

## **Reviewer 1 comments:**

**Comment:** I've made some comments and a few corrections throughout. I could do more, but ran out of interest. The most important would be near the end with the section on regulation. There should be some discussion about the fact that the worm is already present and no amount of "testing" is going to help remove it. They might be able to slow the movement, but since no testing technique will be able to assure 100% absence - short of destroying the entire shipment, it is difficult to figure out how this might be appropriately regulated. Certainly if there is an area of high concentration it would be foolish to move these shells to an area with little or no infestation. Thus the education program is probably the best "regulation". I am not sure it belongs in a peer-reviewed journal, but that is your job.

**Response:** We appreciate this honest feedback. We have reframed the recommended actions section to instead highlight communication and future research needs. Since submitting this manuscript for consideration by JSR, a first-round survey of oysters from Washington State farms has found shell-boring polychaetes in several other locations. Given this new data and the likelihood that *Polydora* is distributed throughout the state, we no longer suggest regulatory actions, but instead focus on the importance of educating stakeholders and addressing data gaps, as suggested by the reviewer. In addition, the manuscript now includes an expanded section on growing and treatment measures developed in other regions where shellfish growers have dealt with *Polydora* for some time. By expanding this information, we hope to provide growers, tribes, and managers with information that they can use if they find *Polydora*-infested products.

**Comment, line 29:** this term is not needed

**Response:** Change made.

**Comment, line 31:** what kind of risk?

**Response:** We have now revised this sentence to read "and may pose an economic and ecological risk to cultured and native shellfish species".

**Comment, line 35:** i think this could be tabulated and it would be nice to have any information on quantified impacts.

**Response:** In response to this comment and comments from other reviewers, Table 1 has been revised to highlight cases where *Polydora* spp. were identified in cultured shellfish. The list of regions impacted by *Polydora* spp. is still included in text, but no in-line references are included.

**Comment, line 45:** 53% of what?

**Response:** This sentence has now been revised to read, ... "The 2017 study reports that *Polydora* prevalence in Pacific oysters sampled from public beaches was as high as 53% in one embayment of South Puget Sound"

**Comment, line 57:** does this publication indicate market value?

**Response:** Thank you for catching this! The word “market value” has been changed to “marketability” for clarity, and the following reference was added to the citation:

- Morse, D. L., P. D. Rawson, & J. N. Kraeuter. 2015. Mud blister worms and oyster aquaculture. Maine Sea Grant Publications. 46. Available at: [https://digitalcommons.library.umaine.edu/seagrant\\_pub/46/](https://digitalcommons.library.umaine.edu/seagrant_pub/46/)

**Comment, line 145:** For *Crassostrea virginica* removing oysters from water and subjecting them to cold conditions for several weeks.

**Response:** The section describing treatment options has been expanded, and now includes details regarding cold-air storage.

**Comment, line 288:** how about some discussion of cost of continued monitoring or treatments vs. the probability of the introduction succeeding - particularly since it is already there.

**Response:** We do not know the full extent of *Polydora* spp. distribution across Washington State, however since submitting this manuscript for consideration by JSR, a first-round survey of oysters from Washington State farms has found shell-boring polychaetes in several locations. Given this new data and the likelihood that *Polydora* is distributed throughout the state, we no longer suggest regulatory actions and ongoing monitoring. Instead, we focus on the importance of educating stakeholders and addressing data gaps. We describe the Washington State code to highlight holes and possible regulatory entry points for *Polydora* spp., should there be opportunity to constrain distribution to some regions within Washington State.

**Comment, line 302:** *grammar issue, incorrect “do” vs. “does not”*

**Response:** This grammatical error has been corrected.

**Comment, line 470:** full cite

**Response:** This reference has been updated with full citation information.

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**Reviewer 2 comments:**

**Comment:** I was struck, however, by the lack of novel information about the current situation in Washington. They confirm the identification of *Polydora websteri* in Washington in 2017 but they 1) do not provide any detail or context for this (had anybody looked before?) nor 2) do they give any information about abundance or extent of spread. While the manuscript may be laying out the rationale for looking at this, I was surprised that there was so little original data here. I'd add that the manuscript reads more like an extended rationale for a proposal to study the problem than a novel work.

