

RIVERCANE MAPPING

THEMES:

- Cultural & ecological significance of rivercane
- Mapping technology
- Data modeling
- Analyzing geographical information

GRADE LEVEL(S):

- 6th - target grade
- 7th-8th overlaps

DURATION:

- Intro: 1 class period of 45-50 minutes
- Activity & discussion: 1 class period of 45 minutes

SKILLS

- Identifying Patterns
- Making Connections
- Gathering Information
- Critical Thinking
- Evaluating Data
- Spatial Mapping

BEST TIME FOR ACTIVITY:

- Anytime



SUMMARY

Interplay of culture and science

Rivercane (ihya –“ee-hee-yah”, in Eastern Band Cherokee) is referred to as the “plastic” of Cherokee culture. At one time, it was plentiful and had many uses in daily life. Over time, it has been reduced to only 2% of its habitat area. Students will: use mapping tools and technologies to investigate potential habitat areas for rivercane (*Arundinaria gigantea*) in the Great Smoky Mountains National Park, learn about historic uses of rivercane; and why rivercane is ecologically important.

OBJECTIVES AND CONNECTIONS

Students will...

- Identify habitat requirements of rivercane based on biotic and abiotic factors.
- Map potential habitat areas within Great Smoky Mountains National Park.
- Compare predictive modeling.
- Understand the cultural significance of a native plant.

MATERIALS

Preparation

- Review Intro and Activity Powerpoints
- Print paper copies of each habitat layer so each group will have their own copies

Activity

*Materials designated with a * will be provided in the activity box.*

- Powerpoints for Introduction & Activity – projection capability or virtual sharing (files on Flashdrive)
- One paper Prime copy of each habitat requirement layer*
- Transparency GSMNP maps, laminated*
- Wet erase markers*



NORTH CAROLINA SCIENCE CORRELATIONS

- ✓ LS.6.2.2 Analyze and interpret data to predict how the abiotic factors (such as temperature, water, sunlight, and soil quality) and biotic factors affect the ability of organisms to grow and survive in different biomes (freshwater, marine, temperate forest, rainforest, grassland, desert, taiga, tundra).
- ✓ ESS.8.2.1 Use models to explain the structure of the hydrosphere including: water distribution on earth, local river basins, estuaries, and water availability.
- ✓ ESS.EES.4.1 Use models to explain how abiotic/biotic interactions shape various ecosystems.

NORTH CAROLINA SOCIAL STUDIES CORRELATIONS

- ✓ 6.G.2.2 - Construct maps, charts and graphs to explain data about geographic phenomena
- ✓ 7.G.2.2 - Use maps, charts, graphs, geographic data and available technology tools
- ✓ 8.G.1.2 - Understand the human and physical characteristics of regions in North Carolina and the United States

NORTH CAROLINA MATH CORRELATIONS

- ✓ 7.RP.2 Recognize and represent proportional relationships between quantities.

TENNESSEE SCIENCE CORRELATIONS

- ✓ TN 6.LS2:4 Using evidence from climate data, draw conclusions about the patterns of abiotic and biotic factors in different biomes, specifically the tundra, taiga, deciduous forest, desert, grasslands, rainforest, marine, and freshwater ecosystems.
- ✓ TN 6.LS2:5 Analyze existing evidence about the effect of a specific invasive species on native populations in Tennessee and design a solution to mitigate its impact.
- ✓ TN 6.LS2:6 Research the ways in which an ecosystem has changed over time in response to changes in physical conditions, population balances, human interactions, and natural catastrophes.
- ✓ TN 6.ESS3:3 Assess the impacts of human activities on the biosphere including conservation, habitat management, species endangerment, and extinction.

TENNESSEE SOCIAL STUDIES CORRELATIONS

- ✓ TN SSP.01, 7.54 Explain the impact of geographic features on North American Indian cultures (i.e., Northeast, Southeast, and Plains), including: clothing, housing, and agriculture.
- ✓ TN SSP.06, 7.53 Identify and locate the geographical features of the Americas.
- ✓ TN 6.02 Describe the characteristics of the nomadic hunter-gatherer societies including use of tools.
- ✓ TN 6.04 Identify and explain the importance of key characteristics of civilizations. (technology)

TENNESSEE LANGUAGE ARTS CORRELATIONS

- ✓ 7.SL.CC.1 Prepare for collaborative discussions on 7th grade level topics and texts; engage effectively with varied partners, building on others' ideas and expressing one's own ideas clearly.
- ✓ 7.SL.PKI.4 Present claims and findings, emphasizing salient points in a focused, coherent manner with pertinent descriptions, facts, details, and examples; use appropriate eye contact, adequate volume, and clear pronunciation.





