Preregistration

Preregistration for reproducing Gooding et al. 2009

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Study Information

Title	Preregistration for reproducing Gooding et al. 2009 Effects of Increasing Temperature on Sea Star Growth
Description	This study is aimed at reproducing the results from Gooding et al. 2009 with simulated data. The authors investigated the combined effects of temperature and increased CO_2 on the growth and feeding behaviour of the seastar *Pisaster Ochraceus*, a keystone predator in the intertidal zone.

Hypotheses We hypothesize that *P. ochraceus* growth rates will increase linearly across the range of temperatures employed in this study.

Design Plan

We plan to run growth trials under different set temperatures for juvenile sea stars *P. ochraceus*.Individuals will be collected and initial wet mass will be determined. Each star will be randomly assigned to temperature treatment between 5 - 21 degrees calcium. Individuals will remain in their treatment tank for 8 weeks, being fed ad libitum for the duration. At the end on the 8 weeks, individuals will be re-weighed and relative growth will be determined. We will then determine if there is a correlation between growth rate and tank temperature.

Study type **Experiment**. A researcher randomly assigns treatments to study subjects, this includes field or lab experiments. This is also known as an intervention experiment and includes randomized controlled trials.

Blinding No blinding is involved in this study.

Study design Juvenile *P. ochraceus* will be reared in the lab, at temperatures ranging from 5 - 21 °C. We will use twenty-four tanks, 246L in volume, with recirculating water to house seastars. Two seastars will be placed inside each tank, contained in their own tupperware with mesh sides and tops to ensure water flow, for a total of 48 seastars. Relative growth of the 2 seastars inside a single tank will be averaged, thus tank is the independent unit in this design.

Randomization Each of the 48 seastars used in this study will be randomly assigned to tanks.

Sampling Plan

We plan to sample 48 individuals, this size complies with our lab space constraints of 24 available tanks. Specimens will be collected in January from Jericho Beach, Vancouver.

Existing data	**Registration following analysis of the data**. As of the date of submission, you have accessed and analyzed some of the data relevant to the research plan. This includes preliminary analysis of variables, calculation of descriptive statistics, and observation of data distributions. Please see cos.io/prereg for more information.
Explanation of existing data	We have simulated date based on the previous study, including review of summary statistics. This was to ensure that using the same methods this experiment was replicable.
Data collection procedures	Enter your response here.
Sample size	Enter your response here.
Sample size rationale	Enter your response here.
Stopping rule	Enter your response here.

Variables

Manipulated variables	Enter your response here.
Measured variables	Enter your response here.
Indices	Enter your response here.

Analysis Plan

Statistical models	Enter your response here.

Transformations	Enter your response here.
Inference criteria	
Data exclusion	Enter your response here.
Missing data	Enter your response here.
Exploratory analyses (optional)	Enter your response here.

Other

Other (Optional)	Enter your response here.

References