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Living Oceans
Foundation

STANDARDS

- **CCSS:** RST.9-10.1, 3, 4, 5, 7, 8, 10; RST.11-12.1, 3, 4, 10; SL.9-10.1, 2, 3, 4, 6; SL.11-12.1, 2, 3, 4, 6; HSN.Q.A.1; HSS.IC.A.1
- **NGSS:** HS-LS1-2, HS-LS2-6
- **OLP:** 1.B, 5.B.1, 5.B.5

ONLINE CONTENTS

- [Ecology Quiz](#)
- [What Is Ecology? Video](#)
Ecology explores living things, plus the way they interact with one another, and their physical surroundings. A coral reef is a very special type of home, it provides nourishment and shelter to an amazing range of living creatures. They interact with non-living things like rocks and sand, ocean currents, temperature, and much more. A vast web of living and non-living things makes up the ecology of coral reefs.

ECOLOGY

This lesson is a part of the *Ecology* unit, which explains what ecologists study and how it applies to coral reefs. Below is a summary of what is included in the entire unit.

UNIT CONTENTS

A. [Background Information](#)

- Ecology
- Biological Hierarchy of Life
- Ecological Levels of Organization

B. Lessons

[Watch it! What is Ecology?](#)

- A worksheet to accompany the [What is Ecology?](#) video

[Factors of the Reef](#)

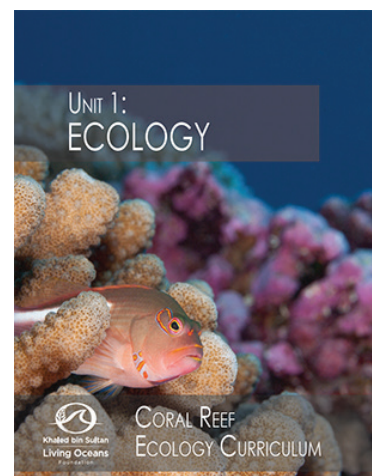
- A lesson to differentiate between inference and observation

[Backyard Ecosystem](#)

- An activity to perform a biological survey of an outdoor area

[Read It! Lionfish: Scourge of the Caribbean](#)

- A worksheet to accompany the [Lionfish: Scourge of the Caribbean](#) field blog



LESSON 2

BACKYARD ECOSYSTEM

OBJECTIVES:

- Draw an ecosystem.
- Identify and record the abiotic and biotic factors that make up an ecosystem.
- Record observations and inferences.
- Identify plants and animals.
- Graph data and draw conclusions based on evidence.

MATERIALS:

- 10 meter string
- Ruler or measuring tape
- Pencil or colored pencils
- Camera or drawing materials (colored pencils and sketchpad)
- Other tools (binoculars, magnifying glass)

PROCEDURE:

1. Choose an outdoor ecosystem. This can be your backyard, a park, a forest, pond, beach, etc.
2. Using your 10 meter string, create a circle around your chosen ecosystem.
3. Second, sketch the ecosystem in the space provided. On the following page name your ecosystem. Be as accurate as possible.
4. Record all of the abiotic and biotic factors of your ecosystem in *Table 1*. When recording the biotic factors list how many of each are present by using tally marks. If you cannot identify certain organisms, take detailed notes about them (color, shape, size, sound it makes, habitat, physical characteristics, etc.), so that you can identify them later. **NOTE:** When possible take photos of the abiotic and biotic factors as well as any observations and inferences that you make. This will come in handy later, especially if you can't identify an organism. It is suggested that you record all of the fast moving organisms first in *Table 1*.
5. Sit down and be as quiet as possible. List all of your observations in *Table 2*. These interactions can occur outside of the circle. Don't forget to include any interactions that you see including organisms interacting with their environment or other organisms.
6. Now based on your observations, make inferences about what you are observing. When making inferences, use your prior knowledge to explain what you are seeing. For example, you observe that the leaves on a maple tree are red, orange, and yellow. Your prior knowledge tells you that the reason that the leaves are changing colors is because it's fall. This is an inference. Write your inferences next to the corresponding observation in *Table 2*. You may not be able to make inferences for all observations.
7. In class, identify each of the organisms (plants and animals) that you found in your ecosystem. Identify each organism to the lowest classification level possible and include the common name. Use your photos or drawings to help you identify these organisms. You may use guide books and the internet to help you. In *Table 3*, make a list of the organisms that you identified including the common name and the lowest classification. Transfer your tallies from *Table 1* to *Table 3*.
8. Label the drawing with the corresponding number for each organism from *Table 3*. For example, if #1 is a shark, then in the drawing, place a 1 next to the shark. Circle the number. If there are more than one of the same types of organism, write the same number next to each one.
9. Create a bar graph including all of the organisms that you listed in *Table 3*. Make sure to label each axis, create a title, and create a scale on each axis.
10. Answer the questions.
11. If you took photos, include your photos in a document and turn them in with your student worksheets.

