

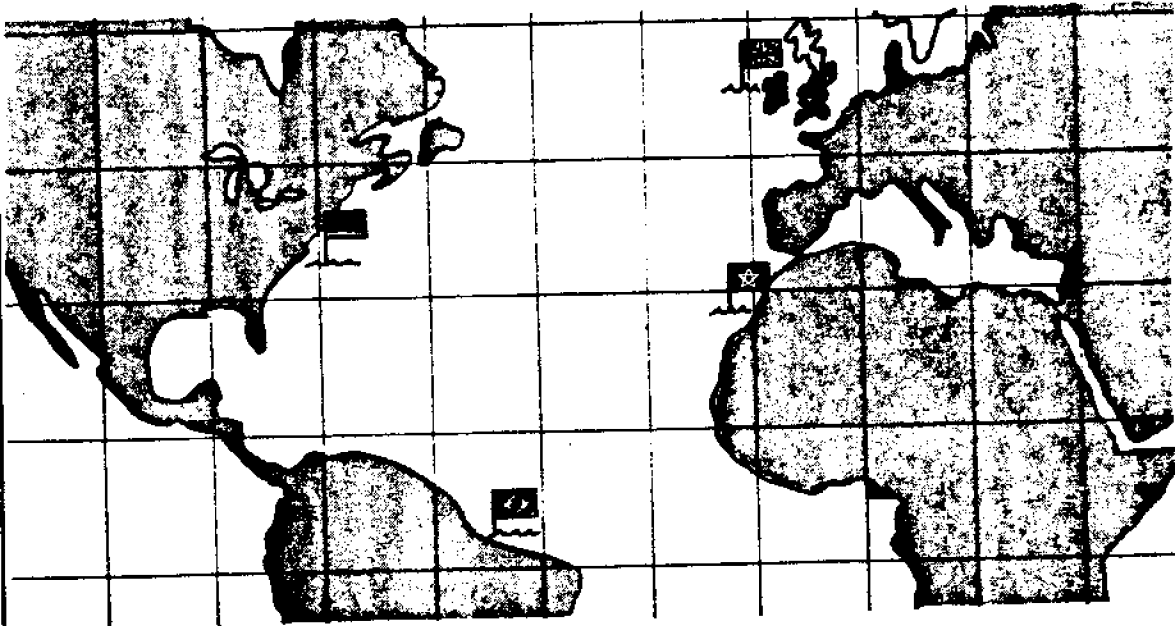
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IT'S EVERYONE'S SEA: OR IS IT?

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TEACHER GUIDE

OEAGLS-Oceanic
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Activities
for
Great
Lakes
Schools

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TEACHER GUIDE

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IT'S EVERYONE'S SEA: OR IS IT? TEACHER GUIDE

by

Victor J. Mayer and Stephanie Ihle
Ohio Sea Grant Education Program



OVERVIEW

In this investigation students study maps of the Atlantic Ocean and the Atlantic Ocean Floor to locate and describe continental shelves, ocean basins and coastal features. They identify areas of the ocean rich in natural resources and in Activity B they participate in a simulation, learning the sources of the conflict between countries regarding rights to these resources. They also learn the major areas of agreement countries arrived at during the Third Law of the Sea Conference. In Activity C, they learn how international boundaries are determined and investigate Canadian and American interests in the sea.

PREREQUISITE STUDENT BACKGROUND

Students should be able to read topographic maps and use map scales.

MATERIALS:

Activity A

Each lab group of two or three students will need the following materials:

1. Pencil, string and ruler;
2. Map of the Atlantic Ocean and Atlantic Ocean Floor, 1974; available from: National Geography Society, Washington, D.C. 20036

Activity B

1. Role card for one of eight countries (included in Appendix).
2. One map of Lake Erie showing the international boundaries should be provided for the entire class (included in Appendix).

Activity C

Students will need a compass, ruler, and pencil.

OBJECTIVES

When students have completed this investigation they will:

1. Know the general shape and topography of the Atlantic Ocean Basin and of the continental margins that surround it;
2. Be able to identify a country as belonging to one or more of eight categories, because of its relationship to the sea.
3. Know the bases of conflict between nations regarding the use of the seas.

4. Understand the problems associated with passing and enforcing a law of the sea.

5. Understand the bases of arguments between Canada and the United States with regard to fishing rights in the Atlantic Ocean and in Lake Erie.

SUGGESTED APPROACH

Both Activities A and C can be done as individually-paced exercises if sufficient maps are available. They can also be done in two to three member lab groups. Activity B is a simulation with eight different roles. Divide your class into eight equal groups and assign each group one of the roles. Place a card with the name of each country on the table where the students representing that country are seated. This will help other students to identify the country they represent.

The film, "Will the Fishing Have to Stop?" part of the NOVA series, would be excellent following completion of Activity A. The film examines dramatic changes in ocean fish populations due to changes in the ocean environment combined with overfishing. It provides insight into research being conducted in proper management of ocean fish species and the problems inherent in enforcing management practices. Produced in 1975, it is 31 minutes long, in color, and available from Time-Life Films.

Another useful introduction to this activity would be the filmstrip entitled "Who Owns the Oceans?" produced by Current Affairs Films, P.O. Box 398, 24 Danbury Road, Wilton, Conn. 06897. The filmstrip provides a history of the development of a law of the sea, and the concerns leading up to the Law of the Sea Conference starting in the early 1970's.

NOTE: Information to teachers is enclosed in boxes in this guide.

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INTRODUCTION

Have you heard of the "cod war" between Iceland and England? Cannons were shot and boats of the two countries tried to ram each other. Do you know why six tuna fishing boats owned by Americans were seized by Peruvian navy ships, almost starting a small war between our nations? Both of these conflicts happened over use of the resources of the sea. Here in Ohio we have had arguments with the Canadian government about fishing rights in Lake Erie. Many countries of the world are now in conflict over using the resources of the sea. Fish, petroleum, and other mineral resources are found along coastlines. Many countries want to use the manganese nodules that are scattered over some of the very deep parts of the ocean basins.

ACTIVITY A: WHAT IS THE SHAPE OF THE ATLANTIC OCEAN BASIN?

KEYWORDS: continental shelf, pelagic, demersal, topography, fathom.

MATERIALS: Map of the Atlantic Ocean and of the Atlantic Ocean Floor.

In this activity students examine and describe the characteristics and resources of the oceans.

Make certain that students begin this activity using the map titled Atlantic Ocean Basin.

PROCEDURE

In this activity you will learn about the margins of the Atlantic Ocean, their topography and the varying depths to the floor of the ocean.

To determine distances you will need to use the scales on your worksheet. They are adapted from the scale that appears in the lower right hand corner of the map entitled Atlantic Ocean.

Because the world is a sphere and the map of it is flat, there is distortion. The actual distances between points an inch apart on the map, for example, may be different depending on how far they are from the equator. Therefore, when you are measuring distances on the map, note the latitude and use the scale for that latitude.

1. Identify the continental shelves along North America, South America, Europe and Africa. What is most noticeable about their topography?

T1. A continental shelf is the shallow part of the sea floor immediately adjacent to the continent. It generally has a smooth, seaward slope and terminates seaward at an abrupt change in slope. In the Atlantic Ocean the continental shelf along North America is relatively wider than the continental shelves of South America, Africa, and Southern Europe. Wide continental shelves are found off the coasts of England, Ireland, Scandinavia and Argentina.

2. Find about 8 depths on the continental shelves. Write the greatest depth you found.

T2. Normally the maximum depth of the continental shelf is about 600 feet. However, there are several unusually deep areas on this map. They are due to local tectonic or erosional influences.

3. Use your ruler and the scales on your worksheet to estimate the width of the continental shelves at New York, mouth of the Niger River, and south of Reykjavic, Iceland.

T3. To answer this question, students can use the distance scale given at the edge of their worksheet in the Student Guide. This scale depends on the latitude of the area to be measured. Make sure the students check the approximate latitude of the area on the reverse side of the map titled Atlantic Ocean and use the proper 200 mile scale when estimating distance on the Atlantic Ocean Floor map.

New York: 140 miles wide
Mouth of the Niger River: 50 miles wide
South of Reykjavic, Iceland: 60 miles wide

For the next several questions use the reverse side of the map; it is entitled The Atlantic Ocean. Look at the blue contour lines in the ocean. These tell you the depth of water. Note the first one out from the edge of the continents. It encloses the lightest blue regions on the map. In some places it is labeled with a "100." It is the 100 fathom line. A fathom is equal to six feet.

4. What is the depth of water in feet along the 100 fathom line?

T4. Since one fathom equals six feet, the depth of the water is 600 feet.

5. What feature does the 100 fathom line mark?

T5. The 100 fathom line marks the seaward edge of the continental shelf.

There are several basins such as: Argentine Basin, Angola Basin, Brazil Basin, and North American Basin.

6. List the depths of five basins.

T6. Answers to this question will vary.

7. Find and write the average of the depths you have listed.

T7. Answer to this question will vary depending on the depths each student has found; however, they should be about 3,000 fathoms, the general depth of ocean basins.

8. What is the width of the Straits of Gibraltar?

T8. The width of the Straits of Gibraltar appears to be approximately 20 miles on this map. Actually, the width varies from 8 to 27 miles across.

9. What is the width of the narrowest part of the English Channel?

T9. The width of the narrowest part of the English Channel appears to be approximately 30 miles across. It is actually only 21 miles across.

10. What is the width of Lake Erie?

T10. Lake Erie is 57 miles across at its widest point. When determining the width on this map, any answer between 50-65 miles is acceptable.

11. Locate the following countries on the Atlantic Ocean map and describe their coast lines and the width of their continental shelves: USSR, Bolivia, Nigeria, Iceland, Yugoslavia, Spain and Bermuda Islands.

T11. USSR--Only a small part of Russia is found on the Atlantic Ocean map. Even so, the coastline shown on the map indicates that Russia is connected to the Atlantic Ocean only through many waterways. The Gulf of Finland and the Gulf of Riza lead to the Baltic Sea which leads to the North Sea and finally to the Atlantic. Also, Russia borders the Black Sea which goes into the Aegean Sea, then to the Mediterranean Sea and out to the Atlantic Ocean.

BOLIVIA--Bolivia, in South America, is a landlocked nation and possesses no coastline.

NIGERIA--Nigeria's coastline is about 1/5 of its total boundary and is about 500 miles in length. The continental shelf is very narrow.

ICELAND--Iceland is an island in the northern Atlantic, completely surrounded by 1200 miles of coastline consisting of many bays and inlets. The continental shelf is generally wide, up to 300 miles on the northwestern side of the island.

YUGOSLAVIA--Yugoslavia borders the Adriatic Sea with about 600 miles of coast, with many islands and harbors.

SPAIN--Spain is basically a peninsula with 1,500 miles of coastline. The continental shelf is fairly narrow, only 20-30 miles wide.

BERMUDA ISLANDS--The Bermuda Islands are a chain of more than 300 islands which have no continental shelf. They are situated on the Bermuda Rise, a small chain of sea mounts.

Deposits of manganese nodules are found in the basins of all oceans. These nodules are rich in several different metals including cobalt, nickel and copper. Deposits of oil are found along many continental margins.

12. What countries do you think have the right to mine the manganese nodules?

T12. Students should think about this problem. As the law of the sea stands now, any country has the right to explore for any mineral resources--however, only the highly developed countries such as the USA and USSR have the technical means to do so.

13. You may have heard about the oil under the North Sea. Write names of the countries you think would have claim to that oil.

T13. Students will have little basis for answering this question. Its purpose is for them to think about the problem of determining the ownership of resources that are under the ocean. Accept almost any answer, but then discuss it with the class. Each country has claimed a 200 mile economic zone in the North Sea. They have reached agreement as to the borders of their zones. Great Britain has the longest sea coast of any of the surrounding countries, therefore, it has claim to the greatest portion of the petroleum found in the North Sea, and to any other fish or mineral resources found there.

