

Virginia Cooperative Extension Service

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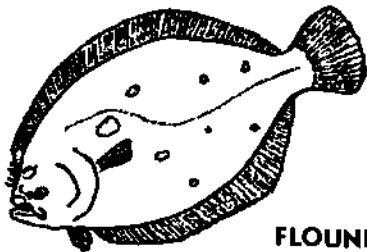
VIRGINIA'S LAND GRANT UNIVERSITIES

4-H MARINE PROJECT

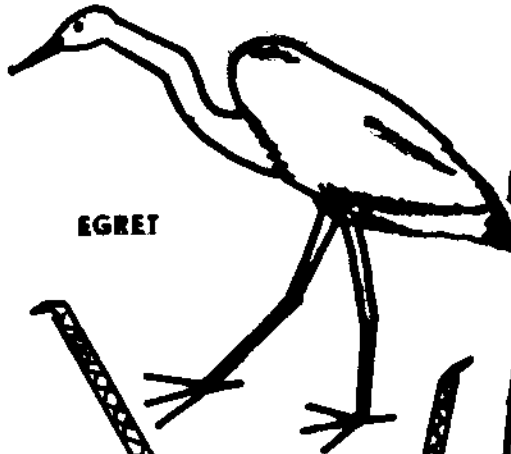
UNIT FOUR

390-054  
SEPTEMBER 1984

MARINE RESOURCES

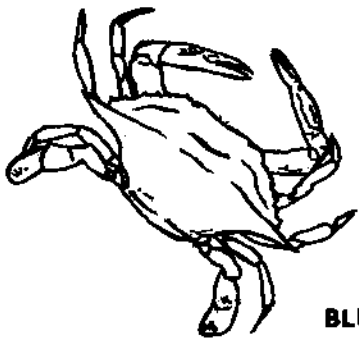
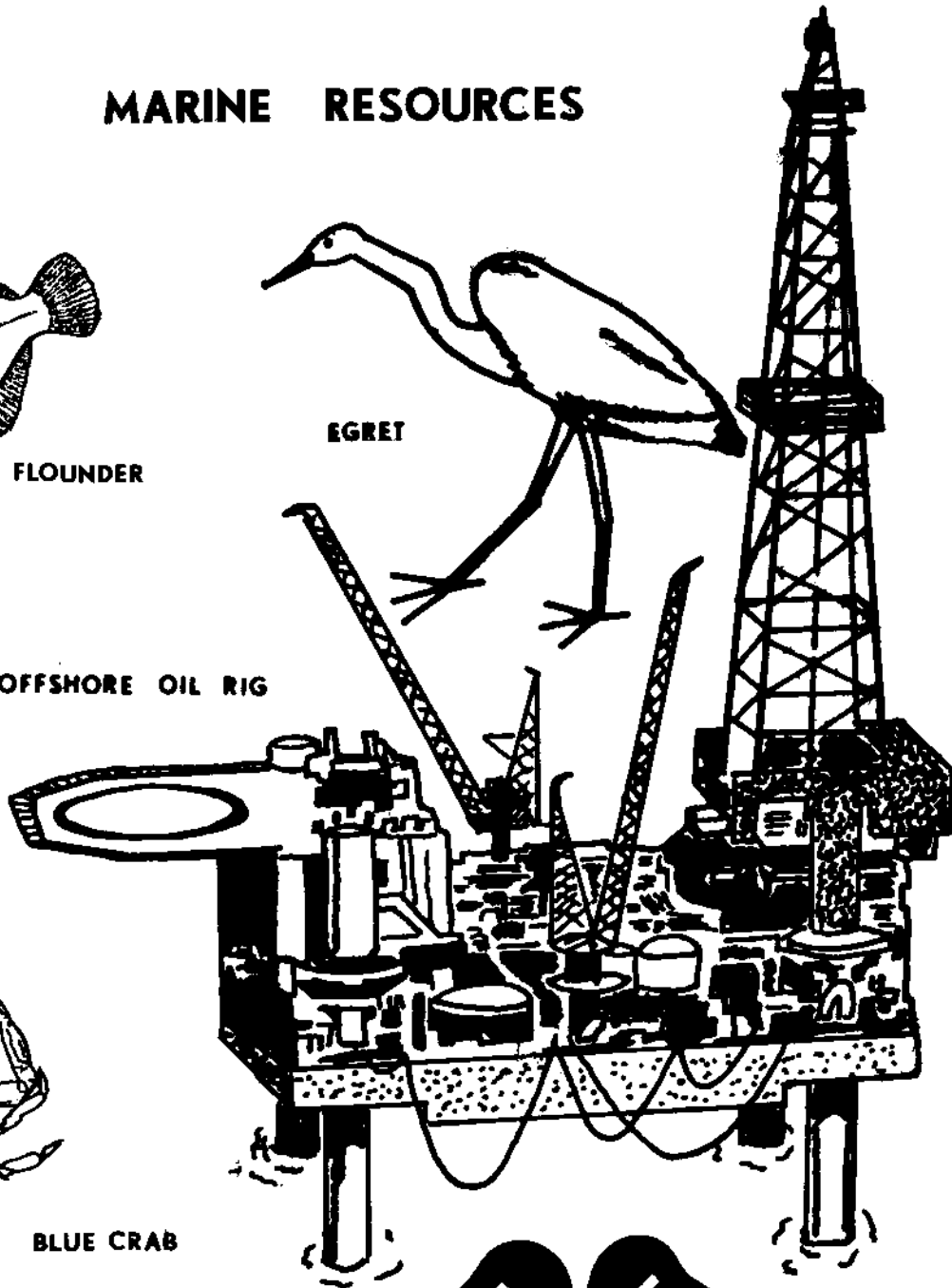


