

More Information on Point System for Scoring Race Series

We switched the point system this year from our previous scoring system to a “High Point Average System” (also referred to as an “at bat” scoring system). I had given some previous information on our trophy/scoring system at:

http://wlsc.lizards.net/race_resources/racing_policies_2009.pdf

I thought it might be useful to give more information on the “High Point Average System” for two reasons. One reason is to document the approach for next year for the new race captain. The second reason is so that anyone interested could check my results. I also included the document from USA sailing as an addendum to this document.

Caution: *Do not read this document while attempting to sail a boat, it could cause one to fall asleep leading to a grounding and serious hull damage..*

If a person participates in four races, only three are required to be eligible for a trophy in any one series. So for example if a racer finished with the following scores, the best three would be used to calculate his “at bat” score for the series. You have to essentially count down to get the “adjusted score.” Thus if you place 1 in a group of 10 boats, your adjusted score is 10. If you place 2, your adjusted score is 9, etc. In a sense, you never strike out since you would get an “adjusted score” of 1 if you come in last.

Race 1 place	Race 2 Place	Race 3 Place	Race 4 Place
1	3	4	5
Race 1 Adjusted	Race 2 Adjusted	Race 3 Adjusted	Race 4 Adjusted
7	6	6	6
Race 1 Boats	Race 2 Boats	Race 3 Boats	Race 4 Boats
7	8	9	10

There would be four permutations where one race is discarded. I used an Excel spreadsheet to calculate the possibilities. I will show only one permutation below as an example:

“Average for Series” = (Race 1 adjusted score + Race 2 adjusted score + Race 3 adjusted score) / (Race 1 Boats + Race 2 Boats + Race 3 Boats)

At Bat Average for Series” = (7 + 6 + 6) / (7 + 8 + 9) = 0.792

From the four permutations, I picked the highest number. If the racer did only three races, then there is only one permutation.

It gets a little more complicated when someone does committee boat in a series. We continued with the policy of taking the person's two highest races and giving them the average of these for their third race. There will be three permutations if the person did the committee boat and then participated in three races. Actually, the calculations are somewhat easier in this case. It can be shown mathematically that when adding the average of two races to the sum of two other races that the same number is obtained by just using the two races in the calculation.

Thus if a racer races in two races finishing with a corrected place of a and b with the number of boats in the race being respectively, c and d, the sides of the following equation are equivalent:

$$(a + b + ((a+b)/2)) / (c + d + ((c + d)/2)) = (a+b) / (c+d)$$

$$(a + b + a/2 + b/2) / (c + d + c/2 + d/2) = (a + b) / (c+d)$$

$$(1.5 a + 1.5 b) / (1.5 c + 1.5d) = (a + b) / (c+d)$$

$$1.5/1.5 ((a + b) / (c+d)) = (a + b) / (c+d)$$

Since you can multiply any number by 1, i.e. 1.5/1.5, then both sides of the equation are equivalent. Try it with real numbers in a spreadsheet and you will get the same answer either way, but much simpler just to do the best two races and use the permutation that is most favorable to the racer. My 9th grade Algebra teacher, Mrs. Wilson, would be proud of me for the derivation..

I had initially planned for the overall score to do the six races that gave the best "at bat" average for the racer. However, just too many permutations and I am much too lazy to attempt it. Thus, I just used the average of the two "at bat" scores for the racers who met the criteria for competing for the overall PHRF and Club champions.

The Addendum below was copied in full from the USA Sailing Web site:

http://www.ussailing.org/rules/documents/SCORING_A_%20LONG_SERIES_09.pdf

SCORING A LONG SERIES

Alternative Scoring Systems for Long Series

Note to reader: *On this web page the US SAILING Racing Rules Committee provides texts for scoring systems designed for long series, such as a season championship spanning several weeks or months. The material presented here is the material referred to in the 'US SAILING Note on Scoring a Long Series' at the end of Appendix A in the US SAILING edition of The Racing Rules of Sailing for 2009 – 2012. Comments on these systems are welcome. Please e-mail them to rules@ussailing.org. Also, the Racing Rules Committee would like to know if fleets and clubs make use of these alternative scoring systems. If you do, please send us a short e-mail telling us the name of your club or fleet. Thanks!*

Appendix A of the Racing Rules of Sailing contains two scoring systems, the Low Point Scoring System and the Bonus Point Scoring System. Those systems are appropriate for regattas held over a weekend or a championship or race week held over several consecutive days. The systems in Appendix A can also be used for scoring a series of races held over a longer period of time. When one of the Appendix A systems is used for such a long series, rule A9 applies and modifies rule A4.2.

On this web page, US SAILING presents two additional scoring systems that some fleets and clubs may find preferable for long series that extend over a month or even an entire season. They are the High-Point Percentage Scoring System and the Low-Point Averaged Scoring System. These scoring systems have been developed over many years by Gregg Bemis, William S. Cox, and Dick Rose.

Background

The scoring systems in Appendix A assign 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.

Both the High-Point Percentage System and the Low-Point Averaged System assign a race score to a boat only for those races in which she competes. Under each of these two systems, she can miss some of the races without penalty provided she sails in sufficient races to qualify for the series. Therefore, she is not placed at a disadvantage if she cannot compete in all the races.

Under the High-Point Percentage System, a boat's series score is the percentage of the boats that she competes against that she defeats. A boat's series score under this system is similar to a baseball player's batting average. Each time the boat races against another boat in a race, that event is equivalent to an 'at bat' in baseball. If she finishes ahead of an opponent, that is equivalent to a 'hit', and if she

finishes behind an opponent that is equivalent to an 'out'. Under the Low-Point Averaged System, a boat's series score is simply the average of her race scores.

