



HANDS-ON LAB

Field Investigation of Plant Quantity and Diversity

In this activity, you will choose two different outdoor sites to study. You will observe how much plant cover is associated with each site. You will also observe how many different species of plants are present at each site. You will use the data you collect to draw conclusions about what types of external influences may affect plant quantity and diversity.

PROCEDURE**ASK A QUESTION**

STEP 1 Within your group, consider the following types of areas: farm, field, park, golf course, parking lot, and nature reserve. Discuss the differences between these areas in terms of the variety of plant species that might be present and the total number of plants present. Develop a question to ask based on your discussion.

FORM A PREDICTION

STEP 2 Within your group, discuss your thoughts on the answer to your question. Write your prediction/hypothesis below.

MAKE A PLAN

STEP 3 Find two different study sites on a local map. Characterize each site with a general description (for example, lawn, golf course, park) and your estimate of the level of human impact (heavy, medium, light, none). Write down the sites you find.

Materials

For each group:

- field notebook
- map of local area
- plant identification key (optional)
- wire square quadrat, 30 centimeters (cm) × 30 (cm)

For each student:

- protective clothing suitable for field study



Name: _____

Date: _____

STEP 4 Read through the procedure you will follow. Work as a group to develop appropriate data tables to use during your field work and enter them in the space below. Obtain your teacher's approval of your data tables before you continue with the activity.

MAKE OBSERVATIONS

STEP 5 Travel to one of the sites you identified in Step 3. At the site, use the wire square to identify an area in which to look for plant species. One way to make sure you are not introducing bias into your sampling is to gently toss the wire square onto the area, without aiming for a specific location.

STEP 6 Count the number of different plant species within the wire square. Also determine whether each species is native or introduced. Record the information in your data table.

STEP 7 Count the number of individual plants of each species within the square. Record this information in your data table.

STEP 8 Estimate the proportion of plant cover and record. Do this by estimating how much of the square is covered by plants compared to how much is bare ground, cement, or asphalt.

STEP 9 Repeat Steps 5 to 8 until you have obtained a representative sample of the different kinds of plants in the site. You will know that you have a representative sample when you are no longer finding additional species each time you use the square. Use this random sampling process to obtain several samples at each site. This is important to ensure the maximum number of plant species is obtained for each site.

STEP 10 Repeat Steps 5 to 9 for your other study site.

Name:

Date:

ANALYZE THE RESULTS

STEP 11 Analyzing Data You sampled each site repeatedly. Work with the other members of your group to decide how to analyze these numbers. Make a summary table below to show your results for each of the two sites you studied.

DRAW CONCLUSIONS

STEP 12 Evaluating Data Compare the results you obtained for the two sites. Are they different? Do you see any relationship between the amount of human activity at a site and the quantity and diversity of plants present there? Explain.

STEP 13 Applying Concepts Do you think that human impact affects other aspects of the natural environment in addition to any that you noted from this investigation? Explain.
