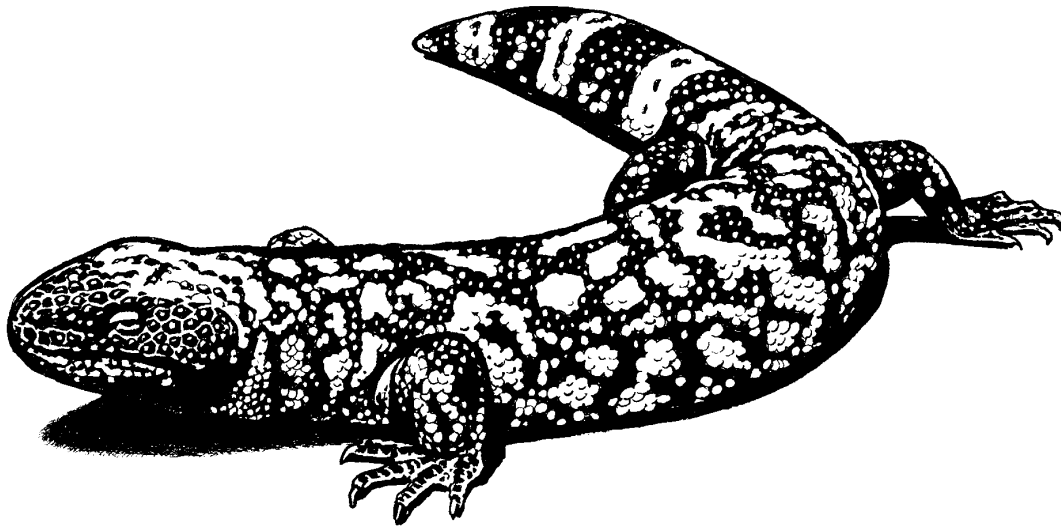


DESERT REPTILES

TEACHER IDEA PACKET

DESERT DISCOVERY CLASS
Fourth Grade

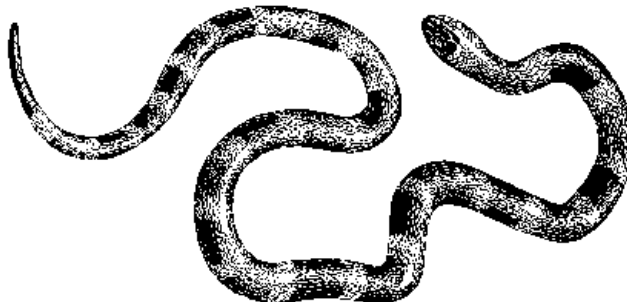


Presented by the



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ARIZONA-SONORA
**DESERT
MUSEUM**

Desert Reptiles

A forty-five minute science program
for students in grades 3-4

To the Teacher:

Thank you for making *Desert Reptiles* Outreach Program a part of your curriculum. During this exciting interactive educational program, students will meet some live Sonoran Desert animals! **Please be sure to review the enclosed Desert Trek Outreach Program Confirmation sheet for instructions on preparing your room and students for this program.**

This packet contains pre- and post- program information and activities along with a vocabulary list and suggested resources. These materials were developed so you can 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 *Desert Reptiles*, helping to prepare them for the program. We hope you'll find this information useful and easy to incorporate into your science curriculum. For more information on the Desert Museum and the Sonoran Desert, visit our website at www.desertmuseum.org.

We welcome and value your comments and suggestions concerning this program and the corresponding Teacher Idea Packet. At the end of the program, we will give you an evaluation form and would appreciate your taking the time to complete it within a week and mail it back to us. If you develop any lessons or activities related to this topic that work well with your students, we would appreciate your sending us a copy. We will give you credit for any materials we use.

We look forward to working with you and your students at your school.

Sincerely,
ASDM Education Department

CLASS OBJECTIVES

Through the examination of live animals and artifacts students will:

- Identify the characteristics which separate reptiles from other vertebrates.
- Learn about the desert adaptations of several Sonoran reptiles.
- Understand how ectothermic animals function.
- Acquire an appreciation for our desert and the creatures that inhabit it.

ARIZONA ACADEMIC STANDARDS IN SCIENCE CORRELATION

Desert Trek Outreach Program: 4SC-F3, 4SC-F4

Pre- and Post-Program Activities: 4SC-E7, 4SC-F3, 4SC-F4, 4SC-E4, 6SC-E6

RESOURCES

Literature:

- Arizona-Sonora Desert Museum. *A Natural History of the Sonoran Desert*. Tucson: ASDM Press, 1999.
- Lazaroff, David. *ASDM Book of Answers* (Answers 42 most commonly asked questions by visitors.) Tucson: Arizona-Sonora Desert Museum Press, 1998.
- Parker, Steve. *Revolting Reptiles*. Austin: Raintree Steck-Vaughn Co., 1994.
- Warner, Matt. *Reptiles and Amphibians*. Racine: Western Publishing Co., 1974.
- McCarthy, Colin. *Reptile*. New York: Alfred A. Knopf, 1991.
- Braus, J., ed. Ranger Rick's Nature Scope: *Let's Hear it for Herps*. Washington D.C.: National Wildlife Federation, 1987. (For ordering information call: 1-800-722-4726)
- Lawrence Hall of Science. *Outdoor Biology Instructional Strategies*. Berkeley: Delta Education, 1980. (For ordering information call: 603-598-7170)

Organizations:

- **Arizona-Sonora Desert Museum:** 2021 N. Kinney Rd., Tucson, AZ 85743. Phone: (520) 883-3025 www.desertmuseum.org
- **Arizona Herpetological Society:** P.O. Box 64531, Phoenix, AZ 85082-4531. Phone: (480) 894-1625 www.arizonaherpetological.com
- **Tucson Herpetological Society:** www.azstarnet.com/~bsavory/circanim.html

VOCABULARY:

Adaptation – Special body features or behaviors that help a creature survive in its environment (i.e. an eagle has sharp talons that help it grab and hold its prey).

Camouflage – An animal's color patterns that help it blend in with the plants or rocks around it.

Carnivore – An animal that eats only meat.

Ectothermic – An animal whose body temperature changes with the environment.

Endothermic – An animal which controls its own body temperature internally.

Evaporation – Water changing into a vapor and going into the air.

Habitat – The place in which an animal or a plant lives that provides the food, water, shelter, and space needed for its survival.

Habitat loss – The use of an animal's or plant's habitat by people, making it no longer usable by those animals and plants.

Herbivore – An animal that eats only plants.

Hibernate – Slowing down of all body processes for the duration of winter, like going into a very deep sleep.

Nocturnal – Active at night.

Omnivore – An animal that eats both meat and plants.

Predator – An animal that kills other animals for food.

Reptile - Animals that have dry scaly skin and are ectothermic.

Venomous – An animal that has a poisonous bite or sting.

PRE-PROGRAM INFORMATION AND ACTIVITIES

Teacher Background Information: 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.

Activity 1: THE SONORAN DESERT

In this activity students study the geographic location of the Sonoran Desert and characteristics of desert environments, plants, and animals.

Activity 2: LEAPING LIZARDS Introduce students to some characteristics of reptiles including ectothermy, adaptations and feeding habits.

Activity 3: LIZARD DASH

Students need to keep their “thermometer lizards” from getting too hot or too cold.

