TEXAS WILDLIFE
THIRD - FIFTH

Life Science TEKS

*Third Grade***:**   3.9A, 3.9B, 3.10A, 3.10B, 3.10C

Fourth Grade: 4.9A, 4.9B, 4.10A, 4.10C

Fifth Grade: 5.9A, 5.9B, 5.9C, 5.9D, 5.10A

Vocabulary

amphibian, Big Bend Country, bird, carnivore, coastal, desert, eco-region, ecosystem, endangered, fish, forest, Gulf Coast, habitat, herbivore, Hill Country, invertebrate, landforms, mammal, omnivore, Panhandle Plains, Pineywoods, prairie, precipitation, reptile, reptile, soil, South Texas Plains, swamp, vegetation, vertebrate

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Pre-Show Activity

Pre-Show Lesson: Texas Eco-regions (3 day activity)

Post this question on the board: "What do you know about the nine eco-regions in Texas?"

Materials:

   Per class: 9 pieces of large chart paper,

   Per group: Eco-region map, Eco-region chart and Eco-region map answer key (Appendix A-1), a different colored marker, 8 pieces of computer paper, Internet accessibility

Procedure:

   Part 1
   1. Groups will get a map of Texas with the nine eco-regions numbered and a list of the names of the regions. They will try to guess which region goes with each area on the map. To guess, they will place the number of the associated region of the map next to the appropriate region name on the chart (see Appendix A-1).

2. Groups will check their guesses with the answer key to see how many they got right.

3. Hang nine separate chart papers, each with one of the following titles, around the room in a carousel-like arrangement:

- Region One: Coastal Prairies or Gulf Coastal Plain

- Region Two: West Gulf Coastal Plain or Piney Woods

- Region Three: Oaks and Prairies or Grand Prairie and Plains

- Region Four: Osage Plains (Cross Timbers)

- Region Five: Rolling Plains

- Region Six: Pecos and Staked Plains or High Plains

- Region Seven: Edwards Plateau

- Region Eight: South Texas Brushlands

- Region Nine: Chihuahuan Desert and Mexican Mountains in Texas or Trans-Pecos

4. Put students into nine groups. Number the groups one through nine. Give each group one different color of marker. Groups will start at the chart paper with their region number. When time starts, they will go to that chart paper and write everything they know about that eco-region (biotic and abiotic features). If they don't know anything, they can turn the paper over and write questions on the back. After one or two minutes, rotate the groups so that each group gets a minute or so at each chart paper.

   Note: Students are not expected to know a lot. This is a way to get them thinking about the regions. It is also an opportunity for you to see what they know and any misconceptions that they might have.

5. Regroup as a class and discuss the overall impression of the activity. How knowledgeable are you as a class?

6. Give each group a chart paper. They can look it over to see what their classmates wrote. This is the eco-region that they will be researching. You may want to have resource books available. In addition, they can use the following websites:

   http://texastreeid.tamu.edu/content/texasEcoRegions/

   http://www.tpwd.state.tx.us/kids/about_texas/regions/

Collect the chart papers.

Part 2
7. Groups will each get eight pieces of computer paper for their research. Each piece of paper will represent a separate part of their eco-region: elevation, precipitation, landforms, soil, vegetation, animals, a problem the eco-region is facing, and, an endangered species from that region. Each piece of paper should have detailed facts and a drawing relating to each element of their assigned eco-system.

Part 3
8. Hang up the chart paper from day one. Groups will stand next to their chart and do a short presentation about the eight elements in their eco-region, briefly connecting it to the chart. Collect the eight papers from each group and randomly pass a paper to each student in the class. They will see if they can identify which eco-region it is associated with by standing next to that chart. Hold out their paper for all to see. Discuss results. Repeat if time permits.

Post-Show Enrichment Activities

Activity One: Show Review

Materials: index cards

Procedure:

1. Each student will draw and write about one animal that they learned about from the show on the front of an index card. They should include the name of the animal and at least one fact about it.

2. The teacher will collect the cards. She will pass the cards back out upside down so that students cannot see what card they have.

3. Students, without looking at the card, will pick up their card and hold it to their forehead with the writing facing out. They will need to ask yes or no questions to people in their group to try to figure out what animal they have. You may want to let them walk around the room to try to figure this out.

4. After everyone has figured out their animal, they must now try to organize themselves by the area that they live in. The teacher should hang signs around the room for the Texas Ecosystems: desert, prairie, swamp, coastal, and forest. When they get to the area, they must find a partner or two and discuss the adaptations that they have to live in that area.

Activity Two: Endangered Species

Materials: endangered species book (such as *Almost Gone: The World's Rarest Animals (Let's-Read-and-Find-Out Science 2)* by Steve Jenkins or *National Geographic Rare: Portraits of America's Endangered Species* by Joel Sartore, internet, endangered animal chart (Appendix A-6)

Procedure:

1. Read a book about endangered species.

2. Students will make a three column chart with the titles "Animal", "Cause" and "Effect". Students will complete the chart as you read. They may add a fourth column which they title "Action Plan". After listening to the book, students will work in groups to fill out plausible actions that they could take to help the animals.

3. Students will read the article in Appendix A-3 entitled "The Road Back", about the recovery of the bald eagle in the United States. While reading the article with a partner, they will fill out the chart in Appendix A-3 stating the actions taken each given year and predicting its effect on the bald eagle population in Texas. Once students have completed the chart, debrief as a class. Next, give students the graph in Appendix A-4 and have them fill in the chart which gives the actual populations of pairs of bald eagles in Texas. Discuss results as a class.

4. Students can watch videos from a live bald eagle video cam: http://blog.nwf.org/2012/02/eagle-cam-is-back-watch-iowa-bald-eagle-eggs-hatching-live/

5. Groups will research an endangered animal and present their findings to the class. Information on endangered animals for kids can be found on the following web sites:

   http://animal.discovery.com/guides/endangered/endangered.html,
   http://www.bagheera.com/inthewild/vanishing.htm
   http://www.earthsendangered.com/index_s.asp

6. Students can complete the chart in Appendix A-5 on an endangered animal.

You can print out one page information sheets on endangered animals if students cannot get access to computers.

Activity Three: Animal Matching Game

Materials: Texas animal cards (Appendix A-5), answer sheet (Appendix A-6)

Procedure:

1. Two to four students play. Pass out all of the cards. If students have a match (two animals from the same eco-region in Texas) they can put it down in front of them. When all matches are laid down, the game starts.
2. From this point on, you can only put down matches when it is your turn. The first person takes a card from the hand of the person to their right without looking. They check their hand to see if there is a match. If there is not a match, the card goes into their hand, and play continues to the left.
3. Continue until someone is out of cards. Use the answer sheet to count how many correct matches each person has in front of them. The person with the most correct matches is the winner.

Other activities you can complete with these cards are listed below.

- Students can create a food chain for a given card.
- Students can take two cards and compare and contrast them using a Venn diagram.
- Students can draw a picture of the animal's habitat and label the biotic and abiotic features.
- Students can complete sorts: by eco-region, vertebrates or Invertebrates, live birth or egg, herbivore, omnivore or carnivore, bird, fish, reptile, mammal, amphibian or invertebrate
- Place them on a large map of Texas in your classroom to show where they live.

You can find more information on these animals at

http://www.tpwd.state.tx.us/publications/pwdpubs/media/pwd_bk_k0700_0517.pdf or
http://animals.nationalgeographic.com/animals/?source=NavAniHome

A-1
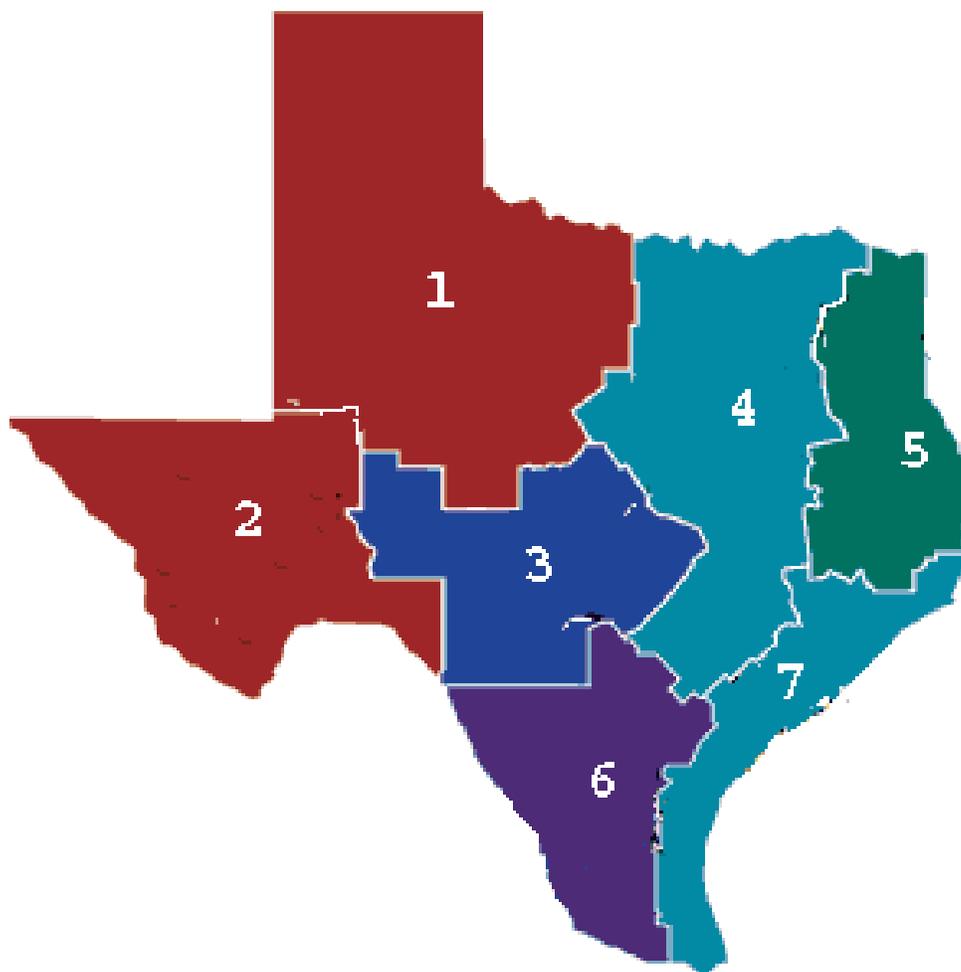
Directions: Match the number of the area on the map with its eco-region name. Place the number next to its name in the chart below.

	Big Bend Country
	Prairies and Lakes
	Panhandle Plains
	South Texas Plains
	Pineywoods
	Gulf Coast
	Hill Country

A-2

Map of Texas regions: Panhandle Plains, Big Bend Country, Hill Country, South Texas Plains, Prairies and Lakes, Pineywoods, Gulf Coast

A-3   **The Road Back**

As the dangers of DDT became known, in large part due to the 1962 publication of Rachel Carson's book Silent Spring, the Environmental Protection Agency took the historic and, at the time, controversial step of banning the use of DDT in the United States. That was in 1972, and it was the first step on the road to recovery for the bald eagle.

In 1967, the Secretary of Interior listed bald eagles south of the 40th parallel under the Endangered Species Preservation Act of 1966. Following enactment of the Endangered Species Act of 1973, the Service listed the species in 1978 as endangered throughout the lower 48 states, except in Michigan, Minnesota, Oregon, Washington, and Wisconsin where it was designated as threatened.

"Endangered" means a species is considered in danger of extinction throughout all or a significant portion of its range. "Threatened" means a species is considered likely to become endangered within the foreseeable future, but is not currently in danger of extinction.

The species was not listed as threatened or endangered in Hawaii because it does not occur there, or in Alaska because populations there have remained robust.

Listing the species as endangered provided the springboard for the Service and its partners to accelerate the pace of recovery through captive breeding programs, reintroduction efforts, law enforcement, and nest site protection during the breeding season.

In July 1995, the Service announced that bald eagles in the lower 48 states had recovered to the point where those populations previously considered endangered were now considered threatened.

