

The purpose of this assignment is to provide a Virtual Field for those who cannot attend our Beach Trip in the fall due to sports conflicts or other financial reasons. Either way it is important that you use the information we studied first quarter to put together this culminating event.

Setting: Shackleford Banks is one of NC barrier islands. Over 100 wild horses roam the isolated shores of this deserted island. During this field trip students explore the life in a vast tidal flat, study barrier island zonation as they hike over soaring sand dunes, and discover the wonders of remote beaches where they collect shells and learn about sea turtles. From the boat students will fish and learn about the various fish populations.



Age Group: 7th Grade

Topic of Focus: Coastal Ecosystems and Food Chains

Standards Addressed:

- OLS 2: The ocean and life in the ocean shape the features of Earth.
- OLS 5: The ocean supports a great diversity of life and ecosystems.
- OLS 6: The ocean and humans are inextricably interconnected.

Time Needed: 2-4 hours (Should replace a day long field excursion using technology instead.)

Objectives:

- To describe the diverse ecosystem of the NC Outerbanks through a virtual field trip.
- To be introduced to the horses that inhabit Shackleford Island and what steps have been done to conserve their existence.
- To discuss the importance of ocean food webs and chains.
- To describe and illustrate the flow of energy in barrier island ecosystems from nutrient cycling to food chains.
- To describe what a barrier island is and why they are important to the shape of NC coastlines.
- To describe some influences humans have on barrier islands.

Ecology Webquest

Ecologist: _____

Period: _____

If you are unable to access the website by clicking on the url then please copy and paste it into your browser.

What is Shackelford?

Visit this website and read the article about the wild horses of Shackelford Island and answer the questions that follow:

<https://www.ourstate.com/how-one-woman-saved-the-wild-horses-of-shackelford-banks/>

State three things you learned:

Give two things you found interesting:

State one question you still have:

Part I: Ecosystems and Nutrient Cycling

Your first assignment is to put together a simple food chain of an estuary and answer the questions below. Take a look at this

http://www.thesciren.org/wp-content/uploads/ninja-forms/lesson_plan_attachments/apnepncdenr-gov/organismandpollutionflashcards.pdf and pick out at least 8 animals. You want to read about what they eat so you can order them into a food web.

1. Draw/illustrate this food web and attach to this paper. You may print the pdf out and arrange your organisms on a small piece of poster board.
2. What would happen if you removed one organism? State which one you removed and 2 things that happen to the food web.

I. FOOD CHAINS

(1) Go to and

https://en.wikipedia.org/wiki/Food_chain

Answer the questions below:

1. A person is called a _____ because they eat meat and vegetables.
 2. Food gives people and animals _____.
 3. _____ are animals that only eat meat.
 4. _____ are animals that only eat plants.
- (2) Visit <https://oceanservice.noaa.gov/facts/estuary.html> and watch the two minute video. List 3 facts that you learned about the importance of estuaries.
- 1.
 - 2.
 - 3.

II. NUTRIENT CYCLING

A. Carbon Cycle

B. Go to https://www.windows2universe.org/?page=/earth/Water/co2_cycle.html, read about the carbon cycle and fill in the blanks below:

Name 2 places on the earth we find carbon:

A. Plants pull carbon (in the form of carbon dioxide) from the atmosphere to make food, through a process called _____.

- B. Through food chains animals get _____ from the plants and other animals they eat.
- C. When plants and animals die and _____, carbon goes back into the ground.
- D. Some carbon is buried deep in the ground and forms _____.
- E. When humans burn fossil fuels, _____ is released back into the atmosphere.
- F. When humans and animals exhale, they release carbon back into the air by a process called _____.

B. Nitrogen Cycle

Go to the website https://www.windows2universe.org/?page=/earth/Life/nitrogen_cycle.html and answer the questions below:

1. What are 2 ways nitrogen becomes useable to plants, humans and animals:
2. How do herbivores obtain the nitrogen they need?
3. How is nitrogen returned to the atmosphere?
4. What are two ways humans impact the nitrogen cycle:

Part 2. Energy in Ecosystems

1. Go to <http://www.ecy.wa.gov/programs/sea/wetlands/poster.html> and answer these questions.
 - a. List the organism(s) that are producers.
 - b. List the organism(s) that are consumers.
 - c. Draw three food chains found within this food web (use words and arrows).

- d. How many different food chains can you find in the food web pictured?
- e. What is missing from this food web?

2. Go to <http://www.vtaide.com/png/foodchains.htm> to answer these questions.

a. In any ecosystem, there are fewer carnivores than herbivores. Why? [Your answer needs to specifically include a description of how energy is transferred.]

b. Why would it be extremely rare to find a food chain with nine links in it?

3. Visit this website

<http://science.howstuffworks.com/environmental/conservation/issues/barrier-island.htm> and answer the following questions:

1. What are the two main functions that barrier islands serve?

2. What do salt marshes help do?

3. List 3 of the influences that cause barrier islands to change:

4. What is beach nourishment? Why does it cost so much?

4. Visit this website

https://oceanservice.noaa.gov/education/kits/estuaries/estuaries09_humandisturb.html

on the impacts that humans can have on the estuarine environment. Define and give one fact about each of the following (use the links at the top of the first page).

1. Toxic Substances:

2. Nutrient Pollution:

3. Pathogens:

4. Invasive Species: