Clumps O' Clams: Testing the relationship between clam burrows and shells in the sediment.

UCDAVIS EARTH AND PLANETARY SCIENCES

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Introduction

- CO_2 emissions in the atmosphere seep into the ocean in order to reach equilibrium.
- As CO_2 emissions increase, the pH in the ocean lowers causing acidity to rise.
- Acidity in the ocean can break down the calcium carbonate in clams shells, making them weaker and hurting their growth.
- While clamming, we observed some burrows associated with large numbers of baby clam shells.
- Could clams be concentrating shells in their burrows? If clams can construct burrows surrounded by old shells, they can potentially combat the acidity in the ocean.

Hypothesis

Clam burrows will contain more shells than the surrounding sediment

Methods

Fieldwork:

- We set up a 60 foot transect, parallel with the shoreline, with measuring tape. We did this at the geolocation of post five of the mudflats at Bodega Bay (38°18'49"N 123°3'13"W)
- Every six feet we extracted a core with a clam gun. Five including burrows, five without.
- Using a large sifter we sifted out the sediment and stored the leftover material in trash bags.

Lab work:

- We removed the shells from the bags, sifting out any extra sediment. Then we dried any extra moisture using hotplates.
- We used dissection microscopes to remove any leftover sediment from the samples.
- We weighed the shells using a scale.

Results

- The mean weight of shells associated with burrows is 3.6440g with a standard deviation of 0.7736g. The mean of samples with no burrows is 3.1340g with a standard deviation of 1.5819g.
- The two-tailed P value for an unpaired t-test is 0.5354 meaning we can't be confident that burrows have more shells than the surrounding sediment.

Future work

- Repeat methods with bigger sample sizes
- Additional variables to consider include, clam species, seasons, and location

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