

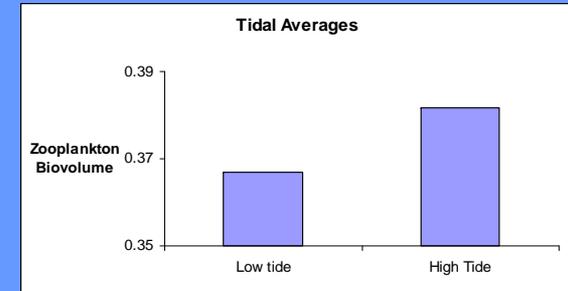
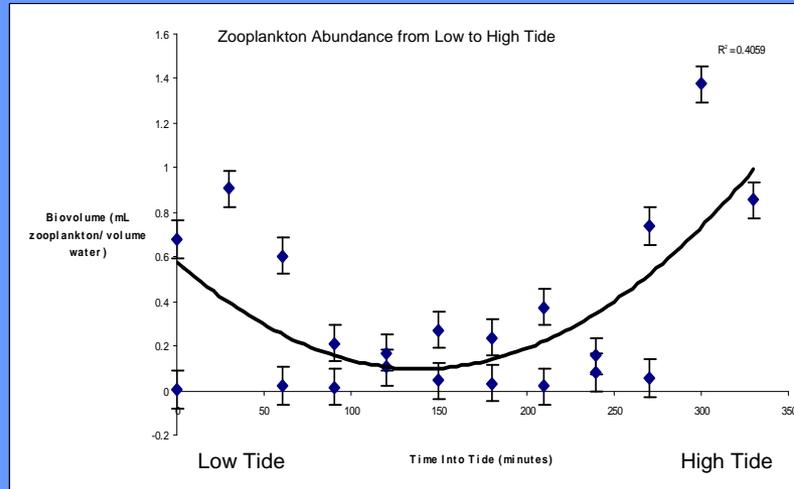
# Changes in Zooplankton Abundance with Tidal Cycles

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Question: Does zooplankton abundance vary throughout a six-hour tidal cycle?

Results:



T-test between Low and High Tide:

$t_{stat} = -0.06728$   
 $t_{critical} \text{ two-tail} = 2.1$   
 $P(T < t) \text{ two tail} = 0.947$

$T_{stat} < T_{crit}$ , so there is no real difference between values for high and low tide.

Abstract/Background:

- Zooplankton have an important role in food chains, energy transfer and indication of how physical forces influence marine environment
- Zooplankton abundance can be controlled by both abiotic and biotic factors including temperature, salinity, and abundance of phytoplankton
- zooplankton abundance has been linked to chlorophyll a concentrations and changes in temperature and salinity
- In a study conducted in a harbor of Taiwan, zooplankton were most abundant at high tide and least abundant at low tide (1)



Materials and Methods:

- 333um mesh plankton net to sample zooplankton
- flow meter to determine how much zooplankton per volume of water
- sampled at ½ hour time periods during incoming tidal cycles
- Measured temperature, salinity, chlorophyll a concentration with each sample
- Sampling conducted at Breach Inlet: GPS location 32.7767, -79.8117

Interpretation:

- Zooplankton biovolume seems to vary during the six-hour tidal cycle, however there is no significant difference between high and low tide
- Our temperature, salinity, and chlorophyll a measurements did not have a significant correlation with biovolume
- Possible reasons for insignificant differences between high and low tides:
  - flow meter was not sensitive enough for slow flowing currents, which occur at peaks of high and low tide
  - possible net avoidance with slow current

Conclusions:

- 1) There was no detected significant relationship between tidal cycles and abundance, which is most likely a result of sampling errors with the flow meter.
- 2) Chlorophyll a concentration, temperature and salinity were not significantly correlated with changes in zooplankton biovolume. Therefore, they were probably not factors influencing biovolume at our sampling site.

Lit Cited:  
(1) Chang, Wen-been; Fang, Lee-shing. (2004) Temporal and spatial variations in the species composition, distribution, and abundance of copepods in Kaohsiung Harbor, Taiwan