



ARIZONA-SONORA  
DESERT  
MUSEUM

# *Endangered and Threatened Species*

A forty five minute Desert Discovery Class

## **To the Teacher:**

Thank you for making the *Endangered and Threatened Species* program a part of your curriculum. During this exciting interactive educational program, students will meet live Sonoran Desert animals, handle bio-facts, and participate in class discussions.

This packet contains pre- and post- program information and activities along with a vocabulary list and suggested resources. These materials were developed to help you extend this class topic with both introductory and follow-up lessons. The pre-visit information will introduce students to some of the basic concepts covered in *Endangered and Threatened Species* and help prepare them for the program. We hope you'll find this information useful and easy to incorporate into your science curriculum. For more information about the Desert Museum and the Sonoran Desert, visit our website at [www.desertmuseum.org](http://www.desertmuseum.org).

We look forward to working with you and your students.

Sincerely,  
ASDM Center for Sonoran Desert Studies  
Education Department

## **CLASS OBJECTIVES**

Through the examination of live animals, artifacts, and interactive demonstrations students will:

- Understand the use of the terms Endangered and Threatened Species.
- Describe the purpose of the Endangered Species Act.
- Become familiar with some endangered or threatened species in the Sonoran Desert Region .
- Describe reasons for those species becoming endangered or threatened.
- Identify some ways humans affect life in the Sonoran Desert and measures that are being taken to conserve and protect it.

## ARIZONA ACADEMIC STANDARDS IN SCIENCE CORRELATION

The Threatened and Endangered discovery program and supplemental activities correlate to these Arizona Academic Science Standards. See each activity for specific standards and performance objectives.

SC05-S3C2-02; SC03-S3C1-01; SC03-S3C1-02; SC07-S4C3-03; SC03-S4C3-03; SC03-S4C3-04;  
SC04-S4C4-02; SC03-S4C3-05; SC05-S1C4-02; SC07-S1C3-06; SC07-S1C3-07; SC08-S1C3-07;  
SC03-S3C1-02; SC04-S4C1-02; SC03-S4C3-01; SC03-S4C3-01; SC04-S4C3-03; SC03-S4C3-04;  
SC04-S4C4-02; SC04-S4C4-05

### Science Standards:

#### Strand 1: Inquiry Process

Concept 1: Observations, Questions, and Hypotheses

Concept 2: Scientific Testing

Concept 3: Analysis and Conclusions

Concept 4: Communication

#### Strand 2: History and Nature of Science

Concept 1: History of Science as a Human Endeavor

Concept 2: Nature of Scientific Knowledge

#### Strand 3: Science in Personal and Social Perspectives

Concept 1: Changes in Environment

Concept 2: Science and technology in Society

Concept 3: Human Population Characteristics

#### Strand 4: Life Science

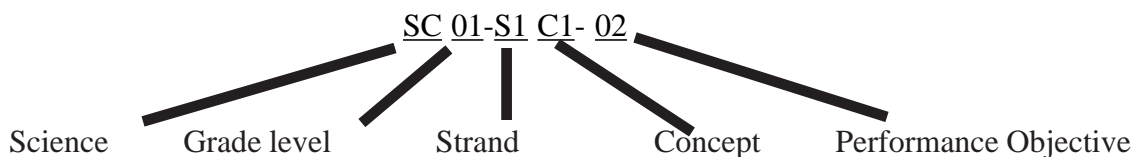
Concept 1: Characteristics of Organisms

Concept 2: Life Cycles

Concept 3: Organisms and Environments

Concept 4: Diversity, Adaptation and Behavior

The shorthand for each standard is read this way:



## RESOURCES

### Literature:

- Arizona-Sonora Desert Museum. *A Natural History of the Sonoran Desert*. Tucson: ASDM Press, 1999.
- Braus, J., ed. Ranger Rick's Nature Scope: *Endangered Species: Wild and Rare*. Washington D.C.: National Wildlife Federation, 1987. (For ordering information call:1-800-722-4726)
- Few, Roger. *MacMillan Children's Guide to Endangered Animals*. Simon and Shuster, 1993.
- Field, Nancy and Sally Machlis. *Discovering Endangered Species*. Middleton, WI: Dog-Eared Publications, 1990.
- Simon, Noel. *Vanishing Habitats*. Franklin Watts, Inc, 1987.