14. Natural gas and some oil are found under Lake Erie, one of the Great Lakes. Write names of the countries that might claim ownership of resources under Lake Erie.

T14. Both Canada and the United States claim portions of Lake Erie.

Figure 1 on the next page is a map of the Atlantic Ocean showing the important fishing areas. There are two types of fish caught. One group is found only in the shallow shelf areas. They feed off the bottom of the sea and are therefore called **bottom-dwellers** (or **demersal fish**). The **pelagic fish** feed on plants and animals that float or swim close to the surface of the water. They can be found almost anywhere in the ocean, but especially where food is plentiful.

15. Look at the map showing fishing areas of the Atlantic Ocean. Identify and describe the general areas where the major fishing zones are found.

T15. Shallow water areas tend to be more productive than those over deep oceanic waters. This is because light can penetrate closer to the bottom, thereby enhancing productivity. Also, the major sources of nutrients for life in the oceans are the coastal marshes and rivers. These nutrients will be more concentrated in the shallow coastal areas.

16. Identify and describe three areas where conflict over fishing rights might occur.

T16. One area of conflict is the North Sea between the Scandinavian countries, England, Ireland, Denmark, Germany, the Netherlands, and Russia. Another area of conflict is the rich fishing waters surrounding Iceland. Many nations may compete with Iceland for its fishing wealth. The Gulf of Maine is a rich fishing area between Canada and the United States. Its close proximity to both countries may create conflicts between fishermen of the two countries. Any area where there is a broad continental shelf will provide area for conflict.

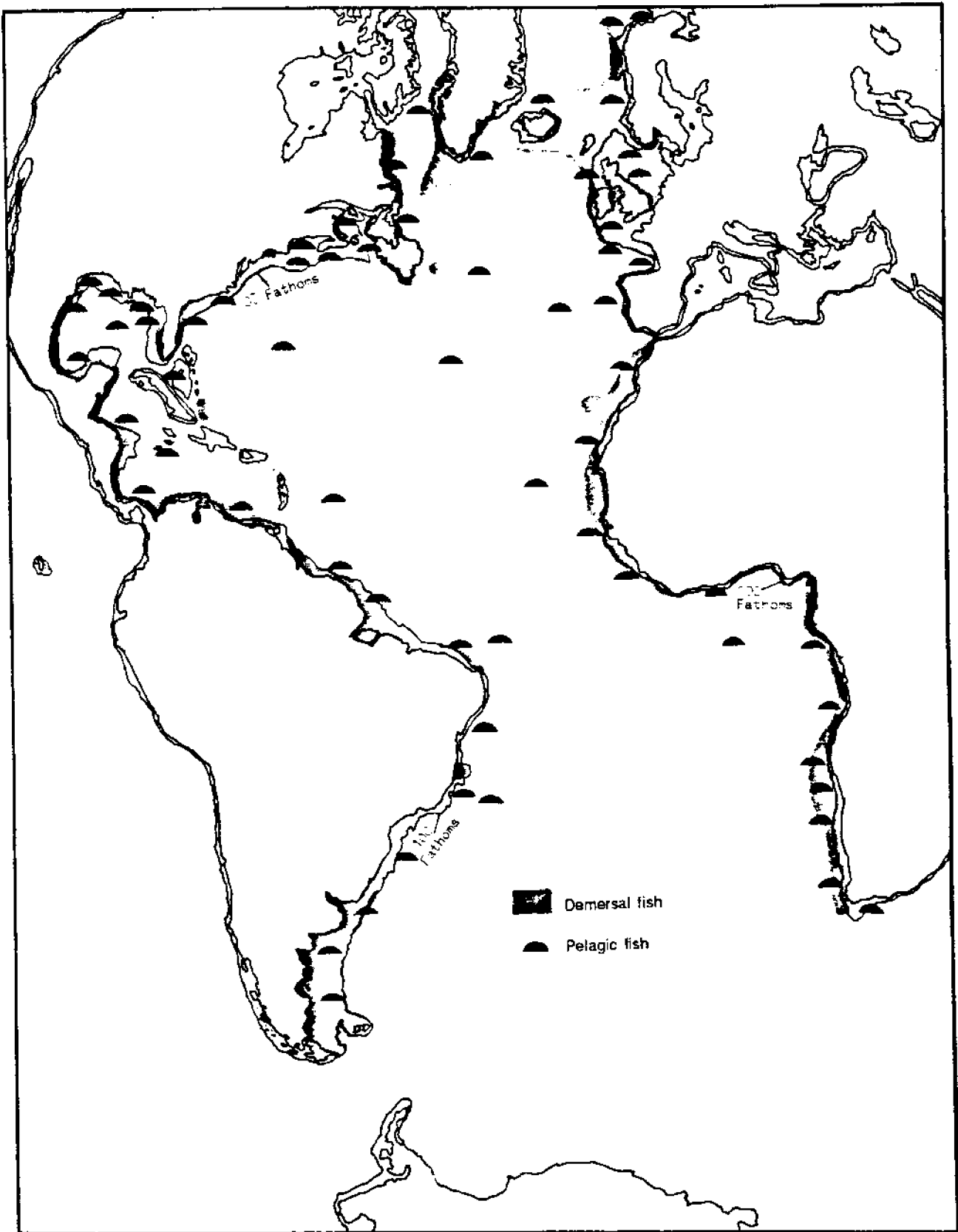


Figure 1. Fishing Areas of the Atlantic Ocean.

ACTIVITY B: WHO OWNS THE SEA?

Determining the rights of countries to parts of the sea and seabed has become a very important problem. In the seventeenth century two types of rights were commonly accepted by all countries; **territorial seas** and **high seas**. Territorial seas extended three to six miles out from the coastline of a country. The country had complete rule over this zone, except that any ship had the right of "innocent passage," that is, movement that did not threaten the safety of the country. Beyond this were the high seas in which any country had both free movement and fishing rights.

With the Industrial Revolution came greater use of fish from the oceans and recently the discovery of energy and mineral resources in the seabed. Countries began to compete for these resources. In 1973 the United Nations held the third conference on the Law of the Sea to draw up rules and regulations for all countries to follow, to provide for a fair division of those resources. This part of the activity will simulate a meeting of the Law of the Sea Conference.

MATERIALS: The same maps used in Activity A and a set of role-playing cards.

PROCEDURE

This activity involves a simulated Law of the Sea Conference between eight countries. Each country represents an interest in the sea based on location and industrial development, and can be categorized accordingly. The class should be divided into eight groups, each group representing one country. Every student should receive a copy of one role card which provides information pertaining to his/her group's country. (Masters are provided in the Appendix.)

The instructions and proposed resolutions for the simulation are complete within the Procedure. Two class periods should be allowed to complete this activity. Help students who have difficulty understanding their roles and mediate the order of activities by setting time limits for discussion in groups, calling for ambassador statements to the entire conference, and asking for the vote.

Each of the world's countries can be classified according to its level of development, economy and geography into one or more of eight categories: straits, fishing, island, maritime, limited shelf, landlocked, developing and developed. There are

eight countries that will take part in this conference: United States, Russia, Spain, Yugoslavia, Nigeria, Iceland, Bolivia, and Bermuda. They represent the different interests countries have in the sea, because of their location, industries and development.

Four actions are being considered for adoption.

- I. Establish a 12-mile Territorial Zone in which the customs, sanitary, and financial laws of the country would be enforced.
- II. Establish an Exclusive Economic Zone, 200 miles wide, in which the nation would have control over living and mineral resources in the water and the seabed. Other nations would keep the traditional freedoms of navigation, overflight and the rights of cable-laying and pipelaying.
- III. Establish an International Seabed Authority which would explore and develop the area of the sea beyond the 200 mile Exclusive Economic Zone in cooperation with the bordering state. Half of the resources would be controlled by the Authority and given to the countries that do not border the ocean.
- IV. Establish a Pollution Prevention Tribunal which would act to prevent, reduce and control pollution of the marine environment.

The delegation of each country is to take an official stand on the proposed actions of the conference. A delegation can also propose that an action be changed or a new one adopted, provided it can get the support of one other country. You will follow this order of activities.

- A. Be assigned to the delegation of one of eight countries by your teacher.
- B. Read the role card for your country and study its location on the map of the Atlantic Ocean. Determine why it belongs to the categories indicated on the role card.
- C. Elect an ambassador.

- D. Discuss the four actions being considered by the conference and decide which you as a country will support and which you will oppose. You can support or oppose as many as your group wishes.
- E. Write a position statement for the country your group represents. State the reasons why your group supports or opposes each action.
- F. Each ambassador presents the position statement of the country to the entire conference.
- G. If there is not unanimous agreement on the issues, countries meet individually to reconsider their position statements, revising them if necessary. They may meet with other groups to lobby for their positions on each action.

At this point countries may develop new actions to be presented to the conference. Any new ones must have the support of at least one other country.

H. Repeat Steps D and E.

I. A vote is taken. Each country casts one vote either for or against each action.

J. For an action to pass, the vote must be unanimous.

After you have completed this simulation, answer the following questions on your worksheet.

- Briefly describe the characteristics of the following categories of nations: straits countries, fishing countries, island countries, maritime countries, limited shelf countries, landlocked countries, developing countries and developed countries.

T1. Following are the eight categories of nations and a description of each of the categories:

STRAITS COUNTRIES. These are countries that are located next to a strait, a narrow passage connecting water bodies having access to the sea. There are 100 straits less than 24 miles wide. A 12-mile territorial sea would limit the rights of innocent passage through these straits. Spain is one such state, sitting on the north side of the Straits of Gibraltar.

FISHING COUNTRIES. This group includes those states with important coastal fisheries and also those with distant-water fishing fleets. The USSR, USA, Iceland, and Spain can all be considered fishing states. All but the USSR have extensive coastal areas for fishing. The USSR sends its fleet world wide.

ISLAND COUNTRIES. If 200-mile Economic Zones are accepted then island states such as Bermuda would command extensive areas of the ocean basin, and the sole right to exploit such areas. Such potential wealth might be in great contrast to the relative size of the country in area and population.

MARITIME COUNTRIES. These are states with large fleets of commercial and/or naval vessels, such as USSR and USA. They have concern about the rights of free passage of their vessels, especially important through straits.

LIMITED SHELF COUNTRIES. These are states with narrow and/or short shelves. Therefore, they have limited access to the resources found on the shelves. They could consider themselves disadvantaged in access to the resources of the ocean, especially under the current law.

LANDLOCKED COUNTRIES. These are countries with no coastline, such as Bolivia. Under current law they have no rights to any coastal resources. They would generally be in support of some type of Seabed Authority that would share ocean resources among all countries.

DEVELOPING COUNTRIES. These are countries of the "third world." They do not have a strong industrial base. Frequently, they are deficient in natural resources. These countries are concerned that there be a law of the sea that would not favor the developed countries. They may be more in need of the sea's mineral and food resources, but they do not have the technological capability for obtaining them.

DEVELOPED COUNTRIES. These are countries that have well developed economies and industrial bases. They are the ones, such as USSR and USA, that have the greatest potential for developing the mineral resources of the sea. They also have a large share of the current wealth of the world.

- Why do you think one requirement of the simulation is that actions had to be passed unanimously?

T2. It would be very difficult to enforce a law of the sea unless all countries accepted it.

- List the basic interests that countries have in the sea.

