CHAPTER 1

The Land Where We Live

Chapter Preview

Terms:

geography, region, sound, barrier island, cape, inlet, Gulf Stream, wetland, estuary, pocosin, savanna, crossroads hamlets, tobacco towns, Carolina bays, Fall Line, headwaters, sectionalism, mill village, NASCAR, monadnock, elevation, bald, cove, weather, climate, westerlies, humidity, precipitation, tornado, hurricane

a-z GLOSSARY

Places:

Tidewater region, Outer Banks, Jockey's Ridge, Lake Mattamuskeet, Coastal Plain region, Sandhills, Fort Bragg, Piedmont region, Research Triangle Park, Uwharrie Mountains, Piedmont Crescent, Mountains region, Blue Ridge, Appalachian Mountains, Mt. Mitchell, Black Mountains, Great Smoky Mountains, Balsams, Fontana Lake

This book, *North Carolina: People, Places, and Progress*, tells the story of the people who have lived in our state. It also tells *how* they lived. The questions in this book will challenge you to think about *why* the people in our state did the things they did. We will begin the book by looking at the geography of our state. **Geography** is the study of the physical features of Earth and its atmosphere and how these affect human activities. Geography asks the question, "How does *where* you live affect *how* you live?"

The many thousands of people who have come to North Carolina in recent years are often confused about our state's habits and tastes. Young people from places like Liberia or Honduras may wonder why natives say the things they say, and do the things they do. Why does school start in August, and why do some older people keep Easter Monday as a holiday? Why do folks eat so much barbecue, and why do they argue over which kind is best? How is it that people along the coast sound so different from folks in the mountains? Who decided that the state should be so long from east to west, yet so narrow in some places from north to south? What causes the soil to be black in some areas, and red in others? All of these questions can be answered with a better knowledge of the state's geography.

Background: The Blue Ridge Parkway. **Right:** Looking Glass Rock, viewed from an overlook on the Blue Ridge Parkway.

Internet Activity

Textbook Scavenger Hunt

Key Terms

North Carolina's Geographical Location

PowerPoint

Quick Notes

Guided Notes

North Carolinians have always made sense about their surroundings by giving different parts of their state names that correspond to "the lay of the land," or features of area. This idea has helped state residents find both an individual and community identity. These identities give North Carolinians a "sense of place" that often increases their pride in their hometowns and surrounding areas. As you will learn in this book, North Carolinians have always put a lot of energy and enthusiasm into living close to their surroundings. The variety of these landscapes influenced the course of their progress and made North Carolinians into the distinctive people that they are, even today.

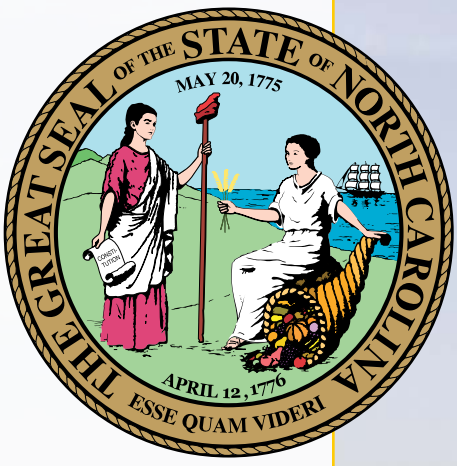
North Carolina is located in the eastern United States along the coast of the Atlantic Ocean, and the land within its borders rises in elevation as one travels from east to west. Its original inhabitants encountered several different land regions as they spread out and established new homes and communities. A **region** is a specific area where the lay of the land and the habits of the people are similar. Two of North Carolina's regions are relatively flat—the Tidewater and the Coastal Plain. There the people traditionally raised large crops of tobacco, cotton, and foodstuffs. These two regions make up the eastern section of the state. The other two regions—the Piedmont and the Mountains—are characterized by hills and mountains. These two regions make up the western section. Eastern and western North Carolina are divided by the Fall Line. This geographic boundary marks where the land changes from Piedmont (hills) to plains. The Fall Line is the last point where one finds waterfalls or rapids on a river as it makes it way to the ocean. Over time, the history and culture of the people in these four regions took on unique characteristics. Even though they were all North Carolinians, geography affected how they lived and shaped their life and culture.

Top: Aerial view of a coastal community on Bald Head Island. **Above:** The American black bear is commonly found in the Mountains region.

Background: Chimney Rock State Park. **Right:** The Great Seal of the State of North Carolina was standardized in design in 1871. **Lower Left:** North Carolina State Capitol building in Raleigh. **Lower Right:** Silhouette of a blue heron at the beach at sunrise.

Signs of the Times

Vital Statistics



Area: 53,819 square miles (28th largest)
Land: 48,618 square miles
Water: 5,201 square miles
East-West length: 560 miles, greater than any state east of the Mississippi River
North-South length: 170 miles
Number of bordering states: 4
Lakes and ponds: Over 50,000
River basins: 17
Number of land regions: 4
Number of counties: 100
Highest point: Mount Mitchell, 6,684 feet
Lowest point: Atlantic coastline, sea level

Location

Latitude: Between 33°50' and 36°35' north latitude
Longitude: Between 75°28' and 84°19' west latitude
Location within United States: Southeast
Location within South: Eastern
East-West divider: Fall Line
Geographic center of the state: In Chatham County, 10 miles northwest of Sanford

Audiobook Chapter 1-1

Section 1

The Tidewater Region

Setting a Purpose

As you read, look for

- features of the Tidewater region;
- the influence of the barrier islands;
- North Carolina's five major sounds;
- major rivers in the Tidewater region;
- terms: **sound, barrier island, cape, inlet, Gulf Stream, wetland, estuary, pocosin, savanna.**

The Tidewater: A Legacy of Lighthouses

North Carolina's Counties

North Carolina's Regions

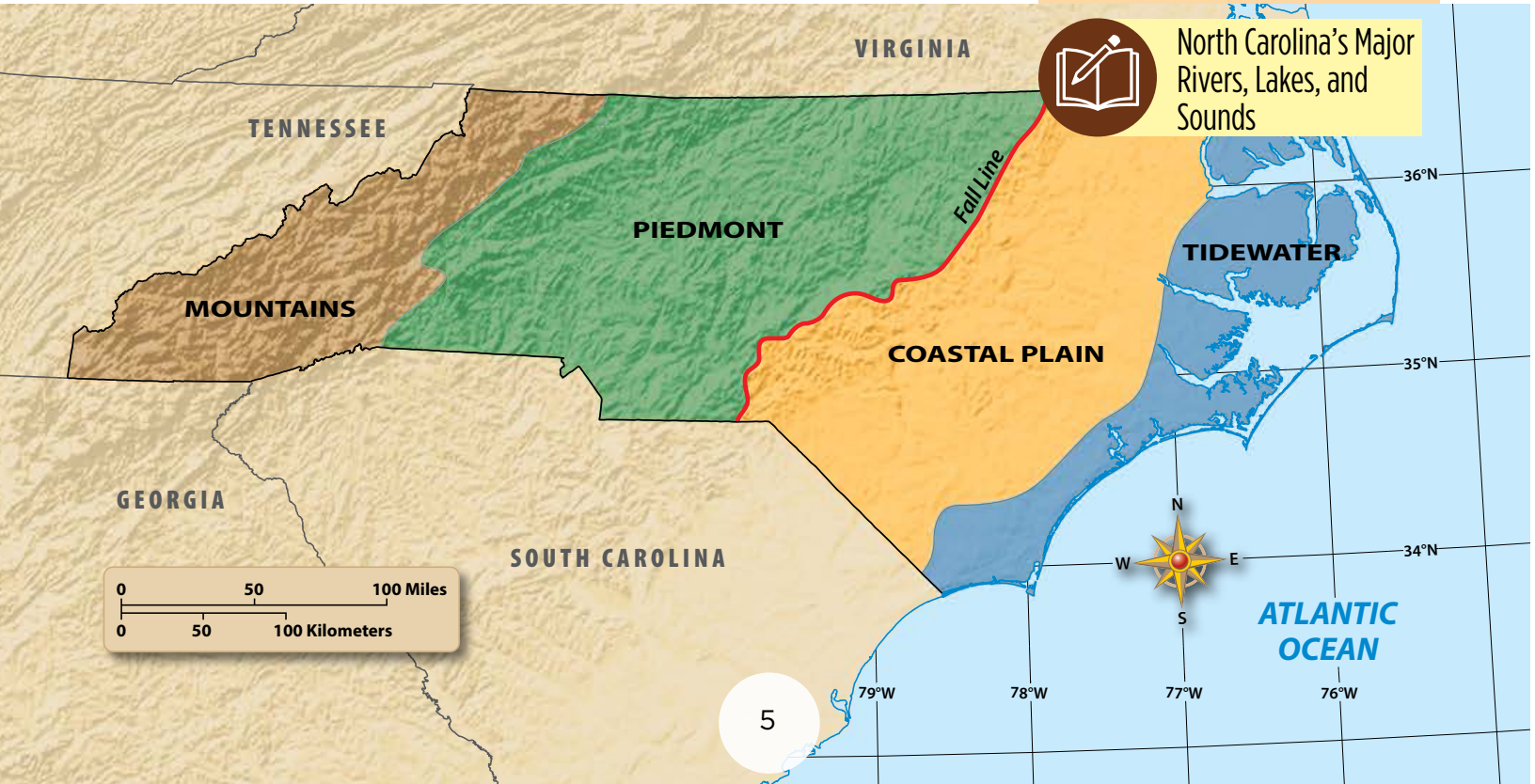
Water, water, everywhere! If you live in this region, or if you have visited it, you know this describes the **Tidewater**. This narrow strip of land extends along the Atlantic Ocean. In the southern part of the state's coast, the Tidewater is no more than thirty miles wide, but in the north, where inland bodies of water are large, it goes back more than fifty miles in places. The Tidewater includes land on North Carolina's mainland and Outer Banks. Throughout the region, the land is influenced by the daily movement of the ocean's tides. The tides alter currents in streams and sounds. **Sounds** are the inland bodies of mixed water found throughout much of the Tidewater. The resulting mix of salt and fresh water makes the Tidewater different from other regions of the state.

Map 1.1

North Carolina's Regions

Map Skill: In which region do you live? Which regions border the Fall Line? Which borders the Atlantic Ocean?

North Carolina's Major Rivers, Lakes, and Sounds



Barrier Islands

The islands off the North Carolina coast form the beach for much of the Tidewater. They have influenced life in the state from the first explorations to the present. Only a few islands, like Roanoke, where the first English settlement was made, sit alone. Most are part of a long chain of sand spits called **barrier islands**, the most famous of which are called the Outer Banks. The region is also known for its capes. A **cape** is a large portion of land extending into an ocean or other large body of water.

The barrier islands are really just a very long ridge of sand, spread along the ocean floor, always shifting in the tides and storms that come off the Atlantic Ocean. Like the tips of icebergs, only the tops of the barrier islands show above the waterline. Most of the barrier islands are less than two miles across. The size of these sand ridges can vary. At Cape Hatteras, the barrier island is wide enough to support a considerable forest made up of bay, holly, and live oak trees. The highest point along the barrier islands is at Jockey's Ridge, located not far from Kitty Hawk, where the Wright Brothers first flew. Although the winds shift the sand daily, Jockey's Ridge averages about 114 feet in elevation, making it the "tallest living sand dune on the Atlantic coast."

Where the sand has low places, **inlets** allow the seawater to come in and out with the tides. Because the ocean is endlessly churning the sand and the water, different inlets have opened and closed at various times. For example, Roanoke Inlet, which English explorers used in the 1500s, is long gone. Today, North Carolinians in that vicinity use Oregon Inlet, which was carved out by a hurricane in 1846.

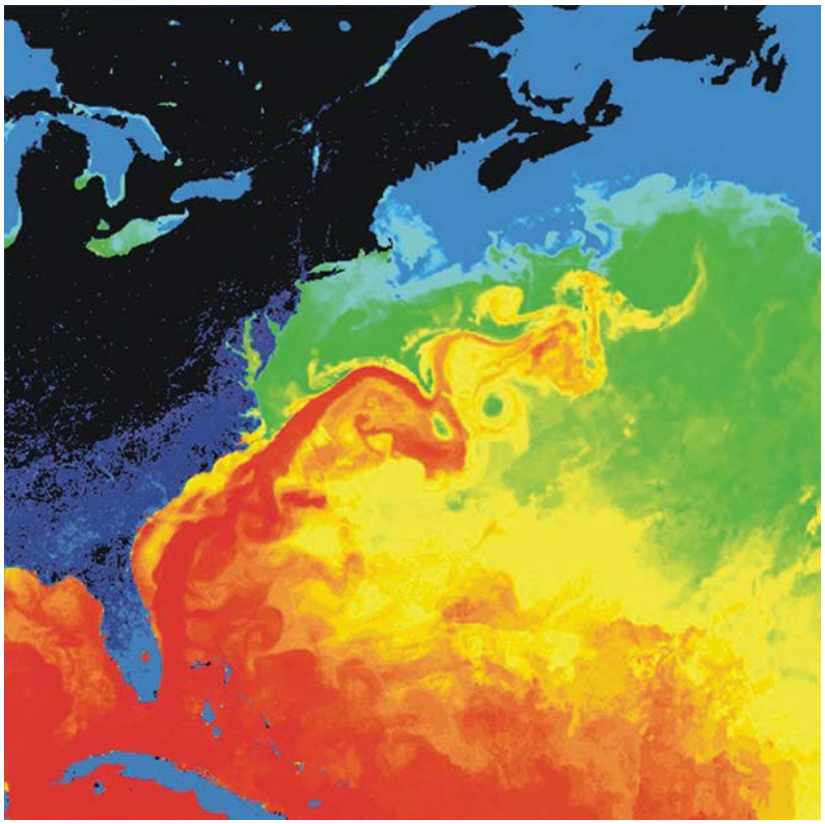
The Outer Banks of North Carolina

Map 1.2

North Carolina's Barrier Islands and Sounds

Map Skill: What are the three capes identified on the map?