FLOUNDER

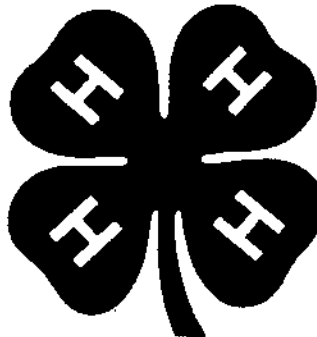


EGRET

OFFSHORE OIL RIG



BLUE CRAB



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4-H MARINE PROJECT

UNIT FOUR

MARINE RESOURCES

(MEMBER GUIDE)

BY

BARRY W. FOX  
Extension Specialist  
4-H Marine Education

Illustrations by:  
Ernestine Scott  
Barry W. Fox

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WHAT IS A MARINE RESOURCE?

RESOURCES are sources of supply. Natural resources are the supplies of water, trees, soil, minerals, oil, wildlife, and other materials found on the earth. Those resources found in the ocean are called MARINE RESOURCES.

WHAT ARE THE KINDS OF MARINE RESOURCES?

Marine resources include seafoods, minerals, oil, water, recreational areas, and others. These are practically the same types of resources, except for trees, that occur on land. For almost every land based resource and industry, there is a marine related counterpart.

BELOW ARE TWO LISTS, ONE OF LAND RESOURCES AND INDUSTRY AND ONE OF MARINE RESOURCES AND INDUSTRY. STUDY THE TWO LISTS AND CONNECT THE LAND-MARINE COUNTERPARTS WITH A STRAIGHT LINE.

LAND

- CROP FARMING \*
- OIL WELLS \*
- MINERAL MINING \*
- RESERVOIRS AND WELLS \*
- AUTOMOBILE INDUSTRY \*
- RAILROADS AND TRUCKING \*
- AMUSEMENT AND THEME PARKS \*
- HUNTING AND TRAPPING \*

MARINE

- \* DESALINATION (MAKING FRESHWATER)
- \* FISHING AND WHALING
- \* SEAFOOD FARMING
- \* SEAFLOOR MINING
- \* CARGOSHIPS AND TANKERS
- \* BEACH RESORTS
- \* OFFSHORE OIL WELLS
- \* SHIP AND BOAT INDUSTRY



VISIT YOUR SCHOOL OR LOCAL LIBRARY, AND WITH BOOKS, FILMS, AND WITH THE HELP OF YOUR CLASSMATES, LIST ADDITIONAL LAND-MARINE RESOURCE AND INDUSTRIAL COUNTERPARTS.

LAND

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MARINE

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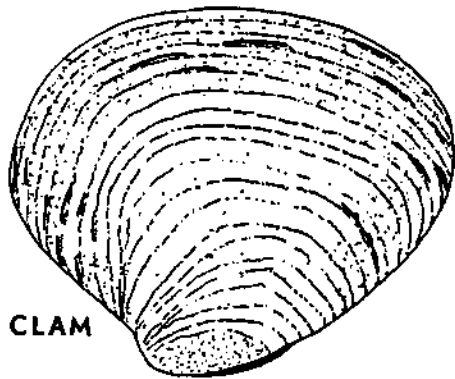
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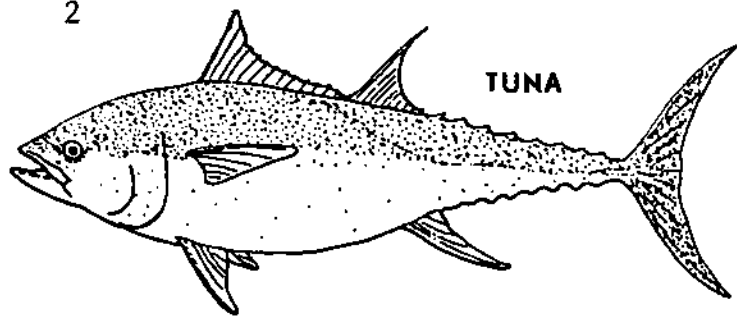


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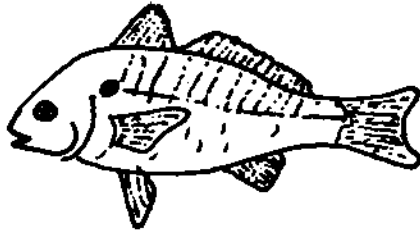


