**Mark Fritts,**

Thank you for your willingness to serve as a peer reviewer for the Upper Midwest Environmental Sciences Center.

I have attached a copy of the manuscript to this email. If you have any questions or comments feel free to contact me. A copy of the instructions for reviewers of UMESC manuscripts is provided, after my contact information.

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**Due Date: June 28, 2022**

Thank you for agreeing to review the attached manuscript for the U.S. Geological Survey’s Upper Midwest Environmental Sciences Center.

To maximize the value and impact of your review, please read and follow the INSTRUCTIONS TO REVIEWERS OF SCIENTIFIC DOCUMENTS. If you wish, your identity will be withheld from the author. Please indicate this when you return your comments.

Please complete the information at the bottom of this letter and return it along with your completed review by **June 28, 2022**. If you cannot complete your review within the allotted time frame, please let me know as soon as possible.

An integral projection model for gizzard shad (Dorosoma cepedianum) utilizing density-dependent age-0 survival by Peirce, James, Sandland, G., Bennie, B., Erickson, R.

Sincerely,

Theresa Schreier

Name of Reviewer: Mark Fritts Date of review: 27 June 2022

Area(s) of expertise: Fisheries Management, Aquatic Invasive Species, Riverine fish sampling techniques

INSTRUCTIONS TO REVIEWERS OF SCIENTIFIC DOCUMENTS

Your responsibility as a reviewer for the Upper Midwest Environmental Sciences Center is to help us to improve the quality of our science by providing constructive, thoughtful, but forthright comments on the degree to which the attached document meets current standards recognized by the scientific community, and the degree to which the work is timely and relevant.

Please read the document carefully and evaluate it objectively. Restrict your technical comments to your area of expertise, but feel free to render opinions or raise questions about larger scientific issues that may be relevant. To the extent possible, justify your comments with supporting evidence just as you would do when presenting your own scientific work. Please do not refrain from offering relevant opinions, but also label them as such. Test your comments for fairness, objectivity and tone of delivery by asking yourself if you would be comfortable presenting your comments, face-to-face, to the author and a panel of your peers.

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You may add your comments directly to the document, but also summarize and explain the important ones in the comment section of this form. Indicate which comments are mandatory and must be addressed in subsequent drafts.

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Please address each of the following questions as you review the enclosed manuscript:

1. Is the objective of the study scientifically relevant and clearly stated?
2. Are the study design and methods appropriate for the purposes of the study? Are the methods presented in sufficient detail to enable the reader to repeat the study?
3. Are there demonstrable errors of fact or interpretation?
4. If your expertise includes statistics, do you find that the statistical methods are applied appropriately and interpreted accurately? If your expertise does not include statistics, do the analyses convince you that the conclusions are correct?
5. Is the study innovative?
6. Is the writing clear, concise, and unambiguous? If not, suggest by example how the document could be improved.
7. Has pertinent literature been used effectively and convincingly? If not, provide specific recommendations.

MANUSCRIPT REVIEW

This is an extremely well-written manuscript with thorough explanations of project objectives and modelling techniques. This is an effective use of the data being collected by the LTRM program. I believe that the study represents a novel use of advanced modelling techniques for better understanding the population dynamics of gizzard shad. Having spent most of my career monitoring fish communities on the Mississippi and Illinois Rivers, I can anecdotally concur that the projections of this model are realistic and reflective of the actual densities of gizzard shad observed in standardized surveys. I have listed a few areas where this manuscript might be improved in the section below. Overall, this is a well-polished product with little need of correction.

REVIEW COMMENTS

General Comments:

Overall quality of graphical figures is poor. I encourage the authors to increase the font of axis labels and remove grid lines to increase the readability of figures.

Increase font size on axes from 16 to 20 and removed grid lines of single plots. Facet plots still have gridlines as an aid for comparison between years and the simulations. Facet plots have been enlarged to improve readability.

Specific Comments:

Line 85-95: Can you provide one or more citations for this information on the basic life history of gizzard shad?

Add a reference to gizzard shad dissertation to support life history traits and references for egg production and survival.

Table 1: I cannot locate a reference to Table 1 in the text. Perhaps one could be added at the end of line 109.

The end of line 109 is a good place for the reference and it was added.

Line 191: misspelled Lake Erie

Correct the spelling.

Line 214-15: Does this annual average density of gizzard shad combine total catch from all gear types represented in the LTRM fish program? If so, state this explicitly.

Yes, it does include all gear types. We changed the sentence to be “We assumed that the initial density of gizzard shad was d\_0=964.7, the average annual density of gizzard shad caught with all gear types represented in the LTRM program in La Grange Reach from 1993-2020.”