



Water We Eating

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Objectives

Participating young people and adults will:

1. Identify foods derived from aquatic sources and their geographic origins
2. Describe importance of aquatic environment as food sources
3. Describe importance of water in our diets.

Youth Development Objectives

Participating young people will:

1. Develop critical thinking skills.
2. Acquire and analyze information
3. Develop problem solving and decision making process.

Roles for Teen and Junior Leaders

1. Assist with gathering materials
2. Serve as group leaders on field trips
- 3.

Potential Parental Involvement

1. See ARoles for Teen and Junior Leaders@ above
2. Conduct survey at home of food derived from aquatic sources.
3. Describe and discuss any cultural link to food derived from aquatic food sources.

Best Time: anytime, although good introductory activity

Best Location: indoors, grocery store

Time Required: from 20-45 minutes

Equipment/Materials

world map
easel pad
markers
tablets or notepads
pens or pencils
If field trip not possible:
empty food containers
magazine or newspaper food/grocery advertisements

Safety Considerations

References

Council for Environmental Education, 1992, *Project WILD Aquatic Education Activity Guide*, Watercourse and the Council for Environmental Education, 1995, *Project WET*, Montana State

Evaluation Activities/Suggestions

- 1. Name five specific foods derived directly from aquatic sources. List their country or region of origin.**
- 2. Name an aquatic plant or aquatic animal that you can find in a local store and that is also found growing or living in your state.**
- 3. Name an aquatic product that is used in food production but is not necessarily eaten directly. How is it used.**
- 4. Describe three ways that aquatic habitats are important to humans as food sources.**

Lesson Outline

**Presentation
Outline**

Procedure

For Younger Youth

- I. Water is used directly or indirectly to prepare food.
 - A. Direct
 1. fish, seafood products
 2. ingredient
 - B. Indirect
 1. irrigation
 2. processing

- . Have youth **BRAINSTORM** the ways they use water in meals or meal preparation. **CATEGORIZE** the uses as indirect (washing food) and direct (ingredient, source of ingredient).

IF FIELD TRIP IS POSSIBLE:

Field Trip Option

II Teams record observations

- . **BRAINSTORM A LIST** of all the things that they would expect to find in a supermarket or grocery that come directly from aquatic environments. They may need help with what constitutes an aquatic environment. Be inclusive. Everything from ocean to pond, from swamp to river, is appropriate.
- . Obtain permission from the manager of a local supermarket or grocery to bring your class to the store to find out how many things come from aquatic environments. Have the youth form three-person team and **design a form to record information** on. Construct a mural of pictures and advertisements to show aquatic foods and their sources.

- . **Compile a master a master list of aquatically-derived products.** If necessary, do research to answer the following: Where do they com from? How are they obtained? Where and how are these products processed? How are they used.
- . On a world map **locate the origins of as many items** on the list above as possible.
- . Ask the youth to draw a picture of the aquatic food products they most like to eat, or make a collage of such products from magazine pictures.
- . Summarize the lesson by emphasizing how much every aspect of our lives depends upon aquatic environments. Point out that aquatic environments not only provide us with all the products the youth listed but they provide the natural home for countless life forms.

For Older Youth:

- . Ask the youth to make a list of all the things that they would expect to find in a supermarket or grocery that come directly from aquatic environments. They may need help with what constitutes an aquatic environment. Be inclusive. Everything from ocean to pond, from swamp to river, is appropriate.
- . Where possible, identify the product, its uses and its source of origin. One clipboard per team is adequate. They should trade off the task of recording. Assign each team of three a specific aisle to survey. Advise them of common courtesies such as carefully replacing items they examine. The entire class should visit the fresh and frozen fish counter, if there is one, and list the names of the fish and shellfish being sold. The frozen fish should also be listed. Canned fish and shellfish products should have the location of the cannery noted. When all this is completed, thank the manager and return to the school. NOTE: if a field trip is not possible, you might use supermarket advertisements in newspapers as a source of aquatic products. Cupboards and pantries at home could be another source. You and/or the youth might bring a representative variety of items to school to show the diversity of foods and other goods people use from aquatic environments. Or, use photos from a variety of magazines.
- . **Compile a master list of aquatically-derived**

products. If necessary, do research to answer the following: Where do they come from? How are they obtained? Where and how are these products processed? How are they used?

