



## Table Rocks Curriculum

### Animals of Table Rocks Memory Game

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**Objective:** The student will explore the characteristics, structure, and function of different *mammals*, *amphibians*, *reptiles*, birds, and *insects* by playing a memory game. The game will be focused on the animals of Table Rocks with an optional artistic extension for learning animal adaptations.

#### **Benchmarks Targeted: 1 and 2 (Grades 1-5)**

#### **Oregon Standards:**

**Subject Area:** Life Science

**Common Curriculum Goals:** Organisms: Understand the characteristics, structure, and functions of an organism.

**Benchmark 1:** Recognize characteristics that are similar and different between organisms. Describe the basic needs of living things.

**Benchmark 2:** Group or classify organisms based on a variety of characteristics. Describe basic plant and animal structures and their functions.

**Common Curriculum Goals:** Diversity/ Interdependence: Understand the relationships among living things and between living things and their environments.

**Benchmark 1:** Describe a habitat and the organisms that live there. Identify how some animals gather and store food, defend themselves, and find shelter (with extension only)

**Benchmark 2:** Describe the relationship between characteristics of specific habitats and the organisms that live there. Describe how adaptations help a species survive.

**Subject Area:** The Arts

**Common Curriculum Goals:** Create, present and perform: Apply ideas, techniques and processes in the arts.

**Benchmark 1:** Use experiences, imagination, essential elements and organizational principles to achieve a desired effect when creating, presenting and/or performing works of art.

**Benchmark 2:** Use experiences, imagination, organizations, essential elements and organizational principles to achieve a desired effect when creating, presenting and/or performing works of art.

**Subject Area:** English/Language Arts

**Common Curriculum Goals:** Speaking and Listening: (All Grades) Communicate supported ideas across the subject areas using oral, visual, and multimedia forms in ways appropriate to topic, context, audience, and purpose.

**Length of Lesson:** 30 minutes

#### **Materials:**

- ✓ Age-appropriate "Animals of Table Rocks Memory Cards" (provided)
- ✓ Photocopies of these cards, enough to create 1 set per 2-3 students
- ✓ Scissors to cut photocopies

**Key Vocabulary:** *amphibian*, *ectothermic*, *endothermic*, *exoskeleton*, *gall*, *insect*, *invertebrate*, *mammal*, *metamorphosis*, *reptile*, *vertebrate*

## **Background:**

Animals are grouped into classes based on certain characteristics they exhibit. It is through these different characteristics that each class of animal is defined and separated. Each class has unique attributes which help it adapt and survive in its environment. The following is a list of animal classes and their unique characteristics.

### **Mammals**

**Mammals** belong to the class Mammalia (this includes humans). These animals are warm-blooded **vertebrates** (have a backbone) and are known for having fur/hair covering their skin, giving live birth (most do, however the duck-billed platypus lays eggs), producing milk for offspring, having a hinged jaw, and hearing through bones in the middle ear. **Mammals** are **endothermic**, or “warm-blooded,” animals meaning they are able to maintain a constant body temperature. **Mammals** of the Table Rocks include: bobcat, cougar, black-tailed jackrabbit, coyote, black-tailed deer, ringtail, dusky-footed woodrat, valley pocket gopher, and the California ground squirrel. **Mammals** of the Table Rocks live in all habitat types.

### **Birds**

Birds belong to the class Aves. Birds are warm-blooded **vertebrates** that have feathers, wings, and a beak. Like **mammals**, they are **endothermic** and are able to maintain a constant body temperature. They have a highly specialized skeletal structure that includes hollow and fused bones for saving weight. The reduced weight helps them fly. Birds must have an efficient circulatory system and a strong heart in order to maintain oxygen flow during flight. They have a unique one-way breathing system that is made up of a number of large air chambers and hollow bones that are interconnected to their lungs. These air chambers allow the air to flow in a circle which maintains a fresh, oxygen rich supply of air in their lungs at all times. Their breathing is controlled by muscular contractions in the ribcage which reduce or increase the overall size of the body cavity and thus force air out of the various air chambers. A bird’s breathing mechanism is a very efficient way to obtain oxygen from the air. It also allows them to fly high in the atmosphere where it is easier to fly but where there is less oxygen. Birds maintain their energy by eating a variety of foods including **insects**, plants, carrion (dead animals), fruit, and nectar. Birds have very good eyesight and rely on this to locate prey. Birds build nests in trees, on the ground, in hollow tree cavities, or along cliff edges. Here they lay their eggs (size and color vary greatly among species) and raise their young. Many birds migrate in the fall to warmer areas and return to the Table Rocks in spring and summer. Some birds travel thousands of miles every year! Birds of the Table Rocks include: Anna’s Hummingbird, Western Meadowlark, Pileated Woodpecker, Acorn Woodpecker, Spotted Towhee, Blackheaded Grosbeak, Rufous Hummingbird, Violet-green Swallow, Turkey Vulture, American Robin, and Blue-gray Gnatcatcher. While birds are found in all habitat types on the Table Rocks, the chaparral habitat contains the most bird species due to its dense vegetation and protective cover.

