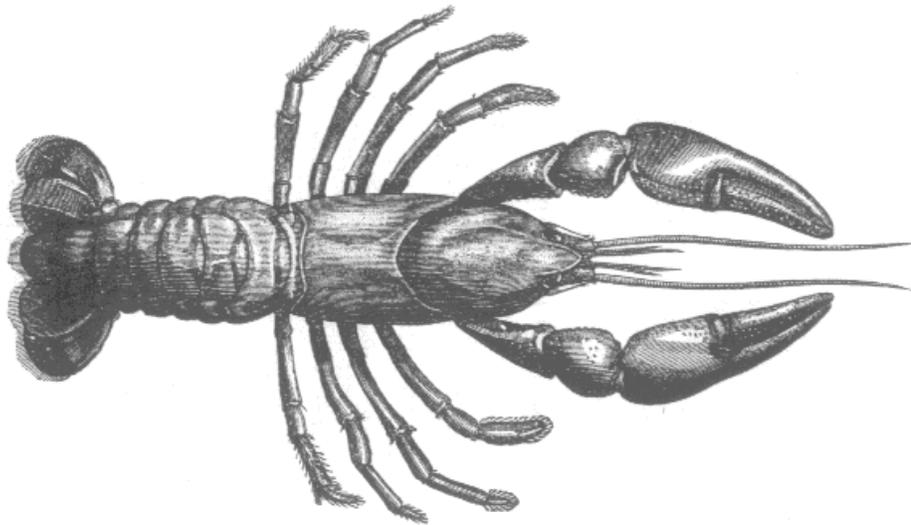


Crayfish Ecology

*The effect of altered habitat conditions on *P. clarkii* behavior*



Your Name: _____

Period: _____

HONORS BIOLOGY

INTRODUCTION

In this lab you will investigate factors that impact crayfish behavior. The red swamp crayfish (*P. clarkii*) is an invasive crustacean species in the Santa Monica Mountains. Originally from the southeastern United States, this crayfish species has spread into non-native areas via fishermen and rapid proliferation.

Animals that are invasive impact abiotic factors of their new environment as well as alter biotic interactions with other plants and animals. Negative impacts of the invasive red swamp crayfish include stream bank erosion and a massive decline in amphibian populations, specifically of the California newt.

DIRECTIONS

1. First you will choose one *independent* variable listed in class. Write down your independent variable you will manipulate here _____.
2. Then you will choose to either measure movement or aggression in crayfish as your *dependent* variable. Write down your dependent variable here _____.
3. Next you will decide how you will *measure* the dependent variable you stated in #2 by recording *qualitative* data. Will you observe the number of times the crayfish moves per minute? Will you observe how far the crayfish travels in the container? Will observe the number of times a crayfish acts aggressively towards another crayfish? Work with your large group to decide how you will choose this independent variable, these will be your methods you will write in the “methods” section below.
4. Lastly, once you have decided on your independent variable and dependent variable, you will complete the “Hypothesis” and “Materials & Methods” sections below. See those sections for further instructions.

HYPOTHESIS

Directions: Here you will write your hypothesis. Use your hypothesis sentence stem sheet to construct a sentence that contains both your independent and dependent variables you described above. Here is an example:

Example: “If crayfish have a rocky substrate then they will have more movement than crayfish with no substrate.”

Write your hypothesis down below (work independently):

MATERIALS + METHODS

Which materials will you use in your experimental trials? List them below in *bullet point format* (e.g. sandy substrate, rocks, another crayfish etc.)

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How will you conduct your trials? Describe in *one to two paragraphs* how you plan to set up your experiment. These are your methods. Describe in detail how you will use the materials you listed above, and why you think these materials will be useful in this experiment. Why did you choose the materials and methods that you chose? Because it relates to a bigger ecological problem? Because it involves previous knowledge you now have about crayfish? Because you thought it would be interesting? Describe below:

DATA

This is where you will collect *qualitative data* as you run your trials. Qualitative data is descriptive data you can record through observations. Each group's qualitative data will be different as each research project is designed differently.

One half of your eight-person group will collect data for the control group of crayfish, meaning they *will not* be testing an independent variable. The other half of your eight-person group will collect data on the experimental group of crayfish, meaning they *will* be testing the independent variable. This is important because we need a baseline against which we can test our hypothesis. We are unable to describe differences in results unless we have two groups to compare.

In both groups, research team members are *describing* what they observe in detail. What is the crayfish doing? Is it moving? Is it using escape behavior? Describe what you see during the observation period in *1-2 paragraphs* below:

RESULTS

Directions: Here you will write a brief summary of your data. We will not be performing statistical tests on these data, but we will be observing trends. Did your data support your hypothesis? How did you know? What were patterns or trends you observed? Maybe your experiment didn't work as planned, why? Describe in *2 paragraphs* below.

CONCLUSION

Directions: Here you will discuss broader implications of the results you observed. How do the trends you observed in these *controlled experiments* relate to bigger ecological concepts in the outside world? What is the connection to climate change?