POST-PROGRAM ACTIVITIES

Activity 4: DESERT TORTOISE: FACT OR FICTION

Students decide, as a team, if the statements given by their teacher are facts or are fiction. Each statement leads into a teacher-lead discussion on desert tortoise natural history and conservation.

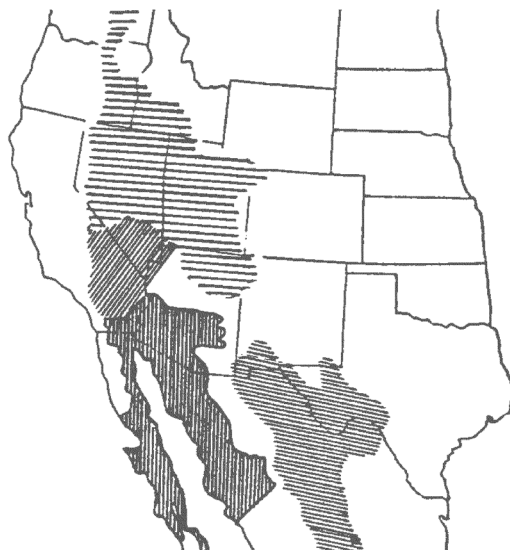
Activity 5: REPTILE SURVEY This activity can be used as a pre-program activity and then as a post-program activity to measure learning outcomes.

Activity 6: Reptile Fact Sheets

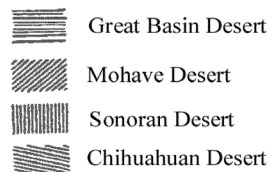
A LOOK AT THE SONORAN DESERT

Background Information for Teachers

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.



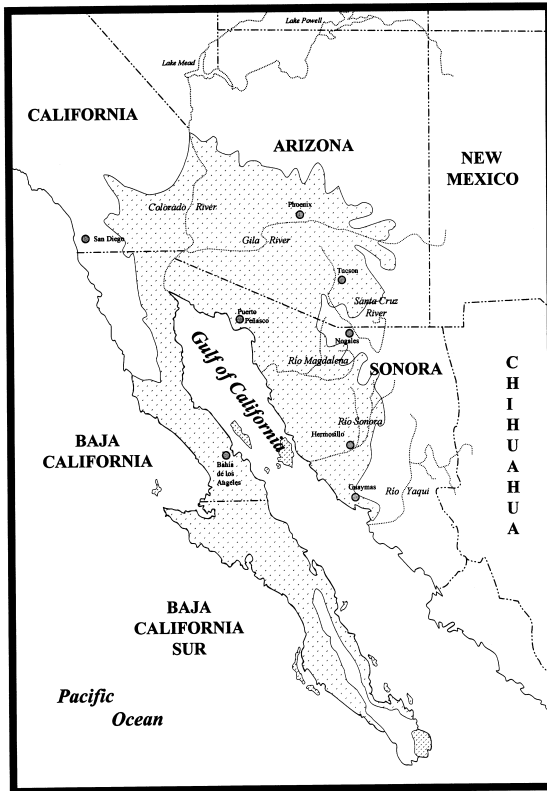
Major North American Deserts



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. Summertime 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 dominant the landscape.

The Arizona-Sonora Desert Museum is a great 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.

In general, reptiles tend to do better than many other animals in desert climates because they have scaly, water-proof skin. The reptiles that live in the Sonoran Desert also have to deal with very hot summer days and cold winter nights. Many of them hibernate during the winter and rest underground or in shady areas during the summer days.

1. THE SONORAN DESERT

Study the geographic location of the Sonoran Desert and characteristics of desert environments, plants, and animals.

SCIENCE STANDARDS CORRELATION

4SC-E7, 6SC-E6

OBJECTIVES

Students should:

- locate the Sonoran Desert within political and geographic boundaries.
- describe what happens to the little rain that falls on the desert.
- explain why plants and animals can live in the desert.

MATERIALS

- green and blue markers, crayons, or colored pencils for each student
- a copy of *Handouts 1 and 1A* for each student

VOCABULARY

Adaptation
Evaporate
Habitat
Nocturnal

GETTING READY

Prepare the materials as listed in the left margin of this page.

DOING THE ACTIVITY

SETTING THE STAGE

- 1) Have students read *The Sonoran Desert*. Discuss the information with students, introducing new terms.
- 2) Review the water cycle.

MAP ACTIVITY

- 1) Pass out *The Sonoran Desert Region Map* and markers. Give students a few minutes to review the map. Have students do the following as you ask the related questions:
 - a) Trace the outline of the Sonoran Desert with their finger. Shade the Sonoran Desert in light green. In which countries is it found? (Mexico and United States)
 - b) List the states in both Mexico and the United States in which the Sonoran Desert is found. (Sonora, Baja California, Baja California Sur, California, Arizona)
 - c) Locate Tucson. Is it within the boundaries of the Sonoran Desert? (yes)
 - d) Locate Nogales. Is it within the Sonoran Desert? (no)
 - e) Color the Gulf of California and Pacific Ocean in blue. Point out that much of the Sonoran Desert is along the coast.
 - f) Locate the 6 labeled rivers (*ríos* in Spanish). Trace these in blue. Tell students that the areas along these rivers are called riparian corridors. Many animals from the desert visit these areas, but some of the plants

and animals in the riparian corridors are different than those found away from water.

EXTENSION ACTIVITIES

- 1) Have students pretend they are in the desert as a storm approaches, drenches the area with rain, and eventually disappears. Ask them to write a story describing their experience. Some things you might want them to consider include how they would feel; what they would do; what animals may be doing; the changes in the temperature, sunlight, and moisture; water flow; and sounds.
- 2) Provide students with more detailed maps so they can better understand the diversity within this region. Have them add more details to their maps, such as mountain ranges, additional waterways, traditional tribal territory, current Indian reservations, and National Parks.



The Sonoran Desert

What Is A Desert?

Deserts are dry places. Most get less than 10 inches of rain each year. The hot desert sun and dry winds quickly **evaporate** most moisture.

Desert rains often come in big bursts during the summer monsoon. Flooding is common and rainwater quickly flows off the land into washes. From washes, much of the water runs off or evaporates, and some of it sinks into the sand.

How Can Plants and Animals Live Here?

The desert is the **habitat** of many different plants and animals. They are **adapted** to live in this environment. They are very good at surviving on little water. An **adaptation** is a feature of a plant or animal that allows it to survive. For example,

