

ACTIVITY: WHERE DOES IT LIVE, AND WHAT DOES IT EAT?

BY SUSAN LEACH SNYDER

INTRODUCTION

This activity can be adapted for students in grades 4-9. It correlates to the following National Science Education Standards: systems, order, organization; evidence, models, and explanation; structure and function in living systems; and diversity and adaptations of organisms. It also correlates to Benchmarks for Science Literacy Number 5: The Living Environment.

TEACHER PREPARATION

Before beginning the activity explain to students that a habitat is where an organism lives. Also, explain that a food web is made of a series of overlapping food chains. Explain that a simple food chain is the relationship between grass-cow-human. You might explain that grass is the producer, a cow is a herbivore, and humans are (in this food chain) carnivores. A food web would have several arrows pointing from grass to animals that eat grass, and several arrows pointing from each of those animals to animals that eat them. The arrows point in the direction that energy is transferred, (see Figure 7).

OBJECTIVES

In cooperative learning groups, students will:

1. Research the habitat and food of organisms living in a mangrove estuary.*
2. Illustrate where organisms live in a mangrove estuary.
3. Diagram a food web in a mangrove estuary.

(* This objective applies to older students.)

Process Skills: making models, using tables (young students), inferring, communicating

MATERIALS

PROCEDURES FOR THE TEACHER

- one sheet of butcher paper to cover a bulletin board
- colored pencils
- construction paper
- scissors
- crayons
- glue or tape
- markers

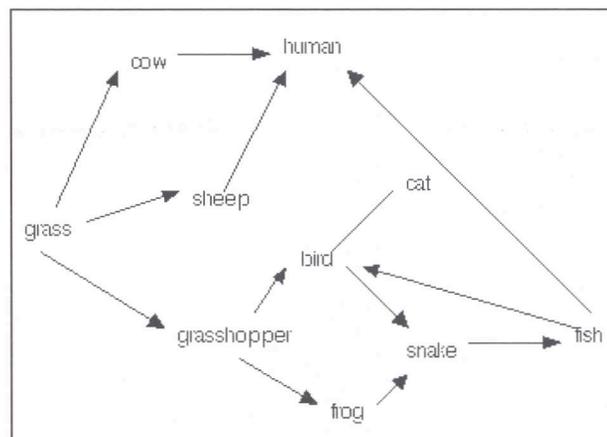


Figure 7. Food web

1. Assign one group of students to make a bulletin board display that shows a mangrove estuary. The drawing should include mangrove trees, exposed roots, submerged roots, water, and a sand/mud bottom. (With younger students, you might wish to do this procedure yourself.)

2. Assign other student groups to research ten organisms that live in a mangrove estuary. Have them find out where each organism lives and what it eats. For younger children, a chart has been provided that lists organisms, their habitats, and their food (see Figure 8 on page 23).

3. Using colored pencils, construction paper, scissors, and glue or tape, have students make models of their organisms and glue or tape each one into its habitat in the estuary.

4. After all organisms have been glued or taped in place, have

FIGURE 8. TABLE OF MANGROVE ORGANISMS, THEIR HABITATS, AND FOOD.

