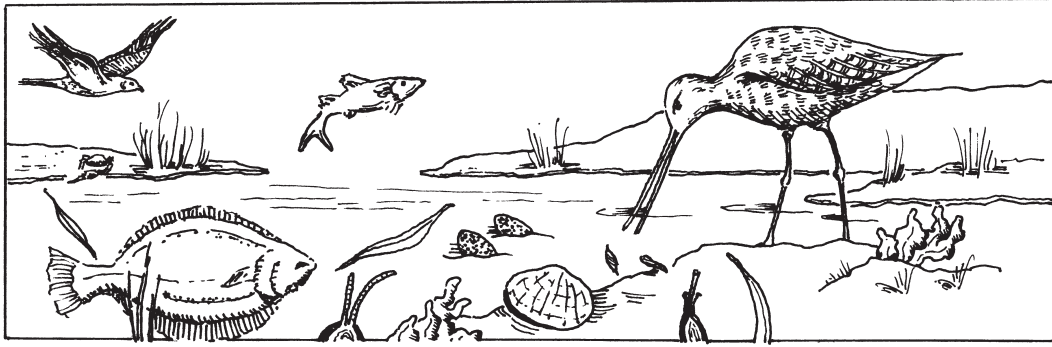


Ecology Chapter Teacher Sheet



Activity #3: Biotic vs. Abiotic Factors

*California Content Standards
Biology (Ecology) 6e
Biology (Ecology) 6f*

Objectives:

To determine student's prior knowledge of the environment and introduce the concept of biotic factors and abiotic factors in an environment and their effect on other organisms living within an environment.

Time:

This activity will require one 55-minute class period.

Background:

Although students are generally aware of the term "environment," some students may not be able to articulate what an organism's environment is composed of. Since both biotic and abiotic factors affect the health and well-being of every organism within an environment, it is important for students to understand the difference between the two, and to realize the role these factors play in the health of an environment and the organisms who live there.

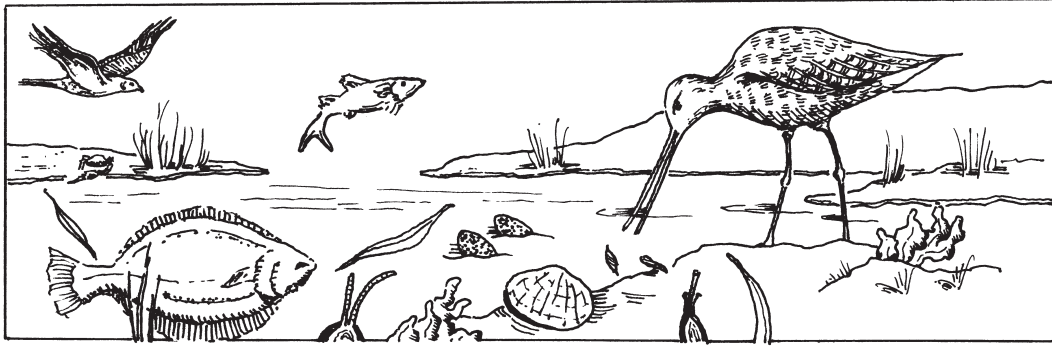
Materials:

Students need to have a notebook or journal. The teacher should have an overhead and a whiteboard to write down and organize students' responses.

Procedure:

1. Begin by asking students "What exactly do we mean by an 'environment'?" Accept all student responses and write them on the overhead.
2. Tell students to think about the environment of the Tijuana Estuary. Ask students to name all of the things that make up this environment. For some classes, it may be best to call on each student in the class and ask them to name one thing in the environment. Continue surveying the class until each student has participated, and the students can't think of anything else. Write down each response.
3. Remind students that "bio" means life, as in biology, which means the study of life. Remind students that, in science, to put an "a" in front of a word means "without," so abiotic means without life. Tell students that everything in an environment can be put into one of two classifications - either things that are, or were, alive (biotic), and things that never were alive (abiotic).
4. Tell the students they are going to determine whether each item on the list they made is biotic or abiotic. Ask for two student volunteers to write these lists on the overhead.
5. Begin at the top of the list of things the students named as part of the environment, and have the students determine whether each item on the list is biotic or abiotic. As they make their decisions, the volunteer writes the word on the whiteboard. When the list is finished, there will be two lists on the whiteboard - a list of the biotic elements in the environment, and a list of the abiotic elements in the environment.
6. As the lists are generated, the students should write each factor in the appropriate column of the Student Sheet.
7. Beginning with either list, ask the students how each item in the list might affect other organisms living in the environment. Write their responses on the overhead, and students write the responses on the Student Sheet. Continue with the other list.
8. Have the students draw 4 rows of 4 boxes - 16 boxes in all - and place the 16 most important factors in the boxes, one in each box. They should then draw arrows between the boxes to indicate interactions between the factors.
8. Ask the students to write a short summary of the differences between biotic factors and abiotic factors, and their affects on organisms living within the Tijuana Estuary.

Ecology Chapter Student Sheet



Activity #3: Biotic vs Abiotic Factors

PURPOSE:

You will be deciding which factors in an environment, such as the Tijuana Estuary, are biotic or abiotic factors.

INTRODUCTION:

There are many different types of environments, such as deserts, forests, grasslands, tundra, ocean beaches, and, of course, estuaries. Each type of environment contains a number of different factors that interact with each other. For instance, a forest environment has large trees with smaller bushes, some grasses, rivers, ponds, insects, many different types of small and large animals, soil with organic matter in it, and usually abundant rainfall. In contrast, a desert environment has cactus, small plants, lizards, snakes, smaller animals, sandy and/or rocky soil, and low yearly rainfall.

The way all of the factors in an environment interact determines which organisms can live in that environment. For instance, an alligator, which needs a lot of water to live in, would have a hard time living in a desert that doesn't have much water. Ferns need shade and moist soil to live, and would die in the hot, dry, sunny desert. Polar bears have thick fur coats to keep warm in the cold, snowy arctic and would have a difficult time if they lived in a hot, humid tropical environment.

In this activity, you are going to list all of the environmental factors of the Tijuana Estuary that you can think of, and then determine how those factors interact with each other.

MATERIALS:

A copy of the student sheet and a notebook or journal.

PROCEDURE:

1. What do we mean when we talk about an "environment?" In your notebook, write down all of the things that comes to mind when you think of an "environment." Be prepared to contribute your ideas to a class discussion.
2. Think about the environment of the Tijuana Estuary. In your notebook, write down all of the factors that make up the Tijuana Estuary environment.
3. As your class determines which factors are biotic and which are abiotic, write each one on your copy of the Student Sheet..
4. As your class decides how each factor on your sheet affects other organisms in the environment, write their decision on your sheet.
5. On a piece of paper or in your notebook, draw 4 rows of 4 boxes - 16 boxes in all. Decide which factors are the most important to the Tijuana Estuary, and write one factor in each box. Be sure to include both biotic and abiotic factors. Draw arrows from box to box to indicate how the factors affect each other.

STUDENT SHEET
BIOTIC AND ABIOTIC FACTORS OF THE TIJUANA ESTUARY

Biotic Factors	Affect on organisms

Abiotic Factors	Affect on organisms

In your own words, define biotic and abiotic factors:

Biotic Factors _____

Abiotic Factors _____