Cape Fear extends into the Atlantic Ocean from Bald Head Island, which can only be reached by ferry. Transportation on the island is limited to golf carts, bicycles, or foot traffic.



Graveyard of the Atlantic

The very eastern tip of our state, Cape Hatteras, is a huge spit of sand that projects out for miles into the ocean. The ocean current running by it, heading north, is the **Gulf Stream**, one of the main influences on the world's weather. It carries warm water from the Gulf of Mexico across the Atlantic to the British Isles. Cooler water is then pushed south toward Africa, to be warmed once again near the equator. Before airplanes, the Gulf Stream was the "road" ships took back from North Carolina to Europe. Relatively speaking, then, North Carolina is located at the place where the warm water begins to move toward the colder north. In fact, Cape Hatteras for centuries was known as the "graveyard of the Atlantic" because frigid Arctic water, called the Labrador Current, collides with the warmer Gulf Stream just offshore, creating turbulent waters that make for unexpected storms. That is why the Cape Hatteras Lighthouse has become so legendary. It served a vital purpose in world commerce, warning ships with valuable cargo of potential danger at sea. These dangerous waters and the cluster of shifting, underwater sandbars located just off the coast of Cape Hatteras have been given the name Diamond Shoals.

The only true break in the barrier islands along the state's shoreline is Cape Fear, where the Cape Fear River flows directly into the ocean. All the other rivers in the eastern half of the state flow into the sounds behind the islands.

Top Left: The warm waters of the Gulf Stream flow northward near the North Carolina coast. **Top Right**: Diagonal black-and-white stripes mark the Cape Hatteras Lighthouse at its new location near the town of Buxton on the Outer Banks. **Above:** Wild horses graze among the houses in Corolla, on the protected northern tip of the Outer Banks. **Left:** The Herbert C. Bonner Bridge spans the Oregon Inlet.

special Feature

Carolina Places

Biking the Tar Heel State

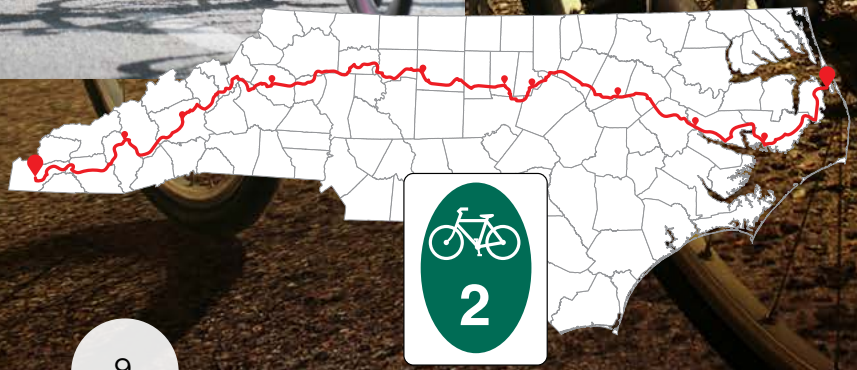
If there are wheels, there is a way to see North Carolina from the Mountains to the Tidewater, through the Piedmont, and across the Coastal Plain. Increasingly, residents of the state choose to see the sights, hear the sounds, and taste the goodness of the state's wonders by bicycle.

Bicycles first appeared in North Carolina in the 1890s. The oldest bicycle repair shop in the state, Hearn's in Asheville, dates to 1896. However, only in the latter part of the twentieth century did state citizens make concerted efforts to carve out their own lanes, so to speak, to protect themselves and have a better view of their surroundings. The cycling environment became so inviting that the nation's largest bicycle retailer, Performance, located its headquarters in Chapel Hill. Many communities began to sponsor long-distance races for more serious riders. One of the best known is the "Tour de Moore," where hundreds of cyclists join the Sandhills Cycling Club for a whirl through Moore County.

So popular has biking become that the North Carolina Department of Transportation has promoted the designation of public bike routes throughout the state. The "Carolina Connection" follows the route of old Highway One from the Virginia to the South Carolina line. Virginia has done the same on its side of the line, and the hope by many is for folks to be able to bike safely from Miami to Maine by the 2020s. Other designated routes include "Ports of Call" in the Tidewater and a roundabout through the Carolina bays, highlighted by a visit to Bladen Lakes State Forest.

The largest annual ride in the state in the 2010s is Cycle NC, sponsored by the North Carolina Amateur Sports Association. The first event in 1999 went all the way from Murphy in the far west to Manteo in the far east of the state. Soon, more than one thousand riders joined in this annual event. Every year, the ride has gone from the high elevations to the coast—a sort of "downhill marathon," noted one observer. Participants, by the way, often gather in Cary, and take buses to the starting line.

Biking has become, for many folks, a way to enjoy the geographic variety of our state. Because large groups of cyclists would have a hard time in congested urban areas, Cycle NC tends to take secondary roads. Most years, riders get to stop and see the sights in places like Troutman in Iredell County or Clarkton in Bladen County. The 2015 riders toured through Saluda, Columbus, and Ellenboro in the west and Wagram and Lumberton in the east. Along the way, they visited the Cradle of Forestry in the Pisgah National Forest and a Century Farm near Lumberton. Such stops each year help the riders understand just how much variety there is to the terrain and vegetation of the land, as well as the habits and customs of its inhabitants.



Mountains to Sea Bicycle Trail

DID YOU KNOW...

The first lighthouse along the North Carolina coast was erected in 1793 on Bald Head Island, which is located at the mouth of the Cape Fear River. The original structure was replaced in 1817. This newer lighthouse, known as "Old Baldy," is the oldest standing lighthouse in North Carolina. Decommissioned in 1935, it no longer serves as an aid to navigation. Its only illumination at present is a decorative light that shines dimly at night.

The Sounds

North Carolina has five major sounds. Almost half of the Tidewater area is made up of these mixed bodies of water that are just behind the barrier islands. The northernmost one is Currituck Sound, followed, as one goes south, by Albemarle Sound, Pamlico Sound, Core Sound, and Bogue Sound. Pamlico is the deepest and largest of these, at least twenty feet deep much of the year.

Each of the major sounds is fed fresh water from a river coming from the Coastal Plain. Some of the oldest towns in North Carolina are located near the mouths of these rivers. These towns were trading centers where goods could be transferred from river flatboats onto the schooners that would take goods by sea to other parts of the world. The town of Washington, for example, sits just upstream from the mouth of the Pamlico River, which feeds into the Pamlico Sound. The Trent and the Neuse Rivers come together at New Bern and also feed into the Pamlico. In addition to the sound towns are small fishing villages like Wanchese, Engelhard, Atlantic, and Oriental, all of which face Pamlico Sound.

Above: A sailboat lies at anchor in Kitty Hawk Bay, which is part of Albemarle Sound.

Sedimentation (the depositing of clay or silt or gravel) through time has kept the sounds from being deep enough for large oceangoing vessels. Thus, towns located where rivers run into the sounds, like Edenton, Bath, or New Bern, never grew into ports the size of Savannah, Georgia, or Norfolk, Virginia. The direct outlet to the sea enjoyed by the city of Wilmington, in the southeast corner of the state, is why that seaport was North Carolina's largest town through most of the state's history.

A large portion of the land in the Tidewater is **wetland** most of the year, meaning that the soil is soaked or flooded with water. All along its shore are salt marshes where shellfish breed and live. These mucky **estuaries** (places where fresh water and salt water meet) serve as incubators for a variety of sea life, such as shrimp.

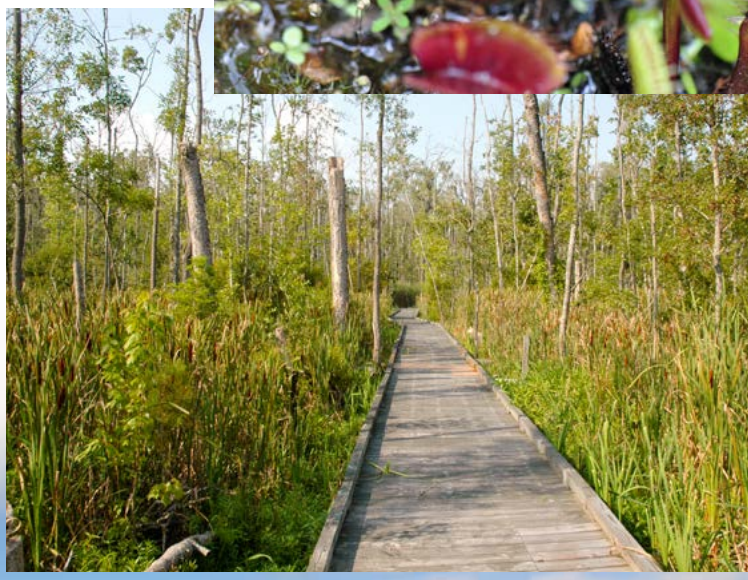
Swamps and Lakes

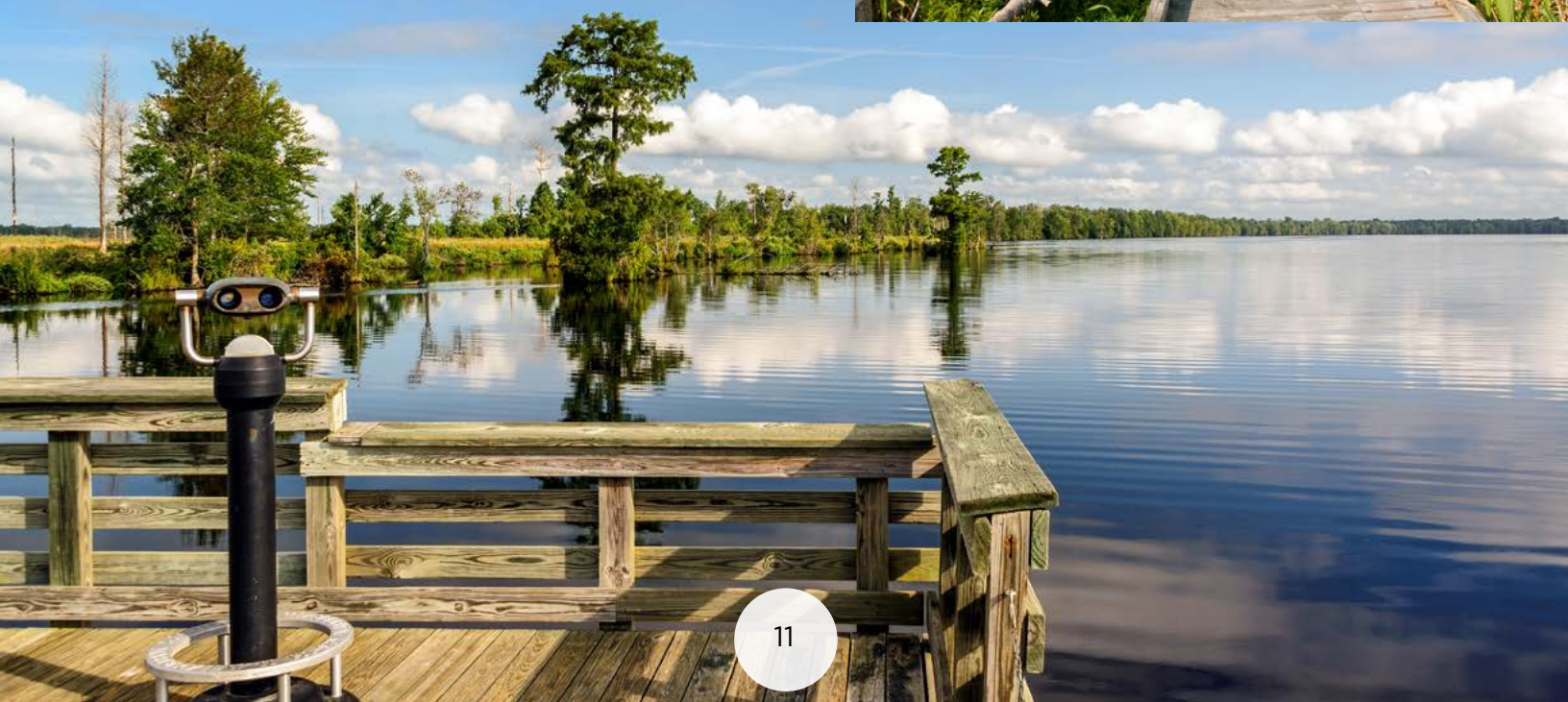
The most common type of wetland away from the estuaries is the **pocosin**. The term is an American Indian name for a particular type of swamp. It means "a swamp on a hill," made up of peat that fills with water when the water level is high. Pocosins are found from the Albemarle Sound all the way to the Cape Fear. They are distinguished by their vegetation, most often having a mix of laurel, bay, and scrub oak trees. Alligator Pocosin makes up the bulk of the land between the Albemarle and Pamlico Sounds. Big Pocosin is located near the town of Washington.

