

The Meadows Center for Water and the Environment



TEKS CURRICULUM GUIDE Fifth Grade



THE MEADOWS CENTER
FOR WATER AND THE ENVIRONMENT
TEXAS STATE UNIVERSITY

The Meadows Center

The Meadows Center Educational Tours mission is to provide people of all ages with the ability to recognize Spring Lake as a unique freshwater ecosystem through interpretative interactive experiences that engages the audience in an exploration of interconnections between all living things and water.

All tours require a two-week advanced reservation. Tour dates are not guaranteed until your confirmation notice from The Meadows Center Education Office has been processed. The listed group rates apply to any group of 15 people or more. Prices subject to change without notice. Listed prices are for school groups and non-profit organizations.



Activities for Fifth Grade

1. Glass-Bottom Boat Ride

Length: 30 minutes

As students glide across Spring Lake in glass-bottom boats, they have a rare opportunity to see underwater life from a different perspective. View over 1,000 springs that bubble up 150 million gallons a day of clear water from the Edwards Aquifer to form Spring Lake, the headwaters of the San Marcos River. Declared a critical Habitat by the Federal Government in 1980, Spring Lake is the home of several endangered species.

2. Wetlands Boardwalk

Length: 30 minutes

Journey over a 1/10 mile floating boardwalk through our wetlands habitat. Students will learn about what wetlands are and what species live in them. Stroll by "Turtle Island" where turtles often sunbathe and birds migrate through.

3. Aquarium and Discovery Hall Exhibit

Length: 15 minutes

Students will see live endangered species on display in this new aquarium exhibit.

4. Bug Picking

Length: 30 minutes

Participants will conduct an experiment in order to test the quality of the water at Meadows Center based on the bugs they find in their water samples.

5. Wetlands Bug Bingo

Length: 15 minutes

This activity goes hand in hand with Bug Picking. Students will learn what different aquatic bugs look like and how to identify them while playing a fun game of "Wetlands Bug Bingo."

6. All the Water in the World

Length: 15 minutes

During this interactive activity, students learn how little fresh water is available for use by all living things.

7. Frog Food Chain Tag

Length: 15 minutes

During this interactive game, students pretend to be frogs competing with each other for prey while avoiding the predator herons in our wetlands food chain. What our frogs don't know is that there is a twist to this game... this wetland habitat has been polluted! How will the frogs survive?

8. Water Conservation Game

Length: 15 minutes

This trivia game explores the theme of conserving water. Teams compete to see who can successfully save the most water.

9. Journey of a Water Drop

Length: 15 minutes

Students pretend to be a water drop on a journey through the water cycle.

10. Nature Orienteering Plant Scavenger Hunt

Length: 2 hours

Students will participate in a nature orienteering scavenger hunt while hiking on the beautiful Spring Lake Preserve adjacent to The Meadows Center. Students will use compasses and an iPad to navigate while identifying plants in the area. (Available for schools with 4 or less classes total)

11. Enviroscope 3D Watershed Model Presentation

Length: 30 minutes

Students learn about watersheds, and point and non-point source pollution that affects water quality. Students participate in an activity where they put different types of pollution on the ground of the 3D watershed and see how rainfall creates runoff that carries that pollution into rivers and lakes. (Available for schools with 4 or less classes total)

12. Water Quality Presentation

Length: 30 minutes

Water quality is important for human, wildlife, and ecosystem health. Students will explore a basic water quality testing kit and examine what the results of the test mean for the health of the Spring Lake ecosystem. (Available for schools with 4 or less classes total).

*Corresponds with Texas Aquatic Science lesson 1.9 Student Investigation in Water Quality <http://texasaquaticscience.org/>

13. Mapping the Meadows Center

Length: 30 minutes

Students will delve into mapmaking during this hands-on activity to learn about the importance of maps and map-making, understand the importance of different elements of a map, and build upon foundational spatial thinking skills. Spatial ability is important for success in many fields of study, including mathematics, natural sciences, engineering, economic forecasting, meteorology, and architecture. Mapping at Meadows is part of a study we are conducting to learn about how students understand nature and maps. Teachers have the option to receive a copy of the participating students' maps by email. Parents who do not want their child's map to be involved in the study can sign the opt-out form.