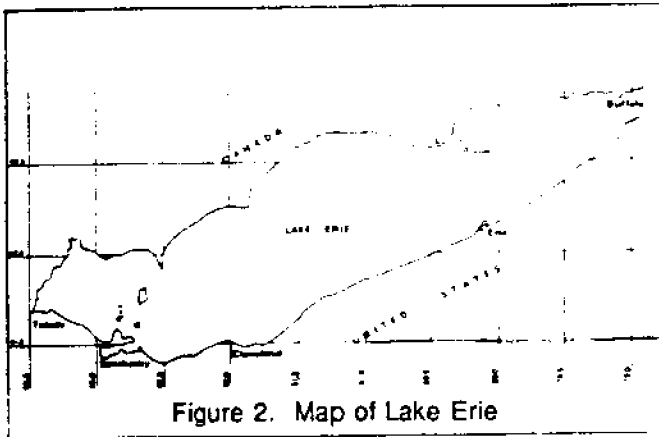
T3. The basic interests that most countries have in the sea are economic, use of its resources, and for defense and transportation.

ACTIVITY C: HOW ARE BOUNDARIES OVER WATER DETERMINED?

KEYWORD: boundary

MATERIALS: Compass, ruler, pencil, map of the Atlantic Ocean.

The treaties with Great Britain that ended the Revolutionary War defined the boundary between Canada and the United States through Lake Erie as being "through the middle of said Lake until it arrives at the Water communication between the Lake and Lake Huron." This is a common way of defining territorial boundaries that occur along bodies of water.



1. In Figure 2 on your worksheet, draw in the boundary between Canada and Ohio as defined by the treaties. Lay your ruler across the Lake, keeping it perpendicular to the north and south shores. Mark the center of the Lake. Do this several times at different places. Then connect each point with a line. This will be your boundary.

T1. The student can use a ruler to locate the middle of Lake Erie and plot the boundary. Some students may have difficulty plotting the boundary due to uneven coastline and islands.

2. Compare the position of the boundary that you have drawn with the boundaries drawn by other members of your class. List the similarities between the boundaries.

T2. The boundaries will vary depending on the student's ability to locate the middle of the Lake. Some variation of boundaries may be seen around the islands. Provide students with a copy of the map of Lake Erie (Appendix B).

3. List the differences between these boundaries.

T3. Answers to this question will vary depending on the boundaries drawn by student.

At the Treaty of Ghent, following the War of 1812, there was doubt as to what was the middle of the Lake. You may have encountered this problem when your tried to determine the middle.

A commission was appointed to settle upon the boundary. Its decision in 1822 provided for the division of the western islands between the two countries. Even then, there was not a definite line between the two countries over water. In 1908, the International Waterways Commission fixed a series of straight lines using permanent objects such as lighthouses as turning points for the lines. This is the boundary on the map provided by your teacher.

4. Compare the position of your boundary with the present boundary as it appears on the map of Lake Erie your teacher has posted in the classroom. Where are there differences?

T4. Answers to this question will vary depending on the position of the individual students' drawings.

5. State some of the possible reasons for these differences.

T5. It is difficult to judge where the middle of the Lake should be because of the irregular shoreline, islands, peninsulas, etc.

Commercial fishing is an important industry on Lake Erie, especially for Ontario. Ontario and Ohio have somewhat different laws that apply to its waters. For a Canadian boat to fish in the waters of Ohio, its captain must get an Ohio permit and follow the laws of the State. The captain must also land his catch in Ohio so that authorities can be assured that Ohio laws have been followed.

In 1978, a Canadian boat was seen illegally fishing in Ohio waters. Law enforcement officers in the Ohio Department of Natural Resources chased the Canadian boat. One officer was able to jump aboard just before it crossed the border into Canada. The Canadians captured the officer and took him into Canada. Later he was returned to Ohio. A few years later, the same boat was successfully captured by Department officers. A judge ordered the boat impounded as punishment for law violations committed by the Canadians.

There are other locations where there is conflict between Canadian and American interest in the sea. One is the Gulf of Maine. Here there are rich fishing grounds and possible oil deposits under the continental shelf.

6. Locate the Gulf of Maine on your map of the Atlantic Ocean. It is a body of water that lies just off the coast of Maine, between the southern point of Nova Scotia and Cape Cod. Now identify the Gulf in Figure 3. Locate Georges Bank and the edge of the continental shelf.

7. Refer to Figure 1. Identify and state types of fish that are found near the Gulf of Maine.

T6-7. Both pelagic and demersal fish are found in the Gulf of Maine.

Both the United States and Canada enforce a 12-mile territorial limit.

8. List the rights a country has within its territorial zone.

T8. A country has a right to enforce its laws including immigration, customs, sanitary and financial laws in its territorial zone.

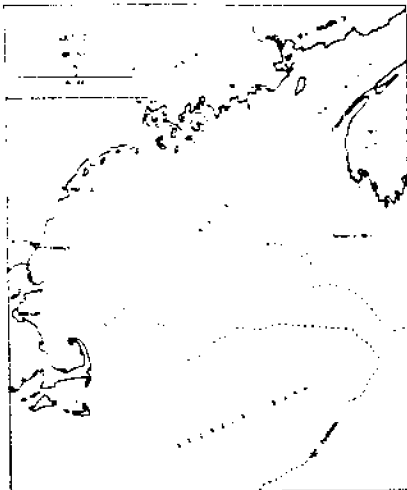


Figure 3. Gulf of Maine

9. On Figure 3 on your worksheet, draw in the territorial limits of Canada and the United States. Using the map scale, adjust your compass to measure 12 miles on the map. Placing the point of the compass on the coast of the United States draw arcs in the water. Do this many places along the coast of the United States. Then draw a line connecting the arcs. Now do the same for the Canadian coast.

T9. On the map of the Gulf of Maine (Figure 3) 12 miles is equal to approximately 1/4 inch.

Recently the United States announced a 200-mile economic zone. Canada has also done this.

10. Do you think there is a possible controversy between the United States and Canada because of their territorial limits? Where?

T10. These would be between Maine and New Brunswick because of the overlap of the 12 mile limit. Negotiations between the two countries established their territorial limit in this case.

11. Draw the boundary of the economic zones between the two countries in the Gulf of Maine (in Figure 3). List the difficulties you had in drawing this boundary.

T11. Part of the 200 mile economic limits overlap, providing a source of disagreement between the United States and Canada.

12. List the rights each country holds within its economic zone.

T12. Each country has a right to the resources within the economic zone, i.e., fish, minerals, oil, etc.

13. What effects do you think this boundary will have upon fishing rights in the Gulf of Maine?

T13. Since the boundaries overlap, some common boundary line must be agreed upon by Canada and the United States. The area for fishing for each country will be reduced (for commercial and sport fishers) to a smaller area than the 200 mile limit.

14. What effects do you think it will have upon searching for petroleum?

T14. The economic zone agreement between Canada and the United States must also take into consideration the prospect of petroleum fields. Petroleum is usually located at the seaward margin of the continental shelf. If most of the continental shelf lies within one country's zone, the right to mine the petroleum must be decided upon and considered in the agreement.

REVIEW QUESTIONS

1. Describe the general characteristics of ocean basins, continental shelves, and straits.

R1. The four largest ocean basins (Brazil, Angola, Argentine, and North American) are the deepest points in the Atlantic Ocean, averaging more than 3100 fathoms deep. The continental shelves are the shallowest part of the sea floor immediately adjacent to the continents. They range in width from about 30 miles to 500 miles. The maximum depth of water above the continental shelves is approximately 100 fathoms. Straits are narrow waterways between two large bodies of water.

2. Distinguish between developing countries and developed countries. Give several examples of each.

R2. Developing countries are just beginning to modernize. They want to build up industry, business and wealth in their country. Developed countries are highly industrialized. Established laws and business practices affect these countries' interests. Developed countries include the United States, West Germany and Japan. Developing countries include many African and South American countries, Pakistan, and most of Southern Asia.

3. Describe general characteristics of the following categories of nations: straits, fishing, maritime, limited shelf, and land-locked.

R3. See #1, Activity B.

4. List the major interests that nations have in the sea.

R4. See #3, Activity B.

5. What has made it difficult for nations to agree on a law of the sea?

R5. All countries want to use the benefits of the sea as much as possible. To some, fishing is more important; to others, minerals are more important. Some countries have no access to the ocean, but have interests in how products are shipped, etc.

6. Describe possible sources of disagreement between Canada and the United States because of boundaries on lakes and oceans.

R6. Both countries want fishing, mineral, and shipping rights and both want their country to benefit from the sea and lakes. Each works for its own best interest (See #12 and #13, Activity C).

BACKGROUND INFORMATION

A Constitution for the Seas - Main Features of the Treaty

In spite of many nations and the complexity of the issues involved, in 1982 delegates to the third United Nations Conference on Law of the Sea (UNCLOS III) reached agreement on a wide variety of problems. The main conclusions were:

Boundaries

The treaty sets rules for drawing boundaries starting at the coastline, usually the low water mark, and stretching into the deep ocean, as well as for defining special cases like internal waters (bays, rivers and estuaries), island chains and straits.

Territorial Sea: The treaty recognizes the territorial zone not wider than 12 miles from the coastline. Foreign ships have a right to "innocent passage" (but not air crafts or submerged submarines). It also recognizes the Contiguous Zone which stretches 12 miles beyond the territorial sea. Coastal countries have the right to enforce their immigration, customs, fiscal or health laws in effect in their territorial sea and to protect archeological treasures like sunken ships.

Exclusive Economic Zone

The treaty also acknowledges a 200-mile exclusive economic zone for each coastal nation. It permits coastal states to have full control over living and non-living resources, ocean dumping and activities related to economic exploitation of the zone. Coastal countries also have jurisdiction over natural and marine resources on and under the continental shelf 200 miles from their coastline. The shelf boundaries, however, may not extend 350 miles from the coastline, or at the outer edge of the continental margin (the underwater extension of continental land), whichever is greater.

Ocean Transit

The treaty assures the right of passage, freedom of navigation, and overflights on the high seas, as well as within the 12-mile limits, (under certain circumstances). It also assures movements of ships and aircraft through and over 116 straits that are less than 24 miles wide.

Seabed Mining

The seabed area has been defined as that part of the "seabed and ocean floor and subsoil" that is not within the jurisdiction of any country. This area has been declared as the "common heritage of mankind." Non-resource uses, including scientific research, are free. However, efforts to mine deep ocean minerals require a contract with an international seabed authority.

Fishing

Under the treaty coastal nations have absolute control over the fish within their economic zones, and are responsible for maintaining levels of maximum sustainable yield. They also have rights to grant permits to fishers from other countries. Fishers from other countries are required to obey the management rules set by the coastal state. Coastal states are responsible for managing the fish within their exclusive economic zone to maintain maximum sustainable yield.

Marine Environment

The treaty paves the way for environmental safeguards to protect the seas from contamination, even if it originates in polluted inland waterways. Therefore, the treaty calls for every state to take actions consistent with the Convention to prevent, reduce and control pollution of the marine environment, including the areas under their control, as well as on the seabed, artificial islands and similar structures.

Jurisdictional Agencies

The treaty provides for the establishment of two governing units: 1) the International Seabed Authority, and 2) the Supranational Law of the Sea Tribunal. The exploitation and exploration of the areas beyond the limits of national jurisdiction and deep seabed resources will be controlled and managed by the International Seabed Authority. The International Seabed Authority contains provisions for:

- a) Assembly - Policy-setting organization composed of all nations which have approved the Treaty. Two-thirds majority vote required on questions of substance.
- b) Council - 36-member executive organization, which, with its subsidiary technical commissions, monitors day to day mining operations. It has final say over all mining activities. Members are elected for four-year terms and are eligible for re-election. They are elected on the basis of specified categories of interest and geographical location.
- c) Preparatory Commission - Committee to be established by UNCLOS III resolution. It will lay the ground work for the establishment of the International Seabed Authority and for the Law of the Sea Tribunal for ocean-related disputed settlement. (Adapted from Soundings.)