CLAM

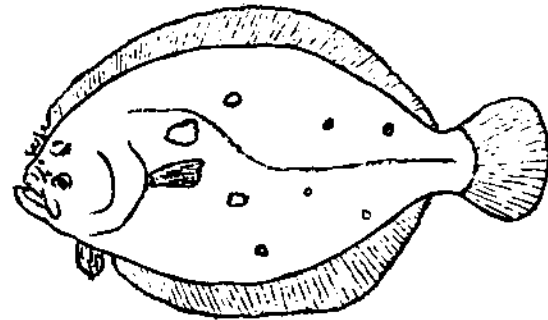
2



TUNA



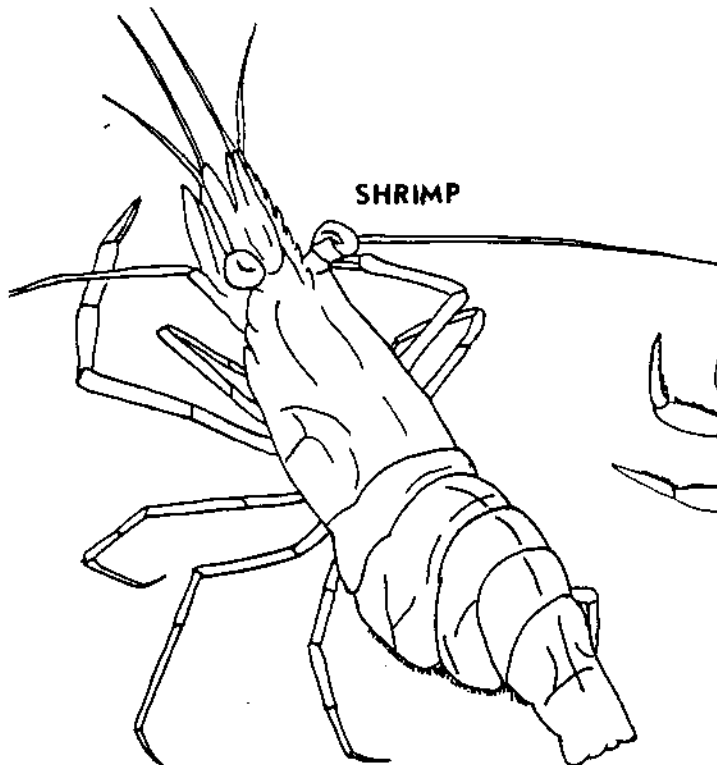
SPOT



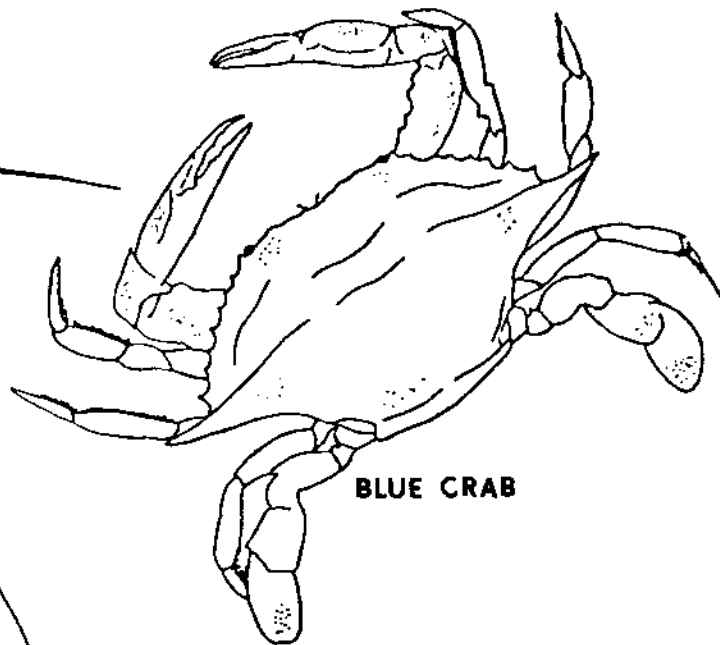
FLOUNDER

## SEAFOOD

Seafood is one type of marine resource. There are two main categories of seafood, FINFISH and SHELLFISH. Finfish include flounder, seatrout, spot, bluefish, and many other species. Shellfish are not fish at all but types of MOLLUSCS and ARTHROPODS. Molluscs usually have hard shells. Clams, oysters, scallops, conchs, and squid are molluscs. Arthropods have a hard outer skeleton, jointed legs, and include shrimp, crabs, lobster, and others. What types of seafood have you tried?



SHRIMP



BLUE CRAB

FILL IN THE CHECKLIST BELOW BY CHECKING THE TYPES OF SEAFOOD YOU HAVE TRIED.

