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From the Director

This year, the Land Trust Alliance launched a national campaign called Gaining Ground, designed to engage people who know how essential protected lands are, but may not know much about land trusts.

Mainspring is a member of LTA, an organization comprising nearly 950 land trust members. Based in Washington, D.C., LTA works on behalf of accredited organizations to advance conservation and to lobby for ethical tax practices while also serving as a resource for land trusts to collaborate.

Here at Mainspring, we are fortunate to have globally significant resources that illustrate the benefits of and the need for conservation. We can look around and see proof of the value of clean water, healthy forests and beautiful vistas.

Our unique platform holds challenges, however. LTA's national research shows that the critical audience of future conservation supporters is between the ages of 25 and 54 from diverse urban and suburban backgrounds. Those are not the demographics of western North Carolina communities — meaning Mainspring must work harder to identify supporters outside of our region, while ensuring those who do live here understand the importance of conservation.

You can play an essential role in this campaign to identify and recruit future advocates for conservation. Talk to friends who visit, your children and grandchildren, and their friends — and share Mainspring's impact on this unique region. Building our constituency is vital to save the best of the rest in the Southern Blue Ridge.

Fostering relationships and translating them into support for our ever-increasing work takes time. Your help in recruiting the next generation of Mainspringers is more critical than ever. Together, we can continue to gain ground.

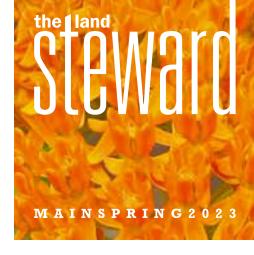
Executive Director

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December 2023

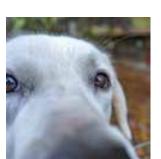


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COVER: Wooden beams line the ceiling of the old barn on Providence Farmstead.





A Journey of



FTER A BUMPY RIDE up a rocky dirt road to Dark Cove Farm, the only sounds are the trickle of a small creek cascading down the mountain and an autumn breeze rustling tulip poplar leaves.

It's exactly why Jackie Palmer and David Smith bought these 85 acres in the Balsams more than 30 years ago.

"We looked at about five or six places around Jackson County. We'd stand there and listen, but we'd still hear the highway, so we kept searching," says David.





"Other stuff — the money, the details, the rights-of-way — it's all really important. But it won't come together if you don't have a heart in the right place."

Jackie Palmer



"When we first bought the place," Jackie says, "it was so overgrown that you couldn't drive up to the house. You had to bushwhack. The pond was a three-inch deep slop, and the house was outdated."

None of that mattered to the couple, who were enchanted by the richness of Dark Cove. Over the next three decades, they worked diligently to clean up the forest and transform the low-lying portion of the property into a small goat farm. However, a threat to the forest's integrity loomed on the horizon. Their neighbor was about to put her property, Sweetwater Cove, on the market to pay her mother's medical bills. Jackie and David didn't have the cash to buy the property, but it was clear that the land was just as lush and needed protection.

So, the couple called Mainspring. To conserve the property, the land trust utilized an unconventional strategy. The concept entailed purchasing and conserving the neighbor's land, and, to provide matching funds for a grant application to the North Carolina Land and Water Fund, Jackie and David would donate the value of a conservation easement on their property. This tactic would permanently protect both the neighbor's land and Dark Cove, bringing the total number of contiguous conserved acres up to 120.

"I was selfish," Jackie recalls with a smirk. "I said, if you buy [Sweetwater Cove], I'll give you [Dark Cove]. I just wanted it protected."

The risk paid off. Not only did Mainspring receive the NCLW grant — as well as a grant from the Alice Zawadzki Land Conservation Fund of the North Carolina Native Plant Society — but the owner also pitched in, selling her land for less than market value and accepting the

payment in installments over the next few years.

When the properties are protected, more will be secured than just Jackie and David's peace. The wildlife that call this place home will thrive in perpetuity. Both properties are surrounded by U.S. Forest Service land, which connects to the Blue Ridge Parkway and Great Smoky Mountains National Park. This swath of connected habitat that spans all of western North Carolina allows wildlife to migrate and disperse, and ensures that species are better able to adapt to our changing climate.

"We couldn't have done any of this without Mainspring," Jackie says. "My favorite hero at the moment is Emmie, [Mainspring's land conservation manager]. She made it happen. A lot of people were involved, but she was the conductor. The music couldn't have happened without her expertise and big heart."

Emmie may have been the conductor, but conductors can't work without their orchestra. The best things happen with collaboration. Jackie and David poured their hearts into Dark Cove, transforming it into a wildlife haven. Without their foresight, Mainspring wouldn't have been able to protect the adjacent property—and, without Mainspring, Jackie and David would have no way of ensuring that their legacy would live on in the wildflowers, songbirds and trout-filled streams they worked so hard to nurture.

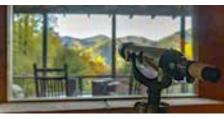
"It's a journey of heart," Jackie says.
"Other stuff — the money, the details, the rights-of-way — it's all really important. But it won't come together if you don't have a heart in the right place."

"You just do your best with what you have," David adds. "There's a really good group of people in these mountains who are trying, in a quiet way, to save what we can."















No matter how much land you own, how much time you have or how willing you are to wield a chainsaw, one thing is certain: You, too, can

Grow Your Own Nature Preserve

wenty-six years, 14 acres and a full-time job cutting down multiflora rose: These are daunting shoes to fill. Al Reynolds' story (page 30) is certainly inspiring, but he's far from alone in his pursuit.

SKYE CAHOON

Mainspring Conservation Outreach

Associate

First things first: It's important not to get caught in an "all or nothing" mindset regarding conservation. Turning half of your front yard into a native plant meadow may seem insignificant, but it's everything to the creatures that call it home. Within the expanse of your yard, birds can raise their families, generations of butterflies can live and die, and salamanders can find safe spots to hunker down for the winter.