INSTRUCTIONS: Sketch your ecosystem.

Title: _____

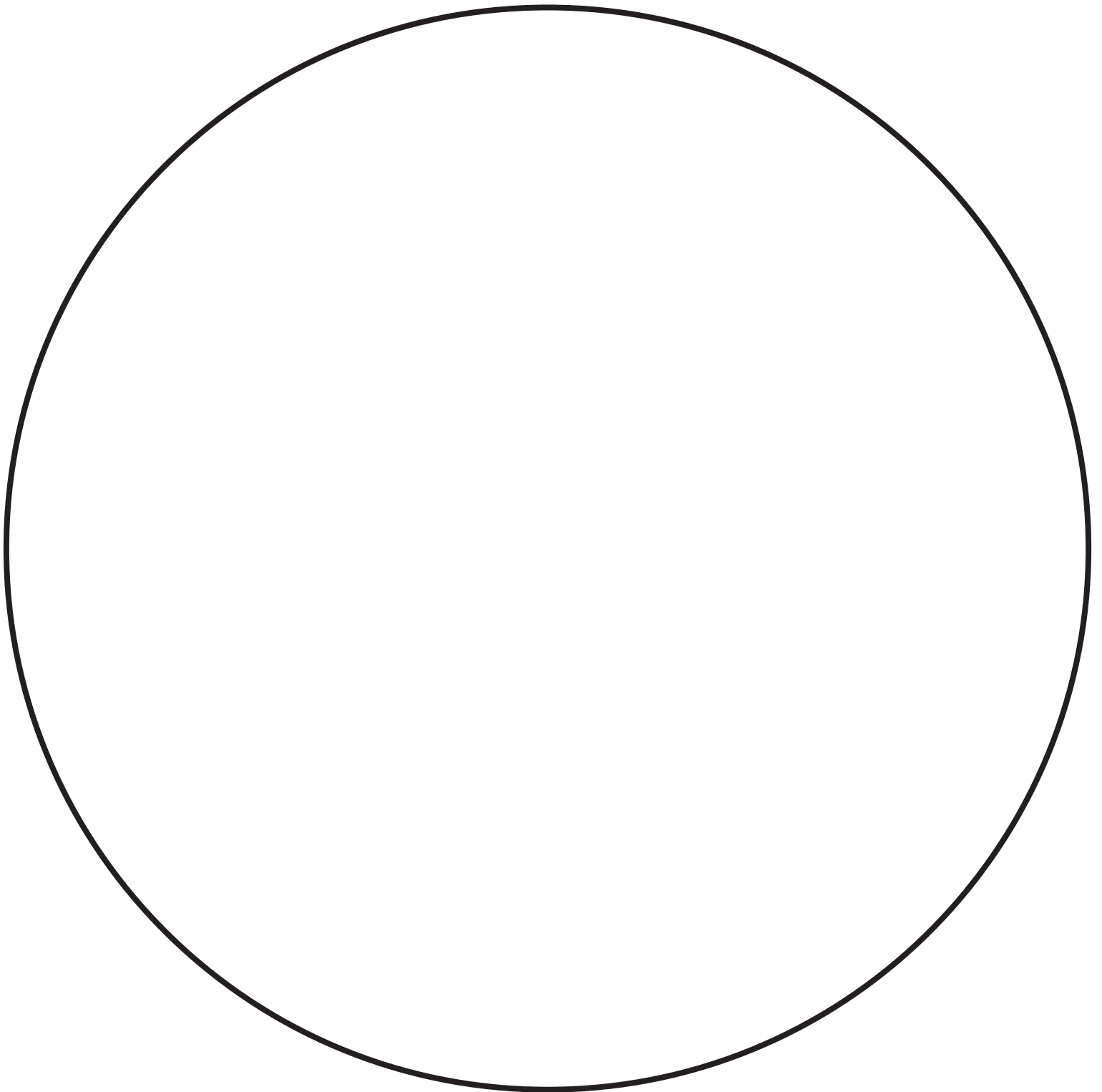


Table 1:

Abiotic Factors	Biotic Factors	Biotic Tally
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		
17.		
18.		
19.		
20.		
21.		
22.		
23.		
24.		



