Archaeology & Environment

GPS Alignments
SS8H1 a & b
SS8G1d
S7L4

SC Alignments

6-1.1	8-1.1	8-2.1
6-1.2	6-1.4	8-2.2
6-4.3	7-4.1	8-2.4
6-4.4	7-4.3	8-2.7

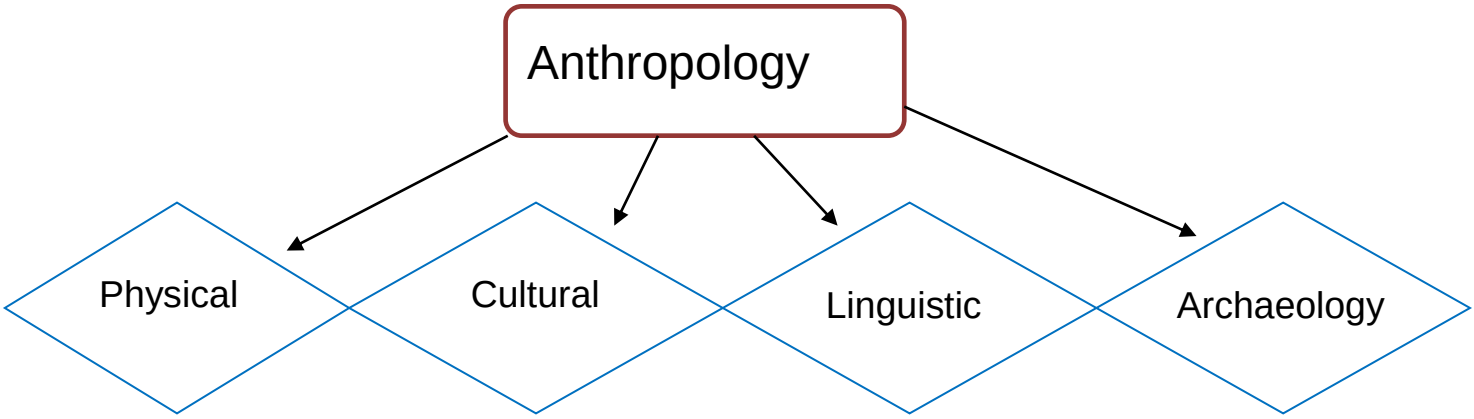
HICKORY HILL

People have always had to deal with the environment – drought, floods, snow, hurricanes, etc. **Archaeology** is one of the sciences that can help us learn about the environment as it existed in the past. In this study packet you will learn:

1. what is archaeology;
2. how archaeology can inform us about past environments;
3. how pre-historic people in the American Southeast lived.

What is Archaeology???

Archaeology is one of the four *sub-disciplines* (a field of study) of *Anthropology*. The word Anthropology comes from two Greek words – *ology* meaning to study and *anthropos* meaning man. So, **Anthropology is the study of mankind** (women too), so anthropologists study the world as it relates to humans.



Physical or Biological Anthropology

This sub-discipline studies the fossils and evolution of humans and how their bodies adapt to the environment in which they live.

Cultural or Ethnographic Anthropology

This sub-discipline studies living human cultures and societies around the world.

Linguistics

This sub-discipline studies human languages through time and connects language families around the world.

Archaeology

Archaeology is the study of the cultures and the stuff of people who lived in the past. **Culture is the way of life of any group of people.** The Old Things archaeologists study are called **artifacts**. **An artifact is anything made or used by <u>humans</u>.**

Archaeologists do not study dinosaurs.

Archaeology comes from the Greek word *ology* (to study) and the Greek work *Arkios* (old). Archaeology is the study of Old stuff!

There are many sub-disciplines of archaeology. Here is a short list of some of them you might find interesting:

Archaebotany	Experimental	Landscape	Underwater
Archaeozoology	Forensics	Maritime	Urban
Egyptology	Industrial	Osteological	
Environmental	Historic	Prehistoric	

How do Archaeologists do their work???

Before we can understand what archaeologists find and how they find it, we have to understand WHERE they find it. The place that an archaeologist works is called a **site**. Sites can be found in two very different places.

Terrestrial – On land
: Sites on land can be in open areas or may be inside things like caves.

Underwater – permanently covered by water
: Sites can be located in rivers, under lakes or reservoirs, or in the ocean. They include shipwrecks.

How do Archaeologists FIND sites?

Sites are located in many different ways.

