DOCUMENT RESUME

ED 142 430 SE 022 818

TITLE	Environmental Studies Center Teacher Books. 3rd Grade - Grassflat Communities.
INSTITUTION	Martin County Schools, Jensen Beach, Fla. Environmental Studies Center.
PUB DATE	76
NOTE	61p.; For related documents, see SE 022 815-823; Not available in hard copy due to marginal legibility of original document
AVAILABLE FROM	Environmental Studies Center, 2900 NE Indian River Dr., Jensen Beach, Florida 33457 ($2.00; all 9 books $20.00)
EDRS PRICE	MF-$0.83 Plus Postage. HC Not Available from EDRS.
DESCRIPTORS	Curriculum Development; *Ecology; Elementary Education; *Elementary Grades; *Environmental Education; Grade 3; Instructional Materials; Learning Activities; Nature Centers; *Oceanology; Outdoor Education; *Teaching Guides
IDENTIFIERS	*Estuaries; *Florida

ABSTRACT

This teacher's guide, one of nine teacher packages developed for use in the sequential, hands-on, field-oriented, K-8 environmental education program of the Martin County Schools in Florida, was developed for use with elementary children in grade three prior to and after a visit to an environmental studies center located near an estuarine area. The grade three program centers around the concept of "Saltwater Grassflat Communities" and begins the fact-finding, data collection phase of the program. Students literally get into a saltwater grassflat community, and collect and interpret data about it. This guide contains teacher instructions, scripts, tests with answer keys, and a copy of all student materials. Flash cards and slide/tape programs are not included. General and specific program objectives are stated and a program outline, including learning activities to be completed at the school and environmental studies center, is detailed. (BT)

3rd Grade

Grassflat Communities

Martin County Schools'
ENVIRONMENTAL STUDIES CENTER
2900 NE Indian River Drive, Jensen Beach, Florida 33457

2

TABLE OF CONTENTS AND CHECKLIST

This packet contains teacher instructions, scripts, test with answer key and a copy of all student materials.

We suggest you cover these materials in the order listed in this packet.

In parenthesis after each item is the quantity you will need for your class and whether it is expendable or to be returned.

* Also listed but not included in this booklet are items such as flash cards, slide/tapes, feltboard and pieces, etc.

CONTENTS:

THIRD GRADE PROGRAM SUMMARY

GENERAL OBJECTIVE: To acquaint the student with a saltwater grassflat community and provide him evidence that he is an integral part of it resulting in his successful completion of the performance activities for the specific objectives.

SPECIFIC OBJECTIVES: The student will on the test

1. identify 8 of 10 organisms when given their characteristics and 10 sets of 4 pictures to match
2. identify 8 of 10 vocabulary words related to the child's grassflat experiences when given 10 definitions and 4 choices for each
3. construct a simple 3 item food chain when given 5 sets of 3 items with 80% accuracy
4. identify physical factors of importance to a saltwater grassflat community and predict how changes in these factors would affect a particular community when given 5 propositions with 4 alternatives with 80% accuracy

PROGRAM OUTLINE:

A. Activities at home school

1. Slide/tape programs - "Food Chains", "Vocabulary", "Organisms", "Grassflats"
2. "Grassflat" booklet and workbooks
3. Animal flash cards
4. Vocabulary flash cards
5. Food chain discussion sheets
6. Food chain practice sheets
7. Seining instructions
8. (Visit to Center)
9. Data sheets for use at Center and follow-up
10. Post-test

B. Activities at Center

1. Seining - students seine in the river and collect typical river organisms
2. Measurement - students measure distances from plant line to water's edge and from water's edge to grassflat. Record plants and animals found, also measure temperature of air, water and soil, and record general weather conditions
3. Lab I - discussion of physical factors of the grassflat area including salinity, sunlight, temperature and tide conditions
4. Lab II - discussion and observation of plankton using stereo miscroscopes
5. Distill fresh water from salt water
6. Food chain - formation of typical food chains with paper cutouts
7. Museum and wet lab visit - students observe and handle live specimens from local aquatic communities

THIRD GRADE TEACHER INSTRUCTIONS

INTRODUCTION: There are four major units in this program: Saltwater Grassflats; Vocabulary; Food Chains; and Seining. We suggest that you allot one class period a day for two weeks just prior to your visit (more if you feel your students need it) to cover the material.

Your visit to the Center will give each child an opportunity to seine, collect, identify and study fish and other inhabitants of the Indian River.

If we can be of assistance to you in the successful presentation of this material, do not hesitate to call us.

PROGRAM AND MATERIALS

Refresh student's memory as to the Environmental Studies Center, where we are, what our purpose is: to create an environmental awareness which can be carried into the home, school and community, and serve as a center for collection, study, and dissemination of data.

Unit I: What Makes Up a Salt-water Grassflat?

If this is an area new to you, prepare first by reading the teacher supplement: Indian River Lagoon. It will give you a background.

To be included:

1. any information from your pamphlet
2. experiments on physical factors
3. slide/tape presentations that accompany this unit
4. student booklet "What Makes Up a Salt-water Grassflat?"

Physical Factors

You will need radish, bean or squash seeds along with corn seeds for the following experiments:

A. Light Experiment

Plant a corn seed in each of 4 test tubes. Place the seed between the blotter and the glass of the tube. Now add some water so the blotter is soaked. Keep enough water in bottom so blotter will remain soaked. Now place 2 tubes in moderate light and 2 in the dark. Observe the tubes over a period of 2 weeks. What should happen?

1. the seeds start to grow
2. plants in light grow green, ones in dark remain white
3. if kept in these conditions, plants in dark will die

Why?

A seed is provided with enough inherent energy to push its way through the ground till it reaches light. After that, photosynthesis must provide the energy the plant needs or it will die.

(See also pp. 13-14 of Concepts in Science text)

B. Oxygen and Water

All plants and animals need oxygen and water to survive. The human body is 65% water. Water has oxygen in it.

Experiment I: Take a glass - pour some water in it - cover it. Observe over several hours. Bubbles will form. This is oxygen leaving the water.

Experiment II: Take 4 corn seeds - put 2 in each test tube. Water one as directed before and leave the other dry. Observe results over 2 weeks. All plants need water. What about animals?

1. Why do the astronauts bring oxygen to the moon with them?

2. Could a man live without any water? (Don't forget - many foods have water. For example: watermelon 95%)

C. Temperature

Soak 10 radish, bean, or squash seeds between damp paper towels overnight. The next day plant 2 seeds in soil in each of 4 paper cups about 1/2" below surface.

Place remaining 2 seeds into an ice cube division of a refrigerator ice tray.

Now place 2 cups on a window sill and 2 cups in the refrigerator. After 2 days take the 2 cups from the refrigerator and place on window sill. Plant the seeds in the ice cube in a 5th cup and place it on the window sill. Keep ALL soils moist.

RESULTS: Low and freezing temperatures kill seeds once they begin to germinate. Normal temperatures are necessary for plants to develop.

D. Bottom

Take 8 bean seeds and place 2 in each of 4 cups filled with (1) sugar sand (2) garden soil (3) rocks (4) humus. Water regularly and give sufficient light.

After 2 weeks observe results.

Bottom makes a difference to these plants as it does to the grasses in the grassflats.

The bottom must be good for attachment and provide nourishment for the plants.

(Refer to pp. 166-67 in Concepts for additional information)

E. The slide/tape presentation, "What Makes up a Saltwater Grassflat?" covers most of the physical factors investigated in A thru D.

Biological Factors:

A. Organisms to be identified

1. pipefish
2. blowfish
3. stingray
4. pelican
5. blue heron
6. grass shrimp
7. clam
8. oyster
9. hermit crab
10. blue crab
11. horseshoe crab

B. The booklet "What Makes Up a Salt-water Grassflat?" deals with organisms found there. This would be a good way to begin this section.

C. A set of flashcards will also be provided for you to use with the class or to allow students to use individually. These flashcards include the 11 basic organisms and a number of others.

D. Slides of these 11 organisms will also be provided so that the student can identify them both from a drawing and photograph.

E. Possible related activities:

1. Handwriting: practice the organisms' names
2. Spelling bee

Unit II: Related Vocabulary

A. To be incorporated as much as possible into the entire program, but to also be intensified in a unit of its own.

This unit can replace or enhance your language art sections until a positive response of 8 of 10 is achieved by the majority of your students.

B. Words to be studied:

1. grassflat
2. salinity
3. environment
4. habitat
5. nursery
6. population
7. plankton
8. seine
9. food chain
10. microscope

C. At the end of the teacher's instructions is a glossary of terms so that a uniform definition will be available to you.

D. Included in this unit is a student workbook, slide/tape program, and flash cards

Unit III: Food Chain

This unit includes all the information in the 3rd Grade unit on GRASSFLATS. The student must use his knowlege to form a logical food chain. Included in this unit are:

A. Slides on Food Chain

B. Booklet - for individual or group work

C. Practice sheet

D. The flashcards can be used to make your own food chains

Unit IV: Let's Go Seining

This unit gives the student instructions on how to seine.

. . . .

This concludes the classroom Pre-Activities. You should now be fully prepared for a visit to the Environmental Studies Center. Please let us know which activities were/were not successful, and what activities of your own you may have added. After your visit to the Center we suggest at least one day of review before giving the test.

TEST

To post-test your student for your records, copies of the test and answers are included. The test is to be given after your students visit the Center. The test mean for 1974-75 Third Grade students completing a full program was 77.5.

Teacher Vocabulary Glossary

Grassflat	- grassy areas which are seldom exposed, growing in shallow water
Food chain	- sequence of organisms starting with the green plant, in which each is food for a higher or more complex organism
Environment	- all the factors that affect an organism or group of organisms
Habitat	- place where an organism lives
Plankton	- usually microscopic plants and animals that float or drift in water
Miscroscope	- an instrument which enables us to see organisms too small for the naked eye
Nursery	- a habitat, usually protected, where the young stages of marine organisms live
Seine Net	- a type of net used to collect aquatic specimens
Population	- the number of plants or animals in a given area
Salinity	- a measure of the quantity of dissolved salts in sea water

THIRD GRADE CENTER ACTIVITIES

4 TO 5 HOURS

I. INTRODUCTION - Topics include:

1. Saltwater grassflat
2. Data sheets to be used in the field
3. How the equipment is used in order to get data
4. How to use a seine net

II. RIVER VISIT

Students make about three sweeps in the grassflat with seine nets. After each sweep they will identify and count animals found and record this information on their data sheets. They will release all animals except one of each that cannot be identified in the field.

III. MEASUREMENT

Students measure distances from the plant line to the water's edge and from the water's edge to the grassflat. Students also measure the temperature of the air and water.

IV. CLEAN UP AND LUNCH

After returning to the Center students will be asked to help clean up the nets and other pieces of equipment. The students themselves will be hosed down and given a chance to change into dry clothes and use the bathroom.

Rooms are available in which students may eat lunch; however, if the weather is nice why not have a picnic on the patio?

V. LAB I

Students discuss physical factors of the grassflat. General topics include: salinity, sunlight, temperature and weather conditions.

VI. LAB II

Students discuss and observe plankton with the use of stereo miscroscopes.

VII. LAB III

Students will observe the process of distilling fresh water from salt water.

VIII. ART ACTIVITY

Students will construct food chains from animals found in the field. If there is time they will also draw pictures of a saltwater grassflat.

IX. MUSEUM AND WET LAB

Students will view aquariums and observe the variety of organisms found in the Indian River lagoon. They will also pick up various organisms found there.

INDIAN RIVER LAGOON

The Grassflat Habitat

Habitat is defined as the place where a plant or animal lives. In your visit to the Environmental Studies Center, you and your students will be introduced to a specific kind of habitat - a salt water grassflat. You will see grassflats covering large areas of the Indian River lagoon.

For a grassflat to exist in the Indian River, certain conditions must be met. First, a substrate (soil) is necessary for the grass to attach its roots, for these plants are not free-floating or carried about by the tide as plankton is.

Second, you will notice that the grass grows in relatively shallow water. Sunlight must be able to penetrate to the grass if it is to supply sufficient energy for photosynthesis to take place. You will also notice that the grass is seldom completely exposed at low tide. Obviously the grass needs to be covered by water most of the time.

With these two factors - water deep enough to cover the plant, yet shallow enough to allow sunlight to penetrate - you can begin to see some of the physical limiting factors considered in an environmental study of a grassflat habitat.

Other important physical factors for this type of habitat would be: current, temperature range, pressure, salinity range, amount of oxygen, carbon dioxide and minerals present.

Living within this environment are plants and animals well adapted to it, displaying an interrelationship of animal dependence upon plant and plant dependence upon animal. You will note various types of algae on the grassflat, both microscopic and macroscopic. Most of those which are free floating are contingent upon the tides. Other algae may be trapped by or attached to the grass.

Microscopic examination of the water reveals tiny planktonic forms of plants and animals. The phytoplankton (plants), along with the grasses, is a primary energy source for other inhabitants of the grassflat. We often think of terrestrial plants as our major oxygen producers. In truth the phytoplankton of the world's water produce about 90% of our oxygen supply.

Zooplankton is made of of one-celled animals and both larval and adult forms of many multicellular animals. These are generally the first order consumers. They feed on the phytoplankton. The zooplankton are fed upon, in return, by larger animals, the second order consumers. This process continues with larger generally feeding on smaller until a continuous food chain is formed. Since the same organisms are common in many different food chains there is an intermeshing of food chains within a habitat forming a food web.