United States and the Law of the Sea

In December, 1982, the last formal session of the Conference on the Law of the Sea convened in Montego Bay, Jamaica, to sign a treaty which took nearly fifteen years of negotiations. 117 nations signed in favor, 17 abstained, 4 countries voted against the treaty. The United States was one of the 4 countries which voted against it. Although many features of the treaty advanced U.S. ocean interest, the Reagan Administration felt that the parts of the treaty dealing with the deep ocean mining were unacceptable. The Reagan Administration believed that this part of the treaty is fatally flawed because it is allegedly antithetical to the free enterprise system that the Administration thinks should prevail in the mining of deep seabed resources. Although the United States opposes the seabed mining part of the treaty, it is anxious to benefit from the other provisions because they are considered mostly advantageous to the United States. This rejection of a treaty with widespread international support has compelled the United States to explore different ways to achieve its ocean interest outside the framework of the treaty.

Treaty supporter nations were particularly grieved at the United States because the latter had been a leader in the negotiations during the past four years and had succeeded in securing a number of favorable changes in the proposed treaty. Treaty supporters criticized the U.S. for several reasons. First, considering the range and complexity of the issues and the number of participants, they argued that the compromises in large number squared with American navigational rights. Secondly, although the seabed mining provisions did not meet the expectations of the United States, the delegates at the Eleventh session had agreed to a number of compromises along the lines called for by President Reagan. These included: protection for the first investors in seabed mining, high ceilings on the amount of mineral that could be mined from the sea floor, and an assured position for the largest consumer of minerals, (presumed to be the United States) on the Council of the International Seabed Authority.

Finally, by focusing on a single issue - seabed mining - which is not likely to occur on a commercial scale for at least another decade, they felt the United States had jeopardized its right to enjoy the treaty provisions relating to its basic interests in navigational freedom, fisheries management, environmental protection and scientific research.

Despite U.S. objections to the treaty, most international observers believe that the treaty provides a fair system for regulating deep seabed mining and it is not unduly burdensome on private enterprise. At the same time it is hoped that there are improvements that could be made that could be generally beneficial and might encourage the United States to withdraw its objections.

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Evaluation Items

1. Manganese nodules are found
 - a. on the continental shelves.
 - b. in straits between two large bodies of water.
 - *c. in ocean basins.
 - d. near islands.
2. What rights does an exclusive Economic Zone give a nation?
 - a. Enforcement of customs, sanitation, and financial laws of the country.
 - b. Jurisdiction over pipes and cables laid by other nations.
 - c. Authority to control pollution from ships.
 - *d. All rights to resources in water and sea bed.
3. Where would you find major fishing areas of the world?
 - a. Above the deep ocean basins.
 - *b. Over wide continental shelves.
 - c. Along the Mid-Atlantic ridge.
 - d. In straits between two larger bodies of water.
4. What right(s) does the Right of Innocent Passage include?
 - *a. Freedom of peaceful navigation through foreign territory.
 - b. Freedom of fishing within foreign territory.
 - c. Freedom of mining within foreign territory.
 - d. Authority to control pollution from ships.
5. Which of the following is classified as a landlocked country?
 - a. Yugoslavia
 - b. USSR
 - *c. Bolivia
 - d. Nigeria
6. Which of the following is a developing country?
 - a. Iceland
 - *b. Nigeria
 - c. United States
 - d. USSR
7. Which of the following is a straits country?
 - *a. Spain
 - b. Bermuda
 - c. Iceland
 - d. Nigeria.

8. Which of the following countries would be most likely to favor the establishment of an International Seabed Authority?

- a. United States
- *b. Bolivia
- c. Bermuda
- d. USSR

9. Which of the following is found on continental shelves?

- a. manganese nodules
- b. forests
- *c. petroleum
- d. alcohol

10. Disputes between Canada and the United States have arisen over fishing rights and rights for petroleum exploration. Most of these disputes involve:

- *a. The Gulf of Maine
- b. Lake Erie
- c. Lake Superior
- d. Puget Sound

Appendix

A. Following are role cards for United States of America, Union of Soviet Socialist Republics, Spain, Yugoslavia, Nigeria, Iceland, Bolivia, and Bermuda.

B. Map of Lake Erie.

THE UNITED STATES OF AMERICA

The United States of America has been nicknamed "the melting pot of the world" because of the wide variety of nationalities, religions, climates, natural resources, agricultural and manufacturing products. Education from age 6 to 16 is compulsory. Most Americans graduate from high school or vocational school and many attend colleges and universities. In 1983, the average per capita income was \$11,675; one of the highest in the world.

AREA: 3,615,122 square miles (4th largest country in the world)

POPULATION: 226,545,805 (1980 census) (4th highest population in the world); Literacy Rate = 99%.

The current goals for the armed forces are: to deter an all-out strategic nuclear war and to be ready for limited nuclear or non-nuclear conflicts. To accomplish these goals about 2,135,900 people are enlisted in the Army, Navy, Air Force, Marine Corps, and Coast Guard and the defense budget is over \$100,000,000,000 (about 7% of the Gross National Product). The Navy employs about 564,800 men and women at American naval bases and also at bases located in Newfoundland, Bermuda, Bahamas, Jamaica, St. Lucia, Trinidad, Antigua and British Guyana.

Seventy-four percent of the population lives in metropolitan areas situated along coastlines or major waterways. The United States is the world's leading manufacturing country. Machinery, food products, fabricated metal products, primary metals, printed publications, paper products and instruments are the leading products.

Twenty-six percent of the population lives in rural areas. There, farming is the leading occupation. The United States has fertile soils. The use of modern machines and technology has greatly improved the quantity and quality of farm products. Beef cattle, corn, dairy products, eggs, hogs, poultry, soy beans, tobacco and wheat are produced in great quantities.

The United States has many natural resources. Water supplies provide hydroelectric power, irrigation for agriculture, and transportation for industrial products. Leading minerals include coal, iron ore, lead, limestone, natural gas, oil, phosphorus, potash, uranium and zinc. Due to low or absent supplies, antimony, asbestos, bauxite, chromite, cobalt, copper, diamonds, iron ore, magnesium, mica, nickel, tin, titanium, and uranium must be imported. Because of its high rate of energy consumption, the United States must now import almost half of its oil, most of which comes from overseas.

The imported products come from many countries. The United States trades with every nation in the world. Over 800 vessels carrying 1,000 gross tons or more make up the American merchant fleet, however, 90% of America's shipping is done with vessels that are registered with foreign governments.

Along the Atlantic and Pacific Oceans three and one half million metric tons of fish and other seafood are caught annually. The chief fishing states include Florida, Massachusetts, Maine, North Carolina and Oregon. Cod, haddock, herring and mackerel are caught along the New England coast. Menhaden fish and shrimp are the major fish catches in the South Atlantic and Gulf Coast, and salmon and tuna are caught along the Pacific Coast.

The United States falls into several categories of countries; it is next to several straits including the Bering Strait, it is a major fishing nation and maritime nation, and it is developed.

Information Source: World Almanac Book of Facts, 1986
Countries of the world and their leaders, 1986

UNION OF SOVIET SOCIALIST REPUBLIC "RUSSIA"

Russia is the largest country in the world. It borders three major oceans; Atlantic, Pacific and Arctic. However, its only ports lie in high northern latitudes and are, therefore, closed by ice during part of the year.

Russia was the first country to develop a communist government and today has alliances with most other communist countries.

A governing council rules over 15 republics that make up the USSR. Each is almost like a separate country since languages, customs and traditions vary greatly among the republics.

AREA: 8,549,500 square miles (3 times larger than the United States, excluding Alaska)

POPULATION: In 1980 was 265.5 million. It ranks third in world population and has a Literarcy Rate = 99.8%.

It has the largest armed forces in the world, employing over 3,375,000 persons. The defense budget is approximately 15% of the Gross National Product. Russia's navy is steadily expanding and progressively modernizing with over 500,000 officers and men. Naval ports are located in Nikolaiev and the Sevastopol on the Black Sea, Molotovsk on the White Sea, Komsomolsk on the Amur River and Leningrad.

Russia is a developed country with an excellent educational system enrolling 55 million full-time students. Sixty-four percent of the population lives in cities and is employed in business and industry. Thirty-six percent of the Russian people live in the country, most on farms. A few farms are privately owned and operated, while most are state owned and operated by 5 to 10 families apiece. The per capita income in 1980 was approximately \$4,550 U.S. dollars.

Russia produces the following agricultural products: barley, corn, flax, rye, cotton, oats, potatoes, sugar beets and livestock. Russia's leading natural resources are bauxite, coal, copper, gold, iron ore, lead, and forestry products. Russia is the largest oil producing nation in the world. Besides oil, hydroelectric power and coal are the major energy sources. It also has one of the world's largest fishing fleets. Fish provide a major source of protein in the Russian diet.

Russia exports iron, steel, lumber, machinery, and petroleum. Since Russia is almost self-sufficient in most materials, only a few goods are imported--industrial equipment and consumer goods. Russia's leading trading partners are Czechoslovakia, Japan, Italy, East and West Germany, Poland, Bulgaria, Hungary, Romania, Cuba and the United States. Over 7,000 vessels make up the Russian merchant fleet. The most important merchant sea ports are at Vosochny in far eastern Russia, Girgorevsky on the Black Sea, Ventspils at Lativ and Murmansk and Archangel, used for Arctic traffic.

Russia is in several categories; it is next to several straits, including the Bering Strait; it is a fishing country with a world-wide fleet; a maritime country, and developed.

Information Source: World Almanac Book of Facts, 1986
Countries of the world and their leaders, 1986

SPAIN

Spain occupies 5/6 of the Iberian Peninsula, with the remaining occupied by Portugal. It boasts 3,340 miles of coastlines bordering both the Mediterranean Sea to the south and the Atlantic Ocean to the north and west. The climate is sunny and dry. The high central plateau region has hot summers and cold winters. Along the coast, climatic conditions are not as severe.

AREA: 195,988 square miles (slightly larger than California)

POPULATION: 38,629,000 (est. 1985) (about 50% larger than California) Literacy Rate = 97%.

Spain has approximately 280,000 men in the armed forces. The Spanish fleet is undergoing modernization.

It has grown to become a modern, industrial country. Today, half of Spain's population lives in cities, dwelling mostly in apartments. The per capita income in 1979 was \$5,500 U.S. dollars. Most of the working force is employed in industry, farming, or fishing. Spain is one of the world's leading producers of automobiles and ships. In addition, cement, chemical products, clothing, shoes, cork products and steel are also major manufactured items. Most of the industrial and energy resources must be imported since Spain lacks raw materials. A few minerals such as coal, lignite, iron ore, zinc ore and lead are mined for industrial use or exported.

Farm production in most regions is low due to poor soil, dry climate and inferior farming techniques. Although livestock, cereals, vegetables, grapes, oranges, tobacco, honey and sugar cane are major farm products, much food must still be imported.

Spain is a leading fishing nation, catching over 1.2 million metric tons of fish each year, chiefly anchovies, codfish, hake, sardines and tuna. The Spanish fishing fleet includes 16,853 vessels. The fish come primarily from the water off the northern coast of Spain. The merchant shipping fleet includes 3,040 vessels carrying over 3 million passengers and 49 million tons of cargo annually to other parts of the world.

Because of its position at the mouth of the Mediterranean, Spain would be considered a "straits" country. It is also a fishing nation and is becoming a developed country.

