



CRITTER CONNECTIONS



Turtles in Texas

American White Water-lily



The American White Water-lily (*Nymphaea odorata*) grows in aquatic habitats such as shallow lakes and ponds. Water lilies have special adaptations that allow them to float on top of the water. The stem is a structure called a rhizome, which grows horizontally allowing roots to grow down into the soil and new plants to grow up and out of the water. The leaves are large and round, up to 10 inches or 25 centimeters across. This leaf shape provides a wide, flat surface for photosynthesis to occur and produce energy. The large white flowers usually open in the early morning through midday and they float on the water's surface.

Sweet Scent

This plant is also known as the Fragrant Water-lily or Sweet-scented Water-lily because of its nice smell which attracts a variety of pollinators. The sweet smell comes from the nectar, which pools in a bowl-like structure in the middle of the flower. The liquid serves

two functions, first to attract pollinators, and then once the insect has entered the pool of nectar, it washes off any pollen from their body that was collected from other flowers. Once the flower is pollinated in this manner, it will sink underwater and grow a fruit, which will produce seeds for new plants to grow.

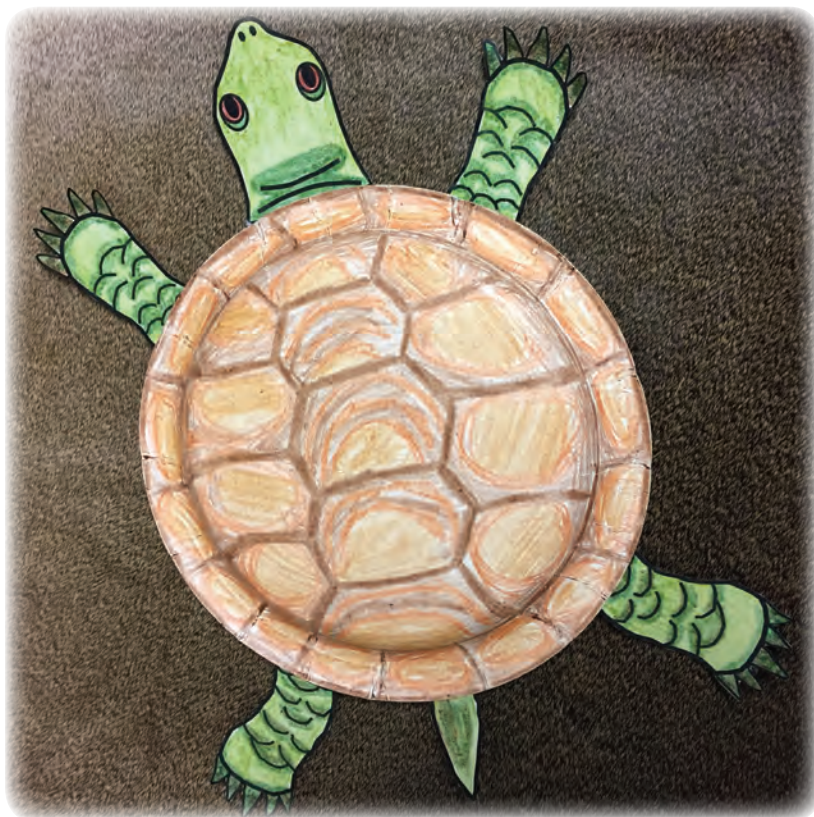
Friend of Wildlife

In addition to providing nectar to pollinators, water lilies are also an important food source for other types of wildlife. Plant-eating mammals such as deer, nutria, and beaver will eat the leaves and rhizomes. Ducks and other types of aquatic birds will eat the seeds, and even other parts of the plant that are underwater are a good food source for aquatic invertebrates and fish. Small species of wildlife such as frogs and insects will also use the large leaves as a resting platform above the water.

Photos and source: Ladybird Johnson Wildflower Center



Turtle Craft



Step 1: Download the craft template at goo.gl/2aPBYB

Step 2: Choose a shell for your turtle.

Possible shell ideas – piece of egg carton, paper bowl or plate, paper mache balloon, bottom of plastic bottle

Step 3: Color the turtle body parts and add pattern to shell

Step 4: Cut out turtle body parts

Step 5: Glue or tape turtle body parts to the shell using the tab

To download this craft go here:
goo.gl/2aPBYB

Did you know...

- ... that turtles have been alive since the time of the dinosaurs, over 200 million years ago?
- ... that a turtle's shell is actually part of its skeleton?
- ... that turtles do not have teeth; they have a beak like birds?
- ... that a turtle's shell is made of 60 different bones?
- ... that a turtle's scutes are responsible for the patterns on their shell?
- ... that in 1986 two Russian tortoises were launched into space and safely returned in a probe called Zond 5?
- ... that temperature determines the gender of a hatchling turtle, females hatch in warmer temperatures and males hatch in cooler temperatures?
- ... that some species of turtles have lived to be over 100 years old?