Geography TEKS: 6A, 24C

14. Land Use in our Watershed

Length: This is an add on activity that will take place throughout your tour

Hunt for evidence of water. This scavenger hunt activity leads students around the site looking for signs of runoff, erosion, accumulation, or infiltration. This ties into discussions of watersheds, surface water, and aquifer recharge.

*Corresponds with Texas Aquatic Science lesson 3.3 Land Use in Our Watershed
<http://texasaquaticscience.org/>

15. Competition within Spring Lake

Length: 15 minutes

Your environment is crowded! What happens to your resources? Competition for basic survival needs is a part of living in an aquatic habitat. Many factors influence the amount of resources available for species. This engrossing game demonstrates how different limiting factors affect survival rates.

*Corresponds with Texas Aquatic Science lesson 5.2 Competition within Spring Lake
<http://texasaquaticscience.org/>

16. Food Web Wonders

Length: 15 minutes

Participate in a giant string-web to explore how energy moves in an ecosystem. Species interact through food webs, which require a healthy ecosystem to function. Starting with the sun, energy moves through the natural system from plant to carnivore to decomposer.

*Corresponds with Texas Aquatic Science lesson 8.3 Where do I Live? What do I Eat?
<http://texasaquaticscience.org/>

17. The Hunt for Biodiversity

Length: 30 minutes

What can we learn from plants? Biodiversity is important to the health of an ecosystem. This activity introduces students to scientific methods (including sampling) and discusses the importance of tall plants growing near a waterbody like Spring Lake. (Available for schools with 4 or less classes total).

*Corresponds with Texas Aquatic Science lesson 6.3 The Hunt for Biodiversity
<http://texasaquaticscience.org/>



Activity Connections with Texas Essential Knowledge Standards (TEKS)

5 th Grade Science TEKS	Applicable Activities
(5.1) Scientific investigation and reasoning. The student conducts classroom and outdoor investigations following home and school safety procedures and environmentally appropriate and ethical practices. The student is expected to:	
(A) demonstrate safe practices and the use of safety equipment as described in the Texas Safety Standards during classroom and outdoor investigations; and	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 17
(B) make informed choices in the conservation, disposal, and recycling of materials.	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14
(5.2) Scientific investigation and reasoning. The student uses scientific methods during laboratory and outdoor investigations. The student is expected to:	
(A) describe, plan, and implement simple experimental investigations testing one variable;	11, 14, 17
(B) ask well-defined questions, formulate testable hypotheses, and select and use appropriate equipment and technology;	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 14
(C) collect information by detailed observations and accurate measuring;	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 16, 17
(D) analyze and interpret information to construct reasonable explanations from direct (observable) and indirect (inferred) evidence; and	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 16, 17
(F) communicate valid conclusions in both written and verbal forms.	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 17
(5.3) Scientific investigation and reasoning. The student uses critical thinking and scientific problem solving to make informed decisions. The student is expected to:	
(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student;	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15
(D) connect grade-level appropriate science concepts with the history of science, science careers, and contributions of scientists.	11, 14, 15, 16, 17
(5.4) Scientific investigation and reasoning. The student knows how to use a variety of tools and methods to conduct science inquiry. The student is expected to:	
(A) collect, record, and analyze information using tools, including calculators, microscopes, cameras, computers, hand lenses, metric rulers, Celsius thermometers, prisms, mirrors, pan balances, triple	4, 10, 11, 12, 14, 15, 17

