

# TRAVELLER'S SERIES SCORING

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This document provides a summary of scoring systems used in sailing and provides an explanation of why we have adopted a High Point Scoring (HPS) for the Supernova Traveller's Series of open events.

## BACKGROUND ON SCORING SYSTEMS

The three main sailing scoring systems are:

- Low Point System as in RRS Appendix A (most clubs use this method)
- Low-Point Averaged Scoring System.
- High-Point Scoring

The Low Point System in RRS Appendix A (abbreviated to LPS here) assigns a race score to each boat for each race in the series, even if a boat is forced by circumstances beyond her control to miss one or more races (scored as DNC).

Low-Point Averaged Scoring System scores for only the races the boat competes in, therefore competitors who miss races are not disadvantaged. Series scores under the Low-Point Averaged System are somewhat easier to calculate than series scores under the High-Point Percentage System.

Under the Low-Point systems, if a boat wins a race when only a few boats compete, the effect of that win on her series score is the same as if she had won when many boats were competing. This does not seem as equitable as the way in which fleet size is treated under the High-Point (Percentage) System.

Also, a major disadvantage to LPS is that they apply equal weight to each race identically regardless of how many boats are competing. If you finish in a race of three boats, then finish another race at the same position in a race of 20 boats later in the series, your score is identical, regardless of the number of boats sailing. If adverse conditions prevent a number of entrants going to the start line, then those that do race are favoured- it's relatively easy to win a 10 boat race!

## HIGH POINT SCORING

High Point Scoring systems (HPS) have become more widely accepted over the past 15 years. They are useful where 'disassociated' races occur over a long period (in our case annually). It is a points-based system that gives a sailor a percentile performance based on finishing position. First place will get 100 points, with 2nd, 3rd etc spaced equally down to the last finisher.

You score the total number of boats in the race plus 1, minus the position that you finished. For example, in a race of 20 boats, first place might receive 20 points, second place 19 points, etc. We convert the scoring into a percent so that first place will get 100 points, with 2<sup>nd</sup>, 3<sup>rd</sup> etc spaced equally down to the last finisher. If you retire from racing and do not finish (DNF), we think you should receive some points as you did make the effort to race, so this is worth points (we give 5 points).

HPS is based on a mathematical formula which is entered into SailWave.

The simplest form is  $S_{p,s} = 100 \times (s - p) / (s - 1)$ .  $S_{p,s}$  is the score for position  $p$  out of  $s$  starters.

In the 20-boat example, first place will be awarded a score of 100 points, 2 - 94.7 points, 3 - 89.5 points etc. In practice we have modified the formula to give DNF 5 points as mentioned above. Also, we want to derate the scoring for less well attended events. Additionally, the formula is modified to add weighting to reflect that it's harder to get a top position with a larger fleet than in smaller races. This is true for several reasons (harder to find a clear lane in the first beat, bad air, more right of way crossings, more congested marks, for example). Less well-attended races should naturally score lower points.

So the formula we actually use is  $S_{p,s} = 95 * (((s+1-p)/s) * (1 - 2.7183^{-0.25*s})) + 5$

We assume that:

- First place can never attain a score higher than 100% and the score should approach 100 only with sufficiently large fleets. In our case we think this is above 20 entrants (20 entrants being close to the average Supernova Open attendance in 2017 and 2018).
- The differences between places should decrease as the number of competitors increase (2nd out of 10 is better than 2nd out of 3).
- The last place scores should be higher for smaller fleets than bigger (2nd out of 2 is better than 20th out of 20).

Another advantage of HPS is that mid-fleet scores (2nd of 3, 3rd of 5, 4th of 7, etc.) are all somewhere near 50 points. Mid-fleet racers are not punished as much as by other systems.

## WHY DO WE USE THIS SYSTEM FOR THE TRAVELLER'S SERIES?

Our Traveller's fleet is comprised of many different sailing abilities across a diverse range of clubs throughout the UK. With HPS, scores are related to individual performance against the whole fleet. With enough participation, individual ability under valid race conditions is scored within the overall fleet and can be presented meaningfully (as a percentage score) and can be used to grade sailors into Gold, Silver or Bronze fleets.