Research: Archaeologists talk to people who remember where buildings, cemeteries, barns, roads, fences, and graves used to be. They also study old maps, sea captain's logs, and other documents to learn where people may have settled.

Survey: They study the land because people often live on high ground near a water source. Survey involves walking back and forth across an area looking for artifacts that have eroded to the ground surface.

GPR: Ground penetrating radar (GPR) is used to find walls, foundations, and graves beneath the ground surface. GPR uses radio waves to locate irregularities in the soil. Variations in soil texture and chemistry and variations in materials (for example, sand versus clay or soil versus brick or stone) reflect the radio waves differently.

Excavation destroys an archaeological site, so archaeologists only dig if they are really certain they need to!

Magnetometry & Sonar: Magnetometry (electromagnetic signals) and side-scan sonar (sound) are used to find shipwrecks and other submerged sites. Like GPR, the magnetometer or sonar signals reflect differently as they encounter variations in materials on the bottom of the sea, lake, or river under investigation.

Excavation: In an area where archaeologists know a site exists they will excavate large square holes in the ground, called units, to locate and map artifacts located below the ground surface.

Numbering Sites

All archaeological sites found in the United States are given a **site number**. Site numbers are made up of **three parts** that identify where they are found — two numbers that represent the state, two letters that represent a county in that state; and a last set of numbers determined by the number of sites already found in that county.

First, identify the state by number:

09 – Georgia

38 – South Carolina

Next, identify the county with a two-letter abbreviation:

RI – Richmond County

AK – Aiken County

CO – Columbia County

MF – McDuffie County

Lastly, the sites are number within the county:

75 – the 75th site found in that county

Example: 9MF914 – the 914th site found in McDuffie County, Georgia

What happens to the Stuff?

It depends!

Archaeologists **never** keep what they excavate. That would be unethical and possibly illegal!

If the archaeologist works for a museum or a university, then the artifacts will be stored there. If the archaeologist is working on land that belongs to the federal or state government (like a National Park or a State Park) then the artifacts will be stored by the government. Often artifacts are put on exhibit in museums.

Ethics!

Storing artifacts in public places like museums and universities is considered to be saving the past for the future. The artifacts will be available for the public and for scientists to look at and study forever!

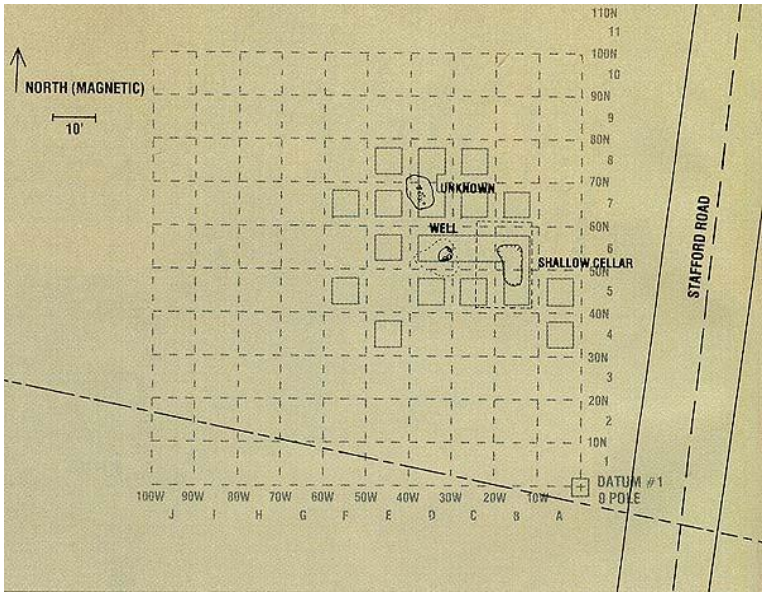
It is illegal to excavate (or use metal detectors) on Federal or State land unless you are an archaeologist with permission from the government to dig.

A looter is someone who steals artifacts, parts of buildings, and information - digging an archaeological site without a permit is looting.

A vandal is someone who destroys a cultural resource for fun or to show off - spray painting pictures or words on a historic building is vandalism.

Excavation!