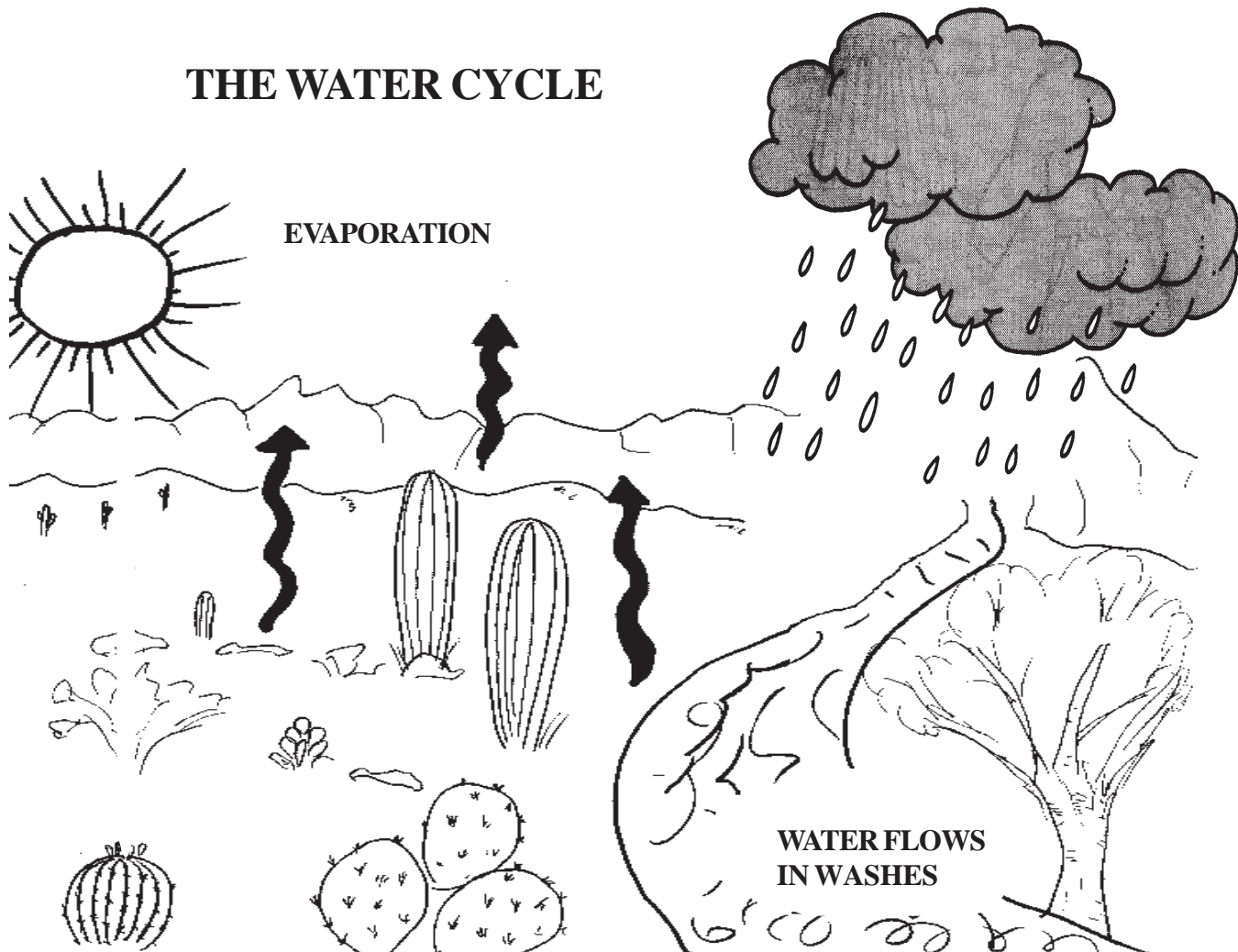
many desert animals are **nocturnal**. They spend the hot, dry days keeping cool in underground burrows and don't come out to find food until the sun has set. This is a behavioral adaptation that helps them stay cool and conserve water. Some animals, such as the kangaroo rat, do not need to drink water. They get most of the water they need from their food. Many desert plants are covered with a thick, waxy "skin" to help keep water inside. These are other examples of adaptations.

Can you think of other ways desert plants and animals are adapted to life in the desert?

The Sonoran Desert

The Sonoran Desert is a special place. It has more plants and animals than most other deserts in the world! Study the map of the Sonoran Desert given to you by your teacher.

THE WATER CYCLE



The Sonoran Desert Region



2. LEAPING LIZARDS

Introduces students to some characteristics of reptiles including ectothermy, adaptations, and feeding habits.

SCIENCE STANDARDS CORRELATION

4SC-F3, 4SC-E4

OBJECTIVES

Students should:

- describe lizard strategies for maintaining a safe body temperature.
- become familiar with some Sonoran Desert lizard species and variations in feeding habits.
- compare the activity of a lizard to a human at various temperatures.

MATERIALS

- copy of *Handouts 2 and 2A* for each student

VOCABULARY

Adaptation
Camouflage
Carnivore
Ectothermic
Herbivore
Predator
Reptile
Venomous

BACKGROUND

An important characteristic of reptiles is the fact that they are ectothermic. Ectothermic means that an animal's body temperature changes with the outside environment. This term is used instead of "cold-blooded" as "cold-blooded" incorrectly implies that a reptile's blood is always cold. The term "cold-blooded" is not incorrect, it is just less accurate. Use whichever term you prefer with your students.

Although most reptiles lay eggs, there are some exceptions. In our region, rattlesnakes, garter snakes, and some horned lizards are among the few reptiles that give birth to live young.

GETTING READY

Make a copy of *Handouts 5 and 5A* for each student.

DOING THE ACTIVITY

SETTING THE STAGE

- 1) Ask students if they've watched lizards near their homes. Have them share their observations.
- 2) Pose the question to the class, "What do you think might eat a lizard?" Possible answers include roadrunners, snakes, owls, centipedes, scorpions, small mammals, and other lizards, too.

ACTIVITY: LEAPING LIZARDS

- 1) Ask students to read *Leaping Lizards*.
- 2) Discuss the reading, introducing new vocabulary.
- 3) Compare a lizard's body temperatures to our own, reviewing concepts outlined in the reading.
- 4) Pass out *Lizard Temperatures (Hand-*

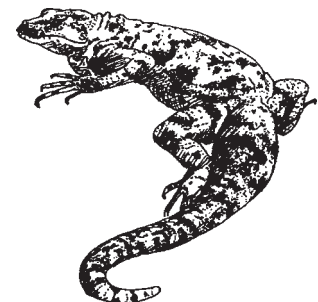
out 5A) and review the directions with students. Go over how to read the thermometer before students begin. Have students work together in small groups to answer the activity questions. Once the students are finished, review answers.

ANSWER KEY TO *LIZARD TEMPERATURES*:

1. 120°F, move into the shade.
2. 80°F
3. Moves very slowly and hides from predators.
4. Looking for a place to cool off.
5. At 50° we might be wearing warm clothes, but we would be active since our body temperature would be 98.6°F; a lizard, however, would hardly be able to move as its body temperature would be 50°F. (Point out that species that live in the cooler mountains may use the heat accumulated in rocks to stay somewhat active.)

EXTENSION ACTIVITY

Ranger Rick's NatureScope: Let's Hear it for Herps contains an excellent outdoor activity called "Hot 'n Cool Herps." Students must keep model lizards within a predetermined safe temperature range throughout the game. For ordering information call 1-800-722-4726.



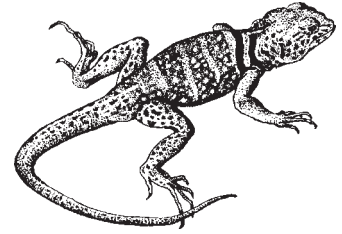
LEAPING LIZARDS

What would your life be like if...

... you could hardly move whenever it got cold?

... you had to bask under the sun on a bed of hot rocks?

... you couldn't eat until your body warmed up?

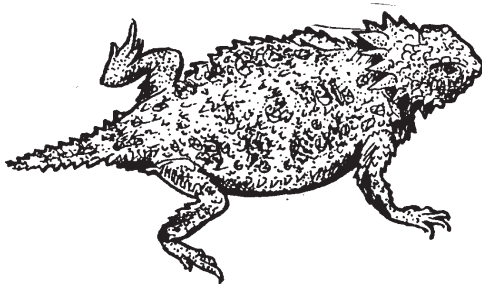


That's how most lizards live here in the Sonoran Desert. During the hot summer months they must be careful not to get too hot. They move back and forth from sun to shade in order to control their body temperature. Then, in the winter when it gets too cold, they **hibernate**.

