

NOAA Teacher at Sea Program Shark Week Lessons

Activity Title: Shark Week: A Species Study from the Oregon II

Subject: Science, Language Arts

Grade Level: 7th and 8th grade

Average Learning Time: 5 class periods (70 minutes each)

Lesson Summary: In this week of lessons, students will map out the square feet of the Oregon II's front deck, simulate a haul-back using the species actually caught over two weeks on the Oregon II, work independently or with a partner to map the location of the caught species using Oregon II latitude and longitude data and research the species "caught", and finally students will present their species to the class.

Overall Concept: Marine Species Research

Specific Concepts: - Species info: average size, role in ecosystem, threats

- Geographical information: mapping the latitude and longitude of stations where the species was caught
- Mathematical information: What is the square feet of work space on the front deck of the Oregon II.

Focus Questions: - What kinds of species exist off the east coast?

- What makes these species valuable to their ecosystem?
- What threatens this species?
- Should this species be protected by the Federal Government? Why or why not?

Objectives/Learning Goals: The goal of this week is for students to look deeply into the coastal Atlantic (Florida, Georgia, South Carolina, North Carolina, Virginia) ecosystem. Students will calculate the square feet of workspace on the Oregon II and then simulate a haul back.

Students will map the latitude and longitude of the stations where the species was caught.

Students will conduct research on their "caught" species from the haul back.

Students will present their research to the class. (For this, I brought in goldfish, gummy worms, salt water taffy, etc. to share.)

Background Information: This shark week was taught in the middle of a big unit on ecosystems in and out of balance. The unit began with an exploration of what an ecosystem is and classifying the 6 major types of ecosystems: mountains, grasslands, deserts, marine, freshwater, and forest. Students created a classroom bulletin board, working in teams, that served as our informational source on each ecosystem type, with examples and a map of ecosystems in that classification around the world. Students also looked at the flow of energy within ecosystems.

For the complete ecosystems unit, just email me.

This unit followed the ecosystems unit as an in depth look at species in the marine ecosystems off the South Eastern Coast of the United States. It is not essential to study ecosystems prior to teaching this unit.

Common Misconceptions/Preconceptions: - Sharks are scary and vicious.

- All sharks are large
- What threatens a species only threatens that species
- All sharks are threatened

Materials:

For the measuring the Oregon II activity:

- Lots of tape measures or long field tape measure
- Cones for marking off the space
- Dimensions sheet
- Kids: paper and a clip board
- Species sheets (fish cards with species scientific name on the back – 100 cards in total)

For the research:

- Computers, iPads, or printed species info
- Species info sheet, provided above
- Maps with latitude and longitude lines

Technical Requirements: This research project is best done with computers or iPads so the students can explore information from many different websites. I made a list of recommended websites, but generally just circulated the room while students worked independently. If that's not possible, this project is still entirely doable by printing resources on each species and collecting materials from colleagues and libraries.

Keywords:

Ecosystems

Species

Threats

Flow of energy

Pre-assessment Strategy/Anticipatory Set (optional):

To begin with, I had students list or create a web of everything they thought of when they thought of sharks. I let them work on that for a few minutes before they shared some of their responses. Then I asked students to write at the bottom what their level of interest in sharks was, just so I could gauge interest and make sure kids who were super interested in sharks go them in the haul back.

Another way to do the above is to create an anticipation guide with questions about sharks and other coastal marine species that students can answer before and after the week.

Something else I wanted to do but couldn't because of the filter on our internet was show a series of videos that damage the image of/create misconceptions about sharks. Scenes from Jaws and Shark Week on the Discovery Channel, etc.