Associated with the salt water grassflat are long-legged wading birds (herons) which are predators. If you dig into the soil, you will find various forms of worms. Certain organisms such as crabs function as a sanitation department by consuming detritus and dead organisms. Parasites and saprophytes (including certain fungi and bacteria) play their role in helping recycle organic materials

through the system.

A typical sweep of a grassflat with a seine net turns up a variety of organisms. Some examples are game fish such as snook and trout. Others might be snapper, sheepshead and blow fish. Also plentiful in this habitat are several species of shrimp as well as crabs (spider, hermit and blue).

Other common animals found at various seasons are pipefish, horseshoe crabs, sea squirts and flounders. You will often see egg masses and egg cases attached to grass blades.

A plentiful food supply is not the only reason we find these grassflat inhabitants. Examination will show most of them are comparatively small. They can live in shallow water and find a safe hiding place in the grass.

We can liken the grassflat to a nursery. Removing any link in the food chain, or drastically altering the physical environment could disrupt the habitat. One obvious result would be the economic loss to the community of mature gamefish and crustaceans.

VOCABULARY

ALGAE - plants with chlorophyll, but lacking true roots, stems and leaves

BENTHIC ZONE - bottom zone of river or ocean

BRACKISH - water which has low salt content; water in which salinity ranges from approximately 0.5 to 17.0 parts per thousand

CARNIVORE - any organism that eats meat exclusively

COMMUNITY - a group of interdependent populations of organisms in a particular environment

CONSUMER - in a food chain, a plant or animal that must depend upon other plants and animals for its energy for living.

CRUSTACEA - a class of arthropods which breathe by means of gills, and the body is covered by a hard shell or crust; also have two pair of antenna; includes barnacles, shrimp and crabs.

DETRITUS - bits of food; dead leaves, twigs, algae, etc.; remains of animals.

ECOSYSTEM - the interaction in time and space of the biological community and the physical environment.

ENVIRONMENT - all the factors that affect an organism or group of organisms

ESTUARY - a partially enclosed section of a coastal body of water where a river meets ocean tides, producing a mixture of salt and fresh water.

FOOD CHAIN - sequence of organisms starting with the green plant, in which each is food for a higher or more complex organism

FOOD WEB - the many connected food chains by which organisms of a community obtain their energy

GRASSFLAT - a salt water habitat characterized by marine grass in shallow water

HABITAT - the place where an organism lives

LAGOON - an area of salt or brackish water separated from the sea by low sand-banks.

LARVA - early form of any animal that at birth is unlike its parents and must pass through one or more metamorphoses (changes) before assuming the adult characteristics

LIMITING FACTOR - any factor that tends to slow down growth in an ecosystem; a regulatory factor.

MACROSCOPIC - easily seen by the unaided eye

MICROSCOPIC - too small to be seen without the use of mangification

MOLLUSCA - a phylum of invertebrates with soft, unsegmented bodies covered by a fleshy mantle which usually secretes a shell; chiton, snail, oyster, squid

NICHE - the interaction of a specific organism with its environment

NURSERY - a habitat,usually protected, where larval stages of marine organisms live

ORGANISM - any living thing

PARASITE - an organism that lives in or on another organism from whose body it takes nutrients, thus harming it to some extent

POPULATION - groups of individuals of any one kind or organism in a community

PELAGIC ZONE - ocean water zone beyond the continental shelf

PHOTOSYNTHESIS - the process by which plants with chlorophyll use light energy to manufacture carbohydrates and release oxygen

PHYTOPLANKTON - the plants occuring in plankton; diatoms and dinoflagellates

PLANKTON - usually small plants and animals in water that drift with the currents

SALINITY - a measure of the quantity of dissolved salts in sea water, usually expressed in parts per thousand.

SAPROPHYTES - an organism that secures its nutrients from dead or decaying matter

SESSILE - attached; not free swimming; e.g. barnacles, oysters, sea squirt, etc.

SYMBIOSIS - association between unlike living plants and animals in which one or both are benefited and neither is harmed.

TERRESTRIAL - land, as opposed to water or air

ZOOPLANKTON - animal forms of plankton, including copepods, protozoans, eggs, larvae

3rd Grade Slide Presentation

"What Makes Up a Saltwater Grassflat?"

TEACHER - Turn on projector to "Focus" slide. Turn on tape player. Advance the slides at the audible tone (or, if you are reading the narration to your class, advance where indicated by the asterisk (*). The narrative is in CAPITAL letters.

1. Focus *

2. "Credits" slide *

3. "An Environmental Study Unit on Grassflat Communities" *

4. WHAT MAKES UP A SALTWATER GRASSFLAT? *

5. THE SHALLOW AREAS OF GRASS IN SALT WATER ARE CALLED SALTWATER GRASSFLATS *

6. THERE ARE CERTAIN THINGS THAT ARE VERY IMPORTANT IF A SALTWATER GRASSFLAT IS TO LIVE. THERE ARE FIVE BASIC THINGS. CAN YOU NAME THEM? (Pause) LET'S SEE IF YOU WERE RIGHT. *

7. FIRST, OF COURSE SALT WATER IS IMPORTANT TO THE GRASSFLAT. *

8. TWO, A GOOD BOTTOM IS IMPORTANT FOR THE GRASS TO ATTACH TO. *

9. THREE, ALL LIVING THINGS NEED SUNLIGHT. IS THE GRASS IN THE SALTWATER GRASSFLAT ALIVE? DOES IT NEED SUNLIGHT? *

10. FOUR, ALL LIVING THINGS NEED OXYGEN. THE PLANTS AND ANIMALS OF THE SALTWATER GRASSFLAT NEED OXYGEN. PLANTS GET OXYGEN FROM THE WATER AND SOIL. *

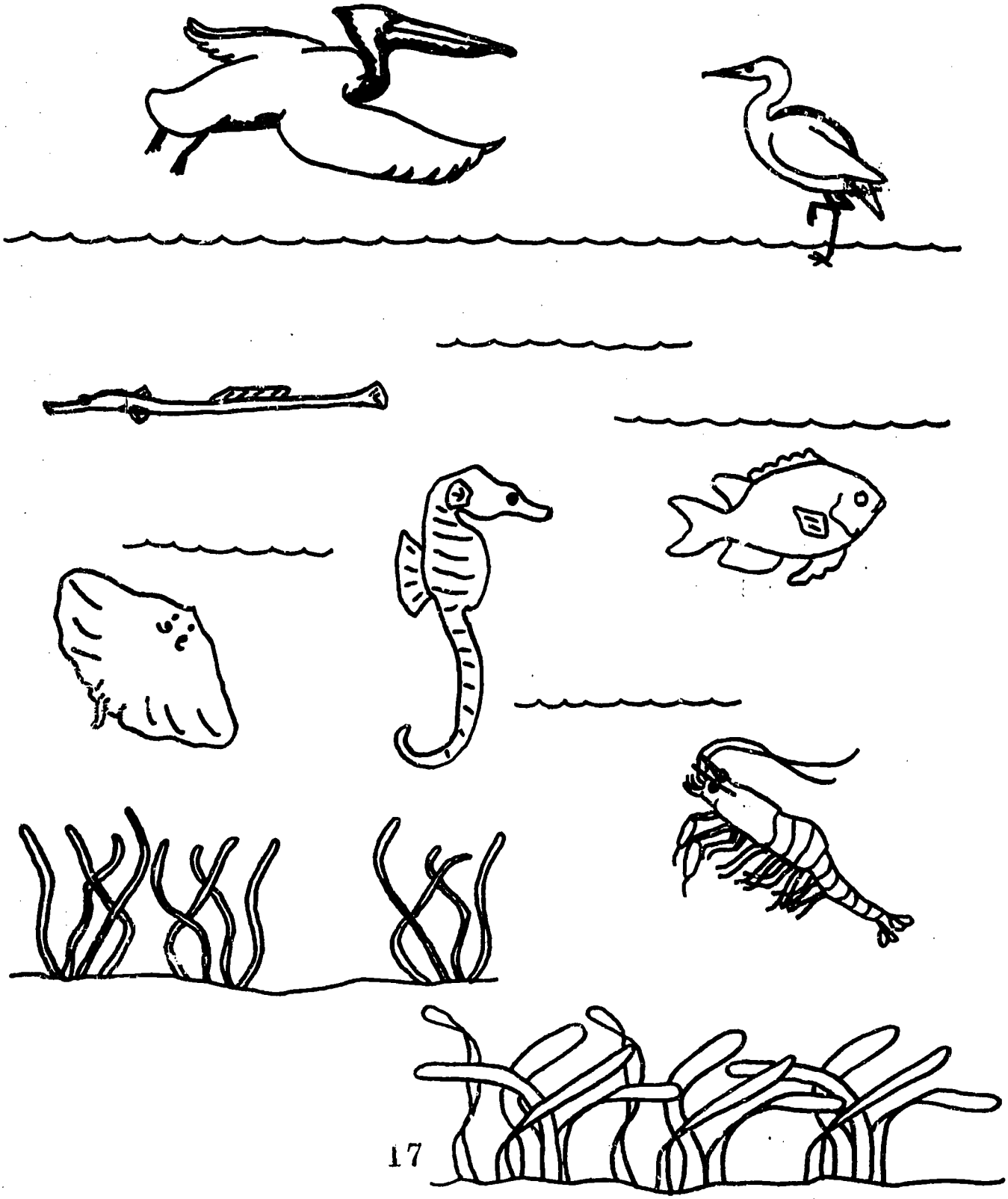
11. AND, FIVE, THE TEMPERATURE MUST BE NORMAL. THE GRASS WILL DIE IF THE TEMPERATURE DROPS TOO LOW. AND, IF THE WATER GETS TOO WARM, THE OXYGEN LEAVES THE WATER AND THERE IS NONE LEFT FOR THE PLANTS. *

12. IF THE SALTWATER GRASSFLAT HAS ALL THESE THINGS, IT CAN GROW AND SERVE AS A HOME FOR THE MANY ANIMALS THAT LIVE THERE. *

13. SALTWATER GRASSFLATS ARE AN IMPORTANT PART OF OUR ENVIRONMENT.

14. The End.

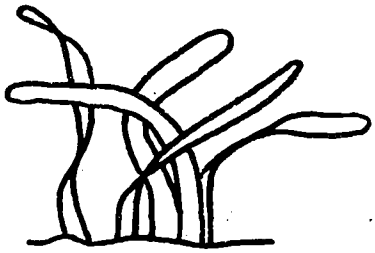
WHAT MAKES UP A SALTWATER GRASSFLAT

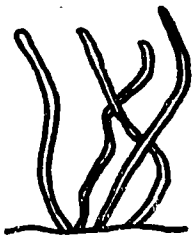


WHAT MAKES UP A SALT WATER GRASSFLAT?

The answer to that question is easy! GRASS makes up a saltwater grassflat Different types of grass are found there. The wide-bladed grass that grows there is called TURTLE GRASS. The grass with the thinner, rounded blade is called MANATEE GRASS. These are the types we find most often.

Which of these drawings is manatee grass?





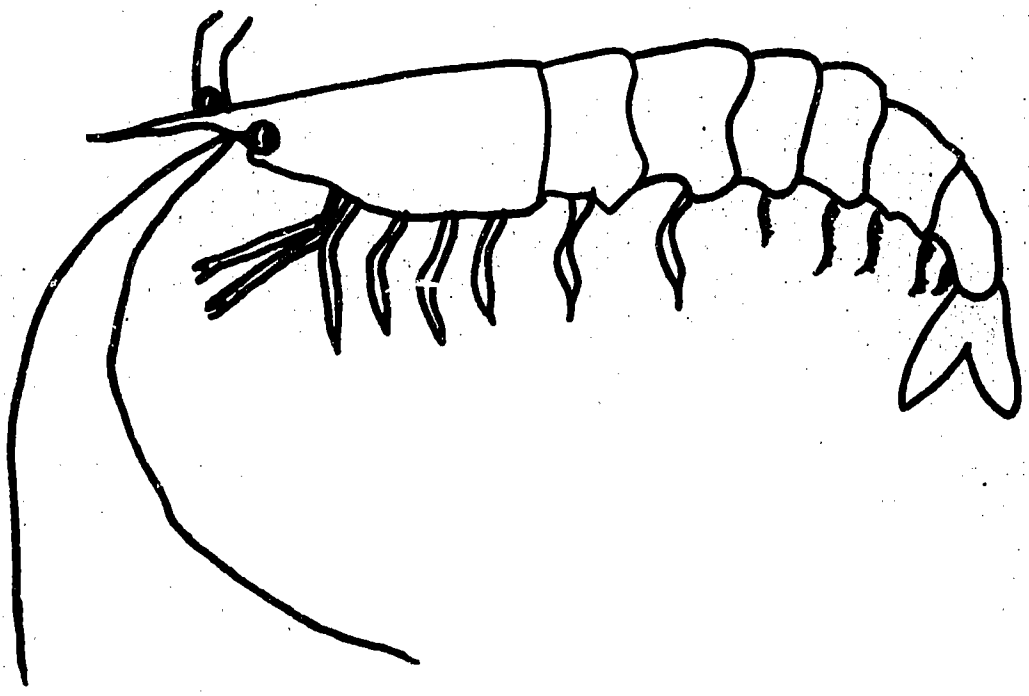
There are also many other things that help make up a grassfalt. The river bottom is needed for the plants to attach themselves to. Water is also needed. In this case, it's SALT WATER. The water must be shallow so sunlight can reach the plants that grow in this grassflat. Without sunlight, green plants will die.