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About this project:

The Seeking Paths in Nature (SPiN) project was developed through a partnership between Great Smoky Mountains National Park (GRSM) and the Cherokee Preservation Foundation. SPiN encompasses the focused efforts to enlighten the public, students, and GRSM employees on the history and cultural connections inherent between the Cherokee and the land, currently deemed as Great Smoky Mountains National Park, as well as surrounding communities.

Background Information:

The land of Great Smoky Mountains National Park lies on the traditional homeland of the sovereign nations of Cherokee, or Aniyuwiya*, (*pronounced “a-nee-ya-wee-ya”) meaning the Principal People. We recognize the Cherokee and their ancestors as the original and continuing stewards of this land, going back to time immemorial. The Cherokee have a deep, complex, and reliant relationship with the land. Their intimate knowledge and relationship with the land along with the seasonal availability of plants and animals has resulted in stories, medicinal remedies, foodways, arts, technologies, science, and many other practices that prioritize ecologically sustainable stewardship and partnership with the land. Many Cherokee continue these significant traditions.

Vast changes to the land came in the late 1700s when European immigrants, largely of Scotch-Irish heritage, moved to the Southern Appalachians. The massive influx of people and greediness led to disputes and conflicts between the Europeans and Cherokee, eventually resulting in the tribe being forced to sign over their lands first to Great Britain, and later to the United States. Though some found ways to remain on their traditional lands in the 1830s, most Cherokee were forced to move west. Nearly 16,000 Cherokee were forced to walk to newly appointed Cherokee lands located in present-day Oklahoma. This tragic journey is known as the “Trail of Tears” due to the deaths of approximately 4,000 Cherokee people. Since the arrival of settlers, there have been many impacts of colonization including wars, conflicts, disease, broken treaties, land resource exploitation, forced assimilation, and genocide. Despite it all, the Eastern Band of Cherokee Indians have persevered.

Today, the Cherokee live on just a small fraction of their traditional homelands known as the Qualla Boundary. They are revitalizing their culture through efforts such as language preservation, the arts, education, community building, natural resource management, and commercial enterprises. Currently, the EBCI Qualla Boundary adjoins a southern portion of Great Smoky Mountains National Park, and the Cherokee proudly proclaim: “Si O Tse Do Ha”*, (*pronounced “she oh tsay doe ha”) or “We’re Still Here!”



Acknowledgements:

Special thanks for contributions from the Cherokee Preservation Foundation, Friends of the Smokies (FOTS), Great Smoky Mountains Association (GSMA), Cherokee Central Schools, Eastern Band of Cherokee Indians (EBCI) Natural Resources, Museum of the Cherokee Indian (in particular *Dakota Brown and Dawn Arneach*), EBCI Speaker's Council [*Laura Pinnix, Roger Smoker, Bo Lossiah, Marie Junaluska, Mary Wachacha (in memoriam), and Dr. Hartwell Francis*]. For your insight, we thank *Russ Townsend*, EBCI Tribal Historic Preservation Office Program (THPO), and the many teachers who assisted in content creation and piloting [*Jessica Metz, Malia Crowe Skulski, Kaitlin Roberts, Matt Tooni, Lizzie Carver, Amanda Clapp, Nikki McCoy, Randi Neff, Max Lanning, Melissa Crisp, Judy Dulin, Michelle Whaley, and Brian Hardison*], community members *Louise & Butch Goings, Peggy Hill-Kerbow*. The National Park Service (NPS), AmeriCorps Project Conserve members, and Great Smoky Mountains National Park Education staff and interns.

Thank you to our project coordinators whose leadership and creative energy were vital to the success of this project. *Jessica Metz* led the project in 2014 – 2016, *Julie Townsend* (in memoriam) led the project from 2016-2019. For their seasonal terms as project assistants, we thank *Jessica Stump, Natrieifia Miller* and *Kahawis*.

