

Data Analysis

Grade Level: upper elementary / middle school, upper middle school / high school

Duration: one 50-minute class period

Skills: critical thinking, interpreting data, discussion and evaluation

Subjects: science and math

Concepts

- Bridge the classroom and the local environment.
- Utilize the scientific method as a process for inquiry and discovery.

Vocabulary

- percentage
- average
- range
- mean

Overview

Students analyze the invertebrate, shorebird, or environmental data they collected on their field trip using a variety of mathematical calculations and observations.

Objectives

After this activity, students will be able to:

- Calculate percentage, average, range, and mean from a set of actual data.
- List at least three factors influencing data collection.

Materials

Any of the following:

- completed Shorebird Observation Record Sheets and Invertebrate Data Forms (from shorebird journals in Field Trip Journals section)
- other data collected on field trip by several individuals or groups

Introduction

Since this is a summary activity, there is no introductory information for this activity.

Procedure

1. During the field trip, have students collect data, using any of the Shorebird Observation Record Sheets and/or the Invertebrate Data Forms (part of the Shorebird Journal) or their own data sheets. Environmental data like water temperature, wind or water speed can also be used.
2. After the field trip, combine the information collected by individuals or teams. Interpret the data with as many calculations as you determine will provide valuable information: averages, ranges, means, percentages, etc.
3. Discuss why groups got different measurements or numbers. What sorts of things might have affected the measurements?

- Did everyone take measurements at the same time and place?
- Could the actual water temperature vary at different times of day, or on different days? Would weather affect the measurement?
- For numbers of birds, might the behavior of different groups of students (noisy versus quiet) have affected the visibility of animals?
- Did everyone count, or did some “researchers” guess?

- Does everyone see color or shape the same way?
- Is calculating an average of several people’s data the best way to determine a measurement?
- What else could you do to obtain an accurate measurement?

Additional Activities

Using the Scientific Method

If you have not introduced your students to the Scientific Method take a look at the following classroom activities: [Banded Birds](#), [Bird Beans](#), [Imaginary Mist Nets](#) and [You Be the Scientist](#) (found in the Shorebird Research and Technology section). Refer to the reading [The Scientific Method of Inquiry and Estimating Populations](#) for more information about sampling bias, error, and good technique.