Information Source: World Almanac Book of Facts, 1986

YUGOSLAVIA

The Socialist Federal Republic of Yugoslavia borders the Adriatic Sea in southeastern Europe. A communist country, it is influenced by the USSR. Its population is a mixture of many nationality groups with different cultures, religions, and languages. Much of the area is mountainous. Along the coast, over 700 islands and the indented coastline provide many excellent natural harbors. In northcentral Yugoslavia, the Danube River runs through the Pannonian Plains region which is flat with rich soils, making this region the chief farming area. The climate along the coast is mild; however, more extreme climatic conditions occur inland.

AREA: 98,766 square miles (a little larger than Oregon)

POPULATION: 22,412,000 (1982 census) (ten times greater than Oregon). Literacy Rate = 90%. Almost all attend Primary School.

The Yugoslavian armed forces consist of about 250,000 men, 27,000 of which are in the navy. The defense budget is \$1,300,000,000 or 8.5% of the Gross National Product. This is a larger percentage than many other countries.

The Yugoslavian standard of living is high. Most families own a car, television set and other luxury items. They travel freely to other countries. In most cases, both the husband and wife hold full-time jobs. The per capita income is \$3,109 U.S. dollars.

About 35% of the land is devoted to agriculture, providing high yields of corn, sugar beets, wheat, barley, oats, potatoes, tobacco, grapes, olives, plums, cattle and sheep. Forests cover 35% of the land and forest products are a major export.

Mineral resources include bauxite, chromite, coal, copper, iron, lead, mercury, natural gas, petroleum and zinc. Yugoslavia trades mostly with Italy, East and West Germany, the Soviet Union and the United States. The major exports are forest products, livestock, machinery, metals, plastics and textiles. The chief imports include coal, crude oil, machinery, metals, plastics and textiles. The Yugoslavia shipping fleet consists of 432 vessels. Half of Yugoslavia's energy comes from hydroelectric power. Coal is also widely used and a new nuclear power plant is near completion.

The principal product from the Adriatic Sea is fish. Yugoslavia owns more than 200 motorized fishing vessels and over 1,700 sailing and rowing fishing vessels. Fish catch in 1981 was 71,000 metric tons.

Yugoslavia has limited shelf area and is on the verge of being a developed country.

Information Source: World Almanac Book of Facts, 1986

NIGERIA

Nigeria is located on the west coast of Africa, along the Gulf of Guinea, just north of the equator. Topography in Nigeria varies greatly. It has hot, rainy swamplands; dry, sandy deserts; grassy plains; tropical forests; high plateaus; and rocky mountains.

AREA: 356,669 square miles (the size of Texas and Colorado combined)

POPULATION: 88,148,000 (est. 1984) (three times the combined population of Texas and Colorado). In 1980, the enrollment ratio for primary schools was 71 percent.

Over 200,000 persons serve in the Nigerian Army. Nigeria also operates a small navy (4,500 perons), an air force and a federal police force.

Three-fourths of the Nigerian people live in rural areas earning their living by farming, fishing or herding. The per capita income is \$750 U.S. dollars. Most people live in small villages in huts made of grass and dried mud. Over 250 languages are spoken.

Nigeria's economy is based on farming and mining. Nigeria ranks among the world's leading producers of cacao, palm oil and palm kernels, peanuts and rubber. Other important crops include beans, cassava, corn, millet, rice and yams. Farmers also raise goats, poultry, sheep and cattle.

The oil industry is the fastest growing industry in Nigeria. Most of the oil fields are operated by foreign companies. Many of the oil wells are located on the Nigerian continental shelf in the Gulf of Guinea. Nigeria is a member of OPEC (Organization of Petroleum Exporting Countries). In 1985 over 95 percent of the value of exports was in crude oil. Other minerals are coal, columbite, gold, iron ore, lead, limestone, natural gas, tin, and zinc.

The principal shipping ports include Lagos, Port Harcourt, Warri and Calabar. In addition to oil it exports cacao beans, palm products, peanuts, rubber, timber and tin. Important items that must be imported include cement, chemical products, food products, machinery, manufactured goods and textiles. Nigeria's most important trading partners are Great Britain, the Netherlands, West Germany and the United States.

Nigeria has a limited continental shelf and is a developing country.

Information Source: World Almanac Books of Facts, 1986
The New Encyclopaedia Britannica, 1987

ICELAND

Iceland is a republic located just below the Arctic Circle in the northern Atlantic Ocean. Because of its northern location, it has a relatively cool climate. A large part of the country is covered by an icecap. There is a great deal of volcanic and earthquake activity. Much of its energy comes from hot water that is found at and below the surface.

AREA: 102,846 square kilometers or 39,769 square miles (about as big as Kentucky)

POPULATION: 239,000 (est. 1984) (about 1/16th the population of Kentucky). Education is required through age 16.

Iceland has no army or navy, however, the United States has troops stationed there. Iceland does have a small coast guard which patrols the fishing area surrounding the island. In 1975, Iceland announced an extension of its fishing rights to 200 miles to protect the fishing stocks and its fishing industry.

Most Icelanders live in coastal towns, making a living by fishing or working in fish processing plants. The per capita income in 1980 was \$9,000 U.S. dollars. Fifteen percent of the Icelanders are farmers, making a living in the fertile lowlands along the southern and western coasts. The major agricultural products are hay, wool, meat, skins and dairy products.

The most important industry in Iceland is fishing and fish processing. In 1982, its total fish catch was 776,000 metric tons, primarily cod, haddock, and herring. Most of the fish are dried, salted or frozen and exported to other countries. Iceland trades mainly with Denmark, Great Britain, Norway, Russia, Spain, Sweden, Switzerland, East and West Germany and the United States. Fish and whale products are Iceland's greatest exports. A small merchant marine consists of six steam powered vessels and 987 smaller motor vessels.

Iceland is an island country, a fishing country, and developed.

Information Source: World Almanac Book of Facts, 1986
The New Encyclopaedia Britannica, 1987

BOLIVIA

The Republic of Bolivia, located in South America, has been a landlocked country since 1879 when its western neighbor, Chile, seized the Bolivian coastal province, Atacama, in a dispute over nitrate deposits. This isolated country lies between the Amazon jungle and the Andes Mountains. It has high plains, plateaus, mountains, and lowlands. The average temperature varies from 45 degrees to 75 degrees F depending on the region of the country.

Bolivia is often called a "Beggar sitting on a throne of gold." This poor country has large mineral, forest and water resources, yet lacks the capability for using these resources.

AREA: 424,165 square miles (about the size of California and Texas together)

POPULATION: 6,195,000 (est. 1985) (one-half the population of Texas). The Literacy Rate was only about 60 percent in the early 1980s.

Bolivia employs 24,000 people in the armed forces.

Two main social classes exist in Bolivia; "those who have much" and "those who have little." Basically, the majority of Indians and some Mestizos (mixed Indian and White) are poor farmers, miners and industrial workers. They live in adobe houses and eat corn, cereal and potatoes as major portions of their diet. The minority Whites and Mestizos dwell in Spanish-style homes in the large cities and primarily operate the businesses. The per capita income in 1982 was \$570 U.S. dollars.

Farming employs over one-half of the Bolivian workers, although only 2% of the land is cultivated. Lack of funds to buy machinery, primitive farming methods and unwillingness to move to richer lowlands prevent larger crop yield. Beef, cocoa, coffee, corn, cotton, rice, hides, mutton and sugar are the chief products.

Although poor in many aspects, Bolivia is rich in minerals. Thirteen percent of the world's tin is mined in Bolivia. Other valuable minerals include antimony, bismuth, copper, gold, lead, tungsten, silver and zinc. Bolivia is also self-sufficient in oil production. Vast forests supply quebracho wood (used in tanning and drying) and rubber. Waterfalls and rapids are possible sources of hydroelectric power.

Since Bolivia is landlocked, trade with other countries is limited. However, surrounding countries allow Bolivia the use of some ports. Arica and Antofagasto, ports in Chile, Mollendo-Matarani in Peru and La Quiaca on the Amazon are the most used import-export shipping centers for Bolivia. Of the revenue from exports, 55% comes from tin and other exported minerals, vehicles, timber and wool from the United States and other South American countries. Railroads connect harbors on the Pacific to major cities in Bolivia, making foreign trade easier.

Bolivia is a landlocked country and one of the developing countries.

Information Source: World Almanac Book of Facts, 1986
The New Encyclopaedia Britannica, 1987

BERMUDA

The British dependency, Bermuda, consists of more than 300 coral islands in the North Atlantic Ocean. This favorite resort country is known for its warm, sunny climate, winding roads, palm trees, colorful flowers and shining beaches. The only source of fresh-water in Bermuda is rain water caught off roofs of buildings and stored in tanks outside. Small fish are sometimes put in the tanks to keep them free of mosquito larvae.

AREA: 20 square miles or 53 square kilometers (1/8th the size of Columbus, Ohio)

POPULATION: 58,000 (est. 1985). The Literacy Rate is almost 100 percent. Between the ages of 5 and 16, education is mandatory and free.

For defense, Bermuda relies primarily on Britain; however, the Bermuda Regiment defense-force employs 350 men. Since Bermuda occupies a very strategic military location the United States, in 1941, leased 2.3 square miles of land for naval and air force bases.

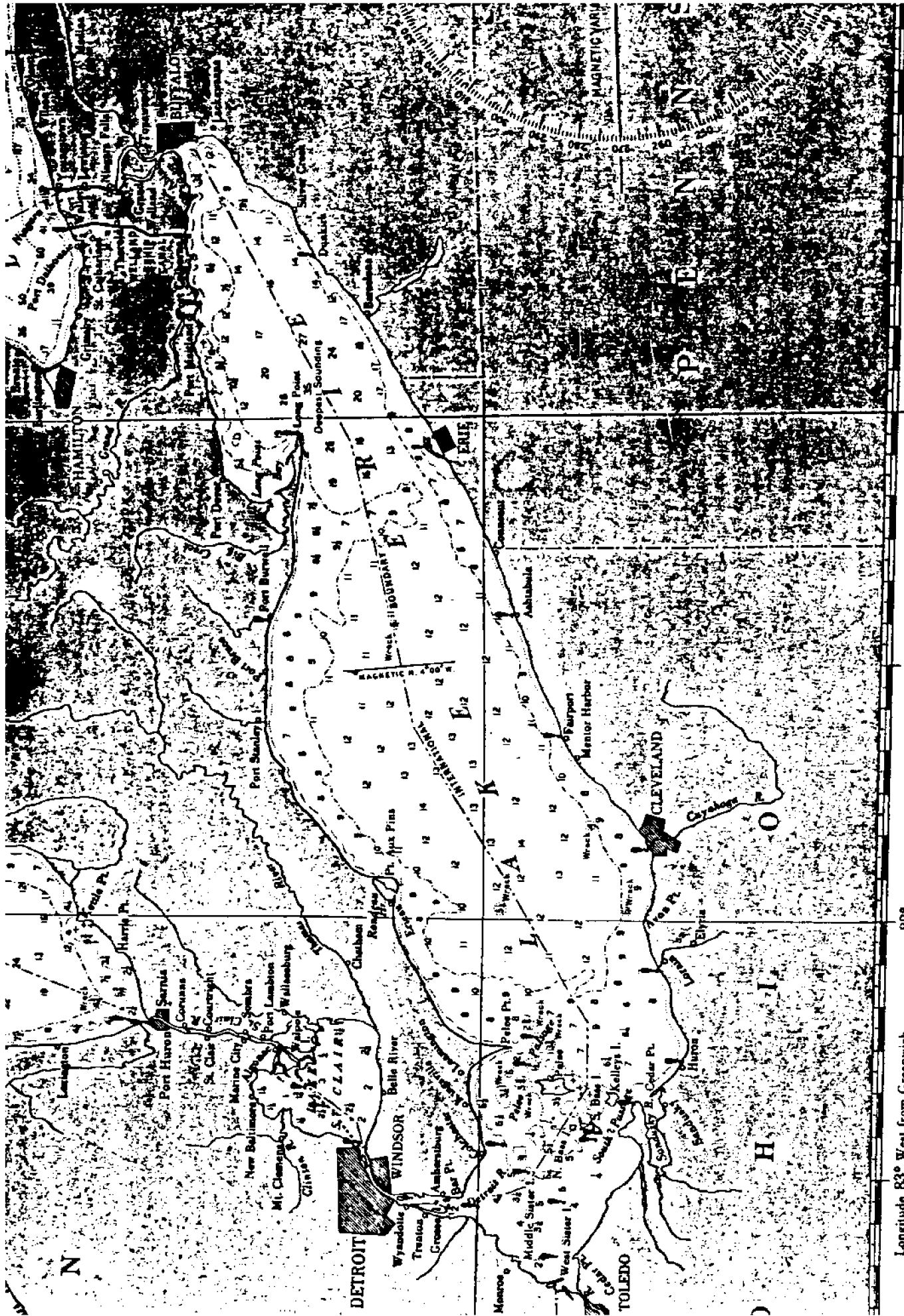
Only 20 of the 300 Bermudan Islands are inhabited. On these islands, hotels, beaches, and recreational resources attract over 500,000 tourists each year. Tourism represents 44% of the Gross National Product. The country has almost no natural resources and therefore must import all energy and minerals.

