

## **DOWNWIND RATINGS INTRODUCED in 2010**

The PHRF committee is pleased to introduce downwind ratings for 2010. The new "Downwind Rating" appears on your certificate below the normal PHRF buoy rating.

FAQs:

*What is a "downwind rating?"*

A downwind rating is a handicap that applies only to races that are historically downwind events (see the list below). The Notice of Race should indicate whether downwind handicaps will be used.

*What races should use the downwind rating?*

As the name implies, this new downwind rating is intended for races that are predominantly downwind. Northern California races where we believe this rating is appropriate include:

- Pacific Cup
- Singlehanded Transpac
- Coastal Cup
- Spinnaker Cup
- Windjammer's
- Delta Ditch Run
- Jazz Cup
- Possibly Saturday Vallejo Race

If you do not enter one of these events, you will not likely ever use your downwind rating.

*Why is my downwind rating different from my normal PHRF rating?*

Downwind races are different than buoy races in several significant ways. All of these influence a boat's performance and the rating it should carry relative to the competition. Some of these factors are more obvious than others:

1. Boats are generally slower upwind, and upwind Velocity Made Good (VMG) is especially slow due to tacking. Because there is no or minimal upwind sailing in a downwind race, all boats sail the course faster on a seconds/mile basis. Said differently, assuming constant wind strength, it takes longer to sail 15 miles upwind than it takes to sail 15 miles downwind. It is only the downwind courses this rating is trying to address.
2. Light boats have an advantage downwind because they catch waves more easily, surf for longer periods of time, and are less trapped by their "hull speed".
3. Sail area, particularly spinnaker area is more effective downwind. In a buoy race, the spinnaker may be set only 30-40% of the time, where in a downwind race it is set most of the time. Boats with very high downwind sail area in proportion to their displacement may plane.
4. Factors such as shallow draft, poor maneuvering ability, low righting moment that make a boat slow in an upwind or buoy race are much less significant in a downwind race. Often such boats will have a high (as in slow) PHRF rating relative to their length; but in a long, straight line course these boats will sail to their hull speed.

*How should I look at my down wind rating?*

Since the downwind ratings are not just a modification of normal buoy ratings, do not be concerned if your downwind rating is very different from your buoy rating. Just like in regular

PHRF, what is important is how you rate relative to your competition. Ratings for the NCPHRF fleet can be found here: [http://www.yra.org/PHRF/ncphrf\\_base\\_rates.html](http://www.yra.org/PHRF/ncphrf_base_rates.html). You can find current ratings of boats sorted by boat name, boat type, sail number and by regular PHRF rating.

### *How is the downwind rating determined?*

In fact, downwind ratings have been used for years in the Pacific Cup, Single Handed Trans Pac, and Coastal Cup; but these were modifications of a boat's buoy rating based on "PCR formulas". The Pacific Cup Rating formula had two corrections. First, it penalized boats that rated slow for their length (see factor 4 above). Secondly it penalized light displacement boats for their surfing ability. Under PCR the light displacement penalty was a "feel good" correction that actually raised the ratings of heavy boats while leaving light boats unchanged. Over the last decade, new designs are appearing that are much more powerful. Some are lighter than those that were around when the PCR corrections were developed, some have extreme downwind sail area, some have movable ballast, some have all of the above. So, while the PCR was a good start, it is no longer good enough.

We decided to start the downwind ratings from ground zero, rather than use an adjustment to buoy ratings. This is to eliminate all the baggage that comes with a buoy rating. If you start with a buoy rating, your start point assumes that half the race is upwind. That gives unfair advantage to boats that are fast downwind and slow upwind, and disadvantage to boats that are fast upwind and slow downwind.

Downwind performance is strongly affected by length, downwind sail area, displacement, and wetted surface. Wetted surface is approximated subjectively using the boat's underwater profile. Performance ratios using these factors are calculated, and we have used historical records dating back sixteen years to decide how these ratios should affect your rating. A number is suggested by these ratios and further modified by propeller and other factors. The PHRF committee then uses its discretion to assign a final rating.

Some pointers: Since jibs are a relatively small part of downwind performance, the jib adjustments under paragraph VII of NCPHRF Rules and Guidelines do not affect downwind ratings. Similarly, since downwind ratings are sail area based, standard corrections for mainsail and spinnaker changes under the same paragraph do not apply. However, there is a 3 second penalty for carrying both symmetric and asymmetric spinnakers.

### *Any tips for filling out my application correctly?*

PHRF is necessarily a blunt instrument, this is not a measurement rule. Nevertheless it is helpful to everyone to have the data on your application as accurate as possible. Please read the Northern California PHRF Rules and Guidelines available at:

[http://www.yra.org/PHRF/docs/ncphrf\\_rules\\_and\\_guidelines.pdf](http://www.yra.org/PHRF/docs/ncphrf_rules_and_guidelines.pdf)

Look carefully at Part 2, "Assistance in Filling Out an Application for Handicap."

- Please supply mainsail girths and all spinnaker dimensions. Everything should be in decimal feet.
- Length Overall is meant to be hull length. *Do not include bowsprits, anchor rollers, boomkins and the like.*
- In order to get an idea of the wetted surface of your boat we need to know what the hull looks like below the waterline. If you are a custom boat or filing a first time application we need to know what the boat looks like.
- Displacement is intended to be with the boat in "measurement trim" according to guidelines used for IMS/ORR. This is the boat equipped for racing but with no crew, no sail, no consumables, no liferaft on board, all tanks empty. More detail can be found here:

<http://www.ussailing.org/offshore/ORR/ORR%20Measurement%20Protocol.pdf>

*Why were downwind ratings implemented?*

- Tighter, more fair race results than previous systems. (The downwind ratings replace PCR adjustments given in paragraph VII of the NCPHRF Rules and Guidelines).
- To allow adjustment of regular PHRF ratings for high speed downwind boats so they can be more competitive on windward-leeward courses.
- Reversing the decline of heavy boat entries in downwind races such as the Delta Ditch Run. These ratings should give heavier boats a chance at the podium once again.
- Better “first guess” ratings for boats new to the area.

*Are the downwind ratings intended for TOD or TOT scoring?*

Just like normal buoy ratings, either TOD or TOT scoring may be applied successfully using the standard formulas.