We dedicate this curriculum guide in the memory of Julie Townsend; her good humor, knowledge and relationships in the community are missed daily. Julie lived her life by the Cherokee concept of Gadugi - “we learn together” and it is with this intent that we offer these activities to you.

We acknowledge that the spelling of Cherokee words included in these documents may differ slightly, as there are variations of Cherokee dialects within EBCI.



NATURAL RESOURCES
EASTERN BAND OF CHEROKEE INDIANS



RIVERCANE MAPPING

VOCABULARY AND DEFINITIONS



Grade Levels: 6 - 8

Subject Areas: Science & Social Studies

Activity time: 45 -90 minutes

Setting: Classroom

Skills: Analyzing, Gathering information, evaluating data, critical thinking, spatial mapping

Materials: Computer(s)

Objectives:

Students will be able to...

- Create layered maps for modeling potential habitats of rivercane.
- Analyze & predict patterns of growth in the area.
- Understand the rich cultural history associated with native plants.

Vocabulary:

- **Abiotic Factors** – non-living factors, such as temperature, water, sunlight, elevation, soil quality.
- **Biomes** – a large naturally occurring community of flora and fauna, adapted to a specific climate. (ex: aquatic, grassland, forest, desert and tundra).
- **Biotic Factors** - living components in an ecosystem.
- **Canebrake** - a thicket of any of a variety of Arundinaria grasses (rivercane) generally found in stream valleys and ravines throughout the southeastern US.
- **Canopy Cover** - proportion of the forest covered by the vertical projection of the tree crowns (Jennings et al. 1999).
- **Elevation** - measurement of height above sea level.
- **Endangered Species** - a type of organism that is threatened by extinction, most commonly from loss of habitat and loss of genetic variation
- **Habitat** - the natural home or environment of an animal, plant, or other organism which usually includes: physical factors such as soil, moisture, range of temperature, and availability of light as well as biotic factors such as the availability of food and the presence of predators.
- **Hydrology** - a science dealing with the properties, distribution, and circulation of water on and below the earth's surface and in the atmosphere.
- **Photosynthesis** - the process by which green plants and some other organisms use sunlight to synthesize foods from carbon dioxide and water.
- **Respiration** - a process in living organisms involving the production of energy, typically with the intake of oxygen and the release of carbon dioxide from the oxidation of complex organic substances.
- **Transpiration** - the process where plants absorb water through the roots and then give off water vapor through pores in their leaves.



IN-CLASS ACTIVITY PART 1

DISCUSSION: IMPORTANCE OF RIVERCANE



Grade Level: 6-8

Subject Area: Social Studies / Science

Activity time: 45 minutes

Setting: Indoors

Skills: Analyzing, Applying, Communicating, Comparing, Debating, Discussing, Gathering information, Hypothesizing, Summarizing

Materials:

• Powerpoint - Introduction

History and Significance of Rivercane

(can use Powerpoint Introduction to introduce same concepts below)

Dialogue Question: Think of something you use every day. (Discuss with a partner). What is it made of? Now imagine that resource gone. How would you replace it or adapt without it?

Cherokee Plastic: “A Forest of Tall Canes”

The Eastern Band of Cherokee and their ancestors have used native rivercane (ihya –“ee-hee-yah”) (*Arundinaria gigantea*) for centuries (at least 500-1500 years) and many continue those traditions today. Rivercane was abundant, versatile, strong, waterproof, and valuable in its many uses. It could be straightened, bent, split, woven, and drilled. Being lightweight with the strength compared to steel or modern materials, Cherokee used rivercane for weaponry, basketry, storage, building houses, fishing, pipestems, chairs, food, medicines, creation of pottery and more. Imagine walking through forests of rivercane in the river valleys, stalking wildlife, fishing, gathering. Sadly, today, rivercane only occupies a small fraction of its original habitat in the Great Smoky Mountains region.

Would people of the past ever imagine rivercane’s rarity today? Cherokee and European stories and accounts confirm how common it was, going back centuries.

- The earliest European explorer visiting Cherokee country in 1540, Hernando DeSoto, wrote of the reliance on rivercane for baskets and homebuilding in his accounts.
- Botanist Mark Catesby described rivers “covered with spacious tracts of cane” in 1724, as he documented local flora and fauna, as did William Byrd in 1728, describing “a Forest of Tall canes”.
- William Bartram’s 1775 exploration and documentation of the southern Appalachians described “perhaps the most extensive Canebreak (sic) that is to be seen on the face of the whole earth”, it rolled out to the horizon “like the ocean” and was “alive with cattle, deer, and turkeys”.
- When Henry Timberlake visited the Cherokees in 1754, he described vast canebrakes dominating the lowlands and the hunting of small game by children using cane blowguns. Other accounts describe dense stands, as well as local usage.

Ecological Significance

Found from Maryland to Florida, and as far west as Texas, rivercane serves as important habitat for over 60 species of wildlife including mammals, birds, amphibians, fish, insects, and reptiles.

- A natural water filter: It provides dense buffers for riparian (wet-





land) areas by filtering contaminants and sediment. Imagine the stalks as a huge teabag for water to filter through, the finely knitted roots removing toxins such as nitrates in agricultural areas.

- Studies indicate a 10m rivercane buffer can reduce contaminants from agricultural runoff better than a forest buffer:
 - Nitrogen compounds: 100%
 - Phosphate compounds: 28-100%
 - Sediment: 100%
- Erosion control: It is also important in its role in stabilizing and protecting eroding riverbanks, especially in flooding events. Soil can wash away from runoff without the Velcro-like root structure provided by plants such as rivercane.
- Soil fertility enhancer: rivercane traps nutrients in its dense web of rhizomes and roots.

“Rivercane is a highly effective riparian buffer, improving water quality by trapping sediment, nutrients, groundwater nitrates, and groundwater phosphates and also serves as an important habitat for a variety of species. Rivercane has been used by artisans of the Eastern Band of Cherokee Indian (EBCI) for millennia to make baskets which are used for storing, processing, gathering, and serving of food. Rivercane suitable for use by artisans is no longer abundant.” (RTCAR)

One way to explain how rivercane adds to the fertility of soil, is its ability to “net” floating organic debris in floodwaters and redeposit within the canebrake. Imagine a flood carrying leaves, branches and logs that become wedged in the canebrake. They decompose and amend the soil in that area. The cane also serves as structure, with the thick velcro-like weave of the rhizomes and roots within the soil.

With the arrival of European colonists, the demand for land resulted in not only removal of some of the Cherokee to Oklahoma (via the Trail of Tears) but also an aggressive eradication of river cane. Just as bison were important to western cultures, rivercane in the East was vital to tribes in many ways. By destroying canebrakes, those wanting the land could put further pressure on Cherokee by diminishing their resource needs. Generations of cutting, burning, using grazing cattle to destroy the giant stands and hogs to root up the rhizomes, resulted in a dramatic landscape change. In the ensuing years, development and invasive plants have further strained the rivercane population to less than 2% of its original range, with many experts believing the figure to be well below 1%.

Good news: With a resurgence of interest in rivercane for cultural use, efforts are underway to determine suitable areas for rivercane propagation. This activity introduces students to ways that scientists today are working to restore important native plants, such as rivercane.

Next: Where is Rivercane Found?

In the activity, we will be examining and mapping areas where rivercane’s habitat needs are present:



IN CLASS ACTIVITY PART 2

MAPPING RIVERCANE



Grade Level: 6-8

Subject Area: Science

Activity time: 45-50 minutes

Setting: Indoors

Skills: Analyzing, Applying, Communicating, Comparing, Discussing, Gathering information, Hypothesizing, Mapping, Predicting, Summarizing

Materials:

- Laminated transparency map of GSMNP
- Paper printouts of each GIS layer samples
- Wet erase marker set: black, red, blue, green
- Powerpoint - Activity



Great Smoky Mountains National Park and Rivercane

(use Activity Powerpoint to lead this section)

If you were to pick a biome for this region, which might it be?

(Tundra, Temperate Forest, Tropical Rainforest, Desert, Aquatic, Grassland). We are considered a temperate forest, but with our rainfall, we've been referred to as a temperate rainforest! With our diversity of ecosystems, from high mountain tops, to wetland valley areas, dry slopes, to cool caves, we have an amazing diversity of plant and animal species.

While rivercane is found in multiple areas around the region, scientists, managers, and artisans are interested in restoring it within its original range, both in the park and in surrounding communities for ecological and cultural reasons. With many river bottom areas throughout the park, there is potential for rivercane to return. Park scientists often use satellite imagery, soil studies, modeling, and mapping to examine best habitats for species, and this activity allows us to participate in a similar analysis.

Where is Rivercane Found?

Look in areas where rivercane's habitat needs are present:

- **SUN** - Rivercane prefers thin or no tree canopy cover. It needs solar energy in the form of sunlight for photosynthesis, soil nutrients for respiration and water for transpiration. Essentially, sunlight allows rivercane to breathe and get the nutrients it needs. (Selective harvest and fire can both stimulate growth and remove older culms, making room for new growth.)
- **WATER** - Rivercane prefers floodplain areas and can be found in valleys in North Carolina and Tennessee close to the water. It prefers well-drained areas so that it's "feet" aren't always wet, but can withstand long periods of being under water.
- **SOIL** - While cane is adaptable to a wide range of variables, ideal habitat is in floodplains and riparian areas. Rivercane prefers sandy, silty, mineral (rock-based), alluvial loam soils, but also soils that have a percentage of clay. They are found in mixed hardwood areas with organic matter, but not under areas with heavy treecover. Typical soils can have low bulk densities (less compacted) and low pH levels (acidic).
- **ELEVATION** - Rivercane can be found in low valley areas at elevations below 760-m in elevation (2,493.4 ft.)



IN CLASS ACTIVITY PART 2

MAPPING RIVERCANE: WORKSHEETS

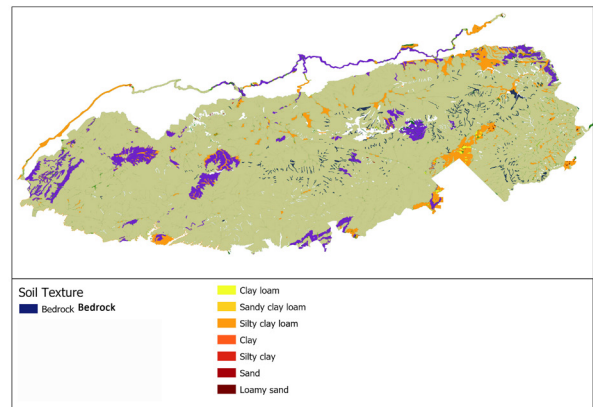


GIS Technology – Mapping

How do smart phones' directions/locations apps work?

They tap into GIS mapping technology.

- A Geographic Information System (GIS) is a computer tool using location data related to positions on earth. The data is used to create layers that help us understand relationships and patterns. It can use any information that includes a location.
- This data can be about anything, such as people, landscapes, natural resources or buildings. Even where your favorite chocolate treat might be sold!



Scientists use GIS data to predict where species might be found. Because different species have different habitat needs, data helps us guess if our target species might be present. This is called modeling. Once certain species are found, their location can be input into the system, also becoming data. It can all be compared with weather trends, plants, soils, and other features to see how life interacts in the park.

There are many jobs using GIS technology: biologists, air & water quality specialists, archeologists, public health coordinators, engineers, city planners, road builders, emergency responders, even trail guides.

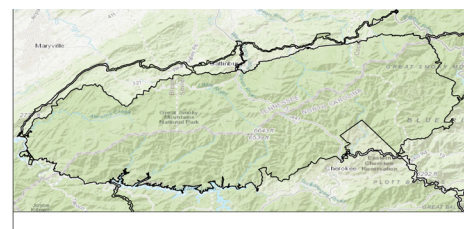
Activity:

Introduce students to the importance of rivercane culturally and ecologically. They will role play as scientists:

- studying rivercane populations in the region.
- evaluating and mapping potential locations for rivercane habitat within the Great Smoky Mountains National Park area.
- working in pairs, students will analyze different variables utilizing data and compare with attributes on ground. Students can divide up the responsibilities of looking up data and drawing on the map, or one student can do the drawing on the laminated map while the other looks up data.

Materials:

- Powerpoints –
 - 1) Intro and
 - 2) Activity
- Pass out:
 - ✓ Packet of paper layers
 - ✓ Clear Place Name Transparency
 - ✓ Laminated Transparency of Base GSMNP (Great Smoky Mountains National Park) map
 - ✓ Wet Erase Markers Set





Rivercane Mapping Procedure:

Why do we map?

Mapping allows us to understand relationships and geography. If you were to map your favorite places, where would you put points? What would your personal routine look like on a map?

Orientation: Great Smoky Mountains National Park map (use Activity Powerpoint)

1. Looking at the GSMNP Base Map, orient students to locations around the region on the laminated base map (green) of Great Smoky Mountains National Park.
2. Have students find the TN/NC border, Gatlinburg and Cherokee. Have them notice the park falls inside the black outline. (The skinny black lines on the north and southern sides are the Foothills Parkway and Blue Ridge Parkway, also NPS sites).
3. Once these places are located, students can be guided to find approximate locations of their home, their school, and relation to the Park.

Rivercane Habitat Mapping – Transparencies & Habitat Layers

Method:

- Students, working in teams, will layer one of the paper habitat layers on the bottom with the laminated basemap in the middle and the place name transparency on top. Using the layers, they will mark their maps where suitable habitat meets the growth requirements of rivercane.
- There will be four habitat layers, represented by four colors of markers. Use the Rivercane Mapping Activity Powerpoint to guide the students.

The Four Layers to mark are:

1. **Elevation: (Green outline)** (prefers below 760m) Using the ELEVATION MAP, have students mark their laminated maps by tracing in green to show areas with the appropriate elevation below 760m (2,493 ft). (Area colored rust on the elevation map is the area to trace).
2. **Soil Texture: (RED dots)** (high sand content) Using the SOIL TEXTURE (or Sandy Soil Map) have students mark their laminated maps with red dots to show areas with higher sand and silt content.
Review soil texture triangle if working with an Earth & Environmental class. If not, continue to step 3.
3. **Tree Canopy Cover (BLACK outline)** (prefers little to no tree canopy) – Looking at the CANOPY COVER MAP, have students trace their maps with black marker where areas are open, and not completely tree covered. (On this map, those open areas are black).
4. **Rivers – (Blue outline)** (prefers growing close to water) – Using the RIVERS MAP, have students mark their laminated maps with blue marker to outline areas with water (rivers, streams, wetlands, etc.). (Note: Only mark the water that is within areas where the elevation, soils texture, and tree canopy cover intersect - there are so many areas, they don't all need to be traced)!

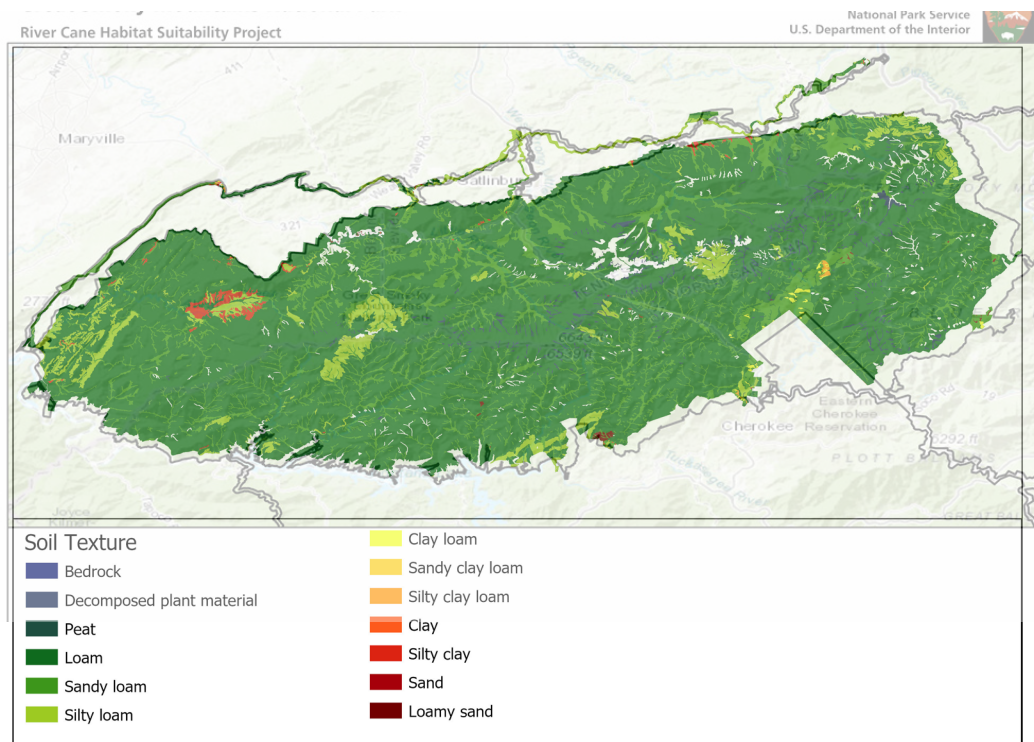


Analysis:

Once the students have marked on their laminated maps where all 4 habitat layers overlap, students complete the activity by overlaying the map with the “Place Names” layer and picking where they think would be the best spot to try reintroducing rivercane.

Discussion Questions:

- o What areas did you find that would make good habitat for rivercane in the Park?
- o What areas did you find that might make good habitat near where you live?
- o Have you seen rivercane or exotic bamboo in your area?
- o What can be done to continue the legacy of rivercane, both ecologically and its use by the Cherokee?
- o What other cultural and/or natural resources might be good candidates for mapping?





Extension Activities

Contact RTCAR (#3 in resources) to set up a Rivercane restoration project in your community; at your schoolyard or a local park.

SPiN Program Pairings

- Blowgun Activity
- Trek Through Time

Online and Virtual Resources:

1. **Species Mapper, GSMNP / *Atlas of the Smokies*:** <https://maps.nps.gov/species/>
 1. Watch Video about Atlas of Smokies: (3:28) <https://www.nps.gov/grsm/learn/nature/index.htm>
 - a. Compare results about rivercane
 - a. Select: Species Mapper
 - b. View: Predictions and Observations (check both boxes)
 - c. Name Convention: Latin
 - d. Dropdown list: select “*Arundinaria gigantea gigantea*”
 - b. Allow students to investigate where different animals and plants are found
 - c. Learn more about Smokies biodiversity and mapping: <https://www.nps.gov/grsm/learn/nature/index.htm>
 - d. Enviromapper: <https://maps.nps.gov/enviromapper/>
2. **GSMNP online GIS map** (Online tool to manipulate rivercane maps with in class overhead) <https://nps.maps.arcgis.com/home/item.html?id=e95e1a54a64f40629e6fb98a7b31ba94>
 1. (Use “How to Use Mapping Tools” in your kit for step by step instructions)
 - a. This online application should be done as a group, the website cannot support multiple users at a time so it is best done as a presentation to the whole class. You can have the class decide what layers to display/remove layer by layer.
 - b. Have the class go through each tool to become familiar with how the map changes.
 - c. Allow students to direct ways to manipulate maps for inquiry
2. **GRSM Wetlands Map** - <https://www.nps.gov/maps/full.html?mapId=d39262b6-83c8-4c8a-829b-d98f7aaa74c1>
3. **Discover Life in America (DLIA)**
 - Snap It and Map It [Smokies Most Wanted - Discover Life in America \(dlia.org\)](https://www.dlia.org)
 - Atlas of the Smokies video <https://www.nps.gov/media/video/view.htm?id=B4C11937-A079-7BD4-E85FB8BB80F0EBEF>
4. **iNaturalist – Rivercane Mapping in the Southeast** - [Rivercane Mapping in the Southeast · iNaturalist](https://www.inaturalist.org/projects/rivercane-mapping-in-the-southeast)
 - o Type “River Cane” into search field. Choose “Map” view. Zoom into the GSMNP area and explore where observations have been made.
5. **EBCI projects:** seed banks, garden wagon, etc. Visit <https://ebci.ces.ncsu.edu/>

Local Fieldtrips:

Find rivercane in Cherokee, Oconaluftee, Bryson City, Cades Cove or local areas. Visit the Museum of the Cherokee Indian and the Qualla Arts & Crafts Mutual to identify uses.



References:

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