

Mills and the Changing Landscape

Lesson and related resources developed by Toni Stadelman, K-12 Science Specialist for Franklin County Schools, N.C.

Alignment to NC Essential Standards

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

Language Arts RI.5.1, RI.5.3, RI.5.5, W.5.2

Learning Objectives

Students will be able to describe how humans have changed the landscape to meet their basic needs.

Essential Question: How have humans changed the landscape to meet their basic needs?

I Can Statement: I can explain how humans have changed the landscape to meet their basic needs.

Time Required:

Activity: 2-3 class periods

Materials

- Computers, laptops, etc.
- [Story Map for Exploring the Waters of the Tar-Pamlico](#)
- Reading "Exploring the Mills of the Tar-Pamlico River Basin"
- Reading "How Have We Changed the Landscape of the Tar-Pamlico River Basin?"
- How Have We Changed the Landscape of the Tar-Pamlico River Basin? Worksheet
- Exploring Waters of the Tar-Pamlico River Interactive Map Worksheet
- Slide Set [Corn From Farm to Home](#) and/or corn kernels, cornbread mix, cornbread

Vocabulary

Mill, headwaters, millpond, dam

Knowledge

Students should know the definition of a river basin and the name of the river basin where they live.

Background

Discover North Carolina's River Basins Brochure:

<http://bit.ly/NCRiverBasins>

North Carolina River Basins Base map:

<http://bit.ly/NCRBBasemap>

Tar-Pamlico River Basin Story map:

<http://bit.ly/TPRBasin>

NC Environmental Education Webpage for River Basins:

<http://www.eenorthcarolina.org/riverbasins.html>

Engage:

Ask the following questions using the slide set titled [Corn From Farm to Home](#)

1. How many of you like cornbread?
2. How do you make cornbread?
3. How do you go from corn kernels to cornbread mix?
4. Where are the corn kernels ground? Show pictures
5. How did the corn kernels get to the factory?
6. How did the cornbread mix get to the store?
7. How did it get from the store to your home?
8. Where is corn grown?
9. How have farms, factories, stores, homes, & roads changed the landscape?

Farms, factories, roads, houses are all examples of how humans have changed the landscape to meet their needs. The examples shown and discussed are modern examples. What about our great-great grandparents? They had the same basic needs but they didn't have the technologies that we have today. How did they change the landscape to meet their needs?

Mills and the Changing Landscape

Explore:

- Have students explore, on their own or in pairs, the following story maps:
 - Tar-Pamlico River Basin Story Map: <http://bit.ly/TPRBasin>
 - Exploring the Waters of the Tar-Pamlico River Basin Story Map (Section 1 and 2 only): <http://bit.ly/EXTPRIVERS>

Explain:

Have students read the article: *How Have We Changed the Landscape of the Tar-Pamlico River Basin?* And answer the questions on the accompanying worksheet.

Explore:

1. Introduce the story map for *Exploring the Waters of the Tar-Pamlico*.
 - a. There are 5 sections.
 - b. Point out that the maps are interactive.
 - c. The panel on the right side tells the “story” and is also interactive.
2. Let students explore the story map either individually or with a partner.
3. After they have explored the story map, then give them the Exploring the Mills of the Tar-Pamlico River Basin worksheet to answer. These questions go with the section: *Selected Mills on the Tar-Pamlico River*.
4. Have students click on the Mills in the Tar-Pamlico River Basin Interactive Map. Give them the Exploring Waters on the Tar-Pamlico Interactive Map Worksheet. This link is found in the section: *Selected Mills on the Tar-Pamlico River*.

Elaborate/Evaluate:

- Have students research an area around them that is being developed so they can create their own story map. Have them answer the following questions:
 - What is the development?
 - What basic need is this development helping to meet?
 - How is the landscape being changed?
 - What are the positive effects of this development?
 - What are the negative effects of this development?
- There is a link at the bottom of the Laurel Mill and Rock Mount Mill Information sheets that will take students to the National Register of Historic Places: Inventory Nomination Form. These forms will give students even more background knowledge about the mills and owners. Students could read and summarize this information.

[National Register of Historic Places: Inventory Nomination Form for Laurel Mill](#)

[National Register of Historic Places Inventory-Nomination Form Rocky Mount Mills](#)

[“We Recollect.....” An Anecdotal History of Nash County](#)-written by 7th & 8th grade students at Southern Nash Junior High- 1988. Students interviewed older citizens of the county. This provides some information about Webb’s Mill.