Which of these plants do you think were in the closet for two weeks? WHY?

The temperature of the water is also very important. If the grassflat is to live, the water cannot be too cold, or too hot.

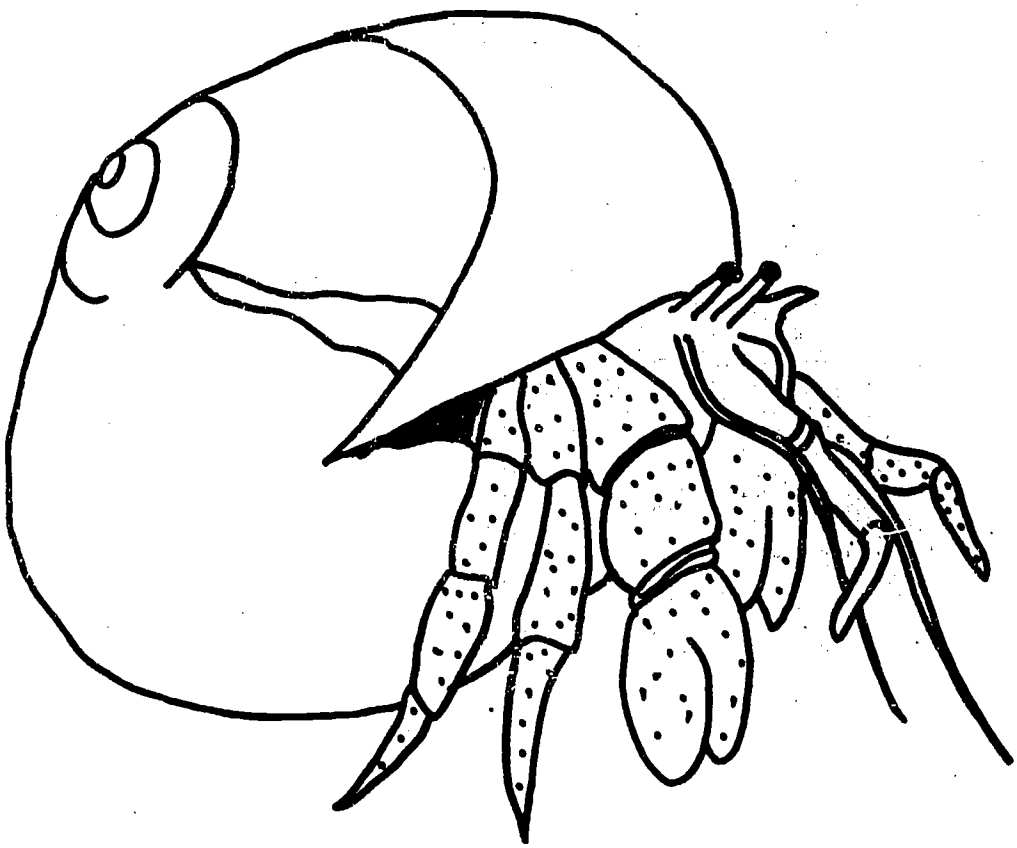
If conditions - such as the bottom, sunlight and temperature are just right, many living plants and animals will be found. What are these plants and animals? What do they eat? Try to answer these questions. The next few pages will help you.

Grass Shrimp



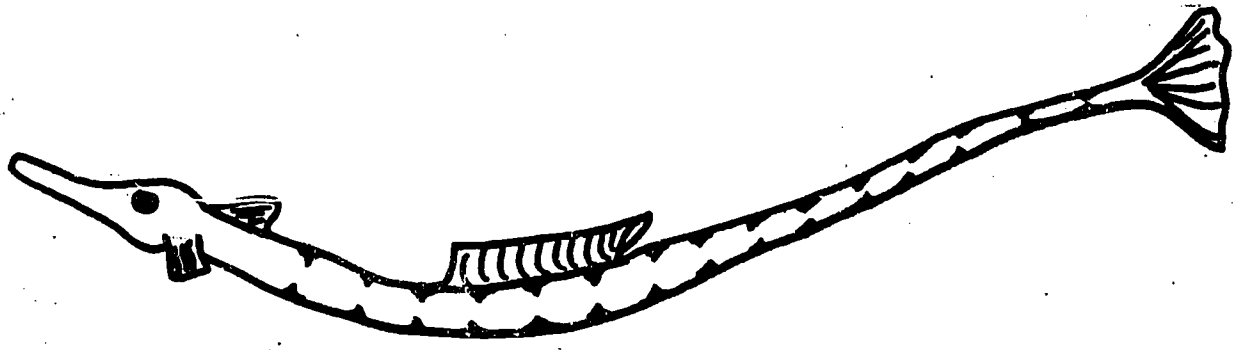
SHRIMP are little animals who live in the grassflat. They are good cleaners. They eat algae and dead plants found in the grassflat.

Hermit Crab



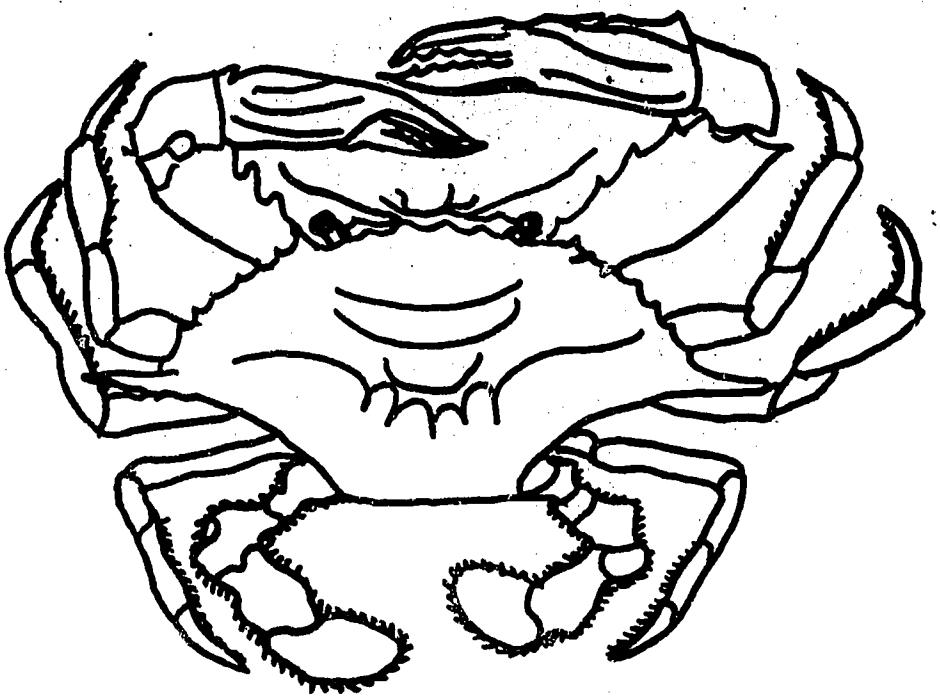
The HERMIT CRAB is a strange little fellow, who lives in the shells of dead animals. As he grows, he moves to a larger shell. He eats dead plants and shrimp.

Pipefish



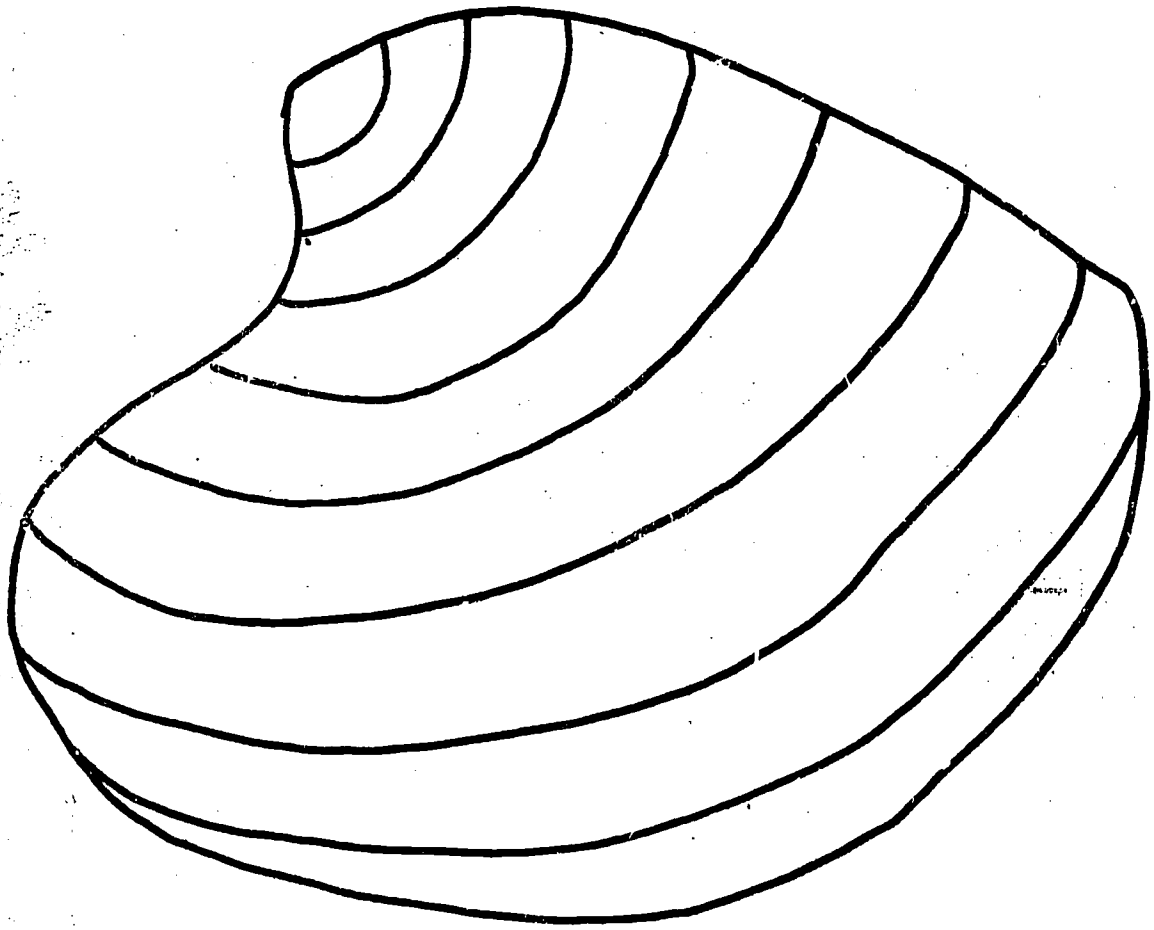
The PIPEFISH is a cousin of the seahorse. He can swim straight up, which is something no other fish can do. He usually eats small shrimp.

Blue Crab



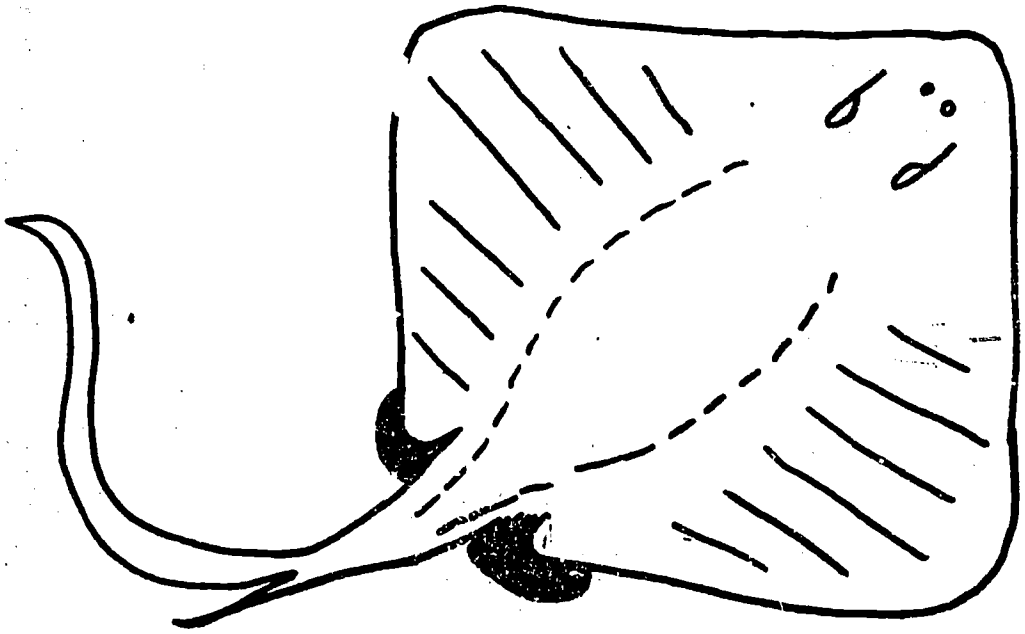
The BLUE CRAB is a mean animal found in the grassflats. It can swim in the water or bury in the bottom. It uses strong pinchers to catch its food. The BLUE CRAB eats fish, algae, grass and dead plant and animal parts.

