

# 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 know the importance of ocean stewardship for sustainable fisheries.

## **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 Access  
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 learn more about the world's oceans and how humans rely on them, the more we become aware that the ocean is not an endless resource. Researchers have found that many economically important organisms are well below the maximum sustainable yield for the survival of their species. The maximum sustainable yield is the number of organisms that can be fished yet still sustain a healthy population level to produce future generations. There is a careful balance that must be obtained 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 often perceived the ocean to have an endless supply of resources. As a result, the oceans have been fished indiscriminately. This has led to overfishing of some species. 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 from over fishing is commercial extinction, where it simply becomes too expensive to search and fish for a particular species and still be profitable. 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 visiting the Georgia Aquarium website at [www.georgiaaquarium.org](http://www.georgiaaquarium.org).

### **Learning Procedure:**

1. Survey/Poll the students on their interpretation of sustainable fishery, commercial extinction and ocean stewardship. **Educator's Tip:** On the board start a K-W-L chart (what do you know?-what to you want to know? - what have you learned?) to find out what the students may know and what misconceptions they may have. At the end of the lesson be sure to complete the last part of the K-W-L chart.
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. Use attached worksheet to help guide student research.
3. Introduce the Seafood Watch concept - card, best, good, bad.....
4. Tell the students, they now need to design and create a menu for a new restaurant in town that is concerned about ocean conservation. This activity is flexible and students may work in pairs or individually. Direct the students to have at least 2 soups and salads, 2 appetizers, and 2 main courses that utilize seafood on the menu.
5. Have students present their menus to the larger group and explain why they included their specific menu choices.

## Evaluation:

Students should be evaluated using the attached rubric which is based upon how they have addressed ocean conservation, sustainability of a particular fishery, and stewardship. The seafood selections made by the students for their menu should also be taken into consideration.

## Extensions:

1. Have students debate and develop best practices or regulations to help ensure sustainable fish populations.
2. Have the students write their legislator about a species of concern for your region to ensure its survival.
3. Have students develop and implement a plan to educate local restaurant chefs and owners of good practices in selecting fish for their menus.
4. Have students get Seafood Watch cards for the southeast (from the Georgia Aquarium) and distribute them to other students. Encourage them to give them to their parents and other adults in their communities.
5. Identify and ask a local restaurant owner and/or chef who makes a conscientious effort to select sustainable fish species to speak to the class and if it can be arranged to the entire school to discuss what it takes to buy sustainable fish species.

## Resources:

Seafood Savvy Program, Georgia Aquarium - [www.georgiaaquarium.org](http://www.georgiaaquarium.org)

Seafood Watch Program, Monterey Bay Aquarium - [www.montereybayaquarium.org](http://www.montereybayaquarium.org)

Oceanography: An Invitation to Marine Science 5<sup>th</sup> 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 Gray's Reef National Marine Sanctuary in which the author participated. For more information about this workshop, Georgia Aquarium, or NOAA Gray's Reef National Marine Sanctuary, please visit our websites at [www.georgiaaquarium.org](http://www.georgiaaquarium.org) or <http://graysreef.noaa.gov/>.*



## Guided Worksheet for Sustainable Seafood Delight Project

Before you get started on today's activity lets define these vocabulary terms to better assist your understanding of your research

**Overfishing:**

**Maximum sustainable yield:**

**Bycatch/bykill:**

Name of the fishery that you are investigating \_\_\_\_\_

Describe how your industry extracts resources (marine life) from the ocean

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Location of fishery \_\_\_\_\_

Marine life of interest \_\_\_\_\_

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Fishing Season? How much is extracted in a season? \_\_\_\_\_

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Additional information that may be helpful for your project:

## Rubric for Sustainable Seafood delight

Organization	3	2	1	0
<b>Correct number of menu items</b>	All dishes present and accounted for!	Missing one or two dishes	Missing three or four dishes	Missing more than four dishes
<b>Mission statement of how to help sustainable fisheries</b>	Excellent mission statement that demonstrates true mastery of sustainable fisheries	Good mission statement but your understanding of sustainable fisheries may need some refinement	You have a mission statement but I don't think you truly understand the concept	No mission statement found
<b>Type of Seafood used</b>	Used all of the "Best Choice" seafood	Used mostly "Best Choice" seafood but a few in "Good Choice" category	Uh no! you used one "Bad Choice" Seafood species	Choices were all over the chart!
<b>Grammar</b>	One to two grammatical errors	Three to four grammatical errors	Five or six grammatical errors	More than six grammatical errors
<b>Organization</b>	Perfect organization and really nice flow	Good organization but maybe one or two things out of place	Okay organization - Let's work on these skills together!	No organization demonstrated

**Educator's Tip:** Grammar and Organization have been added to the rubric of this project because most students continue to struggle with these "life skills" areas. If you are having the students present their menus to the class consider adding a row for presentation etiquette.