**Response:** Thank you for this valuable feedback. The intention of the manuscript is to provide pertinent and timely information on *Polydora* spp., an emerging issue for shellfish culture in Washington State, a region that has not historically been affected by this pest. To this end, the manuscript has been revised into a mini-review, and focuses on information that stakeholders can use to mitigate the effects of *Polydora* on their shellfish. Please see our response to the Editor (above) for a complete overview of the major changes made in this latest version of the manuscript.

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### Reviewer 3 comments:

**Comment:** However, it feels like a Thesis introduction and discussion with no guts in the middle. I am not sure what this manuscript is trying to be.

**Response:** Thank you for this valuable feedback. The intention of the manuscript is to provide pertinent and timely information on *Polydora* spp., to highlight an emerging potential issue for shellfish culture in Washington State, a region that has not historically been affected by this pest. To this end, the manuscript has been revised into a mini-review, and focuses on information that stakeholders can use to mitigate the effects of *Polydora* in their shellfish. Please see our response to the Editor (above) for a complete overview of the major changes made in this latest version of the manuscript.

**Comment:** I am not comfortable with recommending acceptance without having read the Lopes et al paper that is apparently in review and the scientific documentation of the occurrence of the new pest. Does that say the same thing?

**Response:** The manuscript documenting *Polydora* in Washington State is under review, and is published as a pre-print on *PeerJ* (citation below). Please note that the first author has changed since submitting this manuscript to JSR.

J. Martinelli, H. Lopes, L. Hauser, I. Jimenez-Hidalgo, T. L. King, J. Padilla-Gamino, P. Rawson, L. H. Spencer, J. Williams, & C. Wood. 2019. First Confirmation of the Shell-Boring Oyster Parasite *Polydora Websteri* (*Polychaeta: Spionidae*) in Washington State, USA." e27621v1. PeerJ Preprints. <https://doi.org/10.7287/peerj.preprints.27621v1>.

**Comment:** I took a quick look at the cited WA regulations and they seem to prohibit the transfer of pests for both within state and interstate transfers. Contrary to what is stated in the ms??? Maybe in practice that doesn't actually include polydora, but it seems that the language is there to easily add polydora to requested health certification scope. This section may need to be tightened.

**Response:** We have revised this section to improve clarity. While the Washington State regulations prohibit transfer of pests, shell-boring species are not listed as pests, and therefore the regulations do not apply to them. We certainly agree that this language could be leveraged and updated to begin regulating against *Polydora* translocation. We describe the Washington State regulations in detail in part for that reason - to highlight regulations that might already limit spread. But we also aim to highlight holes and possible entry points for *Polydora* spp. We do not know the full extent of *Polydora* spp. distribution across Washington State, and therefore we stop short of explicitly recommending where *Polydora* should or should not be included in regulations.

**Comment:** The recommendations provided probably could have been included in the Lopes paper rather than serve as a stand alone ms.

**Response:** The recommended actions initially included in the manuscript have been shortened, and re-framed to focus more on research needs and education. Our intent in this manuscript is

to provide an approachable mini-review for those in Washington State who might be impacted by *Polydora* spp. now or in the future.

**Comment:** If it were to be accepted, maybe the title should indicate it is a literature review with recommended actions for minimizing the risks of distribution expansion....or something like that. No research results presented, current title, while trying to be clever is misleading. Also title should include "in Washington, USA"

**Response:** Thank you for this helpful suggestion. The title has been changed to:

*The risks of shell-boring polychaetes to shellfish aquaculture in Washington, USA: a mini-review to inform mitigation actions*

**Comment:** She wrote a good cover letter, some of which should be incorporated in the ms!

**Response:** Portions of the cover letter have been incorporated into the manuscript, as suggested.