beam balances, spring scales, graduated cylinders, beakers, hot plates, meter sticks, magnet, collecting nets, and notebooks; timing devices, including clocks and stopwatches; and materials to support observations of habitats or organisms such as terrariums and aquariums; and	
(B) use safety equipment, including safety goggles and gloves.	4, 10, 12
(5.7) Earth and space. The student knows Earth’s surface is constantly changing and consists of useful resources. The student is expected to:	
(D) identify fossils as evidence of past living organisms and the nature of the environments at the time using models	1, 2, 3
(5.8) Earth and space. The student knows that there are recognizable patterns in the natural world and among the Sun, Earth, and Moon system. The student is expected to:	
(B) explain how the Sun and ocean interact in the water cycle.	9
(5.9) Organisms and environments. The student knows that there are relationships, systems, and cycles within environments. The student is expected to:	
(A) observe the way organisms live and survive in their ecosystem by interacting with the living and non-living elements;	1, 2, 3, 4, 5, 7, 10, 11, 15, 16
(B) describe how the flow of energy derived from the Sun, used by producers to create their own food, is transferred through a food chain and food web to consumers and decomposers;	1, 2, 3, 4, 5, 7, 10, 16
(C) predict the effects of changes in ecosystems caused by living organisms, including humans, such as the overpopulation of grazers or the building of highways; and	1, 2, 3, 4, 5, 7, 10, 11, 15, 16, 17
(D) identify the significance of the carbon dioxide-oxygen cycles to the survival of plants and animals	1, 2, 3, 4, 5, 7, 10, 15
(5.10) Organisms and environments. The student knows that organisms undergo similar life processes and have structures that help them survive within their environments. The student is expected to:	
(A) compare the structures and functions of different species that help them live and survive such as hooves on prairie animals or webbed feet on aquatic animals;	1, 2, 3, 4, 5, 7, 10
(B) differentiate between inherited traits of plants and animals such as spines on a cactus or shape of a beak and learned behaviors such as an animal learning tricks or a child riding a bicycle; and	1, 2, 3, 4, 5, 7, 10
(C) describe the differences between complete and incomplete metamorphosis of insects.	1, 2, 3, 4, 5, 7, 10

Additional Materials

Additional information on water education can be found on the Texas Aquatic Science website at <http://texasaquaticscience.org/>. This website provides additional learning opportunities and materials for a variety of subjects concerning water, including “Water is Life”, “Water for the people and the Environment”, “Bays and Estuaries”, and many others.



Frequently Asked Questions

How do I book a group tour?

You may book a tour online at <http://www.aquarena.txstate.edu/Educational-Tours/Tour-Reservation-Form.html>. If you have questions please call 512-245-7540. Our office hours will vary depending on park traffic, so please leave a message and we will call you back.

How far in advance should I book my tour?

We require two weeks advance notice for group tours. Please remember the days during March through August can fill up several months in advance, so please book your tour as soon as possible.

Do you have a maximum number of students that can attend the field trip?

There is not a set maximum number of students per field trip. Your tour-booking agent will discuss the best activities for your group's size when you book your tour. We recommend booking your tour early for best choice of dates.

Do you have a minimum number of chaperones required?

One teacher per class is sufficient for our tours. The one required adult should never leave the group alone with the tour guide. You may choose to bring additional teachers and parents if you wish (please check your tour confirmation for fee information). The boats will comfortably seat 25 people each, so additional adults may need to ride on a separate boat than the rest of the group.

What age groups are your programs appropriate for?
All ages. We customize our programs for your group.

I would like to do something different than listed on your website, can you accommodate my group?
We try our best to accommodate special requests.

Do I need to book a specific time for my tour?
Yes, you will book a specific date and time for your tour. Please arrive 15 minutes prior to the start time of your tour. We apologize that we are unable to push back the start times of tours. If your group is late we may need to cut a portion of your tour time. Please call 512-245-7570 and push 0 to notify us that you will be late.

What if it rains?
If it rains on your tour date you will have the option to reschedule. Please call 512-245-7570 and push 0 on the day of your tour and let a staff member know that your group will not be coming. The boats are enclosed and will still run unless there is lightning. We have limited indoor space so please dress for the weather if it is raining on your tour date.

Booking a Tour

Web: <http://www.meadowscenter.txstate.edu/Education/EducationalTours.html>

Phone: (512) 245-7540