



Outdoor Classroom

McKinney Roughs Nature Park

Natural Science Programs

"Coming to McKinney
Roughs is amazing
because these kids' lives
are altered. They talk
about this trip for years
to come. They are so
overwhelmed with joy,
and as an educator,
it's the best gift to
give a child; the gift of
experience. Thank you
for the amazing day!"

- Mia Tannous
The University of Texas
Elementary School



Hands-on Hydrology



Young Scientists at Work



Dip-Netting Discovery



Awe-Inspiring Adaptations



Where Texas comes together...

McKinney Roughs Nature Park

Situated just east of Austin, nestled among the Lost Pines of Bastrop County and the Texas Colorado River, is a special place where the natural resources of several ecosystems converge. McKinney Roughs, owned and operated by the Lower Colorado River Authority (LCRA), is home to hundreds of plant and animal species living within the rolling box canyons, wildflower meadows and lazy river bends of the park. The 1,100-acre park is a unique, environmentally significant property that has been carefully developed by LCRA, a conservation and reclamation district created by the Texas Legislature. The nature park is part of a system of parks and natural science centers operated by LCRA along the Colorado River.

The natural science centers' educational philosophy is based on the belief that people learn best in the outdoors through direct experience with the natural world that surrounds them. Our mission is to promote conservation and create stewards of the Texas Colorado River. By providing opportunities for children and adults to experience the river's beauty firsthand, the education and recreation programs not only teach, but also inspire.

The Mark Rose Natural Science Center at McKinney Roughs Nature Park is home for your group's outdoor activities, and the center's experienced staff can take your classroom topics and bring them to life in a way that creates enthusiastic learners. Hands-on activities that incorporate different learning styles and lessons that bring students in close contact with the natural world encourage their inherent sense of wonder.

Read on to discover what McKinney Roughs Nature Park can offer you and the curious minds in your care.

"The care of rivers is not a question of rivers, but of the human heart."

- Tanaka Shozo

Water Conservation

Walking With the Water

Guided riparian hike

A river runs through it and changes the landscape and the biota as it goes. Hiking along the banks of the Colorado River where it flows through McKinney Roughs, students will get a first-hand look at a riparian ecosystem and the species of plants and animals that live within it. We'll also discuss the role of trees and herbaceous plants in erosion control and in watershed management. (2 hours - D, A)

Waterworks

Watershed model investigations

Water is essential to all living things. Water is at the heart of human civilization as well as a necessity in homes, businesses, industry, agriculture and recreation. But sharing it and keeping it clean are a challenge, and the ways we use water can affect our environment. Students will focus on waters wandering through a watershed model to track down potential points of pollution in their community and learn about point- and nonpoint-source pollution. (1 hour - D, A)

Something Fishy

Fish adaptations

It may seem fishy, but every fish species is uniquely adapted to its specific habitat. Students will catch a fish with a magnetic lure and identify their catch by using a dichotomous key. Looking at fish specimens, they will use a fish's morphological features to learn about the habitat and behavior of various species native to the Colorado River. Students also will learn what is being done to help with fish and riparian zone conservation. (1.5 hours - A)

Aqua-ology

Biological water testing

A stream that looks and smells clean could still be polluted. But the macroinvertebrates that inhabit the stream will reveal the truth! Students will use dip nets to collect macroinvertebrates, identify them, and classify them with a dichotomous key according to the invertebrates' tolerance to different levels of dissolved oxygen. Students will evaluate their findings to make an assessment of the body of water. (1 hour - D, 1.5 hours - A)

