Dear Kiva,

Thank you so much for providing this thoughtful review of our manuscript. We agree with all of your comments and edits and incorporated them into the attached revised manuscript draft. Below, we detail how we addressed your major comments. In the attached original manuscript draft, we explain how we incorporated your line edits.

Thanks again and please let us know if you have any additional questions or concerns.

On behalf of the entire author team,

Chris

Major Comments

The paper is interesting and well-written, obviously many very smart people have contributed. :)

I am probably too deep in the weeds on this one, but I think the shrimp case study needs more ground truthing, especially since it wasn't identified by an expert. (Either that or just eliminate it.) At the end you say research is needed to determine if the high catches are driven by changes in effort or abundance, but they do at least try to track effort for pink shrimp, the ODFW annual reports publish CPUE, and they also do a VPA. Don't get me wrong, the VPA could use some work and they don't handle long-term increasing fishing efficiency well in their effort estimates, but there's definitely *something* out there. It looks like CPUE peaked in 2014 and declined in 2015-2017. I would also add to the set of hypotheses that changes in effort could be driven by prices, which seem to have hit a record high in 2015, and are determined by global shrimp markets, euro to dollar exchange rates, etc. (This could also explain the synchronous peak in value for two shrimp species.)

It seems like this ended up on your radar because of the revenue spike. I think that was unrelated to the blob. In 2015 they were fishing a relatively weak 2014 year class and the record-setting 2013 year class (this is consistent with CPUE peaking in 2014), and also experiencing record high prices. The blob summer in 2015 was associated with a slightly above average year class, which, as you mention, was unexpected given that previous El Nino events supported very poor year classes, but the 2015 year class first shows up in the *2016* revenue. In other words, it seems there is a correlation vs. causation issue. Of course, the revenue spike during the MHW is very real, but I'd be careful about what lessons were gleaned. Make sure you also update figure 7 after figuring out what you want to say.

> This is a fantastic set of observations. We significantly rewrote the shrimp case study vignette to highlight most of these points. This benefited the vignette in many ways, including adding a new insight about the role of global markets and lagged population dynamics in either mitigating or exacerbating heatwave impacts.

The new paragraph reads as follows:

> "In our systematic analysis of fisheries revenues, West Coast commercial shrimp fisheries showed one of the strongest and most consistent increases in revenues during the marine heatwave (**Figure 3**), but have received surprisingly little attention in the scientific literature. Revenues of Pacific pink shrimp (*Pandalus jordani*), the 5th most important U.S. West Coast fishery species in terms of revenues over the last decade and by far the most significant shrimp species (PSMFC, 2021), experienced an enormous spike in revenues in both Oregon and Washington in 2015 (**Figure 9C**). Similarly, ridgeback prawn (*Sicyonia ingentis*) experienced a profound spike in revenues in California, the only state in which it is fished (**Figure 9C**). Spot prawn (*Pandalus platyceros*) revenues increased throughout the heatwave, continuing growth observed since 2003 (**Figure 9C**). These increases were unexpected as Pacific shrimp are generally thought to experience low recruitment in warm years and to have low landings following El Niño events (Groth et al., 2017; Groth & Hannah, 2018). Furthermore, jellies, which clog the bycatch reduction devices required in shrimp trawl nets, were highly abundant during the heatwave, requiring shrimpers to develop innovative methods for maintaining adequate flow through nets (Groth et al., 2017). Ultimately, the 2015 revenue spike can be explained by record high prices, which are determined by global markets, with an assist from a strong cohort of 2-year-old shrimp from the 2013 year class (Groth et al., 2022). Although the Oregon Department of Fish and Wildlife (ODFW) identified revisiting the relationship between shrimp recruitment and environmental conditions as a top research priority (Groth et al., 2017), it also highlighted that continued monitoring and improved stock assessment are, perhaps, more important to near-term fisheries outcomes. Thus, this case study highlights that: (1) global markets and lagged population dynamics can potentially mitigate (or, in other situations, exacerbate) heatwave impacts; (2) innovation by fishermen can overcome some negative climate change impacts; and (3) addressing climate change impacts may not be the highest priority if there are more pressing concerns (i.e., improving stock assessments)."

Otherwise, the paper looked good and I just had a couple minor things:

The paper says it is about impacts along the Pacific Coast of North America, but Mexico is completely missing, and the figures in the manuscript even show the heatwave extending into Mexican waters. "Pacific Coast of the U.S. and Canada" is almost as pithy, more accurate, and less problematic in that it doesn't equate North America with North American English-speaking countries. (There is technically Hawaii, I guess, but I think that would be a more expected omission since it is not even in the NE Pacific.)

> This is an excellent observation and we updated our language throughout. We replaced “North American West Coast fisheries” with “U.S. and Canada West Coast fisheries” or something similar throughout.

I would put the figures through a red-green color blindness filter. I'd especially check the colors for the five different states/provinces in figures 3 and 5, even I had a kind of hard time with the red and orange. If you need ideas, a couple sources I like for palettes are https://github.com/ciannabp/inauguration and https://github.com/jakelawlor/PNWColors.

> We really appreciate this comment and have adjusted the figure palettes to be red-green color blind friendly.