Table 2:

Observation	Inference
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	

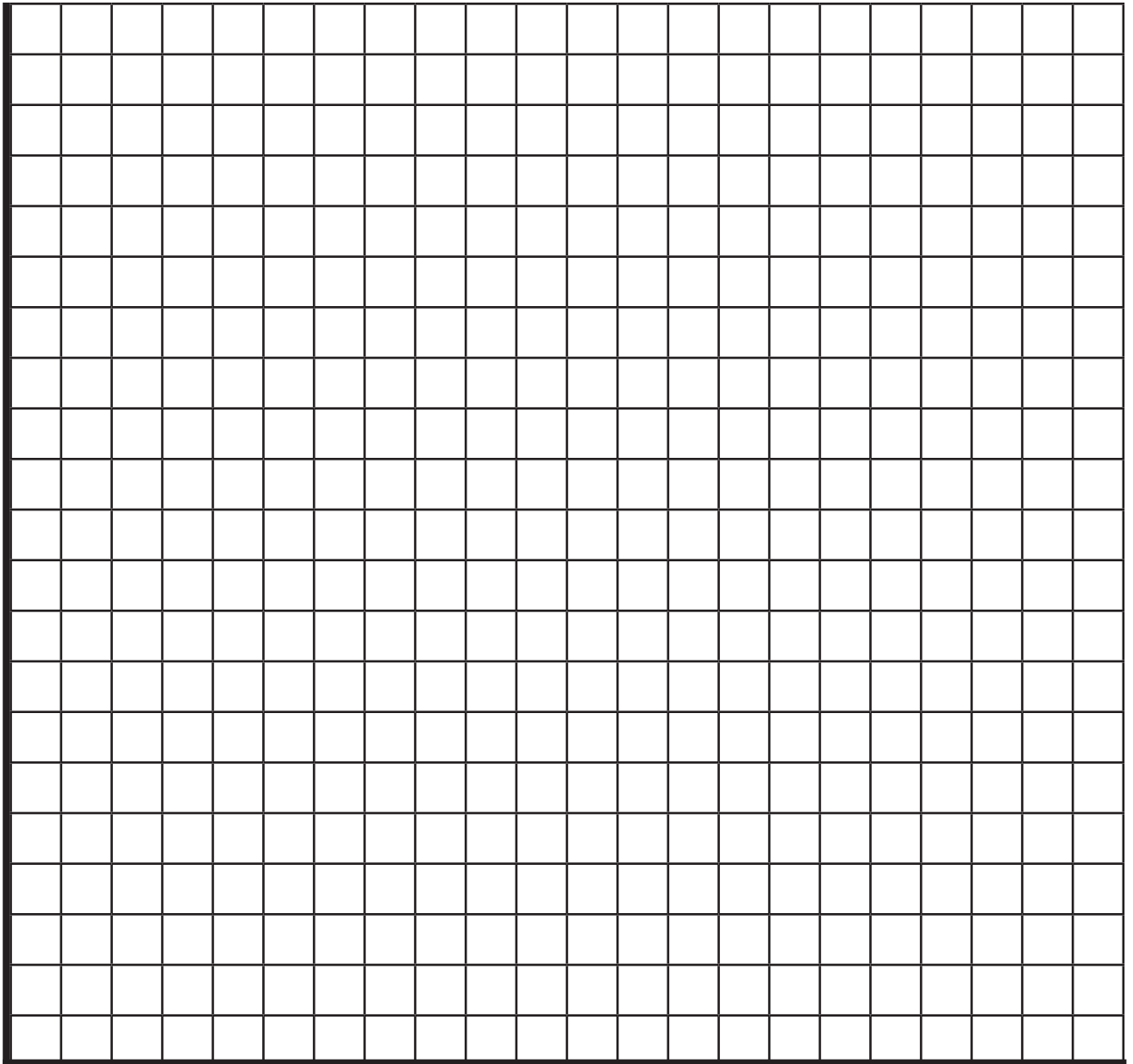


Table 3:

Organism	Number
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	
13.	
14.	
15.	
16.	
17.	
18.	
19.	
20.	
21.	
22.	
23.	
24.	



INSTRUCTIONS: Create a bar graph using the data from Table 3.



INSTRUCTIONS: Answer the following questions:

1. Looking at the bar graph, do you think that your ecosystem is diverse? Why or why not? Explain how you came to these conclusions.

2. List three abiotic factors that would exist in most ecosystems.

a. _____

b. _____

c. _____

3. Do you think that the time of day would change the animal and plant interactions? Why?

4. Do you think that the time of year would change the animal and plant interactions? Why?

5. Do you think that there were organisms that you couldn't see? If so, where would you expect to find them?

a. Do you think that they are important? Explain.



6. Choose two organisms found in your ecosystem. Describe an adaptation that allows these organisms to live in their ecosystem.
 - a. Would they survive if you moved them to a different ecosystem? Explain your answer.

7. Did you find any invasive species in your ecosystem? How do you think that invasive organisms affect ecosystems?

8. Did you notice any human interactions? Explain your answer.

9. How do you think that human interactions affect ecosystems? Provide two examples to back up your claim.