Clam



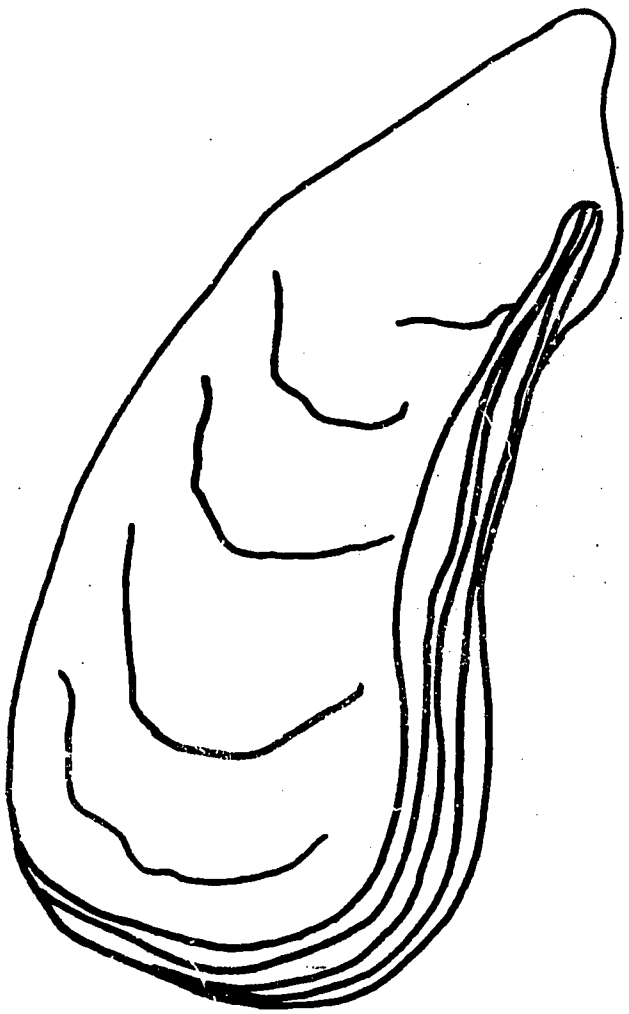
The CLAM is a shelled animal that can be found buried in the bottom of the grassflat. It eats the free floating plants and animals called PLANKTON, that are found in the water around the grassflat.

Stingray



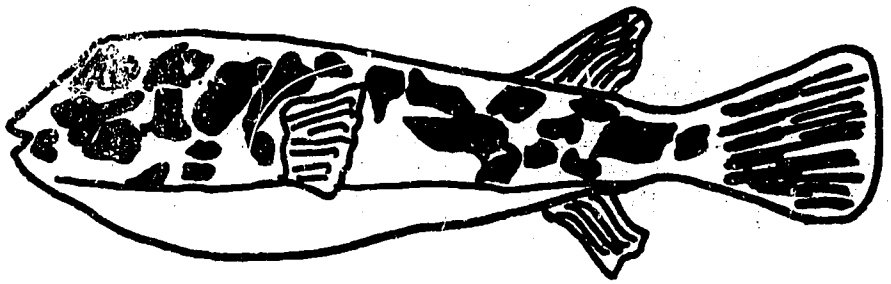
The STINGRAY is a very shy creature of the grassflats. He is not at all like his mean cousin, the shark. He is easily scared away, but if you should happen to step on him, his barb can be very painful. He likes to eat clams, who like himself, burrow into the ground.

Oyster



The OYSTER lives in the shallow waters of the river. This shelled animal must live attached to something, like a rock, or shell, or some roots. The OYSTER eats dead plant parts and plankton.

Puffer

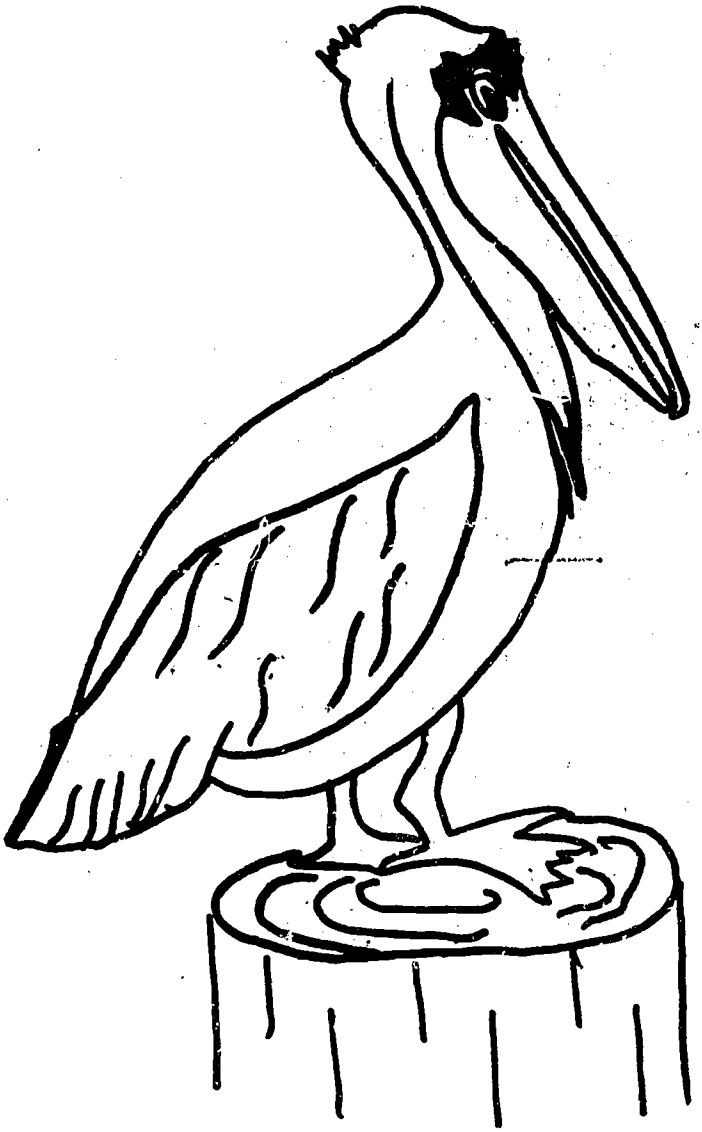


The PUFFER is one of many fish that you will see out in the grassflats. When he is faced with an enemy, he inflates himself like a balloon, so that he looks much bigger than he really is. The PUFFER is a meat-eater. He will eat almost anything.

Blue Heron

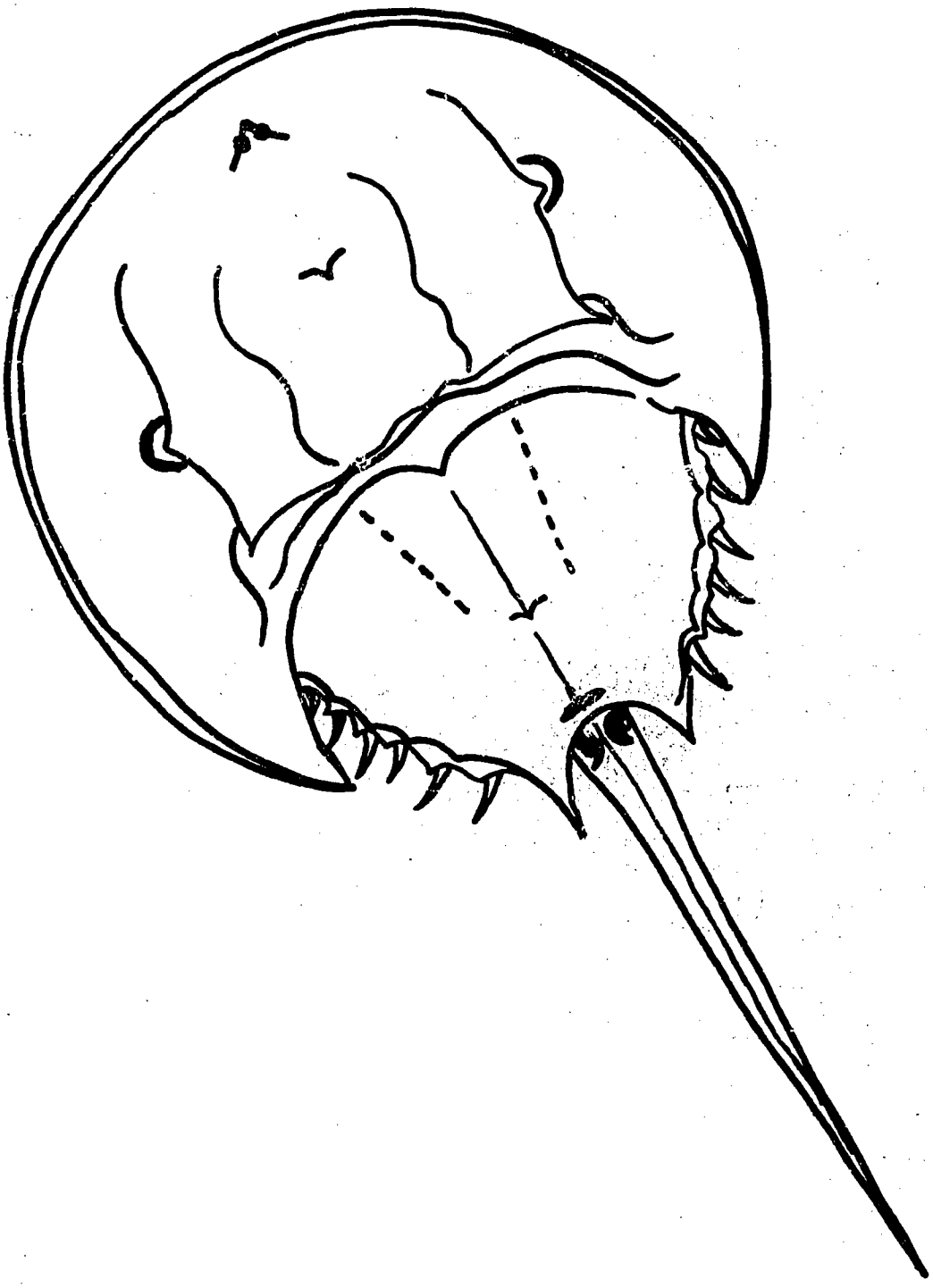
This long legged fellow does not live in the grassflat, but he does spend a lot of time there. The HERON eats the fish that live there.

Pelican



This is a bird that many of us see quite often. He nests on the islands in the Indian River and dives into the water using his large throat pouch to scoop up fish.

Horseshoe Crab



The HORSESHOE CRAB is not a true crab but is more closely related to the scorpion. The crab breathes through gills, and in deep water swims on its back. The HORSESHOE CRAB eats tiny fish, shrimp, and just about anything it finds on the bottom of the river.

Martin County School's
Environmental Studies Center
2900 N.E. Indian River Drive
Jensen Beach, Fl. 33457

3rd Grade Slide Presentation

"Organisms"

TEACHER - Turn on projector to "Focus" slide. Turn on tape player. Advance the slides at the audible tone (or, if you are reading the narration, at the asterisk (*). The narration is in CAPITAL letters.

1. Focus *

2. "Credits" slide *

3. "An Environmental Study Unit on Grassflat Communities". *

4. "Organisms" WHAT ARE ORGANISMS? THEY ARE PLANTS AND ANIMALS! LET'S LOOK AT SOME OF THE ANIMALS WE MAY COME ACROSS IN THE GRASSFLAT COMMUNITY. *

5. DO YOU KNOW THE NAME OF THIS STRANGE ANIMAL? IT'S A PIPEFISH. HE IS RELATED TO THE SEAHORSE. BECAUSE OF HIS SMALL FINS, HE IS A POOR SWIMMER. *

6. THIS MEAN LOOKING ANIMAL IS A BLUE CRAB. HE LIVES ON THE RIVER BOTTOM AND WILL ATTACK JUST ABOUT ANYTHING. MANY PEOPLE ENJOY EATING BLUE CRABS. DO YOU LIKE BLUE CRABS? *

7. HERE WE HAVE AN OYSTER. THIS ANIMAL MUST LIVE ATTACHED TO SOMETHING. IT IS A PLANKTON EATER AND ALSO MAKES GOOD FOOD FOR MAN. *

8. THIS IS ANOTHER SHELLED ANIMAL. IT IS CALLED A CLAM. THIS ANIMAL CAN BE FOUND BURIED IN THE MUD OF THE RIVER. SEA STARS OFTEN EAT CLAMS. *

9. WE SOMETIMES SEE THIS ANIMAL WALKING IN OR NEAR THE GRASSFLATS. HE IS A HERMIT CRAB. HE IS BORN WITHOUT A SHELL, AND SINCE HIS BODY IS SO SOFT, HE MUST FIND A HOME. HE USUALLY LIVES IN AN EMPTY SNAIL SHELL. AS HE GROWS, HE MUST FIND LARGER SHELLS TO LIVE IN. *

10. THIS LITTLE ANIMAL IS A GRASS SHRIMP. HIS TINY BACK LEGS ARE CALLED SWIMMERETS AND HELP HIM SWIM VERY QUICKLY. HE MAY SERVE AS FOOD FOR MANY OTHER ANIMALS OF THE GRASSFLATS. *

11. THIS IS AN ANIMAL WE MUST WATCH OUT FOR WHEN WE ARE IN THE RIVER. THIS IS A STING RAY. HE BURIES IN THE SAND TO HIDE AND IF YOU SHOULD STEP ON HIM, HE HAS A

SHARP POISONOUS BARB ON HIS TAIL THAT CAN BE VERY PAINFUL. *

12. THIS LONG LEGGED CREATURE IS CALLED A BLUE HERON. HIS LONG LEGS COME IN HANDY FOR WADING IN THE RIVER TO CATCH FISH TO EAT. DO YOU LIKE TO WADE IN THE RIVER? *

13. ANOTHER BIRD WE OFTEN SEE IN THE RIVER IS THE PELICAN. HE DIVES DOWN FROM THE SKY AND SCOOPS UP FISH IN HIS POUCH USING IT MUCH LIKE WE USE A SEINE NET. *

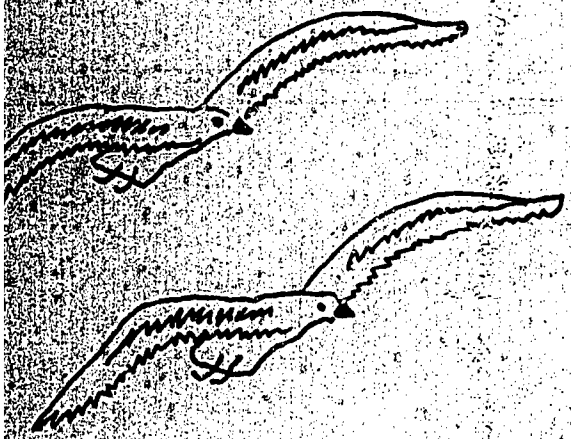
14. FINALLY, WE MAY SEE THIS FELLOW. HE IS CALLED A PUFFER OR A BLOWFISH. HE CAN BLOW HIMSELF UP LIKE A BALLOON TO SCARE AWAY ENEMIES THAT MIGHT LIKE TO EAT HIM. *

15. THESE ARE JUST A FEW OF THE MANY ANIMALS LIVING IN A SALTWATER GRASSFLAT. THIS IS THE END OF YOUR UNIT ON ORGANISMS. *

16. The End.

TEACHER - Please rewind the tape for the next use. Thanks.