Native plants may be the stage on which this drama plays out, but plants

are not just a static backdrop. They are the foundation, feeding and sheltering the animals that live among them. Like the alchemists of old turning lead into gold, plants turn sunlight, water and oxygen into leaves, flowers, nuts, fruit and wood.

However, a vibrant landscape is more than a few native plants. How do you go from a packet of milkweed seeds to a living, adapting, thriving ecosystem? Below, we've listed a few helpful tips for growing a nature preserve on your property. Tackle these steps in order, pick an exciting one to start with, or try out just one or two — every little bit helps, but the level of involvement is up to you!

Invasive plants are not malicious, but they aggressively displace the remarkable creatures native to the Southern Appalachians. Since they evolved together, native plants and native animals are intimately intertwined. Like toddlers who turn down anything that's not breaded, fried and shaped like a dinosaur, some animals are incredibly picky. Pipevine swallowtail butterflies, for example, will only lay their eggs on the native Dutchman's Pipe vine. Chaga, a medicinal fungus, only grows on birch trees.

Invasive plants like knotweed, kudzu and Asian bamboo cannot feed or house these choosy critters, so their removal is imperative to welcoming native species back to your yard. After identifying and removing invasive plant species, it's important to replant the area with competitive native plants that will cover the bare ground quickly — and to stay diligent in removing new invasive sprouts.



Identify and remove invasive plants

Removal of species like kudzu is imperative to welcoming native species back to your yard.

"Stack, pack and layer" native plants

When planting native species, think vertically and horizontally: Encourage vines to climb upward, layer tall and short plants, and pack plants closely together to provide a diversity of resilient micro-habitats that will attract a wide variety of creatures. Consider also creating different habitats across your property — a meadow in the front yard, for example, and a woodland in the backyard.

Plant native trees

Native trees host more native insect species than any other plants. Oaks, in particular, are superstars, hosting almost 1,000 species of native caterpillars. Willows, birches and cherries are good choices, too.



Oaks can host almost 1,000 species of native caterpillar.

Reduce chemical use

Overuse of fertilizers can pollute our waterways, causing algae blooms and affecting aquatic wildlife. Instead of choosing exotic plants that require fertilizer and a green thumb, choose native plants that will thrive even with neglect. No matter what soil you have, there are native plants that want to grow in it — even in mountain clay!

When removing problematic wildlife from your property, choose humane traps or relocation over rat

bait or poison. Small mammals that ingest poison are often consumed by predators or scavengers like foxes and hawks, which then die from secondary poisoning.

In some situations, however, targeted herbicides are the best option for removing large quantities of invasive species. It may be best to reduce use of these chemicals in some cases, rather than stop altogether.

A few small changes to your maintenance regimen can have an enormous impact on the wildlife in your yard.

Leave the leaves (and sticks). Important insects live and overwinter in leaf litter, and sticks provide shelter for all sorts of wildlife. Allowing leaves and sticks to decompose on the ground allows nutrients to return to your soil, which, in turn, feeds your plants. For an attractive alternative to removal, arrange fallen sticks

thoughtfully into a natural fence or stick pile.

Postpone yard clean-up until midspring. Dead seed heads provide food for birds and small mammals, and dead, hollow plant stems provide overwintering and nesting habitat for pollinators and other insects.

Set your mower height no lower than 3 inches. Not only does this make for a healthier lawn that requires less watering, but it also protects turtles and toads from the blade.

Change your maintenance regimen



Allowing leaves and sticks to decompose on the ground allows nutrients to return to your soil.

Grass lawns do not support wildlife, and they require constant upkeep: fertilizers, water, herbicides and fossil fuels used in mowing. Grass has shallow roots that contribute to erosion, flooding and poor water quality.

Of course, this doesn't mean you have to rip out every blade of grass

in your yard. Simply consider where you actually use your lawn, and "rewild" the spots you don't use. Then, create mulch or grass paths between areas of use. For large lawn spaces, consider planting clover instead of grass. While still non-native, clover feeds pollinators and requires less mowing.

Shrink your lawn

No Land? No Problem!

Even if you don't own land, you can create habitat for native species in pots or window baskets. Here are 10 native plants that support pollinators, provide beautiful color and will thrive no matter where you plant them.

Full Sun:

- Lanceleaf Coreopsis (Coreopsis lanceolata)
- Autumnale Sneezeweed (Helenium autumnale)
- Wrinkle-Leaf Goldenrod (Solidago rugosa)
- Ashy Sunflower (Helianthus mollis)
- Black-Eyed Susan (Rudbeckia hirta)
- Old Field Goldenrod (Solidago nemoralis)

Partial Sun:

- Woodland Sunflower (Helianthus divaricatus)
- Cutleaf Coneflower (Rudbeckia laciniata)
- Blue Wood Aster (Symphyotrichum cordifolium)
- Calico Aster (Symphyotrichum lateriflorum)



For more information on appropriate native plants, visit newildflower.org/native-plant-handouts-gardening or homegrownnationalpark.org/native-plants-finder.

Target pollinators to support

Pick one or two native pollinators to learn about and nurture within your yard. Intentionally choose plants that support your chosen species across all seasons. Some plants flower in the spring, some bloom in the summer, and some provide an autumn food source.

Some pollinators need overwintering habitat like raspberries

or Joe Pye Weed, which have hollow stems that solitary bees nest in. Others, like monarch butterflies, have fussy babies that need a particular food source: Monarch caterpillars can only eat milkweed. Monarchs identify milkweed by sight — so to support these butterflies, you must plant your milkweed at the edges of your garden beds or in milkweed-only patches.



Pick one or two native pollinators to nurture within your yard.

THE LAND STEWARD

Many creatures, especially birds and amphibians, are attracted to the sound of running water. Provide a clean water source to elevate your DIY nature preserve from good to great.

Birds, fireflies, flying squirrels, bats, moths and other critters are disoriented by artificial nighttime light. Prevent light pollution by aiming outdoor lighting downwards and using motion sensors to limit use.

Provide nest boxes for birds, bats and bees, and clean them once a year.

If you have window wells, install covers to prevent salamanders, frogs, turtles and other small critters from becoming trapped.

Install wildlifefriendly features



Provide a clean water source to elevate your DIY nature preserve.

If Al Reynolds learned anything during his decades-long journey, it's that nature doesn't respect property lines. One native yard is a valuable habitat, but a native neighborhood is even better. Start a "Leave the Leaves" conversation with your neighbor, or throw a block party to show off the bees in your garden.

Collaborate and spread the word

This isn't a journey that happens overnight. It can take months, years or even decades to welcome nature back to the places where it has been removed. Set short-term, achievable goals — and don't forget to celebrate your progress. Not every plant you choose will thrive, but those that do will reward you more every year. Remember: You are making the world a brighter place, one seed at a time. 6



Be patient and hopeful

Relax. It can take time to welcome nature back to the places where it has been removed.

MAINSPRING 2023





HE SOUTHERN BLUE RIDGE HAS BEEN A HAVEN for outdoor enthusiasts for generations, and the COVID-19 pandemic in 2020 underscored the importance of access to nature and wild spaces like never before, heightening the need for more public lands and outdoor recreation opportunities in North Carolina. However, owning and maintaining publicly accessible lands is a time-consuming and expensive option for Mainspring. "While we are glad to own a few properties to maintain as public preserves, we don't have the staff capacity or resources to stay on top of all that's required for good stewardship," says Mainspring Executive Director Jordan Smith.



Recreation Collaboration

Enter our long-term partnership with the North Carolina Wildlife Resources Commission. The state agency works closely with Mainspring's land conservation staff to identify priority projects that can provide habitat protections while also offering the community an opportunity to improve their mental and physical well-being through public access.

Below are six collaborative projects between Mainspring and the WRC that will become part of public state lands this year.



Klatt Wetland

46.36 acres. Mainspring purchased the wetland using internal and private funds in fall 2021. WRC is purchasing the property using a grant provided by the U.S. Fish and Wildlife Service, as it will benefit several Threatened and Endangered species in the Little Tennessee River, as well as the wildlife habitat that the property provides to terrestrial and aquatic species. The property has been a long-term organizational priority for both the WRC and Mainspring for its conservation values, restoration potential and adjacency to other WRC Game Lands that the public currently cannot access except from the Little Tennessee River. Through this acquisition, the public will now have access to both tracts.

Lakey Creek Wetland

5.57 acres. Mainspring purchased

this tract with internal funds in 2011 and leased it to a vegetable farmer for several years. Mainspring and WRC completed stream restoration work together on the property in Lakey Creek in 2016. While the property is partially within the Appalachian Trail viewshed, the WRC is purchasing it to protect 300 feet of Little Tennessee River frontage and to construct a new, low-maintenance river access point for public use.

Kelly Cove

95.34 acres. Mainspring purchased this property in a bargain sale with private funds in fall 2021. Like the Klatt Wetland tract, Kelly Cove is next to existing managed Game Lands without public access. With this addition, the public can use Kelly Cove to recreate and access other state and adjacent U.S. Forest Service lands, as well as Burningtown Creek.

Public access on the Little Tennessee River is planned at the mouth of Lakey Creek.



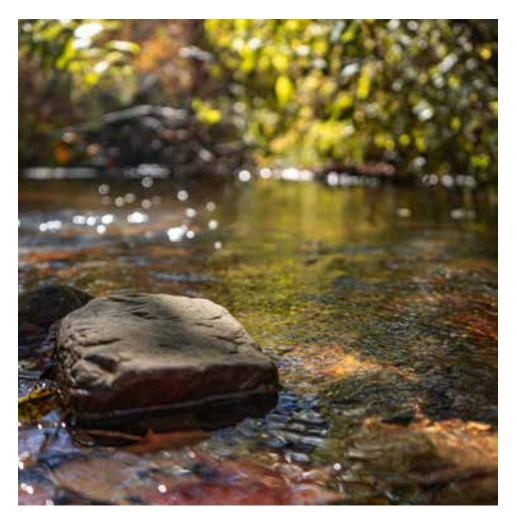
Horseshoe Bend

5.3 acres. This property is a prime example of why Mainspring's ability to purchase land quickly helps its partners, as the private seller initially approached the state when looking to sell in 2021. The WRC had previously identified the property as a priority acquisition, as it is

surrounded by the Needmore Game Lands and would increase land open to the public, but the Commission couldn't work with the landowner's timeline. Instead, Mainspring was able to step in, purchase the property in summer 2022, and hold it until the state could allocate funds to buy it in January 2023.



When the Wildlife Resources Commission can't work with a landowner's timeline, land trusts like Mainspring step in to purchase and hold these properties for future conservation.

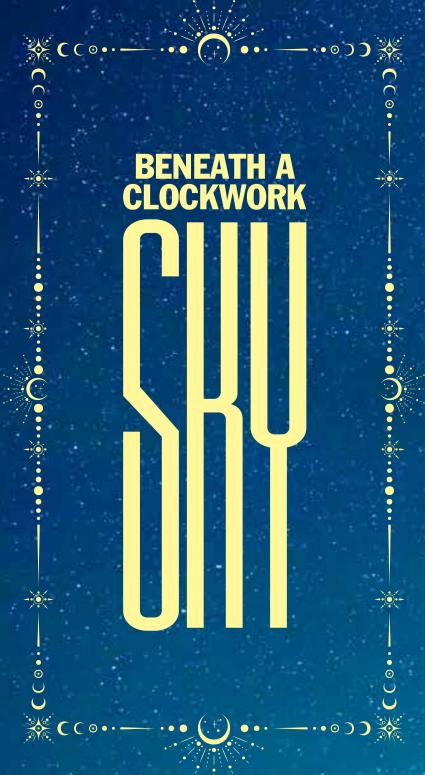


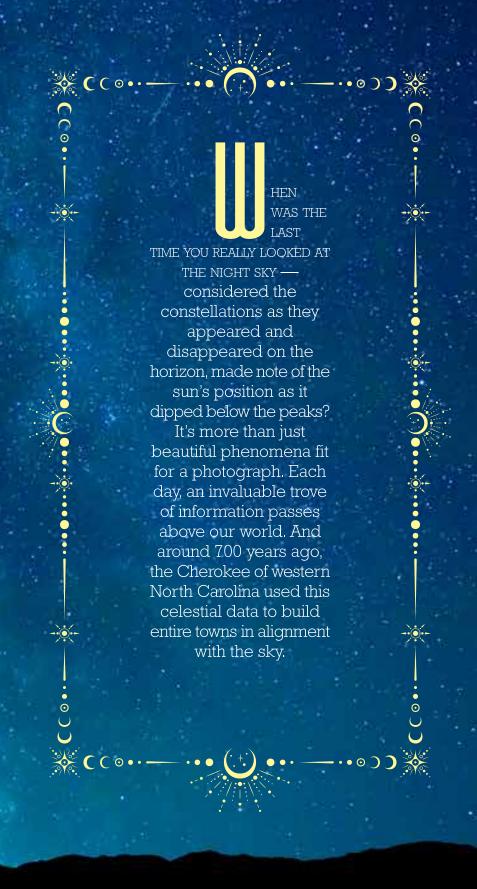
Simp Gap

505 acres. Mainspring purchased three contiguous tracts in this area in 2018 and 2019, utilizing private dollars and grants from the North Carolina Land and Water Fund. Almost entirely within the Appalachian Trail viewshed and surrounded on three sides by U.S. Forest Service lands, this property has significant conservation values, including more than three miles of

streams. An established trail takes hikers through the property along Rines Creek and up to the Appalachian Trail on National Forest lands. While the WRC will keep the path open for hikers to access the AT, they will also manage it for nongame wildlife habitat protection, as it's full of unique species like the rare Cheoah Bald Salamander and several other rare or threatened wildflowers, bats, birds and butterflies.









"If you asked someone today to go outside and tell you what day it was, they'd have no clue. They could not tell you without looking at their devices," says Dr. Brett Riggs, research archaeologist and professor of anthropology at Western Carolina University "Hundreds of years ago, though, all the Cherokee had to do was wait for the night sky. They could tell you what day it was, what time it was, and precisely where they were." If the stars are a compass, then their towns' structures were the needle, turning the sky into a GPS, calendar and clock all in one.

For the last three summers, Riggs, fellow professor Dr. Jane Eastman and their WCU students have conducted gradiometer surveys of the two mounds in the Cherokee town of Watauga, and through this noninvasive process, they were able to piece together a picture of the buried structures that exist at both sites.

"What we see at the northern mound is that one [corner] of the building points directly — and I mean inarguably — to the sunrise on the winter solstice," Riggs explains. And, following that axis to the building's opposite corner, "it points directly to the sunset on the summer solstice." At the southern mound, it's the exact reverse: one corner points to the sunrise on the summer solstice, and,

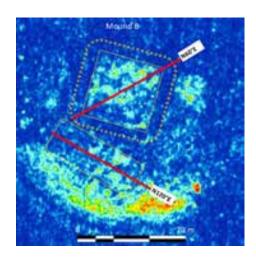
following a straight line, its opposite points to the sunset on the winter solstice.

Discoveries like this suggest that "these folks were engaging in what you would call horizonal astronomy," Riggs continues. "They're looking to see where things touch the horizon, either rising or setting, and then they're using that as a calendar, because certain events only happen at particular times of the year."

But the sun wasn't the only thing Cherokee astronomers were tracking with this calendar system at Watauga. The constellation Pleiades — a cluster of stars significant and beloved to the Cherokee people, who called them the Seven Boys — follows the exact same path as the summer solstice sun, rising at one end of the southern mound's axis and setting in line with the northern mound's complementary corner.

Of course, the constellation's position along this arc in the night sky heavily depends on the time of year, which added another reference point for the Cherokee to use. "The Seven Boys will inform you in all sorts of ways, like when it's time to plant your corn, for instance," Riggs explains. "People would gauge when their birthdays were by when and where they saw the Pleiades. They were watching this constantly and seeing the very real and direct relationship

LEFT: Gradiometry imaging of Watauga's southern mound shows a buried structure that aligns with the summer solstice sunrise and winter solstice sunset. RIGHT: WCU students view the summer solstice sunset at the northern mound, simulating how the sun's rays would have illuminated the structure's interior through a corner entryway.





between their lives and the whole cosmic realm"— and the structures they built at Watauga were designed to help monitor and track these astronomical events.

From 2020 to 2023, Mainspring conserved three parcels (60 acres) at the site of historic Watauga Town, part of the ancient Cherokee Middle Towns that include Cowee to the north and Nikwasi to the south. Likely built between the late 13th and early 14th centuries — and occupied until the Rutherford expedition of 1776 — Watauga wasn't alone in its celestial alignment. Evidence at Cowee and Nikwasi shows that these towns were similarly positioned to track the stars.

"There's this mountain on the horizon that can be seen from all three sites. It's the most prominent feature on the southeastern horizon from each of them, and they [likely] used that as their orientation point. All of these stellar phenomena occur over that mountain," Riggs says. "And at Watauga, you have a 360-degree view, which in this part of the mountains is not very common. The horizon has all these peaks and gaps and notches all the way around, so it's indexed much like a clock. Certain things happen on the horizon in certain places, and you know what time it is"

Because each site is set up in the same relative position, pointing at the same reference point in the distance, Riggs, Eastman and other researchers believe that these towns were planned around the landscape with calculated precision. Though each town was independent from its neighbor, they were all built in reference to the same celestial phenomena, using the same notches on the horizon — and the same invaluable information passed down from generation to generation.