Aqua-ology Lab

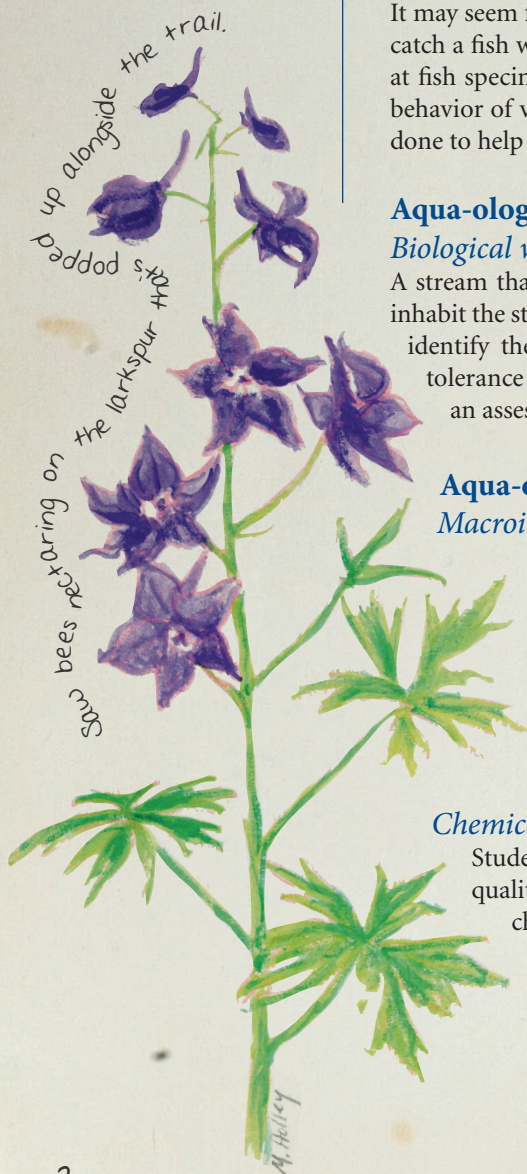
Macroinvertebrate investigation

Macroinvertebrates are fascinating aquatic creatures that can hold the key to determining water quality. Students will investigate these aquatic larvae under microscopes and identify them to learn more about their anatomical structure, appreciate their function in the food chain and determine their tolerance to differing levels of water pollution. This program is a laboratory component of the Aqua-ology program. (1 hour - D, A)

Testing the Waters

Chemical water testing

Students will discover the science of water chemistry. The class will determine the water quality of the Colorado River or a McKinney Roughs pond by conducting the same chemical tests that field scientists use to indicate parameters of dissolved oxygen, pH, air and water temperature, and nitrates. The class will discuss test results and the important balance of all parameters to a healthy ecosystem. (1 hour - D, A)



Build-a-River

River features study

Students will experience the flow of a river model and learn about water flow and hydrology. They will learn about the history of the Colorado River, floods, dams, irrigation and hydropower. The class will work together in groups to build dams in a simulated riverbed and will discover different river features and see erosion processes at work. Watershed, tributaries and surface runoff will be discussed. (1 hour – D, 2 hours – A)

Frankie the Fish

Point- and nonpoint-source pollution lab

Students will differentiate between point-source and nonpoint-source pollution as they follow the story of Frankie the Fish. Frankie begins life in a state fish hatchery, but he is eventually released into a Texas river. Students will follow Frankie in the river and complete a data and observation sheet of his adventures. As they complete this activity, they will come to recognize how water quality can be altered by human activity within the watershed. (1 hour – D, 1.5 hours – A)

Water Coursing Through Time

Water use activity

Water is important to all members of a community. As the demand for this finite resource grows, the need to conserve and manage supplies also grows. In this activity, students will simulate changes in a watershed over several rounds of time. In each round, the students will represent different water users whose demands exceed the capacity of the resource. This program encourages students to practice math skills, evaluate scientific thoughts and social behavior, and discuss environmental concerns in their hometowns. (1 hour – D, A)

Building an Aquifer

Water cycle and groundwater activity

Groundwater is one of Earth's most valuable natural resources. The water stored in pores, cracks and openings of subsurface rock material is groundwater. Students will create their own geologic cross section or "earth window" by building aquifers from sand, soil, pebbles and "clay." They will then compare the movement of water through these diverse substrates and simulate drilling a well for groundwater. (1 hour – D, A)

Land Stewardship

A Walk in the Woods

Guided nature hike

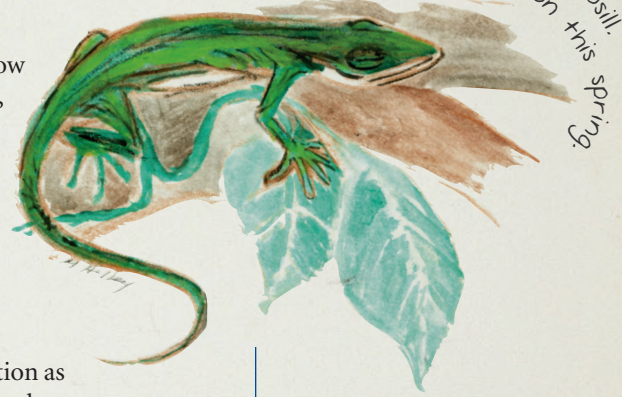
Students will tread the trails of McKinney Roughs and observe the flora and fauna. The interactions and interdependence of many species can be seen as students observe them in their natural habitat and hear the story of how the Colorado River has helped to shape this land's history. (1 hour – D, 1-2 hours – A)

