COASTAL FOOD WEB

OBJECTIVES

The student will do the following:

1. Identify members of the coastal food web.
2. Label food web members as plants or animals (herbivores, carnivores).
3. Construct coastal food chains and webs.

SUBJECTS:
Science

TIME:
90-120 minutes

MATERIALS:
student sheets (included)
index cards
masking tape (or pins)
marker
string or yarn
teacher sheet (included)

BACKGROUND INFORMATION

All life systems depend on green plants which use the energy of sunlight to produce sugars, fats, and proteins. They are the ultimate food sources for all life. Green plants produce food. Animals must obtain energy from either plants or other animals. Animals that eat plants are herbivores. Animals that eat other animals are carnivores. Even organisms that break down dead plants and animals get their food directly or indirectly from plants.

Plants and animals are linked by food relationships and form food chains. Food chains are linked together into food webs. Decomposers are members of the web because when animals and plants die their decomposed forms are broken down into essential nutrients that are used by green plants.

Terms

carnivore: a meat-eating organism.

food chain: animals and plants which have direct food relationships; energy passes through the food chain.

food web: interrelated food chains; shows direct and indirect food relationships.

herbivore: a plant-eating organism or first level consumer.

ADVANCE PREPARATION

A. Write the name of each organism on the student sheet "Coastal Food Web Questions" separately on index cards.

B. Photocopy the student sheets, one for each student.

C. Compile a small reference library so that the students can look up coastal plants and animals.

PROCEDURE

I. Setting the stage

Share the background information with the students.

II. Activities

A. Review food chains with the students. Have them suggest some simple food chains, and let volunteers role-play several food chains.

B. Give each student an index card with a coastal organism's name on it.

1. Have each student cut out a picture of the organism (from the "Coastal Organisms" student sheet) and glue it to the back of the index card.

2. Use masking tape or pins to attach each student's card to his/her clothing.

C. Have the students make coastal food chains.

1. Tell all the students with plant names to form a group.

2. Tell all the students with animal names to form a group.

3. Have the "animal" group divide itself into plant-eaters and meat-eaters. Tell the plant-eaters they are "herbivores." Tell the meat-eaters they are "carnivores."

4. Have the students link hands with other students to form food chains.

D. Have the students make a coastal food web.

1. Have all the students stand in a circle.

2. Hold up a ball of yarn or string and tell them that it will represent the links in a food web—many related food chains. Give the yarn to a student.

3. Have the student tell what organism's name and picture is on his/her card, then throw the yarn to a classmate. He/she must hold on to the end of the yarn.

4. The classmate will share the name and picture on his/her card and tell how the organism is related to the first one. (NOTE: You may have to help with this.) He/she will hold onto the yarn and throw the ball.

5. Repeat the process until all the students are holding onto the yarn and a large web has been created. This illustrates the interrelationships in the coastal ecosystem.

E. Have the students examine the student sheet "Coastal Food Pyramid." The pyramid illustrates the transfer of energy and other resources from food through food chains. Relate this to the activities above.

III. Follow-Up

A. Give each student a copy of the student sheet, "Coastal Food Web Questions." Have them answer the questions, then discuss the answers with them.

B. Give each student a copy of the student sheet, "Coastal Crossword." Have them complete the puzzle and let them check each other's papers.

IV. Extensions

A. Have students report on groups of these organisms and make sketches of lower members of the food web, especially planktonic organisms.