Farming and fishing employ 1.5% of the work force in Bermuda. Bananas, citrus fruits, lilies, potatoes, green vegetables, eggs and milk are the major farm products.

Bermuda imports three times more goods than it exports in its 200 vessel shipping fleet. Four-fifths of its food must be imported. Britain, the Netherlands and the United States are Bermuda's biggest customers. In addition, Bermuda re-exports many goods because of ships stopping in major harbors such as Hamilton and St. George for medical, fuel and other ship supplies.

Bermuda is a developing island country.

Information Source: World Almanac Book of Facts, 1986
The New Encyclopaedia Britannica, 1987



Longitude 83° West from Greenwich 82° 81° 80° 79°

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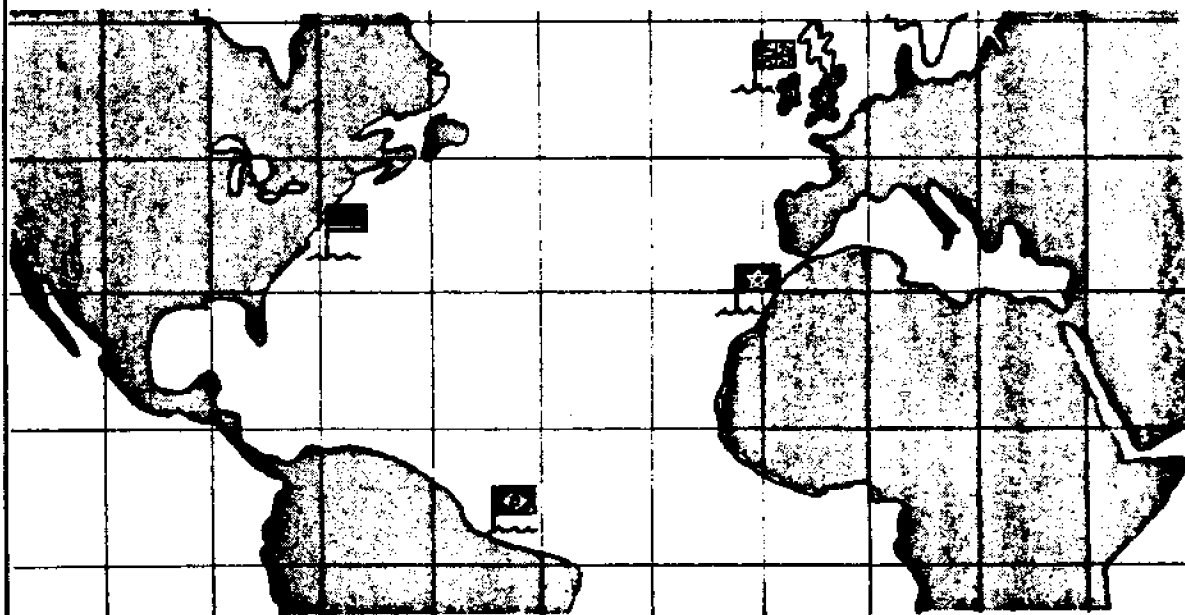
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IT'S EVERYONE'S SEA: OR IS IT?

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**OEAGLS-Oceanic
Education
Activities
for
Great
Lakes
Schools**

OEAGLS Investigation #18

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IT'S EVERYONE'S SEA: OR IS IT?



by

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Ohio Sea Grant Education Program

INTRODUCTION

Have you heard of the "cod war" between Iceland and England? Cannons were shot and boats of the two countries tried to ram each other. Do you know why six tuna fishing boats owned by Americans were seized by Peruvian navy ships, almost starting a small war between our nations? Both of these conflicts happened over use of the resources of the sea. Here in Ohio we have had arguments with the Canadian government about fishing rights in Lake Erie. Many countries of the world are now in conflict over using the resources of the sea. Fish, petroleum, and other mineral resources are found along coastlines. Many countries want to use the manganese nodules that are scattered over some of the very deep parts of the ocean basins.

When you have completed this investigation you will:

1. Know the general shape and topography of the Atlantic Ocean Basin and of the continental margins that surround it;
2. Be able to identify a country as belonging to one or more of eight categories, because of its relationship to the sea;
3. Know the basis of conflict between nations regarding the use of the seas;
4. Understand the problems associated with passing and enforcing a law of the sea; and
5. Understand the bases of arguments between Canada and the United States about fishing rights in the Atlantic Ocean and in Lake Erie.

ACTIVITY A: WHAT IS THE SHAPE OF THE ATLANTIC OCEAN BASIN?

MATERIALS: Map of the Atlantic Ocean and of the Atlantic Ocean Floor.

PROCEDURE

In this activity you will learn about the margins of the Atlantic Ocean, their topography and the varying depths to the floor of the ocean.

To determine distances you will need to use the scales on your worksheet. They are adapted from the scale that appears in the lower right hand corner of the map entitled Atlantic Ocean.

Because the world is a sphere and the map of it is flat, there is distortion. The actual distances between points an inch apart on the map, for example, may be different depending on how far they are from the equator. Therefore, when you are measuring distances on the map, note the latitude and use the scale for that latitude.

1. Identify the continental shelves along North America, South America, Europe and Africa. What is most noticeable about their topography?

2. Find about 8 depths on the continental shelves. Write the greatest depth you found.
3. Use your ruler and the scales on your worksheet to estimate the width of the continental shelves at New York, mouth of the Niger River, and south of Reykjavic, Iceland.

For the next several questions use the reverse side of the map; it is entitled The Atlantic Ocean. Look at the blue contour lines in the ocean. These tell you the depth of water. Note the first one out from the edge of the continents. It encloses the lightest blue regions on the map. In some places it is labeled with a "100." It is the 100 fathom line. A fathom is equal to six feet.

4. What is the depth of water in feet along the 100 fathom line?
5. What feature does the 100 fathom line mark?

There are several basins such as: Argentine Basin, Angola Basin, Brazil Basin, and North American Basin.

6. List the depths of five basins.
7. Find and write the average of the depths you have listed.
8. What is the width of the Straits of Gibraltar?
9. What is the width of the narrowest part of the English Channel?
10. What is the width of Lake Erie?

11. Locate the following countries on the Atlantic Ocean map and describe their coast lines and the width of their continental shelves: USSR, Bolivia, Nigeria, Iceland, Yugoslavia, Spain and Bermuda Islands.

Deposits of manganese nodules are found in the basins of all oceans. These nodules are rich in several different metals including cobalt, nickel and copper. Deposits of oil are found along many continental margins.

12. What countries do you think have the right to mine the manganese nodules?
13. You may have heard about the oil under the North Sea. Write names of the countries you think would have claim to that oil.
14. Natural gas and some oil are found under Lake Erie, one of the Great Lakes. Write names of the countries that might claim ownership of resources under Lake Erie.

Figure 1 on the next page is a map of the Atlantic Ocean showing the important fishing areas. There are two types of fish caught. One group is found only in the shallow shelf areas. They feed off the bottom of the sea and are therefore called **bottom-dwellers** (or **demersal fish**). The **pelagic fish** feed on plants and animals that float or swim close to the surface of the water. They can be found almost anywhere in the ocean, but especially where food is plentiful.

15. Look at the map showing fishing areas of the Atlantic Ocean. Identify and describe the general areas where the major fishing zones are found.
16. Identify and describe three areas where conflict over fishing rights might occur.

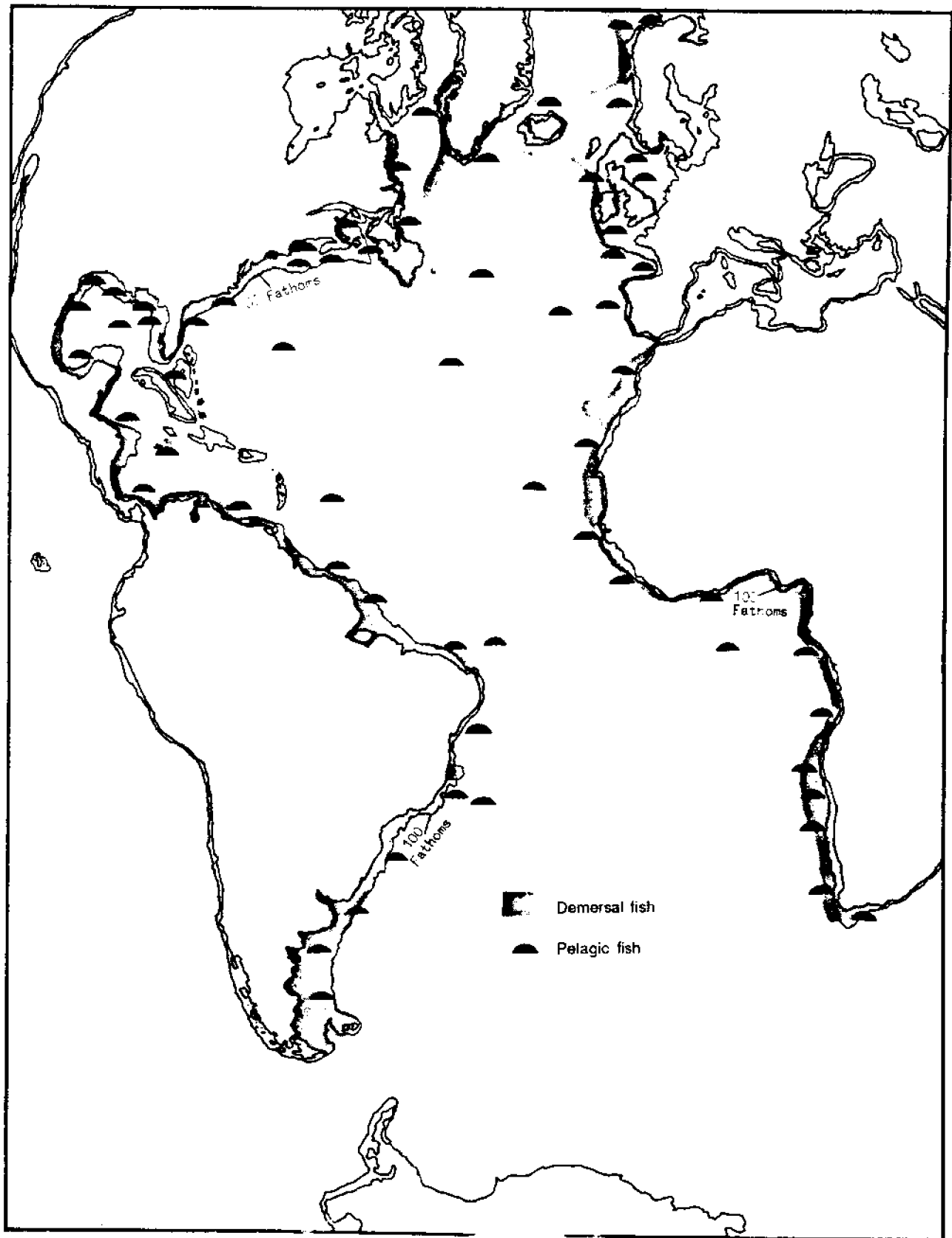


Figure 1. Fishing Areas of the Atlantic Ocean.

