

This study investigated the ocean alkalinity enhancement (OAE) effect on fish organismal and community responses under mesocosm settings. Overall, no negative effects of OAE were reported and even a positive effect of alkalization on fish biomass has been observed. Currently, OAE effects on marine biota remain poorly understood, preventing sustainable implementation of this carbon dioxide removal solution for climate change mitigation. Therefore, the data presented are important for advancing our understanding of the ecological risks associated with OAE. The results are especially important as they mimic the natural ecosystem, providing a better understanding of the potential OAE effects. The revised version of this manuscript is of much higher quality. The authors decided to remove the laboratory experiment which I believe was a good decision because the mesocosm and laboratory experiments differed in methodology. A discrepancy between mesocosm and laboratory experiments was the major problem addressed in the previous version. Now the logic and story overall are concise.

Moreover, the species-specific responses are now better addressed. An explanation of why Atlantic herring was used as a model organism is provided. It is also clearly stated now, how the other naturally occurring communities were studied.

Furthermore, the authors addressed in the discussion other potential effects from OAE that were not studied under their study but should be considered (trace metals).

Thank you very much for your positive reassessment of our revised manuscript. We implemented your further suggestion.

Specific comments:

Figure 1 caption: "Potential pathways of change in fish in natural plankton communities: I believe it should rather be" "in fish and natural plankton communities".

Changed as suggested.

Line 133: It is not clear if herring larvae might have naturally occurred in the mesocosm as well. This is important to understand if the results were biased with naturally occurring larvae. Explain.

Counting live fish larvae in the water column at the beginning of the experiment was unfortunately not possible. So, we do not have data on herring abundances. Our thorough monitoring of fish carcasses via the sediment trap, however, provides indirect evidence. Herring were the most abundant species in the sediment trap. Several individuals were found every sampling day from the time of introduction until the end of the experiment. Yet, no herring had been found before introduction, suggesting that herring had either been absent or present only in low numbers.

We also followed the principles of a sound experimental design. This assured that a prior presence of herring (which we consider as highly unlikely) would have been random in relation

to the OAE manipulation. Consequently, while absolute values would differ, our test for OAE would remain unbiased.

We added the following sentence to the paragraph:

“Prior to their introduction, herring had either been absent or at low abundance according to our monitoring of deceased fish via the sediment trap.”

Line 178: “and pH was measured spectrophotometrically”

Changed as suggested.