Foray through the Forest

Guided comparative ecology hike

Sometimes you can't see the forest for the trees. But by looking at the trees that compose the unique forest ecological system, students will discover the differences between an oak-hickory woodland and a loblolly pine forest. Each has its own community of organisms that help and hinder the survival of trees and other inhabitants. Student hikers will appreciate the effect of tree cooling as they trek through the trails of McKinney Roughs. (1.5-2 hours – A)

Green anole is lounging outside the windowsill.
He has become a constant companion this spring.



"McKinney Roughs always excels with their Home school programs. I've been very pleased with their ability to make a fun yet educational class in a relaxed atmosphere that encourages the love of learning."

– Karin Barasa
Home school parent

"The clearest way into the Universe is through a forest wilderness."

- John Muir

Pharmacy in the Forest

Edible and medicinal plant hike

Whether you're hungry or hurting, the plants of McKinney Roughs are a resource to discover! Native people and pioneers found plants that let them live off the land and cure their ills, from toothaches to tummy troubles. Students will see the value of preserving species diversity as they experience the variety of beneficial plants so close at hand. (1 hour - D, 1.5 hours - A)

Puzzling Over Texas Ecoregions

Texas ecoregion lab

Students will explore the diversity of the 11 Texas ecoregions! In this hands-on class, students will study the similarities and the differences of the natural regions. They will acquire a perspective of how rainfall, geology, plants, animals and humans have shaped Texas. The students put together a puzzle of the ecoregions and match pictures of all the animals, plants and geological formations that make each region special. (1 hour - D, A)

Quercus Village Grid Studies

Oak forest investigation

Students will get down to the nitty "griddy" of forest studies in this scientific field population investigation. Areas of the forest marked by grids provide opportunities to collect data on abiotic factors as well as on organisms found within the grids. Participants will use scientific instruments to measure and record data, then develop theories explaining the spatial arrangement of trees and the process of natural succession. (1.5 hours - D, A)

Native Texas Grasses

Field study of native grasses

Green, blue, tall, short—what's so special about grasses? Students will discover the vital role of grasses in the ecosystem as we mow through the great variety of grass species in Texas and learn the differences between grasses, sedges and forbs. Food chains, prescribed burns, groundwater retention and soil conservation are all linked in this grassland exploration. (1 hour - D, A)

Anatomy of a Wildfire

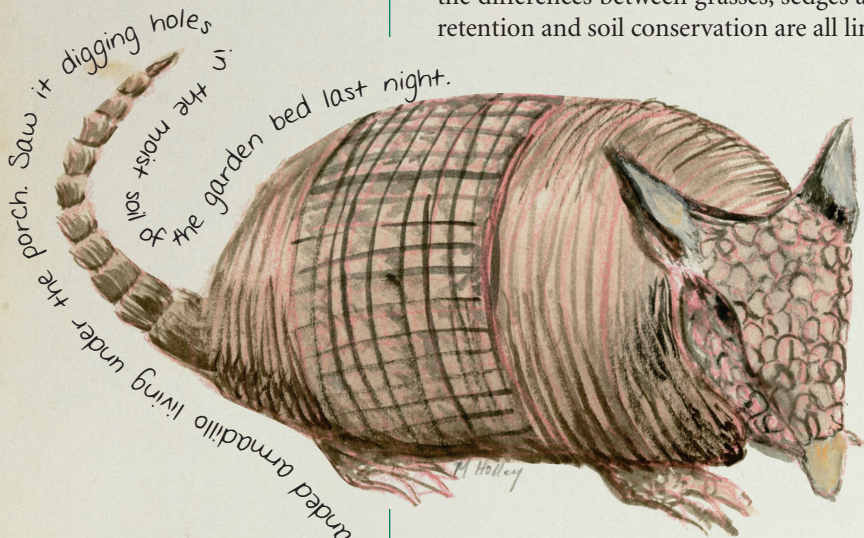
Fire ecology hike

Despite the devastating effects to people and property, fire can be a positive force in nature. Although fire and smoke signal major changes to the landscape, naturally occurring forest fires can help maintain a balanced and healthy ecosystem. Central Texas forests have historically been the site of regular wildfires, and resident plants and animals have adapted to survive. Students will investigate the anatomy of a burn, the effect of weather conditions on the intensity of the blaze, and its consequences to plants and soil. (2 hours - A)