"It's funny how, today, we are so dependent on our devices," Riggs says. "We've stopped paying attention The Cherokee story of the Pleiades revolves around seven boys who, after being scolded by their mothers, angrily ran outside and began to dance. When they didn't return home, their mothers searched the town and found the boys floating up into the sky. Though one was pulled back to earth, the other six rose higher and higher, eventually shining like stars in the sky.

The Seven Boys

to all the information that already exists around us, but what we see happening on the Earth and in the sky are all related. Hundreds and even thousands of years ago, the Cherokee were doing some pretty sophisticated things, all because they were paying close attention to what was going on in the sky."



A tunnel-like entryway at the northern mound reveals the final rays of the summer solstice sun as it dips into a notch in the mountain landscape.

MAINSPRING 2023

t's hard to put into words how I felt the first time I visited the mounds at Watauga. Sinking to my knees, placing my palms flat on the rough texture of the earth, my throat felt tight as I imagined what would have been a village plaza 250 years ago. In that moment, I felt beyond lucky to be present in such a special place — and to have the privilege of helping uncover pieces of its past.

My Thousand-Year Summer



AUTUMN HALL

Autumn is a senior student at Western Carolina University double majoring in anthropology and history. This summer, she worked with WCU professors Dr. Jane Eastman and Dr. Brett Riggs on a field study and excavation of Watauga Mound.

As a student intern working at the Cherokee town site — which, now conserved by Mainspring, was most recently inhabited in the Revolutionary War era — every moment spent caked in red clay, dripping in sweat, and feeling as if my knees would explode confirmed my love for archaeological fieldwork: If digging holes all day in the blistering sun until your hands bleed makes you smile wider than you ever have, you know you are in the correct field. It showed me that archaeology cannot only occur in closed-off, stuffy laboratories and libraries — it must also involve the community connected to the site.

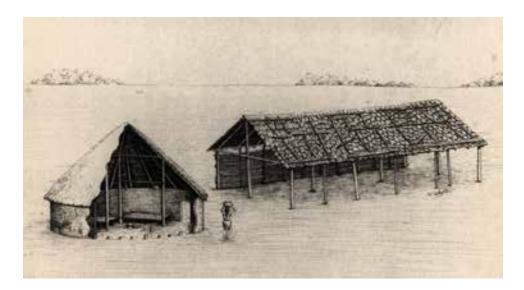
After the town of Watauga was burned by the Rutherford Expedition in 1776, the Cherokee people returned to clean up the damage, sweeping the remains of burned homes into refuse pits. One pit feature I helped excavate this summer supported this idea by containing large quantities of daub, or fired clay, and a six-inch section of burned roof timber. Although white hands took

the land, Cherokee people today are coming back and working closely with WCU professors to learn more about how their ancestors lived, and to help those in the field understand what they are seeing. Watauga is not a place of the past. It remains a culturally significant place that speaks to the resilience of the Cherokee people.

I spent June on-site. Then, in July and August, I was busy water screening excavated soil from Watauga's pit features — sifting through and collecting tiny objects like glass beads, pieces of animal bone and pottery, each small enough to be lost through the larger screens used for topsoil.

One sunny July afternoon, while water screening samples outside on WCU's campus, a man stopped to ask if I had found anything interesting. His name was Leon Sampson, and he explained that I was working with the material culture of his ancestors. After that, Leon began stopping by almost every afternoon. I would show him the items I had sorted out from the dirt, while he taught me about Cherokee culture and his family's history. I looked forward to our conversations, and whenever I uncovered pottery sherds with a stamp pattern I didn't recognize or a flake of Knox Chert, all I could think was: "I can't wait to show Leon!"

These interactions reaffirmed that archaeology work holds far less



TOP: An illustration shows winter (left) and summer (right) dwellings as they likely looked at Watauga. BELOW: Autumn and other students excavate postholes at Watauga, conduct water screenings of soil collected at the site, and conduct gradiometry surveys of the town's buried infrastructure.

meaning without community involvement. While it is incredible to uncover pottery made over two centuries ago, it holds an entirely different weight resting in Leon's palm, whose family lived in this area when it these objects were in use. Seeing the relationships between my professors and the people connected to Watauga, along with my

own personal experience, has changed my career outlook and molded me into the archaeologist I wish to be. It is my hope that this "Watauga Model" will continue to foster a new generation of archaeologists, who will work in conjunction with the descendant community that created and lived on each excavated site.