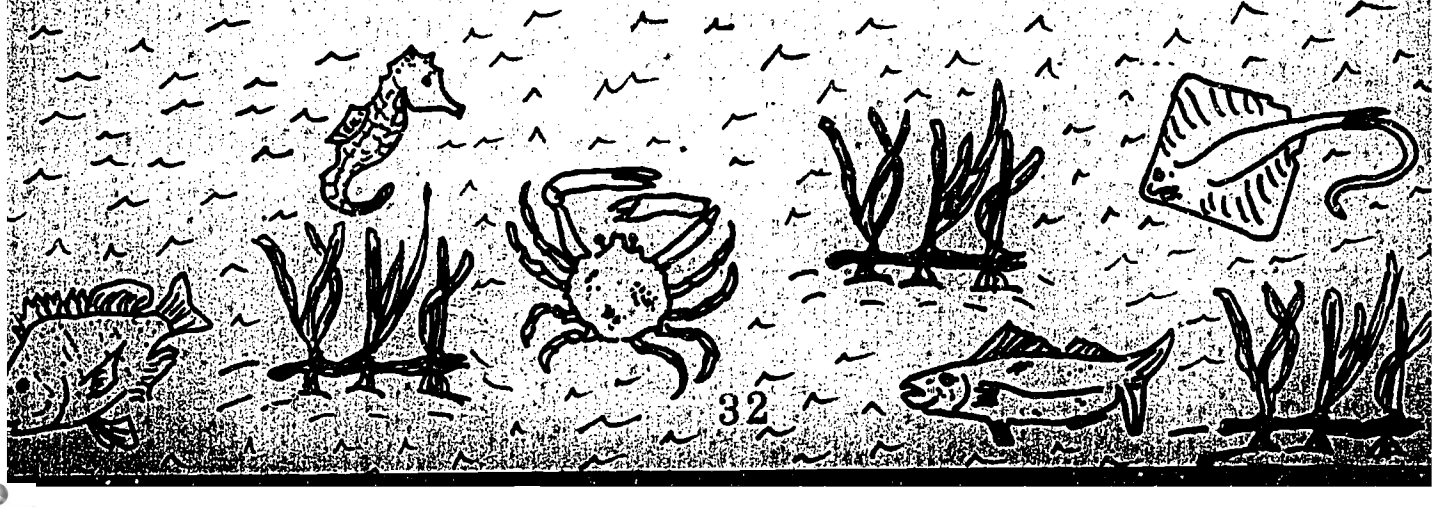
Third Grade



Saltwater

Grassflat

Vocabulary



THIS IS YOUR VOCABULARY WORKBOOK FOR THE UNIT YOU ARE STUDYING ON GRASSFLATS. IT IS TO HELP YOU LEARN MORE ABOUT THESE WORDS.

1. GRASSFLAT
2. SEINE NET
3. POPULATION
4. HABITAT
5. ENVIRONMENT
6. MICROSCOPE
7. PLANKTON
8. NURSERY
9. FOOD CHAIN
10. SALINITY

USE THIS LIST WHEN YOU ARE WORKING ON THE REST OF THE BOOKLET. IT WILL HELP IN ANSWERING THE QUESTIONS.

LOOK AT ME IN THE MIRROR

T N E M N O R I V N E

WHAT DO I SAY?

__ __ __ __ __ __ __ __ __ __ __ __ __

WHAT IS YOUR ENVIRONMENT?

A. THE RIVER
B. EVERYTHING AROUND YOU
C. A PLACE WHERE BABY ANIMALS LIVE

ANSWERS TO "THE MIRROR GAME"

E N V I R O N M E N T

WHAT IS YOUR ENVIRONMENT?

B. EVERYTHING AROUND YOU

UNSCRAMBLE ME !!!

N E S I E

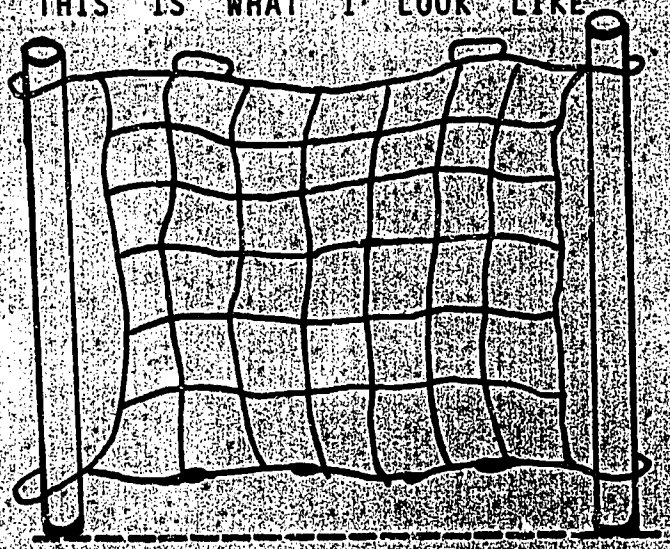
_ _ _ _ _ _

NOW DRAW A PICTURE OF ME !!!

ANSWERS TO "UNSCRAMBLE ME"

S E I N E

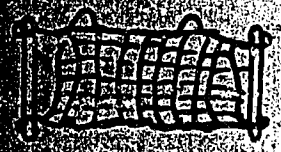
THIS IS WHAT I LOOK LIKE



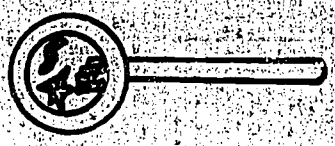
NOW, FILL IN THE BLANKS

P _ _ A _ _ K T _ _ N

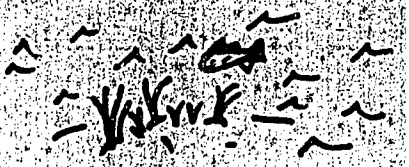
WHICH PICTURE SHOWS ME THE BEST?



B.



C.



ANSWERS TO "FILL IN THE BLANKS"

P L A N K T O N

YOU SHOULD HAVE CIRCLED ("B")

?? GUESS WHO I AM ??

1. I AM A SHALLOW GRASSY AREA IN THE INDIAN RIVER.
   WHO AM I ? ----------

2. I AM THE AMOUNT OF SALT IN WATER.
   WHO AM I ? ----------

3. I AM A PLACE WHERE BABY ANIMALS LIVE.
   WHO AM I ? ----------

4. I AM THE TINY PLANTS AND ANIMALS THAT FLOAT IN THE WATER.
   WHO AM I ? ----------

5. I SHOW HOW THE ENERGY FROM THE SUN GETS PASSED FROM PLANTS TO PLANT-EATERS TO MEAT-EATERS.
   WHO AM I ? ----------

ANSWERS TO "GUESS WHO I AM"

1. GRASSFLAT
2. SALINITY
3. NURSERY
4. PLANKTON
5. FOOD CHAIN

CROSSWORD GAME

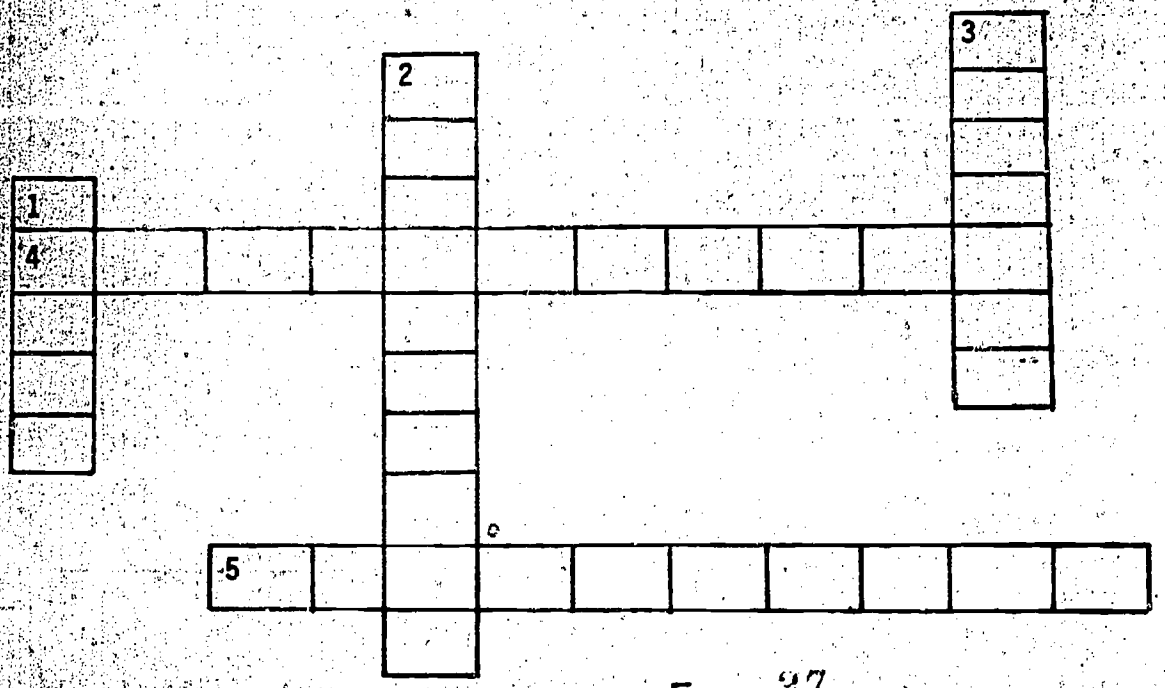
PUT THE LETTERS OF THE ANSWERS TO THESE QUESTIONS IN THE CORRECT □'S BELOW.

DOWN

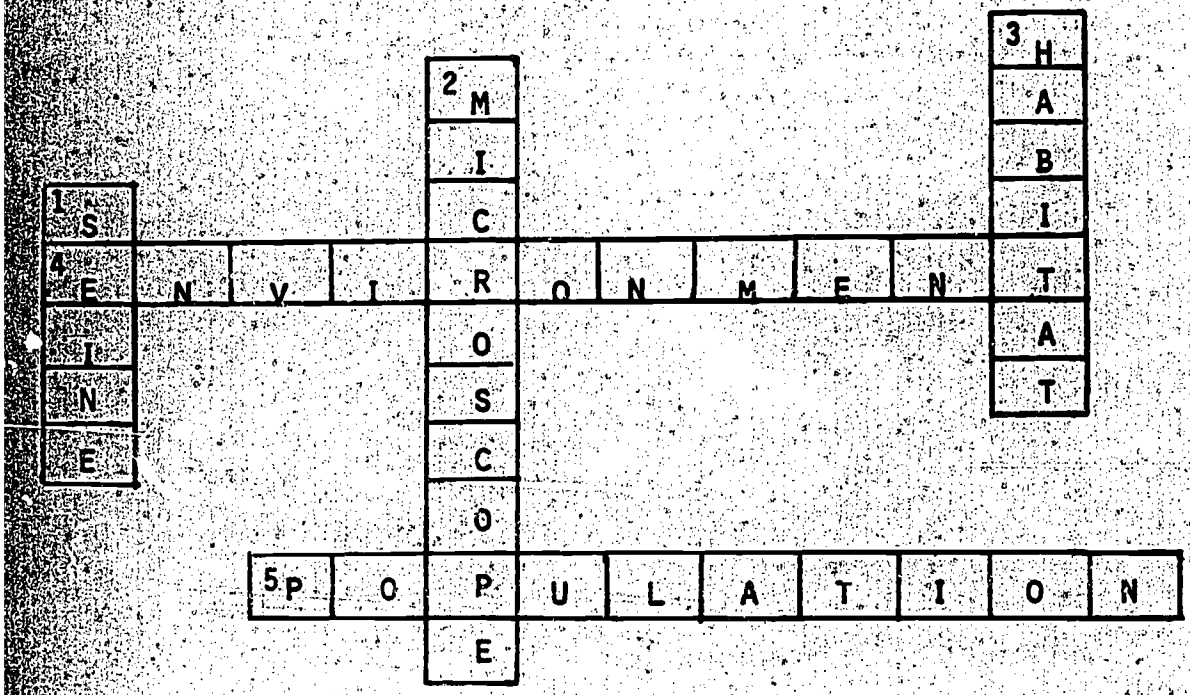
1. A TYPE OF NET USED TO COLLECT WATER ANIMALS
2. AN INSTRUMENT USED TO LOOK AT THINGS TOO SMALL TO SEE WITH THE NAKED EYE
3. A PLACE WHERE A PLANT OR ANIMAL LIVES

ACROSS

4. EVERYTHING AROUND US
5. THE NUMBER OF PLANTS AND ANIMALS IN A GIVEN AREA



ANSWERS TO "THE CROSSWORD GAME"



Martin County Schools'
Environmental Studies Center
2900 N.E. Indian River Drive
Jensen Beach, Florida 33457

3rd Grade Slide Presentation

"Vocabulary"

TEACHER - Turn on the projector to the "Focus" slide. Turn on tape player. Advance the slide at the audible tone (or, if you are reading this aloud, where indicated by the asterisk (*). The narration is in CAPITAL letters.