Another Tidewater habitat is the **savanna**, where tall grass mixes with scattered longleaf and other types of pine. Parts of the Green Swamp, the most extensive wetland at the southern end of the Tidewater, become savannas in the drier times of the year. The Green Swamp is the habitat for one of North Carolina's unique plants, the Venus flytrap, a type of trumpet plant that catches a variety of bugs with its hair-lined "pitchers." The vital parts of the bugs are gradually absorbed into the plants for nourishment.

Most of the natural lakes in North Carolina are in the Tidewater. Lake Mattamuskeet, the largest, is fifteen miles across at its longest but averages only about six feet in depth. It is a major landing point for migratory birds along the Atlantic coast and is today a wildlife refuge. Not far from Mattamuskeet are Pungo and Phelps Lakes, smaller but similar in appearance. On the edge of the southern part of the Tidewater, adjacent to the Green Swamp, is Lake Waccamaw. Its longest stretch is five miles, but, like the others, it is very shallow.

Below: Carnivorous Venus flytrap plants. **Middle:** Goose Creek State Park boardwalk in a swamp. **Bottom:** Lake Drummond, a fresh water lake at the center of the Great Dismal Swamp.





Above: Ocracoke Light, built in 1823, is the oldest North Carolina lighthouse still in continuous service. The current light casts a beam that can be seen 14 miles at sea.

Through time, the Tidewater has been one of the least populated portions of the state. Many of the early families either fished or supplied goods to the fishing trade. Some families today can trace their ancestry all the way back to the 1600s. Some residents of Ocracoke, one of the Outer Banks islands, still speak with a dialect that sounds like their distant ancestors. This "hoi toide" brogue uses words similar to the English spoken in the days of William Shakespeare. For example, Ocracokers might "call over the mail" instead of get the mail. They might say they "have a gutful of food" when they are full from a meal. If they get nauseous, they become "quamished in my gut." If they meet someone from another region of North Carolina, like the Coastal Plain, they will call that person not an outsider, but a "dingbatter." The isolation of the Outer Banks reinforced the sound and patterns of this speech over time.

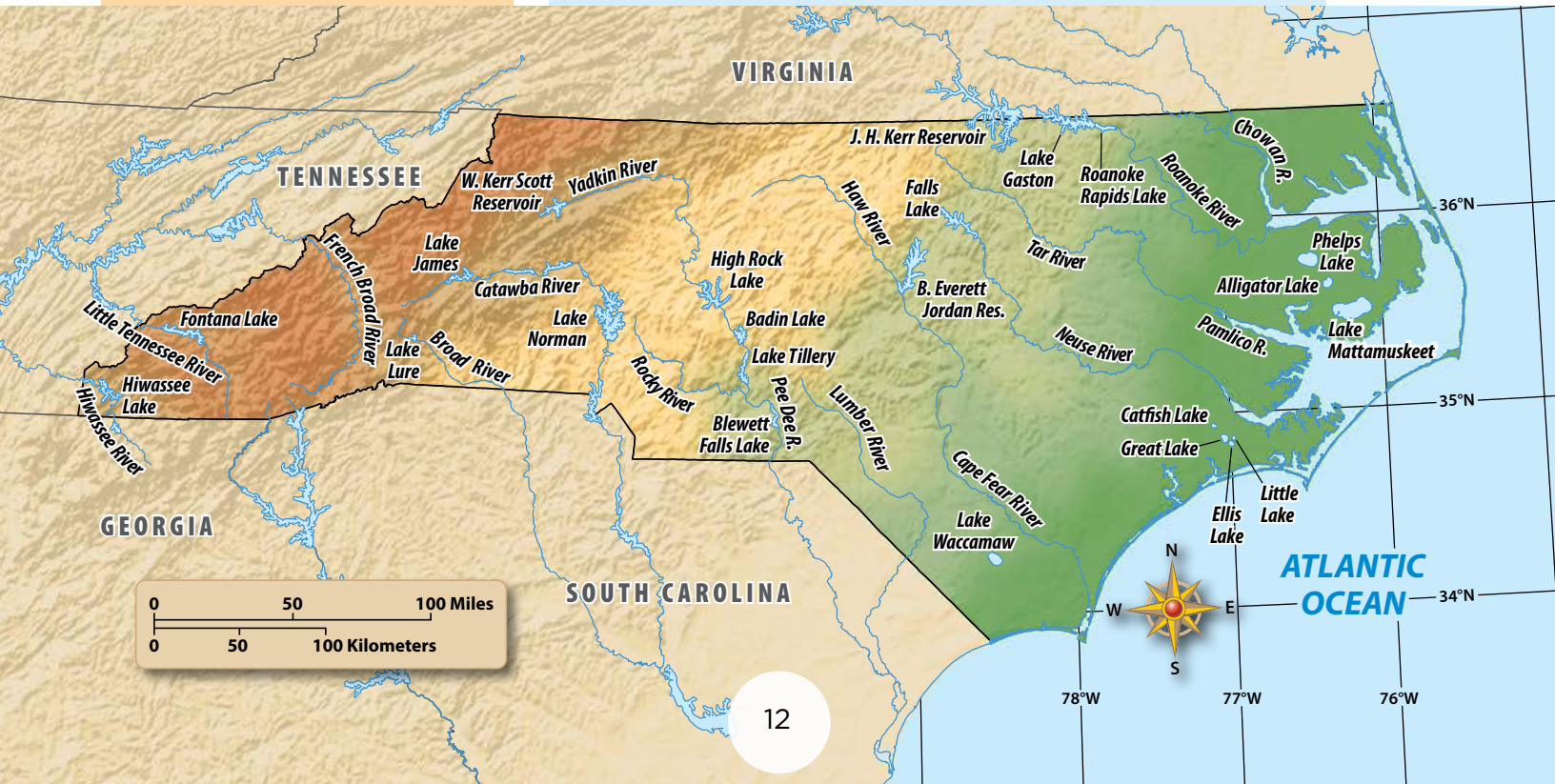
It's Your Turn

1. What are the Outer Banks?
2. What ocean current flows off the eastern coast of North Carolina?
3. What effect has geography had on the population of the Tidewater region?
4. Why is "Tidewater" an appropriate name for this region?

Map 1.3

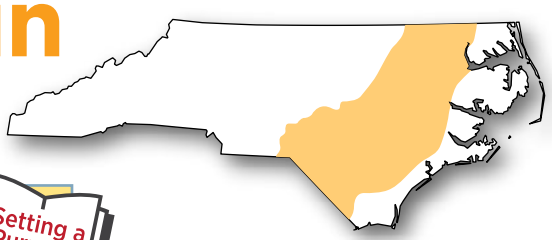
North Carolina's Rivers and Lakes

Map Skill: In which direction does the Cape Fear River generally flow through North Carolina?



Section 2

The Coastal Plain Region



As you read, look for

Setting a Purpose

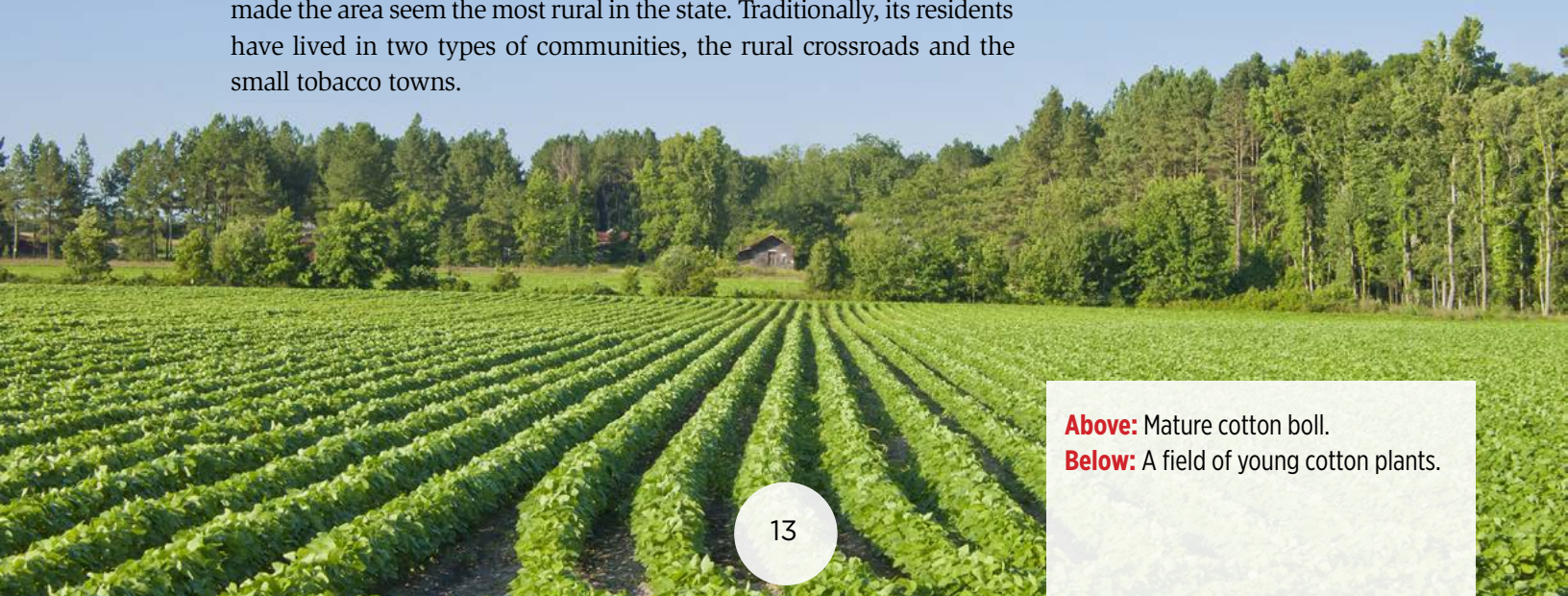
- features of the Coastal Plain region;
- types of traditional communities in the Coastal Plain;
- the Carolina bays and the Sandhills;
- terms: **crossroads hamlets, tobacco towns, Carolina bays.**

Audiobook Chapter 1-2

The **Coastal Plain** has some of North Carolina's richest soil and takes up about a third of the area of our state. It is part of the Atlantic Coastal Plain, which extends 2,200 miles from New York to Florida. In North Carolina, the Plain averages 100 miles in width and slants from the northeast to the southwest, going all the way from the Virginia border to the South Carolina line. The Plain has two central characteristics: its flatness and its soil—both of which contribute to its role as the chief farming region of the state.

The rivers of the Coastal Plain generally flow southeasterly. Most flow into the sounds of the Tidewater region. The Roanoke, Tar, and Neuse are the major rivers that do so. The Cape Fear River, which rises in the Piedmont, is the longest river entirely in North Carolina. The Cape Fear flows past Fayetteville and Elizabethtown before it reaches Wilmington and the Atlantic Ocean.

Great stretches of the Coastal Plain seem to go on forever, because in many areas large fields, sometimes several miles across, have been cleared for farming. Through most of the region's history, farms were scattered out across the landscape a half mile or more apart. This has made the area seem the most rural in the state. Traditionally, its residents have lived in two types of communities, the rural crossroads and the small tobacco towns.



Above: Mature cotton boll.
Below: A field of young cotton plants.

Above: Old tobacco sheds, such as this one, are reminders of the importance of tobacco farming in North Carolina's history.

Below: This tobacco warehouse of the E. B. Ficklen Tobacco Co. is located in Greenville, one of the Coastal Plain's tobacco towns.

Crossroads Hamlets

Crossroads hamlets dot the region. Often they have had a store or two, or a school or church, that provide goods and services to the nearby farmers, who have neither the time nor the money to go to town frequently. These community centers are generally named for local residents, like Ballard's Crossroads near Farmville or Hill's Crossroads near Wallace. In recent times they have become locations for what North Carolinians call convenience stores.

Tobacco Towns

Tobacco towns have been a part of the Coastal Plain since it was first settled in colonial days. In the twentieth century, the popularity of cigarette smoking caused these towns to grow. People in the towns focused their activities around the raising of tobacco. Rocky Mount, Greenville, Wilson, and Goldsboro provided markets for the largest tobacco-growing region in the world. Each of these towns had more than a half dozen tobacco warehouses—large, spacious sheds where harvested tobacco was stored until purchased by cigarette companies.

Everyone from bankers to farm equipment dealers scheduled their business around the tobacco harvest. On the special market day, an auctioneer sang out the bids as he and the buyers went up and down the rows of tobacco stacks. At the height of tobacco production in the mid-1900s, almost every town in the Coastal Plain had at least one tobacco warehouse.

The traditional tobacco barn, a tall, thin square of logs or planks, was once seen everywhere on the Coastal Plain. This tobacco was flue-cured, dried for the market with low levels of heat that made it mild enough for cigarette smoking. In modern times, computer-controlled "barns" made of insulated metal and plastic are used for drying. Fewer and fewer Coastal Plain residents grow tobacco, however, because of the health risks associated with smoking and the cutoff of government payments that guaranteed farmers a profit. Only the town of Wilson still has regularly scheduled auctions where farmers can accept bids for their product.