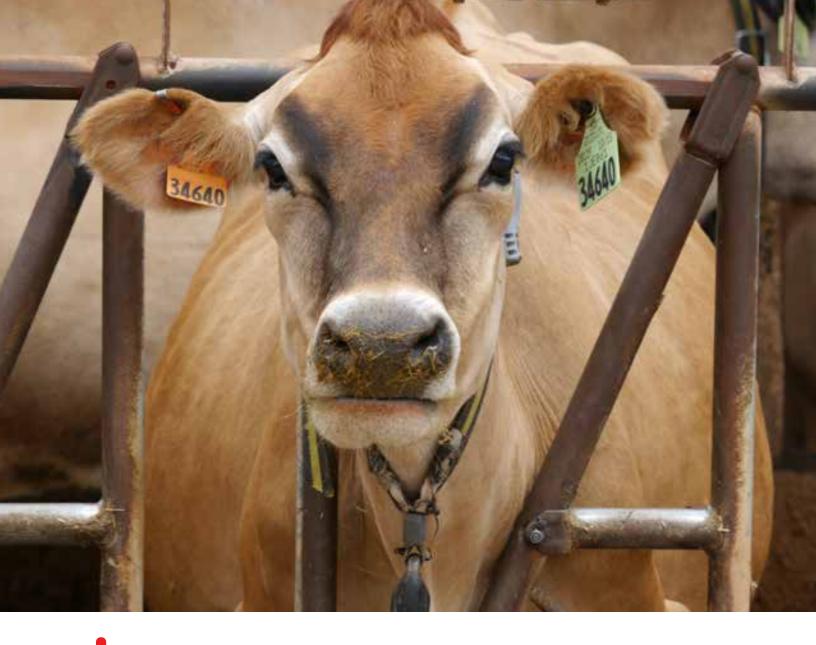












N EARLY OCTOBER 2023, the only sound from Providence Farmstead was the bang and buzz of construction. But, soon, the new dairy here will be home to the state's most comfortable Jersey herd.

OREAM CREAMERY



Providence Farmstead sits on the former Spring Ridge Dairy property in southern Macon County. In 2004, Mainspring partnered with long-time owner James (Jim) Moore to conserve the working farmland, protecting a mile of Little Tennessee bottomland and ensuring the land will always be used for agriculture.

In addition to the dairy, Moore owned and operated the popular Spring Ridge Creamery near the North Carolina-Georgia state line, where he sold milk, cheese, butter, eggnog and ice cream until a cancer diagnosis affected his ability to work.

In the meantime, across the country in California, C.A. and Kirsten Russell were considering a life-

changing shift — moving away from Kirsten's family dairy operation, with its 2,000-cow herd, to become business partners with their three adult children: Colin, Lars and McCalister. Growing up, C.A. frequently visited his family's cabin on Lake Rabun, and he knew the Southern Appalachians' air quality, scenery, weather and lifestyle would be a good fit for their dream farm. Having known Moore and his operation for years, C.A. and Kirsten jumped at the opportunity to purchase Spring Ridge Dairy's land.

The move prompted the family to develop three separate businesses in the Southern Blue Ridge: a herd of (continued on next page)



MAINSPRING 2023



Providence Farmstead is a true family partnership. Left to right: McCalister developed the Providence Farmstead brand and sells Wagyu beef to the community. Lars has restored the farm, cares for the beef herd and will process the milk into delicious dairy products. Kirsten handles the bookkeeping, while C.A. manages the new dairy operation. Colin manages the farming, equipment and beef operations, and his wife. Erica. manages communication efforts.

(continued from previous page) American Waqyu beef cattle (a cross between full-blood Waqyu and Jersey cows) and a small herd of full-blood Waqyu; the Blalock Meat Processing Plant in Rabun Gap, Georgia, where they process and sell their beef; and, once their Jersey herd arrives, the Otto, North Carolina, dairy — since renamed Providence Farmstead where they're building one of the most state-of-the-art dairy facilities in the region. In 2024, the family plans to open a new creamery, where they will continue Moore's tradition of selling milk, cheese, butter and ice cream.

Walking around the almostcompleted buildings with C.A. and Kirsten, it's obvious the cows on Providence Farmstead will live well: What the Russells have built is not the rural dairy farm of previous generations.

"We are all about cow comfort," says C.A., pointing out the foot baths and automated cow brushes, which, looking much like a car wash, allow the cows to enjoy a massage at their leisure. Cow comfort is a research-based philosophy indicating that the way a cow is housed and managed significantly affects milk production and quality, reproductive efficiency and overall health. "Plus, it's just the right way to treat a dairy cow," he adds.

Lactating cows will choose their stall in the shaded barn, resting on soft, comfortable sand that doesn't



harbor bacteria. The stall is designed to keep manure off the sand, falling instead into an alley, where it's flushed into a reception pit. The barn is engineered and positioned for optimal wind flow and sunlight, with fans located throughout that allow air flow to keep the barn's temperature as comfortable as possible during hot times of the year. When the cow is ready for a meal, she heads for the feeding area, where she stands comfortably on rubber mats. On hot days, she will enjoy a light, cooling mist of water while she dines.

Radiofrequency ID ear tags are a key part of the management program at Providence Farmstead, allowing the Russells to track all events in the

cows' lifespans, like breeding, calving, milk production and other health incidents. The dairy cows also wear activity collars around their necks, which track how much they're walking, their rumination (the process where animals rechew cud to break down plant matter and stimulate digestion), and respiratory rate, which can vary based on the ambient temperature and stress of the cow.

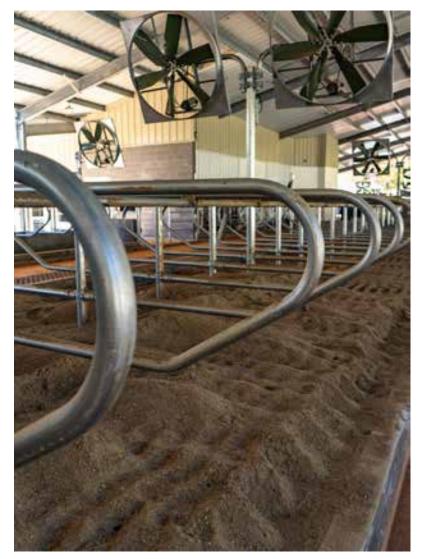
The high-tech equipment also extends into milk production. Cows are milked by two DeLaval robots up to four times a day based on their current milk flow. Each cow enters through an automatic gate, where the computer reads her tag and verifies

(continued on next page)

The original barn on the property will house Providence Farmstead's new cheesemaking operations.

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LEFT: Sand is widely regarded as the best bedding for dairy cows, providing a comfortable place to lie down, traction for the cow to stand and reducing the potential for joint injuries. TOP, RIGHT: The DeLaval robotic milking system saves on labor, which means more time for farmers to work on activities like improving animal health. BOTTOM, RIGHT: The

Jerseys can receive back

scratches with a swinging

cow brush while drinking

fresh water.

