

# The Meadows Center for Water and the Environment



## TEKS CURRICULUM GUIDE Eighth 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 Eight 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 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. Nature Orienteering Plant Scavenger Hunt**

Length: 2 hours

Students will participate in a nature orienteering scavenger hunt during a hike on the beautiful Spring Lake Preserve. Students will use compasses and an iPad to navigate, while identifying plants in the area. Afterwards students will draw a map of their field trip to learn about different parts 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. This activity 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. (Available for schools with 4 or less classes total)

### **10. 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/>

### **11. 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.

### **12. 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/>

### **13. 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/>

### **14. 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/>

### **15. 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/>

### **16. 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)



## Activity Connections with Texas Essential Knowledge Standards (TEKS)

8 <sup>th</sup> Grade Science TEKS	Applicable Activities
<b>(8.1) Scientific investigation and reasoning.</b> The student, for at least 40% of instructional time, conducts laboratory and field investigations following safety procedures and environmentally appropriate and ethical practices. The student is expected to:	
(A) demonstrate safe practices during laboratory and field investigations as outlined in the Texas Safety Standards; and	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 15
(B) practice appropriate use and conservation of resources, including disposal, reuse, or recycling of materials.	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 15
<b>(8.2) Scientific investigation and reasoning.</b> The student uses scientific inquiry methods during laboratory and field investigations. The student is expected to:	
(A) plan and implement comparative and experimental investigation by making observations, asking well-defined questions, and using appropriate equipment and technology.	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15
(B) design and implement comparative and experimental investigations by making observations, asking well-defined questions, formulating testable hypotheses, and using appropriate equipment and technology;	1, 2, 3, 4, 5, 6, 7, 8, 9

(C) collect and record data using the International System of Units (SI) and qualitative means such as labeled drawings, writing, and graphic organizers;	10, 12, 14, 15, 16
(D) construct tables and graphs, using repeated trials and means, to organize data and identify patterns; and	10, 15
(E) analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends.	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15
<b>(8.3) Scientific investigation and reasoning.</b> The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists. The student is expected to:	
(A) in all fields of science, analyze, evaluate, and critique scientific explanation 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
(B) use models to represent aspects of the natural world such as an atom, a molecule, space, or a geologic feature;	13, 14, 16
(C) identify advantages and limitations of models such as size, scale, properties, and materials;	13, 16
<b>(8.4) Scientific investigation and reasoning.</b> The student knows how to use a variety of tools and safety equipment to conduct science inquiry. The student is expected to:	
(A) use appropriate tools to collect, record, and analyze information, including lab journals/notebooks, beakers, meter sticks, graduated cylinders, anemometers, psychrometers, hot plates, test tubes, spring scales, balances, microscopes, thermometers, calculators, computers, spectrosopes, timing devices, and other equipment as needed to teach the curriculum; and	4, 9, 10
(B) use preventative safety equipment, including chemical splash goggles, aprons, and gloves and be prepared to use emergency safety equipment, including an eye/face wash, a fire blanket, and a fire extinguisher.	4, 9, 10
<b>(8.9) Earth and space.</b> The student knows that natural events can impact Earth Systems. The student is expected to:	
(B) relate plate tectonics to the formation of crustal features.	1, 2, 3, 4, 5, 7
<b>(8.11) Organisms and environments.</b> The student knows that interdependence occurs among living systems and the environments and that human activities can affect these systems. The student is expected to:	
(A) describe produce/consumer, predator/prey, and parasite/host relationships as they occur in food webs within marine, freshwater, and terrestrial ecosystems;	1, 2, 3, 4, 5, 7, 14
(B) investigate how organisms and populations in an ecosystem depend on and may compete for biotic and abiotic factors such as quantity of light, water, range of temperatures, or soil composition;	1, 2, 3, 4, 5, 7, 12, 13
(C) explore how short- and long-term environmental changes affect organisms and traits in subsequent populations; and	1, 2, 3, 4, 5, 7, 12, 15, 16
(D) recognize human dependence on ocean systems and explain how human activities such as runoff, artificial reefs, or use of resources modified these systems.	1, 2, 3, 4, 5, 7

## 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