B. Have a seafood festival and invite a grocery store to donate seafood items for a tasting party.

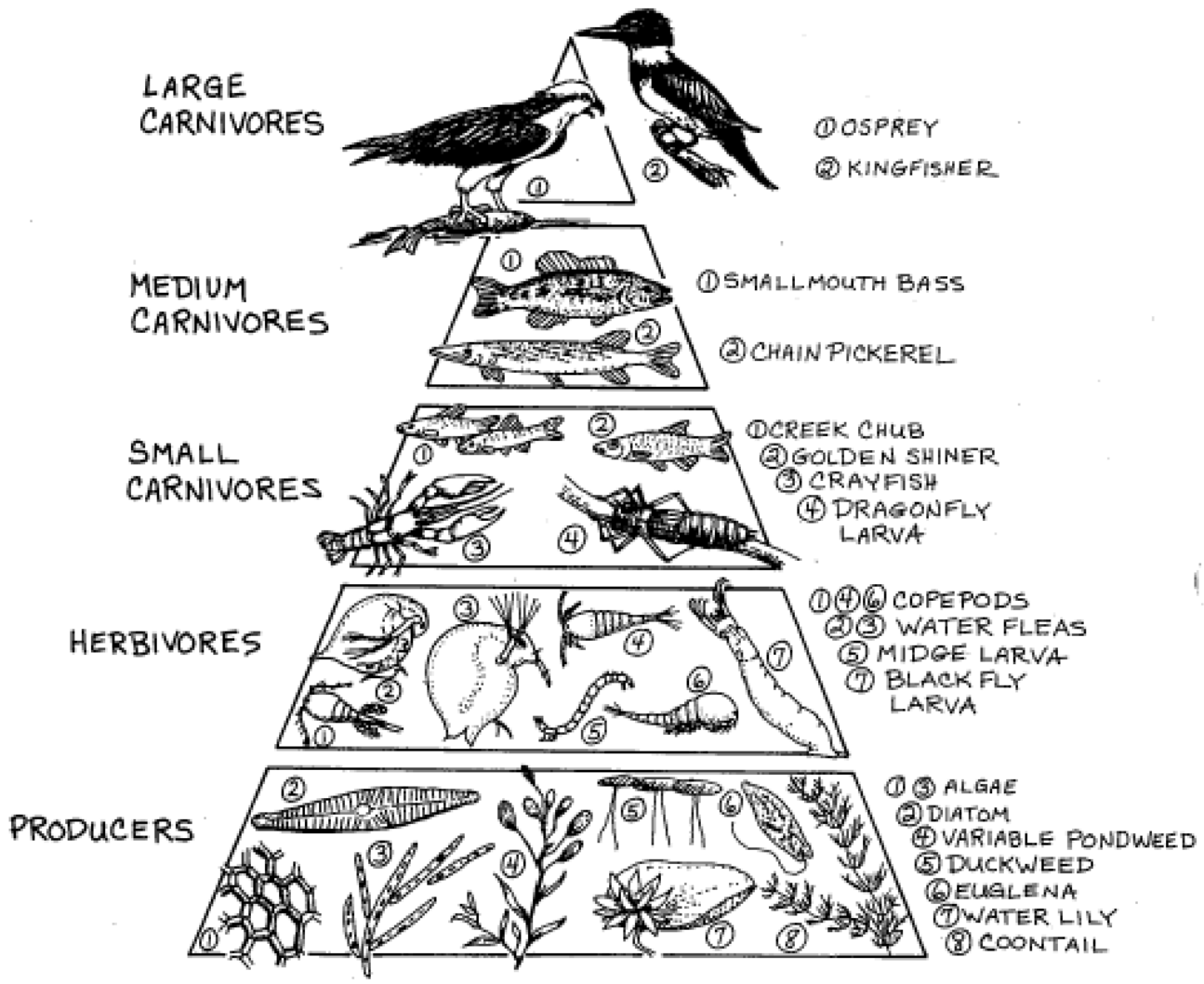
C. Give each student a copy of the student sheet, "Coastal Word Search," and have them find the hidden words. The answers are provided on the accompanying key. (NOTE: You might let the students look up definitions of unfamiliar terms for extra credit or enrichment.)

RESOURCES

"Estuaries and Tidal Marshes," U.S. Fish & Wildlife Service, Washington, DC, 1985.

Marine and Estuaries Ecology: Man and the Gulf of Mexico, Mississippi-Alabama Sea Grant Consortium, University Press of Mississippi, Oxford, Mississippi, 1984.