Middle Left: Tobacco hangs from racks on a wagon. **Lower Left:** Tobacco leaves drying by being hung upside down. **Below/Bottom:** A North Carolina tobacco field.

Story of the Tobacco Industry in NC

Longleaf Pine Forests and Carolina Bays

Before there were tobacco fields, the longleaf pine was the most common sight on the Coastal Plain. Geographers think that more than ten million acres of pine forest covered the region. The tree gradually disappeared from the landscape. At first it was cut down for lumber and for making tar; later the land was cleared for growing tobacco and other crops. In the twenty-first century, better management of resources has stabilized the tree. Today it is mostly found in the southern part of the Coastal Plain, particularly in the Bladen Lakes State Forest near the Cape Fear River. Because of its historical importance to North Carolina, the pine is the state tree. The tree that often grows in the midst of pine forests, the dogwood, provides the blossom that is the state flower.

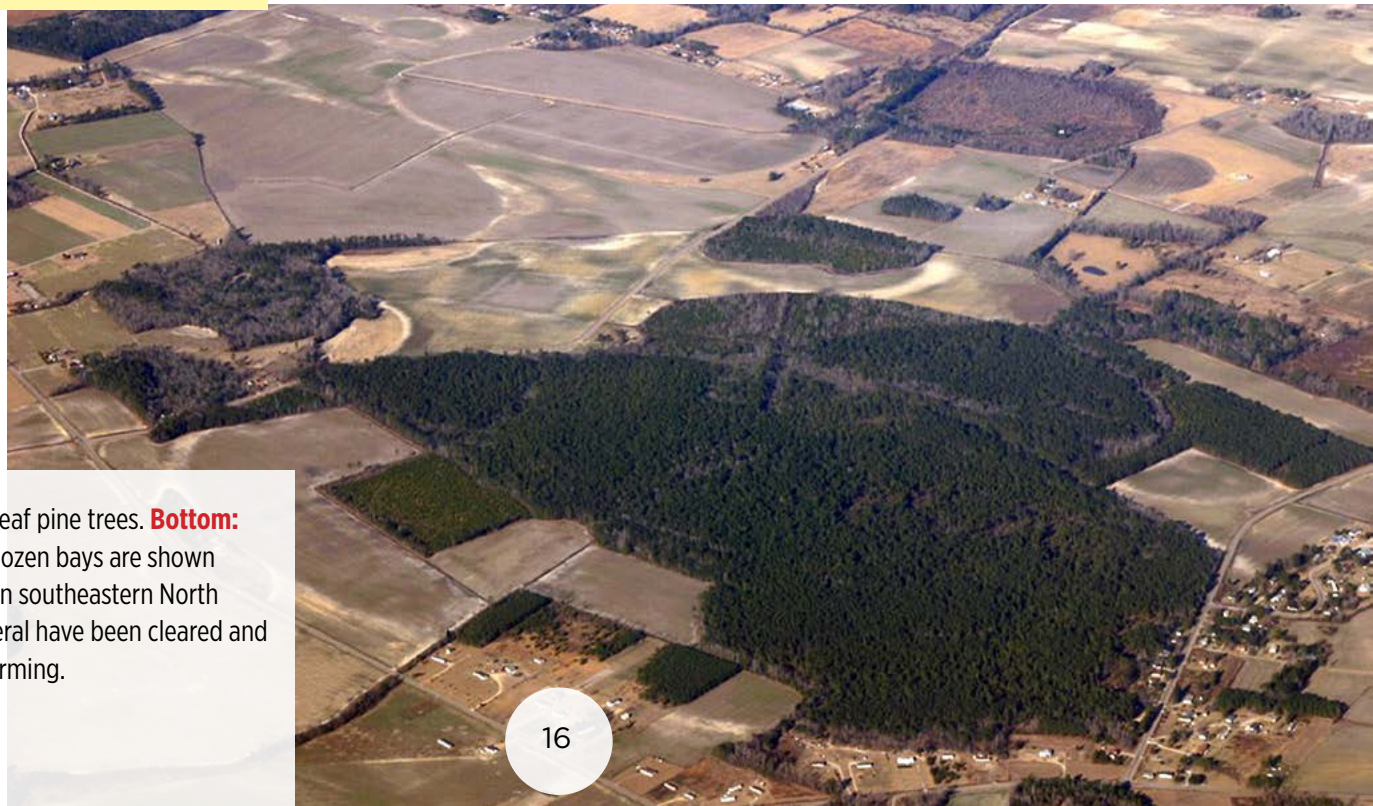
The longleaf pine grows around some of the biggest curiosities in the state. In the southern part of the Coastal Plain are hundreds of elongated depressions in the ground called **Carolina bays**. They range in size from a half mile to two miles long and about a mile wide. No one can figure out exactly why they are there or how they were created. Some, like White Lake or Singletary Lake, are filled with water. Others resemble the surface of pocosins—mucky part of the year, dry the other. Quite a few have been drained and plowed up to make rich farmland.

Scientists still argue about their origin. For a long time, it was thought that an ancient shower of meteors fell from outer space and made the holes. This idea came from the fact that the bays are all lined up, as if some giant flung water into the sand of a huge beach. The problem with that idea is that no one has found evidence of meteorites—what is left after a meteor crashes on Earth. The other idea is that the bays are sinkholes. That is, they are areas of ground that are above bodies of water and thus sink down when the water table changes. But no one has proven that idea, so it is still an open question. What is unquestionable is that they provide some of the richest soil and best animal habitats in the state.

DID YOU KNOW...

The longleaf pine was so named because its needles can be as long as fifteen inches.

History of Longleaf Pine in the South



Above: Longleaf pine trees. **Bottom:** More than a dozen bays are shown in this photo in southeastern North Carolina. Several have been cleared and drained for farming.

The Sandhills

To the northwest of the Carolina bays are the Sandhills. These concentrations of rolling sand ridges are left over from an ancient change in the shoreline of the Atlantic Ocean. They have, by far, the poorest soils in the state, because the sand allows all the topsoil nutrients to drain away. Where they are the most concentrated, the Sandhills shine whiter than the whitest beach on a summer day. They were put to two good uses during the twentieth century: (1) golf courses in places like Pinehurst, where the World Golf Hall of Fame was founded, and (2) Fort Bragg, the huge military installation near Fayetteville, originally designed to be a training ground for artillery. It was thought during the world wars that missiles would land without much damage in the deep sand. Today, Fort Bragg is home to one of the most important units of the United States Army, the 82nd Airborne Division.

People of the Coastal Plain

The Coastal Plain has long attracted people of different ethnic backgrounds who came to take advantage of its dark soil and other resources. Many white residents are descendants of colonial settlers from Virginia or South Carolina. The first concentration of African American slaves was in the area along the Cape Fear River. When tobacco became important, African Americans from other parts of the state moved into the region. Many recent migrants from Mexico and other parts of Latin America have moved to the Coastal Plain to work the land. The most distinctive people of the Coastal Plain are the Lumbee of Robeson County. They form the largest population of Native Americans in the state.

It's Your Turn

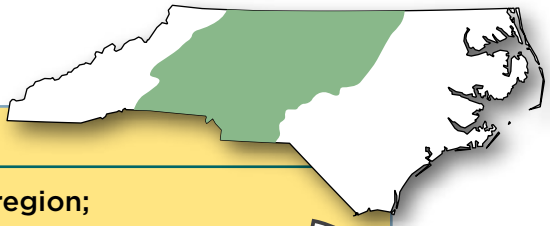
1. What are the two types of traditional communities in the Coastal Plain? Why are they important to the farmers?
2. What are the Carolina bays and why are these areas favorable for farming?
3. What are the primary characteristics of the Coastal Plain?

Above: A hiking trail snakes through Weymouth Woods in the Sandhills area of North Carolina. **Below:** The Coastal Plain is home to people of many ethnic backgrounds.

Audiobook
Chapter 1-3

Section 3

The Piedmont Region



As you read, look for

- features of the Piedmont region;
- the significance of the Fall Line;
- the rise and decline of Piedmont industries;
- terms: **Fall Line, headwaters, sectionalism, mill village, NASCAR, monadnock.**

Setting a Purpose

DID YOU KNOW...

Kudzu was brought to the United States in 1876 for the Centennial Industrial Exposition in Philadelphia. It was on display at the Japanese pavilion.

North Carolina's **Piedmont** region is a place almost anyone can recognize immediately, for it has an unforgettable feature—its red clay. These iron-rich clods show up wherever a field is plowed or a lawn reseeded, and their stain is hardly ever removed from soiled laundry. The red clay is actually the subsoil in most places, meaning that, at one time, trees and forests covered it with black woods dirt. The widespread timbering and cropping of the region made it bleed red in the rain as early as the 1800s.

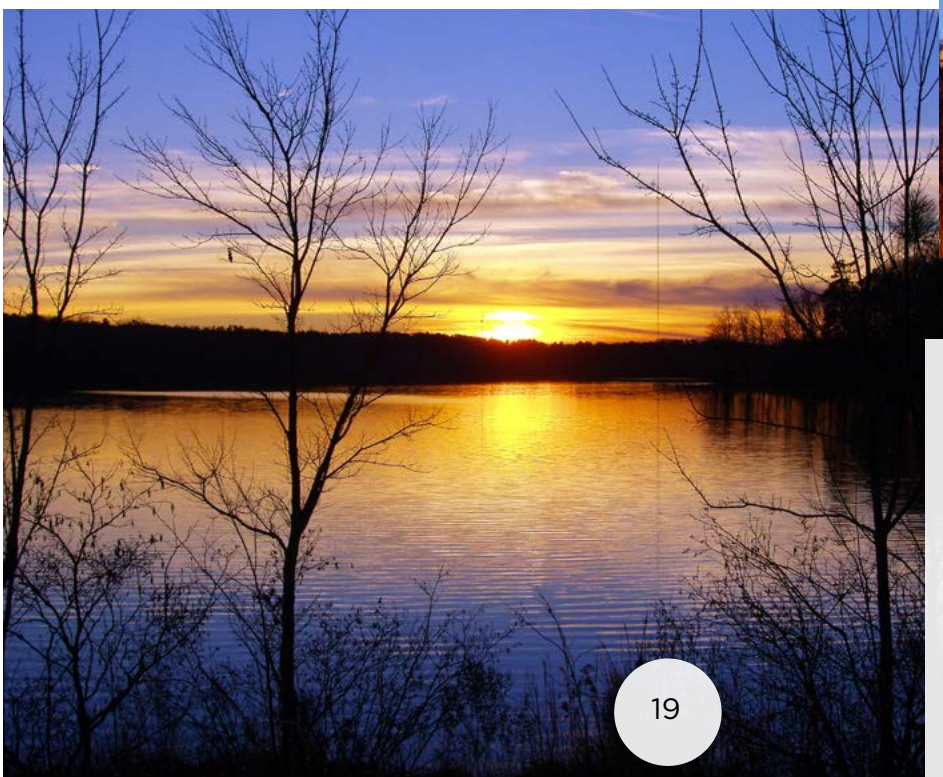
A problem in the region has been erosion and poor soil conservation. Rain and wind washed away valuable topsoil leaving behind soil that was not good for growing crops. To control the erosion, state officials planted millions of kudzu plants in the 1930s, hoping the fast-growing vine would save the soil. Instead, the big-leafed kudzu—a native plant of Asia—turned out to be the monster that almost ate North Carolina. On a hot, wet day it can grow several inches. Its tendrils will reach anywhere, all the way up power poles and over the tops of abandoned buildings. By the late twentieth century, kudzu was common as a weed throughout the Piedmont. Some communities have even resorted to *tethering* (tying up) goats in the kudzu, letting them eat it away.

Above: An abandoned bulldozer will soon be overgrown with kudzu.
Right: Many varieties of grapes grow in the Piedmont region.

The Fall Line

The Piedmont's red clay erodes so easily because the region is hilly. The landscape is pocked with hills and hollows that twist and curve in all directions. Technically, most of the Piedmont—which means "foot of the mountains"—is a plateau, a step up from the Coastal Plain, a step below the Blue Ridge Mountains. In fact, the line that divides the Piedmont from the Coastal Plain is called the **Fall Line**. This is the place where rivers flowing out of the Piedmont, like the Tar or the Neuse, actually go down their last hill. At these points, one finds a waterfall or rapids. Below the Fall Line, the rivers usually become flatter and smoother, allowing boating. Early settlers were able to use boats to travel from the ocean as far as the Fall Line. The Fall Line extends from the north near Roanoke Rapids southwest past Raleigh and Fayetteville. A state park near Raleigh is called Falls of the Neuse. Historians generally use the Fall Line to divide North Carolina into east and west sections. Similarly, the western side of the Piedmont, often called the foothills, is bounded by the ridge line, where the Blue Ridge Mountains rise up on the horizon.

