The authors present the findings from an ocean alkalinity experiment (OAE) addressing the response of larval herring. Two separate experiments were carried out: small-scale experiment on individual larval herring response, and a large mesocosm experiment designed to examine community level interactions in the context of OAE. The authors report non-significant effects of OAE on herring larvae in both experiments. This manuscript provides some baseline evidence addressing the importance of identifying potential negative impacts of OAE. Several aspects of the data analysis and experimental design need additional details and clarification before publication.

General comments

1) The introduction appears to focus more on pH and pH variability rather than OAE. As pH was not held constant during these experiments, the authors should shift the focus of the introduction to alkalinity specific effects. This could take the shape of effects of added Ca with OAE and osmoregulation. The introduction also lacks details about the concerns of OAE and the reactions that occur. More attention needs to be given to this to build context.
2) What is the reason for choosing such a moderate delta TA (600 umol kg-1). Predictions of real applicable scenarios estimate higher TA (See Renforth and Henderson 2017).
3) Since pH was not held constant, this should be considered as a random effect in the mixed model. Despite the finding of nonsignificant effects with the current model, the added random effect will shift the distribution of your df giving you a more accurate representation of detla_TA as a predictor variable.
4) Why was it chosen to have no replicates for the mesocosm experiment? I understand seeing no mineral effect in the lab experiment as potential justification but it was never mentioned that Si was used during the lab experiments. How do you know Si didn't carry a random effect. This needs to be explained and justified.
5) There is no timeseries of delta_TA just pH. A delta TA timeseries needs to be shown. If this information is not available, then report and justify why not. Where was pH measured in the mesocosms, surface, depth? If stratification was strong, there could have been a pH gradient as well, particularly just from the temperature effect from 8 to 15 C. This needs to be address? Again, pH is a covariate for the mesocosm experiment. Discuss this.
6) For the NMDS plots, it would be better to examine larval herring survival or biomass to other assemblages, chl a measurements, temp and OAE rather than changes to whole assemblages of other fish. If you also want to examine the effect of different fishes, then examining the different environmental variables would be useful. Could be useful to also show correlations with other variables to explain the lack of effect of OAE.

Line comments:

39: List some biological processes specifically

45: provide reference for gigaton estimate and scale of plume/ deployment mass of material
46: This line doesn't make much sense. ''because of this coastal systems are relevant" Provide more description/context.

56: What are these thresholds. Provide more discussion here. Where these things even specifically addressed in the study?

78: indirect effects can be explained better.

105: Is this 1800 larvae in total, so evenly distributed across all treatments?

106: Was temperature maintained and continuously monitored in the aquaria?

115: Explain better. Was this a column filled with soda lime ?

116: how was PCO2 measured?

118: Show this TA time series and variation across reps.

123: How was this pH probe calibrated? Tris, NBS buffers? What pH scale (report this throughout)

133: So a subsample of 5 larval fish were measured per aqauria. Out of how many total in each aquaria?

152: Show depth gradient in tanks form the CTD data. Where was pH measured. At what depth. Where was TA measured? What depth? Do you have any depth resolution?

170: Why then were OAE duplicates two different minerals. If Si mineral addition creates reduced nutrient scenarios then having one replicate at one level of delta TA gives you no power. This needs more discussion.

174: Explain the effect of NaSiO as means to prevent secondary precip. Discuss the reactions.

200: See general comment above about LMM

216: this should be in the discussion.

220: If you want to shift the focus to post-exposure effects and discussion then their needs to be some alignment in the discussion about this, despite finding no effect. There are several OA experiments looking at post-exposure effects, these can be used as a contrast.

227: What is standard herring survival rates for natural communities?

241: How were carcasses differentiated between species?

303: Describe the food-web mediated impacts of OAE.

308: Given you had no real replication of a specific mineral at high TA, an NMDS associating fish biomass with other drivers specific to each mesocosm could help explain this.

315: provide more discussion of other metrics used to determine herring tolerance and survival. More discussion needs to be given about why OAE didn't affect them. What are their osmoregulation strategies, what are the potential, for carry-over effects, etc..

Figure 4 and 5 need a legend for the color.