COASTAL FOOD PYRAMID



COASTAL ORGANISMS

COASTAL FOOD WEB QUESTIONS

1. Do plants make their own food? YES NO

2. Do animals make their own food? YES NO

3. Each of the following lists has one organism that differs from the rest. Cross off the one in each list that does not belong. Then label the list "plants" or "animals."

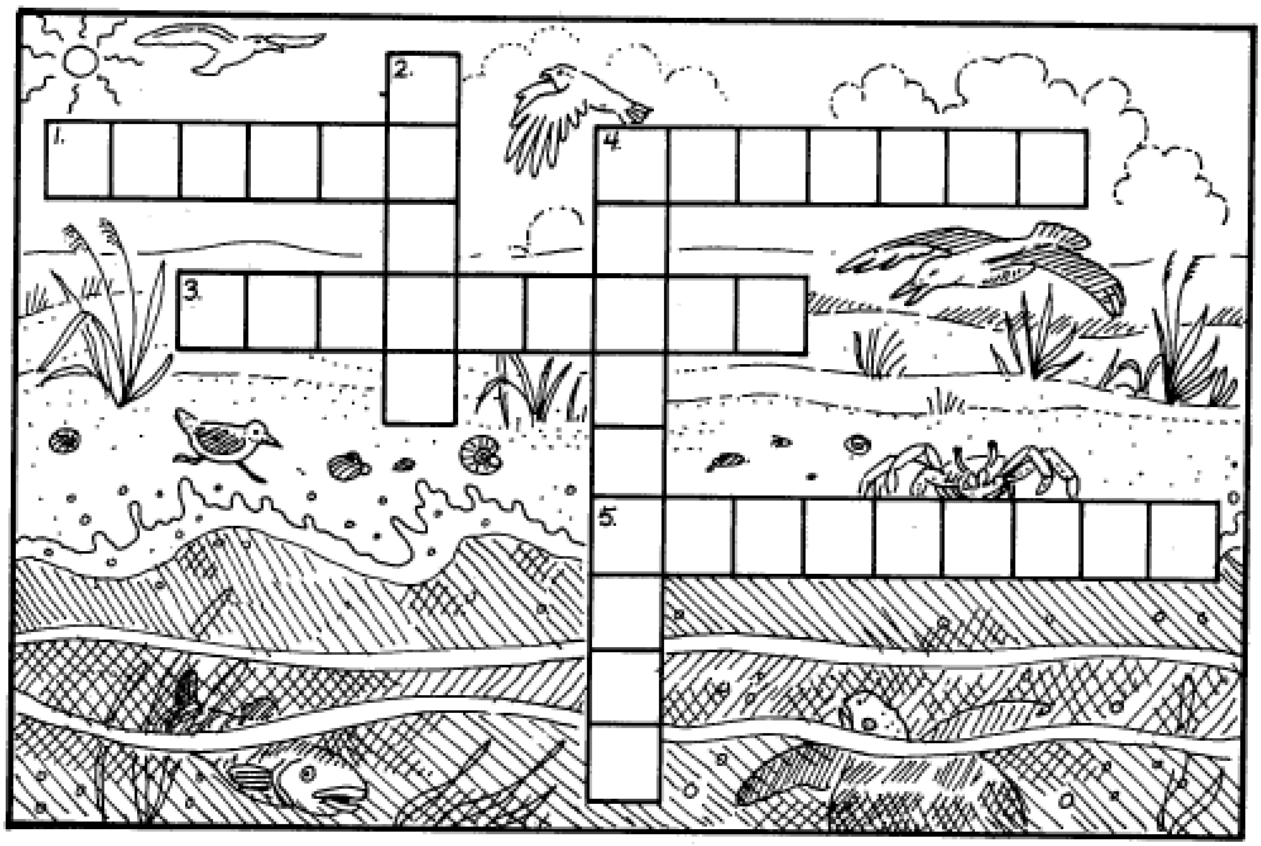
_____	_____
bald cypress	algae
crabs	eel grass
oyster	mangrove tree
osprey	alligator
_____	_____
sea bass	beach grass
harbor seal	wild rice
poison ivy	sea oats
killer whale	muskrat

4. In these lists there are plants, herbivores, and carnivores. Cross off the organism that does not belong and label the list.