Advantages and Disadvantages of the Systems

High-Point Percentage Scoring System

Advantages: The High-Point Percentage Scoring System has two substantial advantages over the Appendix A Scoring Systems and one substantial advantage over the Low-Point Averaged Scoring System. Over the course of a long series, many entrants in a series will, for any of a variety of reasons, find that they must miss one or even several races in the series. Under the High-Point Percentage System, a boat 'qualifies' for a series if she sails 75% of the races in the series. Her series score is based only on the races in which she competes, and therefore, provided she sails in sufficient races to qualify for the series, she is not placed at a disadvantage if she misses some races. Neither of the Appendix A systems has this feature. Also, the High-Point Percentage System has the advantage that a boat that wins a race in which a large number of boats compete is rewarded more handsomely than a boat that wins a race against a smaller number of competitors. The Low-Point Averaged System and the Appendix A systems do not have this feature.

Disadvantages: The High-Point Percentage System is the most complex of the systems presented here. However, anyone familiar with baseball's batting averages will easily understand the system.

Low-Point Averaged Scoring System

Advantages: Like the High-Point Percentage System, the Low-Point Averaged System's series scores are based only on the races in which boats compete, and therefore boats that must miss some races are not placed at a disadvantage. Series scores under the Low-Point Averaged System are somewhat easier to calculate than series scores under the High-Point Percentage System.

Disadvantages: Under the Low-Point Percentage System, 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.

Appendix A Scoring Systems

Advantages: The Appendix A systems are simpler and more familiar than either the High-Point Percentage or the Low-Point Averaged System. If a club or fleet has a regatta scoring computer program for the Appendix A systems, it will require only minor modification to implement rule A9's modification of rule A4.2.

Disadvantages: Both Appendix A scoring systems place a boat that does not compete (scores DNC) in one or more races at a substantial disadvantage to

another boat that sails in more races. Even when one or more scores are excluded, a boat is at a disadvantage when she misses a race because her DNC score for a missed race will automatically become an excluded score, whereas, a boat that competes in more races has a larger set of scores from which her excluded score will be selected.

Sailing Instructions to Implement Each System

Sailing Instructions that may be used to implement these systems are given below. If a system is modified as provided in one of the numbered Notes, include the modification.

THE HIGH-POINT PERCENTAGE SCORING SYSTEM

1 RACES TO COUNT AND MINIMUM REQUIRED

The series will consist of the following races _____. To qualify for inclusion in the final series results a boat shall compete in (i.e., come to the starting area for) at least 75 percent of the races completed.¹

¹ Note: The sailing instructions may state that a different percentage of races, or a minimum number of races, will be required.

2 RACE SCORES

Define 'N' to be the number of boats that compete in a particular race. Each boat finishing that race and not thereafter retiring or being disqualified will be scored as follows:

<u>Finishing place</u>	<u>Score</u>
First	N
Second	N-1
Third	N-2
Fourth	N-3
Each place thereafter	Subtract 1 point

All other boats that compete in that race, including any that finish and thereafter retire or are disqualified, will score 0 points. Boats that do not compete in that race (DNC) will not be scored.

3 SERIES SCORES

The series score for each boat will be a percentage calculated as follows: divide the sum of her race scores by the sum of the points she would have scored if she had placed first in every race in which she competed; multiply the result by 100.² The qualified boat with the highest series score is the winner, and others are ranked accordingly.

² Note: When one or more race scores are to be excluded, add: 'Exclude her ____ worst score(s). An excluded race counts as a race to qualify a boat for a series score, but not as one of her scored races.'

4 TIES AND OTHER RULES

Race ties will be broken using rule A7. Series ties will be broken using rule A8.1. Rules A1, A3, A5, A6, A10 and A11 also apply.

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THE LOW-POINT AVERAGED SCORING SYSTEM

1 RACES TO COUNT AND MINIMUM REQUIRED

The series will consist of the following races _____. To qualify for inclusion in the final series results a boat shall compete in (i.e., come to the starting area for) at least 75 percent of the races completed.¹

¹ Note: The sailing instructions may state that a different percentage of races, or a minimum number of races, will be required.

2 RACE SCORES

Each boat finishing a race and not thereafter retiring or being disqualified will be scored as follows:

<u>Finishing place</u>	<u>Score</u>
First	1
Second	2
Third	3
Fourth	4
Each place thereafter	Add 1 point

All other boats that compete in that race, including any that finish and thereafter retire or are disqualified, will receive the score for the finishing place one more than the number of boats competing in that race. Boats that do not compete in that race (DNC) will not be scored.

3 SERIES SCORES

The series score for each boat will be the sum of her race scores divided by the number of races for which she is scored.² The qualified boat with the lowest series score is the winner, and others are ranked accordingly.

² Note: When one or more race scores are to be excluded, add: ', excluding her ____ worst score(s). An excluded race counts as a race to qualify a boat for a series score, but not as one of her scored races.'

4 TIES AND OTHER RULES

Race ties will be broken using rule A7. Series ties will be broken using rule A8.1. Rules A1, A3, A5, A6, A10 and A11 also apply.

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THE APPENDIX A LOW POINT SCORING SYSTEM

The Low Point Scoring System in Appendix A of the racing rules will be used. Rule A9 will apply.

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THE APPENDIX A BONUS POINT SCORING SYSTEM

The Bonus Point Scoring System in Appendix A of the racing rules will be used. Rule A9 will apply.

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