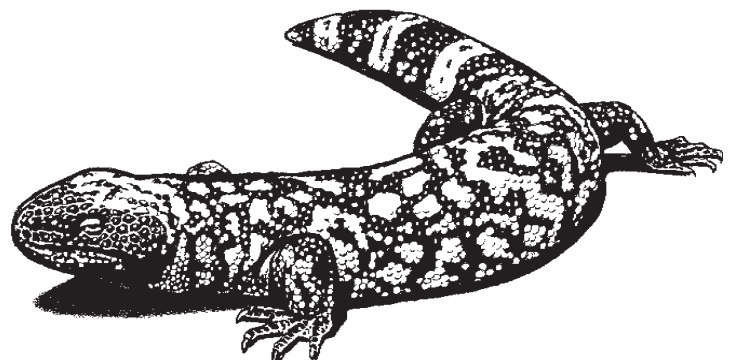
Lizards are **reptiles**. Like most reptiles, they have dry, scaly skin and most lay eggs. All reptiles are **ectothermic**. This means their body temperature changes with the outside temperature. Sometimes ectothermic animals are called cold-blooded, but this is misleading, because their blood is warm on warm days and only cold on cold days. Unlike lizards, our body temperature stays at about 98.6°F and doesn't change unless we are sick. (Have you ever had a fever?) So we don't have to lie in the sun before we can start moving each morning!

All lizards have teeth. A few are **herbivores**, eating only plants. Most are **carnivores** that catch and eat animals such as insects. The Gila monster and the Mexican beaded lizard are the world's only **venomous** lizards. Unlike snakes, this venom is mostly used as a defense and probably not to help sedate or digest food. These large lizards eat small birds, lizard eggs and small rodents.

Most lizards blend in well with their surroundings. This is because the color of their skin is similar to the rocks or plants on which they rest. This is called **camouflage** coloration and is an important **adaptation** that helps lizards stay hidden from **predators**. What do you think might eat a lizard?



Horned Lizard



Gila Monster

LIZARD TEMPERATURES

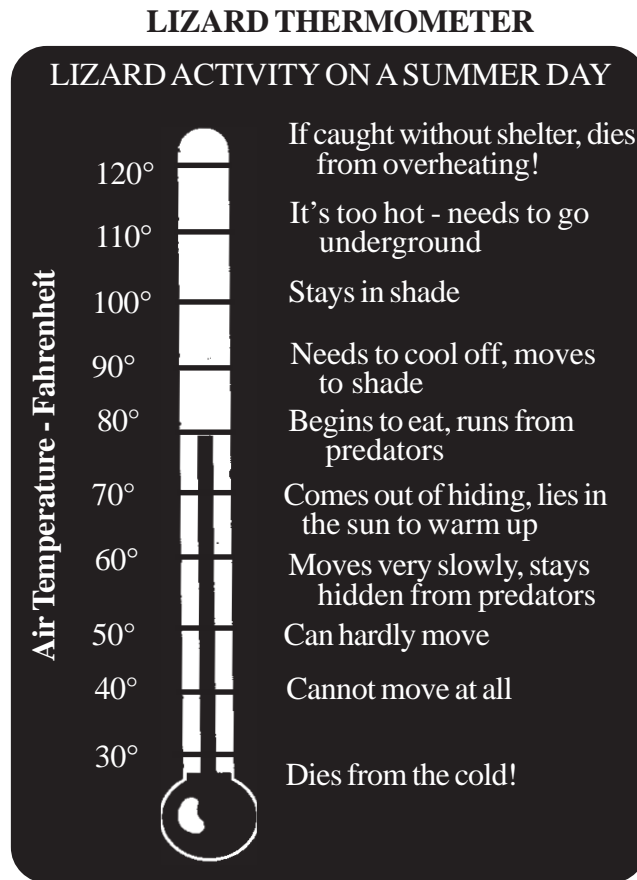
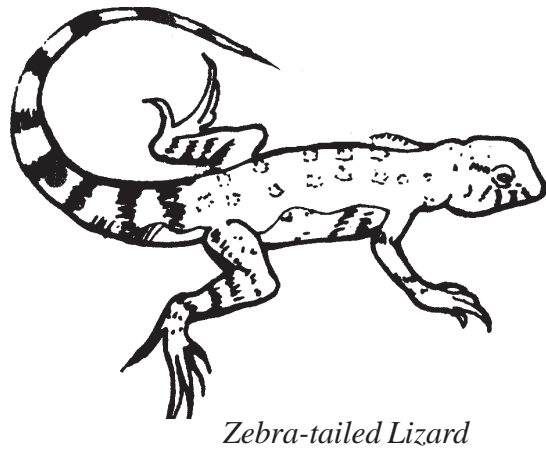
Directions: Look at the thermometer below. Use this thermometer and the information on it to help you answer the questions.

1. On cool mornings, zebra-tailed lizards need to warm their bodies in the sun in order to get moving and eat. But when the temperature reaches ____ a zebra-tailed lizard may overheat and die. What do lizards do to prevent this from happening? _____

2. How warm must a zebra-tailed lizard be before it can eat and run from predators? _____
3. If it's 60°F outside, what might a zebra-tailed lizard be doing?

4. Find your body temperature on this thermometer. (Hint: Although 98.6°F is not on the scale, you can estimate that it is just below 100°F.) What would you be doing if you were a zebra-tailed lizard?

5. How does your activity compare to a zebra-tailed lizard's when the outside temperature is 50°F?



LIZARD DASH!

BACKGROUND INFO

Animals need body heat! Not too much and not too little. Think about us as mammals, are body works hard to keep a constant temperature of 37 degrees Celsius (98.6 degrees Fahrenheit.) If our temperature raises a few degrees, we feel sick and may even die! All other animals must also maintain a certain body temperature to stay alive.

Animals can be divided into two groups according to the methods used to maintain body temperature:

Endotherms (Meaning "inside heat") Sometimes called warm-blooded. Produce heat within their own bodies to stay constant. Includes: mammals (like us!) and birds.

Ectotherms: (Meaning "outside heat") Sometimes called cold-blooded. Must obtain heat from the outside environment. Their body temperatures are raised and lowered by the temperature outside. These animals have numerous ways to warm up or cool down. To raise body temperature, they often bask in the sun or show the board side of their body to the sun. If they are too warm, they will dash into the shade or burrow into the ground.



Clark spiny lizard

MATERIALS NEEDED

- ❖ 1 Celsius **thermometer** for each team. (best with metal back)
- ❖ **Masking tape**
- ❖ **Stop watch**
- ❖ **Set of 8 arthropods for each team** (See copy page. Make a different color for each team to avoid confusion)
- ❖ **Rope** to mark boundaries (optional)

OTHER REQUIREMENTS

- ❖ 45 - 60 minutes for activity duration
- ❖ Must be done on a warm, sunny day with a variety of areas providing full sun, partial shade and full shade.