The two principal rivers of the Piedmont region are the Yadkin-Pee Dee and the Catawba. These rivers do not run to the Fall Line. They have their **headwaters** (the springs from which they arise) on the side of the Blue Ridge and flow east until being turned sharply south when their currents encounter very hard rock layers. After the rivers bend—the Catawba west of Statesville, the Yadkin west of Winston-Salem—the two parallel each other into South Carolina, where they flow into the Atlantic north of Charleston. One of the key reasons **sectionalism** (intense concern for local interests and customs) developed in the state was the lack of connection between the rivers of the Piedmont and the Coastal Plain.



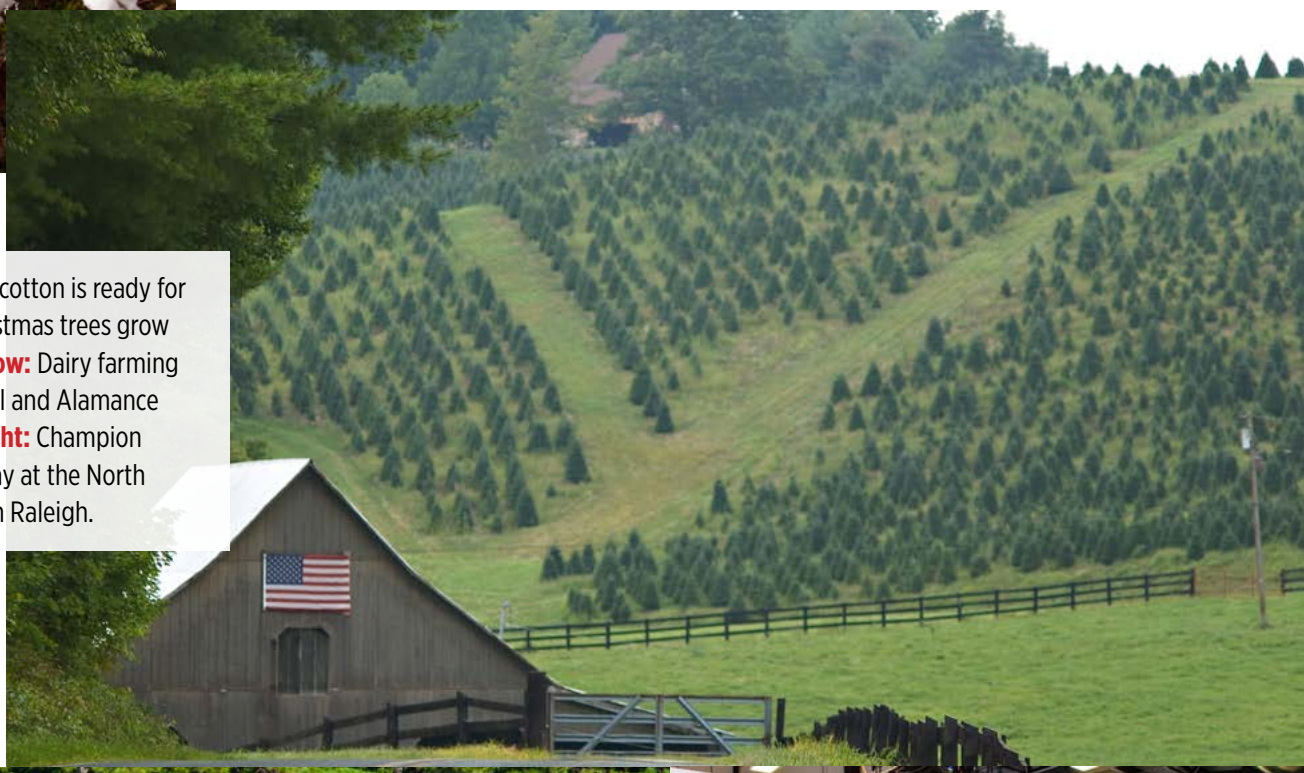
Top: The Fall Line is the place where rivers flowing out of the Piedmont go down their last hill. **Above:** Charlotte, in the Piedmont, is our state's largest city. **Left:** Sunset at Lake Wheeler, the primary water supply for Raleigh and surrounding Wake County communities.

More than half the Piedmont is covered in forests. Where there are lots of pine trees, it usually means that they were planted years ago for erosion control on an abandoned farm. Biological succession—where *conifers* (evergreen trees that produce cones) like pines give way to hardwoods like oak or hickory—occurs all over the region.

Farms and Factories

Farming has been as much a tradition in the Piedmont as the Coastal Plain. However, except for certain rich areas with unusually rich brown soils, like the area around the Charlotte Motor Speedway, farming has always been a struggle in the Piedmont. Early on, farmers depended upon livestock to make their living. Since the end of World War II, they have returned to dairying. This too has been in decline in recent times. Only western Iredell County and eastern Alamance County still have a significant number of dairy farms.

As farms declined, the building of factories increased as people made a living processing and manufacturing raw materials produced elsewhere in the state. In the area stretching from Kannapolis to Gastonia, textile mills began to make cloth of all types for an international market. Durham, Winston-Salem, and Reidsville were home to the leading cigarette



Above: This field of cotton is ready for harvest. **Right:** Christmas trees grow in orderly rows. **Below:** Dairy farming is prevalent in Iredell and Alamance Counties. **Lower Right:** Champion livestock is on display at the North Carolina State Fair in Raleigh.

makers in the world in the early twentieth century. High Point, Lenoir, and Hickory built chair factories, using hardwood from nearby forests. A traveler in the Piedmont in this period could expect to see some type of factory in every town.

Textiles (woven or knit fabrics), tobacco, and furniture were regarded as the three principal industries in the state in the twentieth century. Many of the workers in these factories lived on the edges of town in clusters of housing called **mill villages**, like the Proximity neighborhood in Greensboro. The company owned the houses, provided stores and schools, and generally influenced the lives of workers both inside and outside the factory.

All three principal industries went into sharp decline in the 1990s due to foreign competition. Textile factories were closed in one Piedmont town after another. By the late 2010s, only a few communities like Cliffside and Burlington still had a strong connection to that industry. Despite a decline in smoking, cigarettes are still manufactured in Greensboro and Tobaccoville, near Winston-Salem. Lenoir, Hickory, High Point, and Thomasville are still areas with furniture factories.

Middle: Storage towers at a grain processing plant. **Middle Right:** Samples of colorful leather and carved wooden decorations for furniture. **Lower Left:** A milling and sawing machine for processing wood. **Lower Right:** Stacked pine timber for furniture production.

special Feature

Carolina Places

The Mysterious Devil's Tramping Ground

Most North Carolinians know that Wake Forest University students can be "demon" deacons and that Duke University students paint themselves blue because they are "devils." These athletic nicknames are one of the funnier parts of our state culture. So too is the folk belief that the Devil himself shows up in North Carolina every night to think about his wicked plans.

The Devil's Tramping Ground—an actual place south of Siler City—is world famous. People have been going there for more than a century, ever since a Wilmington newspaper first published a story about it in 1882.

The story goes like this. Supposedly, Satan paces all night just about every night around a strange circle of dirt in Chatham County. Mysteriously, nothing will grow in a near-perfect circle that is about forty feet in diameter. Folks in the neighborhood say that objects that fall into the circle during the day, like sticks or rocks or even heavy logs, are gone by the next morning. Hunters swear that their dogs will not cross over the space, and that they yip and howl if they are taken near it. People who have stayed there during the night have often had strange dreams. More than one group of brave college students has abandoned its camp during the night. No one, however, has ever claimed to have seen the Devil.

There are other explanations for the place. One old tradition says that an Indian chief was killed on the spot, and his blood tainted the soil forever. More recently, advocates of Unidentified Flying Objects say that a spaceship must have landed there and scorched away the grass.

Scientists have another idea. Recently, a soil specialist from out of state took samples of dirt from the track of the circle, from the center of the circle, and from the nearby woods. He then put seeds in each sample and carefully watered them. The seeds in the soil from the center of the circle and from the woods sprouted. The seeds put in the "doughnut" soil—that is, the dirt from the place where the Devil supposedly paces—did not. Tests then showed that the doughnut soil is totally lacking in carbon, a necessary element for plant growth.

So, the mystery has been solved—or has it? Scientists still scratch their heads over the fact that the soil changes completely in its fertility just an inch from the edge of the path. And there are still unanswered questions: Why such a near-perfect circle? Why is this the only place where it happens?

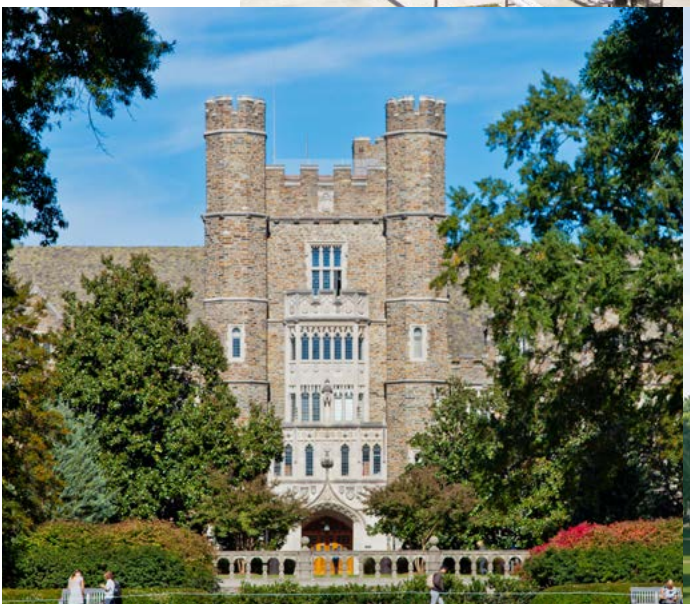
Banking, Racing, and Medicine

Most Piedmont cities have worked hard to find other economic outlets. In Gastonia and Concord, for example, developers have transformed old cotton mills into condominiums and shops. Over the past two decades, Charlotte has become a world leader in banking. Charlotte has also become the support center for stock car racing. Companies that build and maintain cars on the NASCAR circuit are concentrated in the triangle from Charlotte to Concord to Mooresville. **NASCAR** is an *acronym* (an abbreviation that itself seems to be a word) meaning National Association of Stock Car Automobile Racing. Charlotte is the home of the NASCAR Hall of Fame.

In Winston-Salem and Durham, community leaders have attempted to turn around the decline of industrial jobs with the growth of medical services. Wake Forest University in Winston-Salem and Duke University in Durham both have world-class medical schools that staff regional hospitals. The Raleigh-Durham-Chapel Hill area has continued to develop ways to use its resident universities. Since the 1960s, the Research Triangle Park, located in a finger of the Sandhills between the three cities, has been a leader in technology innovation, particularly in pharmaceuticals and computers. Many people are drawn to these areas of the state because of the availability of good jobs.

DID YOU KNOW...

More banking activity is concentrated in Charlotte than anywhere else in the United States, except for New York City.



Top Left: The NASCAR Hall of Fame in Charlotte. **Top Right:** Charlotte's Bank of America Corporate Center. **Middle Right:** Research Triangle Park, home to organizations such as IBM and Cisco Systems, Inc. **Far Left:** Entrance to the Duke University Medical Center in Durham. **Left:** Wait Chapel on the main quad at Wake Forest University, Winston-Salem.

The Uwharries

The most distinctive natural feature of the Piedmont is something called the **monadnock**. This hard-to-pronounce word refers to a geological condition where a point of land stands out because all of the land around it has been eroded. The most famous monadnock is Pilot Mountain north of Winston-Salem. This handsome spire has a cap of granite that makes it recognizable from as far as forty miles away. It has served as a landmark for North Carolinians for centuries, from the first Indian paths to the laying of interstates.

One important cluster of monadnocks is often overlooked by North Carolinians, but its location influenced the shaping of the state almost as much as did the barrier islands. The Uwharrie Mountains are located south of Greensboro and east of Salisbury. Although most scientists believe that the Uwharries are older than the Appalachian Mountains, they do not look the part. They resemble miniature mountains from a distance, their elevations seldom reaching more than 2,000 feet. The best-known Uwharrie "peak" is Morrow Mountain near Albemarle.

Above: The distinctive monadnock known as Pilot Mountain is the central feature of Pilot Mountain State Park north of Winston-Salem.

Because of their slopes and because of the slate found in their soils, the Uwharries were not as thickly settled as other areas in the Piedmont. This is why, in large measure, there is the Piedmont Crescent, the curved necklace of towns, one after another—Burlington, Greensboro, High Point, Lexington, Salisbury, and Concord—that stretch from Raleigh to Charlotte.

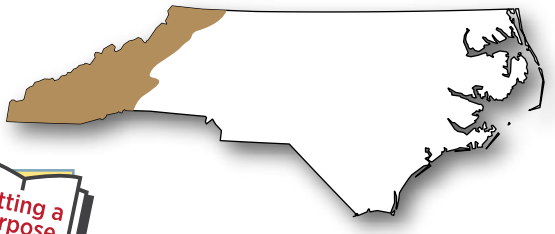
First the buffalo, then the Native Americans followed a trail that became known as the Trading Path. Travelers on it from the coastal areas of Virginia kept the Uwharrie "peaks" like Occaneechi, near today's Hillsborough, and Caraway Mountain, near Asheboro, to their right as they headed south toward the Catawba and Cherokee tribal towns in South Carolina. White settlers gradually moved the network of trails northward, because the soil was more fertile as one got away from the Uwharries. When the first railroad was built in the Piedmont, it was routed around the Uwharries to the north and west, to save money on grading and to bring it closer to the center of farming. Later highways, then interstates, followed the same route.