In July 1999, the Service proposed to remove the bald eagle from the list of threatened and endangered species. Since then, the Service has reviewed comments received on that proposal along with new data and information to determine the best ways to manage the species once it is removed from the protections of the Endangered Species Act. In 2006, the Service re-opened the public comment period due to new information on the proposal to delist. Data gathered during this comment period was factored into a final decision on the status of the species.

Based on the most recent population figures, the Service estimates that there are at least 9,789 nesting pairs of bald eagles in the contiguous United States. Bald eagles have staged a remarkable population rebound and have recovered to the point that they no longer need the protection of the Endangered Species Act.

Thus, on June 28, 2007, the Service announced the recovery of our nation's symbol and removal from the list of threatened and endangered species.
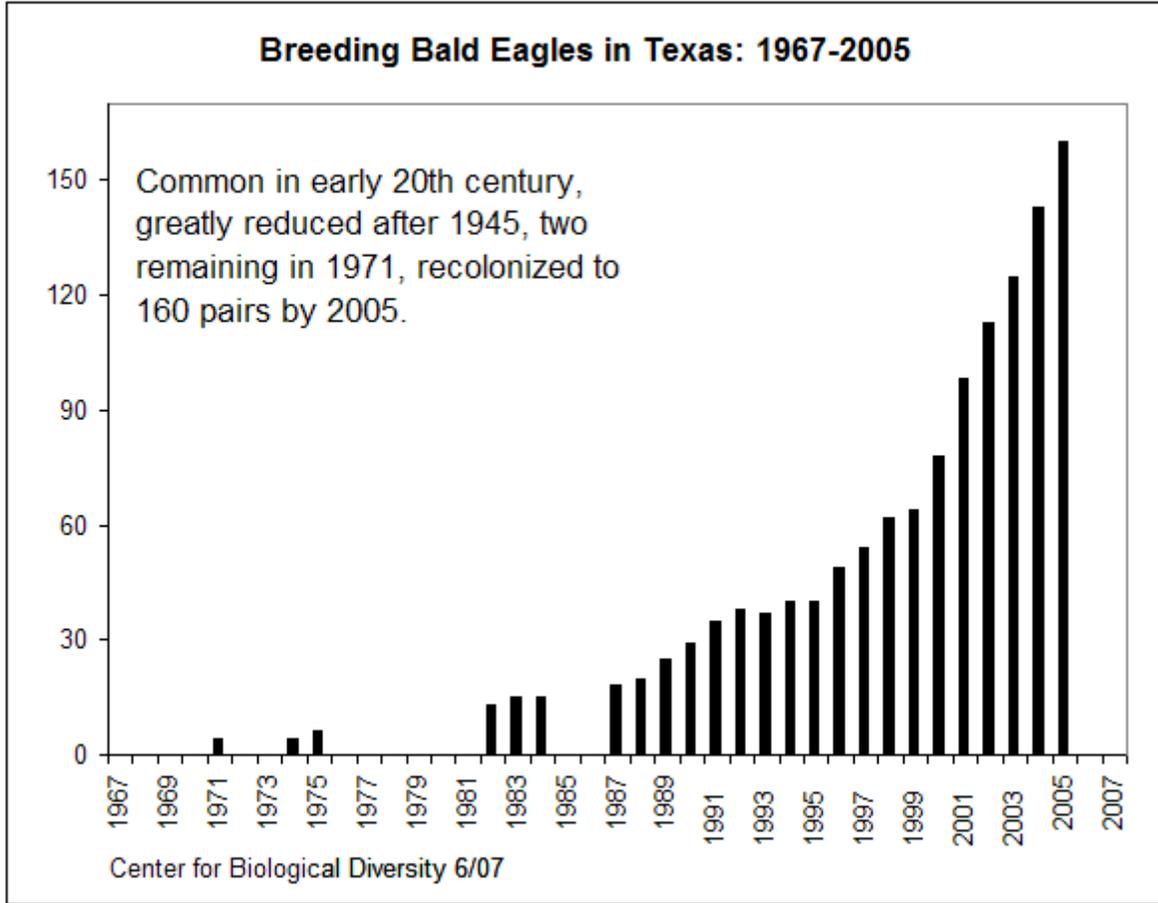
Source: U.S. Fish and Wildlife Service
http://www.fws.gov/midwest/Eagle/recovery/biologue.html

