Grasshoppers on Nihoa: thinking about and doing science
STUDENT PAGE: Experiment #1: Grasshopper Plant Food Preference

Background:

Grasshoppers, *Schistocerca nitens*, were first seen on Nihoa in the 1980's. Even though the endemic Nihoa Millerbird eats this alien grasshopper, the bird can't eat it fast enough to keep the grasshopper's numbers under control.

In the last few years there has been a population explosion of these grasshoppers, and they have denuded all the broad-leafed plants; populations of the native palm (Nihoa loulu) and grasses have not been as heavily impacted.

Therefore, the scientists' goal is to bring the grasshopper numbers under control. To accomplish this goal, one experiment they will do is a survey of Nihoa to see which plants the grasshoppers "hang out" with. That will indicate that the grasshoppers prefer that kind of plant for food.

Question: Which plants do the grasshoppers prefer?

Hypothesis: Make a prediction, using this format—
"If _____

_____then _____

_____ ."

Materials: These are the materials that the Nihoa group plan to use:
- A quadrat, or a square made out of pvc pipes
- Data table

Methods: These are the methods that the Nihoa group scientists plan to use:
1. Designate 3 different plant sites on Nihoa. One site will have mostly broad-leafed plants (like naupaka); the second, mostly grasses; the third, mostly loulu palms.
2. Use a quadrant, probably 0.5m x 0.5m PVC square to count the number of grasshoppers.
3. The scientists plan to repeat the quadrat count 5 times at each plant site.
4. So, there will be 5 counts of the grasshoppers in each plant site (a total of 15 data sets).
5. Whichever plant site has the most grasshoppers will tell us which plants the grasshoppers prefer to eat.

Results: The scientists are scheduled to leave Nihoa and return to the ship on Saturday, August 20, and they will share their data**. On a piece of paper draw a data table where you can write down the numbers of grasshoppers found at each plant site. Include 2 extra columns in your data table for later**.

<u>Conclusion:</u>

After the Nihoa data has been shared with you, use it to answer these questions:

1. What was the average number of grasshoppers attracted by each plant type? Include this information into one of the blank columns o in your data table.
2. What was the range in the number of grasshoppers attracted by each plant type?
3. Which plant food do the grasshoppers prefer? How did you figure out your answer?
4. Was your hypothesis correct or partially correct? How did you know?