WITH YOUR STUDENTS

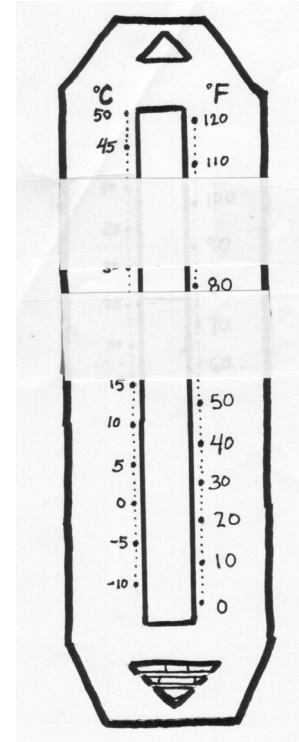
❖ INTRODUCTION

- **Discuss** endotherms and ectotherms. Explain endotherms need for a constant body temperature. Brainstorm the ways ectotherms behave to regulate their body temperature.
- **Explain** they will play a game in which they must keep their lizard (the thermometer) alive by feeding it and by regulating it's body temperature.

❖ GAME PREPERATION

- **Divide students into pairs** and hand out the thermometers.
- **Explain how to read the thermometer.**
- **Define the boundaries** of the playing field (marked with ropes or just verbally described.)
- **Find the average temperature.** Ask students to find the warmest and coolest spots on the playing field. Have students take temperature measurements for about three minutes. (It takes at least one full minute for the thermometer to register the correct temperature.) Call the students back and add the highest and lowest numbers together, then divide by 2.

- **Mark a 5 degree window on each thermometer.** Have students place a piece of masking tape so the bottom edge is placed 3 degrees above the average temperature and another piece of tape is 2 degrees below the average. Each thermometer should look like this:



- **Explain the game.** The object is to feed your lizard all eight arthropods without having the temperature go above or below the 5 degree temperature window. If your lizard becomes too hot or too cold, the lizard "dies" and your team is out of the game. It takes 90 seconds for the lizard to eat the arthropod. In other words, each team must keep their

thermometer in one location for 90 seconds before moving to another spot.

STUDENTS MAY NOT USE THEIR BODIES TO SHADE THE LIZARD!

- **Distribute arthropods.** Each team should have eight of the same color. Have students place their arthropods in strategic locations (such as the sun, shade and partial shade) within the playing field. Remind students that their lizard's temperature will rise in the sun and drop in the shade.

❖ **PLAY ROUND ONE!**

- **Leader calls out "Go Eat!"** Students run to their first arthropod and read the temperature while remaining for 90 seconds.
- **Leader times 90 seconds** then yells out "Go to your next arthropod!" Continue until all eight are "eaten" or all teams are out.

❖ **DISCUSSION**

- **Ask students these questions:**
 - Which lizards survived?
 - What strategies were used?
 - What problems did the others have?
 - What adaptations (or changes) does your lizard

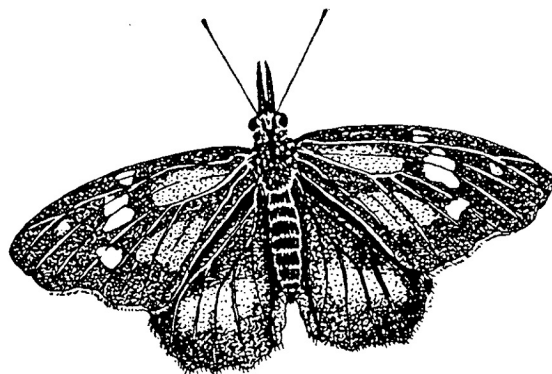
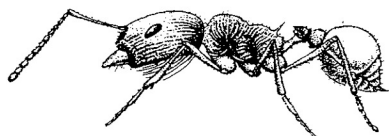
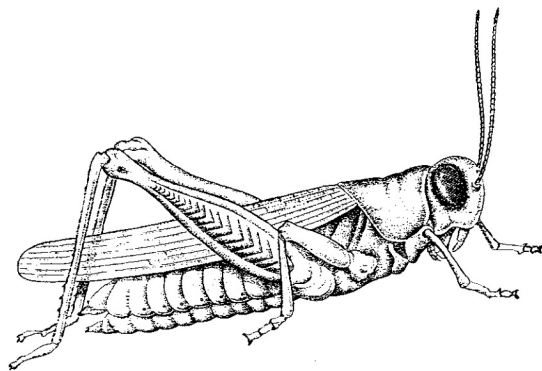
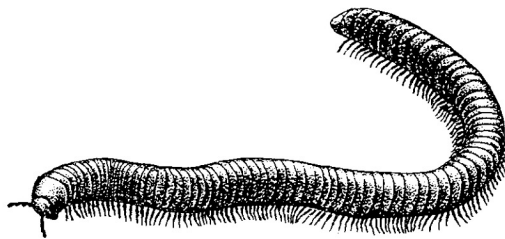
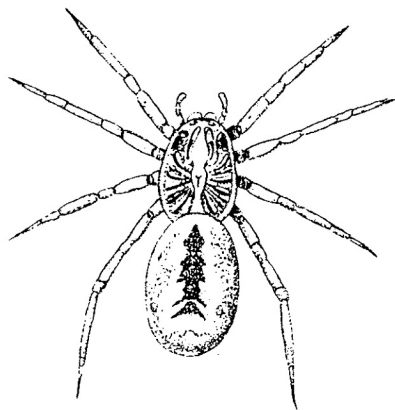
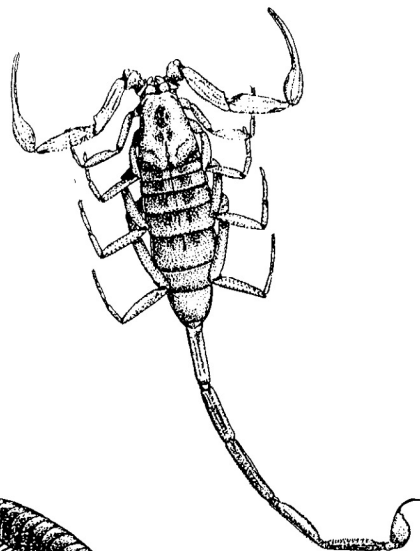
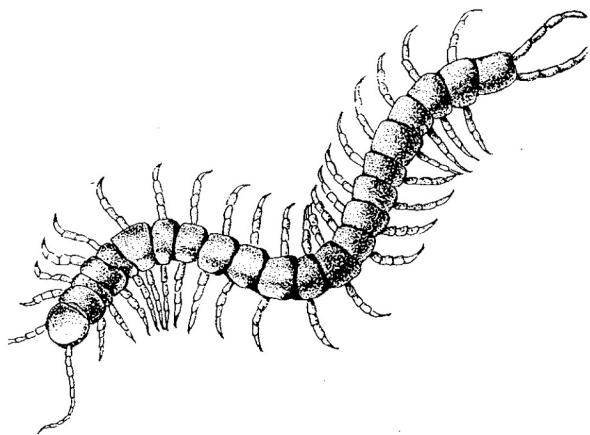
need to make in order to survive?

❖ **PLAY ROUND TWO!**

- **Implement changes and play again.** Consider some of these possibilities:
 - Allow lizards to move more quickly to illustrate the need for lizards to dash from sun to shade.
 - Move the entire 5 degree window up or down the thermometer to illustrate that different kinds of lizards live in different kinds of temperature ranges. (The window must still remain within 5 degrees!)
 - Allow students to bury their thermometers to illustrate the burrowing behavior of lizards to cool themselves off.

❖ **DISCUSSION**

- **Ask students these questions:**
 - What behavior did your lizard show that was different?
 - Were the adaptations successful?
 - What temperature ranges were successful in the sun? The shade? The partial shade?
 - What would be the result of taking a lizard from the desert into your home as a pet?



