

If there are no obvious high spots and low spots, all we can do is to sail freer and faster through the confusion: speed will at least ensure that the rig and foils are working, whereas trying to sail high and slowly will stall both, and contribute to a slide to leeward.

The northerly chop. The waves are too small to be able to steer around: once

again we have to avoid the temptation to point high and 'chop wood'. We use more twist, and pre-empt the worst parts by easing jib and twisting main to keep the speed up as we approach. We always choose the flatter spots to tack in: a loss of speed through a particularly bumpy patch can lose many boat lengths and ruin careful fleet positioning.

Wind and waves from different directions. A left over swell from a storm on the day before gives good opportunities for gains from accurate steering. There are three effects to consider: the boat goes faster downhill; the water at the top of the wave will push in the direction of the wave, that in the bottom against it; and this circular water flow in the wave will affect sailing wind, in both strength and direction.

The best steering technique depends on the relative directions of wind and waves, the wind and wave speed, and the type of boat. With a different 'right' answer for every combination of wave size and direction and wind strength, aim to spend plenty of time before the start sailing in the racing area to decide the best steering technique for each tack. Watching other boats, both before the start and during the race, may give some clues: the bigger the difference in effect of good and bad steering, the more obvious the winning technique will be.

The real life mix. For any wind direction, super-imposed over the expected wave type will be any combination of the others. When sailing upwind, someone near the front of the boat should practice looking for and calling the imminent wave patterns, enabling the whole team to continuously adapt their technique to suit.

Sailing downwind in waves

Double Olympic medallist Simon Hiscocks says, 'don't chase a wave unless you are certain that you are going





to catch it'. When running in sub surfing conditions, the focus is on soaking as much as possible without stalling the spinnaker: sailing higher than this to try to catch an impossible wave will simply result in extra distance sailed. When the waves are not big enough - or when boatspeed is not enough to have a realistic chance to surf them - we use any extra speed to gain ground to leeward, gently luffing back to course before the boat slows. In these conditions, steering can all be done with body weight: rolling the boat to windward (with a simultaneous 'squeeze' of guy and sheet of a symmetric kite) will scoot it down to leeward.

If the waves are irregular, as with steering upwind, we aim for the obvious low spots and avoid the 'mountains'. It may be possible to gybe or sail high for a short period to find a more helpful part of the racetrack.

Sailing at wave speed

Wave speed potentially limits boat speed: it feels great to gain speed on the wave behind until we run into and get held up by the one in front. In theory the whole

fleet could be travelling at exactly the same speed, limited by the wave speed. We keep an eye out for any low spots in the wave crests ahead: every time there is one low enough to break through, we can make a gain on the boats around by sailing momentarily high and finding enough reaching speed to do just that.

Surfing

In classic surfing conditions, there is not enough wind to keep the boat continuously planing. The boat is moving fast enough that the wave speed can just be matched by sailing high and pumping. (Within the constraints of rule 42!)

Just the stern begins to lift; we accelerate by luffing to a faster reaching angle. The bigger and faster the wave, the earlier and more extreme an angle change is required to get boat speed close to that of the wave.

A co-ordinated pump on mainsheet and (symmetric) spinnaker adds to this acceleration: the crew move sharply forward in the boat to get the bow down. As the boat starts to surf, we bear away to stay with the wave. The timing of the pump is critical: we want the pump to add to your boat not to maintain it. Once surfing, we don't steer straight down the wave: that would sail us straight into the one in front. We turn so the boat slides along the face of the wave, upwind or downwind of the wave perpendicular, to maximise the ride, just as a surfer would.

If the waves are really fast, the process becomes: reach in the trough, pump and bear away as we catch the wave, then use the surf to sail below the rhumb line, staying with it as long as possible. Now we are set up to luff to accelerate in the next trough.

In all cases, we begin the next cycle while we still have momentum, luffing to keep speed on for the next opportunity.

Sailing faster than the waves

Skiffs are in this mode in most conditions downwind. There is no point steering down the wave just to put the nose straight into the wave in front. In these conditions we are back to sailing around the obstacle course; just as we were upwind, keep looking for the local low spots to steer through without deflecting from the optimal downwind angle for the conditions.

Staying dry

The gybe and the nosedive are the most common causes of damp in the waves: practice is the best solution to each.

On the gybe, waves are our friends: if we start the gybe just as the transom begins to lift, loads are significantly decreased, and there is plenty of time for crew to move smoothly across the boat; we avoid that heart lurching deceleration which happens as we bear away on flat water.

It's possible to get the feel of the timing without going through with the gybe - bear off as the transom lifts and the boat accelerates - feel the weight come out of the mainsheet. The point of least load would be the best time to execute the gybe itself.

On the run, avoid the nosedive by turning to lift the bow over the back of the wave at an angle, rather than sailing straight into it. We roll the boat to windward or leeward to bear away or luff, and balance as the power comes off or on. Trapeze crew is clipped on ready to help balance. If it is really hairy, we don't point at the leeward mark, but luff up to a broad reach with the crew trapezing as high as possible and the helm perching on the windward side deck. We are safe from the nosedive, and if we get the wind shifts right, the gains will be enormous! ❄️

Emsworth based sailing coach Mark Rushall began winning championships in Hayling Bay in 1981. His new racing book, 'Tactics' is available from www.rushall.net