

B Division

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

DESCRIPTION: Students will be asked questions about Texas endangered, and extinct species (Refer to State Taxa List), including probable reasons for their status on the Texas list. Some of these organisms 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) species (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. Handwritten competitor-made notes on front and back of 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 competitor-made notes **may not** include any typewritten material, clippings, pictures 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 organisms listed as endangered in Texas. Students are expected to know if the selected Texas organisms also appear on the national endangered list and will be expected to identify probable causes of population decline.
2. Students will be expected to identify the organisms by common name and recognize genus and species (see Taxa List).
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 organisms that are non-native (exotics), and will be expected to identify the probable mode of their introduction as well as 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 species in the tray is an exotic species in Texas (non-native)? How did this animal 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
http://www.tpwd.state.tx.us/warden/endangered_species/
<http://www.invasivespeciesinfo.gov/unitedstates/tx.shtml>
<http://www.texasinvasives.org>
http://www.texasep.org/html/wld/wld_3pna_ext.html
<http://plants.usda.gov>

State Triple E Taxa List

******Endangered (including Threatened) Species in Texas**

Amphibians

Mexican Treefrog (*Smilisca baudinii*)
Mexican Burrowing Toad (*Rhinophrynus dorsalis*)
Cascade Caverns Salamander (*Eurycea latitans*)
White-lipped Frog (*Leptodactylus labialis*)

Reptiles

Brazos Water Snake (*Nerodia harteri*)
Green Sea Turtle (*Chelonia mydas*)
Reticulated Gecko (*Coleonyx reticulatus*)
Scarlet Snake (*Cemophora coccinea*)
Texas Horned Lizard (*Phrynosoma cornutum*)
Timber Rattlesnake (*Crotalus horridus*)

Mammals

Atlantic Spotted Dolphin (*Stenella frontalis*)
Black Bear (*Ursus americanus*)

Dwarf Sperm Whale (*Kogia simus*)
False Killer Whale (*Pseudorca crassidens*)
Killer Whale (*Orcinus orca*)
Southern Yellow Bat (*Lasiurus ega*)
Spotted Bat (*Euderma maculatum*)
Texas Kangaroo Rat (*Dipodomys elator*)

Birds

American Peregrine Falcon (*Falco peregrinus anatum*)
Arctic Peregrine Falcon (*Falco peregrinus tundrius*)
Mexican Spotted Owl (*Strix occidentalis lucida*)
White-faced Ibis (*Plegadis chihi*)
Bald Eagle (*Haliaeetus leucocephalus*)
Reddish Egret (*Egretta rufescens*)

Plants

Black Lace Cactus (*Echinocereus reichenbachii* var. *albertii*)
Chisos Mountains Hedgehog Cactus (*Echinocereus chisoensis* var. *chisoensis*)
Davis' Green Pitaya (*Echinocereus davisii*)
Star Cactus (*Astrophytum asterias*)
Texas Snowbells (*Styrax platanifolius* subsp. *texanus*)
Navasota Ladies'-tresses (*Spiranthes parksii*)
Texas Wild-rice (*Zizania texana*)

Invertebrates

Arachnids

Bee Creek Cave Harvestman (*Texella reddelli*)
Bone Cave Harvestman (*Texella reyesi*)
Tooth Cave Pseudoscorpion (*Tartarocreagris texana*)
Tooth Cave Spider (*Neoleptoneta myopica*)

Insects

Coffin Cave Mold Beetle (*Batrisodes texanus*)
Kretschmarr Cave Mold Beetle (*Texamaurops reddelli*)
Tooth Cave Ground Beetle (*Rhadine persephone*)

******Extirpated (Wiped out) Species in Texas**

Mammals

Black-footed Ferret (*Mustela nigripes*)
Grizzly Bear (*Ursus arctos horribilis*)
Louisiana Vole (*Microtus ochrogaster ludovicianus*)

Birds

Passenger Pigeon (*Ectopistes migratorius*)
Ivory-billed Woodpecker (*Campephilus principalis*)
Aplomado falcon (*Falco femoralis*)

Fishes

Amistad Gambusia (*Gambusia amistadensis*)
Phantom Shiner (*Notropis orca*)

******Exotic (non-native, introduced) Species in Texas**

Animals

Invertebrates

Africanized Honeybee (*Apis mellifera scutellata*)
Cactus Moth (*Cactoblastis cactorum*)
Giant African Snail (*Achatina fulica*)
Red Imported Fire Ant (*Solenopsis invicta*)

Vertebrates

Cane Toad (*Bufo marinus*)
Wild Boar (*Sus scrofa*)

Plants

Autumn Olive (*Elaeagnus umbellata*)
Garlic Mustard (*Alliaria petiolata*)
Giant Hogweed (*Heracleum mantegazzianum*)
Kudzu (*Pueraria montana* var. *lobata*)
Multiflora Rose (*Rosa multiflora*)
Musk Thistle (*Carduus nutans*)
Saltcedar (*Tamarix* spp.)
St. Johnswort (*Hypericum perforatum*)

Aquatic Species

Plants

Water Chestnut (*Trapa natans*)
Water Hyacinth (*Eichhornia crassipes*)
Water Spinach (*Ipomoea aquatica*)

Animals

European Green Crab (*Carcinus maenas*)
Flathead Catfish (*Pylodictus olivaris*)
Nutria (*Myocastor coypus*)
Quagga Mussel (*Dreissena bugensis*)
Sea Squirt (*Didemnum lahillei*)

Microbes

Avian Influenza (*Orthomyxoviridae*)
West Nile Virus (*Flavivirus*)