

MAY 2021

# REFLECTION RIDING

## A FRAMEWORK FOR THE FUTURE



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*"Reflection Riding is a scenic, historic, botanic drive-thru. A non-profit General Welfare Corporation for the operation of a modified arboretum, demonstrating the need for conserving animal life, forests, water, soil, a love of nature and its beauty, and acquainting the public with the history of the area in which Reflection Riding is located."*

**John Chambliss  
Reflection Riding Founder**



# A FORWARD-LOOKING VISION FOR REFLECTION RIDING

This Framework for the Future creates an inclusive and equitable vision for Reflection Riding that will: impress a sense of awe for the natural and cultural heritage of the 300-acre campus; catalyze active restoration and conservation of regional ecological communities; and educate generations of future ecological stewards.

The plan carefully considers the relationship between the campus and Lookout Creek, the National Park Service and Reflection Riding's larger social context. For more than 65 years, the people who love this land have been hard at work restoring the vital connection between people and nature. This Plan develops a path for the organization to anticipate future growth while becoming a hub for environmental learning, community outreach and stewardship for the greater Chattanooga region. The Framework was developed through a seven-month long planning process from the fall of 2020 to the spring of 2021, and includes input from Reflection Riding staff, board members, volunteers, partners, and community members.

The team took great care to consider not only existing stakeholders, but also a broader group of people who live and work close by, but have not yet had the opportunity to engage with the organization. We believe that everyone should have the opportunity to experience nature, regardless of where they live or their economic status. We believe that when the benefits of the outdoors are accessible to everyone, Chattanooga becomes stronger and more connected. We believe that young people deserve opportunities to learn in and appreciate the outdoors, so they become lifelong champions for the natural world.



# COMMUNITY ENGAGEMENT PROCESS

Reflection Riding partnered with SCAPE Landscape Architecture to oversee the planning and engagement process. A steering committee composed of representatives from Reflection Riding staff, trustees and partners guided the effort and coordinated stakeholder engagement. The entire planning process took place during the 2020-2021 global COVID-19 pandemic. All outreach and engagement took place in a socially-distant and largely virtual context. In order to support this effort, the SCAPE team used various digital tools including webinars, virtual meeting rooms, digital sketch tables, and an online platform to share progress updates and conduct surveys. While the pandemic could have been a limiting factor for the development of the plan, SCAPE and the steering committee successfully created a strong stakeholder-informed design process, engaging more than 800 individuals.

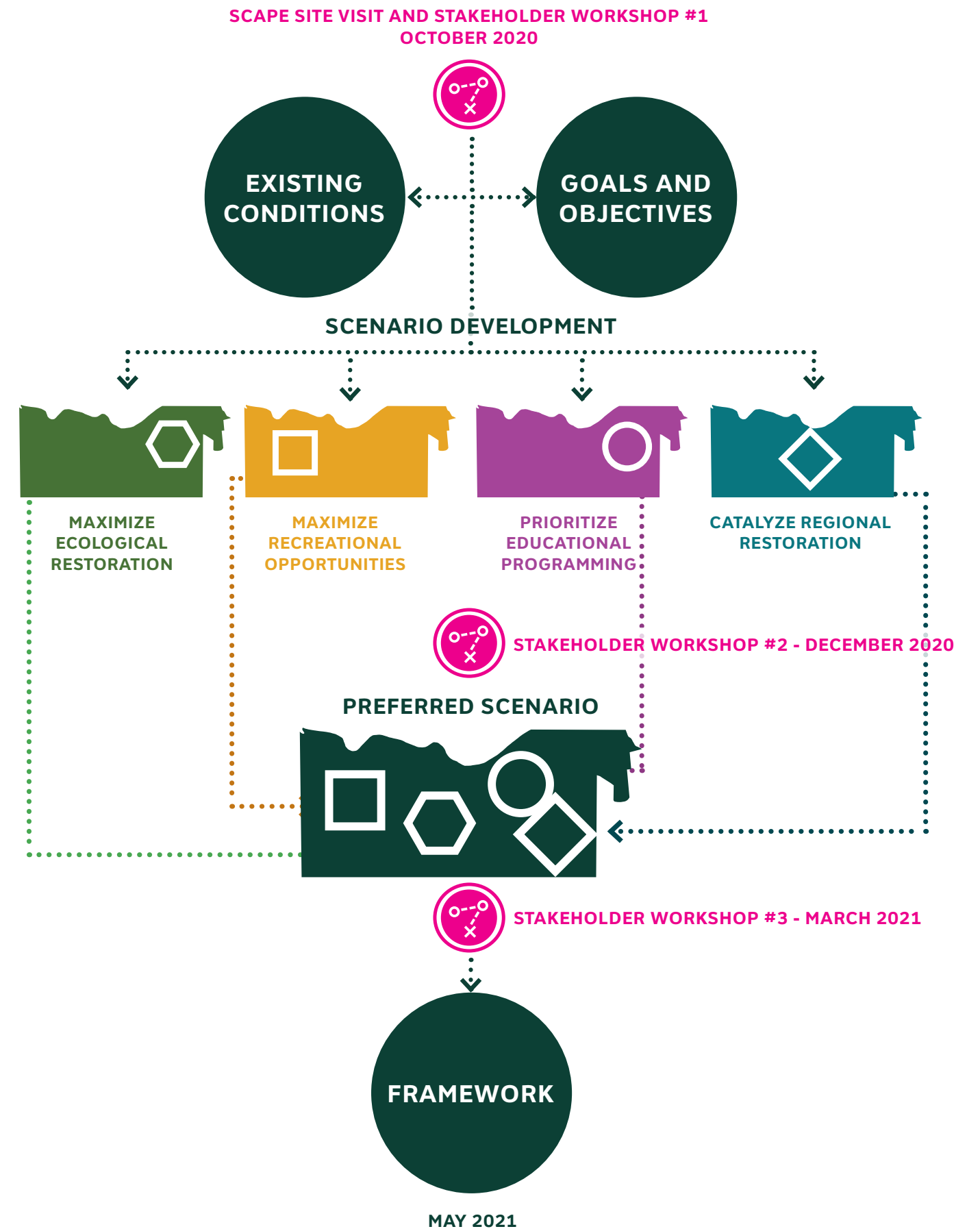
## Existing Conditions Analysis

SCAPE began with an in-depth existing conditions analysis studying the site's landscape, facilities, use, and operations today. The design team also studied Reflection Riding's rich history, past plans, and studies. It carefully researched the site's relationships with Lookout Creek, the National Park and the larger ecological and cultural region. The team documented existing site challenges such as: disconnected and confusing program elements; frequent flood damage caused by increased intensity and duration of storms; crowded parking lots; narrow drives; cramped offices; insufficient septic systems; aging infrastructure; conflicting land uses; various biological invasions; and residential-grade buildings attempting to serve commercial purposes.

## Scenario Development & Feedback

Building on this work, SCAPE, the steering committee and additional Reflection Riding staff developed goals and objectives for the plan. The design team developed four distinct planning scenarios emphasizing a specific theme or site program—ecological restoration, recreation, education, and regional restoration—in order to explore the implications of different programmatic priorities on the future of the site. Stakeholders provided feedback on the scenarios in online workshops in December 2020. Supporters and members added feedback via an online engagement platform. This early scenario development explored the planning and design implications of different program priorities and engaged stakeholders in the process of reflecting on and evaluating the inevitable tradeoffs involved with any improvements.

Feedback came from more than 40 workshop participants, 118 online survey responses, and dozens of additional interviews and focus group workshops with Reflection Riding staff and the steering committee. SCAPE's design team then developed the preferred scenario: a bold vision for the future respecting the site's rich cultural and ecological history. A draft vision was shared with stakeholders in a workshop in March of 2021. Feedback from this event informed the final Reflection Riding Comprehensive Plan, released in May 2021.



# GOALS & OBJECTIVES

This Framework for the Future aligns with the following goals and their supporting objectives. These guidelines arose from the community engagement process and will continue to serve as critical criteria guiding future decision making at Reflection Riding.

## Restore and steward the ecological integrity of the region's native habitats

- Respectfully reveal the ecology and rich history of the campus
- Increase Reflection Riding's capacity to implement conservation and restoration initiatives
- Initiate and promote restoration to propagate knowledge about native habitats
- Engage and empower volunteers to advance restoration and conservation efforts

## Promote ecological literacy within Chattanooga's diverse communities through hands-on experiences

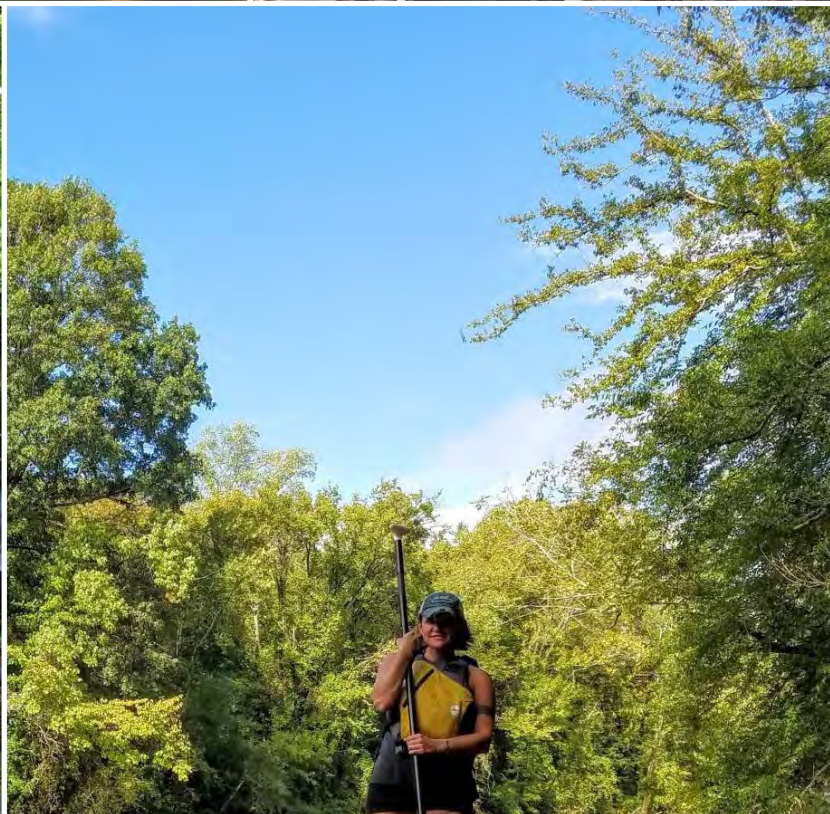
- Engage and empower regional educators to provide a model for engaging youth with science
- Create and plan facilities that enhance immersive programming opportunities
- Support the development of coordinated curricula with a network of educational partners
- Create interactive and interpretive resources for self-guided learning