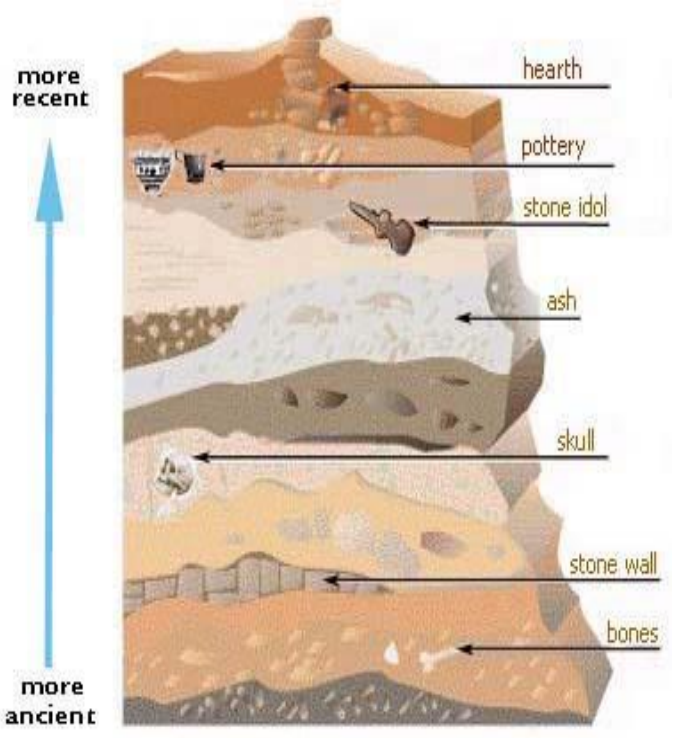
Archaeological sites are fragile, **non-renewable** resources. Once a site is excavated, it is gone forever. The artifacts and soil cannot be put back in place and the site reconstructed. **Archaeologists only excavate sites when they are threatened by destruction or when they can reveal important information that cannot be found any other way.**



Once an archaeologist decides to excavate a site, he or she begins the excavation by creating a measured grid across the area that will be studied. The grid helps them keep track of where they dig test units and where they find artifacts. Every artifact and feature (like fire pits, walls, and wells) on an archaeological site has a precise horizontal (side to side) and vertical (up and down) location that is recorded. The spatial relationship of artifacts and features to each is called **context** and provides archaeologists with important information about the past.

The team digs through the **strata** of the site – strata are the **layers of soil** that contain artifacts. Archaeologists use shovels, trowels, spoons, whisk brooms, and dental picks to carefully remove the soil. The units are dug in layers, generally about four inches thick. This helps archaeologists keep track of the depth below the ground surface where artifacts and features are located. Excavators sift all of the excavated dirt through wire mesh screen to help them find artifacts. It is easy to miss small artifacts such as buttons, beads, and stone flakes during regular shoveling.

Artifacts found in the lowest levels usually are older than ones found in the higher layers. This is called the **Law of Superposition.** An easy way to remember the Law of Superposition is that the **oldest** stuff is on the **bottom**.



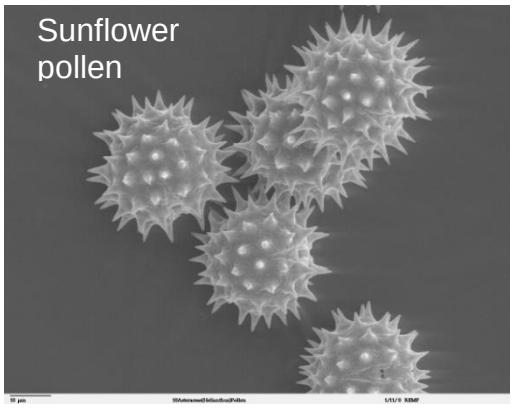
How does Environmental Archaeology fit?

Environmental archaeology is the study of how humans interacted with the natural world - a world that includes plants, animals, and landscapes. Environmental archaeologists try to reconstruct ancient environments associated with archaeological sites and the use of plants, animals, and landscapes by the people who once inhabited these sites. They are interested in the impact people had on the world around them, and the way ancient people viewed and were affected by their surroundings and the plants and animals on which they relied. There are three sub-disciplines in this type of archaeology:


Zooarchaeologist xrays a bison skull

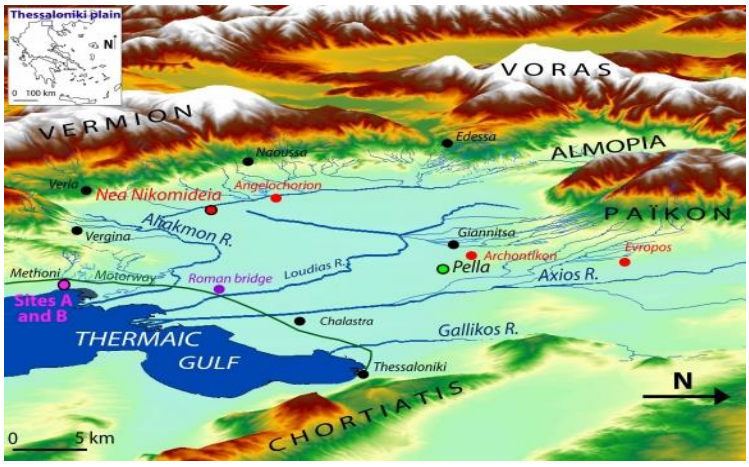
Zooarchaeologists

They study animal remains, both vertebrate and invertebrate, from archaeological sites. These studies provide a better understanding of past cultures, human diets, changed landscapes, management of animals, impact of humans on animal populations, and other interactions between animals and humans.


Sunflower pollen

Archaeobotanists

They study plant remains that are preserved at archaeological sites including such things as wood, seeds, nuts, etc. Archaeobotanists also study tiny remains such as pollen and spores, often found in the soils.



Geoarchaeologists

They study a wide range of data, such as global climate, regional distribution of resources like stone for tools or clay for pots, local landscape, and the clues that soil can provide in studies of ancient land-use. All environmental archaeologists work with other sciences for their research, studying DNA, stable isotopes, or heavy metals to reveal even more detail about ancient environments.

Geoarchaeologists working in Greece recreated the ancient environment using GIS (geographic information system) mapping software and created this 3D map.

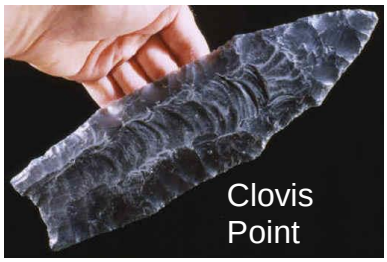
A Glance at Southeastern Prehistory

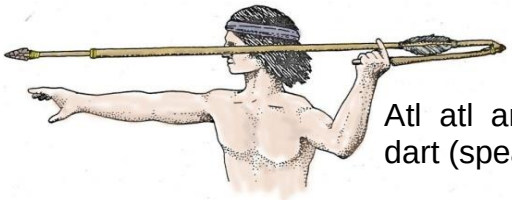
By the time Christopher Columbus set sail for the New World, the native people of North America had inhabited the continent for more than 15,000 years! The people had traveled from East and Central Asia by land bridge and by canoe. Their complex cultures and societies thrived throughout what is now the United States, including Georgia and South Carolina.

BCE means years Before Current Era. For example, 5500 BCE translates into the year 3486BC!

The Paleoindian Period (15,000-10,000 BCE)

A much cooler climate existed in this period. Ice sheets covered much of Canada. Ocean levels were lower because a lot of the water on the planet was frozen! During this time spruce and pine forests, much like those of modern-day Canada, blanketed the Southeast. Small, **nomadic** (roaming) family groups hunted very large mammals, such as mammoth and mastodon. These large mammals became extinct in North America by the period's end. Paleoindian people also hunted small game and gathered wild plants for food. The large spear points they crafted are called Clovis points and were tied onto long sticks called **darts**. The darts were thrown with an **atl atl** or throwing stick. As the ice melted, the oceans rose, the climate warmed, and new plants appeared. The large mammals such as mastodons and camels that had roamed the southeastern grasslands and forests died out and deer and other small mammals began to flourish. Indian cultures changed as they adapted to these new resources. Paleoindian sites in Georgia and South Carolina are rare.


Clovis Point


Atl atl and dart (spear)

The Archaic Period (10,000-3000 BCE)

An increasingly warmer climate, the extinction of very large mammals, and changing vegetation forced Archaic period peoples in Georgia and South Carolina to change their hunting and gathering patterns. Thick forests offered an abundance of both large and small animals like deer and raccoon, along with wild plant foods like hickory nuts and acorns. Baskets were used to collect wild plants and nuts.


Grinding stones


Grooved axe

Archaic people developed tools that differed from those used by Paleoindian peoples. Among the tools people developed were **grinding stones** to grind nuts, seeds, fruit, plants, and small animals. The Archaic people also developed **grooved axes**. A stone axe would be attached to a stick and used to clear trees for hunting and shelters.