Organism	Habitat in/near the Mangrove Estuary	Food in Estuary
American crocodile	swims in water, suns itself and lays eggs on land	fish, turtles, birds
amphipod	in the water on leaves	mangrove leaves
bacteria	on debris in water and bottom sediments	mangrove leaves, dead organisms
bald eagle	builds nest in a tall tree, catches water-prey with talons	fish
barnacle	attached to mangrove roots, and on top of oysters & snails	plankton & detritus
blue crab	on submerged prop roots of mangrove	dead organisms
bottle-nosed dolphin	swims in water	fish
brown pelican	dives into water for food, perches & nests in trees	fish
cooter turtle	swims in water, suns itself and lays eggs on land	fish, insects
crown conch	in water, crawls along bottom sediments	algae
double-crested cormorant	dives into water, perches on channel markers to dry wings	fish
fiddler crab	on mudflat at base of mangrove roots	dead organisms
great blue heron	wades into water for food, perches and nests in trees	fish, snakes
great white egret	wades into water for food, perches and nests in trees	fish, shrimp, crabs
hermit crab	in water, crawls on bottom, lives inside discarded shell of snail	dead organisms
horse conch	in water, crawls along bottom sediments	crown conch & other snails
horseshoe crab	in water, crawls along bottom sediments	clams, crabs, dead organisms
human	live in homes adjacent to mangroves	fish, clams, shrimp, oysters, crabs
ibis	roosts in trees	crabs, clams
kingfisher	perches on branches, dives into water for food	fish
lightning whelk	in water, crawls along bottom sediments	whelks, horseconchs, moon snails
little blue heron	wades into water for food, perches & nests in trees	crabs
little green heron	wades into water for food	fish
long nose killifish	swims in water	shrimp
manatee	swims in water	seagrass
mangrove	in the intertidal zone	makes its own food
mangrove crab	on mangrove tree	dead organisms
moon snail	in water, crawls along bottom sediments	clams
mullet	swims in water, feeds on the muddy bottom	algae and dead organisms
osprey	builds nest in a high tree, catches water-prey with talons	fish
oyster	attached to mangrove roots	plankton and detritus
parchment worm	buried in bottom sediments	plankton and detritus
periwinkle snail	lives on exposed mangrove prop roots	dead organisms
phytoplankton	in the water	makes its own food
pink shrimp	swims in water, larval stages live among roots for food & protection	larval stage: detritus, adults: dead plant material
raccoon	lives in wooded area, wades into water for food	fish, crabs, oysters
roseate spoonbill	wades in water for food, perches & nests in trees	crabs, shrimp
sailfin molly	swims in water	algae
sea anemone	on submerged prop roots, and on bottom sediments	fish
sea cucumber	on the bottom sediments	detritus in the sand
sea grass	on mud flats	makes its own food
sea horse	swims in water, uses tail to hang onto roots	tiny shrimp
sea squirt	attached to roots and oysters	plankton and detritus
sea star	in water, crawls along bottom sediments	sea urchins, bivalves
sea urchin	in water, crawls along bottom sediments	algae
sheepshead	swims in water	crabs, shrimp
snook	swims in water	fish, shrimp, crabs
stripped burr fish	swims in water	shrimp
sunray venus clam	in bottom sediments	plankton and detritus
tarpon	swims in water	mullet & other fish
tricolored heron	wades into water for food, perches & nests in trees	fish
vulture	flies above estuary	dead animals
wood stork	wades into water for food, perches & nests in trees	fish
yellow-crowned night heron	wades into water for food	fish, crab

a student representative from each group discuss in front of the class, how its group's organisms use the mangrove habitat and what each organism eats.

5. After all groups have shared, lead a discussion about the food web in a mangrove estuary that begins when a mangrove leaf falls into the water. As students share information, draw the food web onto a large piece of paper or white board.

6. Have students copy the food web into their notebooks and ask them to infer in writing what happens to the food web if certain organisms die. (For example, if birds of prey, i.e. osprey and eagle die, there may be more fish; if mangroves are cut down and removed from an area, the food web will collapse.)

7. After giving students enough time to do procedure 6, have them share their answers with other members of the class.

ACTIVITY EXTENSIONS

1. After researching the history and biology of a local estuary, have students write a letter to the editor of a newspaper, explaining why the estuary should be preserved.

2. Have students design an experiment to see how mangrove roots reduce soil erosion. Possible materials students could use to make models of the roots and estuary include two paint trays, toothpicks, pipe cleaners, soil, and water. Remind students that they should have a control in their experiment.

3. Have students examine a decomposing leaf through a microscope. Have them draw and explain what they see, and write a description of why decomposers are important parts of any food web.

CREDIT

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Great blue heron