

Sustainable Seafood Delight

Lesson Focus: Ocean resources and sustainability

Learning objectives:

- Students will understand what a sustainable population and fishery is and how they can be impacted by human utilization of the oceans.
- Students will construct a menu that will help ensure fish populations for generations to come.

Enduring Understandings for the lesson:

- Students will develop an understanding of maximum sustainable yield for the conservation of the oceans biological resources.
- Students will develop good practices for ocean stewardship.

Georgia Performance Standards Addressed:

SO6. Students will identify how humans use the ocean for food, commerce and energy and will evaluate the potential for abuse in the absence of responsible stewardship

- a. Describe how physical, geological, and biological resources are extracted from the oceans, and assess the consequences for marine ecosystems.
- e. Analyze fisheries management issues and laws that promote responsible stewardship of the oceans.

Grade level: 10-12

Materials:

Internet – link to the GA Aquarium website
Construction paper
Card Stock
Crafting supplies

Time needed:

2 – 60 minute periods
Day 1 – Background information; research on fishing industries and sea life populations
Day 2 – Construction of menu and presentation

Background information:

As people continue to learn more about the world's oceans and the more humans rely on them the more people learn and become aware that the ocean is not endless in its resources. Researchers have learned that economically important organisms have a maximum sustainable yield. The maximum sustainable yield is the number of that

organism that can be fished yet still sustain a healthy population level to produce future generations. There is a careful balance that must be obtained in order to allow for people to fish and consume seafood at a rate that allows the organism to reproduce and maintain a healthy sustainable population.

Unfortunately, humans perceived the ocean to be an endless supply of resources and therefore the oceans were fished indiscriminately until changes appeared. This eventually leads to a condition where a species is considered overfished. When this occurs the reproductive population of an organism is eliminated and the juveniles that remain may or may not be able to replenish the species. Another problem that can result is commercial extinction. With commercial extinction it simply becomes too expensive to search and fish for a species of interest and still be profitable. Commercial extinction can be a result of overfishing or economic stresses and downfalls.

Today researchers associated with the Monterey Bay Aquarium have developed a list of fish that people should avoid when dining on seafood. The Monterey Bay Aquarium took it a step further and included a list of seafood that is recommended to eat. The guide that was developed was based upon population data gathered by the U.S. National Marine Fisheries Service. A copy of the guide may be obtained for your region by going to the Monterey Bay Aquarium website or by visiting the Georgia Aquarium website.

Learning Procedure:

1. Survey/Poll the students on their interpretation of sustainable fishery, commercial extinction and ocean stewardship.
2. Provide students with access to the internet to research a particular type of fishing industry (crab, shrimp, long line, gill net, etc.) ask them to include fish species of interest associated with those industries. . Educator's Tip: Focus on fish and fishing industries commonly found in your region.
3. Have the students design and create a menu for a restaurant that is concerned about ocean conservation. Direct the students to have at least 2 soups andsalads, 2 appetizers, and 2 main courses that utilize seafood. (Direct students to the safe seafood list via the Georgia or Monterey Bay Aquarium to help with their decisions). Ask them to give at least one reason why they included their specific menu choices.

Evaluation:

Students should be evaluated based upon how they have addressed ocean conservation, sustainability of a particular fishery, and stewardship. The seafood selections made by the students to be incorporated into their menu should also be taken into consideration. The development of a rubric will ensure even and accurate grading for this creative project.

Extensions:

1. Have the students debate and develop best practices or regulations to help ensure sustainable fish populations.
2. Have the students write to their legislator about a species of concern for your region to ensure its survival

Resources:

Georgia Aquarium - www.georgiaaquarium.org

Monterey Bay Aquarium - www.montereybayaquarium.org

Oceanography: *An Invitation or Marine Science* 5th edition by Tom Garrison

Lesson developed by: Charlotte Lizana, Camden County High School

This activity is a product of the Rivers to Reef Teacher Workshop sponsored by the Georgia Aquarium and NOAA Gray's Reef National Marine Sanctuary, in which the authors participated. For more information about this workshop, Georgia Aquarium, or Gray's Reef National Marine Sanctuary, please visit our websites at www.georgiaaquarium.org or <http://graysreef.noaa.gov/>