ACTIVITY B: WHO OWNS THE SEA?

Determining the rights of countries to parts of the sea and seabed has become a very important problem. In the seventeenth century two types of rights were commonly accepted by all countries; **territorial seas** and **high seas**. Territorial seas extended three to six miles out from the coastline of a country. The country had complete rule over this zone, except that any ship had the right of "innocent passage," that is, movement that did not threaten the safety of the country. Beyond this were the high seas in which any country had both free movement and fishing rights.

With the Industrial Revolution came greater use of fish from the oceans and recently the discovery of energy and mineral resources in the seabed. Countries began to compete for these resources. In 1973 the United Nations held the third conference on the Law of the Sea to draw up rules and regulations for all countries to follow, to provide for a fair division of those resources. This part of the activity will simulate a meeting of the Law of the Sea Conference.

MATERIALS: The same maps used in Activity A and a set of role-playing cards.

PROCEDURE

Each of the world's countries can be classified according to its level of development, economy and geography into one or more of eight categories: straits, fishing, island, maritime, limited shelf, landlocked, developing and developed. There are eight countries that will take part in this conference: United States, Russia, Bolivia, Nigeria, Spain, Iceland, Bermuda, and Yugoslavia. They represent the different interests countries have in the sea, because of their location, industries and development.

Four actions are being considered for adoption.

- I. Establish a 12-mile Territorial Zone in which the customs, sanitary, and financial laws of the country would be enforced.
- II. Establish an Exclusive Economic Zone, 200 miles wide, in which the nation would have wide control over living and mineral resources in the water and the sea bed. Other

nations would keep the traditional freedoms of navigation, overflight and the rights of cable-laying and pipelaying.

- III. Establish an International Seabed Authority which would explore and develop the area of the sea beyond the 200 mile Exclusive Economic Zone in cooperation with the bordering state. Half of the resources would be controlled by the Authority and given to the countries that do not border the ocean.
- IV. Establish a Pollution Prevention Tribunal which would act to prevent, reduce and control pollution of the marine environment.

The delegation of each country is to take an official stand on the proposed actions of the conference. A delegation can also propose that an action be changed or a new one adopted, provided it can get the support of one other country. You will follow this order of activities:

- A. Be assigned to the delegation of one of the eight countries by your teacher.
- B. Read the role card for your country and study its location on the map of the Atlantic Ocean. Determine why it belongs to the categories indicated on the role card.
- C. Elect an ambassador.
- D. Discuss the four actions being considered by the conference and decide which you as a country will support and which you will oppose. You can support or oppose as many as your group wishes.
- E. Write a position statement for the country your group represents. State the reasons why your group supports or opposes each action.
- F. Each ambassador present the position statement of the country to the entire conference.
- G. If there is not unanimous agreement on the issues, countries meet individually to reconsider their position statements, revising them if necessary. They may meet with other groups to lobby for their positions on each action.

At this point countries may develop new actions to be presented to the conference. Any new ones must have the support of at least one other country.

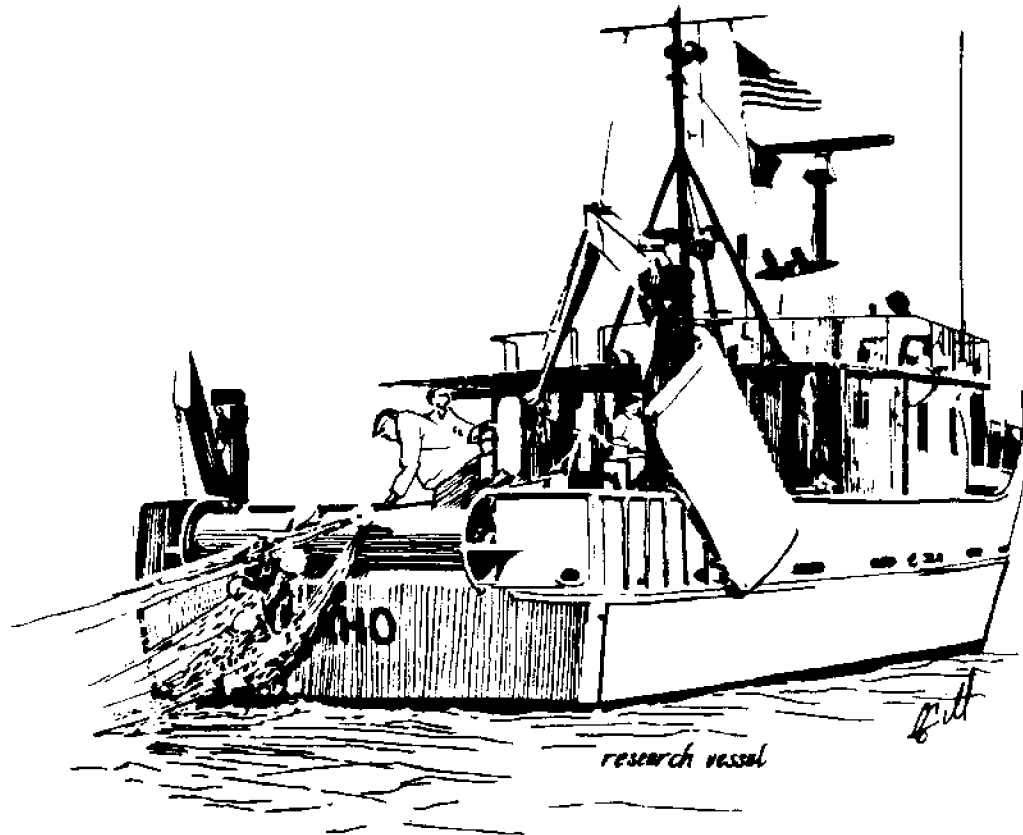
H. Repeat Steps D and E.

I. A vote is taken. Each country casts one vote either for or against each action.

J. For an action to pass, the vote must be unanimous.

After you have completed this simulation, answer the following questions on your worksheet.

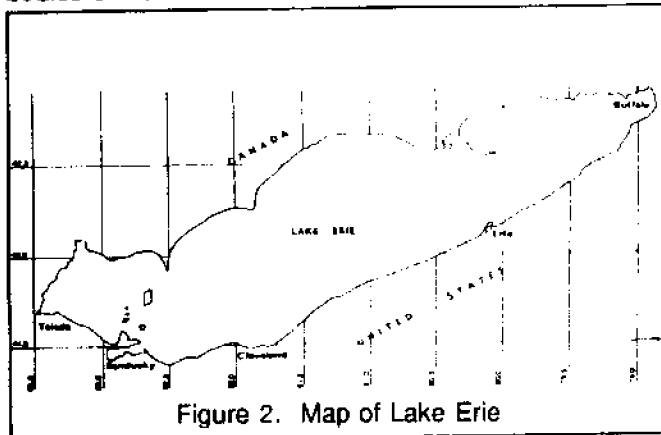
1. Briefly describe the characteristics of the following categories of nations: straits countries, fishing countries, island countries, maritime countries, limited shelf countries, landlocked countries and developing countries, developed countries.
2. Why do you think one requirement of the simulation is that actions had to be passed unanimously?
3. List the basic interests that countries have in the sea.



ACTIVITY C: HOW ARE BOUNDARIES OVER WATER DETERMINED?

MATERIALS: Compass, ruler, pencil, map of the Atlantic Ocean.

The treaties with Great Britain that ended the Revolutionary War defined the boundary between Canada and the United States through Lake Erie as being "through the middle of said Lake until it arrives at the Water communication between the Lake and Lake Huron." This is a common way of defining territorial boundaries that occur along bodies of water.



1. In Figure 2 on your worksheet, draw in the boundary between Canada and Ohio as defined by the treaties. Lay your ruler across the Lake, keeping it perpendicular to the north and south shores. Mark the center of the Lake. Do this several times at different places. Then connect each point with a line. This will be your boundary.
2. Compare the position of the boundary that you have drawn with the boundaries drawn by other members of your class. List the similarities between the boundaries.
3. List the differences between these boundaries.

At the Treaty of Ghent, following the War of 1812, there was doubt as to what was the middle of the Lake. You may have encountered this problem when you tried to determine the middle.

A commission was appointed to settle upon the boundary. Its decision in 1822 provided for the division of the western islands between the two countries. Even then, there was not a definite line

between the two countries over water. In 1908, the International Waterways Commission fixed a series of straight lines using permanent objects such as lighthouses as turning points for the lines. This is the boundary on the map provided by your teacher.

4. Compare the position of your boundary with the present boundary as it appears on the map of Lake Erie your teacher has posted in the classroom. Where are there differences?
5. State some of the possible reasons for these differences.

Commercial fishing is an important industry on Lake Erie, especially for Ontario. Ontario and Ohio have somewhat different laws that apply to its waters. For a Canadian boat to fish in the waters of Ohio, its captain must get an Ohio permit and follow the laws of the State. The captain must also land his catch in Ohio so that authorities can be assured that Ohio laws have been followed.

In 1978, a Canadian boat was seen illegally fishing in Ohio waters. Law enforcement officers in the Ohio Department of Natural Resources chased the Canadian boat. One officer was able to jump aboard just before it crossed the border into Canada. The Canadians captured the officer and took him into Canada. Later he was returned to Ohio. A few years later, the same boat was successfully captured by Department officers. A judge ordered the boat impounded as punishment for law violations committed by the Canadians.

There are other locations where there is conflict between Canadian and American interests in the sea. One is the Gulf of Maine. Here there are rich fishing grounds and possible oil deposits under the continental shelf.

6. Locate the Gulf of Maine on your map of the Atlantic Ocean. It is a body of water that lies just off the coast of Maine, between the southern point of Nova Scotia and Cape Cod. Now identify the Gulf in Figure 3. Locate Georges Bank and the edge of the continental shelf.
7. Refer to Figure 1. Identify and state types of fish that are found near the Gulf of Maine.

Both the United States and Canada enforce a 12-mile territorial limit.

8. List the rights a country has within its territorial zone.

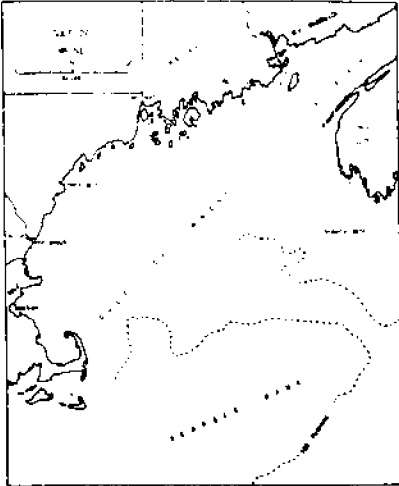


Figure 3. Gulf of Maine

9. On Figure 3 on your worksheet, draw in the territorial limits of Canada and the United States. Using the map scale, adjust your compass to measure 12 miles on the map. Placing the point of the compass on the coast of the United States, draw arcs in the water. Do this many places along the coast of the United States. Then draw a line connecting the arcs. Now do the same for the Canadian coast.