1. Focus *

2. "Credits" slide *

3. "An Environmental Study Unit on Grassflat Communities" *

4. "Vocabulary". IN ORDER TO GET A CLEAR UNDERSTANDING OF THE SALTWATER GRASSFLATS, YOU SHOULD BE FAMILIAR WITH THE FOLLOWING WORDS: *

5. GRASSFLAT -- A GRASSY AREA GROWING IN SHALLOW WATER. *

6. HABITAT -- A PLACE WHERE A PLANT OR ANIMAL LIVES. *

7. NURSERY -- A PLACE WHERE BABY ANIMALS LIVE. *

8. POPULATION -- THE NUMBER OF PLANTS OR ANIMALS IN A GIVEN AREA. *

9. MICROSCOPE -- AN INSTRUMENT USED TO LOOK AT THINGS TOO SMALL FOR THE NAKED EYE. *

10. SALINITY -- THE AMOUNT OF SALT IN WATER. *

11. SEINE NET -- A TYPE OF NET USED TO COLLECT WATER ANIMALS. *

12. PLANKTON --MICROSCOPIC PLANTS PLANTS AND ANIMALS THAT FLOAT IN WATER. *

13. FOOD CHAIN -- A CHAIN WHICH SHOWS HOW ENERGY FROM THE SUN IS PASSED FROM PLANTS TO PLANT-EATERS TO MEAT-EATERS. *

14. ENVIRONMENT -- EVERYTHING AROUND YOU. *

THE END

A FOOD CHAIN

WHAT EATS WHAT

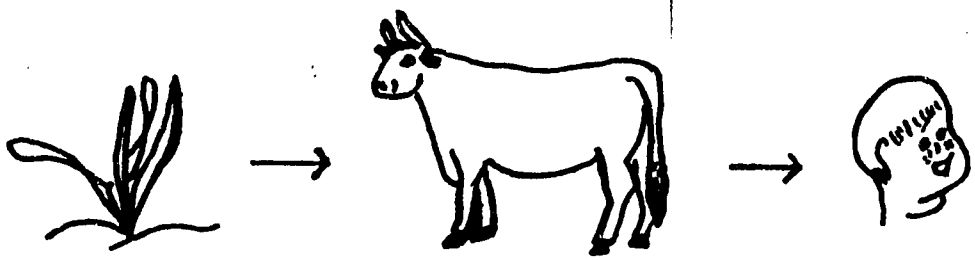
Every living thing needs food to survive. Where does it get its food?

about yourselves.

You may have had beef for dinner last night. We get beef from cattle.

What do cattle eat? We have probably all seen cattle grazing in a pasture. They basically eat grass.

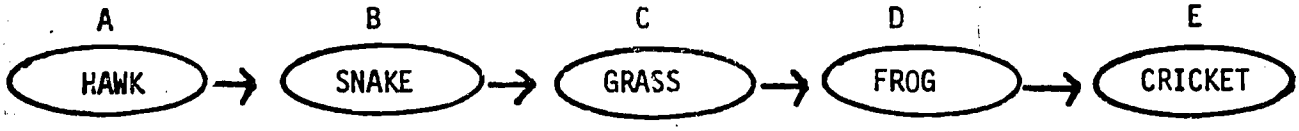
Let's look at a picture of this. . . .



The grass is eaten by the cow. The cow is eaten by man.

This is a very simple FOOD CHAIN. Some food chains can be much larger. Many of the FOOD CHAINS in the ocean may have five (5) or more links.

Look at these: Can you put them into a FOOD CHAIN?



Turn this page upside down to read the answer to the FOOD CHAIN you just did.

ANSWER: A B D E C

Look carefully at these food chains we have been talking about. There is a pattern. CAN YOU FIND IT?

A FOOD CHAIN usually begins with a  green plant. There may be one link, or there may be many in the middle of the chain.

The chain usually ends with a MEAT-EATER. It is usually an animal that no other animal will eat.

What do we need to look at FOOD CHAINS for?

Just to know what an animal eats helps us find out much about how it lives and what it contributes to its own little community.

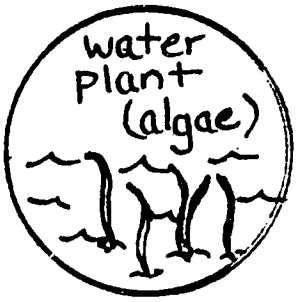
SOME QUESTIONS TO ANSWER:

1. What do cows eat?
2. What does a food chain usually begin with?
3. What does a food chain usually end with?
4. What eats the last part of the food chain?
5. Why do we look at food chains?

Martin County Schools'
Environmental Studies Center
205 South Indian River Drive
Jensen Beach, Fla. 33457

Food Chains

Cut out each circle on this page and glue each picture to its correct food chain on the next page.

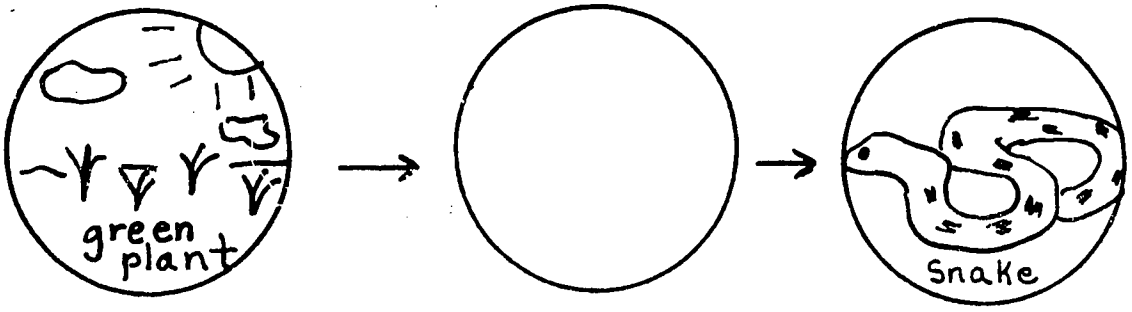


Third Grade

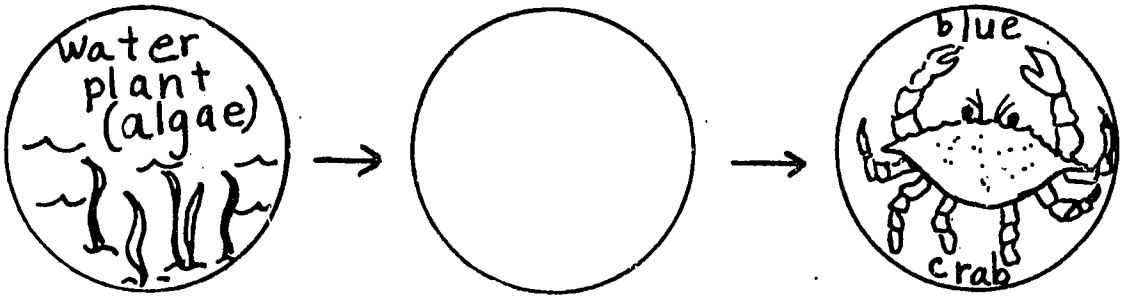
Food Chain Practice Sheet

Martin County School's
Environmental Studies Center
2900 N. E. Indian River Drive
Jensen Beach, FL 33457

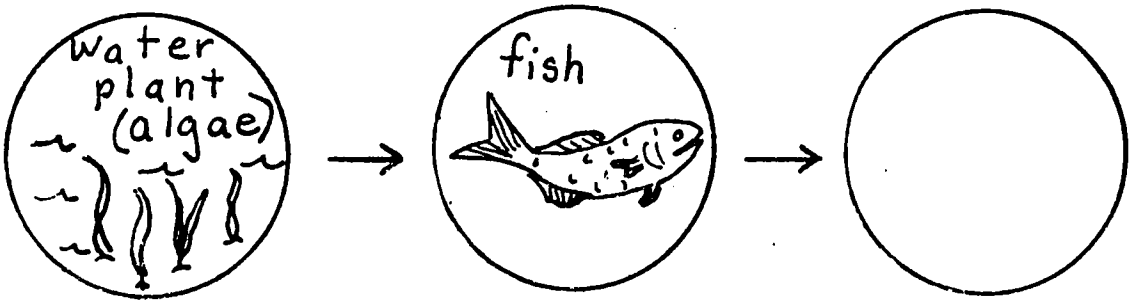
1.



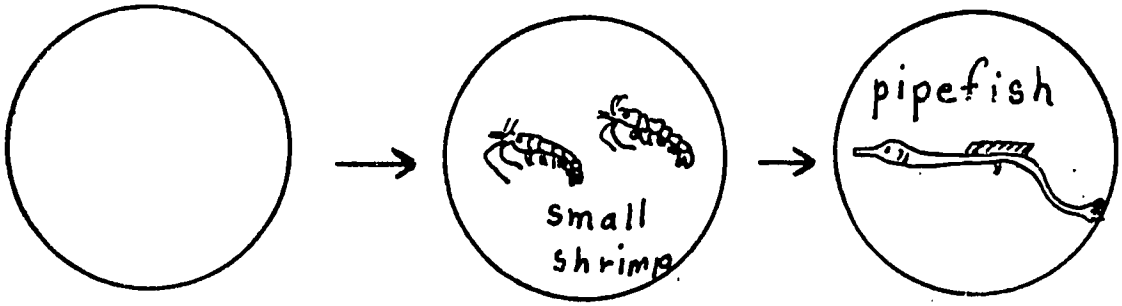
2.



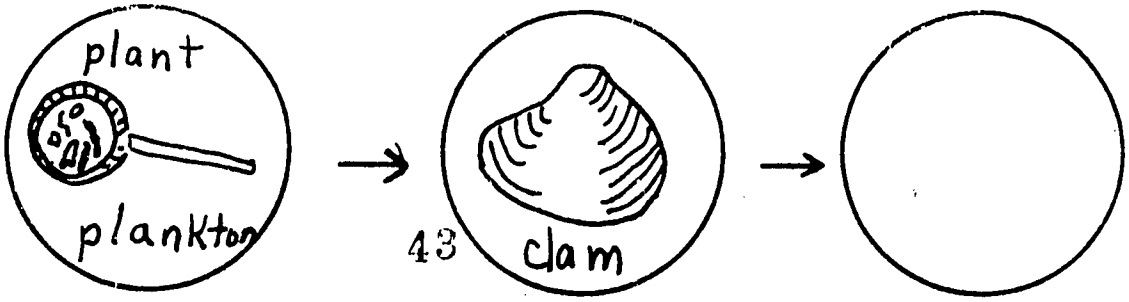
3.



4.



5.



3rd Grade Slide Presentation

"Food Chains"

TEACHER - Turn projector on to "Focus" slide. Turn on tape player. Advance slides at the audible tone (or, if you are reading this narration, as indicated by the asterisk (*). Narration is in CAPITAL letters.

