

Exploring the Waters of the Tar-Pamlico

Alignment to NC Essential Standards

Science 4.L.1, 5.P.2, 5.L.2.1

Social Studies 4.G.1, 5.G.1.1, 5.G.1.2, 5.G.1.3

Language Arts W.5.1, W.5.2, W.5.3, SL.5.1, W.5.10

Learning Objectives

- Students will identify components of a river system.
- Students will demonstrate an ability to find their location within the river basin using online resources and mapping tools.
- Students will describe the importance of water for human settlement.

Time Required:

Activity 1: 40-60 minutes

Activity 2: 40 minutes

Materials

- 1 copy per student or group of:
 - *Natural Environments of the Tar-Pamlico Basin* handout
 - *Mapping The Waters Worksheet*
 - *How To Identify Your Stream* handout
- Tar-Pamlico Basin map
- Computer and internet access to Google Maps
- Dot stickers or push pins

Vocabulary

headwaters, spring, reservoir, dam, riverine, ecosystem, floodplain, inlet

Overview

In the lesson *We All Live in a Watershed*, the students learned about watersheds, that their school grounds are part of a watershed, and that a significant amount of water drains from the school grounds and into the nearest body of water. In this lesson, the students will learn about the Tar-Pamlico watershed specifically by exploring maps and identifying key water features, which are important elements in understanding how physical environments influence human activity. Water is one of the primary physical elements that shaped early settlement patterns and continues to shape how we build our roads and communities today.

Background

The lesson will closely follow information in the *Natural Environments of the Tar-Pamlico River Basin* handout. The students will explore the basin from the headwaters to the sound to get a sense of the landscape from the perspective of the water. Because water is now piped to our homes or pumped from a well, we are not as aware of the location of water sources as were early settlers. Water used to serve as a key form of transportation (or a barrier to transportation), another quality that we do not think much about now that we have roads and bridges throughout the state.

Water is also a major component of aquatic ecosystems, which process large amounts of carbon and nitrogen, provide habitat for aquatic insects (which later, many become flying insects) and fish, and provide food for birds and humans alike. Clean water and healthy aquatic ecosystems are essential to our health, our communities and economy. But as we learned in the prior lesson, it is difficult to keep water clean when runoff carries pollution to streams.

Preparation

The first activity works best if students can explore the online maps on their own or with a partner, so plan to use the computer cart or schedule time in the computer lab and set up website links ahead of time.

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Procedure

ACTIVITY 1

Mapping the Waters

Time: 40-60 minutes

1. Hang the Tar-Pamlico River Basin map on the wall, ideally over a corkboard if you are going to use pins to mark the locations. *Note: The students can find many items just looking at the wall map but will likely find it more engaging if they get a chance to "explore" these sites using Google maps terrain and earth features.*
2. Split students into small groups, and make sure each group has access to Google Maps or Google Earth. This activity can also be completed using a new tool developed by the NC DEQ Office of Environmental Education specifically for EGRET participants' exploration of the Tar-Pamlico watershed:
<http://ncdenr.maps.arcgis.com/apps/webappviewer/index.html?id=6b03c62763074346957e6c5096814bee>
Students can choose to display different layers on the map to identify county boundaries, water bodies, ecoregions, environmental education centers, and other information.
3. You may also wish to share the *Natural Environments of the Tar-Pamlico River Basin* handout, which will provide some answers for the students.
4. If using the online map, have students work through the *Mapping the Waters* handout in small groups. Then, as a class, walk through the handout and have students come up to mark the location on the wall map using sticky dots or push pins.

ACTIVITY 2

Connecting School Grounds to the Watershed

Time: 40 minutes

1. Using the directions in the *How to Identify Your Stream* handout, locate the nearest stream to your school. You may find that water moves through ditches and then to a stream or the river or perhaps directly to the sound, if you are in the lower coastal plain. If your school is in an urban setting, the water may move through stormwater pipes, underground.
 - Ask students if they think the water that runs off their school yard and downstream will make it all the way to the ocean.
 - Brainstorm with students how water may be diverted from reaching the ocean. Examples could include removal for drinking water, industry or agricultural use, capture in a reservoir, evaporation, taken up by plants and transpired.
 - Have students imagine that they were going to take a canoe or kayak and travel all the way to the ocean from their schoolyard. Ask them to write about the obstacles they might encounter. Students could also make a map of their imaginary journey, noting obstacles along the way.
2. Ask students to consider where their school is located in light of the following questions.
 - If they did not have piped water and had to carry it from a nearby stream or river, would they place their school where it is now? If not, where would they consider placing their school?
 - What are some technologies that have been developed since the 1700s, when early settlers were coming to this area, that enable us to place our homes and schools farther away from the waterways?

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Extensions

Where does your drinking water come from and where does it go?

Students can research online where their school drinking water comes from. Does it come from a well or surface water? Who collects the water and makes sure it is clean? Start with the school administration or head of maintenance to find out if your water comes from a well or a public water supply. If you are receiving municipal water, the city or town should have a website that describes where they get the water. Students can research this online starting with the UNC-TV Drinking Water Resilience Project site: <http://drip.unctv.org/maps/>.

Mapping the water of a river basin

Have students develop their own tour of a river basin. Key locations they should identify include the headwaters, dams or other features that obstruct the main river, changes in ecoregions (which often mean a change in topography and land uses), large streams entering the main river, where the river ends and any other interesting features, such as their school location.

Assessment

- Review completed worksheets to assess student understanding of concepts and proficiency using Google maps.
- Evaluate the students' responses to activity 2.

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MAPPING THE WATERS Worksheet

Name(s) _____

1. Identify the location of your school on the map.
2. The headwater of a river is where it begins. The headwaters of the Tar River begin in Person County as a freshwater spring, just east of Roxboro. Use the Google Maps terrain feature to locate the headwaters. (Hint: Start in Louisburg where the river is easy to see and follow it up, toward the northwest. When the blue lines split, zoom in enough to see which line is labeled Tar River.) Once you find the headwaters, switch the map to earth view and look at what the landscape looks like. Is it forest, farms, homes, businesses? What evidence do you have to support your conclusions?
3. If you follow the river southeast of Louisburg, there is a lake called Lake Royale. Explore the lake on Google maps. Is it a natural or human made lake? What evidence did you locate to support your conclusion?
4. What stream flows through Medoc Mountain State Park? Where does that stream enter the Tar River?
5. Find the Tar River Reservoir on Google Maps. Locate the dam. To which city does the reservoir provide water? Research the Tar River Reservoir on the internet and write one interesting fact here.
6. After passing through Rocky Mount, the river enters a riverine ecosystem called the Southeastern Floodplains where the water slows down and the floodplain spreads out. Can you find that on the Tar-Pamlico wall map? Using Google Maps Earth view, follow the river out of Rocky Mount. Can you see how the land use changes to more agriculture? Why do you think that happens?
7. Where does the Tar River change names to the Pamlico River?
8. What is the largest natural lake in North Carolina? Find it in the Tar-Pamlico River Basin.
9. Locate Goose Creek.
10. If you were taking a boat from Bath to the Atlantic Ocean, what is the nearest inlet that you could use to get to the ocean?