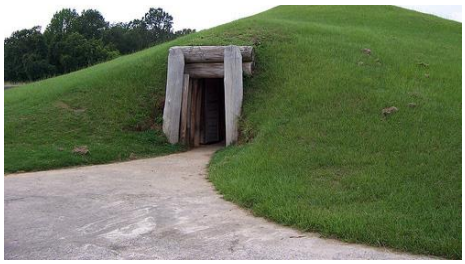
During this time, people began making pottery for storing and cooking food. The pottery vessels were made from clay that was easily dug from riverbanks. Archaic people were still nomadic but they were spending longer periods in one location, perhaps as long as two seasons.

The Woodland Period (3000-400BCE)

By the Woodland period, the Southeastern forests and climate was much like today's climate. People continued to stay in one place for longer and longer time periods. Small family groups were replaced by small villages. This meant that a group larger than an extended family would camp in one location during warm months and in another location during colder months. During this period people began growing crops. Among the crops they grew were corn, beans, squash (including pumpkins), chile peppers and sunflowers. Also during this time people began using bows and arrows for hunting instead of spears since the animals they were hunting tended to be smaller.

Earthworks are piles of soil or stones moved by humans to create designs, walls, mounds, and burial sites.

Ocmulgee mound, GA



The later part of the Woodland Period is called the Mississippian Period. Mississippian sites were larger with ceremonial **earthworks** (called temple mounds) and were surrounded by smaller villages. Archaeologists believe Mississippians were trading goods and sharing ideas with people in Mexico, and that the idea for earthworks and mounds came from Mexico.

Mississippians constructed **earthworks,** such as burial and ceremonial mounds, throughout the Southeast. Rock Eagle and Ocmulgee are examples of earthworks.

Notice how the Mississippian sites are located along rivers. Water was very important for drinking, washing, agriculture, and trade.

Geoarchaeologists will look for sites near rivers, lakes, and large ponds.

The European Contact Period (400BCE – 188BCE)
The first Europeans to enter Georgia were probably Spanish explorers in the late sixteenth century. They were followed by both Spanish missionaries and British colonists in the 1600s. At contact, the Cherokee controlled north Georgia and South Carolina, the Yamassee controlled land along the southern Savannah River, and the Creek controlled most of central, southern, and coastal Georgia.

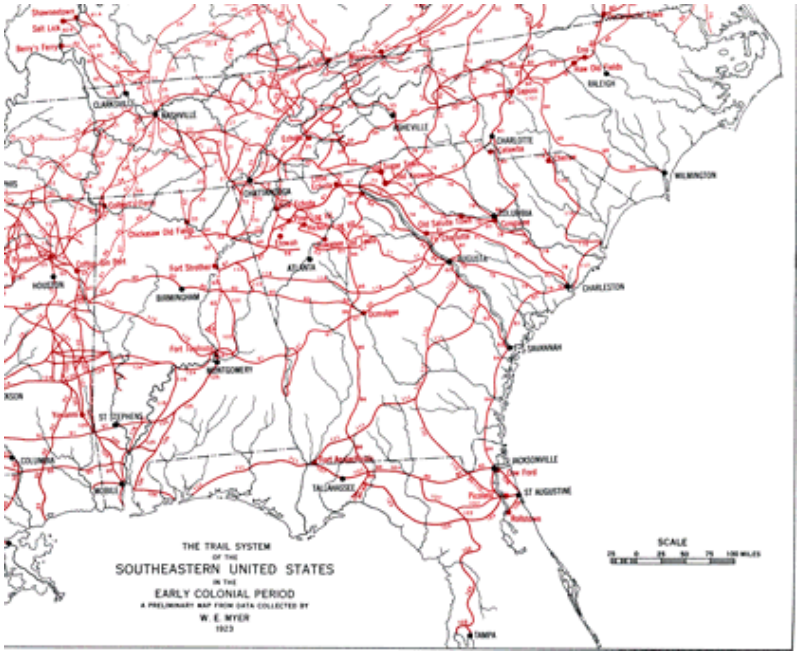
European trade goods include brass bells, iron knives, and farming tools.

The first two centuries of European contact brought many changes to the lives of Georgia's native inhabitants. The arrival of Europeans eventually led to the loss of native political independence. One dramatic change was the decrease in the Native populations due to the introduction of European diseases such as smallpox, measles, and chicken pox.

