Pursuit (Stern-Chaser) Races using TopYacht

Contents

Introduction

TopYacht offers two ways of producing Pursuit Race results

- Manual adjustment of handicaps after each race.
- Automatic Update of handicaps after each race.

Both systems assume 'the slowest boat' starts at time 0 i.e. the initial start time; and that all other boats have a time offset after that initial start. If the initial start is 14:00:00 then a boat with a time offset of 13 minutes would start at 14:13:00.

The finish order determines each boat's placing in the race. First to cross the line wins, next is second etc.

The Importance of the Anticipated Time for the Slowest Boat.

The effectiveness of pursuit race handicaps is very dependent on the accuracy of the estimated time of the slowest boat. It does not matter whether the time offsets are determined manually or set by the computer, if the 'base time' i.e. time of slowest boat, is incorrect then the whole assumption that all should finish together comes unravelled.

Using two boats as an example…

- 'Slowboat' takes 100 mins to complete the course.
- 'FastBoat' takes 90 mins to complete the course.

If the time of the slowest boat is accurately set then…

- The Slowboat starts at time zero and gets to the finish line in exactly 100 mins.
- The Fastboat starts 10 mins later and get to the finish line at virtually the same time.

If in fact the slowest boat normally takes 105 minutes then the faster boat (assuming its estimated course time is correct), will easily get home first as it started 10 minutes after the slowest boat but only takes 90 mins to complete the course.

Impact of Shortening a Pursuit Race

The underlying assumption of a pursuit race is that time to complete the course is known for each boat. If the wind dies and the race is shortened such that the elapsed time of the slowest boat is significantly different to the anticipated time then the underlying assumption becomes invalid. If the race can be shortened such that the slowest boat finishes in the anticipated time, then the assumption is more valid but may be biased in favour of some of the participating boats.

If the race is using TCF originated offset times, then the race can easily be converted to handicap corrected time results which may provide a fairer outcome for the race.

Section One: Manual Handicap Adjustment

This expects that you input handicaps as a time offset in minutes from an initial/nominated race start time. The slowest boat will be on an offset of 0, while a slightly faster boat might have an offset 2 etc. These are not used in any calculations but will display on the entry list and results.

After each race the Handicapper must determine what needs changing and the changes are manually implemented for the next race. This can either be done be applying some mathematical formula or using subjective judgement. Handicap changes are set using Step 6 for the *new* race.

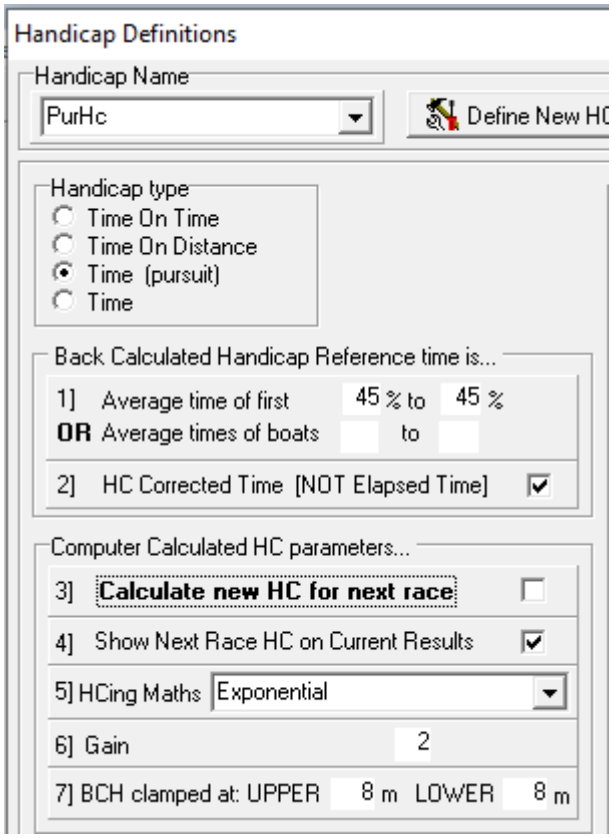
One adjustment method is simply to add a 3 min penalty for first place, 2 min for second and 1 min for third. The aim of this approach is primarily to rotate the 'winners' through the fleet over the duration of the series (This is referred to in other documents as the Knock-Back reaction).

The set up in TopYacht is show below.

The key items are…

- Handicap type of "Time (pursuit)"
- Calculate new HC for next race is ***NOT*** ticked.

Items 4 to 7 below will provide a BCH as a reference, but this will not auto update the handicaps for the next race.



Section Two: Time Correction Factors (TCF)

This approach is based on Time Correction Factors (TCFs) like ordinary keel boat racing. These TCFs (e.g. 0. 985) are used to calculate an offset time (in minutes) for each boat, based on the expected time for the slowest boat to complete the course for this race.

For example, if the slowest boat has a TCF of 0.800 and takes 100 minutes to complete the course then a boat on a TCF of 0.888 will take 90 minutes.

i.e. 100 * 0.800/0.888 = 90 mins

Setting the Handicap Recipe Parameters for Auto Adjusting Pursuit Handicaps

There are (at least) 3 different approaches.

- Option 1 – Use Exactly the Same Handicap Set-Up as you use for Club Racing.
- Option 2 – Use a similar set up but also apply 'Place Penalties' i.e. parameter 20.

  Clubs who believe that the winners need penalising can use this option and set the percentage penalties to say 3%, 2% and 1%. (The Knock-Back Reaction)
- Option 3 – Use Place Biased Exponential Handicapping.

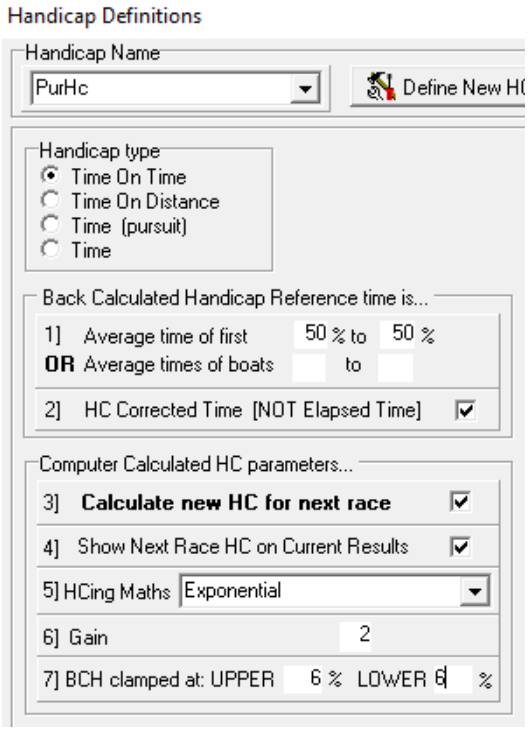
  See How the Next Handicap is Calculated

In each of the above examples you can speed up changes by:

- Increasing the Clamps to say +8% and -8%; and / or
- for Expo; reduce the Gain to 2 i.e. the new AHC is BCH/2 plus AHC/2 (rather than 1/3 BCH plus 1/3 AHC)
- for Expo Place Biased - increase the Percentage Influence to say 85%.