## Cultivate an inclusive environment that promotes physical and mental wellbeing for all

- Offer a wide range of recreational activities accessible to users of all ages, backgrounds and abilities
- Promote an environment that is safe, welcoming, and inclusive to all
- Provide for intuitive circulation and way-finding to ensure safe, universal, and multi-modal access
- Balance increased visitation with ecological protection



## Plan for sustainable growth and anticipate change through adaptive management

- Create a robust identity that remains resilient to change
- Build organizational capacity to adapt to environmental, financial, and social change
- Reduce risk to facilities, infrastructure, and programs from flooding and climate change
- Leverage Reflection Riding's identity to foster philanthropic funding for the near and long term

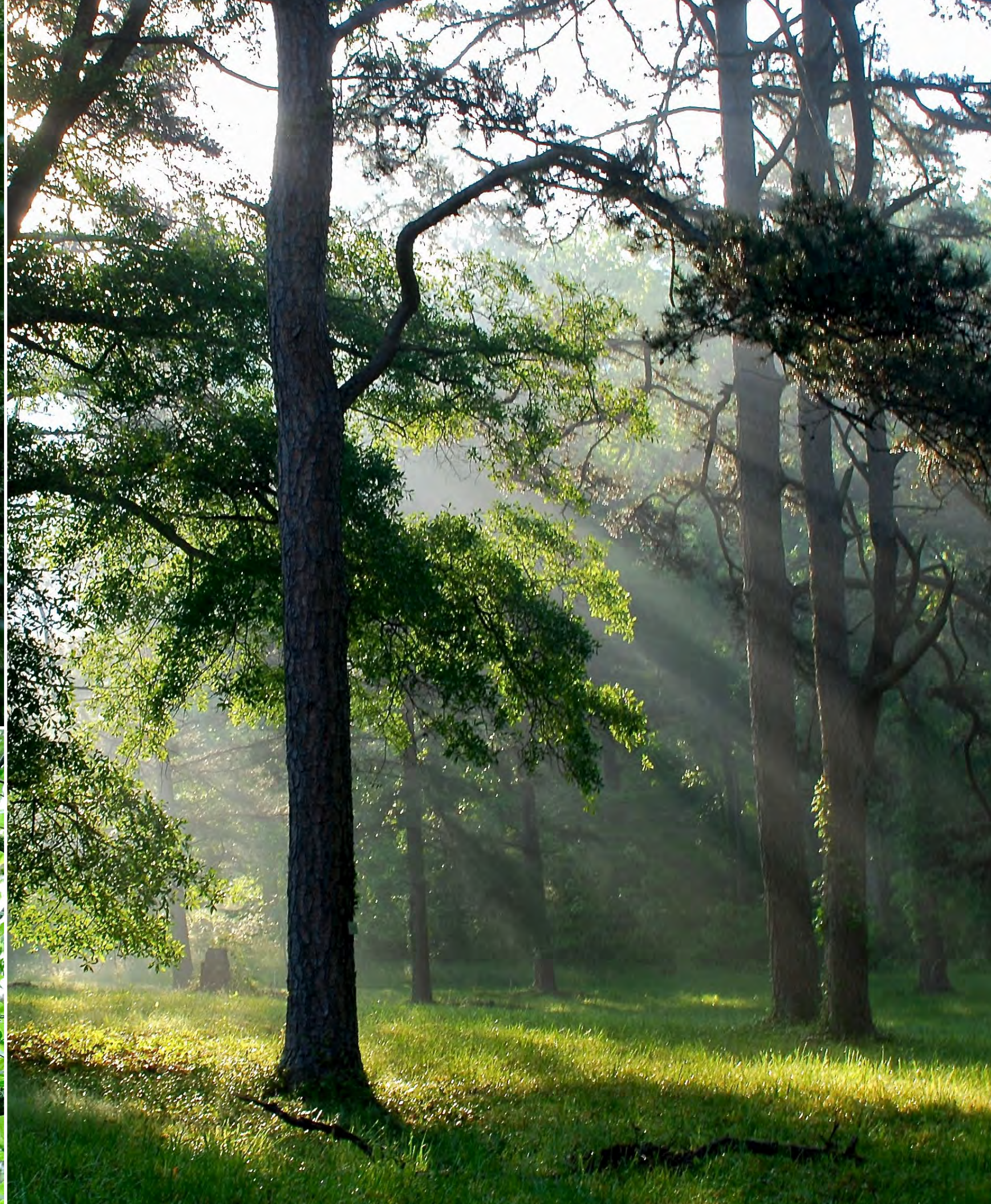
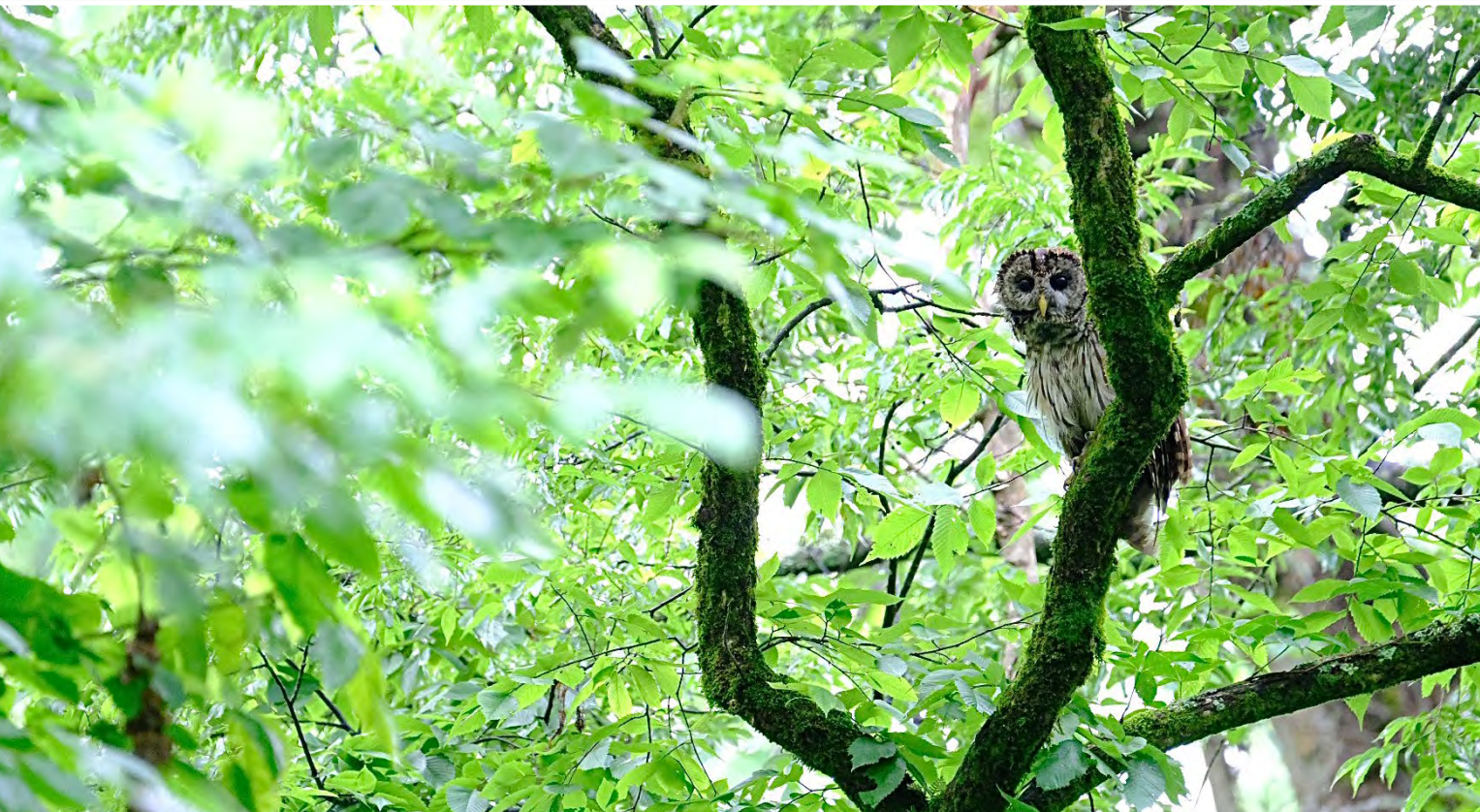




NO BUS,  
TRUCK OR  
CYCLES.

ENJOY THE THREE  
MILE DRIVE IN THIS  
LANDSCAPE PARK,  
PAY THE TOLL OF  
ONE DOLLAR   
AS YOU LEAVE.   
PREPARED FOR  
REFLECTION RIDING, INC.

