Laura H Spencer <lhs3@uw.edu>

Ecological Applications - Decision on Manuscript ID EAP19-0502

Paul Dayton <onbehalfof@manuscriptcentral.com> Thu, Sep 12, 2019 at 5:46 AM
Reply-To: pdayton@ucsd.edu
To: lhs3@uw.edu

12-Sep-2019

Dear Ms. Spencer:

Thank you very much for submitting your manuscript "Carry-over effects of temperature and pCO₂ across multiple Olympia oyster populations" EAP19-0502 (Articles) to Ecological Applications. The reviewers and I appreciate the work you have accomplished. We are willing to consider a revised version for publication in the journal, assuming that you are able to modify the manuscript according to the recommendations.

There are not many O. lurida workers and I was lucky to get the two that I consider the best in the field (number two identified himself as David Kimbro) and they both wrote very strong reviews. They both liked the paper and made a real effort to help you improve it. To me as an old subject editor this is refreshing as I have seen so many situations where I thought a good paper had bad reviews that were more jealous than constructive. You are lucky to have such constructive colleagues. The Olympic oyster needs all the help it can get and it is good to see a very strong manuscript get such positive and constructive reviews. I think it will be easy for you to make these improvements and I look forward to seeing it come back quickly.

Your revisions should address the specific points made by each reviewer.

To submit your revised manuscript, log into https://mc.manuscriptcentral.com/ecologicalapps and enter your Author Center. You can use the revision link or you will find your manuscript title listed under "Manuscripts with Decisions." Under "Actions," click on "Create a Revision." Your manuscript number has been appended to denote a revision. Please DO NOT upload your revised manuscripts as a new submission.

When submitting your revised manuscript, you will be able to respond to the comments made by each reviewer in the space provided. You can use this space to document any changes you make to the original manuscript. In order to expedite the processing of the revised manuscript, please be as specific as possible in your response.

IMPORTANT: Your original files are available to you when you upload your revised manuscript. Please delete any redundant files before completing the submission.

Because we are trying to facilitate timely publication of manuscripts submitted to Ecological Applications, your revised manuscript should be uploaded as soon as possible. Please complete the revision within the next six weeks.

Once again, thank you for submitting your manuscript to Ecological Applications and I look forward to receiving your revision.

Sincerely,

Dr. Paul Dayton
Subject Matter Editor, Ecological Applications
pdayton@ucsd.edu

Reviewer(s)' Comments to Author:

Reviewer: 1

Comments to the Author
See attached file

Reviewer: 2

Comments to the Author
Dear Editor,

I reviewed the submission by Spencer et al. “Carry-over effects of temperature and pCO2 across multiple Olympia oyster populations” (EAP19-0502). In this study, the researchers manipulated the winter water temperature (6 or 10 degrees Celsius) to which adult Olympia oysters were exposed in the laboratory. For each temperature group, oysters were partitioned into ambient or elevated pCO2 in order to mimic the stress of lower pH water or ocean acidification. Throughout the laboratory period, various metrics of adult oysters were sampled such as male:female sex ratio, gonadal stage development, spawning date, daily larval production and total fecundity. Finally, for the oyster larvae produced from parents exposed to ambient winter temperature and elevated pCO2, the researchers deployed them to several field sites that varied in environmental conditions. Survival of these oysters was evaluated after 3 months.

This was an ambitious study to test how projected and observed changes in climate (winter water temperature and pH) may interact to influence adult oyster reproduction and carry-over effects to oyster offspring and the degree to which the answer depends on environmental setting (i.e., the field component of the study) and population of origin (adult oysters collected from different sites).

This is a really ambitious study with a lot of response variables to digest. Given this complexity, I felt that the authors did a great job of clarifying things as much as possible. For instance, figure 2 does a great job of illustrating the chronology of the overall study as well as the experimental design. Overall, I think the manuscript is very well written and makes a complicated subject as simple as possible. I think the motivation of the study is well reasoned and that the results will be of interest to those interested in the effects of projected climate change on marine calcifying organisms.

Given the target journal, one area where the study could improve involves establishing a linkage to a particular ecological application. Can the authors better explain how this study fits a particular ecological problem, issue, or policy decision… other than trying to predict the effects of climate change? Based on one sentence (lines 97-99) of the Introduction, I assume the authors are trying to link their study to the mixed results of Olympia oyster restoration and conservation? Two recent publications (one of which is admittedly self-serving) may help with this link. First, a recent paper by Kimbro et al. (2019) Oikos 128: 584-595 examined why some restoration efforts in Tomales Bay, CA during the 2000-2009 period may have been unsuccessful and why relatively healthy populations in the bay declined despite lack of harvesting. There was a huge recruitment failure for three years and it’s unexplained, even though the population-level consequences were tremendous. This study also used outplants of juvenile oysters across environmental gradients to examine growth and survival over 28 months, showing tremendous spatial structure across the gradients. Secondly, K. Wasson et al. (2016) have a paper in Ecology that shows tremendous spatial variability in Olympia oyster recruitment across the Pacific coast of the US, with a considerable amount of recruitment failure.

Another application to potentially reference is the field’s recent focus on increasing intraspecific diversity of organisms that are being restored so that effects of “diversity” or identity can potentially emerge given in unpredicted environmental settings. I think this was briefly touched on at the end of the paper, but it would be nice to highlight it in the Introduction.

Minor suggestions include the following:
(1) For figure 6, please use symbols (in addition to gray-scale colors) to distinguish the different treatments
(2) Please explain why only the pCO2 factor was included in the outplant studies? I understand the logistics of this were probably quite difficult, but the lack of mention of why this one factor was dropped from the outplant study seemed curious.
(3) In line 367, I believe “among” should be inserted between “survival” and “bays”
(4) I may have missed this, but model-selection approach could be used to evaluate which of the environmental factors best explain the spatial variation in oyster survival from the field

End of review

EAP19-0502_Review.pdf
102K