

Performance variation in *Leptasterias* spp. among habitats

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Background

- *Leptasterias* brood their young and juveniles disperse by crawling away.
- Low dispersing species can be used as a local indicator of environmental health.
- Important to monitor effects of wasting disease and climate change.



Image: Laura Melroy

Rock and Pool Stars



Objectives



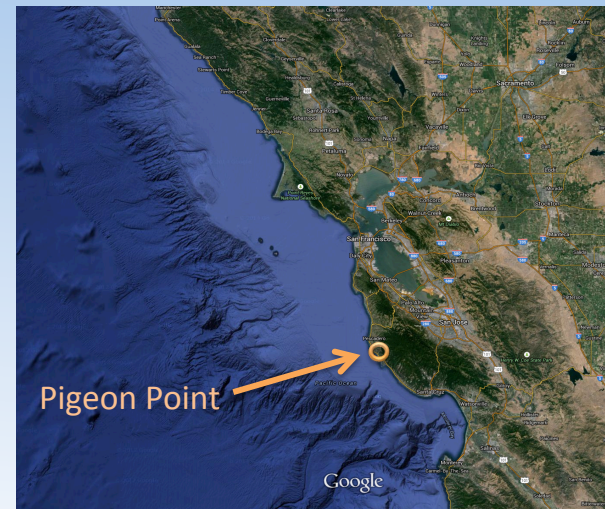
- Is behavioral variation between microhabitats a reflection of genetics?
- Test for differences in performance between habitat types.
 - Is righting response a good measure?
- Develop a comparable field and lab protocol.

Field Methods

- Individuals were collected from Pigeon Point.
- Flip tests were performed in the field and temperature was recorded.

