***Results—***

**Altered alkalinity did not influence net shell growth—**

* Average net growth rate did not differ among oysters exposed to reduced, ambient, or elevated alkalinity (stats).
* Average shell surface area, however, was larger than control oysters grown in lab seawater conditions (average + SE vs control + SE), suggesting that positive growth occurred in all treatments.
* Although the reduced TA treatment exhibited an average omega calcite < 1, mussels maintained calcification rates. In contrast, those exposed to elevated TA did not appear to elevate calcification, indicating that all of the mussels in ambient salinity conditions performed similarly.
* When holding TA near ambient conditions, oysters demonstrated elevated growth in reduced salinity, relative to ambient conditions.

**Oysters’ shell growth in lower salinity was higher when coupled higher TA—**

* In contrast to ambient salinity, TA showed a positive effect on average shell growth in low salinity. In our case, low S interacting with TA produced a higher influence than either change alone.
* In oysters grown in reduced salinity and TA conditions that were similar to ambient (~2200), we saw similar growth rates as those grown in ambient salinity conditions.
* However, oysters growth was low when low salinity was coupled with moderate and severe declines in TA (stats).
* We did not see a significant difference in growth between oysters with DI vs low TA, even though omega spanned below 1 to above 1.

**Incremental growth rate was high following exposure (0-18 dps), then reduced following (18-36 dps)**

* We saw similar patterns between S and TA when comparing overall ‘net’ growth rates, and growth rates occurring in the beginning half of the experiment.
* Patterns changed, albeit slightly, in the second half of the experiment (where the TA effect showed up in amb s and strengthened in low S).
* Regardless, the overall growth was primarily driven by growth occurring in the first two and a half weeks.
* We saw different patterns between TA and shell growth in the two growth phases; with the effect of TA not showing up until later, and even so, being minimal
* We saw benefits of high TA on incremental growth in low salinity conditions within the first two weeks, suggesting that oysters were able to optimize on their preferred condition quickly (effect was apparent by two weeks)
* We saw a similar pattern between S and TA growth in both stages, with TA having a stronger effect in the later time period.

**Differences in condition index are driven by changes in shell growth and not by differences in soft tissue mass—**

* Grew more with more food relative to oysters in flow through system.
* (suggests operating at a biological maximum/limited by something other than carbonate stress overall)
* No effect of TA or S (or pH/Omega) on soft tissue mass overall;
* However, oysters were fed enough that they increased CI relative to those fed less often and grown in the ambient flowthrough seawater.
* This indicates we had animals that could increase energy storage (were not in physiological stress) and that quick changes to their environments didn’t have a significant negative impact to their energy stores.
* Increased CI is due to change in shell growth and not tissue wt.