ACTIVITY: DESERT TORTOISE: FACT OR FICTION

Instructions: Divide your class into two teams, have each team gather in separate parts of the classroom, and then have each one come up with a desert tortoise related name for their team. The instructor will read each of the statements below, addressing the statements to alternating teams. Each team is given a one minute huddle time to decide whether the statement is a fact or whether it is fiction. After the team responds, the instructor, using the information given on this sheet, tells the class about any information that the students may have not come up with on their own. The score for each team is kept on the board.

- 1. A desert tortoise will climb out of its shell when it grows too big and will find another bigger one to live in.**

FALSE. Its shell is attached to its backbone and grows with the rest of the animal.

- 2. The desert tortoise never needs to drink.**

FALSE. Even though it is a real water saver, and it gets water from food that it eats it still needs to occasionally drink water.

- 3. Desert tortoises think that it's funny to urinate on people.**

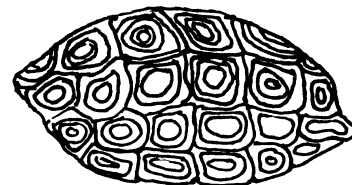
FALSE. They collect water in their bladder and save it for their body to use when no other water is available. They don't drink their own urine, but they can reabsorb the water in it. When a stranger picks up a wild tortoise, it gets scared and will often lose its saved water. This can cause the tortoise to die of thirst if it doesn't find any more water to drink soon.

- 4. When it gets too hot the desert tortoise goes underground.**

TRUE. It will dig a burrow with its front legs and will stay there when it's too hot or too cold and will also hibernate in its burrow. The burrow will often be made in the bank of a wash or under a bush.

- 5. You can tell the age of a tortoise by counting the number of rings on its shell.**

TRUE. Draw a picture of a tortoise shell on the board like this: (It does not have to be complete, just give them the idea.)



As you draw it explain that the shell is made up of many sections and that every year a new ring is added to every section. During the winter, when the tortoise is hibernating the shell stops growing. Because of the yearly grow-stop pattern, one ring is added every year. Usually though, the rings on the sections of older tortoises have been worn down and you can no longer count all of them.

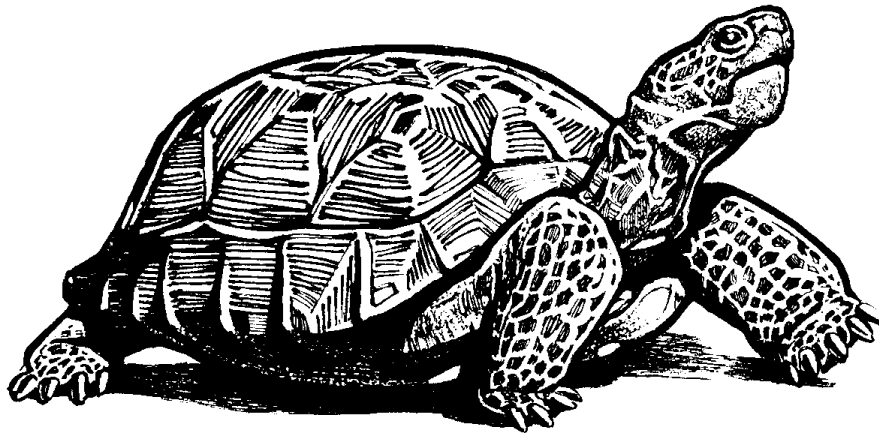
- 6. The desert tortoise has many sharp teeth.**
FALSE. It is toothless, like all turtles. Its large tongue helps push food back into its mouth.
- 7. It is a vegetarian.**
TRUE. It eats mostly grasses, and when they are in season, flowers and cactus fruit.
- 8. The average desert tortoise lives to be 100 years old.**
FALSE. Not quite that old, but they can get to be 80 years old, about as long as the average human.
- 9. Cutting into the shell of a desert tortoise won't hurt it.**
FALSE. Remember that the shell is live, growing tissue – bone, skin, blood and nerve – and if it is cut it hurts. It is not dead like our fingernails. Also, a cut shell can cause infections to pass into the tortoise's internal body cavity, and this could lead to the animal's death.
- 10. It is illegal to collect wild desert tortoises.**
TRUE. In Arizona the tortoise is a protected species. It is not an endangered species, but if it did not have the law to protect it, it would probably be over collected, and this could lead to it becoming very rare and even endangered.
- 11. Building homes, schools and roads for people are not a problem for tortoises.**
FALSE. The biggest problem that desert tortoises face are habitat loss and habitat fragmentation. They are sometimes hit by cars while crossing roads and by off-road vehicles while they are out and about in the desert.
- 12. If you really want to have a desert tortoise in your yard you might be able to adopt one from the Desert Museum.**
TRUE. The Desert Museum has a “tortoise orphanage”. Any desert tortoise that has lived as a pet should not be returned to the wild because they might be carrying a respiratory disease and we don't want them to infect wild tortoises. Since they can live many years, sometimes they outlive their “owners”, so we are a place that they can be returned to instead of the wild. We then find good homes for them.
- 13. The very favorite foods of a pet desert tortoise are bananas, tomatoes and lettuce.**
FALSE. These are very unhealthy foods for a tortoise and will cause the animal to die, if these are the only foods that it is offered.

REPTILE SURVEY: TRUE OR FALSE

Instructions: Read each statement to the class and ask students to write true or false on their paper. Review and discuss the answers as a class.

1. Reptiles are cold-blooded or ectothermic.
2. All lizards eat bugs.
3. Most kinds of reptiles become endangered because people kill them for food and other products.
4. Some snakes eat other snakes.
5. The Gila monster and the Mexican beaded lizard are the only venomous lizards in the world.
6. All lizards have legs.
7. Snakes have eyelids and are able to blink.

8. It is legal for you to take a wild desert tortoise home as a pet.
9. Some lizards can shed or drop their tail as a means of escaping from predators.
10. Lizards and snakes are slimy.



Desert Tortoise

Gopherus agassizii

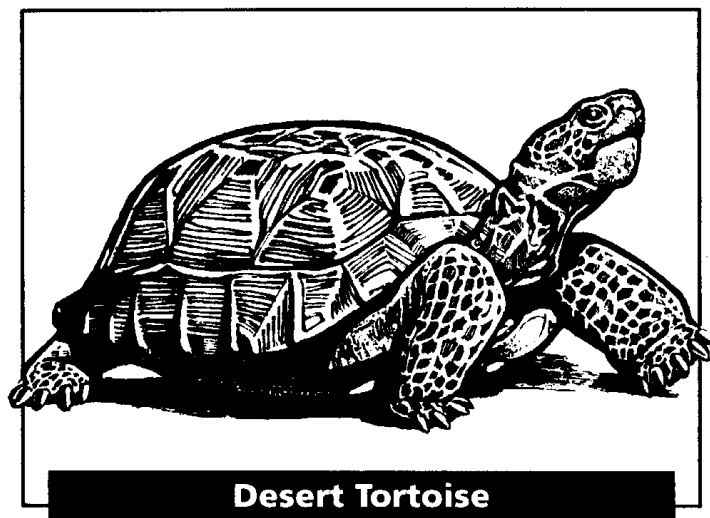
The Desert Tortoise is a fairly large land-dwelling species of turtle. It can reach up to 15 inches in shell length, and has a domed, oval carapace (upper shell) covered with shields that usually have conspicuous growth lines. Carapace color is generally brown, gray, or horn-colored without any distinctive pattern, and the plastron (bottom shell) is yellowish or brownish. The heavy front legs are covered with large, conical scales, and when drawn in to the shell they completely cover the head and the front opening of the shell. The hind limbs are stocky and elephantine. The tail is short.