Trees and Keys

Tree ID using dichotomous keys

Students will learn to unlock the secret to tree identification through learning about the role of trees in the environment and differences in leaf and bark morphology. They will then apply their observations of tree characteristics with the use of a dichotomous key to identify common trees. Students will use scientific instruments to determine a tree's height, diameter and circumference. (1.5 hours - D, A)



Found this nine-banded armadillo living under the porch. Saw it digging holes in the soil in the garden bed last night.

Life Under Our Feet

Decomposers

The forest floor is full of flora and fauna taking care of the dirty job of decomposition. Students will sift through leaf litter using scientific techniques to separate out the minuscule organisms living in the soil and view and identify them under a microscope. (1 hour – A)

Rock On!

Place-based geology

This class will learn to read the rocks and discover the geologic record telling how the land of Central Texas was formed and what organisms lived here over time. Classroom and field experiences will enable participants to distinguish types of rocks and the stages of the rock cycle. Students will visit special spots on a short hike to uncover rock and fossil specimens that tell the story of McKinney Roughs and how the land earned its name.

(1 hour – D, 1.5 hours – A)

Mystery Minerals

Mineral ID lab

A rock is a rock, right? How do you tell one mineral from another? Geologists look at certain properties that allow them to identify minerals. Students will work in small groups to learn to crack the code by applying one of three physical property tests. Each student then becomes an "expert" who helps students from other groups determine the identity of an unknown mineral specimen. (1 hour – D, A)

Wildlife

Nature Sleuths

Animal-tracking hike

Students will learn to read the signs left by animals as they traveled down the same trails you walk through in the mixed hardwood and pine forest of McKinney Roughs. They will discover clues and use their powers of deduction to interpret animal activities! Students will sharpen their observation skills as they examine the importance of snags (standing dead trees), forest litter and brush piles. At the same time, they will learn to identify natural resources that were essential to the survival of the first human residents of this area. (1.5 hours – A)

Survival of the Wettest

Adaptations of aquatic vertebrates

What are the traits that allow certain vertebrates to survive in an aquatic environment? Participants will get up close and personal with a live small alligator, snakes, turtles, toads and salamanders to discover the adaptations of eyes, ears and feet that enable them to thrive in and around the Colorado River. (1 hour – D, A)

Insect Investigations

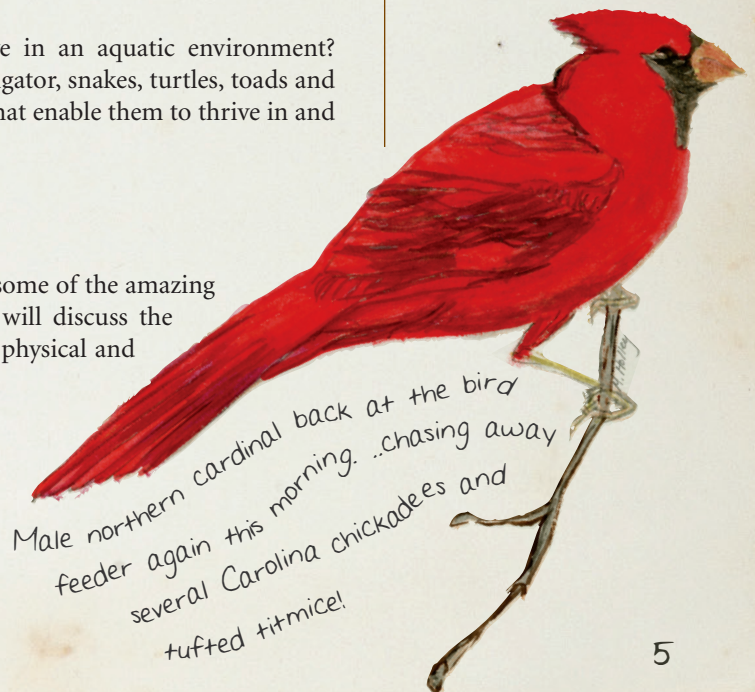
Insect field study

They creep, they crawl, they fly, they're everywhere! What are some of the amazing adaptations that have made insects so successful? Students will discuss the beneficial and harmful behavior of insects and investigate the physical and behavioral characteristics of different insect orders.

