

Grasshoppers on Nihoa: thinking about and doing science

STUDENT PAGE: Experiment #2: Grasshopper Bait

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 loulou) and grasses have not been as heavily impacted.

Therefore, the scientists' goal is to bring the grasshopper numbers under control. To accomplish this, one experiment they will do is to find out which bait is best at attracting the grasshoppers to traps. Once the hoppers are caught, then scientists can carefully destroy them but not any other insects.

Here's an interesting experience about possible grasshopper bait. A few scientists were having lunch on Nihoa. Some of them had oranges in their picnic lunch. As they peeled their oranges, the scientists were surrounded by grasshoppers. Eureka! Maybe the Nihoa alien grasshoppers are attracted to the fragrant oil of oranges! After all, scientists working in other areas discovered that vegetable oils could attract other kinds of grasshoppers.

Question: Which bait is most attractive to the grasshopper?

Hypothesis: Make a prediction, using this format —

“If _____
_____ then _____
_____.”

Materials: These are the materials that the Nihoa group plans to use:

- Coffee filters
- Plant oils (for example corn oil, soy oil, canola oil, orange oil)
- Data table

Methods: These are the methods that the Nihoa group of scientists plan to use:

- (1) Designate 3 different plant sites on Nihoa. These could be the same 3 sites used in Grasshopper Plant Food Preferences experiment.
- (2) Put different kinds of vegetable oil (like corn oil, soy oil, canola oil and orange oil) onto coffee filters.
- (3) Place at least one of each “flavor” filter in each of three plant sites.
- (4) After 30 minutes count the number of grasshoppers at each filter.

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 on the different kinds of bait. Include 2 extra columns in your data table for later.**

Conclusion:

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 oil type? Include this information into one of the blank columns in your data table.
2. What was the range in the number of grasshoppers attracted by each oil type? Include this information into one of the blank columns in your data table.
3. Which bait is best to use in attracting grasshoppers? ? How did you figure out your answer?
4. Was your hypothesis correct or partially correct? How did you know?