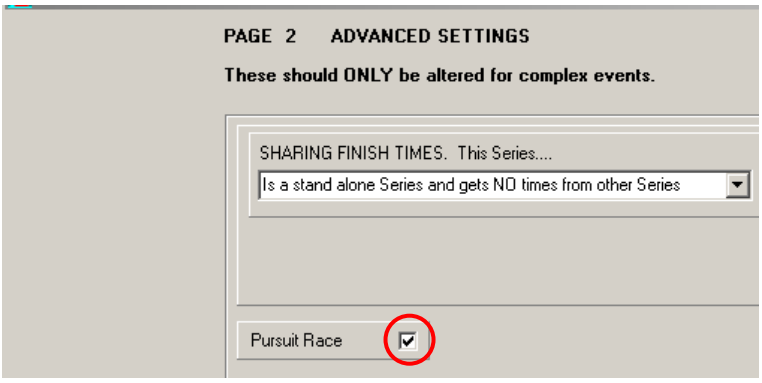
Once you have determined which handicapping method you wish to use, set up a new handicap recipe type and give it a suitable name.

A common set up for pursuit racing is shown below.

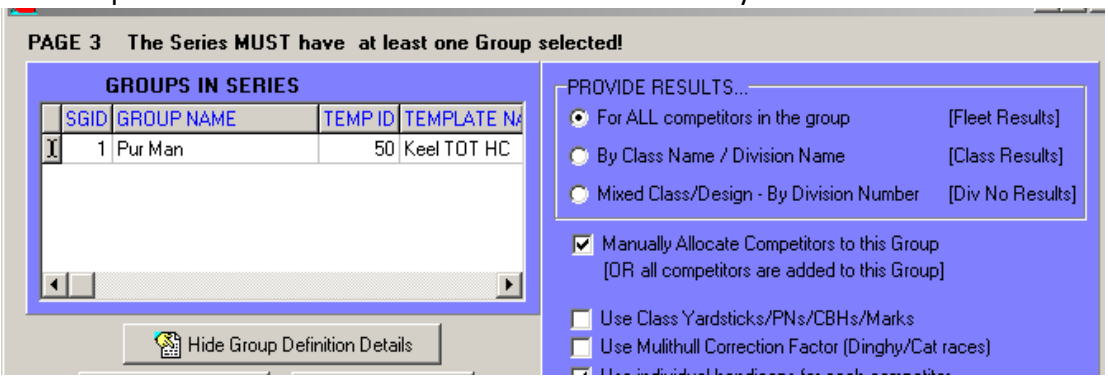


Setting up the Series

1. Create a series and on page two of the setup, check/tick the Pursuit Race box.



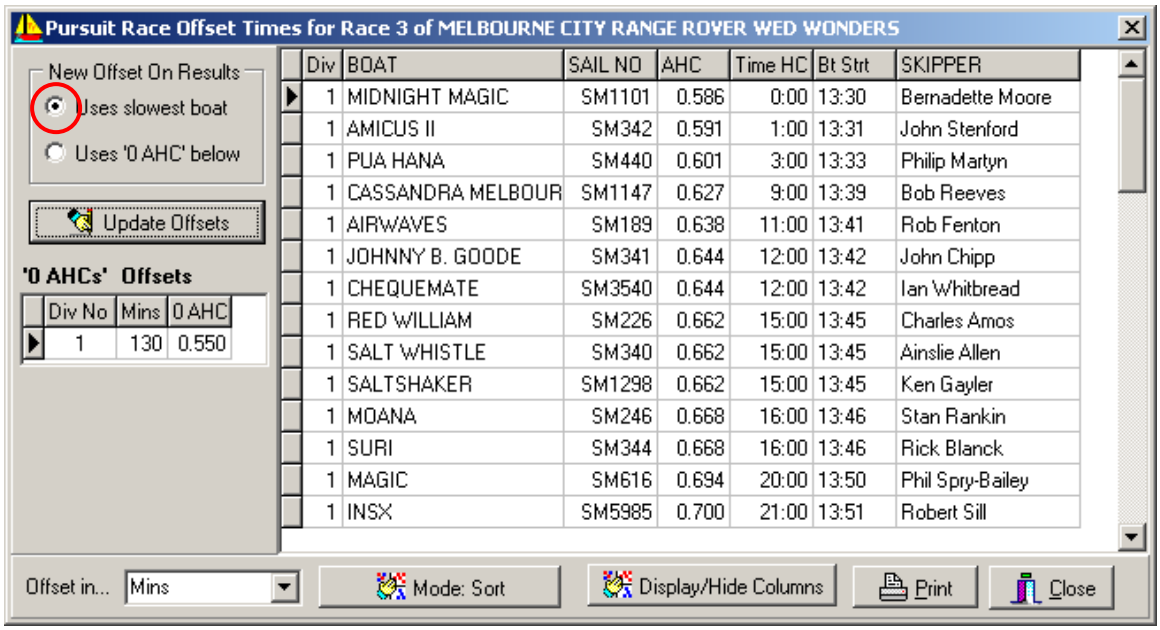
2. **Note:** If you intend alternating between Pursuit races and standard races, then leave the Pursuit Race tick box on page 2 unticked. Instead, on a race-by-race basis, tick the Pursuit Race checkbox on the race set up page (i.e. Step 2) as needed.
3. You can provide on results either for the entire fleet or by division.



4. Enter the competitors into the series (step 3), each with a suitable initial TCF handicap eg 0.850.

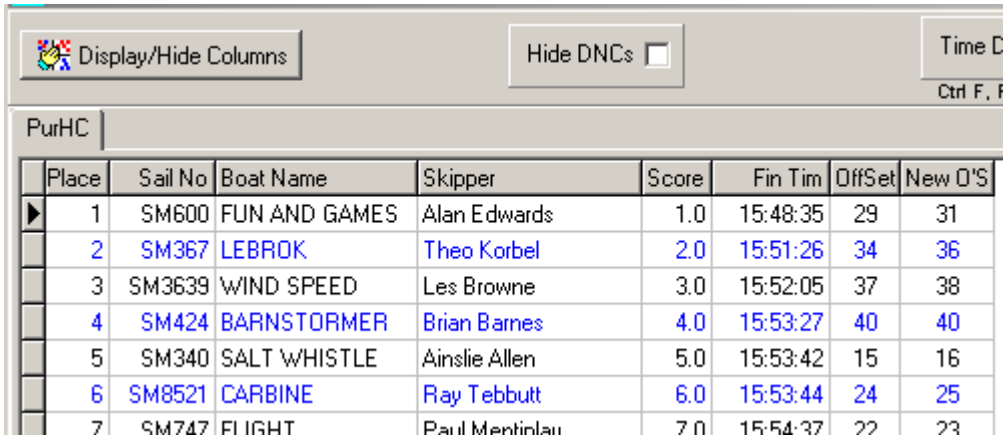
To Run a Race:

1. Set up the first race. When setting up the race, TopYacht may require that you provide the estimated elapsed time for the slowest boat. This will affect the time-offsets computed and also the success of the development of the new **AHC**s, so try to be realistic given the nominated course under the expected conditions. Where there are multiple divisions you need to set a realistic expected time for the slowest boat in each division.
2. Enter the competitors into the race with sensible **AHC**s e.g. 0.950, 0.880 etc.
3. Go to the Race Offset times screen (**View | *Competitors in the Race*** and accept the ***Offsets*** option). In the example below the offsets are based on the slowest boat. There can be advantages in using a 'ref AHC' instead; this will be discussed later in the document. Before printing, hide any columns you do not want.



