



Khaled bin Sultan
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](#)

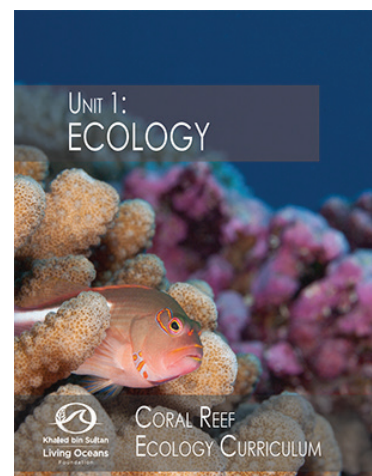
- A lesson to differentiate between inference and observation

[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 1

FACTORS OF THE REEF

ADDITIONAL BACKGROUND INFORMATION:

Do you know the difference between observation and inference?

Let's say that one day you're taking a walk along the beach. You look towards the sky to the west and you notice that some very dark clouds are forming, the wind suddenly picks up, and thunder starts to boom. What are your observations? What inferences can you make using this information?

Observation is a fact that is learned through the senses. There are five senses: sight, hearing, touch, taste, smell. When walking on the beach you *felt* and could probably *hear* that the wind had picked up. You were able to *hear* the thunder and *see* dark clouds. These are all observations.

Inference is based on observations and past experiences. While walking on the beach, you probably inferred that there is a storm on the way. You knew this based on your observations and past experiences of being in a storm.

What is the difference between an abiotic factor and a biotic factor?

Remember that abiotic means without life, so it is the non-living components of an ecosystem, like rocks, temperature, or the sun.

Biotic means living. Most scientists agree that all living organisms

- are made up of at least one cell,
- reproduce,
- have DNA to pass on to the next generation,
- and use energy to perform life functions and maintain their internal environments.

There are other characteristics, like movement, that indicate that an organism is living, but not all organisms have them. Other examples of these characteristics are:

- response to a stimulus,
- complexity,
- and growth/development.

INSTRUCTIONS:

1. Write the definitions for *abiotic*, *biotic*, *inference*, and *observation* in the space provided below.
2. In *Table 1*, write down the picture number that you were assigned by your teacher.
3. Observe the picture. Record all of your observations in *Table 1*. You should have at least 8 observations per picture.
4. Choose three factors from your observations. Make an inference about whether it is biotic or abiotic. Record this in the right-hand column of *Table 1*. Be sure to include an explanation for why you said this, based on your observations. (NOTE: You should describe at least one abiotic factor per picture.)
5. Repeat steps 2-4 with other reef pictures that are assigned by your teacher.
6. Present the information about one of the pictures to the class.
7. Answer the questions below.

INSTRUCTIONS: Fill out the table.

Term	Definition
Abiotic	
Biotic	
Inference	
Observation	

TABLE 1:

Photo #	Observations	Inferences
1		

Photo #	Observations	Inferences
2		
3		



Photo #	Observations	Inferences
4		
5		
6		

PHOTO 1




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PHOTO 2




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PHOTO 3

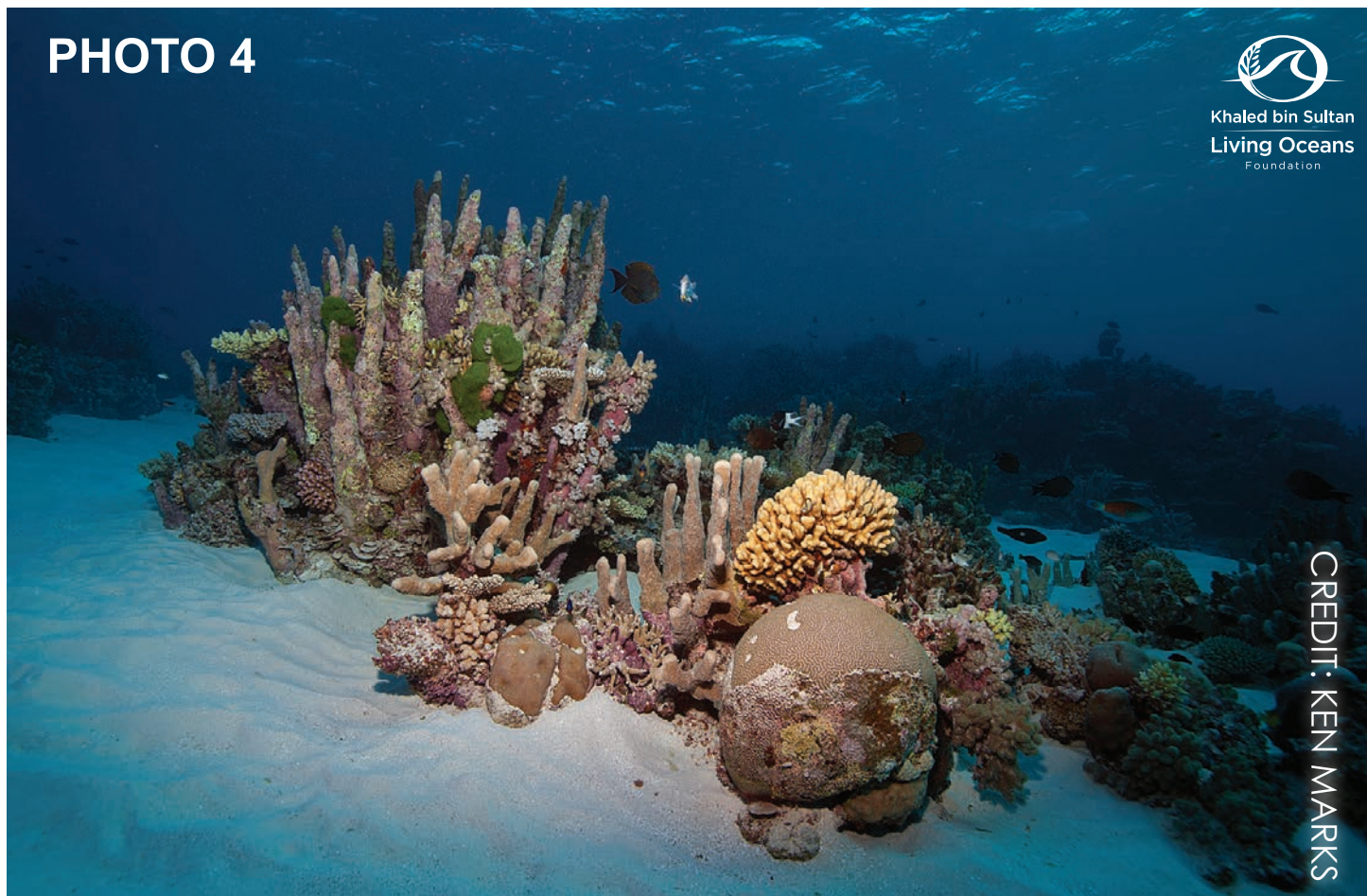

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PHOTO 4


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PHOTO 5



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PHOTO 6



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