The desert tortoise is found from southern Nevada and extreme southwestern Utah southward through southeastern California and southwestern Arizona to northern Sinaloa, Mexico. It is also found on Tiburón Island in the Sea of Cortez (Gulf of California).

Desert Tortoises are completely terrestrial (living on land). They occur in desert and semi-desert habitats: creosote bush flats and hillsides of saguaro and palo verde to up into juniper woodland; in Mexico into thornscrub and the lower reaches of evergreen oak and juniper woodlands. They live where there is firm but not hard ground for burrowing, rocky overhangs, or exposed, eroded caliche layers in the sides of washes and arroyos, for shelter.

Desert Tortoises are vegetarians, eating a variety of grasses, herbs, and cacti. They are active in the spring when many annuals and grasses have sprouted, and again in the summer monsoon season. One to 12 (often 4 to 6) eggs are laid in late spring to mid-summer, buried in sand or soft soil where the temperature and moisture levels are right for incubation, often near the mouths of the adult female's sheltering burrow. The female does not take care of her eggs or young. Hatchlings emerge from 100 to 120 days after egg-laying, but they may not come out into the environment until the following spring.

Desert Tortoises are protected by law in every state they occur in. In addition, the Mohave Desert population is listed by the federal government as Threatened under the Endangered Species Act.



Desert Box Turtle

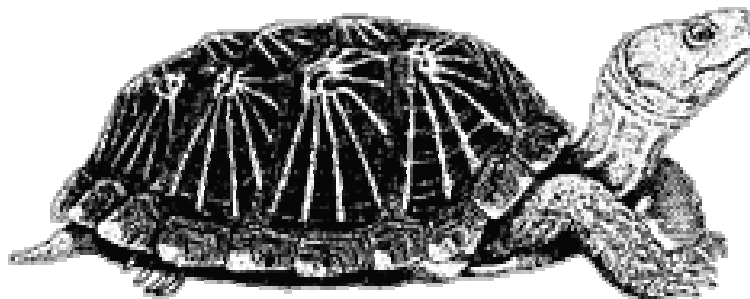
Terrapene ornate luteola

The Desert Box Turtle is a largely terrestrial turtle that does not, however, shun water. It grows to about 5 or more inches in carapace (upper shell) length. The carapace is highly domed, and is usually marked with lines or strings of markings radiating from the center of each scute (shell scale) toward the edges; these markings are black or dark brown on a background color of yellow or horn color. Similar markings may be found on the plastron (bottom shell). Markings become faded with age and may eventually be lost. Often older turtles are plain yellow or straw-colored.

The plastron is hinged and can be drawn up tightly against the carapace, completely enclosing the turtle in its shell (and accounting for the “box” in its common name).

Although called a “desert” box turtle, it is primarily a prairie or grassland species, also occurring in open woodland and the thornscrub of the Arizona Uplands. Box turtles are omnivorous, eating both plants and animals. Their diet consists of insects (grasshoppers, beetles, crickets, caterpillars) and other invertebrates such as earthworms; reptile eggs; carrion (dead animals); berries, melons, cactus fruits and pads, tender shoots, and leaves. In cattle pastures they will burrow into the “cow pies” in search of beetles and other insects. The activity of these turtles is stimulated by rainfall, and they will often soak in puddles or small ponds when the opportunity arises.

Box turtles lay 2 to 8 eggs in the period from May to August. The eggs hatch about 70 days after being laid. As in most other reptiles, the baby turtles are on their own; there is no parental care.



Tiger Salamander

Ambystoma tigrinum

The Tiger Salamander is an amphibian; it has no scales or claws, and must live where it can find sufficient moisture to keep from desiccating (drying out). Its eggs are laid in water and the larvae must live in water and breathe through gills. They metamorphosize (transform) into adults that breathe using lungs and to some extent through their skin (which is another reason it must be kept moist), As adults they are no longer restricted to open water, but they still must live in moist situations.

Tiger salamanders are large (to 10 inches or more in length) stocky salamanders with small, protruding eyes and a broad, rounded snout. Their color varies greatly depending upon where they are found and their age. They may have stripes, spots, bars or reticulations (net-like patterns) of black or dusky on a yellowish, greenish or grayish background, or they may be plain greenish or olive with faint markings.

Tiger salamanders are found throughout much of North America, from the east to west coasts and from southern Canada to northern Mexico. It is the only salamander found in Arizona, where it ranges from desert scrubland to grasslands, oak and juniper woodlands, to mountain meadows and forests. It usually frequents the quiet water of ponds, reservoirs, lakes, temporary rain pools, stock ponds or water troughs. Adults spend most of their time underground in the burrows of prairie dogs, ground squirrels, gophers, and other burrowing animals. Spring and summer rainfalls spur its activity and breeding, and adults will migrate at night or during overcast or rainy days from their underground retreats to bodies of water. Young eat aquatic insects, worms, and other invertebrates, or some may be cannibalistic and eat their own kind as well as tadpoles of frogs and toads. Adult tiger salamanders eat a variety of insects (beetles, grasshoppers, crickets, caterpillars), earthworms, spiders, and other invertebrates, and may occasionally eat small snakes or lizards.

Tiger salamander larvae, often called “water dogs,” have been sold for many years as living fish bait, and have been transported to many areas by fishermen where they did not originally occur. The result of this activity is that there are populations of tiger salamanders in many ponds and reservoirs where they were not found before. In some cases this has created competition with other native species and “pollution” of the gene pool of resident tiger salamander populations.



Chuckwalla

Sauromalus sp.

Chuckwallas are large, heavy-bodied, small-scaled lizards. Three fairly common species occur within the Sonoran Desert Region (two other species have been described, each endemic [originated and found nowhere else] on islands in the Gulf of California).

The Common Chuckwalla, *Sauromalus obesus*, grows up to 14 or more inches long (including its tail), and is a large, flat, often dark-colored lizard (although adult males may have red backs and whitish tails) with loose folds of skin on the neck and sides. The skin on the back is covered with small granular scales, and the tail has a broad base and a blunt tip. It is found throughout the California desert, southern Nevada and southwestern Utah, south through Baja California to La Paz, and south-central Arizona to Guaymas, Sonora, Mexico. It is found on Tiburón Island and San Marcos, Danzante, Santa Cruz, San Diego, San Francisco, San José, Partida Sur, and Espiritu Santo Islands in the Gulf.

The Spiny Chuckwalla, *Sauromalus hispidus*, grows to more than 25 inches long. The limbs, tail and neck are very spinose, and it is a uniform dark brown or black above. It is found on Isla Ángel de la Guarda, most islands in Bahía de los Angeles, Isla San Lorenzo Norte, and Isla San Lorenzo Sur.

The San Esteban Island Chuckwalla, *Sauromalus varius*, also grows to more than 25 inches in length. It is light orange to cream brown with large, irregular charcoal blotches. It is endemic (originated and found nowhere else) on Isla San Esteban, although it has been introduced to a satellite island (Roca Lobos of Isla Salsipuedes).

