



Delta Discovery

Connecting Classrooms to Nature at the
Nueces Delta Preserve

Upcoming Dates

November 1: World Vegan Day

November 3 1957: Soviet spacecraft "Sputnik" was launched

November 6: **Science and Civics Workshop**

November 15: America Recycles Day

November 21: **Delta Discovery Day- Family Picnic**

December 5: World Volunteer Day

December 21: Winter Solstice

December 21 1968: Apollo 8 is the first spacecraft to orbit the Moon

January 22: **LEP Workshop**

January 31 1958: US launched their first satellite named "Explorer 1"

Teacher Discovery News

1. On December 25 the moon will reach full phase, making it visible for much of the night. Look up at the moon and sketch what you see. Make sure to include your observations: what was the weather like, how bright did the moon shine, what time did the moon rise, etc.

2. The Puppis-Velid meteor shower will reach its maximum rate of activity on 9 December 2015. Some shooting stars associated with the shower are expected to be visible each night from 17 Nov to Jan. On December 9 go outside and look at the night sky. Make a sketch of the stars in the sky while keeping an eye out for shooting stars. Make sure to include the shooting star in your sketch if you see one.

3. March 18 marks the anniversary of the first space walk. Imagine that you were on this walk. Describe how you think Earth would look from space. What would you look for? What would you recognize? What would you NOT want to be able to see from space?

*For more information on what to look for in the night sky, visit: <https://in-the-sky.org/newsindex.php?feed=thesky>

Journaling Topics

Did You Know?

There are approximately 400 billion stars in our **Milky Way galaxy** alone! Stars are spheres of very hot gases (also known as **plasma**) that are held together by gravity. As stars get older, they change size and color (example: our Sun is considered to be a **yellow dwarf** and will eventually be a **red giant**). As small stars begin to die, they turn into **white dwarfs** until they finally turn dark or black, where they are considered **black dwarfs**. Big stars have a shorter lifespan than small stars and instead of slowly turning into a black dwarf, they explode, causing a **supernova**. Supernovas can eventually turn into black holes! **Black holes** are one of the biggest mysteries in space, very little is known about them other than their origin.



For more information contact
Lari Jo Johnston or Leigh Perry
Coastal Bend Bays & Estuaries Program
361-673-6830 education@cbbep.org

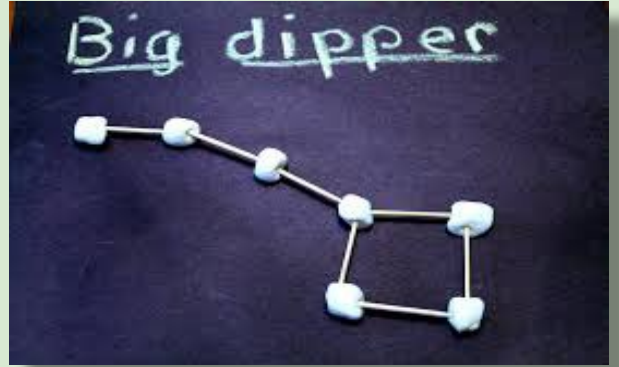
Tasty Constellations

Materials:

- toothpicks
- mini marshmallows
- copies of attached diagram

Instructions:

1. Have students select their favorite constellation from the attached diagram.
2. Hand out the appropriate amount of toothpicks and marshmallows based on their constellation choice.
3. Have students construct their constellation using marshmallows as the stars and toothpicks as their adjoining properties (images attached for example).
4. Enjoy eating your stars!



Extend the idea: Mark index cards with constellations and poke holes through the dots. Hold index cards in front of a flashlight while pointed up to the ceiling or a wall.

<p>Cassiopeia</p>	<p>Leo</p>
<p>Cancer</p>	<p>Big Dipper</p>
<p>Cygnus</p>	<p>Little Dipper</p>
<p>Hercules</p>	<p>Cepheus</p>

Solar System Scale Activity

Materials needed (per student):

- A 24" sentence strip, or a strip of paper 3" wide by 24" long.
- Pencil

Directions:

1) Place the piece of paper on your desk in front of you vertically (so that it is tall instead of fat.) In very small letters, write "Sun" on the very top edge of the strip and "Pluto" on the very bottom edge. Encourage students to use small print, especially for the Sun. And instruct them to NOT use circles to depict object, just letters.