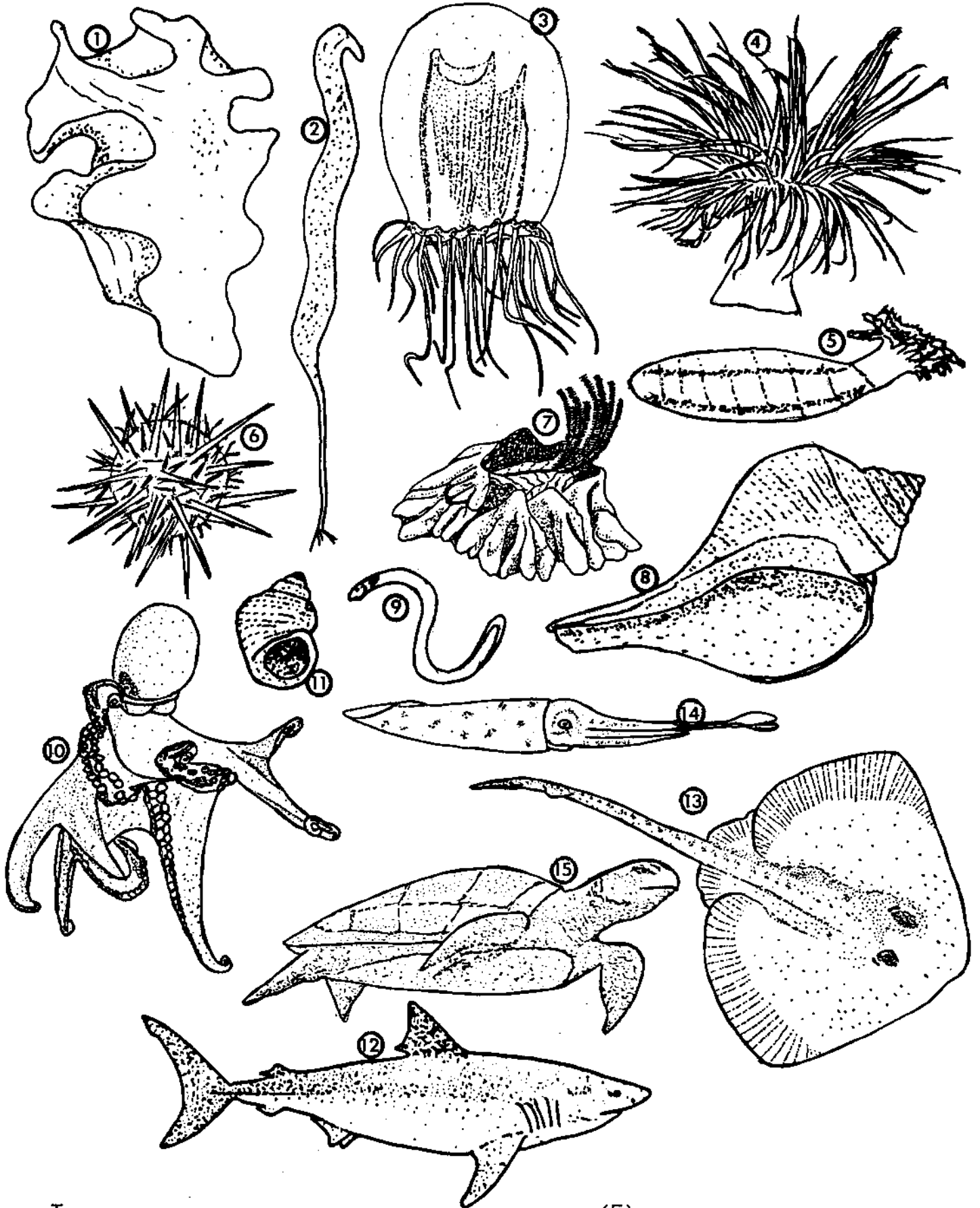
I HAVE TRIED THESE SEAFOODS:

SEAFOOD	OFTEN	SOMETIMES	NEVER	TASTED, LIKED	TASTED, DON'T LIKE
HERRING					
ANCHOVY					
SARDINES					
BLUEFISH					
SPOT					
FLOUNDER					
SHAD					
SALMON					
TUNA					
CLAM					
BLUECRAB					
LOBSTER					
OYSTER					
SHRIMP					

LIST OTHER TYPES OF SEAFOOD YOU HAVE EATEN. \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

There are many types of seafood that are not widely used in America. Once shark, skate, and many other marine animals were considered TRASHFISH and discarded. They were thought to be of no value. Now there is an increasing market for their meat. Squid, seaweed, conch, and even jellyfish are finding their way to the American dinner table. For centuries, Asians and Europeans have used these and other seafoods. Americans are now starting to use many of the less well-known seafood resources of the ocean. Try to identify the unusual seafoods pictured on the next page.

IDENTIFY THESE UNUSUAL SEAFOODS. 4

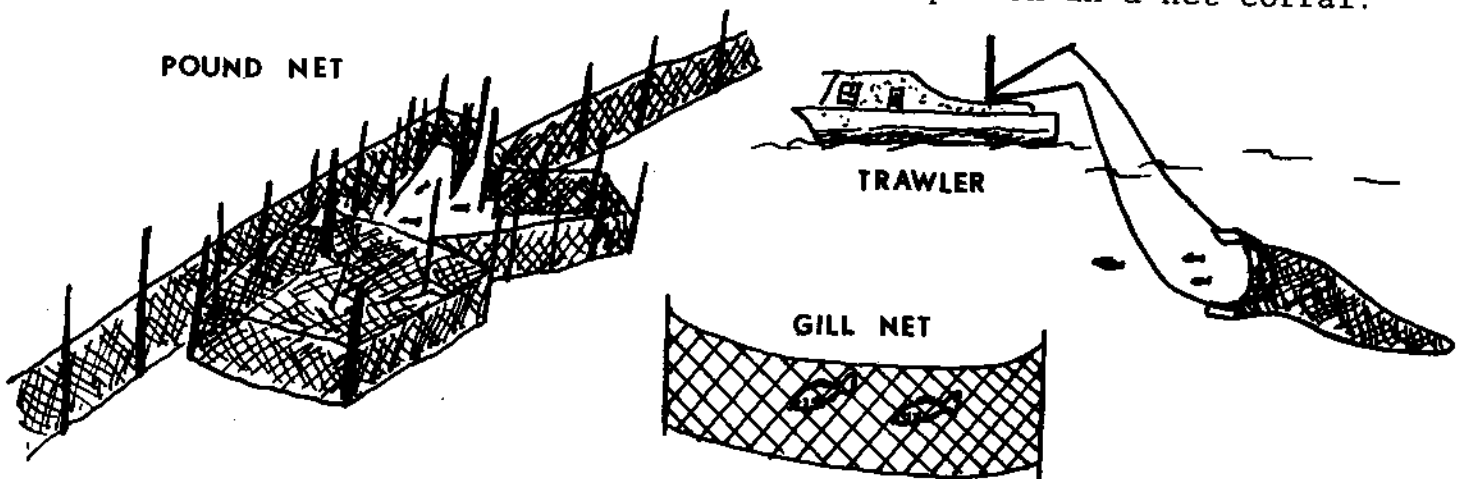


THE KEY TO THEIR IDENTITY IS ON PAGE FIVE (5).