Exploring the Geographical Region and Ecosystems of the Tar-Pamlico Watershed
Exploring the Mills of the Tar-Pamlico River Basin Story Map
Student Worksheet

Directions: Go to the **Selected Mills on the Tar-Pamlico Rivers** section to answer the following questions.

Find Louisburg Mill (red pushpin) and Byrd's Mill (purple pushpin) on the map. You will need to zoom in close to the pushpins to answer the following questions.

1. What town is between Louisburg Mill and Byrd's Mill?
2. Why do you think this town grew between these two mills?
3. What other man-made features do you think were developed around these mills?
4. Click on the pushpin for the Louisburg Mill. What do you think the people in the postcard picture might be doing?

Find Laurel Mill on the map and click on the pushpin. Zoom in and then click on the link for Information and pictures to answer the following questions.

1. When was the mill started?
2. What did the mill grind?
3. How do you think the river was affected by the building of the dam?
4. What town is located northeast of the mill?
5. What highway is close to this mill?

Exploring the Geographical Region and Ecosystems of the Tar-Pamlico Watershed
Exploring the Mills of the Tar-Pamlico River Basin Story Map
Student Worksheet

Find Rocky Mount Mills on the map and click on the pushpin. Zoom in and then click on the link for information and pictures to answer the following questions.

1. When did settlers begin to settle in Rocky Mount?
2. Where did Rocky Mount get its name?
3. Look at picture 2. Describe all the natural land features you see.
4. Look at picture 2 again. Describe all the man-made features you see.
5. What effect did building the mills have on the landscape?
6. How do you think building the mills affected landscape of the Tar River?

Find Webb's Mill on the map and click on the pushpin. Zoom in and then click on the link for information and pictures to answer the following questions.

1. The first picture of Webb's Mill shows the dam without water flowing over it. Where do you think the rocks to build the dam came from?
2. How do you think removal of those rocks changed the landscape?
3. The second picture shows the water running over the dam. How did constructing the dam change the river at this location?
4. What is the water behind the dam called?
5. Look at picture 4. Where do you think all the sand come from?
6. How do you think sand deposited affected the vegetation along the river bank?

Exploring the Mills of the Tar-Pamlico River Basin Story Map Student Worksheet

Find Boddie's Mill on the map and click on the pushpin. Zoom in and then click on the link for information and pictures to answer the following questions.

1. Nathan Boddie opened one of the first grist mill in 1778 on what creek?
2. In 1834, another mill was built and ran until the 1970's. What was the purpose of this mill?
3. How does Boddies Mill still benefit the community today even though the mill is no longer running?

Using all the information you have collected from this story map, explain how and why humans have changed the land to meet their basic needs.

How Have We Changed the Landscape of the Tar-Pamlico River Basin?

Changing the landscape:

One of the first attractions to North Carolina was the abundance of Longleaf Pines. The wood from Longleaf Pine trees was used to build ships. Other parts of the trees were also used such as the pine pitch (sap). The pine pitch was used to make tar which was spread on the ship to keep it from leaking. Since the trees were transported on the river to the Pamlico Sound it became known as the Tar River. At least that's one version of how the Tar River got its name. The headwaters for the Tar-Pamlico River is in Person County. The river is called the Tar River until it reaches Washington NC. At the bridge for US Highway 17, the Tar River becomes known as the Pamlico River. The rivers flow down to the Pamlico Sound.

Settlers also came to North Carolina to become farmers. In order to farm, they had to clear the land. They used a technique called slash and burn. The farmers would cut down the trees and any other vegetation that was in the way and then burn them. The loss of this vegetation exposed the soil and increased erosion. The trees that were not burned were used to build their homes, barns, and other structures such as mills.

The mills used water to power the water wheel which in turn powered the stones to grind the corn and wheat. Since the mills needed water, they had to be located on a river or tributaries of the river. The waters of the river had to be harnessed to provide enough energy to keep the mill running. The flow of the river had to be changed so that the mill could operate whenever the farmers needed to grind their corn or wheat. The Tar-Pamlico River was harnessed in many different areas to supply power for the mills. So how was this done?

Harnessing the Tar-Pamlico River:

The people that built, ran, and maintained the mill were called millers. Mills couldn't be built just anywhere on the river. Certain land features were needed for the mill to be successful.

What is needed to build and maintain a successful mill?

- River with terrain that allows an efficient dam to be built.
- Rocks for building the dam
- Lumber for building the mill and parts to run it such as:
 - Water wheel
 - Sluice gate
 - Headrace
- A road that farmers could use to bring their corn and wheat to and from the mill.