Changes also occurred in Native American material culture (their stuff). The Cherokee, Creek, and Yamassee began to use European trade goods, such as ceramics, cloth, glass beads, and iron tools. They also established trade partnerships with the British and Spanish. In some areas, Native Americans married white settlers and adopted their living style. The European Contact Period ends with the Trail of Tears.

Trails

Native Americans tended to avoid difficult terrain as they traveled across wide stretches of Georgia and South Carolina landscapes, and as a result Indian trails generally followed ridges to minimize stream crossings and swampy bottomlands. When large creeks and rivers couldn't be avoided, the Indian trails often led to shallows that could be easily crossed or safely forded. In times of high water travelers sometimes carried collapsible wooden frames and covered them with animal hides to provide small portable boats for crossing. Dugout canoes were sometimes hidden for use in crossing, or rafts of hickory bark or elm bark canoes were made on the spot.

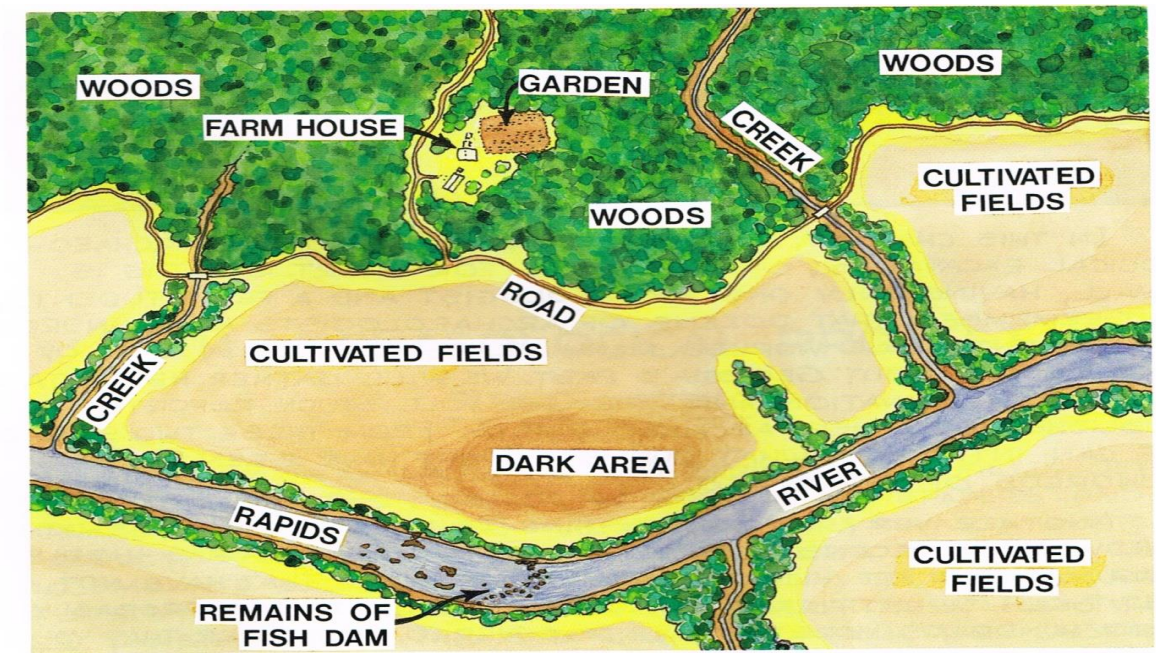


Prehistoric means before written history. Native Americans did not have a written language.