It's Your Turn

1. **What is the "unforgettable" natural feature of the Piedmont region? What caused this natural feature to become widespread?**
2. **What divides North Carolina into east and west?**
3. **What were the three principal industries in the Piedmont region in the twentieth century and what caused their decline?**

Section 4

The Mountains Region



As you read, look for

Setting a purpose

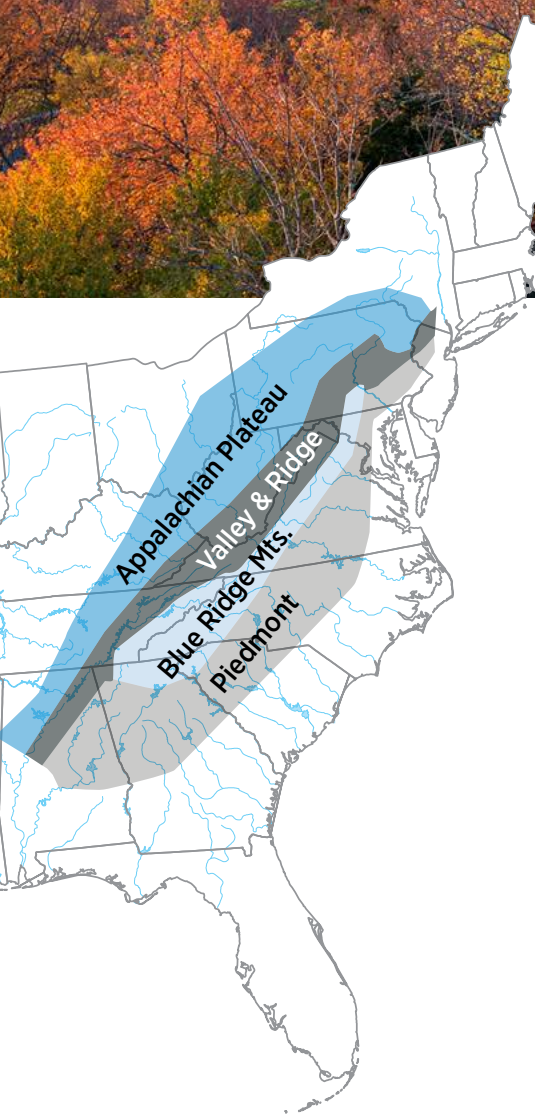
- features of the Mountains region;
- characteristics of the region's different mountain ranges;
- the growth of tourism and tree farming in the Mountains;
- terms: **elevation, bald, cove.**

Audiobook Chapter 1-4

Travelers from the east see North Carolina's mountains long before they cross into them. The **Mountains** region begins at the Blue Ridge, which sometimes towers more than one thousand feet over the nearby Piedmont hills. The Blue Ridge forms the eastern boundary of the Appalachian Mountains, some of the oldest mountains in the world. Running along the ridge top is the Blue Ridge Parkway, a national highway that has some of the best views in the United States. The Eastern Continental Divide runs along the Blue Ridge. Streams flowing down its eastern slopes eventually become part of the Atlantic Ocean. Streams on the west side send water into the tributaries of the Mississippi River and on to the Gulf of Mexico.

A colorful Great Smoky Mountains sunrise is viewed from the Oconaluftee Valley Overlook between Cherokee, North Carolina, and Gatlinburg, Tennessee. Often called "the Smokies," these mountains are a sub-range of the Appalacian Mountains.

The Linn Cove Viaduct hugs the face of Grandfather Mountain. It was the last section of the Blue Ridge Parkway to be completed.



The Blue Ridge

The Blue Ridge gets its name from the fact that, at a distance, the mist evaporating off its slopes shimmers an aqua blue. The Blue Ridge runs from New Jersey into the Deep South. In North Carolina's western area, the Blue Ridge curves westward before nipping the very western edge of South Carolina.

Like the barrier islands, the Blue Ridge is really just one long landform, with peaks of various heights and gaps that, like inlets, both allowed and discouraged travel back and forth. For years, places west of the Blue Ridge were even more isolated than the barrier islands. Early settlers to the state had to cross lower points of elevation like Deep Gap in Watauga County (to the east of the town of Boone today) to venture into the mountains. This isolation encouraged many unique cultural developments.

Until the building of railroads in the late 1800s, travel over the Blue Ridge was expensive and laborious. One of the greatest feats in state history was the long effort in the 1870s to grade and tunnel through the Blue Ridge at Swannanoa Gap. More than one hundred men died in the effort. The long winding route of Interstate 40 up and down the Blue Ridge from Old Fort to Black Mountain parallels that route.

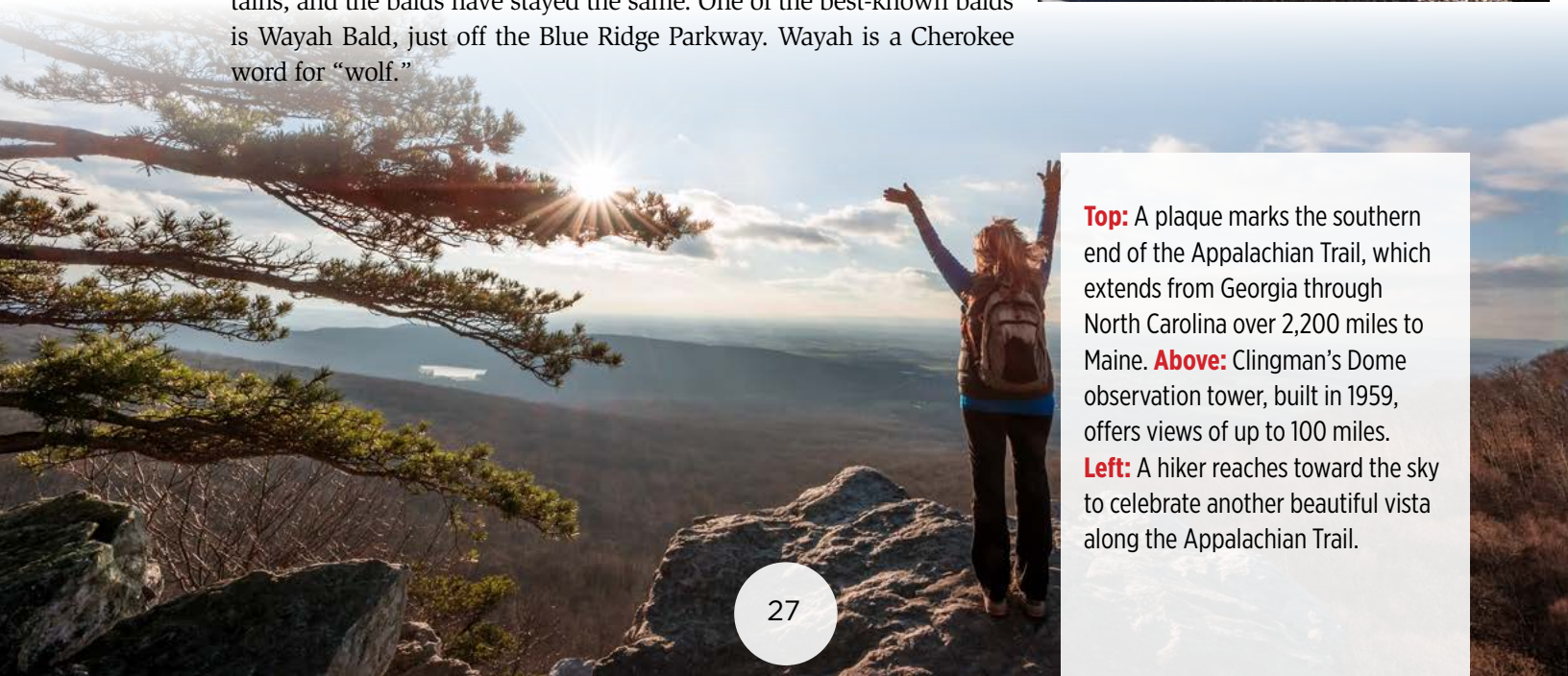
The Appalachians

The Appalachian range runs from New York to Alabama but spreads out the most and has its highest peaks in North Carolina. Forty-three mountaintops in the state are more than 6,000 feet above sea level. The highest **elevation** (height above sea level) east of the Mississippi River is Mt. Mitchell at 6,684 feet, although a half dozen other peaks are just about as tall.

There are more than a dozen different mountain ranges within the Appalachians of North Carolina. Among the more notable are the Black Mountains, located just to the west of the Blue Ridge. The Black Mountains get their name from the dark shadows the mountains cast when summer thunderstorms threaten. Mt. Mitchell is the highest point of the Black Mountains.

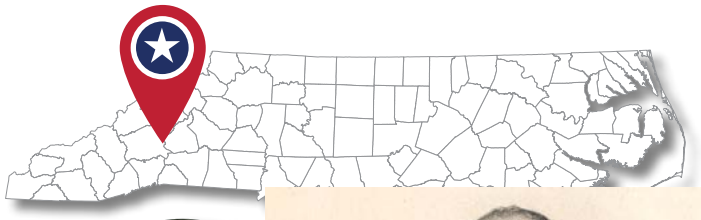
Even more notable are the world-famous Great Smoky Mountains. They get their name from the evaporation of resin-filled dew off the needles of spruce and fir trees. When the mist rises, the resin makes the mist look like smoke. More varieties of plants are found in the Smokies than almost anywhere else on earth. More than four thousand different species have been identified. Two of the highest mountains in the state, Clingman's Dome and Mt. Guyot, are located in the Smokies. The Great Smoky Mountains National Park is the most visited national park in the United States. It draws more than 10 million visitors per year.

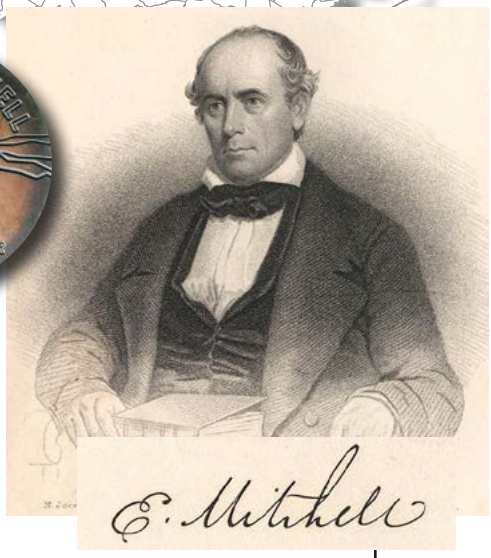
South of the Smokies are the Balsams, home to a large number of the most mysterious places in the mountains, the balds. **Balds** are places, usually above 6,000 feet in elevation, where few trees ever grow. The ones that do take root never rise far above the ground. The bald habitat includes many of the flowers and shrubs found throughout the mountains, including the rhododendron and the mountain laurel. No one has ever explained why trees fail to grow on the balds. Some scientists believe it has something to do with the rocky soil. Others say the cold winds keep the plants from thriving. North Carolinians once believed that the Cherokee kept livestock on the mountaintops, which in turn kept plants from growing. But the Cherokee are long gone from parts of the mountains, and the balds have stayed the same. One of the best-known balds is Wayah Bald, just off the Blue Ridge Parkway. Wayah is a Cherokee word for "wolf."



Top: A plaque marks the southern end of the Appalachian Trail, which extends from Georgia through North Carolina over 2,200 miles to Maine. **Above:** Clingman's Dome observation tower, built in 1959, offers views of up to 100 miles. **Left:** A hiker reaches toward the sky to celebrate another beautiful vista along the Appalachian Trail.

special Feature





Carolina People

Dr. Elisha Mitchell

Most North Carolinians know that the highest point in the state, and the highest in the eastern half of the United States, is Mt. Mitchell. Some state residents remember that the mountain is 6,684 feet above sea level. Often, North Carolinians do not know just how hard it was to figure out that number, and how Elisha Mitchell, for whom the mountain was named, literally gave his life to the effort.

In 1817, Mitchell came to the University in Chapel Hill to be its mathematics and natural philosophy professor. At that time, "natural philosophy" meant anything connected to science, so Mitchell had to teach a wide range of subjects. As a Presbyterian minister, he also conducted religious services on Sundays. During the week, he kept the books and groomed the grounds of the University.

Mitchell also worked to connect the two sections of the state—east and west. In 1846, Mitchell surveyed a route that would connect Raleigh to Asheville. Although the road was not immediately built, North Carolinians today enjoy its more modern version, Interstate 40.

While in the west in the 1840s, Mitchell put his math and geology skills to work studying the Black Mountains. He soon concluded that the highest peak, then known as "the Black Mountain," was higher than Mt. Washington in New Hampshire. Three times he made measurements with surveying instruments and calculations by hand. He believed the peak was 6,708 feet above sea level.

Not every North Carolinian believed Mitchell. Residents around Asheville thought that the Great Smokies might be higher. Like a good scientist, Mitchell went back to Black Mountain to recheck his results. In June 1857, he was alone on a lower slope of a mountain and was caught in a thunderstorm. His companions found him drowned in a pool at the bottom of a waterfall. Apparently, he had slipped on wet rocks and fallen to his death.

