Ref.: Ms. No. FISH12511  
Using mechanistic models to assess temporary closure strategies for small scale fisheries  
Fisheries Research  
  
Dear Dr. Wulfing,  
  
I can now inform you that the Editorial Board has evaluated the manuscript FISH12511: Using mechanistic models to assess temporary closure strategies for small scale fisheries.  
  
The Editor has advised that the manuscript will be reconsidered for publication after major revision.  
  
The comments below should be taken into account when revising the manuscript. Along with your revised manuscript, you will need to supply Revision notes in which you list all the changes you have made to the manuscript, and in which you detail your responses to all the comments passed by the reviewer(s) and the Editor. Should you disagree with any comment(s), please explain why.  
  
To submit a revision, please visit <https://www.editorialmanager.com/fisheries/> and log in as an Author. You will see a menu item called Submission Needing Revision. The revised manuscript and covering letter can be submitted there.  
  
When submitting your revised manuscript, please ensure that you upload the source files (e.g. Word). Uploading a PDF file at this stage will create delays should your manuscript be finally accepted for publication. If your revised submission does not include the source files, we will contact you to request them.  
  
You are kindly requested to submit your revised manuscript within 4 weeks. If your revision is received after that deadline, it may be treated as a new submission.  
  
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Important note: If a reviewer has provided a review or other materials as attachments, those items will not be in this letter. Please ensure therefore that you log on to the journal site and check if any attachments have been provided.   
  
Reviewers' comments:  
  
  
  
Reviewer's Responses to Questions

Note: In order to effectively convey your recommendations for improvement to the author(s), and help editors make well-informed and efficient decisions, we ask you to answer the following specific questions about the manuscript and provide additional suggestions where appropriate.  
  
1. Are the objectives and the rationale of the study clearly stated?  
  
Please provide suggestions to the author(s) on how to improve the clarity of the objectives and rationale of the study. Please number each suggestion so that author(s) can more easily respond.

Reviewer #1: Yes

Reviewer #2: Yes, but I believe they could be improved if the framing of the paper is reworked. limitations of the old dataset are discussed, but more discussion around larval movement should be included before linking to the octopus population in southwest Madagascar.

2. If applicable, is the application/theory/method/study reported in sufficient detail to allow for its replicability and/or reproducibility?  
  
Please provide suggestions to the author(s) on how to improve the replicability/reproducibility of their study. Please number each suggestion so that the author(s) can more easily respond.

Reviewer #1: Mark as appropriate with an X:  
Yes [X] No [] N/A []  
Provide further comments here:

Reviewer #2: Mark as appropriate with an X:  
Yes [X] No [] N/A []  
Provide further comments here:

3. If applicable, are statistical analyses, controls, sampling mechanism, and statistical reporting (e.g., P-values, CIs, effect sizes) appropriate and well described?  
  
Please clearly indicate if the manuscript requires additional peer review by a statistician. Kindly provide suggestions to the author(s) on how to improve the statistical analyses, controls, sampling mechanism, or statistical reporting. Please number each suggestion so that the author(s) can more easily respond.

Reviewer #1: Mark as appropriate with an X:  
Yes [X] No [] N/A []  
Provide further comments here:

Reviewer #2: Mark as appropriate with an X:  
Yes [X] No [] N/A []  
Provide further comments here:  
Statistics are not my personal strength but the modelling method seems comprehensive

4. Could the manuscript benefit from additional tables or figures, or from improving or removing (some of the) existing ones?  
  
Please provide specific suggestions for improvements, removals, or additions of figures or tables. Please number each suggestion so that author(s) can more easily respond.

Reviewer #1: No

Reviewer #2: This seems fine

5. If applicable, are the interpretation of results and study conclusions supported by the data?  
  
Please provide suggestions (if needed) to the author(s) on how to improve, tone down, or expand the study interpretations/conclusions. Please number each suggestion so that the author(s) can more easily respond.

Reviewer #1: Mark as appropriate with an X:  
Yes [] No [X] N/A []  
Provide further comments here:

Reviewer #2: Mark as appropriate with an X:  
Yes [] No [X] N/A []  
Provide further comments here:  
I think more weight needs to be given to the likely distances of larval dispersal and the possible larval supply locations that are settling in SW Madagascar. Have the authors considered whether the population can be defined?  
  
The study is based on modelling data collected in another study but for a fishery which has now been studied, and under management for nearly 20 years. I question what this research is adding to broader science with the current framing.

6. Have the authors clearly emphasized the strengths of their study/theory/methods/argument?  
  
Please provide suggestions to the author(s) on how to better emphasize the strengths of their study. Please number each suggestion so that the author(s) can more easily respond.

Reviewer #1: Yes

Reviewer #2: Yes, they acknowledge a paucity of reproductive studies on octopus in this area, so the modelling has the potential to add value, but the interpretation of the results should be improved.