When closing this screen TopYacht will save the Offset Times for each boat. **This is especially important** as the stored data enables TopYacht to calculate and display actual boat Elapsed Times. These are needed to calculate new handicap values for the next race.

4. After the race add the finish times.
5. Process the race.
6. View Results and print to Internet and paper. Make sure you only show sensible fields as per example below. Important: the New Offset column is based on the existing estimated time for slowest boat and may not be truly indicative of the boat's handicap for the next race where you may have a new estimated course time for the slowest boat, OR you may alter the slowest boat's **AHC** OR another even slower boat may enter the next race.



7. Repeat for the next race. Handicaps will be automatically adjusted for all boats. Manually adjust any handicap as needed.

Results Notes

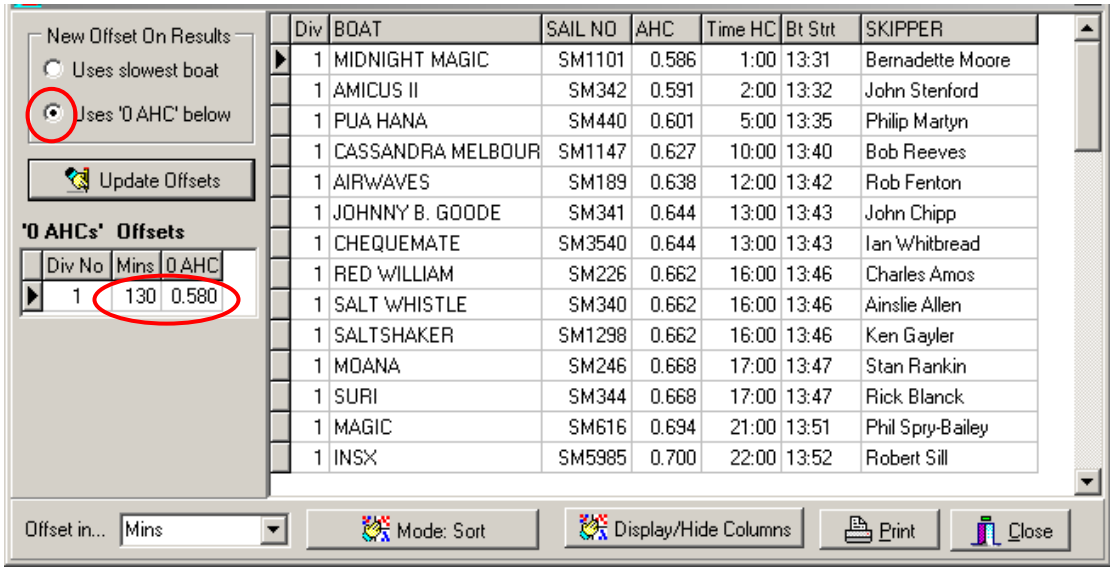
- Results are based on the boats finish time.
- The Elapsed time = finish time – boat actual start time (a column that can be displayed).
- Obviously you can hide any of these fields that you wish.

- You may wish to show the AHC and the BCH for this race so sailors can judge their relative performance.

Using a Nominated AHC Rather Than the Slowest Boat as a Reference Point for the Offsets.

If you use the slowest boat as the reference or time '0' boat, then whenever that boat's handicap changes, so potentially will all other boats' **AHC**s.

The alternative is to use a nominated '0 AHC' value. In the example below this is set to 0.580.



There are a number of consequences of using a nominated '0 AHC'.

- If the slowest boat's handicap alters, then the other boats offset will not be affected by that change.
- The estimated race time are be based on a boat with the '0 AHC'.
- As the slowest boat(s) handicap are adjusted, you may end up in a situation where no one starts for several minutes after time 0. You can accept this or alter the reference AHC and estimated time, but if you do this you will potentially alter most boats offset times.
- If the slowest boat performs very badly it is possible for its AHC to go below the reference AHC and thus the slowest boat may have a negative offset time (see below).

Negative Offset Times

A common problem that can occur is if you have one or more boats that are very much slower than all other boat in the fleet/division. This can be overcome by using the '0 AHC' as above and allowing these (very slow) boats to have a negative offset time. These boats start before the nominated start time. So if a boat had an offset time of -5 mins, this boat start 5 mins before the nominate 0 time.

Example. Most boats have **AHC**'s above 0.800; one entrant has an **AHC** of 0.770. So set the '0 AHC' to say 0.790. The very slow boats **AHC** is below this and so that boat will get a negative offset time but the others will start shortly after the nominal zero/race start time.

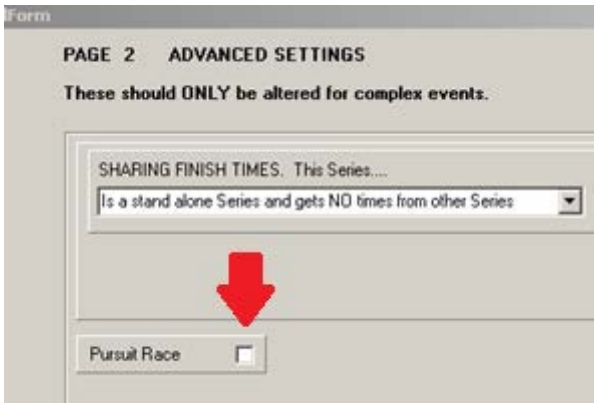
Converting a Shortened Race to a Race that is Scored on Handicap Corrected Time Rather than Finish Order.

As documented above, shorting a pursuit race can make the offset times/time handicaps invalid. The alternative is to shorten the race and then use the handicap corrected times to determine the places/scores.

TopYacht allows you to do this very easily if you follow these steps.

