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Daniel J. Daugherty
Editor
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Dear Dan –

Thank you for the opportunity to resubmit my manuscript titled “Quantile Regression Estimates of Body Weight at Length in Walleye.” I have incorporated the revisions suggested by you, the associate editor, and two reviewers and respond to each on a point-by-point basis below.

Sincerely,

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AE general comments:

1. All suggestions made by reviewer 1 have been incorporated into the analysis of the data in this revision.

2. I have included additional discussion points as to how fisheries scientists and managers should use quantile regression when evaluating body weight estimates at length.

3. I have included in this revision examples of how managers could be using quantile regression rather than W_s and W_r in their analysis. I have also pointed out that quantile regression methods are available in commonly-used data-analysis software packages. Converting anyone from "the devil they know" to "the devil they don't" is challenging. David Willis once told me that "*it would take years, ages, and never completely happen to find all of the computer programs with Ws equations in them in state agencies, private sector biologists, individual agency biologists, etc., etc. It would be a mess.*" In all honesty, I don't disagree.

The reality, though, is that until managers know that quantile regression estimates of body weight at length is a more statistically sound option than using Ws and Wr, then they'll never even have been introduced to "the devil they don't know." That's the primary goal of this paper and hopefully, moving forward, managers, scientists, authors, and reviewers will begin to see the utility of analyzing actual weights with standard statistical analysis (as can be done with quantile regression) rather than the ad hoc methods that are in use to analyze Wr data.

AE specific comments:

1. I have significantly edited the abstract to include more of the data and results.

2. I have included more information on fish collection both in the results as well as several discussion points.

3. Agreed. The initial captions were "stand-alone" captions and meant to allow each table to be digested outside the text of the paper. I've reduced the captions to the each table and figure significantly.

Reviewer 1 general comments:

Reviewer 1 made many very specific and very detailed comments and criticisms about the methods I used in the original submission. Each comment and criticism, particularly those related to the analysis methods, were exactly right and, once reviewed along with their suggested methods, were much clearer than my own initial methods. Because I had included the data and code used in this manuscript, their comments included detailed R code that allowed me to easily and quickly incorporate their ideas into the manuscript. To be honest, I'm rather pleased with having submitted the repository that included the data and code used in this manuscript as part of the submission process. I plan on continuing to submit code repositories that show my analyses methods with future submissions.

Each of the general and specific comments that Reviewer 1 made regarding my analyses was correct and I have incorporated their suggestions into the manuscript (and the code I include with this revision as a supplement).

Reviewer 1 specific comments:

Lines 31-34: Revised

Line 65: Revised

Line 77: Revised

Line 168: It's challenging for me to say to any fisheries manager or scientist that they should stop using Ws and Wr, but in several places in the revised manuscript I suggest that Ws/Wr are limited in their utility and that they should only be used for management-appropriate questions.

Line 202-219 (and all methods): Revised. The code this reviewer provided was quite detailed and, upon review, I was a bit annoyed with myself that I hadn't done this originally.

Figure 1: Revised. I have included a figure that has two panels, one for the reference data set and GA populations and one for reference dataset and SD populations. In greyscale, the confidence bands are difficult to differentiate, but evident. I have available the same image but in color that, if warranted, the AFS editorial board could use in place of the greyscale version included here.

Reviewer 2 general comments:

Reviewer 2 provided excellent guidance as to how this manuscript should be focused towards fisheries managers, given that it is a "management brief." For example, which reference datasets should be used to establish quantiles, state/regional datasets, etc. Reviewer 1 had similar suggestions and I have tried to incorporate those thoughts into my discussion. I have included suggested guidelines on how states and regions can develop their own reference datasets but also leave the question of *which way is best?* to the managers "on the ground." Similarly, I discuss how standardized collection methods could influence reference dataset quantile regression estimates.

Regarding inclusion of the figure, I agree that figures do seem to be rare in Management Briefs in the NAJFM. However, the suggestion by Reviewer 1 to revise the figure in accordance with other peer-reviewed papers that deal with quantile regression seemed appropriate.

Reviewer 2 specific comments:

Lines 32-33: Revised

Line 99: I have included the information related to collections of state population data in the results. I have also included in the newly-revised discussion how varying collections efforts could impact reference datasets.

Line 100: Revised. There was no minimum sample size required for the three random state populations. Given that this was an attempt to analyze data based on "real world" populations, I thought it best to not rely on a minimum sample size.

Line 151: Eliminated. This section, at the suggestion of Reviewer 1, was removed from the, manuscript.

Lines 165-166: Revised. I have included discussion points regarding how many populations and the sizes of reference datasets. Ultimately, given that a reference dataset contains at least enough populations that are representative of the growth form of the species across whatever spatial extent of the comparison(s) being made, *n* populations is of little concern, given that all populations are weighted equally. Guidelines for sample sizes in a regression analysis are difficult to make but, because confidence intervals will be less precise as sample size decreases, comparisons will be more reliable as *n* increases.

Line 174: Agreed. I mention this point in the discussion.

Line 190-191, 199-200: I had a similar conversation with David Willis many years ago.

Line 195: I have changed the quantiles used in this table and have updated the wording to include: 90^{th} = "excellent," 75^{th} = "above average", 50^{th} = "average," 25^{th} = "below average", 10^{th} = "poor".

Line 219: A good point. One made moot, however, by eliminating the use of a K-S test in this manuscript at the suggestion of Reviewer 1. In all honesty, this is an intriguing idea and one that I would be interested in reviewing, particularly given the fact that I possess significant datasets for both walleye and black crappie across their geographic range.

Line 240: References to the Blom method have been eliminated from this revision.

Line 305: Captions have been heavily revised at the suggestion of the AE.