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LEWIS F. ROGERS INSTITUTE FOR ENVIRONMENTAL AND SPATIAL ANALYSIS

Environmental Education Workshop 7

UNG - Gainesville Campus

Tumbling Creek, Hall County, Georgia

April 10, 2021

Grant # 00D882218

If you need this document in another format, please contact Dr. Jamie Mitchem at jamie.mitchem@ung.edu

Welcome to the Environmental Education Workshop.

We are thrilled that you have decided to attend this workshop! At the workshop, our goal is that you learn more about north Georgia's forests, soils, water, and environment. With this information we hope that our communities will become responsible stewards of the air, water, and soils in north Georgia. We hope the workshop is both enjoyable and educational. Finally, we encourage you to share the information learned today with your friends, family, and neighbors to have the largest positive impact on our communities to keep our air, soils, and water clean and safe. If you have any questions, please contact Dr. Jamie Mitchem. Enjoy the workshop!

Environmental Education Project

The project objectives focus on comprehensive knowledge, application, technology, and environmental science skills on the environmental issues of invasive insect species, vegetation management, impairment of waterways due to sediment, soil and water quality issues affecting native forest ecosystems in urban, suburban, or rural communities, as all of these community types have native forest ecosystems in Georgia. One of the major issues in vegetation management is how to control invasive plant species without the excessive use of pesticides. Most citizens cannot identify native species in the Foothills landscape, nor proper methods for treatment; and therefore, are unable to act as good stewards of native forests/trees in Georgia rural, suburban, or urban landscapes. Learning activities on native/invasive plant identification and best treatment practices will mitigate this lack of knowledge.

About the Grant Team

Dr. Allison Bailey (Left) & Dr. Jamie Mitchem (Right)

Dr. Allison J. Bailey

Associate Professor of Geography & Environmental Sustainability Studies, IESA

Dr. Bailey's teaching emphasizes environmental communication, human interaction with nature, and conducts research on forest health, tree canopy, wildlife habitat, and public green spaces.

Dr. Jamie Mitchem

Professor of Geography/GIS, IESA

Dr. Mitchem's teaching and research have been in the areas of hazards geography, Geographic Information Science (GIS), meteorology, storm chasing (tornadoes), climatology, climate change, social vulnerability, and emergency management.

Jacob Lougee, Student GIS Technician and Project Manager

Jennifer McCollum, Student GIS Technician

Student Workers:

Natalie Crews, Biology Major
Aaron Carney, Environmental Spatial Analysis Major
Michelle Ortiz, Journalism Major
Keshav Kumar, Business Major
Waminja Cleaveland, Film Major
Jose Patricio Patino-Cruz, Business Major

Collaborating Partners

Sustaining Georgia's green legacy by partnering with individuals, organizations, and communities in raising awareness toward improving and maintaining Georgia's community forests.

Promote sustainable management that leads to naturally diverse and healthy forests and watersheds within the more than 867,510 acres of national forest lands in Georgia; to engage and educate the public to join in this effort; and to promote preservation of this legacy for future generations.

The Georgia Forestry Commission (GFC) is a dynamic state agency responsible for providing leadership, service and education in the protection and conservation of Georgia's forest resources

Chattahoochee Riverkeeper is an environmental advocacy organization dedicated solely to protecting and restoring the Chattahoochee River Basin.

The Georgia Master Gardener Association, Inc. (GMGA) has as its primary purpose the support of and advocacy for master gardeners and master gardener organizations throughout the state. We work collaboratively with the University of Georgia (UGA) Extension to provide unbiased, research-based horticultural information to the public though our master gardener extension volunteers.

Lumpkin Coalition is a diverse group of wonderful folks -- young and not-so-young, working and retired, Georgia natives and transplants from all over the country -- united by a common commitment to preserving and enhancing the special quality of life here in north Georgia.

The Hall County Master Gardener Extension volunteers help University of Georgia Cooperative Extension staff convey research-based information about gardening, horticulture and best practices to the public.

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Today's Agenda

Time	Speaker	Topic	Location
9:00		Registration	2201 Nesbitt Building
9:30	Mitchem	Orientation/Welcome	2201 Nesbitt Building
9:45	Mitchem	Trees, Weather, & Climate	2201 Nesbitt Building
10:15	Lougee	Tree identification app	2201 Nesbitt Building
10:50		Break	
11:00	Hawkins	Tree Pruning and Demonstration	Outside
Noon	Caldwell	Water Sampling	Tumbling Creek
13:00		Lunch	
14:00	Student Guide	Trail Walk & Exploration	Tumbling Creek Preserve
15:00		End of Workshop	

Weather and Climate

Trees affect our climate, and therefore our weather, in three primary ways: they lower temperatures, reduce energy usage and reduce or remove air pollutants. Each part of the tree contributes to climate control, from leaves to roots. The outdoor air conditioning provided by trees reduces the energy used inside your home or office. Shade provided by strategically planted deciduous trees cools buildings during the warm months, allows the sun's warming rays to shine through its branches in the winter and also protects buildings from cold winds. With some planning, urban trees can help minimize the heat island effect that saddles many cities.

The UNG WeatherSTEM Station

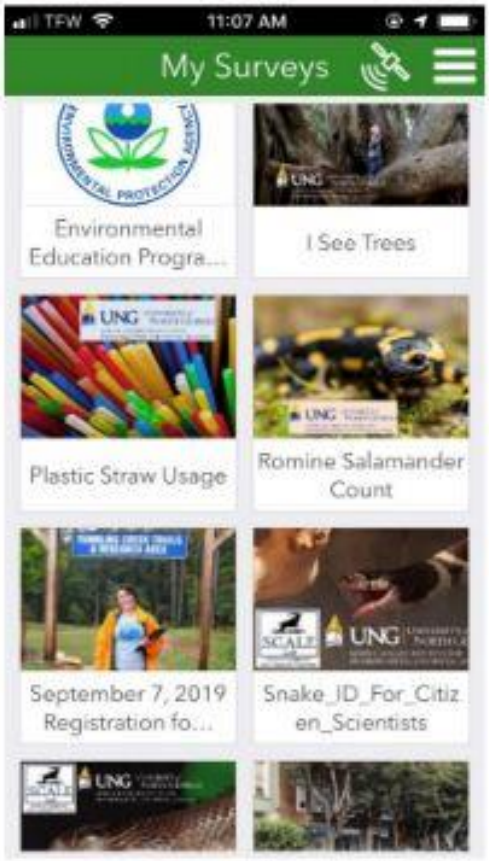
UNG has data collecting weather stations at each of the five campuses. The study of weather provides an excellent foundation for science, technology, engineering and math (STEM) education. The system provides an array of public safety features including lightning alerts, severe weather alerts, temperature forecasts, environmental cameras and agricultural monitoring. It also archives past weather and gives weather forecasts for the coming days. The data can be used to teach about atmospheric pressure, wind speed and direction, and cloud types. The system creates cloud movies, 24-hour time-lapse videos that show the sky conditions for an entire day, in less than a minute. The videos are linked with graphs of temperature, pressure, and dew point.

Practice Citizen Science on your own device

1. Download Survey123 app from the Apple Store or Google Play.
2. Scan the QR code with your camera or QR reader.
3. Open in app and then you can access the survey now and later.
4. Have fun collecting data.

For more information about GIS classes at UNG, visit us at www.ung.edu/iesa

Tree ID App



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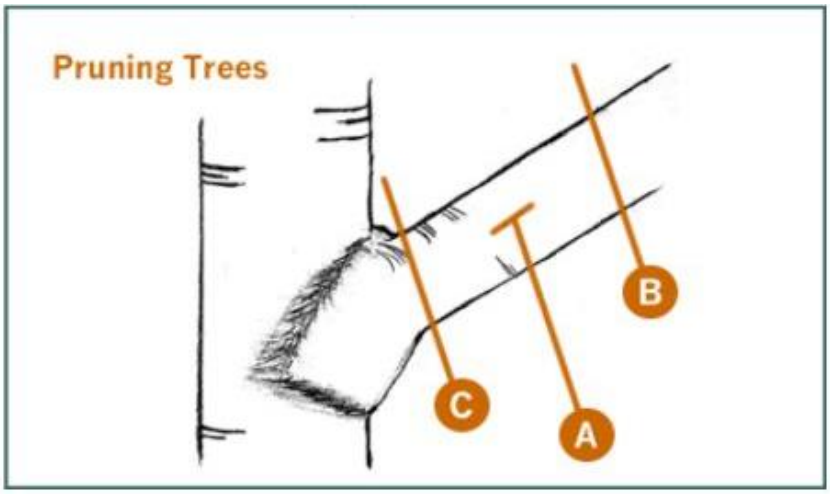
Tree Health: Pruning Techniques

Pruning Mature Trees

Pruning mature trees may require special equipment, training and experience. If the pruning work requires climbing, the use of a chain or hand saws, or the removal of large limbs, the use of personal safety equipment, such as protective eye wear and hearing protection is a must.



Certified Arborists can provide a variety of services to assist in performing the job safely and reducing risk of personal injury and damage to your property. Trained crews will have all of the required safety equipment and liability insurance. They are also able to determine what type of pruning is necessary to maintain or improve the health, appearance and safety of your trees.

Avoid using the services of a company that:

Advertises tree topping as a service. Topping is harmful to trees and is not an accepted practice

Uses tree climbing spikes to climb trees that are being pruned. Climbing spikes can damage trees, and their use should be limited to trees that are being removed.

If branches have broken, stubs remaining on the tree should be pruned back to the next largest branch.

Correct Steps to Pruning

Step A - Cut through 1/2 of the branch from underneath about 1 foot from the trunk. This will help prevent stripping or peeling the bark off of the trunk.

Step B - A few inches further from the first cut, make a cut from the top of the branch downward. This will remove the entire branch.

Step C - Locate the branch collar (a layer of wrinkled bark where the branch attaches to the trunk) and where the branch bark ridge (a raised area of bark at the branch/trunk union). Make the final cut just outside of the branch collar and the branch bark ridge, at a slight downward and outward angle. Do not cut into the collar or leave a stub.

Pruning Young Trees

What to Prune

Only remove dead, dying, diseased, broken or crossing branches.

Remove branches when there are conflicts with utility lines (always consult a professional) and lines of sight related to pedestrian and vehicular traffic, and low limbs over sidewalks.

If young trees are forked at a narrow angle, prune to create one central leader. This trains the tree to grow straight.

Remove sprouts or suckers at the base of the tree or inside the tree crown that are upright and grow rapidly.

Pruning should be done sparingly. If you remove too many leaves, a tree cannot gather and process enough sunlight to make food.

When to Prune

For most trees, prune in late winter or early spring before leaves emerge.

Prune dead, diseased and broken limbs as soon as you notice them. Prompt pruning prevents the spread of decay and cavity development.

Young trees should not be pruned for shape until after the first two growing seasons. Never remove more

that 25% of the live crown (leaves, twigs and branches) in a single year.

How to Prune

When pruning diseased branches, dip the pruners in household bleach or rubbing alcohol before storing or making the next cut.

Once you begin a cut, always finish it.

Trees do NOT need wound dressings to recover from pruning. Through natural processes, the tree will callus over the wound by itself.

Pruning mature or large trees should be left to Certified Arborists. Large branches are removed by making three cuts.

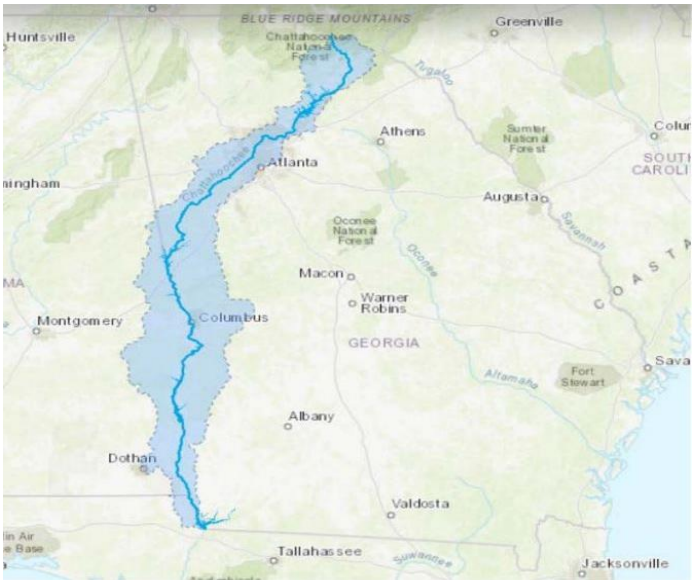
Consult the International Society of Arboriculture for more information.

GEORGIA FORESTRY COMMISSION *protecting and conserving Georgia's forests*

Chattahoochee Headwaters

The Chattahoochee River is one of the smallest river systems in the entire country to provide water supply to a major metropolitan city. This reality compounds the challenges our region faces.

From north Georgia to the Florida line, the Chattahoochee River watershed faces many threats to its chemical, physical and biological health and integrity, including:



- Storm-water and wastewater pollution
- Increased water consumption
- Landscape changes that interrupt natural flow patterns
- A changing climate

Although river health has improved in recent decades, more than 1,000 miles of waterways within the Chattahoochee watershed still do not meet water-quality standards. And that means potential health threats to people and wildlife that come in contact with it.

Meanwhile, government agencies—typically underfunded and understaffed—are often unable to conduct the vigilant monitoring necessary to enforce environmental laws and inform important water-management decisions.

Compounding water-quality problems are human activities that alter the natural hydrology of the watershed. These include:

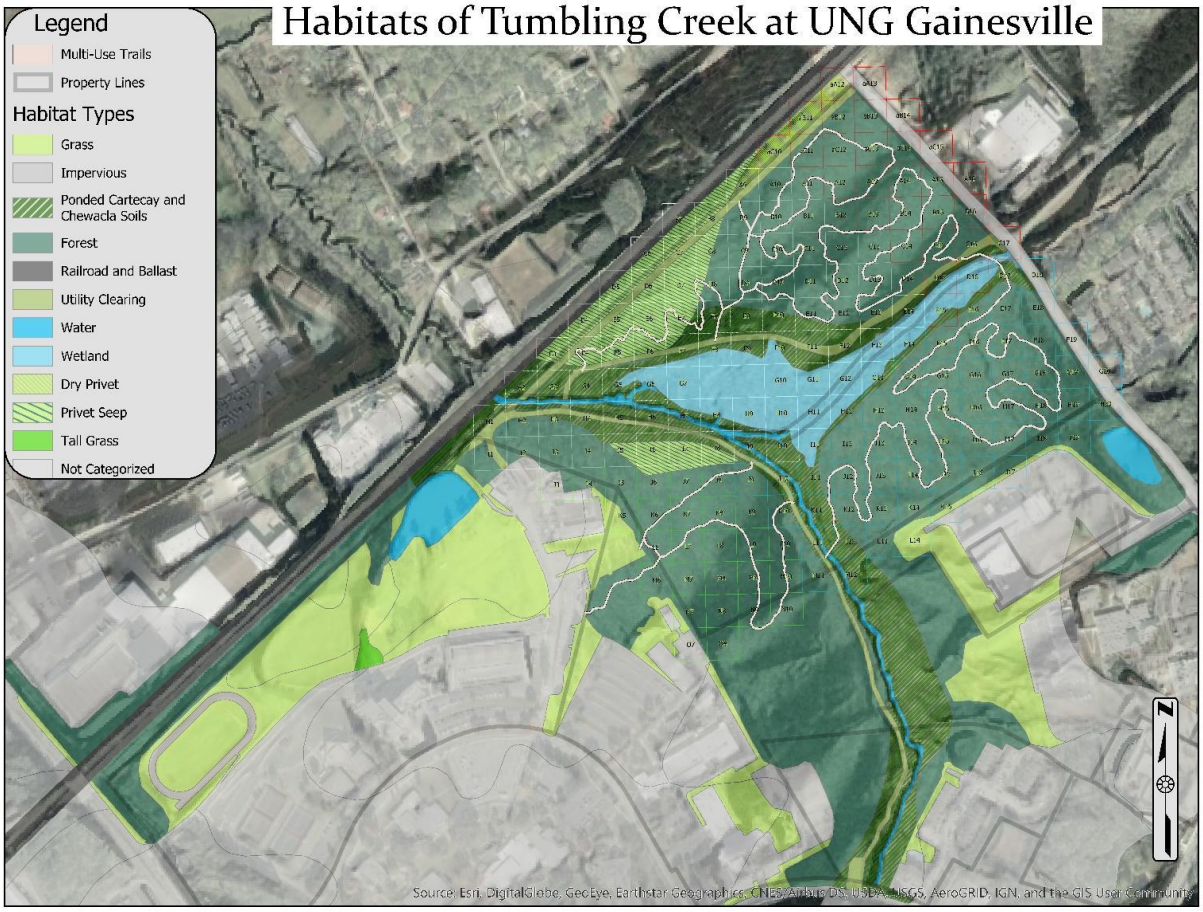
- Hardened landscapes from impervious surfaces
- Denuded stream buffers
- A complex system of dams, and…
- Water withdrawals

All of these activities have reduced flows in the river system, along with altering the seasonal variability that many fish and wildlife species depend on. Add to that a changing climate, with weather events becoming more extreme, with alternating periods of intense storms and droughts that are damaging to river health and downstream communities.

CHATTAHOOCHEE RIVERKEEPER®

Keeping Watch Over Our Waters Since 1994

Streams & Trails of Tumbling Creek



Map created by: Jacob Lougee in consultation with: Dr. Natalie Hyslop (Biology) & Dr. Allison Bailey (IESA). Funded by : EPA Grant # 00D882218

Tumbling Creek Research and Recreation Area has been used by UNG faculty and students for years to conduct environmental and ecological research. Their love of nature has been shared with the community hikers and cyclists who explore the trails on a regular basis. Flowing across this property are Tumbling Creek and Ballus Creek, which flow into the watershed feeding the Chattahoochee River. The hydrology, impacted by beaver habitat and other aquatic species, is a federally recognized wetland. All of the projects discussed in today's workshop are made possible by the open access to this property

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LEWIS F. ROGERS INSTITUTE FOR ENVIRONMENTAL AND SPATIAL ANALYSIS

Established in 2001, the Lewis F. Rogers Institute for Environmental and Spatial Analysis (IESA) on UNG's Gainesville Campus promotes environmental education through the use of advanced technology, interdisciplinary instruction, collaborative learning, and community service.Graduates from our degree and certificate programs have found employment at impressive rates and many go on to reputable graduate schools throughout the United States.Our students follow a curriculum built around a solid core of geospatial science and technology and related courses in areas of their interest, such as environmental science, environmental studies, engineering, education, urban planning and community development, environmental health, and the geosciences. Students find the flexibility to follow their passions, while earning valuable, work-ready training in applied geospatial techniques.

Quick Contacts:

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Notes