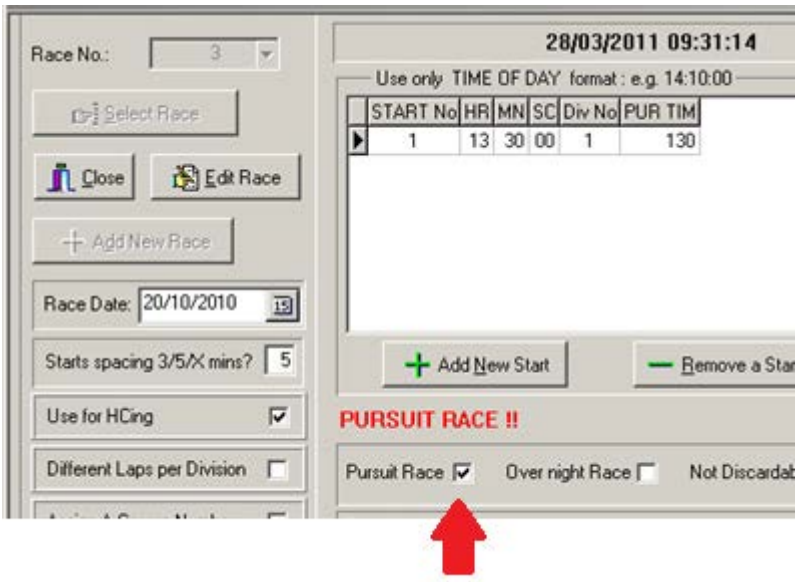
Step 1a)

Do **NOT** set-up the pursuits Series by ticking the Pursuit check box page 2 of Series Set Up.



Step1b)

Instead: Create each pursuit race by ticking the Pursuit Check-box on the race set up page.



Step 2)

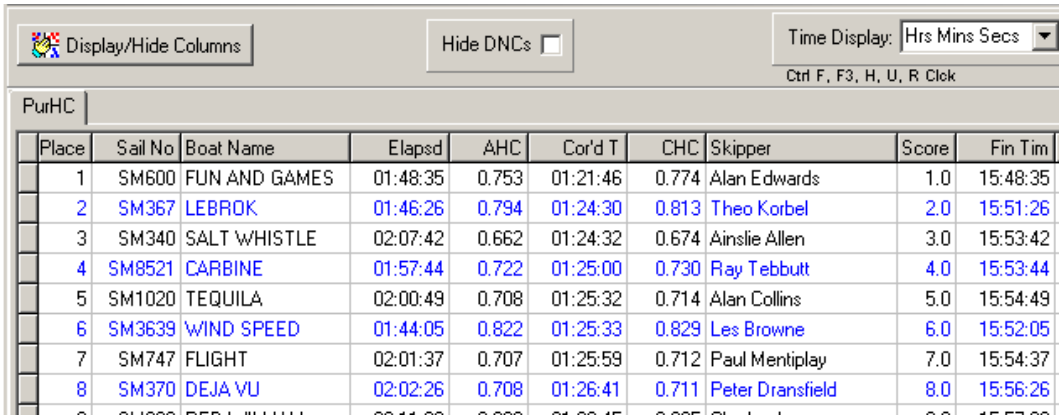
To use this race as a non-pursuit race then un-tick the Pursuit check box on the race set up page.

Step 3)

Reprocess the race and accept the offer to use the stored offsets in determining the elapsed time.

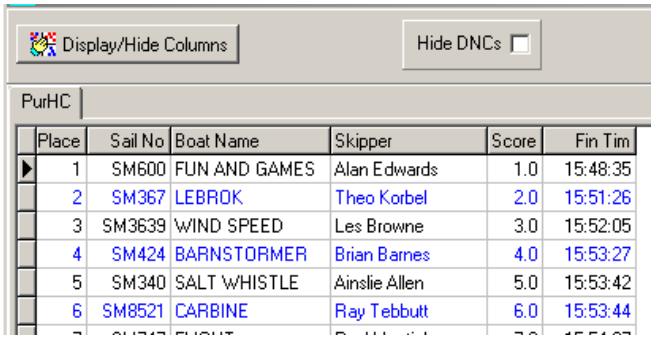
Compare the boat 'Salt Whistle' in the screen dumps below - results by handicap corrected time vs results by finish time.

Results by Handicap Corrected time



Place	Sail No	Boat Name	Elapsd	AHC	Cor'd T	CHC	Skipper	Score	Fin Tim
1	SM600	FUN AND GAMES	01:48:35	0.753	01:21:46	0.774	Alan Edwards	1.0	15:48:35
2	SM367	LEBROK	01:46:26	0.794	01:24:30	0.813	Theo Korbel	2.0	15:51:26
3	SM340	SALT WHISTLE	02:07:42	0.662	01:24:32	0.674	Ainslie Allen	3.0	15:53:42
4	SM8521	CARBINE	01:57:44	0.722	01:25:00	0.730	Ray Tebbutt	4.0	15:53:44
5	SM1020	TEQUILA	02:00:49	0.708	01:25:32	0.714	Alan Collins	5.0	15:54:49
6	SM3639	WIND SPEED	01:44:05	0.822	01:25:33	0.829	Les Browne	6.0	15:52:05
7	SM747	FLIGHT	02:01:37	0.707	01:25:59	0.712	Paul Mentiplay	7.0	15:54:37
8	SM370	DEJA VU	02:02:26	0.708	01:26:41	0.711	Peter Dransfield	8.0	15:56:26

Results by Finish Time



Place	Sail No	Boat Name	Skipper	Score	Fin Tim
1	SM600	FUN AND GAMES	Alan Edwards	1.0	15:48:35
2	SM367	LEBROK	Theo Korbel	2.0	15:51:26
3	SM3639	WIND SPEED	Les Browne	3.0	15:52:05
4	SM424	BARNSTORMER	Brian Barnes	4.0	15:53:27
5	SM340	SALT WHISTLE	Ainslie Allen	5.0	15:53:42
6	SM8521	CARBINE	Ray Tebbutt	6.0	15:53:44

Important Notes:

- Initially the race must have been set up as a pursuit race on the Race Set Up page.
- For the conversion to handicap corrected times to work, you must have opened the ***View | Competitors in the Race | Offset Times***; ***and***, saved the offset as you close that screen. This must have been done when it was set up as a pursuit race.

Auto update Pursuit Race handicaps ~ Overall Notes

- TopYacht will provide new handicaps for the next race based on the relative performance on boats. But as the time offsets are only adjusted in one minutes increments (you can choose smaller increments), some boat's handicaps may not appear to move.
- If the actual race duration is different to the expected race duration, then the placing will be messed up. If it is a light wind day then faster boats are advantaged and conversely. The auto handicap update is based on performance (plus place biased if you have chosen that option). While this creates valid handicaps for the next race, based on corrected time outcomes, it will probably not reflect the finishing order for the race when times are significantly different to the estimated base time. Sailors can find that hard to understand!!

Section Three: Handicaps as Offset Times.

Introduction

This alternative uses a 'time handicap' in minutes.

Example using exponential handicapping with a gain of 2.

TCHC = TAHC/2 + TBCH/2.