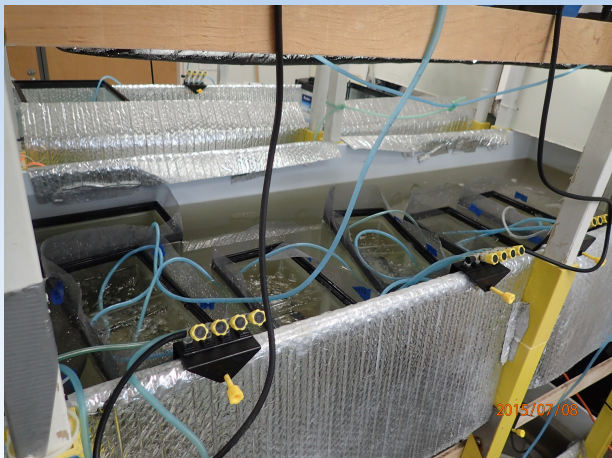


Image: Janet Bair



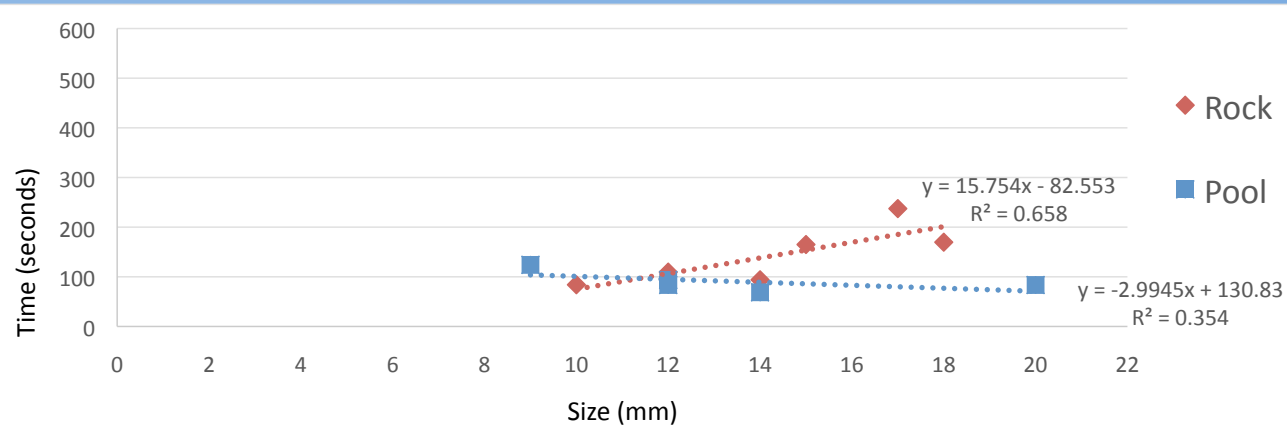
Lab Protocol

- Collected stars were kept in divided tanks at constant temperature and salinity.
- Stars were starved for a day before trials and starved throughout.
- Water quality was tested daily.
- Flip tests were performed in a separate tank at the same temperature.