7. Have the authors clearly stated the limitations of their study/theory/methods/argument?  
  
Please list the limitations that the author(s) need to add or emphasize. Please number each limitation so that author(s) can more easily respond.

Reviewer #1: No

Reviewer #2: Limitations should touch on larval dispersal rates and distances.

8. Does the manuscript structure, flow or writing need improving (e.g., the addition of subheadings, shortening of text, reorganization of sections, or moving details from one section to another)?  
  
Please provide suggestions to the author(s) on how to improve the manuscript structure and flow. Please number each suggestion so that author(s) can more easily respond.

Reviewer #1: No

Reviewer #2: This is fine

9. Could the manuscript benefit from language editing?

Reviewer #1: No

Reviewer #2: No

Two reviewers have submitted there reviews of your work and have detailed many issues that need to be addressed before it is ready for publication. Both have specific knowledge of the situation, so are very valuable and I thank them for there attention to this work.  
The subject matter is very important, as the capacity to provide management guidance despite very little data is shared in many parts of the world.  
Both reviewers had issues with the only data being almost 2 decades old. While this is not ideal and needs to change, I think it speaks more to the framing of the approach (as mentioned by one of the reviewers) rather than the to paucity of data.  
Matrix models are life history approaches that basically show if the intrinsic population growth rate is below or above replacement. This work here is conditioning that evaluation on very old catch data, thus has very high degree of uncertainty on the fishing mortality. Additionally, there was no attempt to come up with a natural mortality rate to compare to the total death rate (1-survivorship used in the model) in order to tease out the fishing or natural sources of mortality. This additional step of proposing possible natural mortality rates to gauge fishing mortality is needed.  
All of this leads to a much more extensive exploration of the uncertainty in the inputs that really needs to be added to this work. The overall lambda needs to incorporate more sources of uncertainty before the next step of seeing what it takes to get it above 1 happens.  
While there are major considerations offered by the reviewers, and even one recommendation of rejection, I invite you to address all reviewer comments while also providing a more extensive presentation of the uncertainty and what management can do given that uncertainty. Ultimately, I do think there is some important management advice that can come from such a simple analysis and hope by addressing reviewer comments and an expanded analysis, this can be achieved.  
I also think some very specific recommendations on future data collection and other management measures could also be included in the Discussion. Please consider those aspects as well in a revision.  
  
  
  
Reviewer #1: Please read the attached pdf with detailed comments.  
  
  
Reviewer #2: I find the research and modelling included in the paper valuable but think that the framing needs to be reworked. I very much agree with your recommendations and conclusions but think you would be better of focusing on the biological/reproductive results from the modelling. The conclusion that the fishery was in decline from 17 year old data seems weak, and I am unsure what value this adds to the scientific community unless you can follow this up and repeat it with newer data which eg shows the results of the fisheries management has now resulted in x (hopefully long term maintenance of the fishery).  
  
I also question the term population without reference to the likely movements of the octopus larvae,a nd think a wider literature research on this element could add value to your work.  
  
There is also a fundamental flaw in your interpretation of the closure models. Further reading of Benbow et al 2014 or Oliver et al 2015 should provide more info on the closure timings.  
  
Some specific comments below:  
1. Line 32: ocean environments should be singular  
2. Line 33: "sand bed" is a strange phrase, please clarify what you mean by this.  
3. Line 37: Humber reference is specific to octopus not fish, please rephrase so this is clear  
4. Line 39: typo near-SHORE  
5. Line 58: personally I wouldn't class seasonal octopus closures as MPAs, they are fisheries management measures or OECMs at a push, but as they are temporary I would also question this  
6. Line 78: delete 'this'  
7. Line 78: also be careful about conflating octopus with all marine resources/fish exports. This sentence should be re written to provide clarity on this  
8. Line 81: yields have been shown to decrease citing a 2006 paper which documents that but is now 17 years old. This sentence is misleading and should be re written. Noting that you use the same reference for population bounce back in line 91.  
9. Lines 83- 97: you are referencing cephalopods but majority of the references relate to octopus, so why not just use octopus as the focus of the paper?  
10. Lines 120-123: this is not what those references state…. Please check and revise this sentence  
11. Line 219: change economical to economic  
12. Line 231: first reference to the larval stage. I would like to see more information about the possible dispersion distances during this stage and how this would impact on the 'population' being assessed in the model  
13. Line 250: don't like the use of preserving, better to use conserving, stock maintenance  
14. Line 282-284: I agree! And wonder whether this would be a better paper for the authors, given the octopus fishery is still ongoing 17 years after the data that this model was built on it seems a fundamental flaw in the conclusions, and questions the value of the conclusion that the octopus stocks are in decline.  
15. Line 312: change build off of, to build on  
  
  
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