- . On a world map **locate the origins of as many items** on the list above as possible.
- . Have a **discussion or brainstorm a list of natural and human** activities that impact the availability of aquatic food products.
- . **Summarize** the lesson by emphasizing how much every aspect of our lives depends upon aquatic environments. Point out that aquatic environments not only provide us with all the products the youth listed, but they provide the natural homes for countless life forms.

Lesson Narrative

Background

Aquatic habitats (oceans, estuaries, marshes, lakes, rivers, etc.) provide humans with a wide array of products which are sold commercially. Some of these are obvious; e.g., fish, shellfish, wild and domestic rice, and cat food. Other items like fertilizer, soup stock, watercress, water chestnuts and vitamins are not so well known. Seaweed, for example, is a source of algin, carrageenan, and agar. Used as stabilizers, thickeners and emulsifiers in hundreds of food products. These seaweed derivatives are used to make the texture of things like ice cream and shampoo smooth and creamy; and to help keep ingredients like the chocolate in chocolate milk in suspension. Certain types of seaweed, which are actually forms of algae, are consumed directly by humans. For example, nori is used in sushi, and Irish moss, lacer and dulce (dulse) are used in other dishes. In another example, the meat in oysters is eaten directly by humans; oyster shells are ground up for use as calcium supplements for humans and poultry.

Another source of aquatic food products is aquaculture. Aquaculture is an ancient form of cultivating aquatic plants and animals for food. Early Egyptians raised fish for food in small ponds. Today China may have the most advanced aquaculture programs. Nearly 40% of the fish consumed in China comes from fish farms. In the United States, aquaculture produces many fish common to our markets. Perhaps as much as 99% of the rainbow trout consumed in the United States comes from aquaculture. As we use the terms, aquaculture typically refers to freshwater programs, and mariculture to marine programs, for raising aquatic plants and animals for commercial purposes. Catfish, lobster, shrimp, oysters and salmon are all examples of aquatic animals now being raised commercially through aquaculture and mariculture programs. The hatching and raising of aquatic animals for release in streams, lakes and oceans is also considered a form of either aquaculture or mariculture.

It is also important to realize that all the food we eat—whether or not it comes from an aquatic source—uses water at some time, directly or indirectly in its development, processing or distribution. Agricultural uses of water account for 33% of human use of water in the United States. That means that over 600 gallons per day for each person in the United States is being diverted by irrigation and livestock use from the natural aquatic sources. It takes about 40 gallons of water to produce a single egg, 80 gallons per ear of corn, and 2,500 gallons for one pound of beef.

This activity does not specifically address potential ethical questions which may be raised concerning human aquaculture and mariculture practices. It is designed to focus on youth—recognizing the role of water in the production of foods, including from aquatic environments.

Exhibit or Sharing Suggestions

1. Present collage or mural of food products.
2. Give presentations on production of food products.

Community Service and “Giving Back” Activities

- 1.

Extensions or Ways of Learning More

1. Visit food production facility to learn how water is used in process.
2. Visit a fish hatchery or other aquaculture facility
3. Research aquaculture and mariculture. Compare the food produced by each to the food produced through commercial fishing. What kinds are produced by each? What impacts, if any, are there on population of fish and shellfish as a result of each approach?
4. Determine how agriculture, and particularly irrigation, affects natural aquatic habitats.
5. Compare aquatic products found in conventional markets in the United States with products found in markets specializing in foods from Asia. (Japan, China, Philippine, Viet Nam, etc.)
6. Classify the aquatic food products according to the kinds of aquatic habitats in which they are found: salt-water (ocean, estuary, marsh, etc.) and freshwater (lake, pond, stream, river, etc.)
7. Invite those working in aquaculture or food production to visit group.