Professor Mitchell was buried at the top of Black Mountain in 1858. Soon after, North Carolinians began to call the peak "Mt. Mitchell." In 1882, government scientists used better instruments to prove that Mt. Mitchell was the highest peak in the eastern United States. In the early 1900s, North Carolina made the mountain a state park. It also remains a place where education never ends, as Professor Mitchell would have liked. Scientists are currently studying its trees to learn the effects of acid rain on the environment.

Mt. Mitchell State Park

Mountain Streams and Rocks

The Mountains, like the rest of the state, have interesting waterways. Where rivers on the Coastal Plain run east, and the Piedmont's rivers turn south, mountain rivers run north and west. The New River starts just west of the Blue Ridge and flows straight north out of the northwestern corner of the state. Also flowing north is the French Broad River, which starts in the Balsams and meanders its way across a broad valley between the Black and Balsam Mountains. Asheville, the largest city in the Mountains, is located in this basin. The tributaries of the Tennessee River, in particular the Little Tennessee and the Nantahala, form a river system that flows all the way to the Mississippi River. The long-time inhabitants of the mountains, the Cherokee, built most of their villages along the Tennessee River tributaries.

More than one hundred lakes are to be found in the Mountains, but almost all of them are man-made. Lake Lure, constructed in the 1920s, is considered to be one of the most beautiful lakes in the world. It has been the setting for a number of motion pictures. Fontana Lake is one of the deepest lakes in America, having been built in steep mountain valleys during the 1930s in an effort to produce cheaper electric power. Fontana has the highest dam in the eastern United States.

The Mountains region is also full of scenic wonders—natural formations that are interesting just to see. Blowing Rock is a cliff so high above the nearby hills that updrafts of wind sometimes make rain and snow reverse course. Chimney Rock, a towering granite spire above Hickory Nut Gorge in the southern mountains, has been a great attraction for almost a century. Grandfather Mountain, in the northwestern corner, has habitats that attract thousands of tourists each year. Sometimes the natural wonders are helped by humans. There is an elevator deep inside Chimney Rock to help tourists get to the top, and Grandfather Mountain is noted for its "mile-high swinging bridge" that connects its twin peaks. The Nantahala River Gorge features some of the best rafting anywhere, which is made possible by the daily discharge of water from a power dam upstream.

DID YOU KNOW...

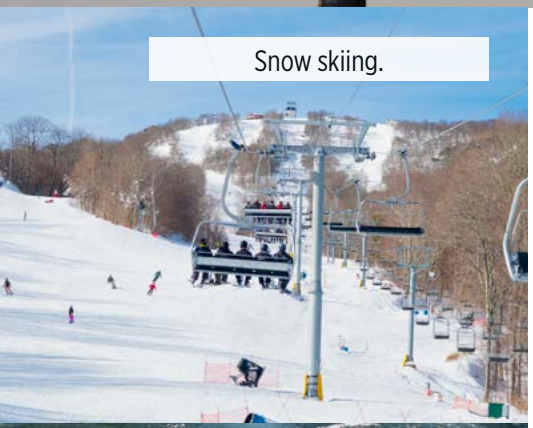
Geologists believe the New River is actually very old. In fact, it may be the oldest river in the United States.

Above: The Cheoah Dam is a hydroelectric complex located in Graham and Swain Counties on the Little Tennessee River. **Left:** Visitors to Chimney Rock in Chimney Rock State Park look down on Hickory Nut Gorge and Lake Lure.

History by the Highway

Asa Gray and André Michaux

From early days, North Carolina has been renowned for the variety of its plants. Some of the pioneers of botany have visited the state, particularly the mountains in the Grandfather Mountain area. André Michaux came to locate plants to take back to his native France as proof of the greatness of the new United States. Asa Gray, the first Harvard College botanist, followed in his footsteps a half century later.


Snow skiing.


River rafting.


Zip lining.

The Mountains Economy

The Mountains region historically was never as populated or developed as the other regions of the state. The first settlers generally lived in **coves** (valleys where streams cut out swaths wide enough for farming). In coves like Valle Crucis, west of the town of Boone, little communities had schools, churches, stores, and mills. Yet, it was hard to get from one cove to the next, and even harder to get goods in and out of the mountains. Early on, farmers grazed livestock on lush mountain grass and then drove the cattle to coastal markets each fall. Because the mountains had a variety of plants, mountain families made money selling "roots, barks, berries, and herbs," plants with medicinal properties. More than two thousand "yarbs," as they were called, could be found. Ginseng, used as a spring tonic in China, was the best seller.

In more recent times, tourism has become the largest part of the Mountains economy, with an increasing part given to people who actually retire to the region. Both retirement and vacation homes seem to be sprouting up everywhere. The most distinctive recent economic development has been the Christmas tree industry. This has been concentrated in Ashe and adjoining counties in the northwest corner of the state. The leading seller has been the Fraser fir. Some tree farms even allow customers to cut their own to take them directly home during the holidays.

It's Your Turn

1. What is the significance of the Eastern Continental Divide?
2. What is the highest point in the state?
3. What are unique features that might draw visitors to the Mountains region?

Section 5

North Carolina's Weather and Climate

Audiobook
Chapter 1-5

As you read, look for

Setting a Purpose

- the difference between weather and climate;
- average temperatures and precipitation in the state;
- types of severe weather;
- terms: **weather, climate, westerlies, humidity, precipitation, tornado, hurricane.**

North Carolinians live in different regions, but we all breathe the same air. Or, as scientists describe it, we have a common atmosphere. Scientists refer to short-term atmospheric conditions as **weather** and to long-term conditions as **climate**. In general, everywhere in North Carolina has a temperate climate, which means there are no extremes in temperature and precipitation. There is, however, a lot of variation in the weather.

Above: The different weather patterns of North Carolina's winter, spring, summer, and fall bring changes to our trees and flowers. **Left:** Some regions of the United States are hot and dry while others are cool and lush.

"It's Not the Heat; It's the Humidity"

North Carolina's temperatures run about the same from Jockey's Ridge to the Blue Ridge. In most places in the state, many winter days get decently warm in the afternoon, and many summer days start out mild in the morning. This is because North Carolina often receives westerly winds. These **westerlies** bring warmer air in the winter and cooler air in the summer. For example, the average temperature each year at Wilmington is only eight degrees higher than the average in Asheville. This is true whether it is January or July.

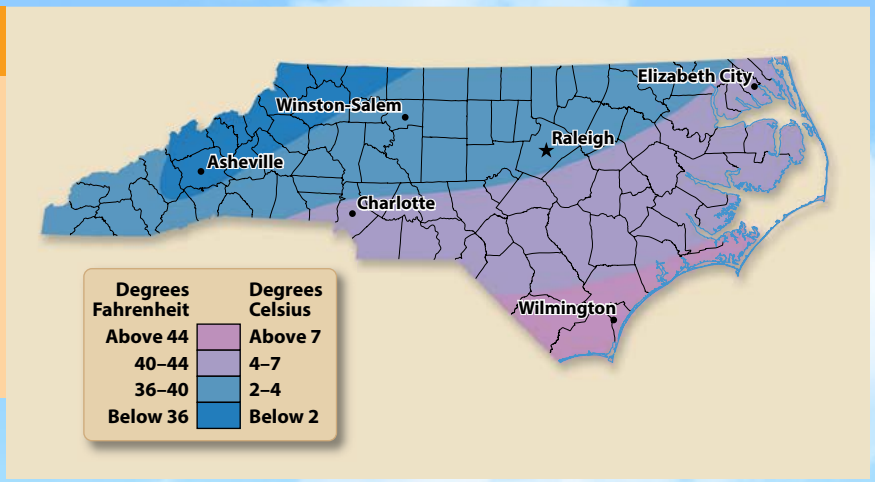
More extreme temperatures tend to occur in particular places. Fayetteville and the surrounding Sandhills tend to have more days with a temperature above 90 degrees than any other place in the state. On the highest mountain peaks, like Mt. Mitchell and Grandfather Mountain, the thermometer is most likely to dip well below zero. The most extreme night in state history was on January 21, 1985, when Grandfather Mountain recorded -32° F (Fahrenheit) and Mt. Mitchell -34° F. That same night, the whole state was below zero, except for Cape Hatteras, which was the "hottest" place at 6° above zero.

The temperature does not feel very temperate on hot, humid days. **Humidity** is a measure of the amount of moisture in the air. In most places of the state, the humidity is often above 50 percent. This makes most state residents less comfortable, regardless of the temperature or where they reside. For example, Cape Hatteras and Charlotte each have the highest average humidity across the state, 65 percent.

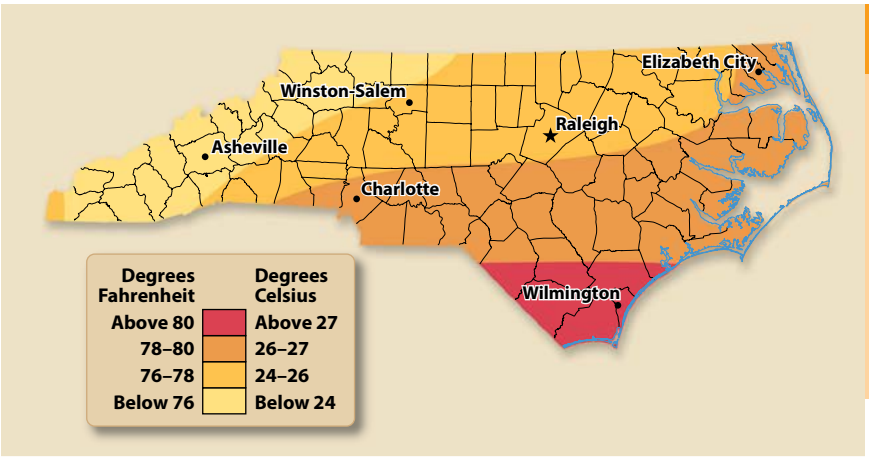
Map 1.4

Average January Temperatures

Map Skill: How does the average January temperature of Raleigh compare to Wilmington? What factors influence the average temperatures of these regions?



Thermometer and humidity meter (hygrometer).



Map 1.5
Average July Temperatures

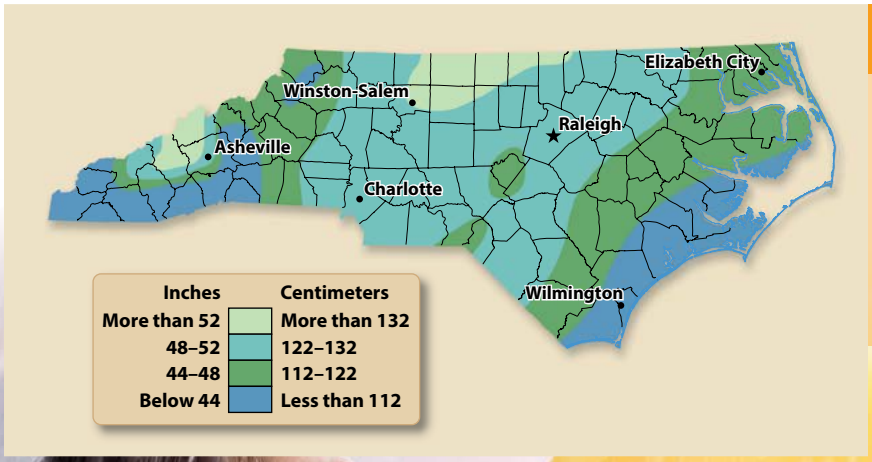
Map Skill: How does the average July temperature of Wilmington compare to Asheville? What factors influence the average temperatures of these regions?

Different Storms in Different Places

The rate of **precipitation** (rain, snow, sleet, hail) varies considerably from place to place across the state. The highest levels of rain occur in the southwest mountains, because the westerlies bring summer storms from the Great Plains. Because there is so much precipitation in the mountains, the Piedmont is the driest part of the state. This is because most of the rain in the Piedmont comes from clouds that first have to cross the mountains, where they drop most of their moisture.

DID YOU KNOW...

Summer is the wettest season in North Carolina, and July is the wettest month.



Map 1.6
Average Annual Precipitation

Map Skill: About how much precipitation does Asheville receive each year?

Anywhere in North Carolina can get snow, but the mountains get the bulk of it. The northwestern mountains get the highest levels of snowfall, because they are the first lines of high peaks that polar air reaches. Although there are very high peaks in the Smoky Mountains, they get less snow on average. There is also less snow east of the Blue Ridge, because the heavy snow clouds have already dumped their moisture, just like the rain clouds. Sometimes, everywhere in western North Carolina that is at least one thousand feet above sea level gets some snow, but it rains at lower levels. On days like that, Hickory or Rutherfordton will see flakes, but Asheboro and Albemarle will see drops.

Some of the worst weather in the state occurs when the temperature is just around freezing, and the rain turns to ice. These ice storms happen most often in the Piedmont. Sometimes the ice will be as thick as an inch around tree limbs and power lines, breaking both of them. Even more dangerous are smaller storms that lay thin layers of ice on roads and streets. Motorists at night often cannot tell where this "black ice" is, and frequent wrecks occur.