Chuckwallas frequent rocky outcrops, dry canyons and washes. They are largely vegetarians, eating a variety of flowers, leaves, cactus fruits, berries, and succulent stems, although they occasionally eat some insects, too. When threatened, chuckwallas will retreat into rock crevices and inflate their bodies with air, wedging themselves into their retreat. Eggs (5 to 16) are laid in June to perhaps August. Sometimes a female may skip a year or two in egg-laying.



Gopher Snake

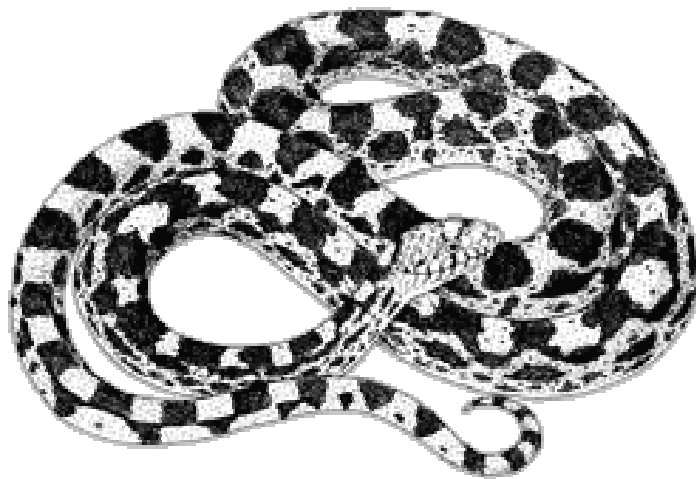
Pituophis catenifer

The Gopher Snake is a large snake, growing to 9 feet long in some parts of its range, although 4 to 6 feet is common. It is found from the Pacific Coast east to Indiana, from southern Canada to Central Mexico, on the Baja California Peninsula, and on islands off the coast of southern California as well as islands in the Gulf of California. It occurs in a variety of habitats from sea level to over 9,000 feet in elevation. In general it is a yellowish or cream-colored snake with black, brown, or reddish brown blotches, usually more widely spaced on the tail than on the body, and smaller secondary blotches on the sides. It is called Bullsnake by many people.

Gopher snakes are carnivores and eat a large variety of small mammals (rodents, rabbits, moles), birds and their eggs and nestlings, and occasionally lizards and insects. It kills its prey by constriction, looping its body around the prey and tightening its grip until the animal dies of suffocation and heart failure. When it is disturbed, a Gopher Snake may flatten its head, hiss loudly, and vibrate its tail. This behavior has sometimes caused it to be mistaken for a rattlesnake and killed.

Gopher snakes lay one or two clutches of 2 to 14 eggs, in burrows rotting logs, or other places where the temperature and humidity will facilitate the incubation. Eggs hatch 52 to 85 days later, and the young snakes are on their own; there is no parental care of eggs or hatchlings. At about 12 inches in length, the newly-hatched young are already big enough to capture and eat lizards, insects, and baby mice.

Gopher snakes are recognized throughout their range as beneficial predators upon rodent (rat, mouse, and vole) pests to crops and gardens. Even a small snake can eat 8 baby mice in a week, and an adult can consume similar numbers of larger animals. It is the smart farmer or rancher who protects the Gopher Snake on his land, for he or she knows that it is saving them huge amounts of money in pest-control costs.



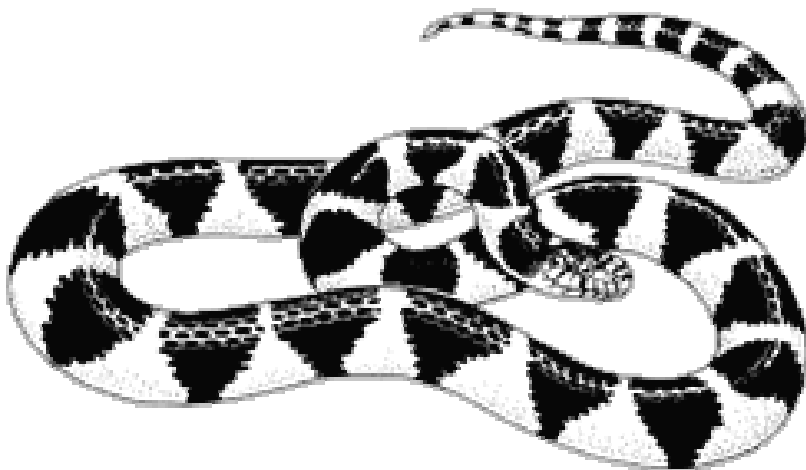
Common Kingsnake

Lampropeltis getula

As its name implies, the Common Kingsnake is indeed common throughout much of the United States and into Mexico. Found from coast to coast and from New Jersey to Florida in the east, Oregon to Baja California in the west, and to northern and mid Mexico in the south, it occurs in a variety of colors and patterns throughout this large range. In the Southwest its generally consists of alternating rings of plain black or brown to dark brown and white or yellow, with the pale bands broadening toward the belly. The light bands may give way to various amounts of light speckling on a dark background, and some individuals are entirely speckled. In southern Arizona, one form is entirely black with no light coloration, and in southern California and Baja California individuals with a light dorsal stripe, entire or broken, may be found.

The Common Kingsnake is capable of growing to lengths of 85 inches, although commonly specimens will range from 36 to 60 inches. The snake has smooth, shiny scales (the name *Lampropeltis* means “shining skin”). Found in nearly every habitat from sea level to over 7,000 feet, the kingsnake is equally diverse in its eating habits. All snakes are carnivorous, and the Common Kingsnake eats other snakes (including rattlesnakes), lizards, small turtles, reptile eggs, frogs, birds and their eggs, and small mammals. Their ease of recognition and reputation for eating rattlesnakes has afforded them a popularity among many people that most other snakes do not enjoy.

The Common Kingsnake lays clutches of 2 to 24 (usually 6 to 12) eggs in the period from May to August. These hatch 47 to 85 days later. As is the case with most snakes, there is no parental care of either eggs or newly-hatched young.



Sinaloan Milk Snake

Lampropeltis triangulum sinaloae

The Sinaloan Milk Snake is a variety of the Milk Snake, *Lampropeltis triangulum*, that is found in many varieties of colors and patterns from most of the United States east of the Rockies (and a few to the west), most of Mexico, all of Central America, and northern South America. The Sinaloan subspecies (geographic race) is found from the southwestern corner of Sonora southward through the coastal plain and foothills of Sinaloa to near the southern border of Nayarit, and up the Rio Fuerte into southwestern Chihuahua, Mexico.

Growing to about 48 inches long, the Sinaloan Milk Snake is a serpent of remarkable beauty. It has a black head and snout with varying amounts of white speckling on the snout. It has narrow white, cream or yellowish bands (of black-tipped scales) bordered on both sides by narrow black bands. Interspaced with these are wide red bands, about three times as wide as the black-white-black ring combinations. All of the rings completely encircle the body. This subspecies was described in 1978, and because of its spectacular colors has become a favorite with herpetoculturists, people who breed and raise snakes in captivity.

Milk snakes, a kind of kingsnake, have similar breeding and egg-laying habits. Like most other snakes, the female Sinaloan Milk Snake will find a place with suitable temperature and humidity to lay her eggs, but will otherwise have no interaction either with the eggs or young. Milk snakes feed on lizards, other snakes, birds and bird eggs, frogs, and small mammals. Like all other snakes they are predators and carnivores, and play important roles in the ecosystem and the “balance of nature.”