# REFLECTION RIDING YESTERDAY AND TODAY







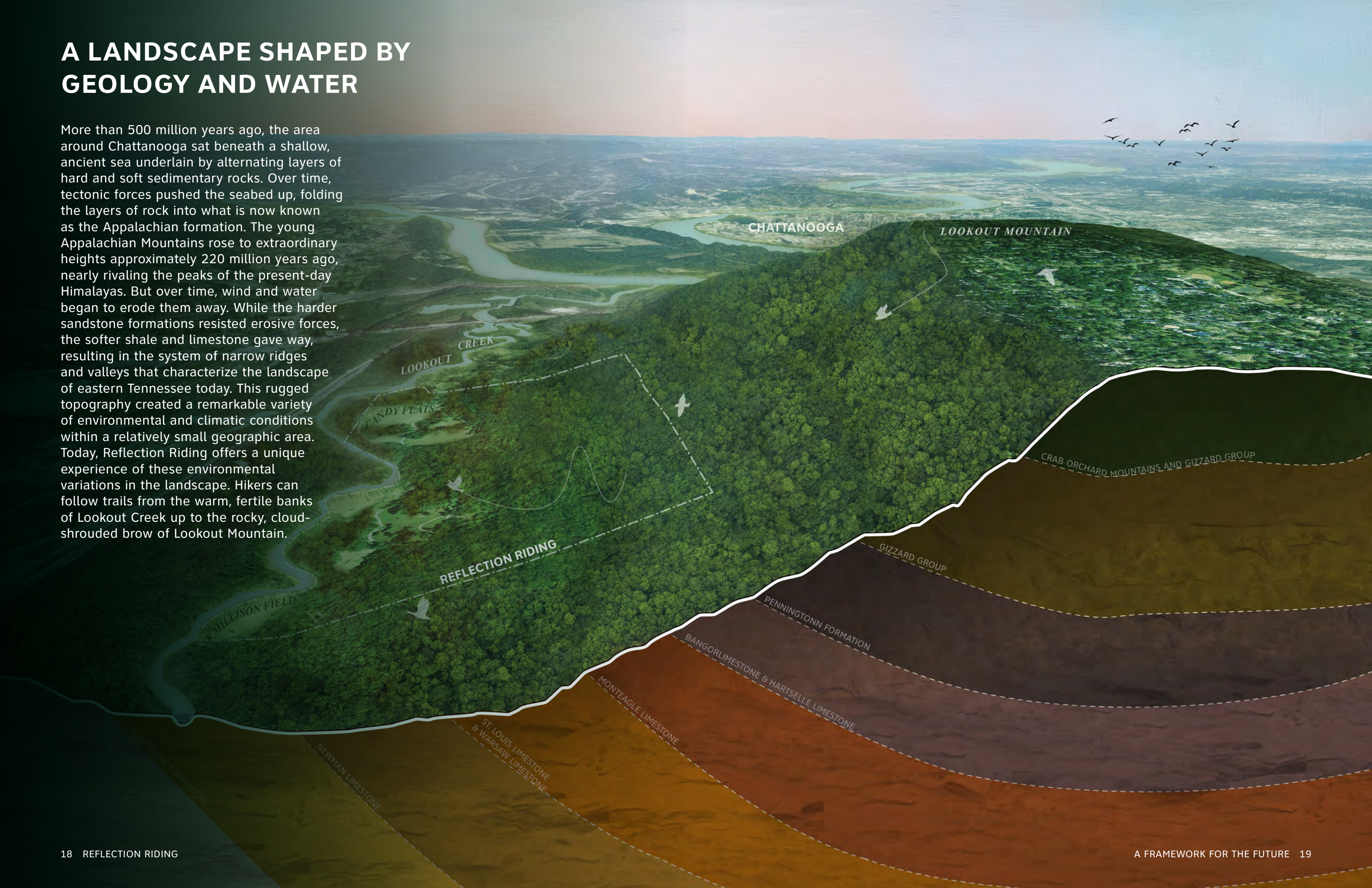
1979



2019

# A LANDSCAPE SHAPED BY GEOLOGY AND WATER

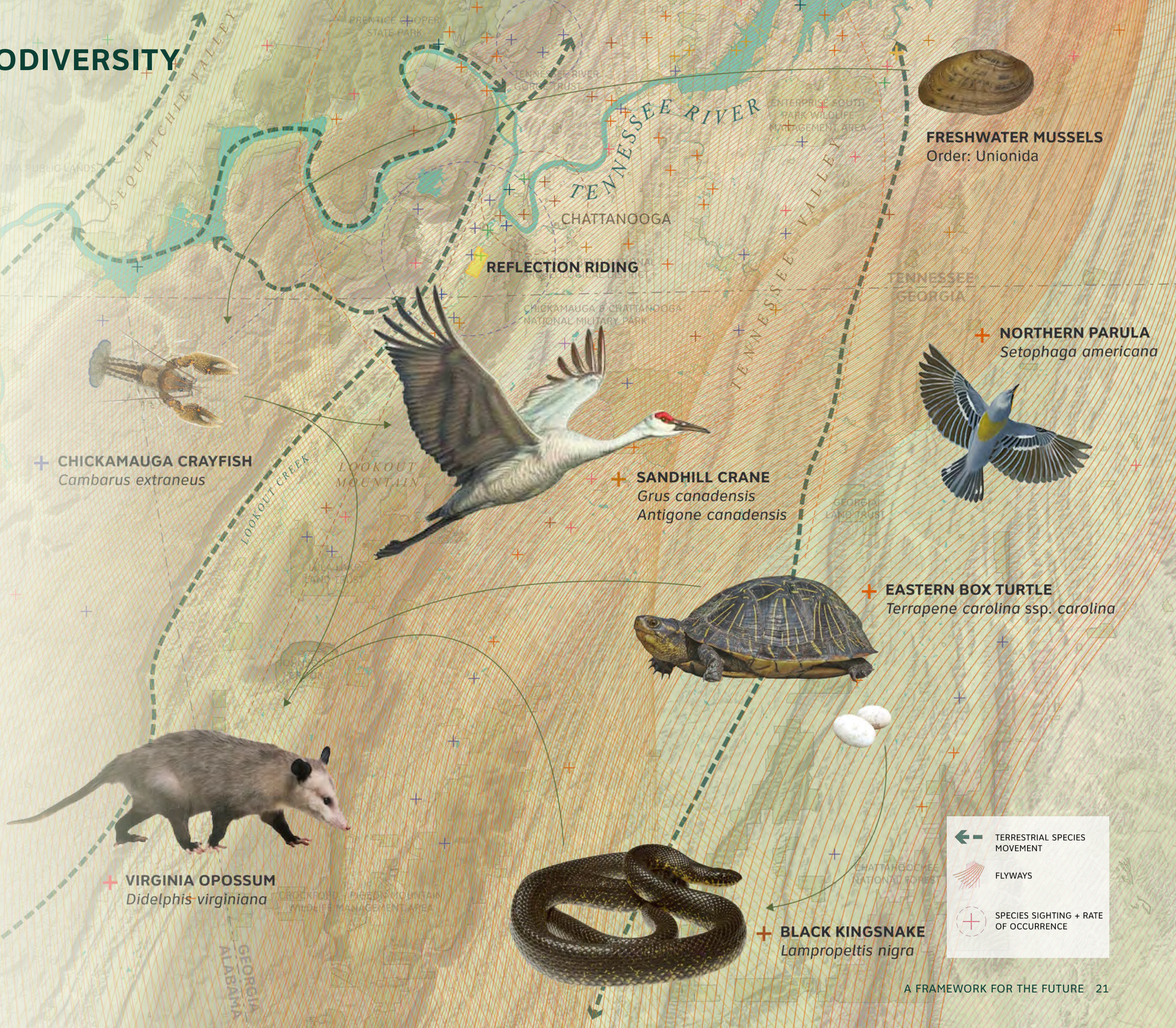
More than 500 million years ago, the area around Chattanooga sat beneath a shallow, ancient sea underlain by alternating layers of hard and soft sedimentary rocks. Over time, tectonic forces pushed the seabed up, folding the layers of rock into what is now known as the Appalachian formation. The young Appalachian Mountains rose to extraordinary heights approximately 220 million years ago, nearly rivaling the peaks of the present-day Himalayas. But over time, wind and water began to erode them away. While the harder sandstone formations resisted erosive forces, the softer shale and limestone gave way, resulting in the system of narrow ridges and valleys that characterize the landscape of eastern Tennessee today. This rugged topography created a remarkable variety of environmental and climatic conditions within a relatively small geographic area. Today, Reflection Riding offers a unique experience of these environmental variations in the landscape. Hikers can follow trails from the warm, fertile banks of Lookout Creek up to the rocky, cloud-shrouded brow of Lookout Mountain.



# A CONFLUENCE OF BIODIVERSITY

The Ridge and Valley landscape, which extends from north to south along the Appalachians from New York all the way to Alabama, served as a corridor for movement of thousands of plant and animal species. Over time, species adapted to high elevations and began to travel along the ridge tops, while bottomland and aquatic species traversed the many creeks and river valleys. These migratory pathways were particularly important for plants and animals during the last Ice Age, as glaciers forced many species from Canada and the northern United States to migrate further south. Many of these northern species took refuge in Tennessee where they became interspersed among the southern species already living there. The interbreeding and increased competition of this convergence makes Tennessee one of the most biodiverse places in the country.

While the Ridge and Valley system makes movement north-to-south quite easy, the terrain makes longitudinal movement much trickier. In order to move between valleys, wildlife must take advantage of rare gaps in the ridge formations. Reflection Riding's unique position between two prominent gaps—the Tennessee River and Running Water Creek gaps—contributes to the remarkable biodiversity found on site. This confluence of latitudinal and longitudinal migration in close proximity to an urban center set the foundation for Reflection Riding's vast ecological value. Visitors experience this rich biodiversity throughout the site from the riparian corridor along Lookout Creek all the way to the endangered mixed mesophytic forest on Lookout Mountain. This Framework for the Future presents a unique opportunity to celebrate this biodiversity while inviting a broader audience to learn about and engage in conservation.