Prizes can be awarded fairly to Fleet winners accordingly.

Significantly, HPS treats race-to-race variations in fleet size in a much fairer manner than LPS.

For finishing in any specific position in a race, scoring basis is consistent:

- Score more points for beating more boats
- Score fewer points if beaten by more boats

The highest overall points score wins the Series after the last event is completed. Scores accumulate immediately, starting from the first race so you don't need to wait until a few races are completed to see your position in the fleet.

Ties are rarely encountered. In Low Point Scoring ties occur frequently, particularly with the use of discards and the use of Countback can lead to unfair results.

## SCORING RULES

- Did Not Compete (DNC – did not come to the event) scores zero points.
- Did Not Start (DNS - came to the event but did not sail or came to the start line but did not start) scores zero points.
- Did Not Finish (DNF – started the race but retired) scores 5 points
- Disqualified (DSQ – started but disqualified by the RO) scores zero points

## QUALIFICATION

Qualification in any division will be 40% of the total number of races held in a series (0.4\*r).

This may be adjusted during the Series at any time as some races may need to be cancelled due to adverse weather conditions resulting in fewer series races.

## EXAMPLE

Here is an example table showing Entrants, Finish position and Points awarded. This table is shown up to 25 entrants, but there is no upper limit.

We round numbers up to the nearest whole number – decimal points are not used in publishing results for clarity, although calculation is done to 1 or 2 decimal places.

Entries		5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	73	79	83	87	90	92	94	95	96	97	98	98	99	99	99	99	100	100	100	100	100	100
2	59	67	72	77	81	83	86	88	89	91	92	92	93	94	94	95	95	95	96	96	96	96
3	46	54	61	67	71	75	78	80	82	84	85	87	88	89	89	90	91	91	91	91	92	92
4	32	42	50	56	62	66	70	73	75	77	79	81	82	83	84	85	86	87	87	88	88	88
5	19	30	39	46	52	57	62	65	68	71	73	75	77	78	79	80	82	82	83	84	85	85
6	5	17	27	36	43	49	54	58	61	64	67	69	71	73	74	76	77	78	79	80	81	81
7		5	16	26	33	40	45	50	54	58	61	63	66	68	69	71	73	74	75	76	77	77
8			5	15	24	31	37	43	47	51	54	57	60	62	64	66	68	70	71	72	73	73
9				5	14	22	29	35	40	44	48	52	55	57	60	62	64	65	67	68	69	69
10					5	14	21	28	33	38	42	46	49	52	55	57	59	61	63	64	66	66
11						5	13	20	26	31	36	40	44	47	50	52	55	57	59	60	62	62
12							5	13	19	25	30	34	38	42	45	47	50	52	54	56	58	58
13								5	12	18	24	28	33	36	40	43	46	48	50	52	54	54
14									5	12	17	22	27	31	35	38	41	44	46	48	51	51
15										5	11	17	22	26	30	33	37	39	42	44	47	47
16											5	11	16	21	25	29	32	35	38	41	43	43
17												5	11	15	20	24	28	31	34	37	39	39
18														5	10	15	19	23	27	30	33	35
19															5	10	14	19	22	26	29	32
20																5	10	14	18	21	25	28
21																	5	10	14	17	21	24
22																		5	9	13	17	20
23																			5	9	13	16
24																				5	9	13
25																					5	9
26																						5

Cells in yellow are last finisher scores. Cells in grey are DNF scores (5 points).

## APPLYING HPS TO PAST SERIES TO SEE DIFFERENCES

We have applied HPS to past Supernova Traveller's Series to see the effects of the new scoring on the results. We have used the 2018 year with 45 races at 15 different UK clubs over the year.

A Qualification profile is set so that participation in 40% of races or more is needed to qualify for the series. In this year, there were 13 qualifiers who did 18 or more races in the Series (40% of 45).