Where

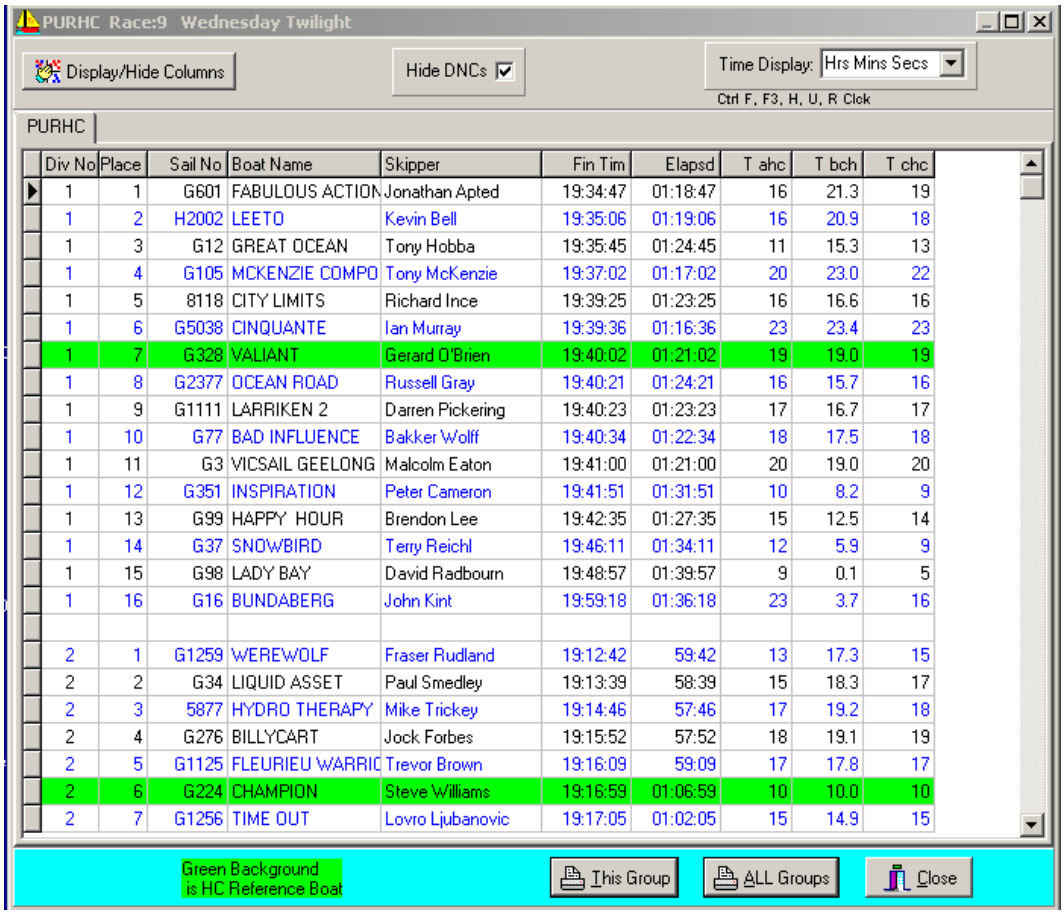
TCHC is the Time based calculated handicap for the next race.

TAHC is the Time based handicap Allocated for this race

TBCH is the Time based handicap a boat needed to finish at the same time as the reference boat.

With an exponential gain of 2, the percentages of TAHC and TBCH are 50%/50% as shown above. This can be altered to other values if desired.

This provides very sensible results and, the handicap adjustments are (to a greater or lesser degree) affected by place. If you do well, your time handicap will probably increase, if you do poorly then it will probably reduce. See example on next page below.



Div No	Place	Sail No	Boat Name	Skipper	Fin Tim	Elapsd	T ahc	T bch	T chc
1	1	G601	FABULOUS ACTION	Jonathan Apted	19:34:47	01:18:47	16	21.3	19
1	2	H2002	LEETO	Kevin Bell	19:35:06	01:19:06	16	20.9	18
1	3	G12	GREAT OCEAN	Tony Hobba	19:35:45	01:24:45	11	15.3	13
1	4	G105	MCKENZIE COMPO	Tony McKenzie	19:37:02	01:17:02	20	23.0	22
1	5	8118	CITY LIMITS	Richard Ince	19:39:25	01:23:25	16	16.6	16
1	6	G5038	CINQUANTE	Ian Murray	19:39:36	01:16:36	23	23.4	23
1	7	G328	VALIANT	Gerard O'Brien	19:40:02	01:21:02	19	19.0	19
1	8	G2377	OCEAN ROAD	Russell Gray	19:40:21	01:24:21	16	15.7	16
1	9	G1111	LARRIKEN 2	Darren Pickering	19:40:23	01:23:23	17	16.7	17
1	10	G77	BAD INFLUENCE	Bakker Wolff	19:40:34	01:22:34	18	17.5	18
1	11	G3	VICSAIL GEELONG	Malcolm Eaton	19:41:00	01:21:00	20	19.0	20
1	12	G351	INSPIRATION	Peter Cameron	19:41:51	01:31:51	10	8.2	9
1	13	G99	HAPPY HOUR	Brendon Lee	19:42:35	01:27:35	15	12.5	14
1	14	G37	SNOWBIRD	Terry Reichl	19:46:11	01:34:11	12	5.9	9
1	15	G98	LADY BAY	David Radbourn	19:48:57	01:39:57	9	0.1	5
1	16	G16	BUNDABERG	John Kint	19:59:18	01:36:18	23	3.7	16
2	1	G1259	WEREWOLF	Fraser Rudland	19:12:42	59:42	13	17.3	15
2	2	G34	LIQUID ASSET	Paul Smedley	19:13:39	58:39	15	18.3	17
2	3	5877	HYDRO THERAPY	Mike Trickey	19:14:46	57:46	17	19.2	18
2	4	G276	BILLYCART	Jock Forbes	19:15:52	57:52	18	19.1	19
2	5	G1125	FLEURIEU WARRIC	Trevor Brown	19:16:09	59:09	17	17.8	17
2	6	G224	CHAMPION	Steve Williams	19:16:59	01:06:59	10	10.0	10
2	7	G1256	TIME OUT	Lovro Ljubanovic	19:17:05	01:02:05	15	14.9	15

Exploring the Above Results

The TBCH is the time handicap the boat needed to have finished at the same time as the ref boat.

The TBCH is displayed to one decimal. So for the first place getter: the Tbch is shown in TopYacht as 21.3 which is in minutes and decimal minutes so all HC information is show in minutes.

Note: the CHC is rounded to the nearest whole minute with 0.5 rounded up.