1. "Focus" *
2. "Credits" slide *
3. "An Environmental Study Unit on Grassflat Communities" *
4. "What is a Food Chain"? *
5. HI! I'M A FOOD CHAIN....I AM A VERY IMPORTANT PART OF LIFE AROUND YOU. *
6. YOU KNOW THAT ALL LIVING THINGS MUST HAVE FOOD....WHAT DO THEY ALL EAT? *
7. SOME ANIMALS EAT ONLY GREEN PLANTS. WE CALL THEM PLANT-EATERS. THESE ARE JUST A FEW PLANT EATERS...CAN YOU NAME SOME OTHERS? *
8. IF SOME ANIMALS EAT ONLY GREEN PLANTS, WHAT DO GREEN PLANTS EAT? THEY USE THE SUN'S ENERGY AND MAKE THEIR OWN FOOD. THEY ARE THE ONLY LIVING THINGS THAT CAN DO THIS WITH THE SUN'S ENERGY. *
9. SOME GREEN PLANTS ARE SO SMALL WE CAN HARDLY SEE THEM. THEY ARE CALLED PLANT PLANKTON. THEY FLOAT OR DRIFT IN WATER. THEY ARE AN IMPORTANT PART OF THE FOOD CHAIN OF THE SEA. THERE ARE SMALL ANIMAL PLANKTON THAT EAT THEM. *
10. SOME ANIMALS DO NOT EAT PLANTS. WE WILL CALL THEM MEAT EATERS. THEY EAT OTHER ANIMALS. THESE ARE JUST A FEW MEAT EATERS. CAN YOU THINK OF SOME OTHERS? *
11. IF YOU WERE THIS PLANT....HOW WOULD YOU GET YOUR FOOD?
    A. A CATERPILLAR?
    B. THE SUN'S ENERGY?
    C. A GREEN PLANT? (Pause)

IF YOU REMEMBER, WE HAVE ALREADY SAID THAT PLANTS GET THEIR FOOD FROM THE SUN'S ENERGY. NOW IF YOU HAVE SAID "B", THE SUN'S ENERGY, YOU ARE CORRECT. *

12. WHAT DO YOU THINK MIGHT EAT THE GREEN PLANT?

A. CATERPILLAR

B. FROG

C. LARGER GREEN PLANT. (Pause)

WELL, IF YOU HAVE SAID "A", CATERPILLAR, YOU ARE CORRECT. *

13. THE CATERPILLAR IS A PLANT EATER. WHAT DO YOU SUPPOSE EATS HIM?

A. FROG

B. FISH

C. RABBIT

NOW, IF YOU HAVE SAID "A", FROG, YOU ARE CORRECT. *

14. THE FROG IS A MEAT EATER. JUST FOR FUN, WHAT DO YOU THINK EATS THE FROG?

A. BUTTERFLY

B. RABBIT

C. OWL. (Pause)

IF YOU HAVE SAID "C", OWL, YOU ARE CORRECT. *

15. NOW LET'S LOOK AT THE WHOLE PICTURE. THIS IS A FOOD CHAIN. *

16. WE CAN PUT IT INTO A PICTURE SENTENCE. THE ARROW HAS AN IMPORTANT MEANING. IN THE SENTENCE IT MEANS "IS EATEN BY". NOW YOU CAN READ THIS SENTENCE... READY? A GREEN PLANT IS EATEN BY A CATERPILLAR. A CATERPILLAR IS EATEN BY A FROG. A FROG IS EATEN BY AN OWL. *

17. WE CAN SEE THAT WE CANNOT LIVE BY OURSELVES. EACH ANIMAL NEEDS THE PLANTS AND ANIMALS AROUND HIM. *

18. THIS IS ANOTHER FOOD CHAIN SENTENCE. CAN YOU READ IT? LET'S TRY. A CARROT IS EATEN BY A RABBIT: A RABBIT IS EATEN BY A SNAKE. A SNAKE IS EATEN BY A HAWK. *

19. WHICH OF THESE GOES IN THE MISSING LINK OF THE FOOD CHAIN? LET'S TRY IT. THE GRASS IS EATEN BY THE SHRIMP. A SHRIMP IS EATEN BY A FISH. A FISH IS EATEN BY A PELICAN. *

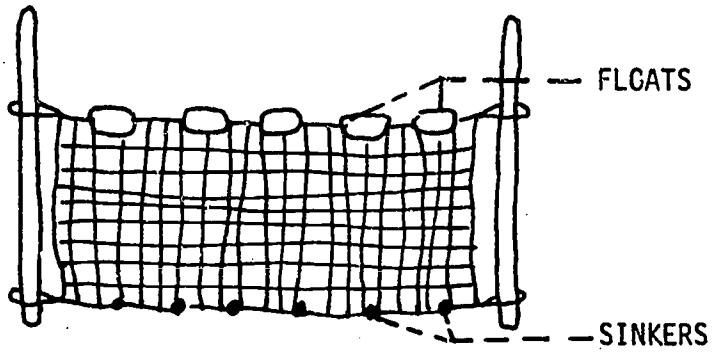
20. CAN YOU MAKE UP SOME OF YOUR OWN FOOD CHAINS? DRAW SOME PICTURE SENTENCES OF YOUR OWN. *

21. THIS ENDS YOUR UNIT ON FOOD CHAINS. *

LETS GO SEINING

Let's Go Seining

Before we go seining, we must find out what a seine is.



This is a seine net. When you are pronouncing the word, the "ei" sounds like the "a" in the word "make".

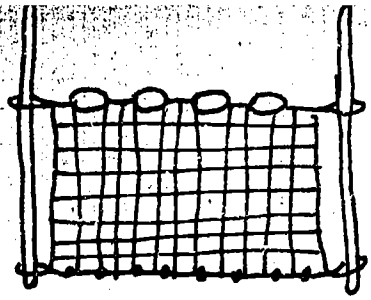
What is the seine net used for?

We use the seine nets to catch water animals. AT the Environmental Studies Center, we will use them to find out what animals live in the salt water Grassflats.

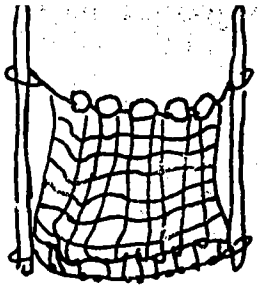
Just by looking at it, how many do you need to handle it? If you said two, (2), you were Correct.

Each person takes a pole and handles it like a broom. You push it out in front of you, always making sure that the bottom end touches the ground. Tilt the top of the pole towards you so that the animals won't escape, and keep the bottom of it out in front of you so that if a stingray should happen to be buired in the sand, you could chase him away with your pole.

The two of you pull at your poles so the net stays tightly strecthed. This will help you cover more area and will also keep the animals from escaping.



THIS



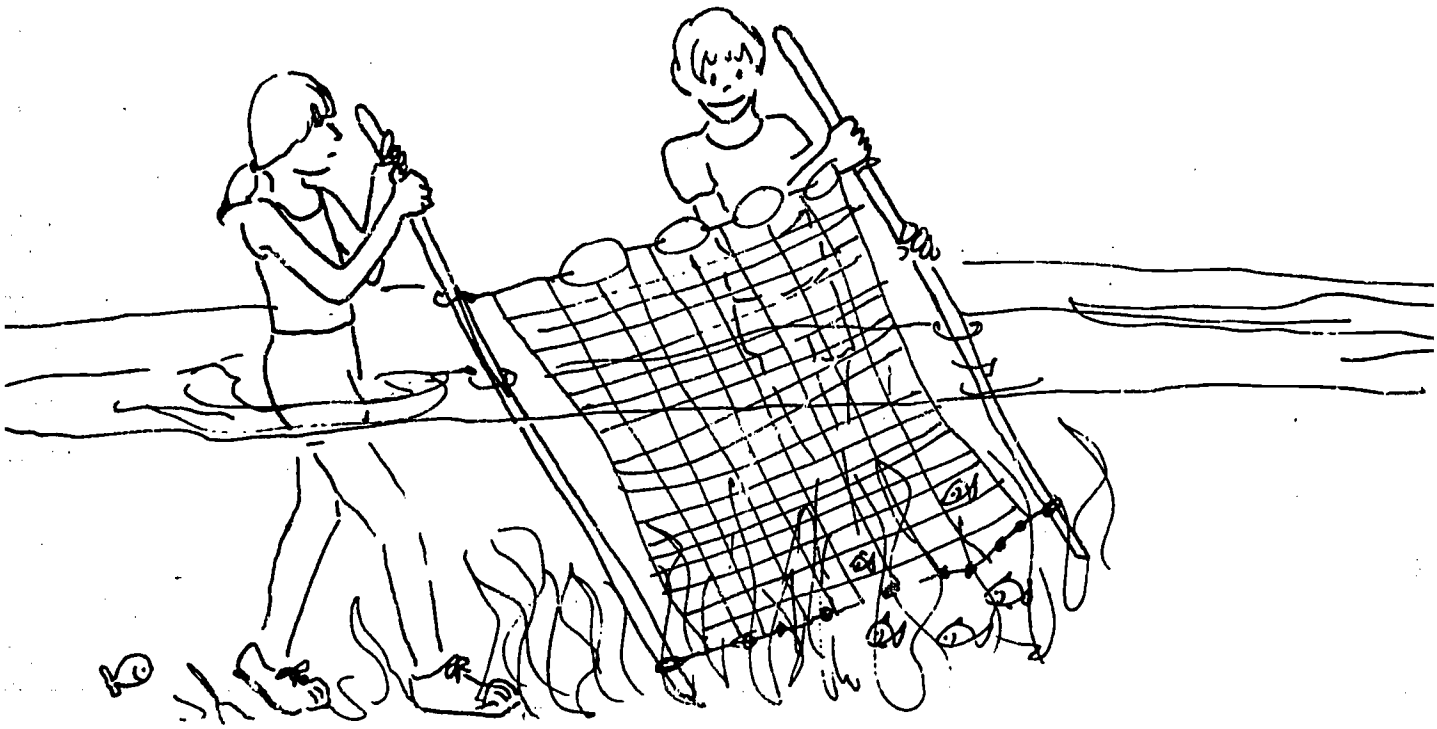
NOT THIS

If you follow these few simple directions, you will be a successful seiner:

1. Keep your pole tilted and the bottom always touching the ground.

2. Keep shuffling your feet with your pole out front.

3. Pull apart to keep the net tight.



Martin County Schools'
Environmental Stuides Center
2900 N. E. Indian River Drive
Jensen Beach, FL 33457

PHYSICAL DATA SHEET

Date _____ Group _____

Time _____ Location _____

Air Temperature _____

Water Temperature _____

Salinity of the water _____

How many meters is it from the edge of the water to the beginning of the grassflat? _____

How many meters is it from the edge of the water to the grassline on the beach? _____

What are the GENERAL WEATHER CONDITIONS today?

(Circle the proper one or ones.)

Clear & Sunny --- Partly Cloudy --- Cloudy --- Rainy

Breezy --- Windy --- Wet

Martin County Schools'
Environmental Studies Center
205 South Indian River Drive
Jensen Beach, Florida 33457

ORGANISM DATA SHEET

Group _____ Date _____

Organism	Number	Total

TEST

I. GRASSFLAT

1. If the sun's light were taken away from a salt water grassflat, what would happen?

   A. the grass would grow more

   B. the grass would die

   C. the fish would grow more

   D. nothing would happen

2. If the water in a salt water grassflat were changed to fresh water, what would happen to most of the animals there?

   A. they would eat more

   B. they would die

   C. they would live just like they did in salt water

   D. they would grow faster

3. Which of the following is most important to a salt water grassflat?

   A. sunlight B. wind C. deep water D. birds

4. Which of the following is needed for a salt water grassflat to live?

   A. wind B. palm trees C. sunlight D. shells

5. Which one is needed in order for a grassflat to grow?

   A. wind B. water C. shells D. fish

GRASSFLAT (cont'd)

6. The water in a salt water grassflat must be?

   A. very deep B. shallow C. cold D. hot

7. Which would be a good bottom for the grass of a grassflat?

   A. sand B. rock C. pebbles D. wood

8. Microscopic plants and animals found floating in the water are known as --

   A. food chain B. plankton C. clams D. manatee grass

9. We can call a salt water grassflat a habitat. What is a HABITAT?

   A. a home
   B. something to eat
   C. something we want to do
   D. nothing at all

10. The grassflats are one small part of our total ENVIRONMENT. What is our environment?

   A. the sky
   B. everything around us
   C. the Indian River lagoon
   D. the palm trees

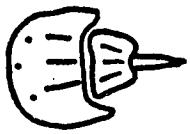
II. ORGANISMS

Read each question. Circle the letter on your answer sheet that you think best answers each question.

