Reviewer Comment Form

**REVIEWER’S COMMENTS**

Note to reviewers: Comments on this sheet will be sent to the author(s). If you wish your identity to be known to the author(s), please make a statement indicating you wish your identity to be known and sign at the end of this form, otherwise do not sign. Please return this form, the confidential rating form, and the copy of the manuscript to the Associate Editor **within TWO WEEKS**.

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Manuscript No. 8-1-30-15 Reviewer No. 1

Author: Stewart et al 15

Title: Age, Growth, and Size of Lake Superior Pygmy Whitefish (Prosopium coulterii) in 2013

This manuscript describes several life history parameters of the Pygmy Whitefish from Lake Superior. Using standard collection techniques fish were collected at 28 stations and scales and otoliths were removed for age and growth analysis. The manuscripts objectives were 1) evaluate between-reader precision for scales and otoliths and compare ages estimated from both structures; 2) Describe growth of the Pygmy Whitefish from Lake Superior and compare current growth with those estimated from a study in 1953; and 3) describe the weight-length relationship for male and female Pygmy Whitefish from Lake Superior. The study found significant differences between ages determined from scale and otoliths, sexual dimorphic growth (females longer than males after age-3) and no difference in growth compared to 1953.

This manuscript is well written, except for some errors in parallel construction, and improves our understanding of Pygmy Whitefish population dynamics in Lake Superior.

Major Comments:

~~Please reorganize the objectives in the introduction and results so they follow parallel construction. For example, in the introduction the three objectives are ordered 1) precision for scales and otoliths, 2) compare growth with other studies, and 3) report weight-length relationship. Then the results have the order 1) Age, 2) Size, and 3) Growth.~~

~~The authors use a model selection method that is valid but not commonly used in fisheries ecology. In the manuscript the authors used an extra sum-of-squares test to determine the “best” model out of a series of candidate nested models. Most readers would be familiar with AIC as a method of model selection and thus I suggest the authors add a few lines describing why they chose extra sum-of-squares over AIC (as both are valid with nested models).~~

The discussion should have a paragraph about the importance and implications of this study. How do the results advance what we know about Pygmy Whitefish management and ecology?

Minor Comments:

~~Line 10: italicize scientific name~~

~~Line 23: should the year be in italics?~~

~~Line 62: the citations are out of order.~~

~~Line 68-70: I think this statement is cannot be evaluated. I don’t think you can make conclusions on if growth has or hasn’t changed with only two years of data that are separated by 60 years. Growth is too variable and influenced by too many factors to evaluate this. But I think it is important to make these comparisons and it is valuable information, however, any statements that growth has increased or decreased should be qualified.~~

Line 85-87: Were the trawls time based? The authors state the speed the boat was driven, depth, and distance covered but it is unclear how the distance was determined.

~~Line164-166: It is unclear why the authors randomly assigned (with equal probability) sex to unknown fish less than 75 mm. Are Pygmy Whitefish population known to have equal sex ratios at a young age in Lake Superior? The authors state that they did this to anchor the left side of the VBGM. I wonder how sensitive the estimates would be if a different sex ratio was chosen? I think this need to be addressed or more support needs to be given for selecting a 50:50 sex ratio to assign unsexed fish.~~

~~Line 170-176: This paragraph summarized the data in Table 1 however it does not follow the table (parallel construction). The paragraph should be reorganized to follow the flow of Table 1 left to right. Also why isn’t APE reported? Perhaps I missed it but I could only find it in the Table. If APE is not relevant it should be removed from the table.~~

~~Line 183: Change “..the once only sample..” to “single sample”~~

~~Line 191: use a comma separator 3,132n Pygmy Whitefish~~

~~Line 197 and elsewhere: Use a consistent number of significant digits for p-values, I believe three is most common (e.g., P < 0.001).~~

~~Line 197-198: It is assumed the Wilcoxon test was two-sided. Unless the authors conducted a one-tailed test the statement about “Significantly longer” should be rephrased. A more appropriate description would be they are significantly different with females being longer than males.~~

~~Line 203: Please add the confidence intervals reported in FishBase.~~

~~Line 205: Please remove the word “quite”.~~

~~Line 215: Please change “few” with a numeric range.~~

~~Line 227-231: This paragraph has two topics (Difficulty in aging scales and growth patterns) and not tied together with a topic sentence. Either separate into two paragraphs or provide a topic sentence relating the two.~~

~~Line 232-239: This paragraph discusses the problems the authors came across during their study. While it is important to present I don’t see the implications of the problems to the study or future studies. A sentence or two about the implications would be helpful.~~

~~Line 260: Please change “…grow more slowly in…” to “grow slower”.~~

~~Line 269: Define “slightly”~~

~~Line 270: Define “somewhat”~~

~~Line 274-276: I don’t think the results support this statement. The size, age, and growth metrics might not be different than those reported from 1953 but you cannot say they have not changed. All the metrics could have fluctuated over the last 60 years but are now back to similar levels to those from 1953.~~

Reviewer's Signature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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