(continued from previous page) whether she can be milked. Robotic arms clean and dry her teats and attach the milking unit, and during the five to seven minutes it takes to complete the milking process, she enjoys a special grain. As the milk runs through the pipes, a computer reads the somatic cell count to test the quality of the milk. If it's not up to standards, the milk is separated and saved for calves to drink. Finally, as the cow leaves the robot milker, a camera records her body condition, and, if all is well, she is led via automatic gate back to her stall. If the camera detects the slightest abnormality, she is led to an area to be examined.

In addition to treating the cows well, the family is committed to reducing waste and reusing resources on the farm. Manure and spilled sand collected from the stall alleyway flow into a sand-manure separation unit, which removes 98 percent of the sand to be reused as bedding. The remaining runoff is then pumped over a screen separator, removing much of the fibrous material to be used as a soil amendment. The remaining effluent water will be recycled to clean the free stall barn or for later application on the farm fields.

The machinery and technology may seem almost futuristic to some, but that's precisely why the Russells







are committed to opening the operation to the public. Outfitted with viewing stations and a space for tour buses to park, Providence Farmstead is set up to welcome visitors who wish to learn about 21st century farming — and they plan to market the dairy as an agritourism destination. "This is not your grandfather's operation," Kirsten says. "We want to show students that careers are available in farming that require STEM education. We need engineers, computer programmers and data analysts to work with us to improve our efficiency and bottom line." As a fifthgeneration farmer, Kirsten has seen firsthand how much the business has grown and evolved. "Everything is

much more specialized than it was 50 years ago," she explains. "In order to continue dairy farming, we have learned to pivot in many ways. And we are excited to share a modern dairy experience with our visitors."

But even the most cutting-edge technology can't outshine the experience of working together as a family. "It's a joy to have all of our children as active partners with us," Kirsten says. "At the end of the day, we know we've all worked hard to develop a happy place for our cows to live, providing high-quality, nutritious products, and we're doing something that no dairy farm in this region is doing."

LEFT: Large tanks store clean water for the dairy. TOP, RIGHT: These pastures will soon be home to the state's most comfortable Jersey herd. BOTTOM, RIGHT: Nursery stalls at Providence Farmstead will house calves until they're large enough to join the herd.



Al Reynolds'
26-year struggle
to restore his
property and
preserve its
native life.





Y RETIREMENT AGE, MANY PEOPLE consider downsizing — their homes, their possessions, their yard work. Al Reynolds is not "many people." When the Lakeland, Florida, native and his wife, Connie, looked at land in western North Carolina, Al knew he wanted an outside project that would keep him busier than what was required from the half-acre lot he owned in Florida. Now, 26 years later, his journey of land restoration and preservation is evident across the 14 acres of land that Al nurtured into his own nature preserve.

Back in 1997, when Al and Connie first acquired the northern Macon County property, which contains 850 feet of Little Tennessee River frontage, the land resembled a barren canvas. The cattle grazing in the fields were devouring everything in their paths, including the fragile small trees along the riverbank. Erosion ran rampant, and invasive species had taken hold, choking out native flora.

After removing the cattle, Al's initial challenge was ridding the land of the invasive species that had entrenched themselves over the years. He used a chainsaw to tackle the multiflora rose — "I looked like I had been in a catfight after that," he says, chuckling — and spent hours culling privet and honeysuckle. Then, it was time for nature to heal itself.

In his pursuit to create a biodiverse sanctuary, Al watched as native species returned and attracted various birds and pollinators. "At least 24 tree species were present at last count, and about 90% of those reestablished in the last 11 years," he says, proudly showing off the yellow blooms of the spicebush and the red fall berries that feed migratory birds flying south for winter.

His journey, however, has not been without its share of unforeseen challenges. The neighboring properties on either side of the Reynolds' land have been stripped of many trees along the riverbanks, leaving his portion vulnerable to beaver activity. His conservation efforts were attracting beavers to his land as they looked for food and wood to build shelter.

"Being sandwiched between two properties that have removed so much of their habitat, I became a victim of unintended consequences," Al remarks, noting that this has been one of his biggest challenges to the trees reaching maturity. "Protecting the trees with three-foot metal cages and staking has been essential. But I understand the beavers' disadvantage. They are just trying to find places they can live that have a food supply."

For Al, it's been a learning experience that underscores the intricate web of ecological relationships that exist within nature — and, despite the challenges, the transformation of these 14 acres into a thriving ecological buffer is also helping the Little Tennessee. Smallmouth bass are now seen around his shaded waters, while the vibrant colors of wildflowers attract insects that feed the fish.

"The land by the river is fertile enough soil that you don't have to do much for them to grow," he says. "It's more of a 'restore-and-protect' mantra—that and a lot of trial and error."

Al's decades-long journey is an inspiration for personal land conservation and restoration. It's proof that anyone with patience, determination, and a curiosity to learn can nurture and protect the natural world placed in their care.

If you'd like advice on creating a preserve on your property, Al has kindly offered to share what he knows. You may also visit shadeyourstream.org to learn more about native plants.

Output

Description:





TOP: Al layered his plantings, using shorter shrubs near the walking trail and taller plants and trees closer to the river. MIDDLE: Al protects the trees from animals, especially beavers, by wrapping the lower level of the trunk with wire. **BOTTOM:** The Catalpa tree often grows over water and is pollinated by bees during the day and by moths at night. It hosts a favorite food for fish, the Catalpa worm; the worm makes fabulous bait.



MAINSPRING 2023

History in a Basket

Nineteen years ago, Mainspring and the Eastern Band of Cherokee Indians sowed a modest initiative that has since blossomed into a thriving partnership — and it all began with the age-old tradition of basket weaving.