2) Fold the strip in half (top to bottom) and open it up again, showing the crease. Ask the students what object in the Solar System might belong on the crease. Maybe there isn't an object there. Ask what other astronomical objects make up the solar system. Usually, students will respond with the order of the planets – My Very Education Mother Just Served Us Nine Pizzas... or more recently – My Very Educated Mother Just Served Us Nachos. (See note below about Pluto's new "Dwarf Planet" status.)

You may want to write M,V,E,M,J,S,U,N,P on the board as a reminder.

3) What planet do you think might belong on the crease (halfway from the Sun to Pluto)? Write your guess on the crease. If there is time available, you may collect a few strips and tape them to the board and have the class vote on which planet they think is accurate. Next, reveal the answer and hand back the strips.

4) Write in the rest of the planets on the strip of paper, making sure you put them in order and keep their relative locations where you think they should be.

5) When your teacher provides the "answer key", write down the answers on the other side of the paper. Compare the correct answers to your own. How did you do?

Read the following key to the class, or write down on the board.

To Make the Answer Key:

- 1) Turn strip over and refold halfway between Sun and Pluto. On the crease, write Uranus.
- 2) Fold Pluto to Uranus. Write Neptune.
- 3) Fold Sun to Uranus. Write Saturn.
- 4) Fold Sun to Saturn. Write Jupiter.
- 5) Fold Sun to Jupiter. Write No Planet or Asteroid Belt.
- 6) Fold Sun to Asteroid Belt. Write Mars.
- 7) Fold Sun to Mars. Write Venus.
- 8) Write Mercury in between Sun and Venus.
- 9) Ask students which planet is missing. Write in Earth in between Venus and Mars.



Solar System Scale Activity

Distance from the Sun *

Planet	(AU)**	(106 Kilometers)
Mercury	0.3871	57.9
Venus	0.7233	108.2
Earth	1	149.6
Mars	1.5237	227.9
Jupiter	5.2028	778.3
Saturn	9.5388	1427.0
Uranus	19.18	2869.0
Neptune	30.0611	4497.1
Pluto	39.44	5900

* Although the orbits of all planets are almost circular, their actual shapes are ellipses. The numbers given are the average distance from the sun to the planet, called the semi-major axis of their ellipse.

** AU stands for Astronomical Unit. It represents the average distance from the Sun to the Earth.

Texas Essential Knowledge and Skills (TEKS) covered:

112.5-3.3(C); 112.6-4.3(C); 112.7-5.3(C); 112.22-6.3(C); 112.23-7.3(C); 112.24-8.3(C): Students represent the natural world using models and identify their limitations.

112.5-3.11(C): Students identify planets in our solar system and their position in relation to the Sun.

A couple of notes on Pluto's uniqueness:

1. Dwarf Planet:

In August of 2006, the International Astronomical Union voted to redefine Pluto as a "dwarf planet". The reason this was done is because around the year 2000 astronomers were beginning to find other objects in our solar system that were very much like Pluto, one of which (Eris) is even bigger than Pluto. If Pluto was to still be called a "planet", then all of these new objects were going to need to be called "planets" as well, and our list of planets would begin to grow indefinitely. A line had to be drawn somewhere. Astronomers decided that the best definition for a planet would have to exclude Pluto. The new definition of a "planet" in the solar system is a celestial body that: 1) is in orbit around the Sun, 2) has enough mass to obtain a nearly round shape, and 3) has 'cleared the neighborhood' around its orbit. The newly created term "dwarf planet" was defined similarly, except for the 3rd part, meaning that it hasn't been able to clear out other bodies of comparable size from its orbital zone. Pluto hasn't cleared out other 'large' objects from its orbital zone; hence it is now called a "dwarf planet".

2. Pluto's unique orbit:

Pluto's orbital path around the Sun is very far from being circular, its elliptical orbit is much more eccentric than the eight planets. At times, Pluto is 49 AU from the Sun and at other times it is only 29 AU from the Sun, bringing it slightly closer to the Sun than Neptune (though they will never collide). In addition, Pluto's orbit is highly inclined (tilted about 17°) relative to the orbital plane of the planets (the ecliptic).

This activity was adapted from an activity created by Pam Whiffen of The Solar System Ambassadors Program - sponsored by the Jet Propulsion Laboratory, Caltech, and NASA

Delta News

“Smoke on the Water”

Earlier this month, the delta underwent a prescribed burn to help 800 acres of the coastal prairie habitat. Fire generally gets a bad rap, but it is vital to many ecosystems as it clears away dry, dead brush and brings new life to the grasslands which in turns provide new habitat for migratory bird species. Thank you to Delta Land Services, M&G Chemicals, U.S. Fish and Wildlife Service and CBBEP for funding the project and The Nature Conservancy’s burn crew who helped plan and complete the prescribed burn.