### Organizations:

- **Arizona-Sonora Desert Museum:** 2021 N. Kinney Rd., Tucson, AZ 85743. Phone: (520) 883-3025 [www.desertmuseum.org](http://www.desertmuseum.org)
- **Bat Conservation International, Inc.:** P.O. Box 162603, Austin, TX, 78716. Phone: 1-800-538-2287. [www.batcon.org](http://www.batcon.org)
- **U.S. Fish and Wildlife Service, Division of Endangered Species:** <http://endangered.fws.gov/> [This site contains information on federally listed endangered plants and animals, including those from the Sonoran Desert region. It provides comprehensive lists of endangered species for each state, teacher information packets, and other resources.] Another is <http://species.fws.gov/> which provides wildlife fact sheets about different endangered species.

## VOCABULARY

**Biodiversity** - Biological diversity of life on Earth found in the variety and number of species and populations and the communities they form.

**Conservation** - Planned management of natural resources and changes in human behavior to protect and preserve species.

**Endangered species** - Plants and animals whose populations (numbers) have dropped so low that they are in danger of becoming extinct if nothing is done to help them immediately.

**Endangered Species Act** - A federal law passed in 1972 designed to identify, list, and protect plants and animals in trouble.

**Extinct** - No longer living anywhere on Earth; gone forever like dinosaurs.

**Extirpated** - This is when a species no longer occurs in a particular location.

**Habitat** - The area where a species lives that provides the food, water, shelter, and space it needs to survive.

**Invasive** - An aggressive, non-native species that has moved into an area and displaced native species.

**Native** - Species that evolved in a particular area or moved into the area naturally without the help of humans.

**Pesticides** - Chemicals used to kill insects and other pests.

**Population** - A number of a group of animals or plants of the same kind.

**Protected** - Legal status for conserving a species of plant or animal. It is illegal to collect or hunt protected plants and animals.

**Riparian** - Areas bordering rivers, streams, or water holes which support abundant vegetation and animal life.

**Species** - A group of animals or plants that look alike and which breed together and produce fertile offspring. (For example, a fox and a coyote are similar, but they cannot breed with each other. A fox is one species and a coyote is another.)

**Subspecies** - A population of a species that may appear a little different from the rest of the members of that species, or may be found in a particular region of the species' range.

**Threatened species** - Any plants or animals whose numbers are very low or decreasing rapidly. They are likely to become Endangered in the future if nothing is done to protect them.

## **ACTIVITY OVERVIEW**

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### **PRE-PROGRAM INFORMATION AND ACTIVITIES**

#### **Teacher Background Information: A LOOK AT THE SONORAN DESERT**

This short reading provides you with some background information on the Sonoran Desert Region and an introduction to the topic of your outreach program.

#### **ENDANGERED AND THREATENED**

Understand how species in the Sonoran Desert Region may become endangered or threatened and what is being done to protect them.

#### **TAKING A COUNT OF BIODIVERSITY**

Compare species diversity of a desert habitat with a school field and describe the impact human development has on wildlife habitat and species diversity.

#### **KEEPERS OF THE PRAIRIE**

The case of the black-tailed prairie dog reveals many of the issues and misconceptions that lead to species becoming endangered.

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### **POST-PROGRAM INFORMATION AND ACTIVITIES**

#### **BATS: NEED NECTAR, WILL TRAVEL**

Students play the role of nectar feeding bats on their annual migration and try to avoid the different hazards that hinder their progress.

#### **CONSERVATION CARTOONS**

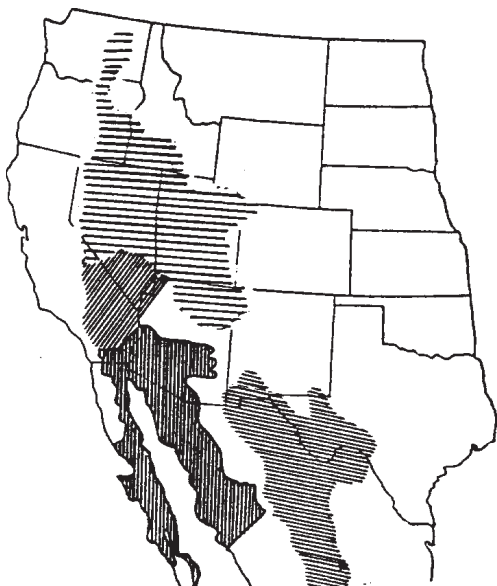
Students read and create cartoons about endangered and threatened species and discuss ways they can help protect species in their own lives.