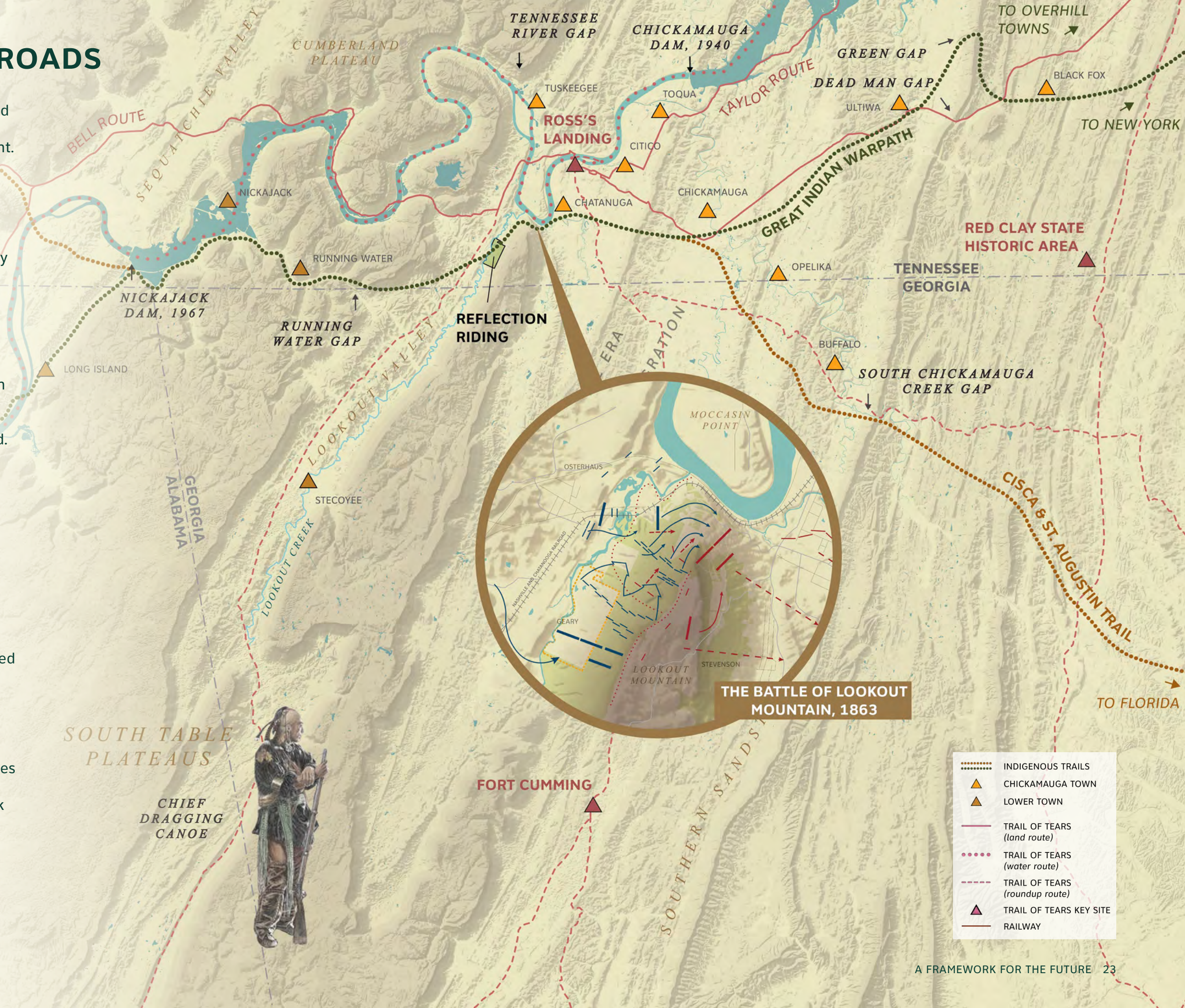


# A CULTURAL CROSSROADS

The topographical formations that facilitated wildlife movement from east to west also influenced human movement and settlement. For millennia Native Americans prospered along the Tennessee River Valley, fishing within its waterways and hunting and foraging along its slopes. Chattanooga served as an important nexus for many indigenous trading routes that longitudinally traversed the Appalachian mountain range.

During the 18th century, the Lower Cherokee migrated south to avoid settler encroachment, and settled the area around Chattanooga. White settlers came to understand Chattanooga's strategic location within the region and forced the Cherokees out of their villages, repurposing the farms and infrastructure that they had established. The same routes that indigenous people once used for trading, hunting, and fishing were utilized during the mid-19th century for their forced removal westward along the Trail of Tears. These routes would later serve as ready-made guidelines for railroad construction. Chattanooga soon became the main gateway and connection between the Midwest and the Deep South, earning the moniker "where cotton meets corn."

As a key logistics center, Chattanooga proved an important asset during the Civil War. The fight for Chattanooga culminated in 1863 with the Battle of Lookout Mountain. Union troops crossed Lookout Creek and traversed the slopes of present-day Reflection Riding, pushing Confederate forces out around the tip of the mountain and ultimately securing the city. This Framework presents an opportunity to interpret this rich cultural history and to support experience-based learning throughout the Reflection Riding campus while explicitly recognizing the indigenous people who were forcibly removed from this land.



# BRIEF HISTORY OF REFLECTION RIDING

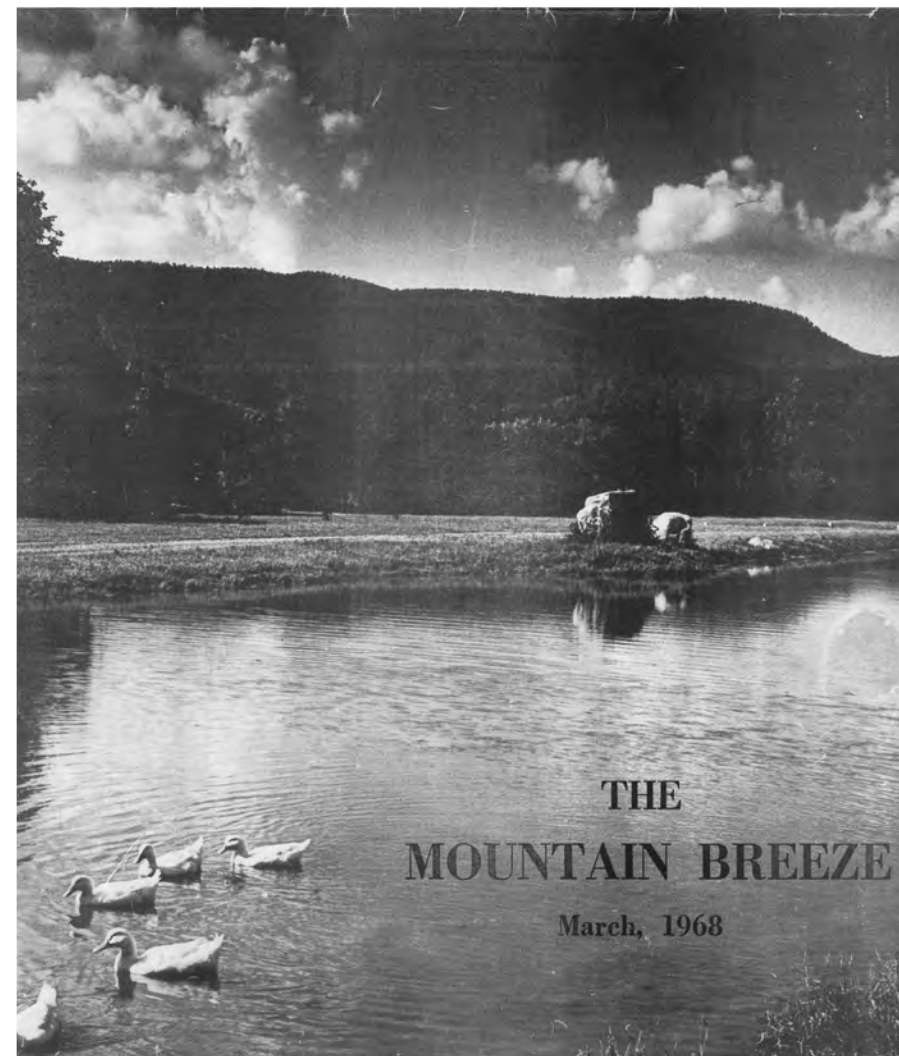
Nestled just inside of Lookout Valley, Reflection Riding offers an important window into the natural heritage of a metropolitan region impacted by urban sprawl and development. As the city of Chattanooga grew over time, two key components of its infrastructural network—the Nickajack and Chickamauga dams—were built by the Tennessee Valley Authority to control flooding and improve navigation along the Tennessee River. While these dams helped to provide sufficient electricity for Chattanooga’s growing population, they also dramatically changed the hydrology of the area. The Tennessee’s course now flows directly into Nickajack Dam, which when closed can cause upstream tributaries such as Lookout Creek to back up or flood. While these man-made fluctuations in water levels have presented certain flood risks to areas along the Tennessee River’s tributaries, they also offer opportunities to enhance seasonal wetlands and contribute to the rich mosaic of habitats found on site.

The ecological and aesthetic value of these natural habitats make up the very core of Reflection Riding’s mission. Having grown up on Lookout Mountain, founder John Chambliss was inspired by the New Deal era efforts to develop the northern part of the mountain into a historic park for scenic recreation. After witnessing loggers begin to clear forest elsewhere along the slope, Mr. Chambliss foresaw the encroaching development and began purchasing tracts of land between the park’s property and the creek.

Over the course of a few decades, a grand vision for the campus began to unfold. Founded in 1956, Reflection Riding was conceived of as a “modified arboretum of natural trees and shrubs”—a botanic drive-thru that offered city-dwellers the chance to learn about the region’s natural landscape

from the comfort of their car. With help from many collaborators, the Chambliss and Humphreys families continued to steward the natural landscape, and in 1978 worked with the Junior League to establish an educational nature center for the public. In the decades to follow, the two organizations coevolved as separate, but related entities—their visitors migrating from their cars to canoes, hiking trails, boardwalks, and outdoor classrooms. The arboretum developed a nursery to further advance botanical conservation on site, while the nature center expanded its education curriculum with the establishment of a wildlife conservation program. Acknowledging the symbiosis between their two missions, the organizations eventually merged and began to chart a collective vision for Chattanooga to advance environmental education and ecological stewardship.

This plan culminates several years of community feedback and listening sessions. The newly combined organization heard from members, foundations and individual philanthropists that it needed to narrow in on a single, unifying identity to advance the mission and remain relevant for a changing Chattanooga. That unification occurred behind the scenes and at a strategic level from 2017 to 2020 and this Framework accomplishes that same unification on the ground through physical site improvements. This Framework envisions a much more cohesive physical environment that will support the mission by 2030.



THE MOUNTAIN BREEZE  
March, 1968

# REFLECTION RIDING TODAY

Today, the nursery propagates more than 100 species of native plants, using them both to restore native habitats across the campus and to offer local gardeners and landscapers the same opportunity on their own properties. The wildlife center houses nearly 30 species of birds, mammals, reptiles, and amphibians—including the endemic and critically endangered American red wolf (*Canis rufus*). Through Reflection Riding's conservation programming on and off site, the wildlife conservation team works to advance education and care for the region's wildlife, bringing these lessons into classrooms across the county. This programming serves as a cornerstone of a more expansive educational curriculum held on site, offering immersive learning to school groups across the region. These programs are nestled within an extensive tapestry of native wetland, forest, and grassland ecosystems—representing a microcosm of regional biodiversity and offering Chattanooga-area residents unparalleled access to nature.

While obvious synergies between these various programs exist, their ability to cooperate comprehensively on site remains impaired by their legacy as separate entities.

- Despite representing symbiotic components of a broader, more holistic ecological framework, the programs are physically disconnected from one another, resulting in a piecemeal understanding of Reflection Riding's robust offerings.
- The circulation between different programs lacks both clarity and

hierarchy, resulting in conflicts between visitor and operational traffic as well as periodic bottlenecks between conflicting users throughout the day.

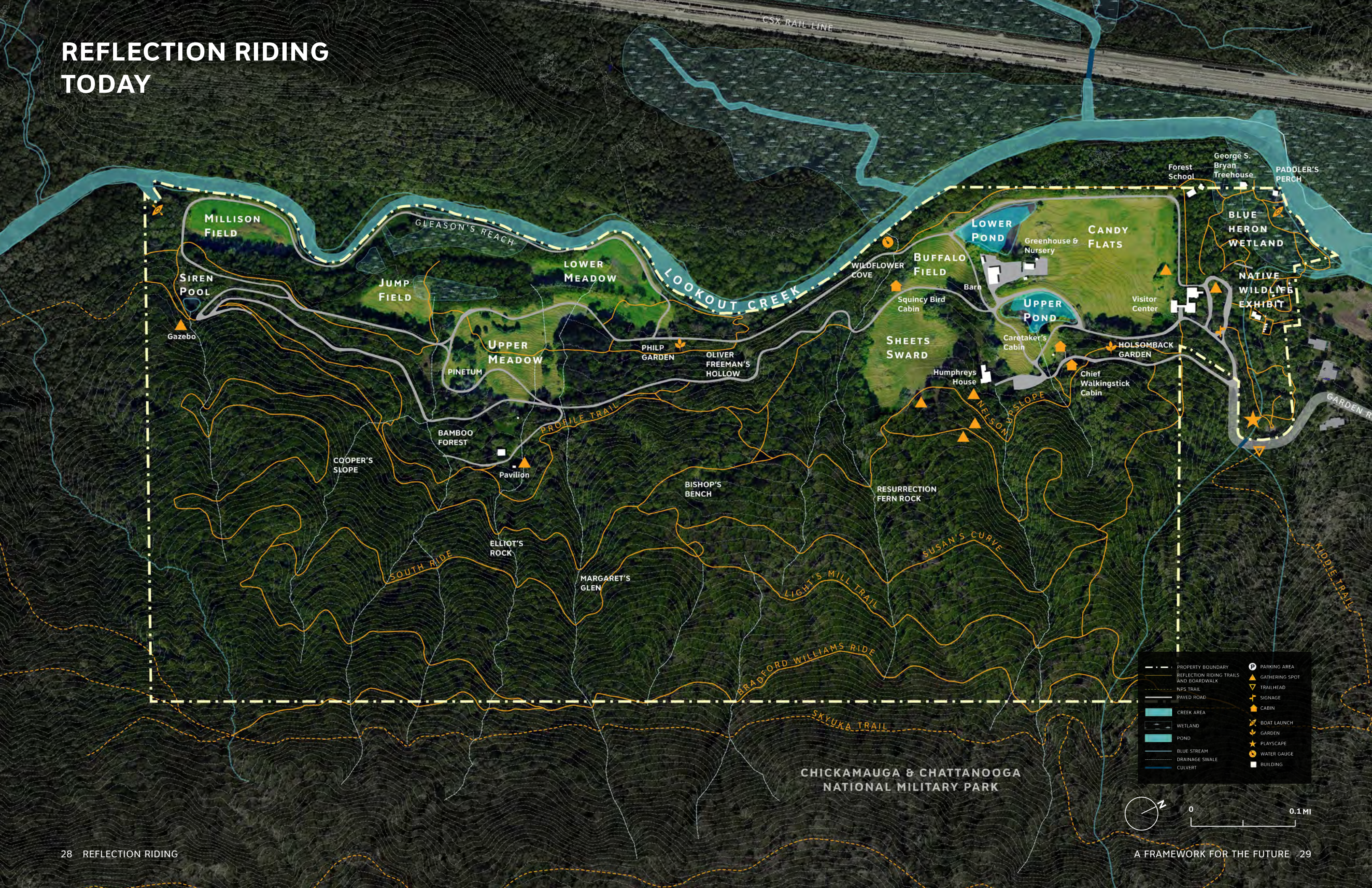
- These challenges extend to other infrastructure and utilities as well, as residential-grade facilities such as bathrooms struggle to accommodate growing visitation.
- Educational and recreational opportunities on site are routinely compromised as trails, boardwalks, and other facilities become inundated by increased flooding and precipitation.

Collectively, these issues present a myriad of challenges for Reflection Riding's continued growth—a process that must carefully balance necessary development with the historical and ecological integrity of its natural landscapes. This Framework offers a bold vision for striking such a balance. By clarifying and reimagining the various relationships on site, this unifying vision works to connect Reflection Riding's diverse programs and paint a comprehensive picture of Chattanooga's natural ecology through immersive learning and experience.

While elements of the campus will change, this plan fully executes John Chambliss' stated vision of "operating a modified arboretum, promoting the conservation of resources by demonstrating to the public the need for conserving animal life, forests, water, soil, a love of nature and beauty and acquainting the public with the history of the area in which Reflection Riding is located."



# REFLECTION RIDING TODAY



	PROPERTY BOUNDARY		PARKING AREA
	REFLECTION RIDING TRAILS AND BOARDWALK		GATHERING SPOT
	NPS TRAIL		TRAIL HEAD
	PAVED ROAD		SIGNAGE
	CREEK AREA		CABIN
	WETLAND		BOAT LAUNCH
	POND		GARDEN
	BLUE STREAM		PLAYSCAPE
	DRAINAGE SWALE		WATER GAUGE
	CULVERT		BUILDING

CHICKAMAUGA & CHATTANOOGA NATIONAL MILITARY PARK





# REFLECTION RIDING TOMORROW

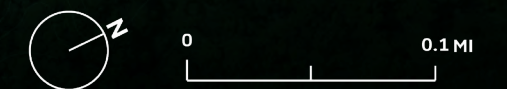


# A UNIFYING VISION



This Framework for the Future creates an inclusive and equitable vision that celebrates the natural and cultural heritage of Reflection Riding's 300-acre campus. A unifying vision allows the organization to catalyze the restoration and conservation of the region's ecological communities while educating and inspiring future generations of environmental stewards. To limit disturbance and protect the ecological health and scenic beauty of the campus, the plan concentrates and redistributes Reflection Riding's main programs into a focused area of development near the campus entrance, reserving the rest of the campus for the active restoration of a variety of

native habitats. This central hub serves as a nexus for educational programming and other activities on the campus, integrating Reflection Riding's key programs and allowing them space to grow over time. From this central axis, visitors can connect to an accessible network of multimodal paths and hiking trails, offering quiet immersion in the site's restored landscapes and the chance to contemplate the beauty of the region's diverse natural habitats. By concentrating buildings and infrastructural assets, the plan also aims at being economical, managing land efficiently, and making Reflection Riding's programs accessible to people of all ages, backgrounds and abilities.



# A RESTORED LANDSCAPE EXPERIENCE

**MILLISON FIELD**  
WET MEADOW RESTORATION

**JUMP FIELD**  
GRASSLAND RESTORATION

**LOWER MEADOW**  
WET MEADOW RESTORATION

**UPPER MEADOW**  
PRAIRIE & PINE SAVANNA  
RESTORATION

**CHESTNUT ORCHARD**  
RESISTANT CULTIVARS RESEARCH

**BUFFALO FIELD**  
PRAIRIE RESTORATION

**LOWER POND**  
WETLAND RESTORATION

**CANDY FLATS**  
PRAIRIE RESTORATION

**FLOODPLAIN FOREST**  
BOTTOMLAND FOREST  
RESTORATION

**UPPER POND**  
WETLAND RESTORATION

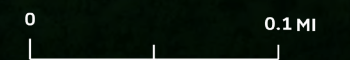
**SHEETS SWARD**  
PRAIRIE RESTORATION

LOOKOUT CREEK

RESTORED STREAM

Boasting at least six distinct ecological communities, Reflection Riding represents a microcosm of the region's diverse native habitats and acts as a shining beacon of natural heritage for the city of Chattanooga. However, the historic legacies of agriculture, development, and human activity on the campus have left their mark: clearing and disturbing plant communities, introducing invasive species, and threatening the native biodiversity and ecological vitality of certain areas of the campus. This Framework puts restoration efforts at the forefront of the vision, providing a path to remediate past legacies of disturbance while incorporating intensive restoration projects as a prerequisite to new development. While restoration efforts engage the range of

ecological communities on site, particular focus is given to grassland restoration, taking advantage of historic clearings to reintroduce endangered prairie, pine savanna, and wet meadow habitats back to the site. Towards the southern end of the campus, a small research station embedded within these grassland habitats will help to monitor ongoing restoration efforts and advance conservation initiatives. Seeds and cuttings for restoration plantings will be sourced directly from the nursery and installed by volunteers. Collectively, these initiatives help to not only enhance the campus' ecological vitality, but also to engage people in a broader conversation about the role each of us plays in caring for the region's biodiversity.