_____	_____
red fox	wild celery
bald eagle	palmetto
person	deer
palm tree	cattail
_____	_____
marsh hawk	grasshopper
pelican	rabbit
manatee	mouse
blue heron	turtle

5. Make up two food chains using some of the organisms above. Each food chain must begin with a plant and must have two animals. Write the words and draw arrows between them to make the food chains.

COASTAL CROSSWORD



ACROSS

1. If you can't make your own food, you must be an _____.
3. The animal that eats meat.
4. A _____ _____ shows how food chains are related.
5. An animal that eats plants. _____

DOWN

2. If you make your own food, you must be a _____.
4. A _____ _____ shows what plant is food for what animal and so on.

COASTAL WORD SEARCH

Can you find the following terms associated with food chains?

biotic
estuary
water
producers
algae
swans
catfish
food
zooplankton
radiant
tides
benthic
striped bass
mink
owls
clam
snakes
disease
carnivores
decomposers
crabs
ducks
geese
omnivores
detritus
salinity
herbivores
marsh
oyster borer
oyster
muskrat
copepods

D H A S N M A B K D E U C F H J I E K R C O K T M B Q R Z
C L O P H I T L L B K T S K B H X S Q M O E K G B L G F W
W D C T M N C F H J P R A D I A N T Q B N C K E F J H N T
K L A T P H R H O B G M L N R C Z U F D S J E O I L M S R
H E R B I V O R E S Z F G L T Q R A B F U A H J K Q X A L
B X T D G L T M U S K R A T P R R R D H M F J N D Z Q W C
T O M M P Y T W B P T F E C Y A F Y D B E N T H I C B L N
T P H H B R K Y E S R F C K C Q N D H S R H J K S Q X A L
D T X Z F O O D Q F E R H Z A L G A P T B C K X E U I M M
C N R C F G Y D H X K I O R R Z A Z O Y T L O X A R W D N
M C A T F I S H U T A T X L N M O M B X M L D P S H J F T
T M X G R H T P L C I X M M I H Z A U J F F G K E P A E I
S D A D G J E K L M E N O P V Q B R C M P Q F H J P X T X
K F B D E T R I T U S R X Z O W L S D P P D Q U N L O F B
P G C O U F G I X K M Q S T R P O H M M M P C B M J Y D B
A O Z K L P H I M C D B Q O E O M O I D W X W S B H S C S
R B C O M N I V O R E S T F S A L I N I T Y A T S E T C H
H D I G O L E K U F C Q S B X N J S K Z I Z Z R X E E F W
W Z O O P L A N K T O N D P M L T C Q B D T B I Q F R R S
Q S W R T B C K Z V M T U Y V D B P A K E V I P U T B J K
C B P C Q I T F J W P Z S P J S N A K E S A Z E W Q O L X
T B I O T I C H M G O C L V K W O T B G R H T D F F R J G
A F O F W M K R H J S N T O O A E M N G L X H B B P E M O
E T V O V L N T A X E B T V M N F U Z G H K W A T E R L G
X C M G Y J G M V B R I K B T S Q V W Y J O J S L X D G P
Z F K R B C D U C K S Q R H C L M H H J G E E S E L C R X

COASTAL WORD SEARCH
ANSWER KEY

Can you find the following terms associated with food chains?

biotic	zooplankton	snakes	detritus
estuary	radiant	disease	salinity
water	tides	carnivores	herbivores
producers	benthic	decomposers	marsh
algae	striped bass	crabs	oyster borer
swans	mink	ducks	oyster
catfish	owls	geese	muskrat
food	clam	omnivores	copepods