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## ***A LOOK AT THE SONORAN DESERT***

Background Information for Teachers



#### *Major North American Deserts*

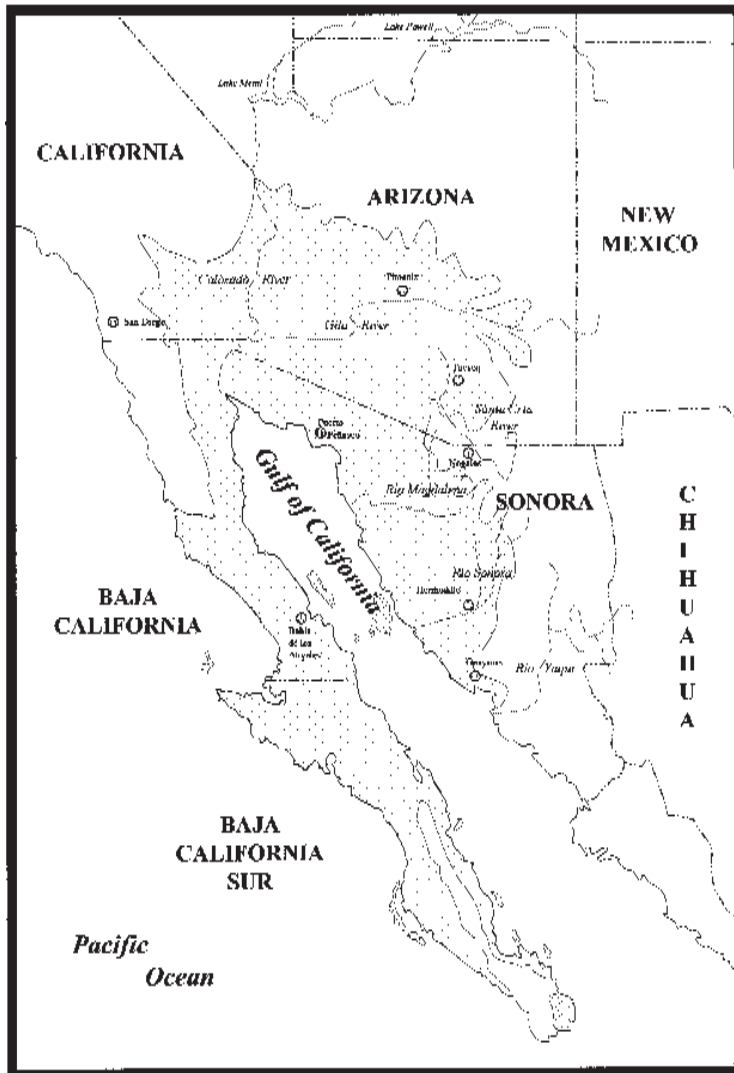
-  *Great Basin Desert*
-  *Mohave Desert*
-  *Sonoran Desert*
-  *Chihuahuan Desert*

The Arizona-Sonora Desert Museum is located in the Sonoran Desert. This desert is one of four that occur in North America. The other three are the Great Basin, Mojave, and Chihuahuan deserts. Arizona is the only state in which all four deserts can be found.

## What Is A Desert?

All deserts share a common factor – they are dry! Little rain falls in the desert, often less than 10 inches per year. The rain that does fall may come in sudden large bursts from a violent desert thunderstorm. Much of this water runs off the soil into washes or evaporates before it has a chance to soak into the ground. This leaves little water for plants and animals.

Other characteristics of deserts include windy conditions, intense sunlight, unpredictable and changing amounts of annual rainfall, and great differences between day and night temperatures (days may be hot, but nights may be much cooler).



### The Sonoran Desert

The Sonoran Desert, for the most part, is a low, hot desert. Parts of this desert get less than 3 inches of rain a year! Winters are mild and summers are hot. Summer-time temperatures may reach 120°F. Tucson and the area surrounding the Arizona-Sonora Desert Museum get an average of 11.4 inches of precipitation per year. Rainy seasons vary throughout the desert, but in our area, the rainy seasons usually come twice a year, in the late summer and winter.

The Sonoran Desert is quite lush when compared to other deserts of the world. It contains over 2,000 different species of flowering plants alone. *Columnar* cacti (such as saguaro and organ pipe) and *legume* trees (such as mesquite, palo verde, acacia) visually dominate the landscape.

*The Arizona-Sonora Desert Museum is an excellent place to visit to learn more about the natural history of this fascinating region. The Desert Museum displays only the plants and animals of the Sonoran Desert Region. This region includes the desert itself and the non-desert communities found next to – or within – the desert. These other communities include riparian corridors (lush areas along streams), pine-topped mountain islands, and desert grasslands.*