“Fun in the Sun”

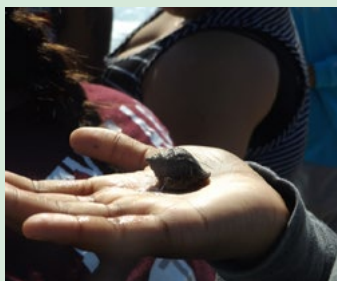
Our last Delta Discovery Day was a major success! Thank you to all of the individuals and families who came out to participate and enjoy nature. Please check out photos from this event on our Facebook page. More information regarding the upcoming Delta Discovery Days can be found on our website, nuecesdeltapreserve.org. Admission is free but registration is required!

Learning On the Edge News

We are excited to embark on a new educational adventure centering around high school age groups. Thanks to **Texas Parks and Wildlife Department (TPWD)**, we have been given a grant to enhance our high school field trips. Through the grant we have been able to acquire new technology for high school students to use while attending two different field trips, one with us here at the Nueces Delta Preserve, and one at an area state park. The hope is that students will be able to compare and contrast habitat between the Delta and the state park and use the technology to record data that can be used back in the classroom.



Additionally, we have been able to provide some mentoring activities to high school students in the classroom, giving lessons on current topics (like the recent red tide outbreak) to give students opportunities to develop their public speaking skills to pass on what they have learned. If you are a high school teacher and are interested in setting up a field trip for your class(es), please contact Lari Jo Wallace at ljohnston@cbbep.org.



Delta Discovery Days

Please join us for our remaining Family Picnics! The Delta will be open to the public (free of charge!) April 9, and May 14 for a day of discovery and nature. The event will run from 11 to 2. Please bring a picnic, picnic blanket and plenty of water for everyone (we recommend at least two bottles per person). Bug spray and sunscreen is also highly encouraged! There will be staff scattered around the area to answer questions and give background information on plants, animals and history. We look forward to seeing you out there!

*Pre registration is required. Please follow the steps for registering on our website.



Upcoming Workshops

January 22: Leopold Education Project

The Leopold Education Project (LEP) is an environmental education program based on the classic writings of the renowned conservationist, Aldo Leopold. The LEP curriculum aligns with the essays in A Sand County Almanac as a springboard for observing the natural world, to instill a love and respect for the land and all that inhabit the land and to protect the earth's natural resources.

LEP has developed a proven curriculum (Lessons in a Land Ethic) that "fosters a positive relationship between our younger generations and the soil, water, plants and animals" - or what Leopold simply called - the land. His objective was to "teach the students to see the land, understand what he sees and enjoy what he understands".



February 11: Introduction to Field Sketching

As Frederick Franck said, "I have learned that what I have not drawn I have never really seen, and that when I start drawing an ordinary thing, I realize how extraordinary it is, sheer miracle." So let's start seeing extraordinary things in nature. Bring your pencil and learn some secrets to basic field sketching. We will strengthen your powers of observation and fire our inner art critic in order to begin our journey to better field sketches. The journal you will be using has 10 activities to begin your journey. Participants also receive curriculums that explore maps, create field sketches, write descriptive passages, use math to draw to scale, and label like a scientist.



February 12: Interactive Nature Journaling

This workshop will help you to intertwine field experiences and interactive foldables. Discover how to bring science to a new level in your interactive science journals. For more information contact Lari Jo Johnston at ljjohnston@cbbep.org

*Register online at www.nuecesdeltapreserve.org



Bird Conservation Curriculum Science Educator Training Workshop



When: Friday January 8 & Saturday January 9

Where: Texas A&M University-Kingsville, Kingsville, TX

- **FREE workshop!**
 - **Curriculum aligned with science TEKS**
 - **Original, hands-on, experiential lessons**
 - **Lesson equipment kit will be available to borrow**
 - **Work with wildlife graduate students & faculty**
 - **Certificate for 16 hours of professional development**
 - **Certificate for program completion**

Learn about techniques and research used in the wildlife field!

Get HANDS-ON experience with LIVE birds!

Light continental breakfast and lunch will be provided.

If you are interested in participating in the workshop and curriculum implementation, please RSVP by Friday December 18.

**RSVP to Janel Ortiz, Program Coordinator, at
TAMUKBirdsGK12@gmail.com**