### Low Point Scoring Results based on lowest net scores – after discards

Rank	HelmName	SailNo	Club	Total	Nett
1	Gary Butterfield	1184	Bartley SC	858.0	144.0
2	Tony Bleasdale	649	Girton SC	674.0	161.0
3	Mark Meadows	1171	Burton	674.5	168.5
4	Paul Undrell	1160	Haversham	894.0	180.0
5	Serena Stewardson	1083	Emberton Park	659.0	186.0
6	Nick Whiles	1130	Attenborough	596.0	192.0
7	Frank McMullen	1068	Bolton	910.0	196.0
8	Dana Church	1139	Nottingham SC	945.0	231.0
9	Dave Stephen	1180	Bartley SC	764.0	279.0
10	Mike Gibson	1127	Bartley	1,006.5	292.5
11	Peter Housley	1099	Sutton in Ashfield	1,090.0	376.0
12	Clive.Brown	576	Bolton	1,121.0	407.0
13	Chris Watts	1163	Bough Beech Sailing Club	1,175.0	461.0
DNQ	Gavin Young	1192	Cotswold SC	1,056.0	342.0

### High Point Scoring Results:

Rank	HelmName	SailNo	Club	Total	Nett
1	Gary Butterfield	1184	Bartley SC	1,927	1,927
2	Paul Undrell	1160	Haversham	1,801	1,801
3	Tony Bleasdale	649	Girton SC	2,037	1,717
4	Mark Meadows	1171	Burton	1,934	1,615
5	Frank McMullen	1068	Bolton	1,614	1,614
6	Serena Stewardson	1083	Emberton Park	1,905	1,475
7	Mike Gibson	1127	Bartley	1,451	1,451
8	Nick Whiles	1130	Attenborough	1,883	1,313
9	Dana Church	1139	Nottingham SC	1,288	1,288
10	Clive.Brown	576	Bolton	1,080	1,080
11	Peter Housley	1099	Sutton in Ashfield	968	968
12	Chris Watts	1163	Bough Beech Sailing Club	860	860
13	Dave Stephen	1180	Bartley SC	1,032	758
DNQ	Gavin Young	1192	Cotswold SC	1,407	1,407

In 2018 a few events were less well attended (Bough Beech 10, Scammonden 11, Attenborough 12, Glossop 14, Chase 14) where less experienced sailors could fare better because of the small fleet sizes. We achieved the highest entries at Cotswold (33), Bowmoor (32), and Bolton (29).

As an example, Mike Gibson sailed 18 races – just sufficient to qualify. Mike is a Gold Fleet sailor (top 20%) and has a reputation for consistency. Also, David Stephen sailed every race in the series (45), David is a bronze fleet sailor (bottom 25%) and relatively new to the Supernova.

- With LPS, David Stephen qualifies one place higher than Mike Gibson.
- With HPS, Mike Gibson qualifies in 7<sup>th</sup> place, six places higher than David Stephen at 13<sup>th</sup>.

This is one example showing that HPS is much fairer at scoring as the built-in weighting factor eliminates the potential inconsistencies with small fleet entries at some clubs and rewards good performance with large fleet numbers.

### HPS TO MEASURE RACE SAILING ABILITY

A person's High Point Score is a good reflection of ability if there is reasonable participation (say more than 40% of events). The Series leader (Garry Butterfield) entered 24 of the 45 races so his percentage score is  $1927/24 = 80.3\%$ . The total (not net) score is used as we want to include discards. This score is directly correlated to race sailing ability. The second-place qualifier (Paul Undrell) also completed 24 races so scores  $1801/24 = 75.0\%$ . In this way, it is possible to segment a fleet according to ability (Gold, silver, bronze fleet).

In addition, the same analysis can be done to those not qualifying although some care needs to be taken to ensure they have completed a significant number of races to count. We can look at the first non-qualifier, Gavin Young. He completed 15 races, unfortunately not enough to qualify. His ability score is  $1407/15 = 93.8\%$ . Cliff Milliner achieved  $1140/12 = 95.0\%$  showing a very close match at the top if they had qualified.

We can conclude that High Point Scoring is a much fairer system for disassociated events over a year, such as we have in the Traveller's Open Series. It also gives a good prediction of outcome and allows individuals to measure their relative performance during a Series and Year on Year.

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