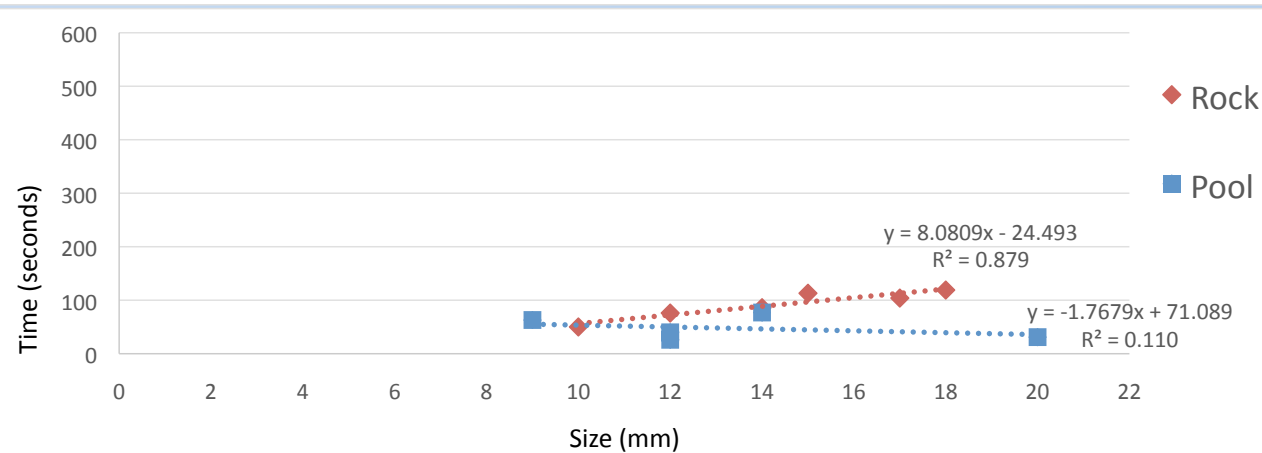


Comparison of Mean Rock and Pool Righting Times

Lab

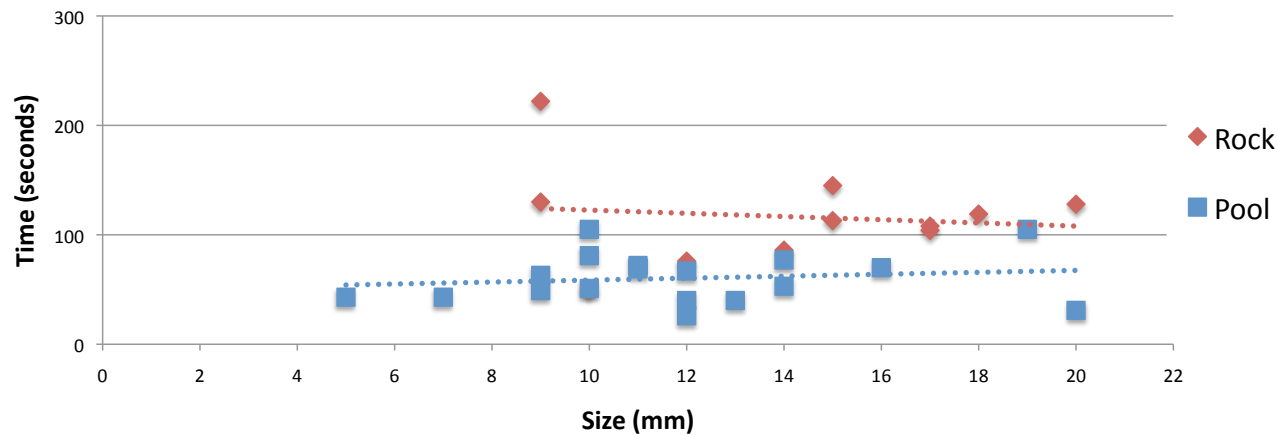


Field



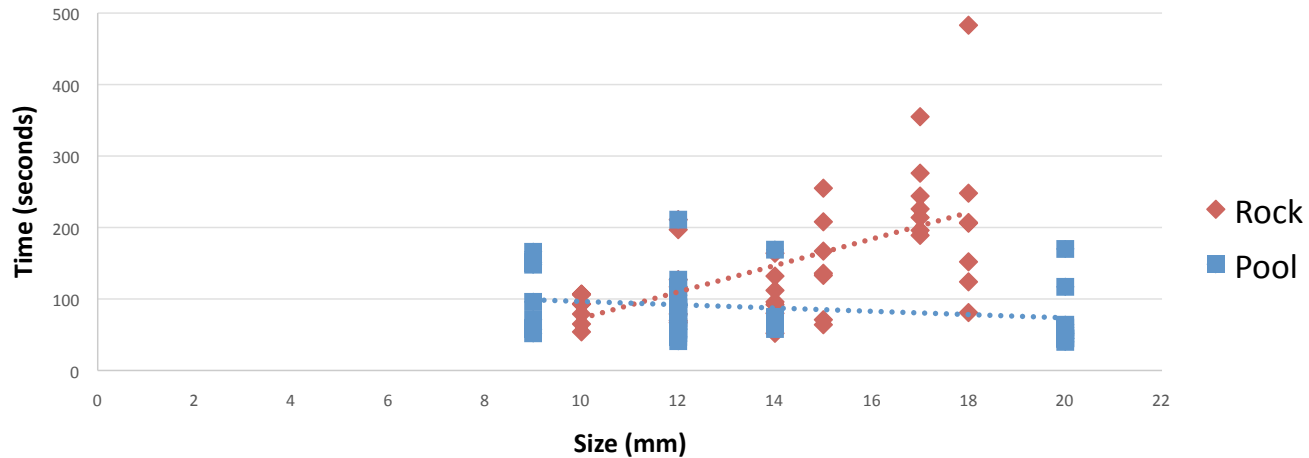
Comparison of All Rock and Pool Righting Response Times

Field



Significant difference in time $\rightarrow p = 0.0002$
No significant effect of size $\rightarrow p = 0.5109$

Lab



Significant difference in time $\rightarrow p = 0.0005$
There IS a significant effect of size $\rightarrow p < 0.0001$

Genetic Comparison of Pigeon Point Rock and Pool Stars



Foltz et al. 2008

CO1 Clade	Habitat
B	rock
A*	rock
K	rock
K	rock
A*	rock
D	rock
D	pool
K	pool
K	pool
K	pool
K	pool
K	pool
K	pool
K	pool
K	pool
K	pool

Genotyping by Laura Melroy

Findings/Discussion

- There may be behavioral differences between rock and pool stars.
- Habitat preference may be a reflection of genetics and/or behavior.
- If righting response is to be used:
 - Stars should be starved in the lab for controls.
 - Multiple flips should be performed for each star during each test period.
 - When collecting stars there should be an equal range of sizes for both pool and rock stars.



Further Questions

- How do differences in temperature affect the two types of stars?
- Do rock and pool stars always stay as a rock or pool star?
- Are rock and pool stars anatomically similar, do they have the same biomass ratio?
- Are there behavioral personalities in individual stars?

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