10. Do you think there is a possible controversy between the United States and Canada because of their territorial limits? Where?

Recently the United States announced a 200-mile economic zone. Canada has also done this.

11. Draw the boundary of the economic zones between the two countries in the Gulf of Maine (in Figure 3). List the difficulties you had in drawing this boundary.

12. List the rights each country holds within its economic zone.

13. What effects do you think this boundary will have upon fishing rights in the Gulf of Maine?

14. What effects do you think it will have upon searching for petroleum?



REVIEW QUESTIONS

1. Describe the general characteristics of ocean basins, continental shelves, and straits.
2. Distinguish between developing countries and developed countries. Give several examples of each.
3. Describe general characteristics of the following categories of nations: straits, fishing, maritime, limited shelf, and land-locked.
4. List the major interests that nations have in the sea.
5. What has made it difficult for nations to agree on a law of the sea?
6. Describe possible sources of disagreement between Canada and the United States because of boundaries on lakes and oceans.

Name _____

**It's Everyone's Sea: Or is it?
Worksheet**

Activity A: What is the shape of the Atlantic Ocean Basin?

1. What is most noticeable about the topography of the continental shelves? _____

2. What is the greatest depth you found? _____

3. What is the approximate width of the continental shelves at the following places:

New York _____ mouth of the Niger River _____

south of Reykjavic, Iceland _____

4. What is the depth of water in feet along the 100 fathom line? _____

5. What feature does the 100 fathom line mark? _____

6. List the depths of five basins. _____

7. What is the average of the depths you have listed? _____

8. What is the width of the Straits of Gibraltar? _____

9. What is the width of the narrowest part of the English Channel? _____

10. What is the width of Lake Erie? _____

11. Describe each country's coast line and the width of its continental shelf:

USSR _____

Bolivia _____

Nigeria _____

Iceland _____

Yugoslavia _____

Spain _____

Bermuda Islands _____

12. What countries do you think have the right to mine manganese nodules? _____

13. What countries do you think have claim to the oil under the North Sea? _____

14. What countries might claim ownership of Lake Erie? _____

15. Identify and describe the general areas where the major fishing zones are found. _____

16. Identify and describe three areas where conflict over fishing rights might occur. _____

Activity B: Who owns the sea?

1. What are the important characteristics of each of the categories of nations:

straits countries _____

fishing countries _____

island countries _____

maritime countries _____

limited shelf countries _____

landlocked countries _____

developing countries _____

developed countries _____

2. Why do you think one requirement of the simulation is that action had to be passed unanimously?

3. List the basic interests that countries have in the sea. _____

Activity C: How are boundaries over water determined?

1. Use Figure 2. Map of Lake Erie (on next page).

2. List the similarities between the boundaries. _____

3. List the differences between the boundaries. _____

4. Where are there differences in the boundaries? _____

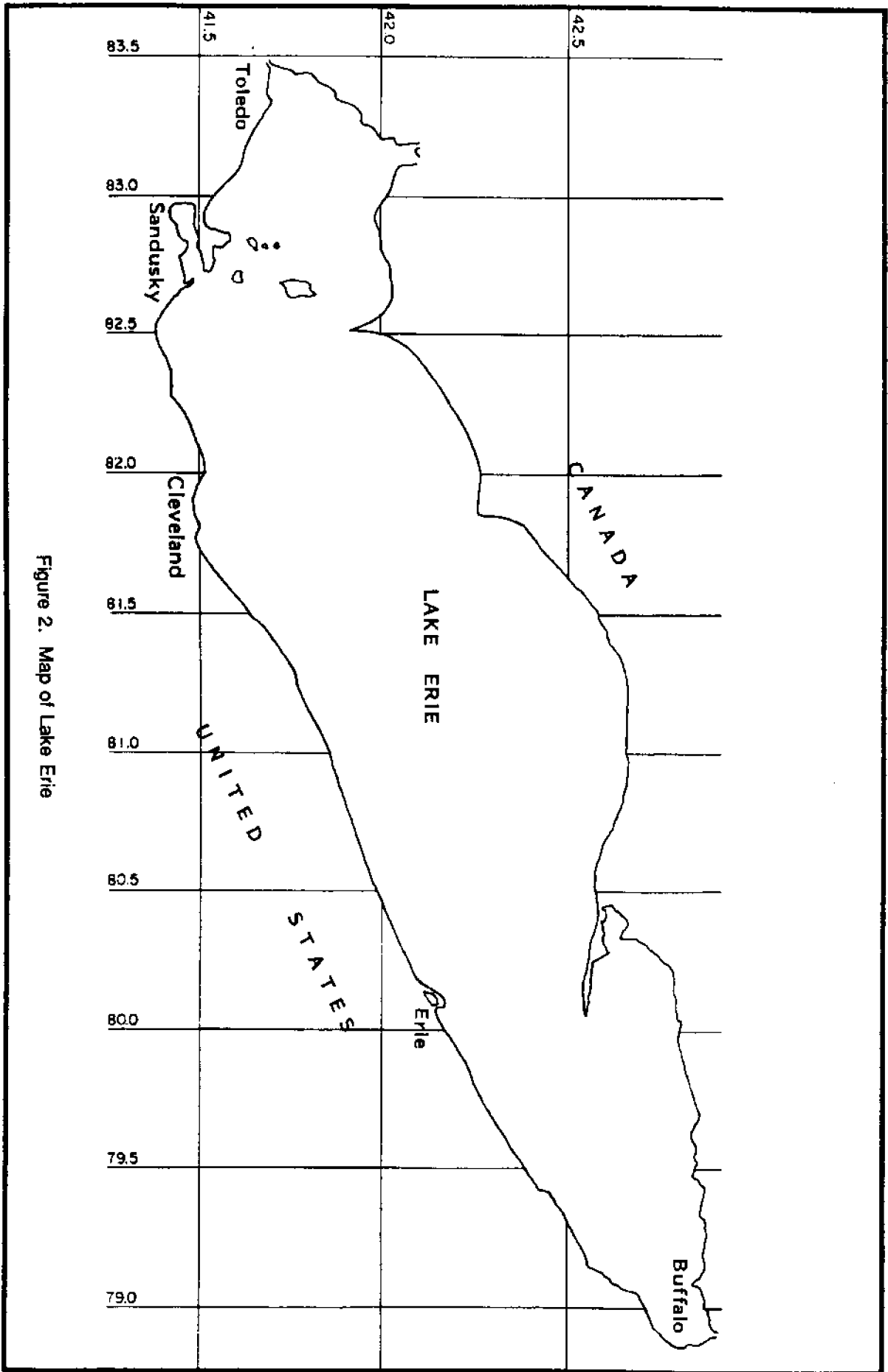


Figure 2. Map of Lake Erie

5. State some of the possible reasons for these differences. _____

6. Identify the Gulf of Maine in Figure 3. Locate Georges Bank and the edge of the continental shelf.
7. What types of fish are found near the Gulf of Maine? _____
8. List the rights a country has within its territorial zone. _____

9. Use Figure 3. Map of the Gulf of Maine(on next page).
10. Do you think there is a possible controversy between the United States and Canada because of their territorial limits? _____
Where? _____
11. Use Figure 3. List the difficulties you had in drawing this boundary. _____

12. What rights does each country hold within its economic zone? _____

13. What effects do you think this boundary will have upon fishing rights in the Gulf of Maine?

14. What effects do you think it will have upon searching for petroleum? _____

Review Questions

1. Describe the general characteristics of ocean basins, continental shelves, and straits.

2. Distinguish between developing countries and developed countries. Give several examples of each.

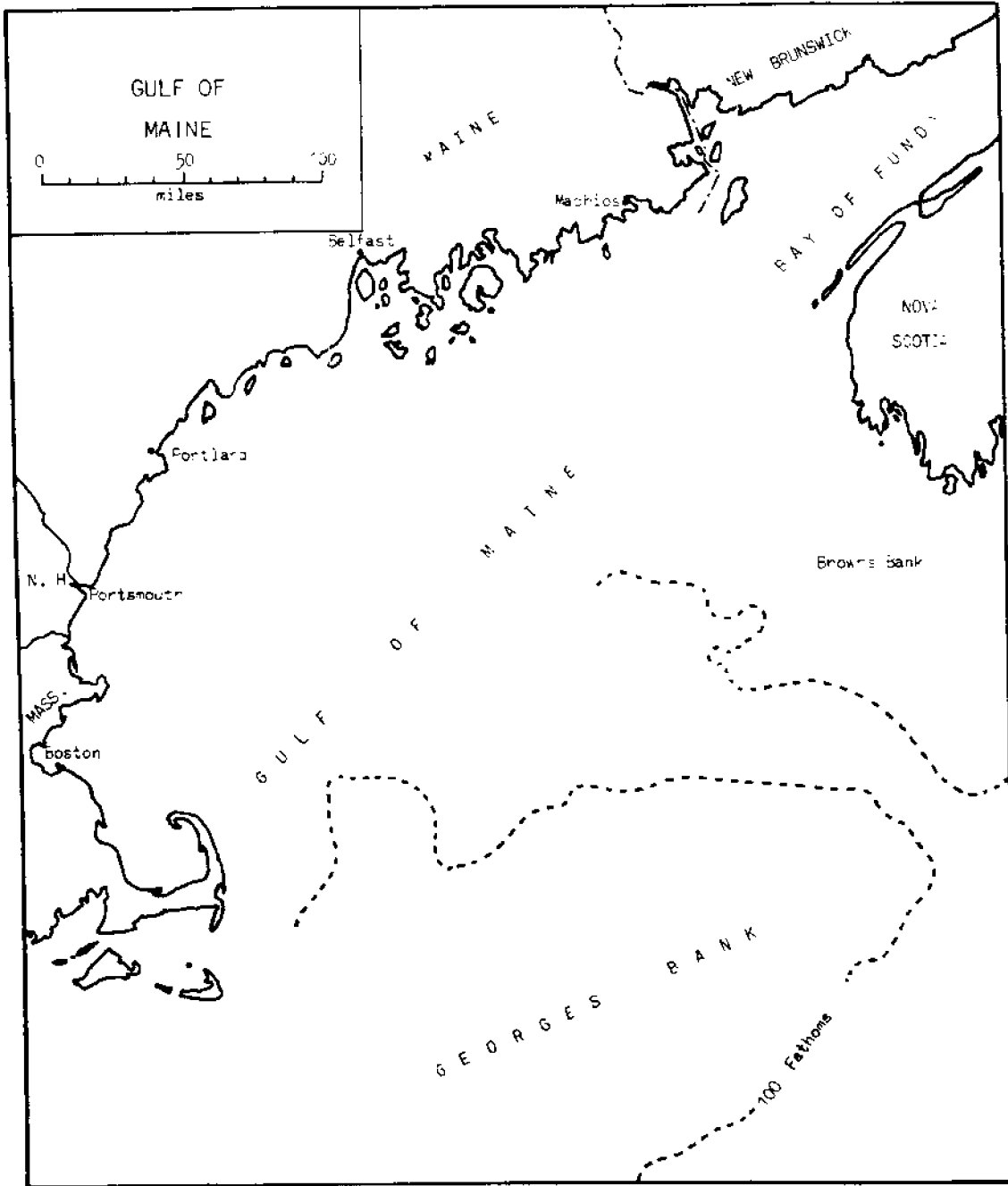


Figure 3. Gulf of Maine

3. Describe general characteristics of the following categories of nations:

straits _____

fishing _____

maritime _____

limited shelf _____

landlocked _____

4. List the major interest that nations have in the sea. _____

5. What has made it difficult for nations to agree on a law of the sea? _____

6. Describe possible sources of disagreement between Canada and the United States because of boundaries on lakes and oceans.

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