HE CHEROKEE PRESERVATION
FOUNDATION played a pivotal role in nurturing this alliance, generously awarding Mainspring 18 different grants from the Revitalization of Traditional Cherokee Artisan Resources program throughout the years. These grants focused on three critical resources: rivercane, butternut trees and white oak. However, the seemingly straightforward project has, over time, yielded a few surprising results, with lessons to still be learned along the way.

Since the partnership began, Cherokee artisans have harvested healthy stands of rivercane from Mainspring properties. Cane is a strong, flexible material well-suited for basketry. Butternut is a dye plant used to impart a rich brown color; many parts of the butternut tree can be used. Like rivercane, white oak splints are popular for Cherokee baskets due to the strength, durability and natural beauty of the wood. Historically abundant, white oaks have become increasingly unavailable due to over-harvesting, habitat conversion and loss of Cherokee artisan access to land — and thus have been a large focus of this collaboration.

In 2006, Mainspring embarked on an ambitious journey to replenish



white oak resources, and, to date, land trust volunteers have planted 1,500 white oak seedlings on several properties. The largest and oldest of these tree plantations is at Tessentee Bottomland Preserve, where trees stand in rows similar to seeds planted in a vegetable garden.

The first harvest began in 2017, 11 years after the initial plantings. Experienced artisans selected and cut trees, but soon discovered that the plantation-grown white oak, while plentiful, lacked the density and robustness of their wild counterparts, making them less ideal for intricate basket-weaving. The wild trees often feature unique grains, colors and textures that add depth and character to the baskets. Subsequent harvests confirmed it: The plantation-grown wood was rigid and coarse.

For Louise Goings, a Cherokee

artisan with a family tradition of basket making that spans four generations, the challenge lies in the fine details. After identifying a potential oak tree, she carefully scrutinizes it with a magnifying glass, counting the growth rings and examining how thick and close together they are. While each artisan has different preferences on the number and width of rings to create the type of splints he/she prefers, Louise says the plantationgrown oaks at Tessentee only generated half the desired count of splints she needed to make a regular-sized basket. "I could salvage enough to make a few small baskets," she explains. "But it takes a lot more time and energy, and I end up with less usable material."

Adam Griffith, the director of RTCAR, noted that though white oak trees can grow in various conditions,



History in a Basket



"scientists are still uncertain of what exactly makes the best trees for basketry and other traditional works." Although he wasn't director of RTCAR at the time of the planting, Griffith thought the spot at Tessentee would be a perfect location. "The floodplain soils where the trees have been planted previously tend to be nutrient-rich," he explains. "Maybe they grew too fast in that environment."

But Kelder Monar, Mainspring stewardship manager, is still optimistic. "Not all the trees at Tessentee are a harvestable size yet," he says. "The slower-growing trees — the shade-limited 'runts of the litter,' so to speak — may have more natural characteristics when cut."

Experiments are ongoing, thanks to the accessibility that conserved lands provide. If tree farming does not yield the desired white oak, Mainspring is ready to explore other avenues.

Griffith acknowledges the critical role played by nonprofit partners like Mainspring in these trial-and-error

endeavors. "We do not have the staff or land to carry out such plantings," he says. "We absolutely needed to plant the white oak trees at Tessentee to learn the lesson that we did." Griffith envisions testing a theory where white oaks might thrive in harsher mountain slopes with poorer soils, producing more pliable splints for basket weaving.

Despite the challenges, the partnership between Mainspring and the Cherokee artisans continues to evolve, a testament to the enduring resilience of cultural traditions and the shared commitment to preserve them. In the intricate dance between conservation, cultivation and craftsmanship, the journey is as important as the destination.

The ongoing quest for sustainable resources is a worthy endeavor, Monar says. With a few innovative solutions, "we hope to continue literally 'planting the seeds' for the talented people who keep this tradition, passed down over thousands of years, alive."







The Last Word

MOLLY PHILLIPS

Communications Director

NE OF THE BIGGEST PERKS OF working at Mainspring is meeting smart, interesting people who are life-long learners. Such was the case this summer when I had the opportunity to spend time with a renowned landscape architect who shares my love of cultural history, particularly in western North Carolina.

We were examining an old house in the region, one built in the 1800s and subsequently added onto many times since then. Each addition told a fascinating story of that era, and I asked my now-friend: How do you choose what is worth saving versus what is worth letting go to modernize?

His response stuck with me. "When I see something really unique and special, I arrange my lifestyle to keep what is rare and extraordinary intact. If it's something I can see regularly or is pretty common, I'll renovate it to fit my modern needs."

Those words resonate when I consider land conservation in the Southern Blue Ridge. Since I moved here 17 years ago, I've learned how and why this region is so extraordinary. The qualities that make

this place exceptional are worth arranging our lifestyles around so they can remain intact. Otherwise, our children and grandchildren will only see how we "renovated" this landscape to fit our current needs. I would much rather be occasionally inconvenienced by a dropped cell call, or drive a little further to shop, than forever ruin all that makes this place so special.

This is not an argument against economic development. We all need an income and a place to live safely. But I believe that this place is incomparable to any other place in the world. We can — and must think outside the box and collaborate for long-term solutions that protect what is vital in this remarkable landscape — and, at the same time, determine what spaces could best be adapted to accommodate our modern needs. This "smart growth" approach can help our communities flourish while still saving the best of the rest in the Southern Blue Ridge. I believe we owe it to future generations, who deserve to see what we see every day: breathtaking Blue Ridge beauty that is rare and intact. 6

To learn more about Smart Growth, visit epa.gov/smartgrowth.



The qualities that make this place exceptional are worth arranging our lifestyles around so they can remain intact.







Stewards of the Southern Blue Ridge

P. O. Box 1148, Franklin, NC 28744

Conserving the waters, forests, farms and heritage of the Upper Little Tennessee and Hiwassee river valleys in western North Carolina and northern Georgia.