# A RESTORED LANDSCAPE EXPERIENCE

Black Vulture  
(*Coragyps atratus*)

LOOKOUT MOUNTAIN

CONSERVATION CENTER  
VIEWING DECK AND FIRE PIT

NATIVE PLANT  
NURSERY

HUMPHREYS HOUSE

Common Grackle  
(*Quiscalus quiscula*)

EDUCATION STATION  
SELF-GUIDED AND  
IMMERSIVE LEARNING

New York Ironweed  
(*Vernonia noveboracensis*)

Gulf Fritillary  
(*Agraulis vanillae*)

Lance-Leaf Coreopsis  
(*Coreopsis lanceolata*)

CANDY FLATS  
RESTORED PRAIRIE HABITATS

Swamp Milkweed  
(*Asclepias incarnata*)

Monarch Butterfly  
(*Danaus plexippus*)

Little Bluestem  
(*Schizachyrium scoparium*)

MULTIMODAL PATH

# A HUB FOR EDUCATION AND STEWARDSHIP

With restoration at the forefront of the vision, this Framework seeks to limit environmental disturbance by consolidating high volume and infrastructure-intensive programs within a concentrated hub of activity near the campus' northern entrance. A compelling and intuitive arrival sequence leads visitors to the new Conservation Center, a flexible and accessible building that welcomes them to Lookout Mountain and orients them to the various experiences available on-site. In addition to serving as the main trailhead to the campus' network of paths and trails, this educational welcome center offers direct connections to the adjacent learning and nursery programs, and creates a continuous spine of flexible education and event spaces. An open plan draws the visitor into restored habitats at various scales—from smaller demonstration gardens to a sizeable prairie restoration.

Educational programs requiring student pick-up and drop-off move closer to the site's entrance with the existing nature center parking lots being repurposed to handle this traffic. Just south of the visitor center, the nursery and its native habitat demonstration gardens offer an introduction to the campus' rich biodiversity, giving a preview of the natural beauty on-site as well as a chance to take that beauty home with you. Further south of the nursery—and still a quick walk from the Conservation Center—the relocated wildlife center sits protected from the floodplain and from the bustle of the main programmatic core, offering intimate experiences with native wildlife.

By establishing a strong programmatic core, this Framework replaces the current condition of detached, isolated programs with an integrated central hub nestled within the larger campus—allowing visitors to understand the connections between programs and fostering ecological thinking through on-the-ground experience.



# ARRIVING AT REFLECTION RIDING

MULTIMODAL PATH  
PARKING LOT

SAFE CROSSING

DROP OFF  
SAFE AND ACCESSIBLE  
SCHOOLBUS DROP OFF

LOOKOUT MOUNTAIN

UPPER WETLAND  
RESTORED WETLAND AND  
DEMONSTRATION GARDENS

CONSERVATION CENTER

Gulf Fritillary  
(*Agraulis vanillae*)

Heartleaf Foamflower  
(*Tiarella cordifolia*)

BUTTERFLY GARDEN  
STORMWATER MANAGEMENT

Marsh Marigold  
(*Caltha palustris*)

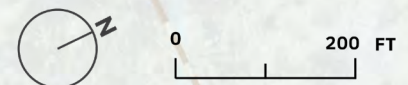
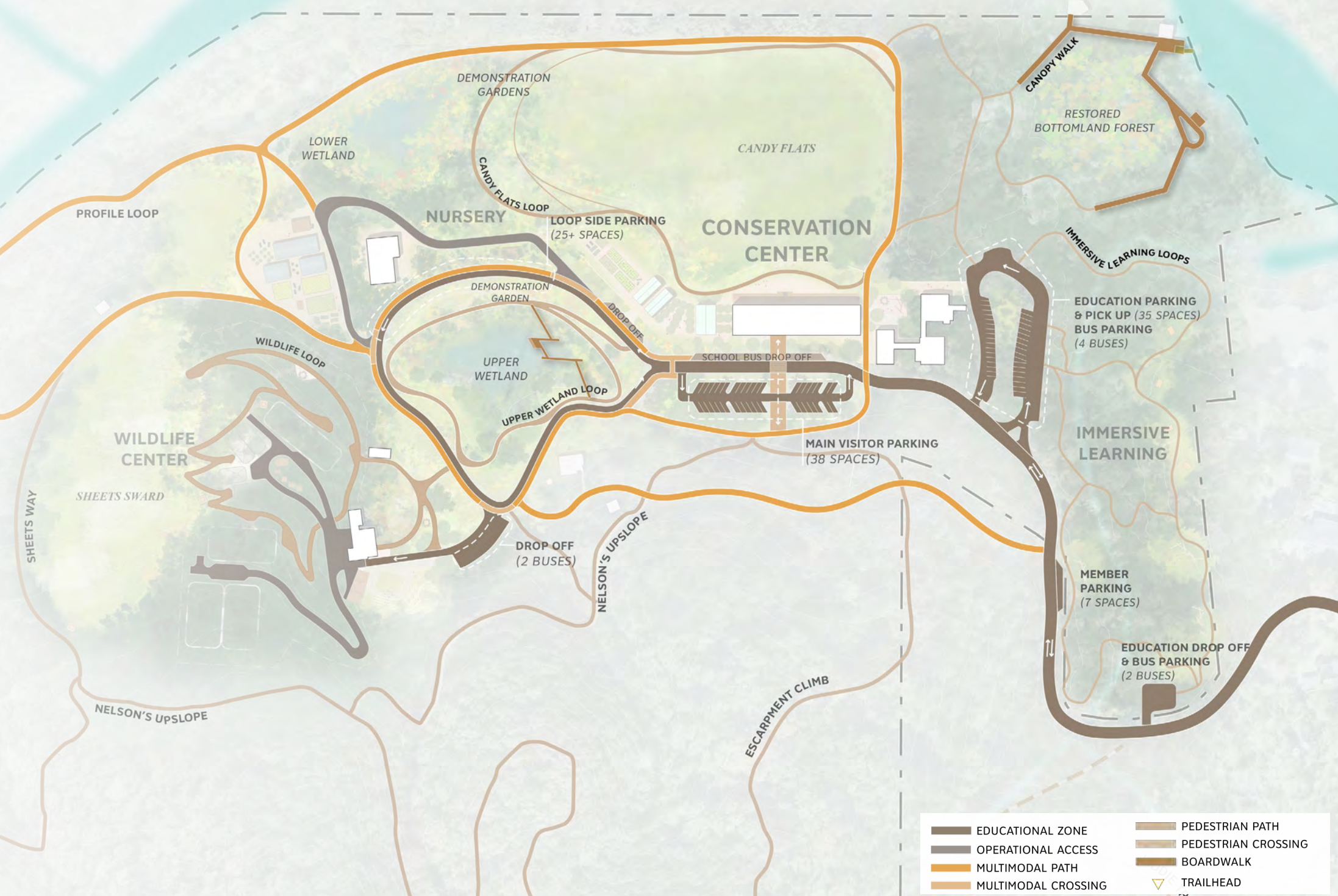
ENTRY PLAZA

Woodland Spider-lily  
(*Hymenocallis occidentalis*)

# CIRCULATION AND ACCESS

One of the core missions of this Framework is to make Reflection Riding an inviting destination that is accessible to all. The plan introduces a new circulation hierarchy that prioritizes accessible pedestrian and non-motorized movement in the new core area while providing occasional vehicular connection to each of the main programs. Upon entering the campus, the main entrance road is widened to accommodate two-way traffic, allowing for a safe, clear, and comfortable arrival. Program-specific student drop-offs are concentrated at existing parking lots near the entrance, preemptively diverting the majority of daily vehicular traffic and providing clear arrival to the new Conservation Center and its adjacent parking lot.

While the majority of visitors will transition to bike or foot from here, an expanded one-way loop around the former Upper Pond provides an operational route for staff, as well as convenient access to the nursery for plant pickup and drop-off and to the wildlife center for service. The proposed loop—wide enough to accommodate event overflow parking or occasional large trucks—will provide designated traffic lanes for different users. The inner lane serves cars, maintenance vehicles, and school buses while the outer lane is reserved for bikes and pedestrians. This outer multimodal loop connects to a larger network of paths which circumscribe Candy Flats, providing bikes, strollers and wheelchairs easy access to the southern end of the campus. Pedestrian-only paths connect different destinations with the programmatic core, while trailheads near the main visitor parking offer entry to the extensive system of hiking trails that traverse the campus.

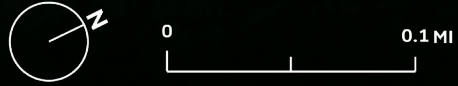


# SELF-GUIDED LEARNING



A way-finding system for new and existing trails provides a self-guided educational overlay across the entire campus, and creates a network of “thematic loops” that make connections between key points of interest on-site. These loops highlight important site themes—such as geology, hydrology, and cultural heritage—and weave them together to tell the rich story of Reflection Riding. Beginning and ending at the Conservation Center, each loop uses interpretive signage and education stations to guide visitors through an immersive experience of the campus’ natural and cultural identity. Education stations are set up to allow for both educator- and self-led learning, featuring physical and digital

interfaces that accommodate users of all abilities. Digital tools connect users to supplemental digital media as well as create opportunities to participate in citizen science and crowd-sourced monitoring of Reflection Riding’s natural landscapes. Stations are strategically placed to engage multiple loops, highlighting the connections between the physical, ecological, and cultural narratives of Reflection Riding and allowing visitors’ curiosity to take the lead and guide them through different experiences of the campus. Collectively, this system offers a narrative framework for understanding the site through multiple lenses, ensuring that no matter how many times one visits, there is always a new way to experience Reflection Riding.



# LEARNING AT REFLECTION RIDING

The Learning Hub celebrates the educational values at the heart of Reflection Riding's programs. While this Framework incorporates educational programs into every aspect of the campus to varying degrees, the Learning Hub dedicates space by renovating the old welcome center and restoring the surrounding bottomland forest to provide captivating spaces for immersive outdoor learning. Students take advantage of a variety of learning spaces spread between the new Conservation Center and Learning Hub, including an auditorium, amphitheater, exhibition spaces, and classrooms.

A short walk from the Learning Hub, a new canopy boardwalk offers students an immersive experience of the bottomland forest and the chance to learn about its ecology and hydrology. Designed to be resilient to flooding, the majority of the canopy walk is elevated to avoid inundation and protect the restored bottomland forest, providing visitors with a bird's eye view of this unique landscape. Elsewhere, multi-level get-downs allow opportunities for creek access, canoe launches, and intimate encounters with the forest floor.