(1-1.5 hours – D, A)

"The park is beautiful, and the children loved it. They were wowed by the newly emerged monarch, by the views on the nature hike, by the lava rocks and chipped stones they saw on the trail."

– **Johnnie Denton**
Austin Montessori School



Male northern cardinal back at the bird feeder again this morning. ..chasing away several Carolina chickadees and tufted titmice!

"Come forth
into the light
of things; Let
nature be your
Teacher."

- William Wordsworth

Animal Trackers

Recognizing animal signs

Who's been here? This class will track some local Texas critters using the clues they left behind. Students will discover the secret to identifying elusive animals through tracks and signs and learn about the diet, behavior and anatomy of these native creatures. Using animal biofacts, students will match the animal with the sign it left behind, then head out to the trail to use their powers of observation to find real animal signs along the trails and meadows of the park. (1 hour - D, A)

C.S.I. - Carnivore Skull Investigation

Animal skull adaptations

Students will learn about the diet and habits of mammals by examining the physical features of their skulls. Teeth and jaw structure show what percentage of meat or plants was in the animal's daily diet. They will learn to determine the relative age of the animal by using armadillo and coyote skulls as a case study and, using raccoon skulls, will determine which skulls belonged to a male or female. The features of the skulls will be measured and compared to see who had the best sense of hearing, sight, and smell and the strongest pheromones. Hands-on stations will emphasize questions that involve measuring, using formulas, comparing and contrasting. Students will use real wildlife skulls in this detailed examination. (1 hour - D, 1.5 hours - A)

Birds of a Feather

Bird adaptations

Humans have long been inspired and fascinated by birds' ability of flight and the beauty of their appearance. What allows these amazing creatures to fly and be successful in their varying environments? Students will learn about birds' adaptive physical and biological characteristics and will explore bird diets and habitats. Students will learn to identify common birds by sight and sound and practice the basics of bird watching while in the field. (2 hours - A)

Renewable Energy

Alternative Energy Boost

Renewable energy lab

How will Texas meet increasing demands for energy? What are the alternative energy resources? Students will learn the difference between renewable and nonrenewable resources and learn about the advantages and disadvantages of hydro, solar, wind and fossil fuels. They will rotate through hands-on work stations that use real wind generators to pump water into a water tower and solar voltaic cells and voltage meters to measure power output. This program will introduce students to renewable energy with fun, interactive, group-led exercises and a real working solar array and wind turbine they will be able to view up close. (1.5 hours - D, A)

Sun-sational!

Solar power lab

Students will explore the ways the earth depends on solar energy through interactive exercises. They will discover different ways we use the sun's energy everyday and new ways to conserve energy with the help of the sun. They also will learn how solar energy works by participating in the solar cell simulation game - the students become the photons and electrons that produce energy. The class demonstrates harnessing the power of the sun by racing solar cars in a field right next to a real working solar array! (1 hour - D, A)

Found this sphinx moth under
the porch roof taking shelter
from the rain, I think.



Nighttime Academy Programs

At the Roughts, the learning doesn't end when the sun goes down! No overnight trip to McKinney Roughts is complete without a chance to learn, explore and have fun after dark.

Campfire and S'mores

The classic outdoor evening experience! Students gather around a campfire to warm their toes and toast marshmallows, while McKinney Roughts staff assist in building the fire and assembling – what else? – s'mores! (1 hour – A)

Stargazing

"The stars at night are big and bright...!" McKinney Roughts staff will guide your group on a tour through the Texas night sky, revealing the beauty and lore of the constellations and the wonders of galaxies, star clusters and nebulae. (2 hours – A)

Owl Prowl

While people get ready for bed, much of the animal world is just waking up! The mystique of the darkness is revealed as McKinney Roughts staff guides you along the trails at night. Use your sense of hearing to listen for nocturnal critters, including the eastern screech owl, and find out "who" or what is active after dark! (1 hour – A)

Recreation

McKinney Roughts recreation programs present students with a unique opportunity to work and play together in a series of problem-solving, group decision-making, positive risk-taking activities in an outdoor setting. Programs include rafting, land navigation and team-building using low and high elements on our challenge course. All of these programs are a wonderful way to tie together your group's McKinney Roughts experience.