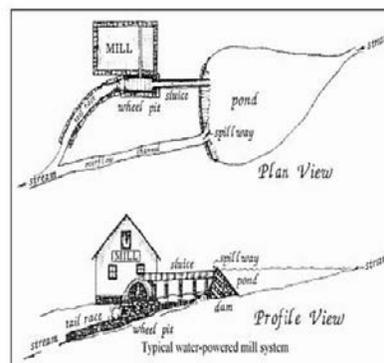


Illustration from: Mills on the Tsatsawassa:
Techniques for Documenting Early 19th Century Water-Power Industry in Rural New York,
by Philip L. Lord, Purple Mountain Press, Fleischmanns, New York, 1983.

Millers looked for areas of the river that were a little higher than the rest of the river. These areas were used to make dams. The dams raised the water level causing the water to get backed up and create a millpond. The height of the dam was important because it controlled how much water would be needed to start the waterwheel and keep it moving. The greater the height, the less amount of water was needed to start the waterwheel. The millpond stored the water that was used to

How Have We Changed the Landscape of the Tar-Pamlico River Basin?

run the mill. The dam sent the water to the headrace where the water would fall onto the water wheel. A sluice gate was used to control the water flow. Opening the gate allowed the water to flow onto the wheel and closing the gate stopped the water flow. The water that flowed over the wheel was carried away from the mill through the tailrace.

After building the mill, the landscape was changed. The Tar-Pamlico River had an uninterrupted flowing river, but was now a river that had several man-made dams. These dams changed the flow of the water by creating ponds. The land surrounding the mills was changed by loss of vegetation which increased the amount of soil being deposited into the river.

Roads and Towns:

Roads were a necessity for the success of the mills and the farmers. When mills first started, roads were nothing more than game trails or paths used by Native Americans. As more and more wagons and horses used the trails, they began to widen. The effect of the widening roads led to the loss of vegetation and bare soil. When the rains came, the roads would get muddy and huge ruts would form due to the heavy wagons. Also, the topsoil on the roads would erode and end up in the rivers, streams, and creeks. The difference in the roads that we have today is that we use asphalt and concrete to build the roads. Even now we change the landscape to meet our needs.

Towns eventually began to grow around the mills. The farmers didn't use all their ground corn or wheat for their families. They also used some to trade or buy things they needed. As more people moved into the area, towns began to grow. This meant buildings were needed for general stores and homes. More of the landscape was changed because trees had to be cut for construction of these buildings.

Reservoirs, Lakes, and Ponds:

The purpose for building dams was to create a supply of water for the mills. These millponds became important to the community. Grinding the corn or wheat took quite a few hours so the farmers would sit around the millpond and talk. Other members of the community would also visit millponds where they would have picnics, fish, swim, have baptisms, and hold important meetings. Ever heard of a "rumor mill"? Going to the millpond was a great place to catch up on all the local news (whether it was real news or fake news.)

Some farmers created ponds on their land to help irrigate their crops and have a water supply for the livestock. The farmers would dig wells to provide a fresh supply of water for their families.

As communities began to grow, the people needed a bigger water supply than a well could provide. These communities created reservoirs for the townspeople. They would use an area of the Tar River or a tributary that would be suitable for a dam. Once the dam was built, water would back up just like a millpond. The difference was that the water wasn't supplying energy for a mill. It was supplying water for people to use for cooking, drinking, and washing. Of course, pipes had to be used to connect the water from the reservoirs to the people who lived in the towns. This is another example of how people have changed the landscape.

Student Worksheet: How Have We Changed the Landscape of the Tar-Pamlico River Basin?

Name: _____

Date: _____

Directions: Use the article, "How Have We Changed the Landscape to the Tar-Pamlico River Basin?" to answer the following questions.

1. Describe how the slash and burn technique was used by settlers and the effect it had on the landscape.
2. Why were the Longleaf Pine trees so valuable to the settlers?
3. Describe how building a mill on the river changed the landscape.
4. What does harnessing mean in the context of the article?
5. Why were roads important for the success of the mill?
6. What impact did roads have on the landscape?
7. Why were millponds important to the mill?
8. How did the community use millponds?
9. Mills not only affected the landscape surrounding the river. If the mill was successful, towns would begin to grow close to the mill. How did the building of towns change the landscape surrounding the river?
10. The bigger the towns became the more water they needed. How did they get this water?