Lesson Procedure:

Day One (optional)

- I. What do you think of when you think of sharks?
 - a. Have students make a web or list and then share
- II. Oregon II
 - a. Provide students with the dimensions of the Oregon II (provided above)
 - b. Ask students to calculate the square footage of workspace
 - i. Have students predict whether this is a lot of space or a little.
 - ii. Guess what rooms or spaces they know might be smaller or bigger.
 - c. Using cones and measuring tapes, having students map out their workspace.
 - d. Math integration questions:
 - i. Calculate the square feet of the front deck (3-x34)
 - ii. Have students create a scale and draw the Oregon II to scale
 - iii. Convert the feet to meters
 - iv. Determine how much longer the ship is than wide.
- III. Simulate Haul Back

- a. In a real haul back, there are 100 baited hooks out in the water being reeled in. Anywhere from 0-100 species can come up and we have no idea. I had 100 hooks, but only 18 had anything on them. This obviously takes longer. You can just do 18 hooks or 25 to give a little suspense.
- b. Once each student or pair had a species, we went back inside to begin the project.

Day Two-Five/Remaining days for unit

- I. Species Identification
 - a. Students received the eXcel spreadsheet of the data from the Oregon II and searched its contents for their specific species.
 - b. Once identified, students plotted the stations at which they were caught on a map using the latitude and longitude data.
 - i. For the Rhizoprionadon Terranovae (Sharpnose), that's almost all of the stations. Depending on the student's ability to plot the stations, a limit may be needed to alleviate the difficulty (For example, plot one per day or plot 10 total)
 - c. I had students mount their maps on construction paper and create a chart of the station data below the map and title the map with their species name.
 - d. After mapping, the research on the species began. Students used iPads to do this. For the pictures needed on the Species Fact Sheets, I used photos from my time at sea. The document was too large to include, but I am working on creating a Flickr album that teachers can access.

Assessment and Evaluation

There are many options here for assessment. I used my Species Fact Sheet presentations as my assessment. Students had 3-5 minutes to present their species to the rest of us using the information on their cards. I brought Goldfish, sour gummy worms, and salt water taffy as snacks for presentation day.

Another assessment option is to ask the students the pre-assessment question again for them to evaluate their own growth in knowledge and understanding about sharks, marine ecosystems, and threats.

Finally, if an anticipation guide was created, use the after side as an assessment.

Standards:

Common Core Standards:

- **CCSS.ELA-Literacy.W.7.7** Conduct short research projects to answer a question, drawing on several sources and generating additional related, focused questions for further research and investigation.
- **CCSS.ELA-Literacy.W.8.7** Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.
- **CCSS.ELA-Literacy.SL.7.1** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 7 topics, texts, and issues, building on others' ideas and expressing their own clearly.

CCSS.ELA-Literacy.SL.7.1a Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.

CCSS.ELA-Literacy.SL.7.1b Follow rules for collegial discussions, track progress toward specific goals and deadlines, and define individual roles as needed.

CCSS.ELA-Literacy.SL.7.1c Pose questions that elicit elaboration and respond to others' questions and comments with relevant observations and ideas that bring the discussion back on topic as needed.

CCSS.ELA-Literacy.SL.7.1d Acknowledge new information expressed by others and, when warranted, modify their own views.

- **CCSS.ELA-Literacy.SL.8.1** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.

CCSS.ELA-Literacy.SL.8.1a Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.

CCSS.ELA-Literacy.SL.8.1b Follow rules for collegial discussions and decision-making, track progress toward specific goals and deadlines, and define individual roles as needed.

CCSS.ELA-Literacy.SL.8.1c Pose questions that connect the ideas of several speakers and respond to others' questions and comments with relevant evidence, observations, and ideas.

CCSS.ELA-Literacy.SL.8.1d Acknowledge new information expressed by others, and, when warranted, qualify or justify their own views in light of the evidence presented.

- **CCSS.ELA-Literacy.SL.7.4** Present claims and findings, emphasizing salient points in a focused, coherent manner with pertinent descriptions, facts, details, and examples; use

appropriate eye contact, adequate volume, and clear pronunciation.

- **CCSS.ELA-Literacy.SL.8.4** Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.