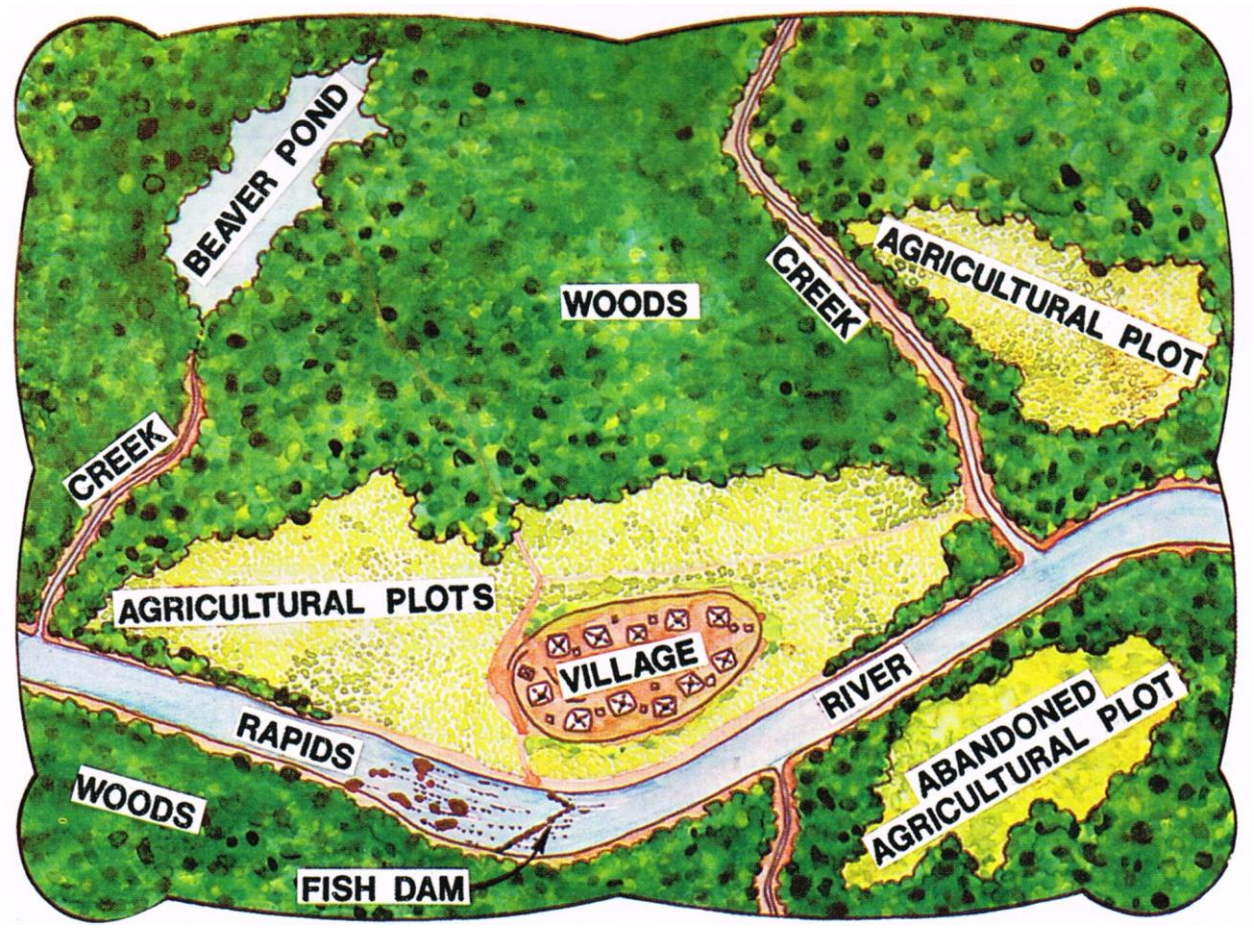
Early Indian trails often served as boundaries to separate the lands of the whites from the Native American hunting grounds. In 1763 an important boundary treaty was signed at Augusta with "the Kings, Headmen, and Warriors of the Chicasahs, Upper and Lower Creeks, Chactahs, Cherokees, and Catawbas." In the treaty the "Lower Creek Path" and "the path leading from Mount Pleasant" were designated to mark parts of the boundary. In 1773 another, even more important, treaty with the Creeks and Cherokees established the Indian boundary along the trail leading to the buffalo lick that William Bartram described so colorfully in his Travels. When Wilkes County, Georgia was created out of that Indian land cession, "the old Indian line" marked its western boundary.

Let's Practice Geoarchaeology!

Archaeology, like anything, requires practice. Let's analyze some drawings to better understand how this science works.



Several months ago, before a field was plowed, an archaeologist flew over it in an airplane and took some photographs. In the image above you can clearly see a dark area in the middle of the field. The archaeologist decided that the dark area might be an archaeological site – possibly where a Native American village once stood. The dark area would have been caused by charcoal from ancient fireplaces, food remains, and broken tools. A geoarchaeologist would take this image and study it along with the artifacts and information gathered from excavation to create the image on the next page of what the site looked like a thousand years ago.



The dark area is where the village was located. In prehistoric times, Native Americans could have harvested freshwater shellfish and fish from the river using the fish dam they constructed. The hills around the village would provide homes for animals to be hunted as well as plants, nuts, and berries to gather for food.

