

B Division

Triple E's: Endangered, Extinct (or Extirpated), and Exotic Vertebrates of Texas

DESCRIPTION: Students will be asked questions about Texas endangered, and extinct vertebrates (Refer to State Taxa List), including probable reasons for their status on the Texas list. Some of these vertebrates on the Texas List may also appear on the National List of Endangered Species. Students will also be asked questions about Texas exotic (non-native) vertebrates (refer to State Taxa List), including their probable mode of introduction and their impact on biodiversity.

EVENT PARAMETERS: No published reference materials (books, pamphlets, maps, field guides, etc.), in whole or in part, may be carried into the testing room during this competition, although student-made notes on as many as **twenty-five (25) 3"x5" index cards, all of which are to be held together by a single ring**, will be permitted during testing. The student-made notes **may not** include clippings or photocopies from published materials.

TEAM OF UP TO: 2

APPROXIMATE TIME: 50 minutes

THE COMPETITION:

1. The event may be run as stations, using names, photos, specimens or drawings of selected vertebrates listed as endangered in Texas. Students are expected to know if the selected Texas vertebrate also appears on the national endangered list.
2. Students will be expected to identify the vertebrate (complete common name is sufficient – see Taxa List), and identify probable cause of population decline.
3. Students may be asked to identify laws and regulations which apply to endangered species on the National level, including but not limited to the Endangered Species Act (ESA), and the Convention on International Trade in Endangered Species (CITES).
4. Students will be expected to recognize photos or specimens of Texas vertebrates that are non-native (exotics), and will be expected to identify the probably mode of their introduction and their impact on biodiversity. Students will be expected to identify characteristics of successful non-native species and the damage they may cause.

SCORING:

1. Points will be assigned to various questions and problems
2. Points will be awarded for both quality and accuracy of the answers, quality of supporting reasoning, and use of proper scientific knowledge.
3. Highest number of points will determine the winner. Tiebreaker questions may be included in the competition.

SAMPLE PROBLEMS:

1. Station #1. Identify the endangered species represented by the photograph. Describe factors that contributed to population decline for this species.
2. Station #2. Which of the three vertebrate species in the tray is an exotic species in Texas (non-native)? How did this vertebrate arrive in Texas?
3. Station #3. Name the national law that prohibits the buying and selling of endangered wildlife? What law protects marine mammals from being trapped, killed, or bought and sold?

RESOURCES: Any current environmental textbook would be a good review for this event. The following websites and their links contain material that may be useful to event supervisors, coaches, and competitors:

www.fws.gov/endangered/

www.endangeredspecies.com/ (use this exact spelling in calling up this website)

www.worldwildlife.org/endangered/index

www.savetheseaturtle.org

http://www.tpwd.state.tx.us/warden/endangered_species/

TAXA LIST:

Endangered and/or Extirpated (Wiped out) Vertebrates in Texas

Fishes

Darter, Fountain (*Etheostoma fonticola*)

Gambusia, Big Bend (*Gambusia gaigei*)

Gambusia, Clear Creek (*Gambusia heterochir*)

Gambusia, Pecos (*Gambusia nobilis*)

Gambusia, San Marcos (*Gambusia georgei*) **Extirpated**

Minnnow, Rio Grande Silvery (*Hybognathus amarus*) **Extirpated**

Pupfish, Comanche Springs (*Cyprinodon elegans*)

Pupfish, Leon Springs (*Cyprinodon bovinus*)

Amphibians

Salamander, Barton Springs (*Eurycea sosorum*)

Salamander, Texas Blind (*Typhlomolge [Eurycea] rathbuni*)

Toad, Houston (*Bufo houstonensis*)

Reptiles

Sea Turtle, Hawksbill (*Eretmochelys imbricata*)

Sea Turtle, Kemp's Ridley (*Lepidochelys kempii*)

Sea Turtle, Leatherback (*Dermochelys coriacea*)

Mammals

Bat, Greater (Mexican) long-nosed (*Leptonycteris nivalis*)

Ferret, Black-footed (*Mustela nigripes*)
Jaguar (*Panthera onca*)
Jaguarundi (*Felis yaguarondi*)
Manatee, West Indian (*Trichechus manatus*)
Ocelot (*Leopardus pardalis*)
Whale, Black Right (*Eubalaena glacialis*)
Whale, Blue (*Balaenoptera musculus*)
Whale, Finback (*Balaenoptera physalus*)
Whale, Sperm (*Physeter macrocephalus*)
Wolf, Gray (*Canis lupus*) **Extirpated**
Wolf, Red (*Canis rufus*) **Extirpated**

Birds

Crane, Whooping (*Grus americana*)
Curlew, Eskimo (*Numenius borealis*)
Falcon, Aplomado (*Falco femoralis*)
Flycatcher, Southwestern Willow (*Empidonax traillii extimus*)
Pelican, Brown (*Pelecanus occidentalis*)
Prairie-chicken, Attwater's Greater (*Tympanuchus cupido attwateri*)
Tern, Interior Least (*Sterna antillarum anthalassos*)
Vireo, Black-capped (*Vireo atricapillus*)
Warbler, Bachman's (*Vermivora bachmanii*) **Extirpated**
Warbler, Golden-cheeked (*Dendroica chrysoparia*)
Woodpecker, Red-cockaded (*Picooides borealis*)
Woodpecker, Ivory-billed (*Campephilus principalis*) **Extirpated**

Exotic Texas Vertebrates (Non-native, introduced)

Fishes

Tilapia
European Carp
Goldfish
Suckermouth Catfish (*Plecostomus*)

Reptiles

Mediterranean Gecko (*Hemidactylus turcicus*)
Tokay Geckos
Spinytail Iguana *Ctenosaura pectinata*

Mammals

Nutria
Roof Rat
Norway Rat
Red Fox
Feral Pig

Birds

Eurasian Collared-Dove
Rock (Feral) Pigeon
European Starling
House Sparrow
Cattle Egret