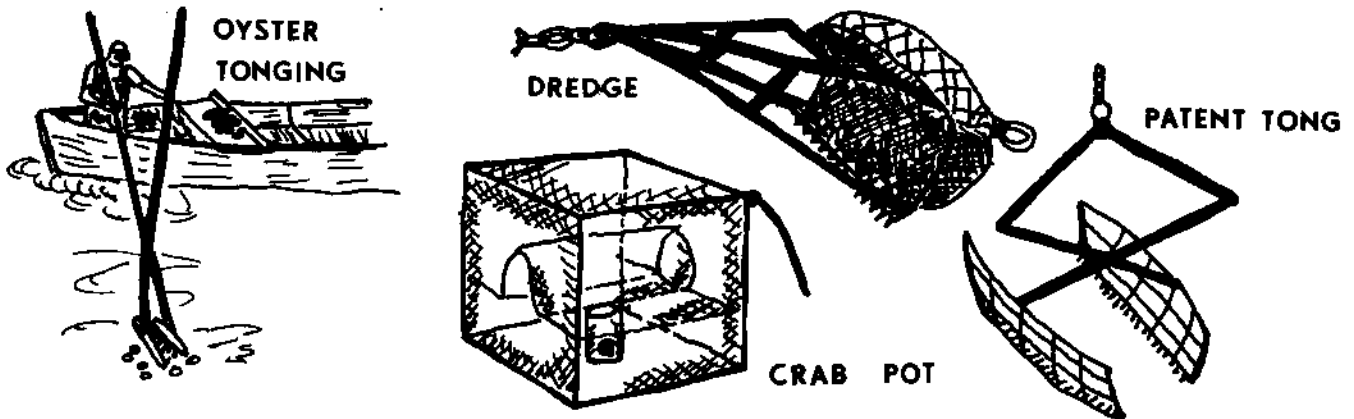
USE THIS SEAFOOD CHECKLIST TO TEST YOUR APPETITE FOR UNUSUAL SEAFOODS.

SEAFOOD	NEVER HEARD OF IT	WOULD NOT EAT IT	WOULD EAT IT	LIKE IT	DON'T LIKE IT
1. SEA LETTUCE					
2. KELP					
3. JELLYFISH					
4. SEA ANEMONE					
5. SEA CUCUMBER					
6. SEA URCHIN					
7. BARNACLES					
8. WELK					
9. EEL					
10. OCTOPUS					
11. PERIWINKLES					
12. SHARK					
13. SKATE & RAY					
14. SQUID					
15. TURTLE					

Seafoods are harvested in a number of ways. Finfish are caught using different types of nets and traps. Large fishing boats, called TRAWLERS, pull a cone shaped net (a trawl), catching fish, shrimp, and other types of seafood. GILL NETS entangle fish that swim into them, while POUND NETS trap fish in a net corral.



OYSTER TONGS are long, double handled rakes that are used to pull oysters and clams from the bottom. Many boats that fish for oysters are now equipped with large PATENT TONGS that are hoisted up and down with a power wench. In colder weather, a bottom scrapping DREDGE is used to harvest shellfish from the seafloor. Clams and mussels are harvested by digging in mud flats or using a hydraulic pump and escalator from a boat in deep water. The pump draws the shellfish up from the bottom and the escalator carries them from the water up to the boat. Crabs are captured with CRAB POTS or baited long lines. Of course, the rod and reel are fishing equipment best known to millions of people.



## MINERALS AND WATER

Seawater contains a wealth of minerals as does the ocean floor. The process of DESALINATION removes salt and minerals from seawater. Seawater is evaporated, usually under low pressure, and freshwater is separated from the minerals. In many coastal areas of the world where freshwater is scarce, desalination plants provide much of the needed water. The minerals removed from seawater include sodium chloride, magnesium, bromine, and many others. Most of the world's supply of salt, magnesium, and bromine comes from seawater.

THERE IS GOLD IN SEAWATER, BUT ONLY A VERY SMALL AMOUNT. THE DOW CHEMICAL COMPANY PROCESSED 15 TONS (3750 GALLONS) OF SEAWATER AND GOT ONLY \$.001 WORTH OF GOLD FOR THEIR TROUBLE.

Ocean floor mining is also a means of harvesting ocean resources of manganese and iron, nickel, and other minerals. These minerals often occur as small nodules or stones on the ocean floor and are harvested with dredges. Beaches are also a source of important minerals. Quartz, heavy minerals, and even gold and diamonds are mined on certain beaches.

VISIT YOUR SCHOOL OR LOCAL LIBRARY AND FIND A BOOK ABOUT MINERALS. WHAT ARE SOME OF THE USES OF IRON, MAGNESIUM, MANGANESE, BROMINE, AND NICKEL?



## OIL AND NATURAL GAS

With the ever increasing need for oil and natural gas, the number of OFFSHORE OIL RIGS has greatly increased over the past decades. Offshore drilling began in the 1890's off the coast of California. Today there are hundreds of offshore oil and gas wells worldwide. Nearly twenty percent of the world's oil supply now comes from the seafloor. Although a great boon to the world's oil supply, the potential environmental dangers posed by offshore oil wells are great.

ARE YOU IN FAVOR OF INCREASING THE NUMBER OF OFFSHORE OIL WELLS? WHY?

VISIT YOUR LIBRARY AND READ A BOOK ABOUT OIL WELLS. WITH THE HELP OF YOUR CLASSMATES, LIST SOME DANGERS OF OFFSHORE DRILLING FOR OIL.

WITH THE HELP OF YOUR CLASSMATES, LIST SOME BENEFITS OF OFFSHORE DRILLING FOR OIL.