East of the canopy walk and on higher ground, a series of immersive learning stations provide the Forest School and Kindergarten with secluded, but accessible spaces to advance their place-based curriculum, while dedicated space within the Learning Hub building provides room for additional education and administrative activities.





# AN IMMERSIVE LEARNING ENVIRONMENT

Prothonotary Warbler  
(*Protonotaria citrea*)



## BOTTOMLAND FOREST

### GET DOWN

RESILIENT WATER ACCESS AND  
EDUCATION PLATFORM

Smooth Witherod  
(*Viburnum nudum*)

## LOOKOUT CREEK

Great Blue Heron  
(*Ardea herodias*)



Painted Turtle  
(*Chrysemys picta*)



Pileated Woodpecker  
(*Dryocopus pileatus*)



## CANOPY WALK

IMMERSIVE AND ACCESSIBLE  
LEARNING EXPERIENCE

PAWPAW  
(*Asimina triloba*)

## EDUCATION STATION

SELF-GUIDED AND IMMERSIVE LEARNING

Painted Lady  
(*Vanessa cardui*)



Eastern Box Turtle  
(*Terrapene carolina*)



Marbled Salamander  
(*Ambystoma opacum*)

# WILDLIFE CENTER

This Framework proposes the relocation of Reflection Riding's wildlife conservation efforts from the current location within the floodplain in order to reduce the risk of inundation, protect animal health and safety, and provide a more diverse range of habitat conditions. Nestled within the slope behind Humphreys House, the new Wildlife Center takes advantage of the existing restored prairie, forest landscape and varied topography to seamlessly integrate wildlife exhibits into their surrounding native habitat. Just a short walk from the Conservation Center, a new welcome pavilion serves as the gateway to Reflection Riding's conservation programming, introducing visitors and student groups to the region's wildlife and offering space for learning and demonstration. An accessible footpath guides visitor through the forest vegetation, offering tantalizing glimpses of wildlife and the chance to climb inside a life-sized eagle's nest. Set at the back of the hill and away from the bustle of Reflection Riding's core programming, the main wildlife footpath navigates between two important regional habitats, weaving in and out of grassland and forest ecosystems and offering intimate encounters with endangered American red wolves and birds of prey. Strategically placed lookout towers offer visitors elevated views into the various enclosures as well as prime posts for bird and insect-watching. Finally, an open amphitheater foregrounds the various avian enclosures, giving staff easy access for educational programs and flight demonstrations.

At the center of this immersive wildlife experience, a concentrated operations core offers efficient operational access to all wildlife enclosures and protected areas for off-exhibit or convalescing animals. The historic Humphreys House is repurposed to act as private administrative offices, placing administrative staff close to, but physically separate from the main programs.



# A NATURE EXPERIENCE



Barred Owl  
(*Strix varia*)

RED WOLF ENCLOSURE

Red Wolf  
(*Canis rufus*)

Cooper's Hawk  
(*Accipiter cooperii*)

Shortleaf Pine  
(*Pinus echinata*)

VIEWING PLATFORM

RAPTOR ENCLOSURE

Bald Eagle  
(*Haliaeetus leucocephalus*)

Loggerhead shrike  
(*Lanius ludovicianus*)

Showy Goldenrod  
(*Solidago speciosa*)

RESTORED PRAIRIE HABITAT  
ECOTONE BETWEEN PRAIRIE AND WOODS

# ADVANCING THE NURSERY

With the closest native plant nursery over 100 miles away, Reflection Riding's nursery serves an important and unique function for the organization and the region overall. In addition to providing an important source of ongoing revenue supporting the organization's conservation mission, the nursery also supplies educational programs and native plants for ecological restoration efforts both on- and off-site. Advancing the nursery will engage more volunteers, conservationists, and home gardeners in the important practice of enhancing the region's native ecosystems. This Framework envisions an overall upgrade of both form and function in the nursery. The planned improvements allow the nursery facilities to grow and diversify while enhancing public-facing programs.

As a key attractor for visitors to Reflection Riding, the expanded nursery is relocated to be highly visible and directly adjacent to the new Conservation Center. A shaded grove connects the main sales floor to the new building's covered porch and offers a

flexible space for educational programming, group gatherings and receptions. Rather than hiding the nursery, the design relocates less aesthetically appealing production areas to Buffalo Field and upgrades the public-facing areas with new and upgraded greenhouses, hoop houses, grow beds, and other production facilities. Equipment storage and a dedicated shed for the production of custom soil blends complete the plan.

Surrounding the central production zone, a series of themed demonstration gardens will showcase nursery species within their native ecological communities while providing habitat for pollinator species. Native gardens will tie the region's rich botanical history to the present day while continuing to identify and remove non-native and invasive species. A series of interpretive paths guide visitors through the gardens and along multiple restored landscapes, highlighting the restored prairie at Candy Flats and the conversion of both artificial ponds into naturalized seasonal wetlands.



# A CATALYST FOR REGIONAL RESTORATION

**NURSERY  
STOREFRONT**

Cedar Waxwing  
(*Bombycilla cedrorum*)

Ruby-throated Hummingbird  
(*Archilochus colubris*)

**PRODUCTION AREA**

**DEMONSTRATION GARDEN**

Florida Flame Azalea  
(*Rhododendron austrinum*)

Florida Flame Azalea  
(*Rhododendron austrinum*)

Swamp Azalea  
(*Rhododendron viscosum*)

**NURSERY PLAZA**

Shortleaf Pine  
(*Pinus echinata*)

**CONSERVATION CENTER**

Swamp Azalea  
(*Rhododendron viscosum*)

# IMPLEMENTATION: PRE-CONSTRUCTION CONSIDERATIONS & PLANNING

Informed by board members, staff, and diverse stakeholders as well as the institution's history and mission, this Framework lays out a long-term vision for the evolution of the Reflection Riding campus. As a next step, the organization will develop a roadmap for realizing that vision. While this Framework outlines a series of related projects that will require different levels of investment, coordination, design, and construction, this effort will require further planning, fundraising, and on-going dialogue with Reflection Riding's diverse stakeholders over the coming years. This section outlines some key next steps and practical, near-term efforts that will need to be undertaken to transform this vision into reality.

## IMMEDIATE/NEAR-TERM RECOMMENDED EFFORTS

**Share the Framework & Initiate Catalytic Projects:** As a first step, Reflection Riding should celebrate the release of this Framework while building constituency around this forward-looking vision for the campus. For example, Reflection Riding can share the plan online and on social media, set up a small exhibit at the Nature Center, and organize an event when it is safe to do so. One of the Thematic Loops could be implemented to showcase the diverse experiences available to visitors. This would quickly demonstrate the educational opportunities promoted in this Framework.

**Framework Opinion of Probable cost:** Preparing a high-level construction cost estimate will be the first step towards implementation. This Framework has developed several projects to a conceptual level, so this would be a concept level cost estimate. Key projects for these cost opinions include the canopy walk; wildlife center relocation; nursery improvements; circulation and way-finding; and the construction of the Conservation Center. An understanding of costs will inform both phasing and fundraising strategies for medium and long-term capital planning. Reflection

Riding will hire a cost estimator with local knowledge and experience in constructing or costing similar facilities in the region.

**Construction Feasibility Assessment:** Another near-term effort to inform implementation planning is to have a construction feasibility assessment of the plan. While SCAPE discussed construction and maintenance considerations with the organization, a contractor or construction engineer with local site and infrastructure construction experience will be able to provide a more detailed assessment of construction feasibility of the different plan elements and potentially long-term maintenance needs or costs. This could include insight into relatively easier or more difficult elements of the plan to implement, additional infrastructure needs, materials sourcing, local workforce resources/availability, seasonal considerations, and identification or even scoping of an additional pre-construction survey or other efforts needed. A contractor with local construction experience would likely be the best resource for this type of work and it may make sense to contract this work together with the cost estimate. Given the interest and concerns around long-term maintenance and operations (M&O) costs, it may be beneficial for the plan to include an opinion of probable cost for M&O.

## LIKELY/POTENTIAL PRE-CONSTRUCTION EFFORTS NEEDED:

The following are a preliminary list of some of the site investigations and surveys likely needed as part of a design process and prior to project construction:

**Physical surveys and site investigation:** Framework level project development was prepared with relatively high-level site information. As Reflection Riding advances specific projects toward design and construction, much more detailed information on physical (and potentially biological) conditions will be required. While there may be economies of scale

in consolidating survey efforts, if construction projects will be phased gradually over time, it is likely beneficial to phase survey work as (1) you typically want relatively recent surveys to inform design and permits, and (2) survey work can be costly, and pairing it with specific capital projects might allow costs to be spread out and potentially paired with individual projects. Such surveys/site investigation are likely to include:

**Topographic surveys** will be needed for any areas with intensive site design and building construction (e.g. road construction, conservation center, wildlife center, etc.). With a large site, surveying can be costly, so smaller areas needing a greater level of detail would be identified.

**Subsurface investigations** (geotechnical borings) will be needed for areas where new buildings, roadways, or substantial structures with footings (e.g. canopy walk) are proposed. If any recent subsurface investigation information already exists, this can likely be used to inform preliminary and schematic design. Subsurface investigation is typically one of the more costly survey investigations and the number and depth of borings drive cost. Thus, it is generally desirable to limit the area/extent of such surveys by waiting until there is at least a schematic level design to locate borings.

**Tree surveys** to identify species, size, and assess the health of trees is recommended for any areas with significant/intensive planned construction. Determining if there are any trees that can or should be removed and identifying those that need to be protected during construction will be key to effectively avoiding undue clearing. This will be integral to developing effective plans to protect trees during construction—a critical step to ensure the survival of trees during and after construction.

**Other biological surveys:** In addition to physical land surveys, biological surveys or inventories are often desired and necessary for site construction, particularly if permits are required or if state

or federal funding resources are used. This may include plants, animals, and other species, particularly for endangered or threatened species. This information would be used to assess potential project impacts to such species or their habitats and would enable project designers to avoid impacts on habitats and species while integrating them with the biological function of the landscape. Such surveys often have seasonal requirements or restrictions.