When moist air coming up from the Gulf of Mexico collides with drier, colder air from the polar regions, blizzards result. In 1993, "the storm of the century" in the state dumped fifteen inches of snow on the Coastal Plain, while the mountain areas got a lot less. In 2003, icy roads forced thousands of students to spend the night at their schools. The snowstorm of 2014 also trapped people at work or in their cars. Heavy snow began to fall around lunchtime and, in some places, roads became impassible in less than one hour.

The whole state experiences thunderstorms during the summer. Some of these intense bursts of heavy rain showers pour down on just one or two places in a region. Other times, a whole front of storms—where the downpour is usually in a line that runs north to south—sweeps across the state. These fronts most often come from the west and bring *hail* (rain that freezes high up in the atmosphere).

Above: A layer of ice coated trees and shrubs after a winter storm in Raleigh.
Right: A rare winter scene around Charlotte.

Sometimes tornadoes come with the storm fronts. **Tornadoes** are funnel-shaped storms whose rotating winds can reach over two hundred miles per hour. Compared to the Great Plains states, North Carolina does not have frequent tornadoes. When tornadoes do occur, they tend to hit the Sandhills and certain counties in the southern half of the Coastal Plain. Duplin and Onslow Counties have had more tornadoes touch down than any other place in the state in the last fifty years. On March 25, 1985, a major tornado hit North Carolina, touching down in at least fifteen eastern counties. Forty people died, and four hundred more were injured. An outbreak on April 16, 2011, counted thirty-one tornadoes in our state in a single day!

North Carolinians are far more likely to die from being struck by lightning than from tornadoes. Our state ranks third in the nation in the number of citizens killed by lightning, just behind Texas and Florida.

Figure 1.1

Enhanced Fujita Scale for Tornadoes

Category	Wind Speed	Potential Damage
EF-0	65-85 mph	Minor damage
EF-1	86-110 mph	Moderate damage
EF-2	111-135 mph	Considerable damage
EF-3	136-165 mph	Severe damage
EF-4	166-200 mph	Devastating damage
EF-5	>200 mph	Incredible damage

Tornadoes are not uncommon to North Carolina.

The Path of Hurricanes

Hurricanes are tropical storms that bring high winds and heavy rains. North Carolina's hurricanes most often develop over the Atlantic Ocean, where they pick up enough moisture to create a huge *vortex* (rotation) of water high in the atmosphere. The rain rotates very rapidly around a center known as the "eye." If the "wall" at the edge of the eye is strong enough to hold together, the force of the wind and rain can do very heavy damage when the storm hits land.

Hurricanes generally damage North Carolina in three ways. First, the wind and rain create a "storm surge" that brings a huge tide onto the beach, wiping out the sand, plants, and man-made structures in its path. A hurricane that hit the Outer Banks in 1846 actually cut two inlets, Hatteras and Oregon, in the sand. Second, the swirling winds can do great damage. This occurred in 1954 when Hurricane Hazel's winds pounded the state's Coastal Plain for thirty-six hours. In some places, the winds exceeded 150 miles an hour, enough to destroy houses in less than a minute. Third, hurricanes usually slow up and weaken over land, because they can no longer suck up water from the ocean. They end up dumping their water onto the state, causing widespread flooding. This was the case in 1999, when Hurricane Floyd caused unprecedented flooding on the rivers of the Coastal Plain. Princeville, a small suburb of Tarboro on the Tar River, was destroyed by the flood.

DID YOU KNOW...

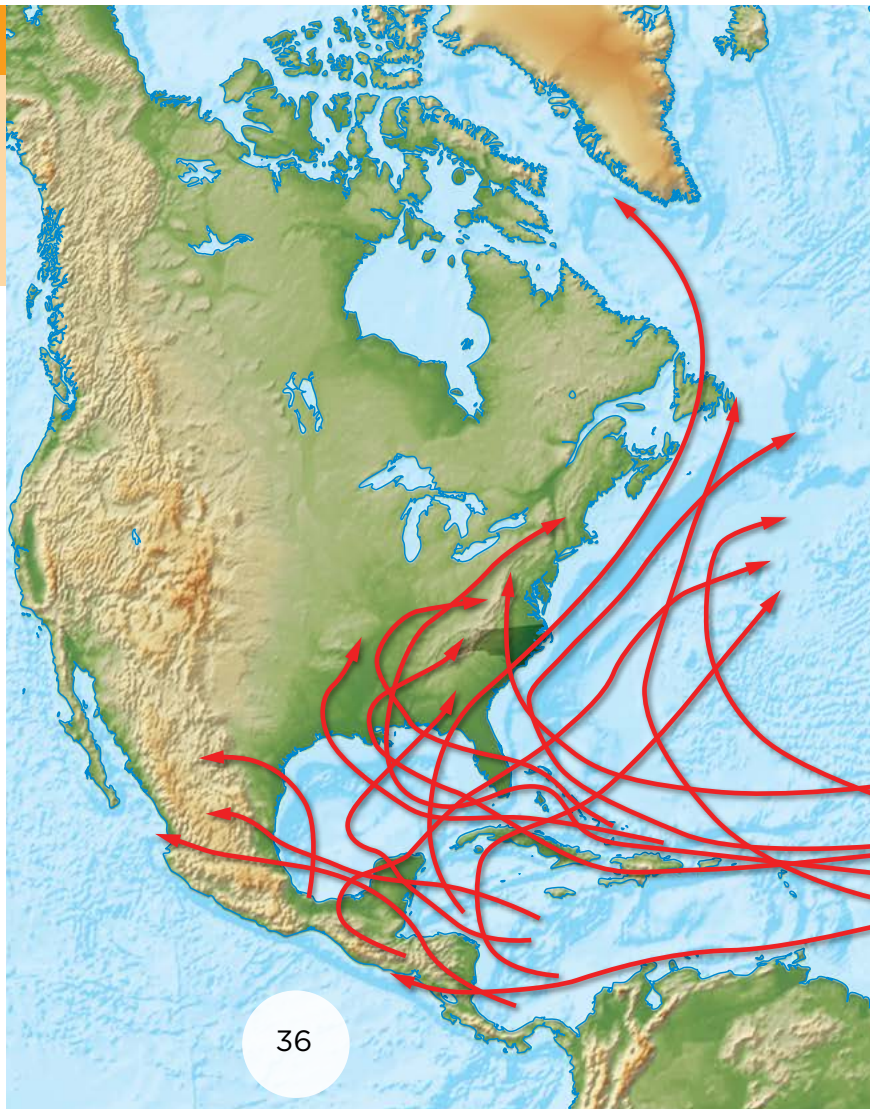
The U.S. National Weather Service started naming hurricanes in 1953, using women's names. In 1979, it began including men's names. There are six standard lists of names, which begin repeating in the seventh year. However, when a storm has a major economic impact, its name (Floyd, for example) is replaced on the list.

Hurricane Matthew 2016

Map 1.7

Hurricane Paths

Map Skill: What area seems to be the most active for hurricanes?



Hurricanes can also enter the state from other states, most often coming from the south. Hurricane Hugo did major damage in 1989 after almost wiping out the South Carolina coast. Electric power was off in the Charlotte area for weeks. Even the mountains can be affected by these tropical storms. Two groups of clouds converged near Grandfather Mountain to cause the "1916 Flood," which swept away houses and bridges all along the Catawba River. Witnesses saw a six-foot-high wave go downriver near where the Interstate 40 bridge crosses the river today.

The frequency of hurricanes comes and goes in cycles. Although North Carolinians cannot predict which part of their state will be hit when a hurricane develops, we can plan for the likelihood of a storm. Most develop during the hurricane "season" that starts in June, peaks in September, and lasts until the end of November. North Carolinians then worry about other types of storms as the weather cools.

Figure 1.2
Saffir-Simpson Hurricane Wind Scale

Category	Sustained Wind Speeds (in mph)	Damage
1	74-95	Some damage
2	96-110	Extensive damage
3 (Major)	111-129	Devastating damage
4 (Major)	130-156	Catastrophic damage
5 (Major)	157 or higher	Catastrophic damage

It's Your Turn

1. What is the difference between weather and climate?
2. What are the four types of precipitation?
3. What conditions create a tropical storm? Why are such storms a danger to our state?

Left: A man grieves the loss of his home destroyed by a hurricane.

Chapter Review

Self Check Quiz

Chapter Summary

Section 1: The Tidewater Region

- This region extends inland from the Atlantic Ocean an average of 30 to 50 miles.
- Barrier islands form the beach for much of the Tidewater.
- The Gulf Stream skirts the North Carolina coast and affects its weather.
- The Tidewater region has five major sounds (mixed bodies of fresh and salt water).
- The Tidewater has many wetland areas, most of the state's natural lakes, and some of its oldest towns.
- The Tidewater has traditionally been one of the least populated regions of the state.

Section 2: The Coastal Plain Region

- The Coastal Plain contains rich soil and averages about 100 miles in width, covering about one-third of our state.
- The Roanoke, Tar, Neuse, and Cape Fear are the region's major rivers.
- The decline in tobacco production has caused tobacco towns to focus on other industries.
- The southern Coastal Plain contains hundreds of Carolina bays.
- The Sandhills area near Fayetteville has poor soil for farming but contains many fine golf courses and is the home of Fort Bragg.

Section 3: The Piedmont Region

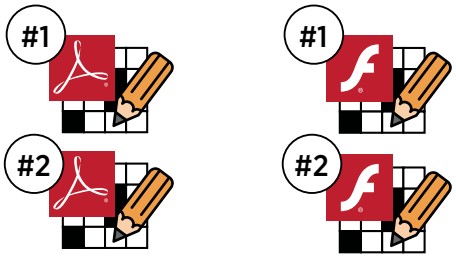
- The Piedmont region's red clay soil is not ideal for farming.
- The Fall Line is the dividing line between the Piedmont and the Coastal Plain.
- The Yadkin-Pee Dee and Catawba are the region's major rivers.
- Textile, tobacco, and furniture jobs of the 20th century have been replaced by jobs in banking, NASCAR, and medical services.
- The Uwharrie Mountains, south of Greensboro, may be older than the Appalachian Mountains.

Section 4: The Mountains Region

- The Appalachian Mountains in North Carolina are subdivided into ranges such as the Black Mountains, the Great Smokies, and the Balsams.
- Mt. Mitchell in the Black Mountains, at 6,684 feet, is the highest point east of the Mississippi River.
- Major mountain rivers include the New, French Broad, and Nantahala.
- Christmas tree farming and tourism are important mountain industries. Chimney Rock, Blowing Rock, and Grandfather Mountain attract many tourists.

Section 5: North Carolina's Weather and Climate

- Temperatures in North Carolina are often similar across the state.
- North Carolina records high humidity levels on warm days, often above 50 percent.
- Precipitation rates vary across the state, with the mountains having the highest average rainfall and snowfall.
- Tornadoes are infrequent, but occur mostly in the Sandhills and the southern Coastal Plain.
- Hurricanes have caused major damages in all regions, with major ones in 1954 (Hazel), 1989 (Hugo), and 1999 (Floyd).



Activities for Learning

Reviewing People, Places, and Things

Match the following with the correct description that follows.

geography	**Mountains**
Uwharrie Mountains	**Piedmont**
headwaters	**Coastal Plain**
Tidewater	**elevation**

1. region between the Mountains and the Coastal Plain
2. springs from which rivers arise
3. region farthest west
4. geographic feature found south of Greensboro
5. region farthest east
6. height above sea level
7. region between the Tidewater and Piedmont
8. study of Earth's physical features and atmosphere

Understanding the Facts

1. Most of the Tidewater is approximately how many miles wide?
2. Define the term *barrier island*.
3. Why has Cape Hatteras been known as the "graveyard of the Atlantic"?
4. How is a sound different from an inland lake?
5. Why are large oceangoing vessels unable to travel in the sounds?
6. On average, how wide is the Coastal Plain?
7. What are the two central characteristics of the Coastal Plain?
8. What two key uses of the Sandhills developed in the 20th century?
9. Describe the soil of the Piedmont.
10. How did North Carolina try to control erosion in the 1930s?
11. What feature covers more than half of the Piedmont?
12. Why did the textile, tobacco, and furniture industries decline in the 1990s?
13. How did the Blue Ridge Mountains get their name?
14. Forty-three mountaintops in North Carolina are higher than how many feet?
15. Why do trees fail to grow on balds?
16. Why was Fontana Lake created?
17. North Carolina has a temperate climate. Describe what that means.
18. What is the driest part of the state?
19. In which month does hurricane season peak?

Developing Critical Thinking

1. Using information from Sections 1-4, select one region of North Carolina and create a travel brochure that will encourage tourism. Include key sites and activities.
2. Create a chart that compares and contrasts the key features of two regions in North Carolina. Use the chart to explain in which of the two regions you would prefer to live.

Building 21st-Century Skills: Using Your Textbook

Making effective use of your textbook is an important skill. Your textbook has two parts: the narrative and visual information. The narrative tells the story of North Carolina while the visual information (charts, illustrations, maps, and timelines) helps make the narrative come alive.

The narrative is divided into fifteen chapters. Each chapter contains several sections with each section identified by a major heading (**gold lettering**). Subheadings are set in **bold red letters**. Scan the heading before you begin to read to better understand the plan of each chapter.

Try this activity with this chapter: Prepare an outline of Chapter 1 using the chapter headings and subheadings. Outlines can make effective study guides to help you prepare for tests.

Chapter Review: Summarizing North Carolina's Regions