## OTHER RESOURCES OF THE SEA

Our coasts are a great resource, providing areas for RECREATION such as fishing, swimming, boating, and relaxing. Resort and vacation areas are springing up all along our coasts. This has greatly increased the number of people who live, work, and visit along our coastal areas. A string of small, sandy islands, called the BARRIER ISLANDS, extend along the coasts of Virginia, Maryland, and the Carolinas. These have become heavily populated. Virginia Beach, Ocean City, Atlantic City, Myrtle Beach, and Nags Head are a few of the many resort areas of our Atlantic coast.

DISCUSS WITH YOUR CLASSMATES POSSIBLE BENEFITS AND PROBLEMS THAT MAY RESULT FROM HEAVY COASTAL DEVELOPMENT.

BENEFITS	PROBLEMS
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The oceans provide shipping lanes for world trade. They are used for scientific research, studying marine life, and the characteristics of the oceans themselves. New medicines and chemicals are being discovered from marine animals and plants. Research is underway in harnessing the energy from tides, waves, and temperature differences in the oceans. With research and investigation, more hidden resources of the oceans will become available for our use.

## HOW DO WE MANAGE OUR MARINE RESOURCES?

In order to protect and conserve our marine resources, there are various government and public organizations at work finding answers to many of our coastal problems. The Virginia Marine Resources Commission, The CHESAPEAKE BAY FOUNDATION, the Virginia Institute of Marine Science (VIMS) and the State Water Control Board are some of those involved in marine resource management. A number of research and educational programs are sponsored by the Federal Government through the National SEA GRANT Office. The U. S. Soil Conservation Service plays an important role in managing our coastal wetlands and finding solutions to beach erosion problems.

WHO DO YOU THINK SHOULD HAVE THE GREATEST CONTROL OF OUR MARINE RESOURCES, THE STATE OR FEDERAL GOVERNMENT? WHY?

The enactment and enforcement of laws are effective means of managing our marine resources. In order to understand the problems facing our marine resources, scientists study the problems and report their findings to government officials. Laws concerning how, when, and where seafoods are harvested, offshore oil wells are drilled, marine pollution is controlled, and other issues are based on these studies.

WHY ARE THERE LIMITS SET ON THE NUMBER AND SIZE OF FINFISH AND SHELLFISH TAKEN FROM THE CHESAPEAKE BAY?

WHY IS IT IMPORTANT FOR LAWMAKERS TO STAY INFORMED ABOUT THE CONDITION OF OUR MARINE RESOURCES?

MANY COUNTRIES, INCLUDING THE U.S., HAVE ESTABLISHED 12 - 200 MILE OFFSHORE FISHING LIMITS AGAINST FOREIGN FISHING VESSELS. WHY?

THERE IS PRESENTLY MUCH DEBATE AND CONFLICT OVER LEASING OF OFFSHORE WATERS FOR OIL EXPLORATION? WHY?

IT IS IMPORTANT THAT WE MAKE WISE USE OF OUR MARINE RESOURCES. THAT MEANS GOOD CONSERVATION PRACTICES. WITH THE HELP OF YOUR CLASSMATES, MAKE A LIST OF THINGS YOU CAN DO, AS AN INDIVIDUAL, TO HELP MANAGE AND CONSERVE OUR MARINE RESOURCES.

SEAFOOD

SHIPPING

SEAWATER

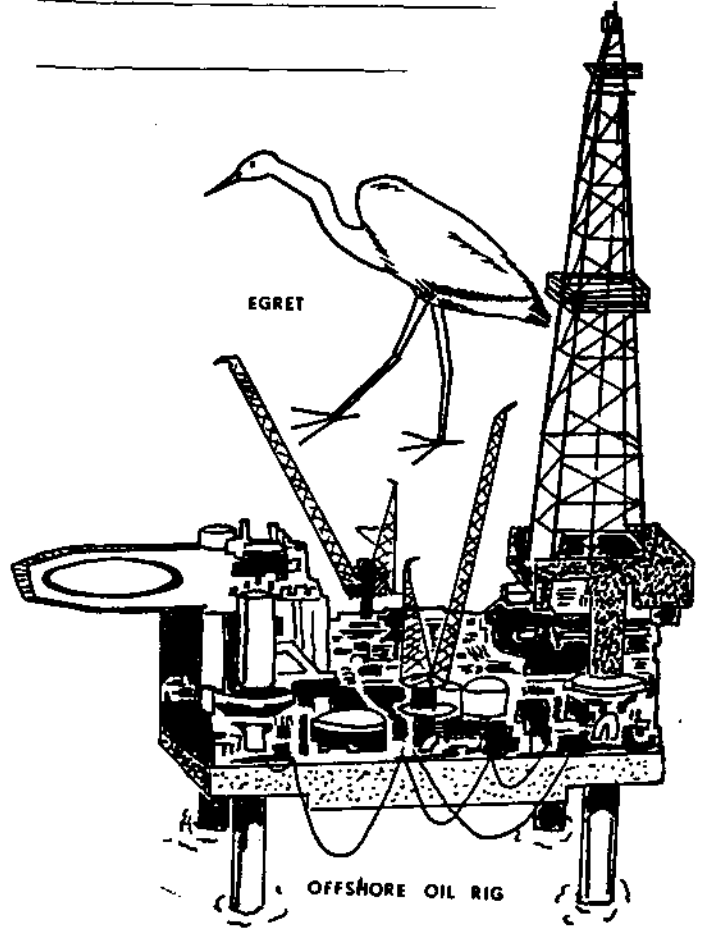
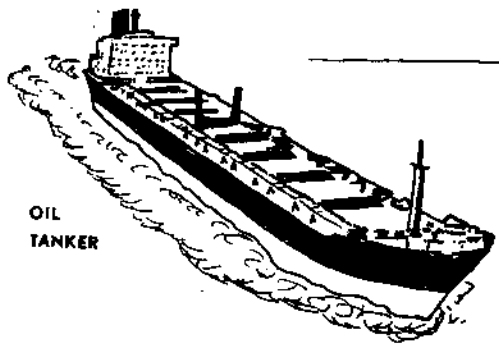
OIL

MINERALS

RECREATION

WILDLIFE

Two columns of horizontal lines for writing, corresponding to the categories listed above.