The location of the village along the river was a smart choice. Humans and animals need water to survive. And, the river would flood every year and lay down a thin layer of **alluvium** (sand and clay) over the agricultural fields – which made the fields more productive.

Notice that over time the beaver pond disappeared and was overtaken by woods. Notice too that the agricultural fields used by the Native Americans are being used by the people who now own the land.

How about a little Archaeobotany?

Southeastern Native Americans began growing crops around 2000 years ago. These were small fields with a few varieties domesticated plants. Archaeologists have been able to determine that the idea of agriculture as well as the seeds for **domesticated** plants were traded to the Southeast from Mexico. The primary plants they grew were: corn, beans, squash, sunflowers, and chile peppers. These are all plants that are **native** to North, Central and South America.

Domesticated is the opposite of wild; it means to train to be of use to humans.

From the diaries of the Pilgrims at Plymouth, Massachusetts and the settlers at Jamestown, Virginia, we know that the Native Americans often planted their seeds with a small fish dropped into the soils with the seeds, which acted as fertilizer. They also planted seeds together that would help each other. For example, corn was often planted with bean and squash seeds. The beans would climb the corn plant and give it strength to withstand high wind. The squash would cover the ground with its vines and provide shade, helping the corn to grow with less water. This is called **companion planting**.

When archaeobotanists look for evidence of agriculture in a site this is what they might find:

Corn cob

Burned corn

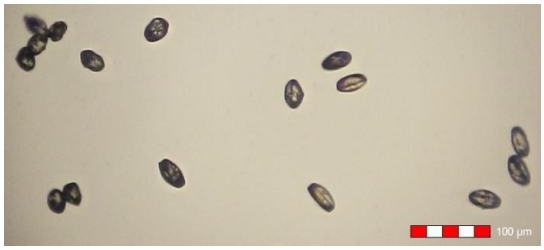
"Indian" corn

Bean seeds

Beans

Squash seeds

Squash



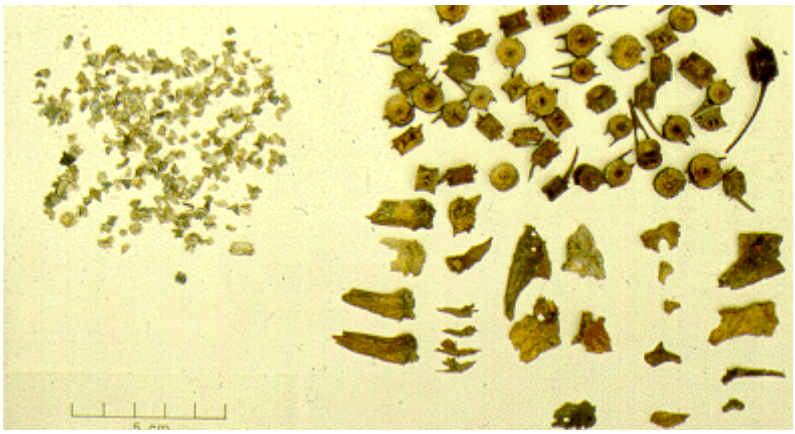
Chile pepper pollen

Chile Peppers

Sunflower seeds

Sunflower head with seeds

Now for a little Zooarchaeology!



Salmon bones would indicate this group of people were fisherman and that salmon were plentiful enough to eat frequently enough for the bones to be found in the site.

Bones from an extinct species of bison (American buffalo) would indicate this site was from the time of the Ice Age since this animal did not live much after the ice sheets melted.

Bones from a type of diving duck would tell archaeologists that there was once a lake or large pond near the site and that the people living there wove nets to catch them.

The objective of Environmental Archaeology is not just to re-create or learn about the environment of the past, but also to understand how people of the past adapted to the environment by:

- Changing how they ate through hunting, gathering, and agriculture
- Changing how they lived on the land – from nomadic to settled
- Changing their house styles
- Altering or changing the land around them to suit them, like creating fish traps or ponds

Environmental archaeologists work with a variety of specialists to help make sense of the data their gather. These can include geoarchaeologists, zooarchaeologists, and archaeobotanists. Other scientists might assist with soil science (pedologist), rock and mineral science (geologist), insects (entomologist), or human bones (osteologist). Archaeologists believe that by understanding where we came from we can better understand who we are.