**Flood hazard/risk assessments or hydrologic modeling:** This Framework takes future flood risks into account using available information including both FEMA maps and on-site observations by staff. However, given the observed flooding and the sensitivity of flooding on the Reflection Riding campus to water management by TVA, a more detailed analysis of future flood risk is recommended before designing specific projects.

**Permits:** County, local, state, and potentially even federal permits or approvals are likely required for much of the construction work. Specific permitting and approval requirements will depend on the type of construction activity, location of the construction activity relative to sensitive species or habitats (particularly wetlands and blue-line streams) and, potentially, the funding sources used. For each project, it is advisable to develop a roadmap of permitting and approvals to identify and plan for critical path items.

**Project designs:** While this Framework lays out the overall vision for the site and describes programs and projects at a planning/conceptual design level, each individual project in the plan will still require preliminary and final design and documentation. During this process, the location and form of each element will be refined. Most of the key projects here would require at least a year of design and potentially more, depending on the pace of the engagement, design, review, and permitting associated with each project.

# FREQUENTLY ASKED QUESTIONS

## **Has Reflection Riding given thought to the long-term financial stability of the organization during this planning process and the vision that will flow from it?**

Yes, these are discussions our board and senior staff have regularly and finances are always top of mind. While our focus is always on our mission to restore the vital connection between people and nature, we must also focus on financial stability because it's not possible to fulfill the mission without adequate funding. We proudly share that we have seen significant growth in philanthropy in the last few years, even during the pandemic. Soon we will finalize permanent, legal protection for our property, which will both provide perpetual legal conservation of the campus and help build our long-term financial stability. We hope you will join us in celebrating Reflection Riding's bright future!

## **How much will this cost and how are you going to pay for it?**

With this plan in hand we will engage a cost estimator and begin further design study including detailed surveys. With these estimates, our leadership will begin financial planning to make these needed improvements become a reality. All along the way we will have long-term stability top of mind. We will plan to simultaneously fund operations, capital improvements, and an endowment and will not outgrow our resources. We aim for sustainable growth not just from an environmental perspective, but also financially.

## **How long will it take to do all this?**

This Framework planning process introduces a long-term vision for this place we all love so much. Over the course of the process, we have focused on a vision we intend to build by 2030, with high-quality commercial grade improvements. To fully implement this vision will likely take more than a decade, and what flows from this work will serve not only this generation, but future generations of conservationists. As this Framework launches and moves forward, a key part of the process will be to consider what should

be prioritized and built first to demonstrate the principles set in motion by this vision.

## **Will I still have a serene place to hike and walk in the quiet?**

Yes! We heard our stakeholders and the broader community when they told us to safeguard the peacefulness of this campus. The plan clearly outlines a concentration of development in the existing disturbed areas in order to create a fun, engaging, educational experience there while conserving a peaceful, quiet experience on the rest of our 300 acres. We are thrilled to offer the best of both worlds with this vision.

## **Will this make my membership cost more?**

Not anytime soon. We believe the outdoors should be accessible to everyone, including Reflection Riding. In fact, your membership helps make access possible for many students and families in need.

## **With these improvements, will my favorite plant, animal, place, or activity still have a place at Reflection Riding?**

Unless privet is your favorite plant, most likely, yes. We heard our stakeholders when they told us they wanted to preserve all the things they love most, and then make Reflection Riding even better too. This Framework has been informed entirely by stakeholders and community members. It strikes a balance between the ambition Reflection Riding has for the future and preserving what makes this place so unique to each of us.

## **Have you asked people what they want and solicited feedback from a broad cross-section of our community?**

Yes. Reflection Riding's Framework team has engaged with people from across not only Chattanooga, but the wider region as well. These diverse stakeholders have provided invaluable feedback that SCAPE incorporated into the planning process. As we implement the plan, we expect and hope to hear from even more community members. Don't

worry... you'll be hearing from us asking for your ideas and feedback regularly! This Framework provides a set of criteria and a broad spatial plan, but as we've mentioned a few times now, every element of the plan will require detailed site surveys, further design study, permitting and funding. We committed to a collaborative process years ago and will continue with similar processes on a smaller scale as we move forward.

## **What makes this Framework different from past plans Reflection Riding has developed?**

A plan with this level of study and community feedback has never been completed in the past. Additionally:

- We engaged stakeholders and incorporated their input from the very beginning and we will continue to do so.
- We engaged the community at large, those who know and use our campus and those who don't, and we will continue to do so.
- We engaged a professional team of experts from SCAPE Landscape Architecture to lead this process.
- Our Board of Trustees has been engaged every step of the way and will continue to be so.
- We engaged a committee of people representing all walks of life who will continue to inform our work long-term.
- This plan provides a vision for the entire campus, based on expertise and experience, preserving what we all love and expanding on what we know must be better.
- This plan considers the long-term—multiple generations, in fact—and the adaptations and changes we will confront during that time frame.

## **How does this plan ensure that both wildlife and land conservation are highlighted and prioritized?**

We heard from our stakeholders and the broader community that they valued both the animal and the botanical components of our mission. In fact, our thoughtful stakeholders noted very early on that the

native plant nursery not only serves our mission, but produces revenue that can support other areas of operations, as does our animal exhibit through field trips. This plan prioritizes both areas and uses resources carefully and thoughtfully to ensure that each can fulfill its mission well. For example, our animal ambassadors will have reduced noise, a location less prone to flooding, and expanded natural areas to enjoy. The native plant nursery will be built to a higher level of quality, allowing greater public access for education and purchases. This plan is a win-win for all components of our mission.

## **With this expanded footprint, have you considered how people of various abilities will access the far reaches of the campus?**

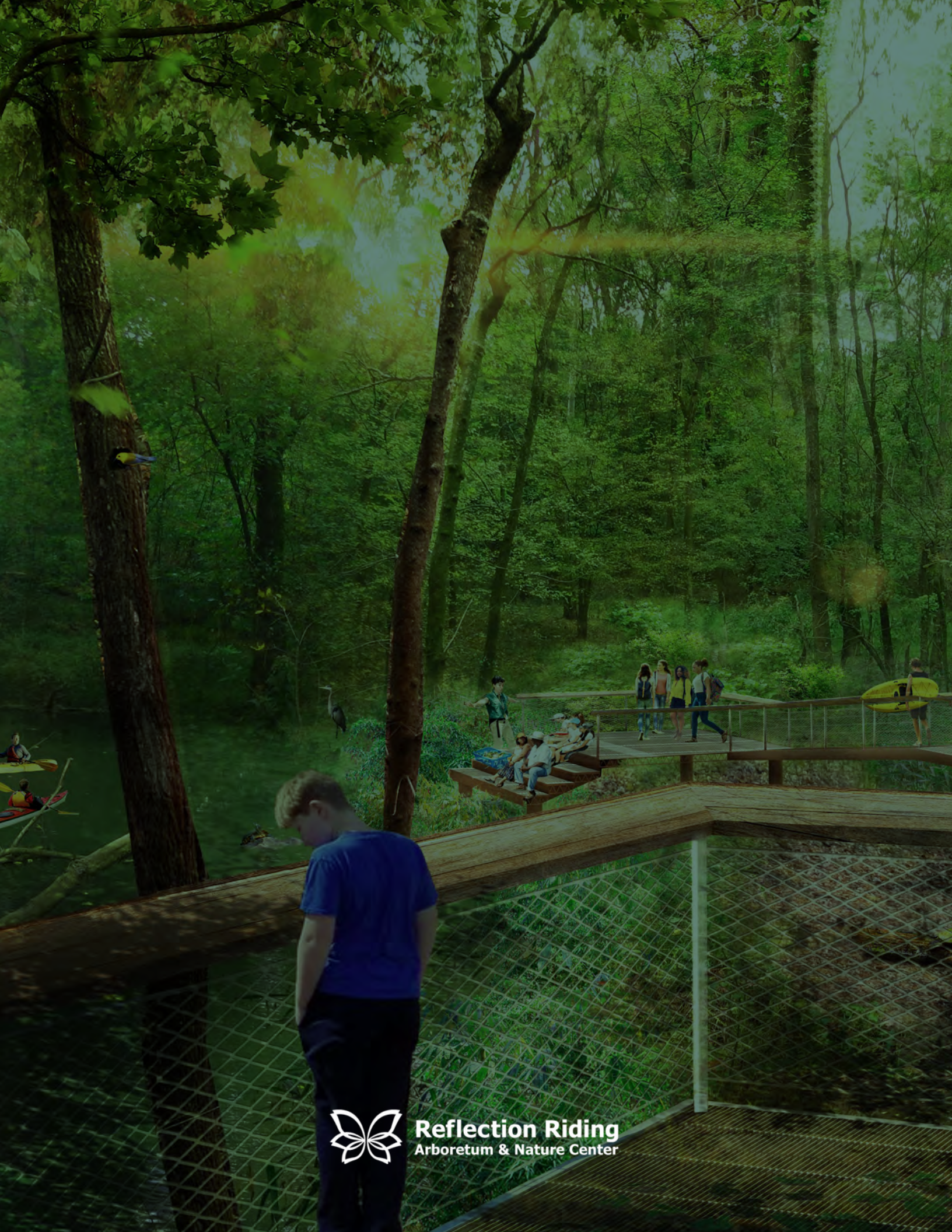
Yes, and we're excited about this as well! This Framework calls for a multi-modal path throughout the campus that would be accessible to strollers, wheelchairs and other conveyances. We have also discussed using electric carts to ensure that the far reaches of the campus are accessible to everyone... and that our footprint in helping people reach them remains small.

## **Will there be more facilities around the campus to make visits more comfortable and convenient?**

Yes, this plan envisions greater facilities throughout the developed area of the campus. We heard from our community that restrooms, access to drinking water, areas to sit and reflect and other kinds of facilities are important, but currently lacking. Those facilities have been incorporated in the developed area while the majority of the southern portion of the campus will remain rugged and a little wild.

## **Will we still be able to access Lookout Creek?**

Yes, we heard loud and clear from our paddlers that they love the easy access to Lookout Creek and this plan not only protects that access, but actually makes it more resilient to changing water levels.



**Reflection Riding**  
Arboretum & Nature Center