

Low salinity decreases juvenile production in the sea urchin *Lytechinus variegatus*

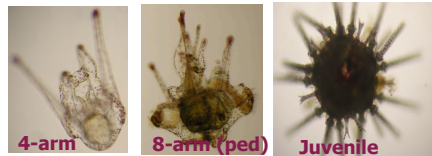


Renee Fritz, Sophie George

Biology Department, Georgia Southern University

Introduction

- An effect of global climate change is an increase in storm frequency and heavy precipitation.
- How stenohaline osmoconformers in coastal marine ecosystems respond to the resulting fluctuations in salinity needs investigation.



Objectives

To determine the effects of long and short term effects of low salinity on larval growth, development, and metamorphosis of the sea urchin *Lytechinus variegatus*.

Methods



Collection and spawning of *Lytechinus variegatus*



Eight-arm larvae used in experiment 2

Acknowledgements

Thanks to all who collected sea water for all the experiments and to Tanya Pia who helped tremendously in the laboratory.

Posterpresentations.com (posterpresenter@gmail.com)

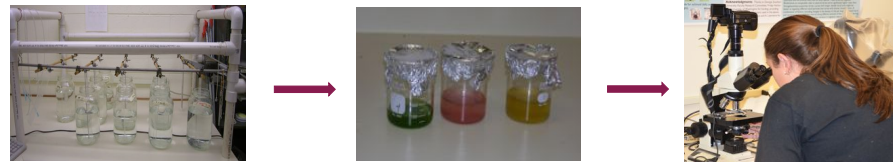


Methods

EXPERIMENT 1: Long term effects of low salinity

Two salinity treatments: controls, embryos exposed to 32‰ for 57 days or to 25‰ and 28‰ salinity for 40 days. Development, juvenile size and numbers noted.

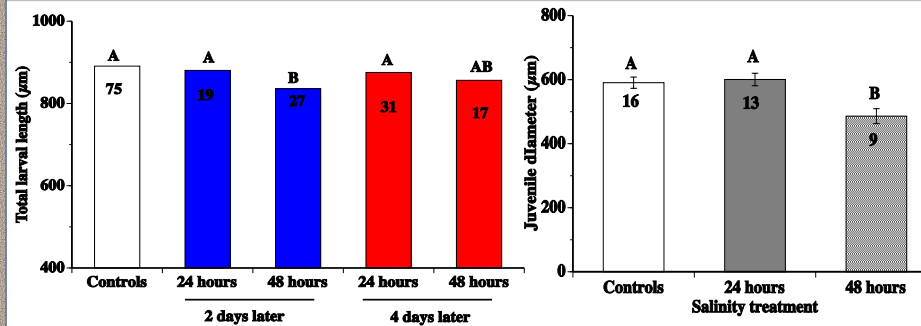
Larvae were kept in 3.5 liter jars under a system of swinging paddles and fed the alga *Dunaliella tertiolecta* (1000-5000 cells/ml) 3 times/week. To estimate food concentration, absorbance measurements @660 nm were made using a spectrophotometer.



EXPERIMENT 2: Short term effects of low salinity

Three salinity treatments: Controls, 8-arm larvae in 32‰ sea water throughout development, 8-arm larvae in 25‰ salinity for 24 or 48 hours. Total larval length and juvenile size monitored using Image J, 2 and 4 days after salinity treatment.

Results: Experiment 2

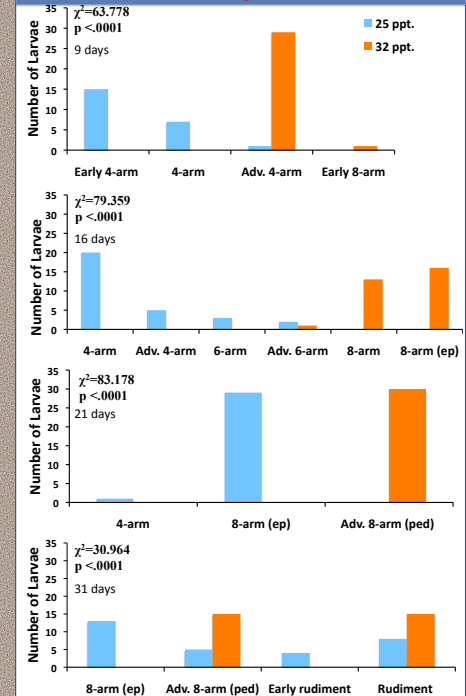


Eight arm larvae subjected to 48 hours at 25‰ were significantly smaller than those subjected to 24 hours at 25‰. Differences among larvae from the 24 or 48 hour treatment were no longer significant 4 days later (no. of larvae or juveniles within bars).

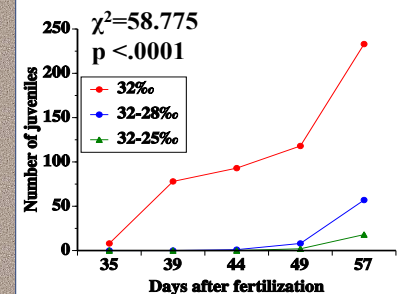
Conclusion

- Both short term (48 hours) and prolonged exposure (40 days) of *Lytechinus variegatus* larvae to 25 and 28‰ delayed development, significantly decreased juvenile size and number.
- A 24 hour exposure to 25‰ had no effect on larval growth or juvenile size at metamorphosis.

Results: Experiment 1



Larvae exposed to 25‰ for 40 days experienced delayed development.



Juvenile production was significantly higher for those reared at 32‰.