

*This is a work in progress and if there are any additions you would like to add please email us using the 'Contact Us' button at the top of the website. -Ed*

*Over to Mike.*

It is not possible to design a multi that will not pitchpole. These notes work for XL, so far, and dinghy cats to reduce bow stuffing. They might not apply to other boats.

### **Running with Two Hulls in the Water**

AWA (Apparent wind angle) 150 – 180

For every hull and sail plan there is a wind strength that will cause a pitchpole. It is a simple balance between the wind pressure on the sails against the volume in the bow. Reefing is very effective because the sail force is lowered.

One problem of sailing deep is when the bows dig into a wave, the boatspeed drops and the apparent windspeed on the sails increases. You will either pitchpole or not – there are no actions you can take.

### **VMG Downwind**

AWA 50 – 100?

Sailing on one hull is OK and I don't think it is any riskier than 2 hulls in. We first learnt this in A-class which is easy to recover.

Some advantages are,

- Faster means easier to steer around waves, and there is only one hull to worry about
- Leeward topsides provide dynamic lift in the bow. More heel gives more lift so we often put crew weight on centreline aft to get more heel without increasing the sail pressure.
- Leeward hull more deeply immersed which helps the rudder
- Luffing lifts the bow because the rudder load depresses the stern. If the bow digs into a wave a *small* sharp luff can lift it out.
- Sails can be eased with gusts or when the bow digs to reduce some shockload. It's not a big effect though.
- Fun

It takes a lot of concentration, trust and communication between trim and helm, and good gust calls. Sometimes the transition from 2 hulls to 1 is daunting because it involves luffing and sheeting on. If you're slow it can be dodgy.

## **Tight Reaching**

Lots of mainsail and jib twist. Reduce mast rotation. Downhaul tight. The rest is prevention – sail high enough to luff out of trouble, then low enough to be depowered.

## **Sails**

Gennaker is safer than a jib because the luff has more upward force, plus the force acts further forward.

## **Rudder Immersion**

Sailing singlehanded was a little sketchy because the boat floated higher so the rudders were more prone to stall. Add more crew in a breeze if they can sit aft.

## **Escape**

With main and jib and being fast, escape by luffing head to wind. Note if the boatspeed is low, then you may not have enough momentum to turn until depowered – this is bad.

I'm not so confident what to do with a gennaker because it will flog and the drag could prevent turning far enough into the wind. So far the best thing has been to sheet on and sail faster with heel.

## **External Threats**

We've found that it is not enough to just monitor the keelers, but to actively guess what they are going to do next. To be fair their usual horizon is pretty small!

The main concern is not getting into a position where they block us from luffing or bearing away.

## **Guaranteed Capsize Prevention**

Don't leave the mooring!

We make the go/no-go call based on observations and what is the likely forecast.

Monitor the forecasts carefully well beforehand (3–5 days before a Gulf race), and compare with actual conditions to get a feel for the accuracy. Factor in the tide for the duration of the race for sea state and wind strength.

## **Curved foils**

Effective in keeping the bow up but important to note that their lift is strongly dependent on speed. Bearaway from slow speed can still be a problem because the pitching moment from the sails builds before the foil lift increases.

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XL