Where on Earth?

Beginning map reading and compass skills

Students will set their bearings by using the Earth's natural magnetic field! They will learn navigation skills through practice with a compass and map. After learning how to read a topographical map, students also will learn how to use a compass to "shoot a bearing." (1 hour – D, A)

Navigating Nature

Beginning orienteering

This land navigation experience unfolds by further developing students' basic orienteering techniques with more advanced map-reading skills. These skills will be put to the test as participants practice "shooting a bearing" and finding clues leading to the solution of a mystery. Students will use a map to navigate through the beautiful woodland and open meadows of McKinney Roughts.

(1 hour if combined with previous class, 2 hours without previous program – D, A)

Plotting Your Path With GPS

Intro to GPS

Use satellite technology to navigate a nature trail. Students will learn how a Global Positioning System (GPS) unit works and how to set and follow set waypoints. Data collected at various locations while hiking will enable students to create a trail map by plotting their waypoints on a topographical map of the park. (2 hours – D, A)



"We got to go on the high elements. I learned how to face my fears and go on something really high up in the air."

– Henry B.
Fifth-grader



"Thank you for making my day great... I loved learning how to water test and rafting. The field trip to y'all's park was my favorite throughout all my years in school. And trust me, I've been on a lot of field trips!"

- Emily S.
Sixth-grader



Colorado River Raft Trip

Rafting on the Texas Colorado River provides participants with a safe, personal experience as they paddle with a team of fellow floaters. Lessons on river history, the ecology of this riparian system, and the importance of preserving this valuable resource flow through an unforgettable river adventure. (2-3 hours - D, A)

Teambuilding Challenge Course

Games and Initiatives

Participants will set their goals high as a trained facilitator guides their group through a series of initiatives designed to promote cooperation, trust, communication, respect, goal-setting and problem-solving. Moving into limited low-course elements allows the group to develop skills in collective achievement and cooperative strategy. (Time varies - D, A)

Low Course

A series of team-building activities involving physical and mental trials provide the framework for this challenge course program. Beginning with initiative activities and progressing into more advanced use of low-course elements, participants focus on skills in effective communication, accommodating diversity, and leadership development. (Time varies - D, A)

High Course

Participants aim high as they move from activities focused on group interactions to those spotlighting individual accomplishment with group support. The high course provides challenges that have greater interpersonal intensity and leads to building self-esteem, breaking through barriers, and pushing perceived limits. (Time varies - D, A)



Natural Science Education Programs Price List

Our educational programs reinforce the Texas Essential Knowledge and Skills (TEKS) objectives and the processing skills necessary for the Texas Assessment of Knowledge and Skills (TAKS) test.

Academy in the Roughs schedule options (Requirements: 30 student minimum; school must have student/teacher ratio of 10:1)	Cost for youth participants	Cost for adults, teachers and chaperones
<p>2 days, 1 night</p> <p>Price includes 3 catered meals; residency in our climate-controlled dorms equipped with rest rooms and showers on each floor; and approximately 10 hours of programming-if you arrive before lunch on the first day and depart around 1 pm on the second day.</p>	\$110	\$55
<p>3 days, 2 nights</p> <p>Price includes 6 catered meals; residency in our climate-controlled dorms equipped with rest rooms and showers on each floor; and approximately 16 hours of programming-if you arrive before lunch on the first day and depart around 1 pm on the second day.</p>	\$170	\$105

Day Programs (scheduled by request) - Two-program minimum per visit
A one-hour program for 60 students or more – \$240 per program. Cost per additional student – \$4
Two, one-hour programs for 60 students or more – \$480 per program. Cost per additional student – \$8
Rafting and challenge course programs are an additional fee per student. Please contact us for a cost estimate for your group.

How To Register

Contact: McKinney Roughs Nature Park
1-800-776-5272, Ext. 8001, or (512) 303-5073
or

1884 SH 71 West • Cedar Creek, Texas 78612 • E-mail: outdoorprograms@lcra.org
For more information, visit: www.lcra.org/mckinneyroughs.

Driving Directions to McKinney Roughs

From Austin: McKinney Roughs is located 13.2 miles east of Austin-Bergstrom International Airport (ABIA). Our rock entrance is 8.4 miles west of Bastrop. Look for the windmill above the trees at our entrance.