From TopYacht results page

A	B	C	D	E	F
	FinTime	ET	TAHC	TBCA	TCHC
First	19:34:47	01:18:47	00:16:00	00:21:18	00:19:00
Sec	19:35:06	01:19:06	00:16:00	00:20:54	00:18:00
Ref	19:40:02	01:21:02	00:19:00	00:19:00	00:19:00
Sec Last	19:48:57	01:39:57	00:09:00	00:00:06	00:05:00
Last	19:59:18	01:36:18	00:23:00	00:03:42	00:16:00

Underlying calculations

H	I	J	K
Nominal Start	Actual Start	Needed Start	TBCH
18:00:00	18:16:00	18:21:15	00:21:15
18:00:00	18:16:00	18:20:56	00:20:56
18:00:00	18:19:00	18:19:00	00:19:00
18:00:00	18:09:00	18:00:05	00:00:05
18:00:00	18:23:00	18:03:44	00:03:44

RefTime = 19:40:02

H = B - C - D

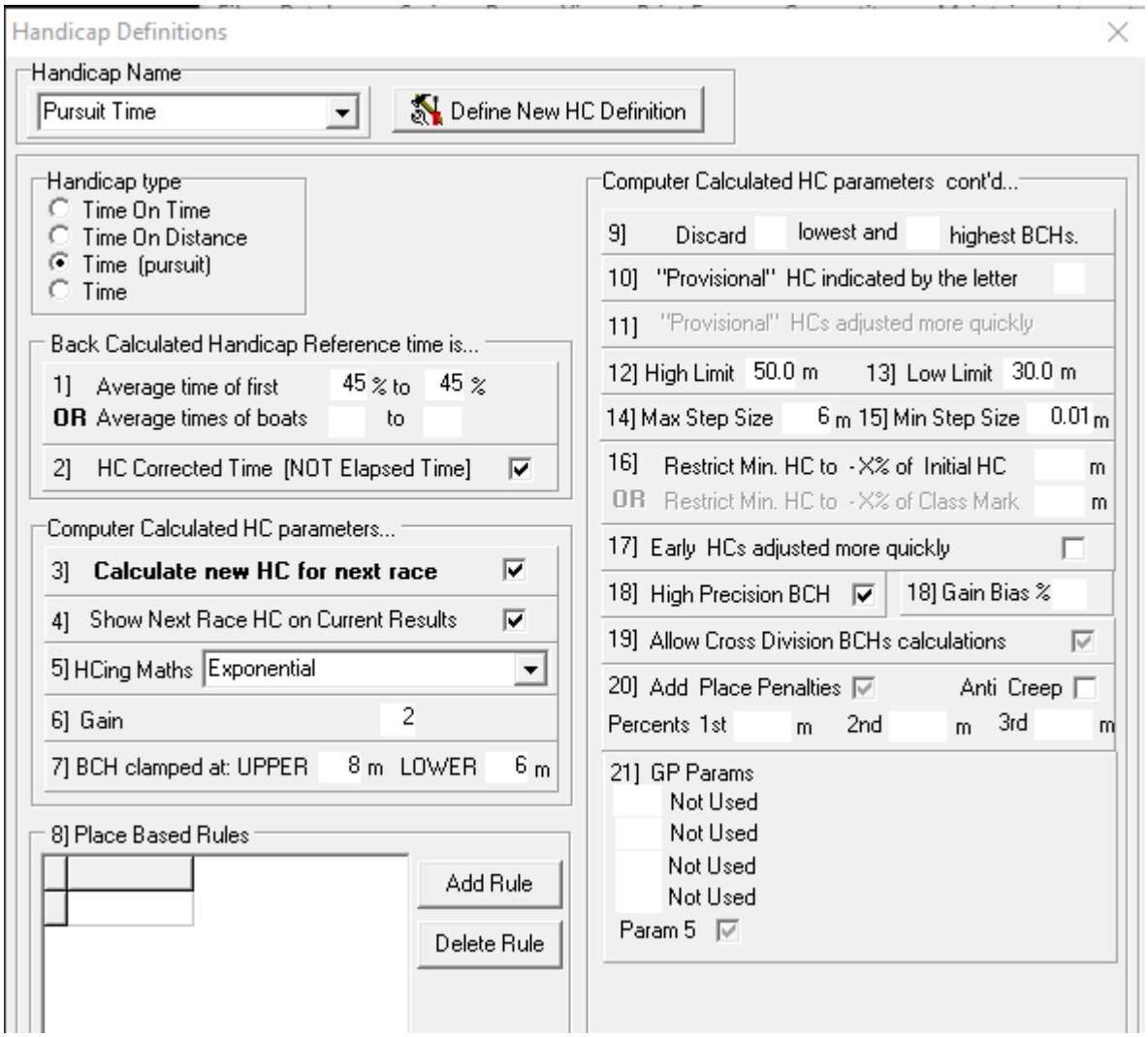
I = B - C

J = RefTime - C

K = J - H

Changes in Handicap set Up to suit the PursuitTimehandicap method

Use the “Pursuit Time” Handicap Recipe.



Once the ‘Handicap Type’ is set, then you can choose a handicap maths, clamps etc.
Important Note: The clamps etc are set in minutes if you select this Handicap Type.

Expansion

In the simple example above the maths was set to Exponential with a gain of 2. As most clubs want their pursuit handicaps to alter very quickly this is a good option particularly if you set suitable clamps and limits.

If you wish to provide a larger change for the front runners and the tail end Charlies then you could use the Place Biased Exponential with a factor of 80%. This changes the boat’s handicap by a factor depending on their place as well as their TBCH.

You could use the “20) Add Place Penalty” but this suffers from the major deficiency that the penalty is fixed irrespective if a boat won by 1 second, 1 minute or 1 hour. *Such an approach seems totally unfair.*

Importance of Pursuit racing

Pursuit racing is a very popular format for twilight racing and, in some clubs, for weekend racing as well. To keep the faith of these sailors and to provide fair and exciting racing I believe it is very important that the race committee put considerable effort in providing racing that meets the requirements of pursuit racing. I am not sure that all race committees understand the requirement of fair pursuit racing. See the next section.

Section Four: Offset Times Using Finish Place.

Introduction

As explained in other TopYacht Documentation, using finishing position as a means of judging relative performance and adjustment of handicaps is, at best, primitive.

In summary, this method adjusts the offset times based on the finishing place, regardless of the margins. Its advantage is that there is no need to record finish time-stamps, and that the competitors know that their start offset times will be adjusted by a set of pre-defined rules.