Bald Eagles: The Road Back

Directions: Read the article The Road Back and complete the Events and Predicted Population columns of the chart below. After you have completed reading the article and filling out the first two columns, look at the graph "Breeding Bald Eagles in Texas: 1967-2005" and fill in the last column of the chart. How close were your predictions to the actual amount. Remember, all population (predictions and actual) are recorded in pairs.

Bald eagles were relatively common nesters in the Panhandle, northeast, central and coastal parts of Texas through the early 20th century. By 1970, the Texas Parks and Wildlife magazine warned that "Saving the bald eagle may be beyond our powers". The 1971 state population was just four pairs.

Texas Bald Eagle Population

Year	Event	Predicted Population Size (in pairs)	Actual Population Size (in pairs)
1972			
1978			
1985	*No Information*		
1995			
2007			

Breeding Bald Eagles in Texas: 1967-2005

Common in early 20th century, greatly reduced after 1945, two remaining in 1971, recolonized to 160 pairs by 2005.

Center for Biological Diversity 6/07

Eastern Gray Squirrel	**Badger**
Javelina	**Desert Big Horn Sheep**
Muskrat	**Mink**
River Otter	**Skunk**

All animal pictures on this page are taken from
http://www.tpwd.state.tx.us/publications/pwdpubs/media/pwd_bk_k0700_0517.pdf

Opossum

Coyote

Prairie Dog

Bobcat

Mountain Lion

Pelican

Owl	**Fox**

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Alligator	**Tarantula**
Rattlesnake	**Snapper**

Bullfrog	**Jellyfish**
Blue Crab	**Kemp's Ridley Sea Turtle**

All pictures on this page are taken from National Geographic:
http://animals.nationalgeographic.com/animals/?source=NavAniHome

A-6

Texas Animal Region Key

Texas Panhandle:

Roadrunner

Mule deer

Swift fox

Prairie dog

Badger

Pinyon mouse

Swainson's hawk

Black-capped vireo

Great horned owl

Burrowing owl

Interior least tern

Snowy plover

Pronghorn antelope

Thirteen-lined ground squirrel

Plains hognose snake

Western diamondback rattlesnake

Big Bend Area (Desert and Mountains):

Pronghorn Antelope

Squirrel

Hooded skunk

Coyote

Javelina

Desert bighorn sheep

Mule deer

Mountain lion

Cactus mouse

Collared lizard

Western diamondback rattlesnake

Cactus wren

Roadrunner

Painted redstart

Townsend's big eared bat

Tarantula

Horned lizard

Pyrrhuloxia

Great horned owl

Vermilion flycatcher

Bullock's oriole

Jackrabbits

Blotched watersnakes

Rio Grande tetra

Round-nosed minnow

Catfish

Green sunfish

Texas Gulf Coast:

Muskrat

Coyote

Marsh rice rat

Mink

River otter

Bottlenose dolphin

Alligator

Diamond back terrapin

Bull frog

Roseate spoonbill

Black skimmer

Gulls

Terns

Pelicans

Kemp's Ridley Sea Turtle

Near shore fishes:

Spotted sea trout

Red drum

Southern flounder

Striped mullet

Sheepshead

Shrimp

Blue crab

Jellyfish

Off shore fishes:

Snappers

Spadefish

Groupers

Texas Piney Woods:

Southern short-tailed shrew

Seminole bat

Ringtail

Virginia opossum

Rafinesque's big-eared bat

Eastern cottontail

Common gray fox

Striped skunk

Bobcat

White-tailed deer

Swamp rabbit

Eastern gray squirrel

Eastern flying squirrel

Bull frog

Attwater's pocket gopher

Marsh rice rat

Eastern harvest mouse

Cotton mouse

Prairie vole

River otter

The eco-regions pictures and animal lists were taken from
http://www.tpwd.state.tx.us/kids/about_texas/regions/