National Science Education Standards:

Ocean Literacy Principles:

Next Generation Science Standards:

Additional Resources:

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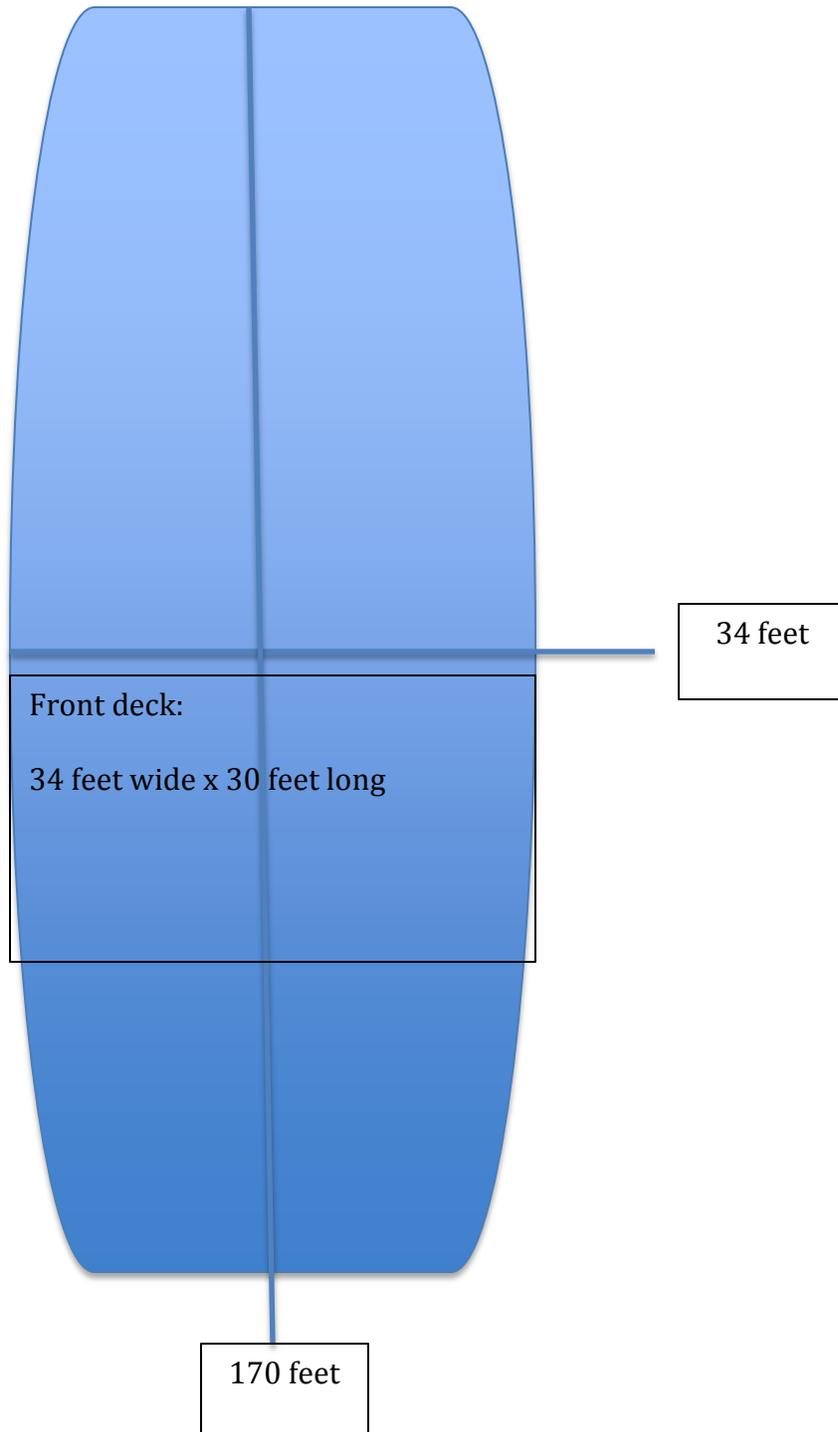
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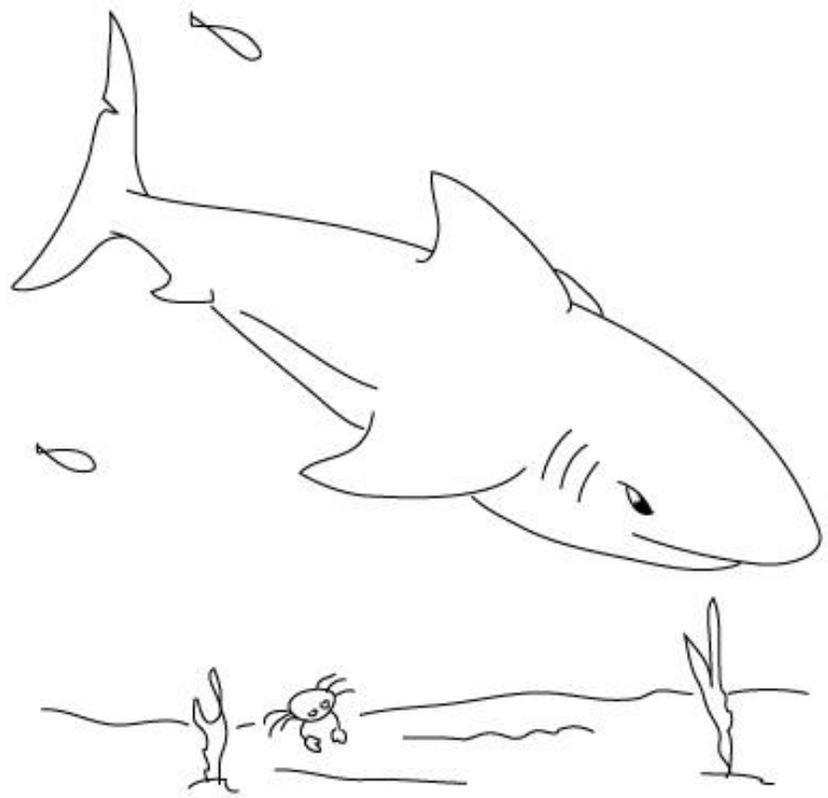
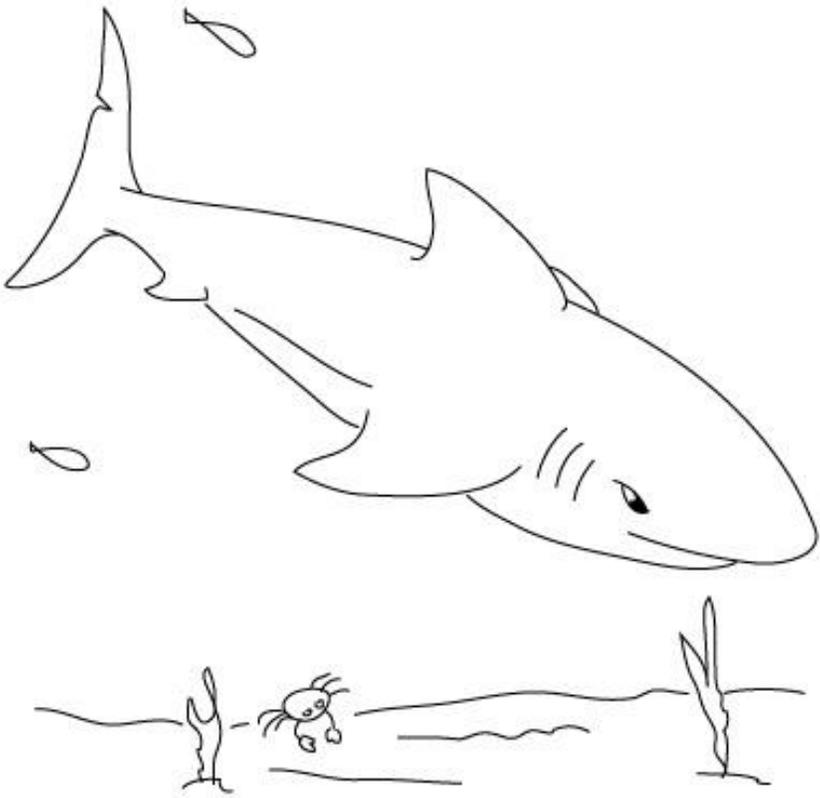
Oregon II Dimensions:

