

Objectives

- ▶ experiment with two underwater research techniques
- ▶ understand the concepts of diversity and abundance

Vocabulary

transect
quadrat

diversity

abundance

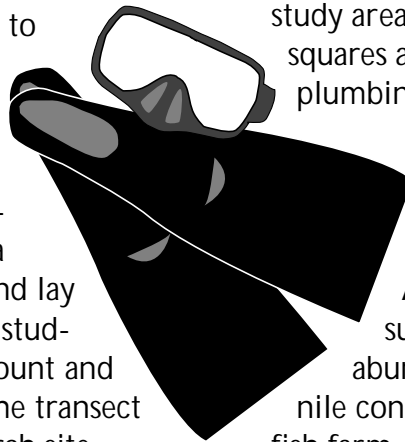
Background

Two of the research methods SFS students at the South Caicos research site use to study the coral reef are the transect, or line survey, and the quadrat, or square survey. The line survey is used to study diversity—how many different types of animals are on the reef. The square survey is used to study abundance—how many of each type of animal lives on the reef.

To conduct a transect survey, researchers measure a length of string or rope and lay it down on the area to be studied. Then they identify, count and record each species that the transect line touches. At the research site, transect lines are laid on the reef, and SFS students use underwater slates to record the types and numbers of corals

they identify along the transect line. This information will be used to compare diversity in coral communities at various locations around the island.

To conduct a quadrat survey, researchers construct a square and place it in the study area. For underwater research, the squares are usually made of plastic plumbing tubes and joints, weighted with sand. The researchers then identify, count and record the types and numbers of each species within the square. At the research site, quadrat surveys are used to study the abundance and movement of juvenile conch that were raised on a shellfish farm, then released to the wild.



Materials

scissors
string
poster board
yardstick

stapler
Transect and Quadrat Surveys Worksheets
green, red, and yellow construction paper

Activity

1. Divide students into teams.
2. Each team will need:

3 green squares	3 red squares	3 yellow squares
3 green circles	3 red circles	3 yellow circles
3 green triangles	3 red triangles	3 yellow triangles
3 green stars	3 red stars	3 yellow stars
3. Have each team measure and cut a three-foot length of string to use for the transect survey.
4. Have each team construct a one-foot square for quadrat survey as follows: Cut four strips of poster board 1.5 inches wide by 15 inches long. Assemble the strips to create a square. Overlap and staple the corners. The inside dimension should be 12" by 12".
5. Have each team scatter its shapes in an area approximately 3' by 3'.
6. Have students conduct transect and quadrat surveys using the worksheets.
7. Discuss the results.

Transect & Quadrat Surveys Worksheet

Name: _____

In this activity you will use the same research techniques that SFS students are using to study corals in South Caicos Island.

Part I - Transect Survey

Lay out your string in a straight line across the shapes in the center of your study area. Identify and count only those shapes that the string touches. Record your results in the chart below, as shown in the example:

	Type of shape	Number	Total
	Yellow Δ	##	7
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			

Part II - Quadrat Survey

Place your square in the center of your study area. Identify and count only those shapes inside the square. Record your results in the chart below:

	Type of shape	Number	Total
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			

Questions:

How many different types of shapes did you find with the transect survey?

How many with the quadrat survey?

If you wanted to find out how many different types of coral live on the reef, which method would you use?

Why?

Which method would be best for counting how many corals of each type live on the reef?

Why?