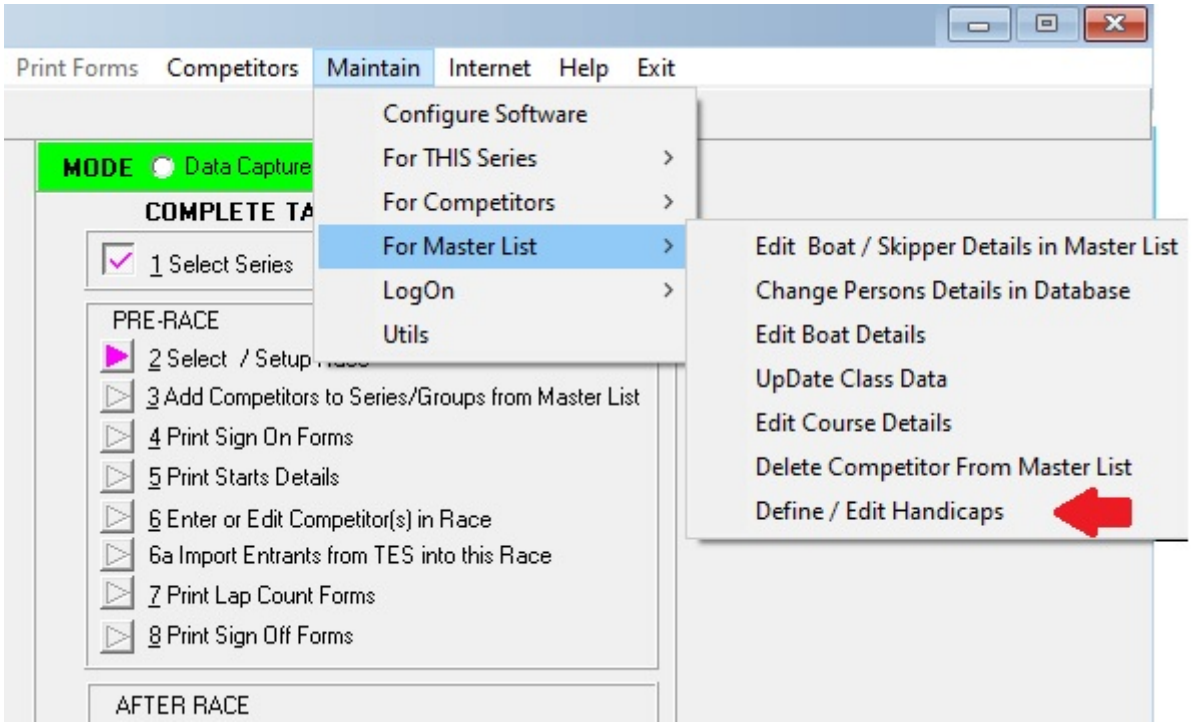
This makes the management of the finish quite simple, often not requiring race officials at the finish line.

Prerequisites:

TopYacht Version: 10.21.4.1 (or later)

Handicap Recipe Setup

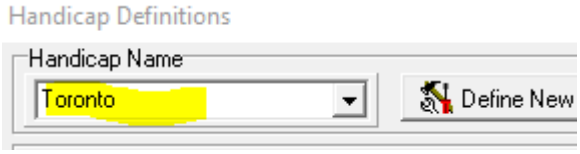
From the main Menu, go to Define / Edit handicaps



Click 

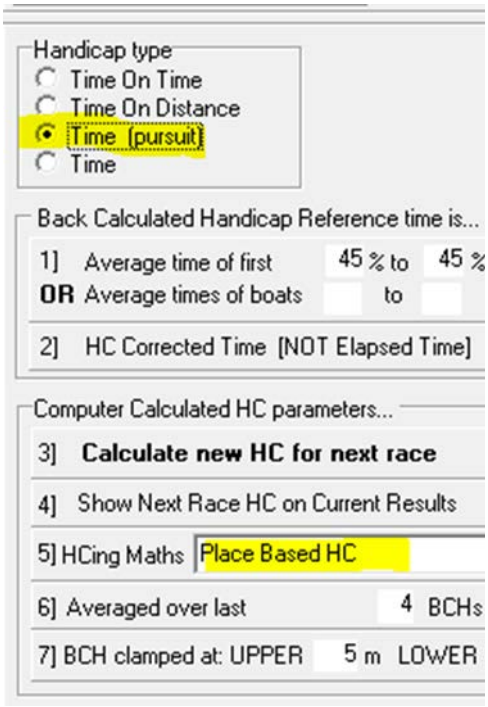
button.

Give it a name.



Set up the key parameters (Highlighted)

The other parameters are ignored by TopYacht

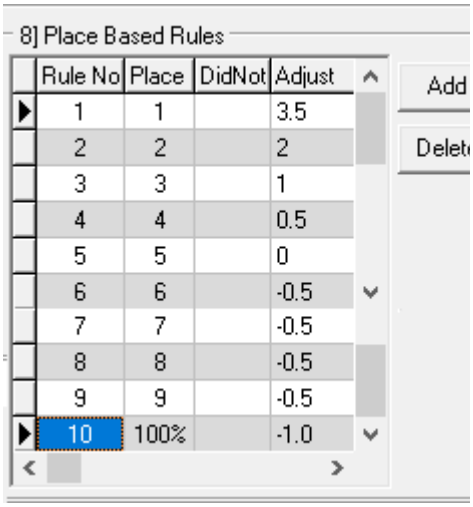


Define a Recipe.

Consideration needs to be given to the size of the increments. A three minute penalty may be OK for a 2-hour race. A six minute penalty may be more appropriate for a four-hour race.

Users also need to consider how to handle the scoring abbreviations described in RRS A11.

For example, a new rule could be inserted prior to rule 101 with **DNC** in the DidNot column with an adjustment of 0 (zero)



GP Parameters:

Set the third one to 1…. Even though it is labelled 'Not Used'

This Enables computed handicap values to be rounded to one decimal place

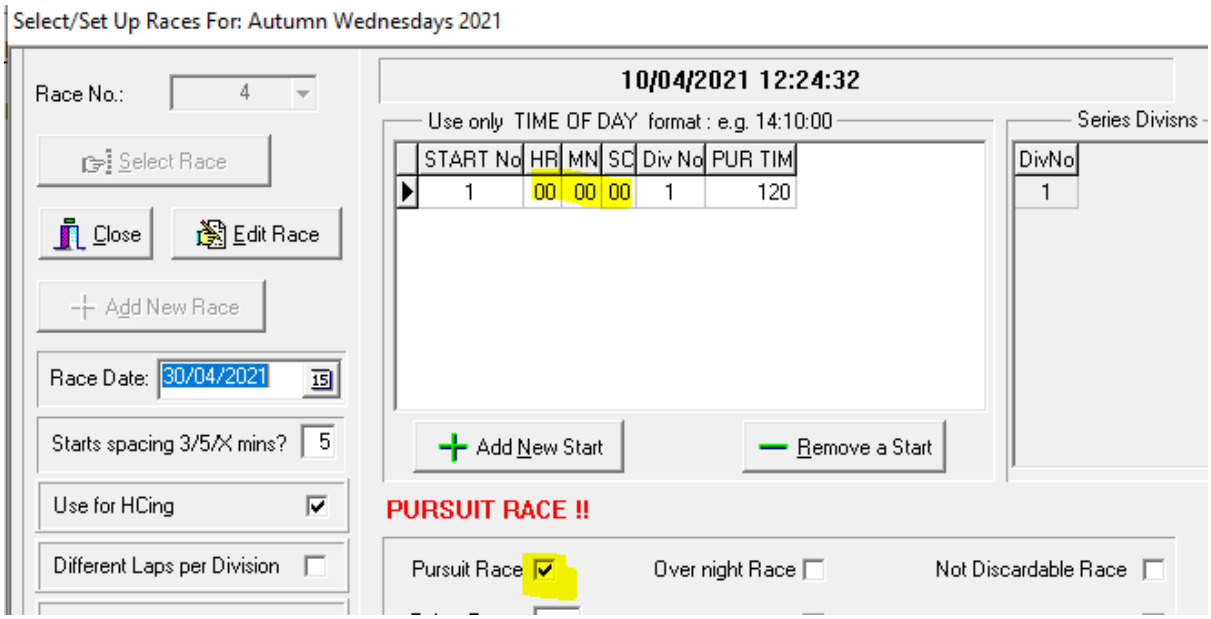
Series Setup

On page 1 of the Series Setup wizard, Choose Finish Place Not Time from the Drop-Down Box.