MARINE RESOURCE	PROBLEM	SOLUTION

The Environmental Protection Agency (EPA) conducted a multi-million dollar study of the Chesapeake Bay with a project called the Chesapeake Bay Program. Several informative publications were produced from that study. Ask your 4-H leader or classroom teacher to contact the State Water Control Board (211 N. Hamilton St., Richmond, Virginia, 23230) and request a copy of Chesapeake Bay Program: Findings and Recommendations. The publication discusses the ecology and human uses of the Bay and points out major marine resource management problems facing the Bay, and possible solutions for them. It will make an excellent reference book for your club library. You can use the publication as a reference for 4-H Marine Project, Unit 5, Marine Pollution.

If you want to learn more about marine resources, visit your school or local library and read the following books:

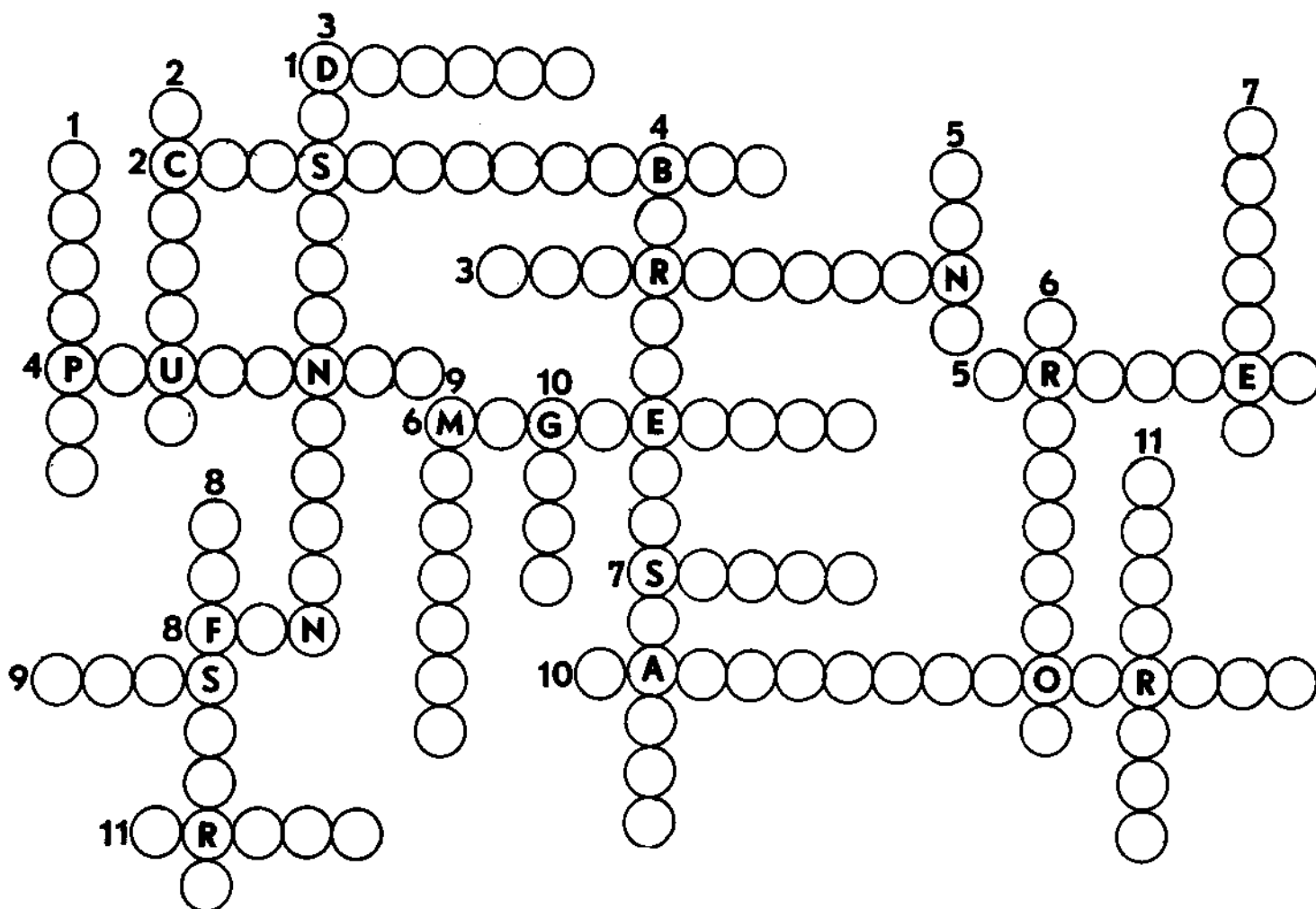
The Edge of the Sea by Rachel Carson, Houghton Mifflin Co., New York, 1955;

The First Book of the Ocean by Sam and Beryl Epstein, Franklin Watts Inc., New York, 1961;

The Oceans in Tomorrow's World, How Can We Use and Protect Them by David R. Michelsohn, Julian Messner, New York, 1972.