1. A small animal that lives in the grassflats of the river and swims with the aid of his swimmerets is the:


A. stingray


B. shrimp

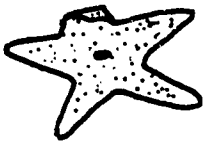

C. horseshoe crab


D. clam

2. Which is an animal, who when young lives in the grassflats, and when older makes a good meal for man?

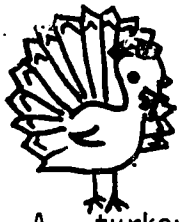

A. seahorse

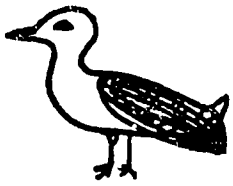

B. hermit crab

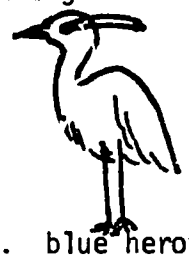

C. sea star

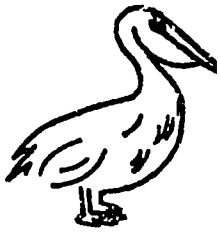

D. blue crab

3. A water bird often seen by himself wading in the grassflats is the:


A. turkey


B. gull


C. blue heron

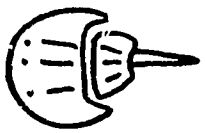

D. pelican

4. An animal related to the seahorse who can very often be found in the grassflats is the:

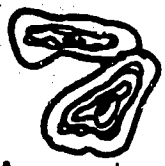

A. pipefish


B. shrimp


C. snail

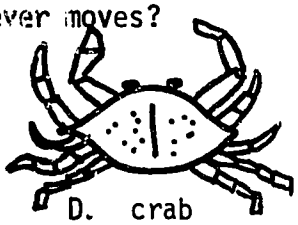

D. horseshoe crab

5. Which is an animal who once he attaches to something, he never moves?

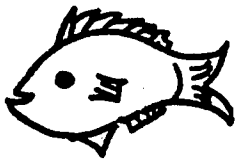

A. oyster

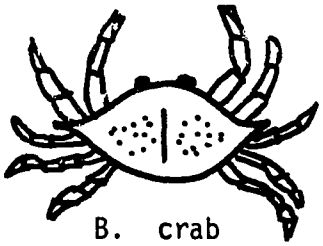

B. horseshoe crab


C. clam

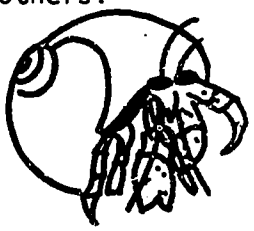

D. crab

6. Which is the animal who finds his home in the empty shells of others?


A. fish


B. crab


C. clam

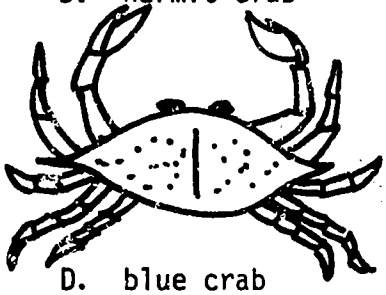

D. hermit crab

7. Which animal is not a true crab?


A. horseshoe crab

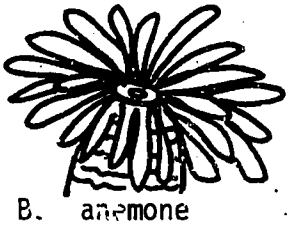

B. snail


C. seahorse


D. blue crab

8. Which animal buries himself in the mud of the grassflats?

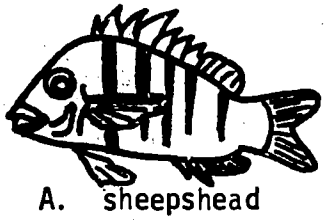

A. seahorse


B. anemone

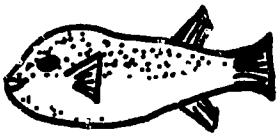

C. clam

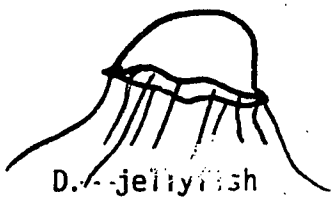

D. pipefish

9. Which is an animal that can inflate himself to scare away his enemies?


A. sheepshead

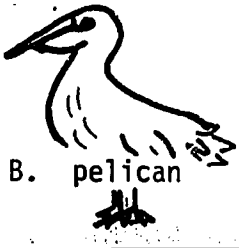

B. gull


C. puffer

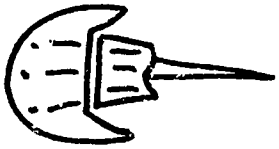

D. jellyfish

10. Which is an animal with a large pouch for catching fish?


A. snail

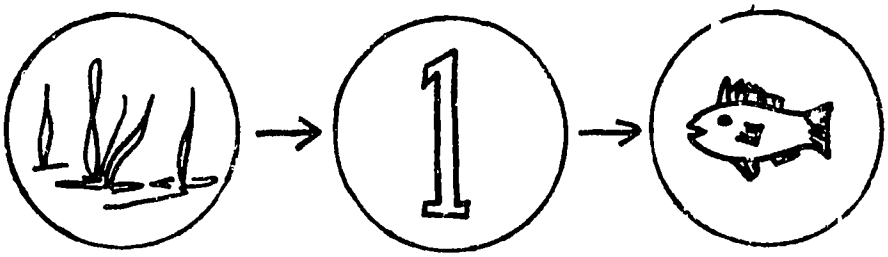

B. pelican


C. clam

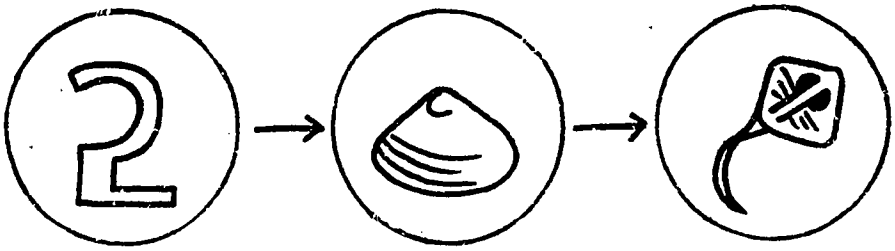

D. horsehoe crab

III. FOOD CHAINS

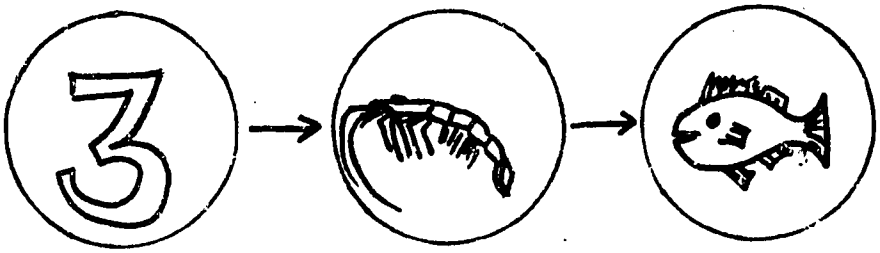
Choose the letter of the organisms at the right that will complete the food chains correctly and mark the letter on your answer sheet.

1. 

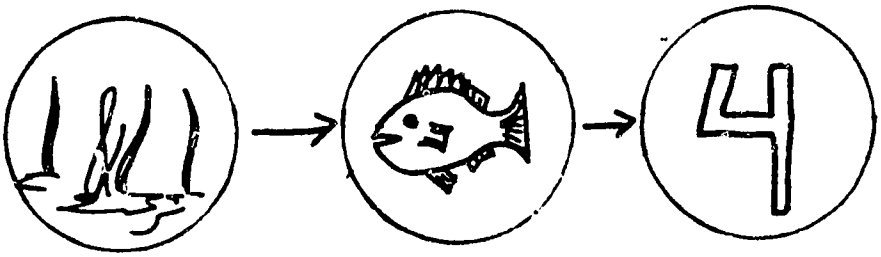
A. shrimp
B. puffer
C. stingray

2. 

A. oyster
B. plankton
C. pipefish

3. 

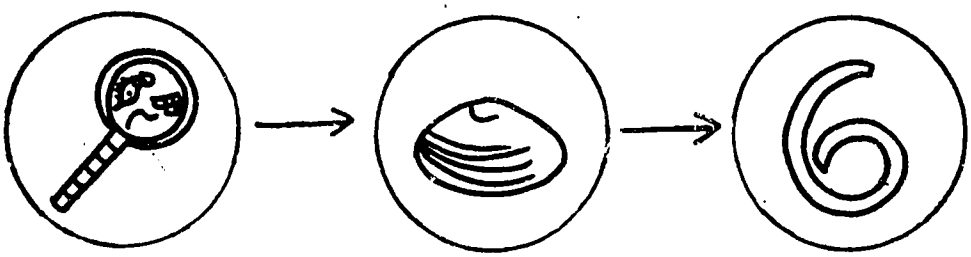
A. pipefish
B. puffer
C. green plant

4. 

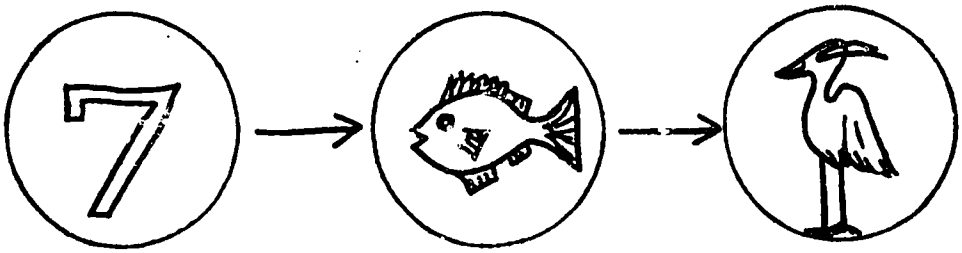
A. pelican
B. shrimp
C. sea star

5. 

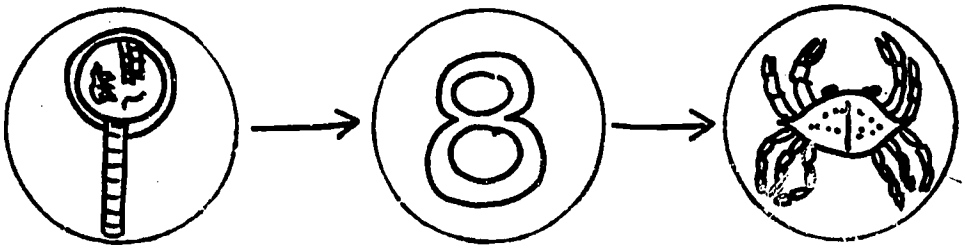
A. blue crab
B. hermit crab
C. shrimp

6. 

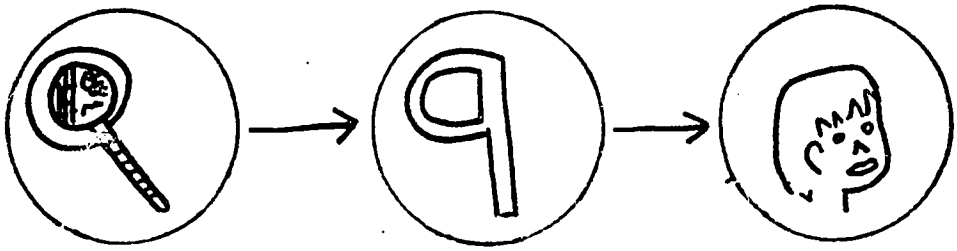
A. sea star
B. plankton
C. oyster

7. 

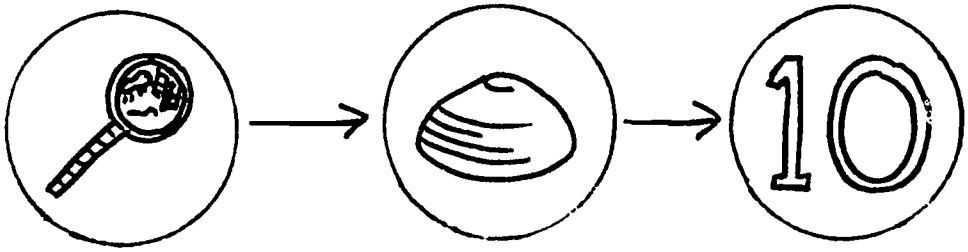
A. green plant
B. stingray
C. clam

8. 

A. sea star
B. pipefish
C. blue crab

9. 

A. stingray
B. pelican
C. oyster

10. 

A. sea star
B. blue crab
C. shrimp

IV. VOCABULARY

1. When you want to look at something so small you can not see it with only your eyes, you use a:

   A. seine B. microscope C. grassflat D. book

2. Everything around us could be called our:

   A. home B. school C. playground D. environment

3. We call the edge of the water the:

   A. wave B. shore C. shells D. sea

4. The amount of salt in the water is called the:

   A. salinity B. tide C. habitat D. shore

5. A seine is used for:

   A. swimming B. flying C. collecting fish D. moving a boat

6. A place where baby animals of the river live is a:

   A. nursery B. laboratory C. house D. population

7. The microscopic plants and animals floating in water are called:

   A. moss B. salinity C. plankton D. turtle grass

8. The shallow area of the river which is a nursery for baby animals is called the:

A. tide B. beach C. sea D. grassflats

9. The <u>place</u> where something lives is its:

A. laboratory B. habitat C. population D. trap

10. The <u>number</u> of living things in a given area would be its:

A. school B. home C. population D. habitat

Martin County Schools'
Environmental Studies Center
2900 N. E. Indian River Drive
Jensen Beach, Florida 33457

me _____ Date _____

hool _____ Teacher _____

GRADE 3 ANSWER SHEET

GRASSFLAT

1.	A	(B)	C	D
2.	A	(B)	C	D
3.	(A)	B	C	D
4.	A	B	(C)	D
5.	A	(B)	C	D
6.	A	(B)	C	D
7.	(A)	B	C	D
8.	A	(B)	C	D
9.	(A)	B	C	D
10.	A	(B)	C	D

II. ORGANISMS

1.	A	(B)	C	D
2.	A	B	C	(D)
3.	A	B	(C)	D
4.	(A)	B	C	D
5.	(A)	B	C	D
6.	A	B	C	(D)
7.	(A)	B	C	D
8.	A	B	(C)	D
9.	A	B	(C)	D
10.	A	(B)	C	D

I. FOOD CHAIN

1. (A) B C
2. A (B) C
3. A B (C)
4. (A) B C
5. A B (C)
6. (A) B C
7. (A) B C
8. A (B) C
9. A B (C)
10. (A) B C

IV. VOCABULARY

1. A (B) C D
2. A B C (D)
3. A (B) C D
4. (A) B C D
5. A B (C) D
6. (A) B C D
7. A B (C) D
8. A B C (D)
9. A (B) C D
10. A B (C) D

Martin County Schools'
Environmental Studies Center
2900 N.E. Indian River Drive
Jensen Beach, Fla. 33457