Painted Turtle

Photo source: USFWS

Color Me

Painted Turtle

Chrysemys picta

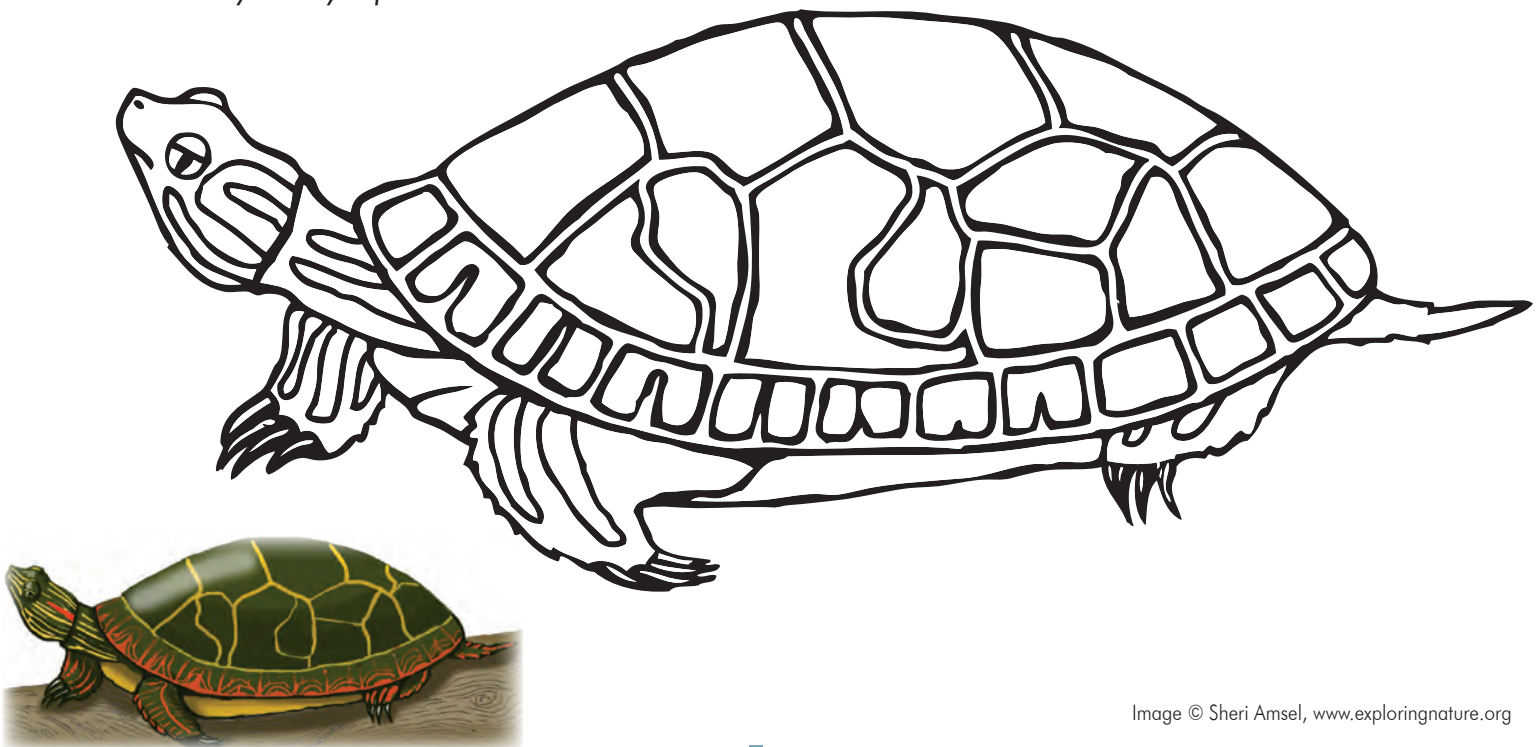


Image © Sheri Amsel, www.exploringnature.org



By Elanor Dean

Texas is home to about 30 different species or types of turtles. All species of turtles have some adaptations in common, but they look very different and have special parts, or structures, that function differently depending on their diet and habitat.

Turtles are reptiles, like lizards, alligators and snakes, so this means they share characteristics with other reptiles. All reptiles are cold-blooded, or ectothermic, which means that they are unable to control their body temperature like mammals and birds. Instead, they must rely on their habitat to adjust the temperature of their body--for example, laying in the sun to stay warm. Compared to amphibians, reptiles are more adapted to survive on land because of two adaptations, their eggs and body covering. Reptiles are covered with scales, which are dry, create patterns and provide them with protection. Many reptiles also lay special eggs, which unlike amphibian eggs, can survive in the air. Reptile eggs look a lot like bird eggs, but the shell is softer like leather. When it is time for a turtle to lay her eggs, she will leave the water and find a quiet spot to dig a hole and will lay her clutch of 10-200 eggs depending on the species.



One adaptation that separates turtles from all other reptiles is their shell. However, a turtle shell is not just one large piece, it is actually made of over 60 bones. The top, curved part of a turtle shell is called the **carapace** and the flat bottom part is called the **plastron**. Turtles are vertebrates, which means they have a backbone that is connected to the inside of the shell. Their ribs are also attached to the inside of the shell. Having their skeleton fused, or connected to their shell means that they are unable to slide out of their shell. So, how do they grow? Turtles are able to grow because their shell is made of many fused or connected bones and special scales

called **scutes**. As a turtle grows, so does its shell. Scutes are scales on the outside the shell and are made of keratin, just like fingernails. As the turtle grows, the scutes get larger and form rings similar to a tree trunk. Next time you see a turtle, look at its top shell, or carapace and you will see the scales have many rings. Scutes are also responsible for the pattern of a turtle's shell.



Texas Tortoise

Turtles do not eat with teeth; instead, they have a beak like birds. Hatchlings, which is what turtles are called when they first come out of the egg, have a special tooth called an egg tooth, or **caruncle**, which allows them to break out of the egg from the inside. After a few months, when the turtle is older, called a juvenile, the egg tooth will disappear as they no longer need it. Similar to a mammal's teeth or a bird's beak, a turtle's beak looks different depending on what it eats. Herbivore, or plant-eating turtles have a beak that is more flat with grooves for crushing and mashing plants, whereas a carnivore, or meat-eating turtle has a sharper beak for killing their prey and tearing up meat. Depending on the species, turtles eat a variety of foods from algae and seaweed, to sponges, fish, crabs and even jellyfish. Some types of sea turtle mistake floating plastic bags as jellyfish and become sick after eating the bag. Using reusable shopping bags and recycling plastic are two ways to help turtles.



Snapping Turtle

Turtles also have different physical adaptations depending on their habitat. Turtles live in many types of habitats from the ocean, to lakes and rivers and even on land in woodland habitats and the desert. All turtles have lungs and must breathe air, but turtles that spend most of their life under water are able to hold their breath for many hours. Sea turtles also have other characteristics that allow them to live in an underwater habitat. First, they have special glands that allow them to release extra salt from their body. Their body cannot handle the extra salt that they get from the food and water in their saltwater habitat,



Green Sea Turtle



so the glands keeps their body balanced. Another more physical adaptation is their legs. Sea turtle legs are adapted into a flat, long flipper structure, which helps them swim. Compare that to a turtle, like a red-eared slider, that spends time on the water and the land. Sliders swim in rivers and climb onto logs to bask, or warm up in the sun, so they have



Red-eared Slider

webbed feet with claws. The webs between their toes are helpful for swimming, and the claws help them crawl out of the water when they need to be on the land. Box turtles and tortoises are different from other turtles because they only live on the land, so they have strong legs for moving around on the ground and are strong enough to hold up their body. Imagine if you have ever seen a video where a sea turtle is on the land to lay eggs, they have a hard time moving on land because their feet are adapted to live in the water. Likewise, tortoises are not adapted for swimming. Another difference between tortoises and other types of turtles is that they are herbivores, or plant eaters. Other turtles will eat plants, but many are either omnivores, or carnivores.



Diamondback Terrapin

Many turtles in the world are endangered, or threatened. The Texas Tortoise and the Diamondback Terrapin are two species that have healthy populations in the United States, but their habitat is being taken away in Texas. Because of this, these turtles are under special protection laws in the state of Texas to help protect them and their habitat. Over 95% of the land in Texas is privately owned, which means

that individual people, known as landowners are responsible for the care of their land. Conservation of natural resources is so important for animals that have reduced habitats because we are responsible for whether these animals can survive in an area. Other than habitat loss, other things, such as pollution, affects turtles. Sea turtles are very affected by pollution, especially plastic waste. It is so important to recycle and reduce the amount of plastic that we use in our daily lives. Some turtles can live to be over 100 years old, and we are responsible for ensuring they live a long, healthy life. Using reusable items such as steel straws or fabric shopping bags are ways we can help. What other ways can you think of? If we make small changes like that in our daily lives, we can become better stewards for the wildlife in Texas.



Eastern Box Turtle



Spiny Softshell Turtle

WORD BANK

Carapace - the hard shell on the back of a turtle
Caruncle (egg tooth) - a small pointed bump on the snout that turtles use to help hatch out of their egg
Plastron - the hard bottom shell covering a turtle's belly
Scutes - large scales on the outside of a turtle's shell

Sources: Texas Parks and Wildlife; Herps of Texas

Photos in order by: Axel Mauruszat, Moondigger, Romey Swanson, USFWS, Brocken Inaglor, MRosetree, Romey Swanson, Shenandoah National Park, Bernard DUPONT

Turtle Time Word Search

S T U R T S H L C E V F L
 S C C A G K A N I N E L L
 O T U G C A T O M M R I E
 D E E T O E C U R T T P H
 O E F T E B H H E E E P S
 N O R T S A L P H C B E E
 I R S E H E I L T A R R L
 Z N N L G A N Y O P A X R
 C L A W S N G L T A T K L
 M E Z N W F A N C R E F D
 E L I T P E R D E A R M S
 E L I N E V U J N C V D V
 P R H L U G P P B E J P S

Directions:

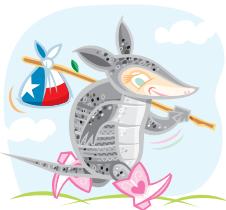
Find and circle each word on the list and place all remaining letters, in order, on the dashes below to reveal a fun fact.

BEAK
 CARAPACE
 CLAWS
 ECTOTHERMIC
 SHELL
 HATCHLING
 JUVENILE

PLASTRON
 REPTILE
 SCUTE
 EGGS
 ENDANGERED
 FLIPPER
 VERTEBRATE

 _____.

Created by Puzzlemaker at DiscoveryEducation.com



Nancy's Corner



These feet were made for...?

Study the turtle foot descriptions and then draw a line matching the description to the picture.



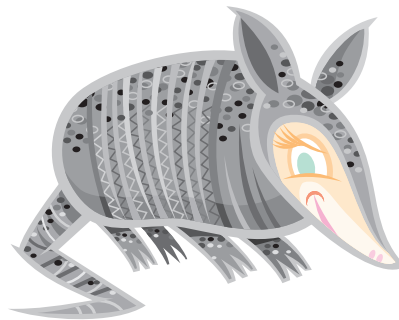
This is a sea turtle foot adapted for swimming in the water.



This is a tortoise foot adapted for walking on the land.



This is a turtle foot adapted for swimming and crawling onto logs.



I help turtles by using reusable shopping bags!

List two ways that you can steward Texas and help:

Youth Education Programs

Discovery Trunks

- * 2-week reservations
- * Seven wildlife topics
- * Hands-on materials and lessons
- * TEKS aligned for Grades K-8



Distance Learning

- * 20-45 minute programs
- * Videoconferences & On-demand webinars
- * TEKS aligned for Grades K-8



Wildlife by Design

- * Classroom Presentations
- * 30-60 minutes in length
- * Hands-on, inquiry-based learning
- * TEKS aligned for Grades K-8



L.A.N.D.S. Program

- * Attend a workshop to receive natural resource lessons
- * Hands-on classroom activities
- * Field Investigation Days
- * TEKS aligned for Grades 6-12



Educator Workshops

- * Provides hands-on training and lessons for educators
- * Grades K-8 and grades 6-12 available
- * 6-12 hours of CPE credits



Trinity River Project

- * Study along the Trinity River
- * Water quality testing and analysis
- * Hands-on, inquiry-based learning
- * TEKS aligned for Grades 4-12



Stewarding Texas

- * 40 lessons about land stewardship and conservation
- * Available online and in every Discovery Trunk
- * TEKS aligned for Grades K-8
- * Available at no cost



Critter Connections

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www.texas-wildlife.org/program-areas/subscribe-to-critter-connections
 Critter Connections is made possible by a grant from the San Antonio Livestock Exposition, Inc.

Join TWA Today!

www.texas-wildlife.org

TWA is a membership-based, non-profit organization whose goal is to educate all people, especially the youth of Texas about conservation, management and stewardship of wildlife and habitat on private land.

All education programs are made possible through memberships, grants and donations. Learn more about the levels of membership as well as the educational programs TWA offers on our website.

All membership levels include a one-year subscription to the TWA monthly *Texas Wildlife* magazine.

Membership Levels:

Family \$250 Active \$150 Associate* \$75 Online \$35

* If you are an educator in the Texas please call the TWA office at 800-TEX-WILD for our educator discount.

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The San Antonio Stock Show & Rodeo is broncs and bulls in the arena, a variety of farm animals in the world's largest junior livestock show, and even more wildlife to pique your interest. You can even see our wild side in a wide range of interactive educational attractions and activities. And naturally, all this is in keeping with our commitment to educating Texas youth. So bring the whole family and prepare for an experience of fascination and fun... just a little wilder than you might have imagined!



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