The First Book of Commercial Fishing by C. W. Harrison, Franklin Watts Inc., New York, 1964.

## CROSSWORD PUZZLE



## ACROSS

1. used to harvest seafood and minerals from the ocean floor
2. \_\_\_\_\_ Foundation is concerned about marine resources
3. another marine resource
4. catches fish in a net corral
5. large fishing vessel
6. important mineral in seawater
7. shrimp are \_\_\_\_\_ fish
8. spot are \_\_\_\_\_ fish
9. Virginia Institute of Marine Science
10. resources from the ocean
11. sharks and skates were once called \_\_\_\_\_ fish

## DOWN

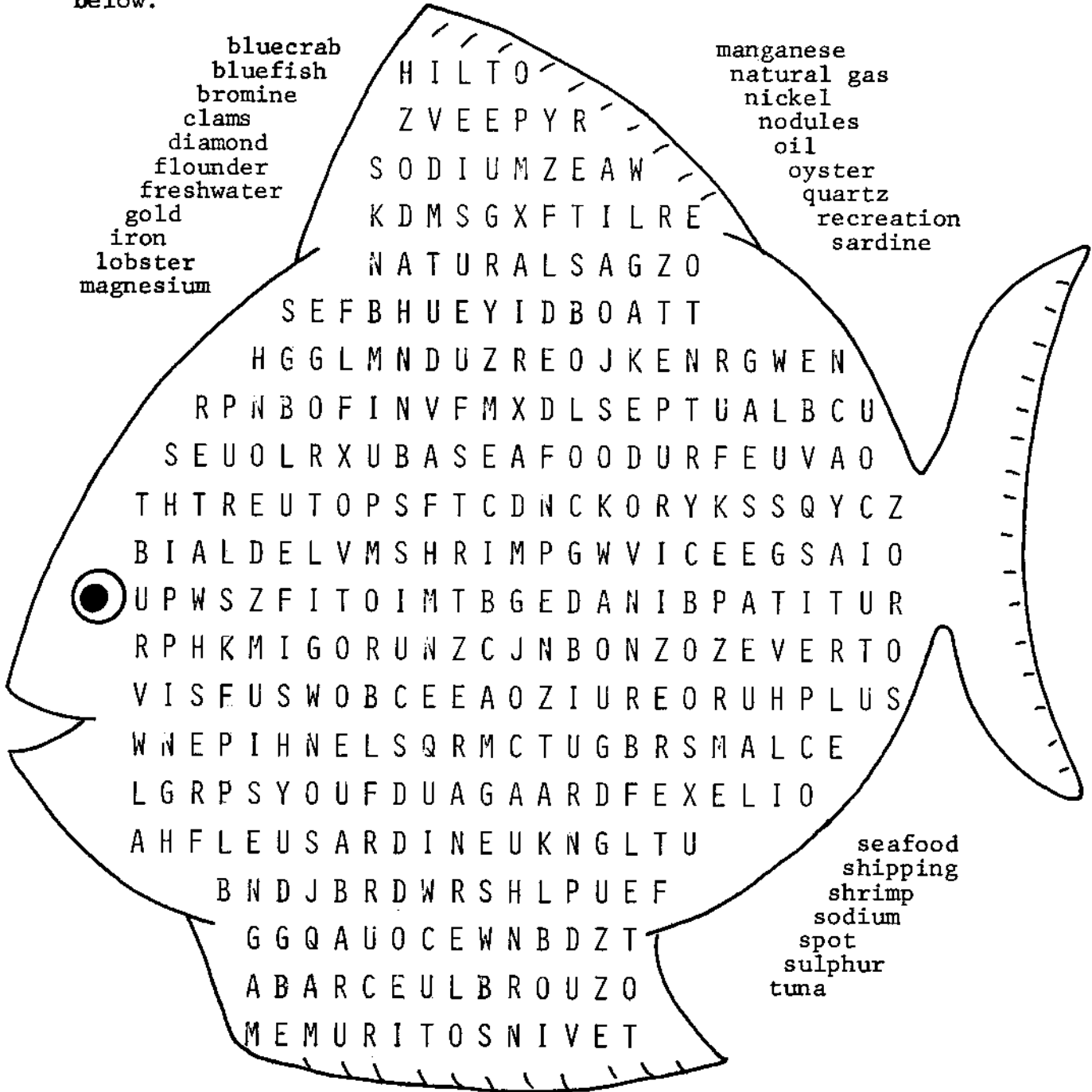
1. used to catch crabs
2. an unusual seafood
3. making freshwater from seawater
4. offshore islands of the Atlantic coast
5. oysterman's tool
6. jointed legged animal
7. entangles fish by their gills
8. where marine oil rigs are located
9. what clams and oysters are
10. a rare mineral in seawater
11. government sponsored marine program

SEARCHWORD PUZZLE

There are 27 different marine resources hidden in this word puzzle. Find and circle all 27. The words in the puzzle are listed below.

bluecrab  
bluefish  
bromine  
clams  
diamond  
flounder  
freshwater  
gold  
iron  
lobster  
magnesium

manganese  
natural gas  
nickel  
nodules  
oil  
oyster  
quartz  
recreation  
sardine



seafood  
shipping  
shrimp  
sodium  
spot  
sulphur  
tuna

Portions of this publication were adapted from 4-H Seafood Project by Janee Medicott, 4-H Staff Associate, courtesy of The North Carolina Agricultural Extension Service.

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