Race Setup

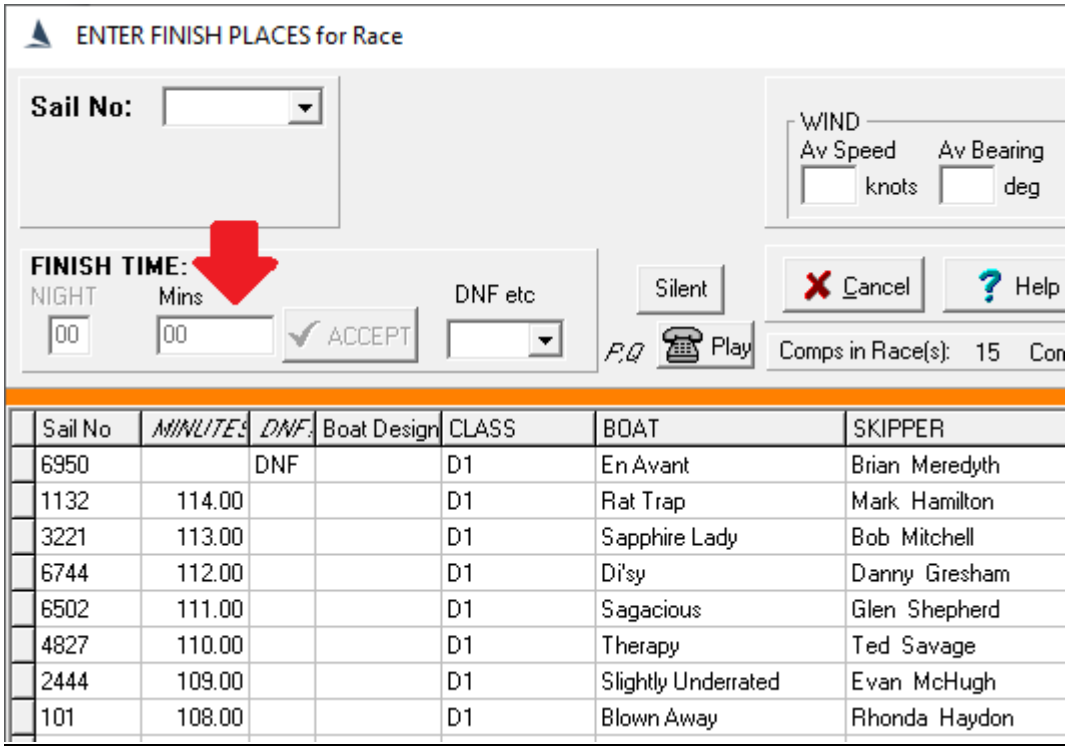
Set the start time to zero.

The PUR TIME must be present, but is ignored by TopYacht



Finish Time Entry

- Use Step 9
- For technical reasons, for the first boat, enter '100' in the 'Mins' box.
  This will auto-increment by one minute for each subsequent entry.
- Enter Sail numbers in the order in which the finished



Sail No	MINUTES	DNF	Boat Design	CLASS	BOAT	SKIPPER
6950		DNF		D1	En Avant	Brian Meredyth
1132	114.00			D1	Rat Trap	Mark Hamilton
3221	113.00			D1	Sapphire Lady	Bob Mitchell
6744	112.00			D1	Di'sy	Danny Gresham
6502	111.00			D1	Sagacious	Glen Shepherd
4827	110.00			D1	Therapy	Ted Savage
2444	109.00			D1	Slightly Underrated	Evan McHugh
101	108.00			D1	Blown Away	Rhonda Haydon

Process the Race

As Per the TopYacht HELP file

Publish the Results

As Per the TopYacht HELP file.

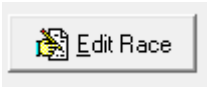
We recommend that the **Elapsed Time** column and the Tbch column be suppressed in the public-domain results… They are meaningless

Remember!!!

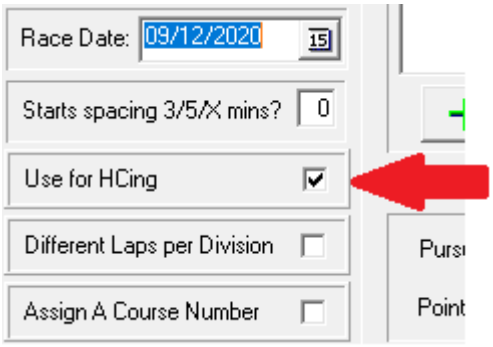
- The ***initial time handicaps*** must be calculated by some sensible maths that starts with one fundamental fact – the anticipated time for the slowest boat to complete the nominated course. Once this value is settled upon, then the offset for other boats can be calculated.
- No matter how the handicaps are then adjusted, the results and the handicap adjustments are nonsense unless significant effort is made to have the race finish at the anticipated time. ***This becomes a race management issue not a handicapper issue.***
  As such, particular attention should be paid to the setting of time limits in the Sailing Instructions. RRS Rule 32.1(d) gives the Race Committee the option of shortening or abandoning a race if the outcome becomes unfair.
- ***It cannot be emphasised enough - a pursuit race must finish at approximately the nominated race time or the race handicaps become nonsense as does the adjustment of handicaps for the next race – irrespective of how the handicap are adjusted!***
- Unlike the auto adjusting handicap corrected time option (Section 1 for pursuit racing) in TopYacht, this system does not require you to input an estimated elapsed time for your (slowest boat) nominated TCF (AHC). While this may appear to be an advantage, it also means you do not have the facility to adjust this on a race by race basis so it is up to race management to manage the race duration either but nominating or setting a suitable course, or shortening the race if the wind is unkind and dies during the race. If the wind actually increases then?????
- If the wind does not play the game, there is always the option of letting a race continue, despite the unfairness of the outcome. However, the option of excluding the results in the computation of the handicaps.

Appendix 1: Exclusion of a Race from Handicap Calculations

- From the front menu, select Step 2.
- Select the current race, and click 

- Click 

- Uncheck the Use For HCing check-box.



- Reprocess the Race (Step 10)

Appendix 2: Time to TCF Spreadsheets

These spreadsheets compute a range of Equivalent Handicaps for various offset times and slow-boat elapsed times.

Only the yellow cells can be changed by the user

- Spread-sheet 1: This caters for offset times starting from time t = 0.

  Click Here to Download
- Spread-sheet 2: This caters for offset times starting from time t = -10

  Click Here to Download

Appendix 3: Further Reading

How the Next Handicap is Calculated