Length: 170 ft

- length of front deck 30 ft

Width: 34 ft





ECHENEIS NAUCRATES

GINGLYMOSTOMA CIRRATUM

RHIZOPRIONODON TERRAENOVAE

GALEOCERDO CUVIERI

CARCHARHINUS ACRONOTUS

SPHYRNA LEWINI

CARCHARHINUS PLUMBEUS

LUTJANUS CAMPECHANUS

CARCHARHINUS FALCIFORMIS

OPHICHTHUS PUNCTICEPS

CARCHARHINUS LEUCAS

RAJA EGLANTERIA

HYPORTHODUS FLAVOLIMBATUS

HYPORTHODUS NIVEATUS

CARCHARHINUS SIGNATUS

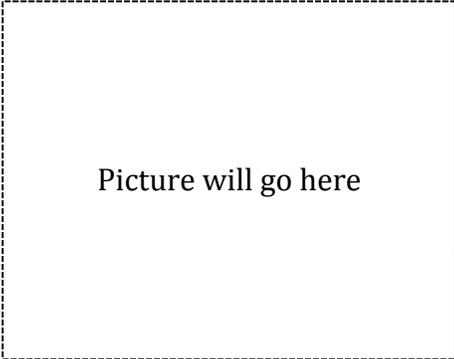
TRICHIURUS LEPTURUS

CENTROPRISTIS STRIATUS

GINGLYMOSTOMA CIRRATUM

NAME _____

SPECIES FACT SHEET

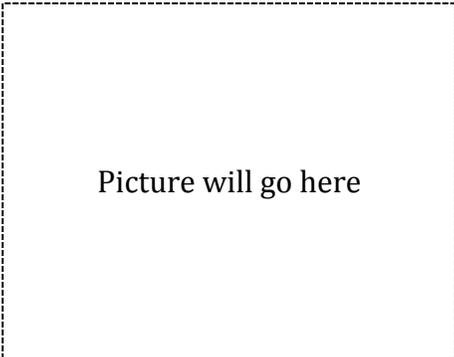


Where was it found?	Stations: Latitude: Longitude: How many?
What is its range?	
Description	
What does it eat?	
What eats it?	

<p>What is interesting about this shark?</p>	
<p>What threatens this shark?</p>	
<p>Should this shark be protected? Why or why not?</p>	
<p>Questions for a NOAA scientist</p>	

NAME _____

SPECIES FACT SHEET



Where was it found?	Stations: Latitude: Longitude: How many?
What is its range?	
Description	
What does it eat?	
What eats it?	

<p>What is interesting about this species?</p>	
<p>What threatens this species?</p>	
<p>Should this species be protected? Why or why not?</p>	
<p>Questions for a NOAA scientist</p>	

Name _____

Job to do	Check
1. Find your species on the data set from the Oregon II.	
2. Complete the first row of boxes on the Species Fact Sheet using your station data	
3. Plot your latitude and longitude on your map. Make sure to label the station number next to the dot on the map!	
4. Complete the boxes on the Species Fact Sheet. All work should be in your own words, but the website you used for that information should be in parentheses () at the bottom of the box.	
5. Make sure the scientific and common names are on the Fact Sheet	
6. Use websites from reputable organizations like: 1. http://www2.isis.org/Pages/Home.aspx 2. http://www.fws.gov/endangered/ 3. http://www.iucnredlist.org	
7. Place picture on Species Fact Sheet	

Name _____

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7. Place picture on Species Fact Sheet	

Name	
Something I learned about another species:	1. 2.
Something I asked about another species:	1. 2.
Comments:	

Name	
Something I learned about another species:	1. 2.
Something I asked about another species:	1. 2.
Comments:	

