Name _____ Period_____Date_____

REAL WORLD LAB—DESIGN YOUR OWN

Monitoring Bird Populations

Teacher Notes

TIME 45 minutes, first day; 10 minutes a day, several times a day for a week

TEACHER PREPARATION 

STUDENT DIFFICULTY 

Purpose Investigate behavior of birds using a bird feeder as a research platform

Overview Students develop a question about bird behavior and then execute a plan to observe the behavior in question.

LAB PREPARATION

- If you do not have bird observation sites readily available, investigate suitable sites.
- Have a variety of different types of bird food available to students. Students may want to compare the influence of bird food on the population of birds at their observation site.

LAB MANAGEMENT

- Observation periods can be lengthened and can include additional practices, such as drawing or using recording media.
- Make sure students choose a feeder location that is safe, reasonable for attracting birds, and not on private property.
- If students have trouble thinking of a suitable research question, prompt them with a few questions. Do weather changes such as rain, wind, or temperature affect how many birds come to the feeder? Do different species of birds prefer different types of food, different times of day, or different weather conditions? Do some species of birds chase away other species?

Safety Precautions Make sure students follow reasonable safety precautions, such as being aware of traffic and not climbing trees.

Post-Lab Discussion Have students discuss and compare their experiences. How much did study designs vary? Were any investigations particularly successful? Were there any surprising results? Did anyone have trouble with a particular aspect of the experiment, such as using the equipment or adequately capturing the data? Ask students if improvements to their experimental plans occurred to them after the fact. Remind students that career scientists experience similar rewards and frustrations in the course of their research.

ANSWERS

Sample Data Observations will vary, but students should pay close attention to time of day and weather conditions, because these factors play an important role in bird behavior. In addition, students may see behaviors such as nest building, mating, or caring for young, as well as establishment and defense of territory.

Analyze and Conclude

1. Answers will vary.
2. Answers will vary.
3. The goal of this exercise is to observe the birds in their natural habitat performing their natural behaviors. A human presence could disturb the birds or otherwise alter their behavior.
4. Answers will vary, but may include establishment of territory, social interactions, nest building, or caring for young.

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BACKGROUND

Bird behavior is very diverse. Birds must avoid predators, find mates, raise young, and, of course, find food. Scientists take a variety of approaches to studying these behaviors, depending on the kinds of questions they seek to answer. Some investigations can take place over a long span of time, others over great distances. Still others focus on examining a single small population. The area around a bird feeder is one such example. A bird feeder provides a stable place for the observation of eating habits and other types of behavior, and it can allow you to see the variety of birds that live in a certain area.

SCENARIO

A magazine that publishes articles on birds is planning an issue on bird behaviors. You have been hired by the editor of the magazine to investigate bird behaviors and write a short article about your observations. First, you will need to find a good location for observing birds, and spend some time watching and recording what they do. Then you will think of a question you want to have answered: are you interested in how birds of the same species interact with each other? How different birds compete? How they respond to predators? Once you settle on a question, you will write a prediction and then design an investigation to study it. Finally, you will carry out your plan and interpret the results.

PROBLEM

What factors influence the behavior of birds in a given area?

MATERIALS

- bird feeder (commercial or homemade)
- 4 cups bird seed
- bird identification guides
- computer with Internet access

PROCESS SKILLS

- Observing
- Designing Experiments
- Collecting Data
- Hypothesizing

- Analyzing Data
- Drawing Conclusions

PROCEDURE

Part A: Observing Birds at a Feeder

1. Scout out a location from which to observe your bird feeder. Keep the following in mind:
   - You must be able to place a bird feeder in the area and have access to the feeder to refill it.
   - The location should allow you to observe the birds without disturbing them. This might involve observing them from indoors.
   - Ensure that the bird feeder is located so that the birds are not in danger from predators or pests such as dogs or cats. Squirrels especially should not have access to the food.
2. Before designing your investigation, spend several 10-minute periods observing birds at the location you chose. Make notes about the species of birds that visit the feeder, how long each bird stays, how the birds interact with each other, and anything else that seems interesting to you. Think of some questions you could ask about the birds that could be answered using a scientific investigation.
3. Use your observations to decide on a question you would like to answer about the birds you observed. Write down your question and prediction of the answer.

   Question:

   _____

   Prediction:

   _____
4. In the space below, write down your investigation plan as a series of numbered steps. Make sure the steps are in logical order. Include any needed safety precautions. Show your plan to your teacher for approval before you begin.

   _____

   _____

   _____

   _____

   _____

   _____

_____

_____

_____

_____

_____

_____

_____

5. Observe the birds regularly for at least six observation periods. Record your observations using the data table given, or design your own table.
6. Use the bird identification guide to identify the types of bird that visited your feeder.

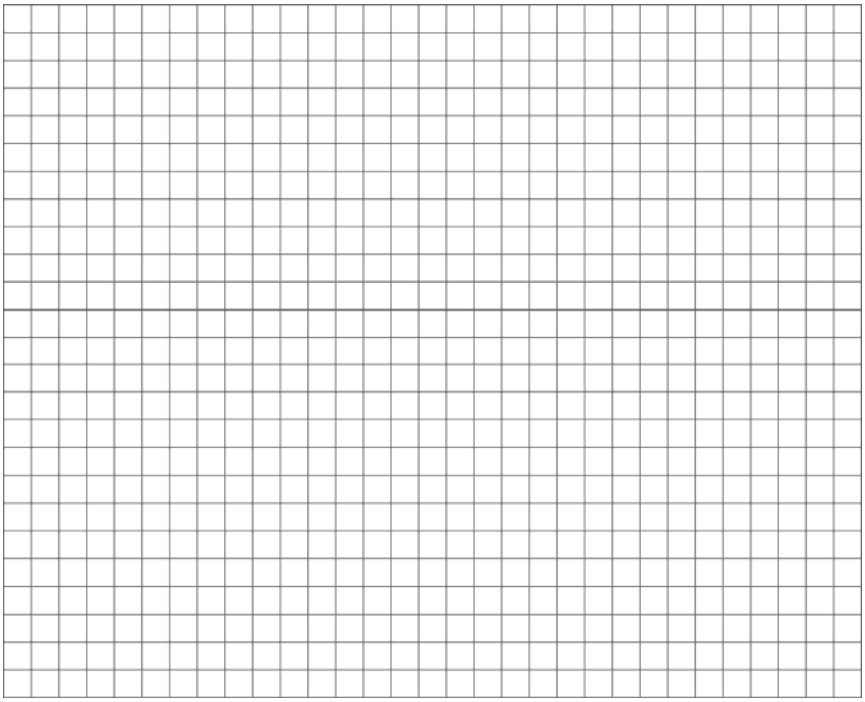
OBSERVATIONS

TABLE 1. BIRD OBSERVATIONS

Day	Number and Type of Birds Seen	Time of Day, Weather Conditions	Feeding Habits	Other Observations
1				
2				
3				
4				
5				
6				

ANALYZE AND CONCLUDE

1. Graph Data Choose an appropriate type of graph to display your results.



2. Analyze Summarize your observations in words. How did your observations compare to your prediction?

_____

_____

3. Infer What can you conclude about the behavior you studied?

_____

_____

4. Infer What effect would a human presence have on the birds?

_____

_____

EXTEND YOUR INVESTIGATION

Prepare a presentation of your work. You may produce a podcast, Web site, or write the magazine article. Use a digital camera to take pictures, and include those.