### **Reptiles**

**Vertebrates** belonging to the class Reptilia. This includes crocodiles, alligators, lizards, snakes, and turtles. **Reptiles** are **ectothermic**, or “cold-blooded,” animals. They have a covering of scales on their bodies, breathe with lungs, and have dry skin. Many **reptiles** lay their eggs on land, under rocks or fallen logs; others bury them in the sand or in rotting vegetation where they will be artificially incubated by their surroundings. The eggs are protected by a hard, leathery shell and contain a yolk sac that provides food to the embryo. Once the eggs are deposited, the animals

show little or no care for them, leaving them to fend for themselves. In some species, the female retains thin-shelled eggs inside her body until they are ready to hatch. Incubation occurs as the female seeks out warmer areas and the embryos receive water and oxygen through a placenta (food sac) similar to the kind *mammals* have. The eggs hatch right before birth resulting in a live birth. In both cases, the young resemble the adults when born. *Reptiles* of the Table Rocks include western fence lizard, western skink, alligator lizard, gopher snake, western rattlesnake, ring-necked snake, garter snake, racer snake, and striped whipsnake. Most *reptiles* are found throughout all habitats on the Table Rocks, though species are less abundant in the shady mixed woodland. Western fence lizards can frequently be spotted on a trailside rock or perched on an oak branch, basking in the sun. Gopher snakes and racers are also often seen near the trail, usually in chaparral or grassy areas. Garter snakes prefer the mounded prairie habitat at the tops of the rocks, especially around the vernal pools where they hunt for tadpoles. *Reptiles* often take shelter in abandoned rodent burrows, under rocks, or in tree cavities.

### **Amphibians**

*Amphibians* make up the *vertebrate* animals belonging to the class Amphibia. This includes frogs, toads, newts, and salamanders. Many *amphibians* go through a larval stage which is usually aquatic and breathe with gills. Most adults are semi-terrestrial, breathing with lungs or through their moist, glandular skin. Unlike other *vertebrates*, they do not have a protective covering for their skin. *Amphibians* are considered indicator species because their soft skin makes them vulnerable to absorbing toxins. Two *amphibians* live on the Table Rocks, the Pacific tree frog and the western toad. These two *amphibians* lay their eggs in the shallow vernal pools on the top of both Table Rocks. *Amphibian* eggs do not have a membrane or shell, instead, the eggs have a jelly-like layer around them which protects and keeps the eggs moist. Vernal pools are an ideal place for amphibians to lay eggs and live in the larval stage. When adults mature and the pools dry up, they move to the mixed woodland where the thick canopy cover provides a cool moist place to live. Most *amphibians* must live relatively close to water or in moist environments at some point in their life. The two *amphibians* that live on the Table Rocks undergo *metamorphosis* (or change) from the larval stage to adult stage. During this time, major changes occur in the animal's feeding habits, movement, appearance, and habitat requirements. After the process of *metamorphosis*, these two *amphibians* also transition from needing to live in water during their larval stage to being able to live on land as adults. *Amphibians* are highly variable and many species do not undergo *metamorphosis* like the two species living on the Table Rocks. In fact, some species remain in the larval stage their entire life cycle!

### **Insects**

*Invertebrates* belonging to the class Insecta. *Insects* represent the largest group of animals on earth, with more than one million species identified! All *insects* are *invertebrates* (have no back bone) and have segmented bodies consisting of a head, thorax, and abdomen. All have three pairs of legs and some have one or two sets of wings. *Insects* also have a hard outer shell called an *exoskeleton*. The *exoskeleton* provides protection and support. Many *insects* go through some form of *metamorphosis* into their adult stage. During this change, the *exoskeleton* does not grow with them and must be shed periodically as the insect grows. This process is called molting. Many undergo several molts in their lifetime. However, once they become adults, molting is no longer necessary. *Insect* eyes consist of several lenses, or compound eyes, which provide them with excellent sight. They have antennae to help them feel, taste, and smell. Their food consists of plant or animal material. *Insects* are the main pollinator of plants and are therefore a necessary and important part of our environment. Can you imagine life without fruits or vegetables? Also,

*insects* provide food for many types of animals (especially birds!) and without them many animal species would starve. *Insects* of the Table Rocks include: the velvet ant (actually a wingless wasp!); western tent caterpillar; snakefly; oak *gall* wasp; cicada; and many species of bees, beetles, butterflies, and moths. *Insects* of the Table Rocks are found throughout all habitat types.

## **Procedure:**

### **Preparation:**

This activity can be used as a pre-hike activity to familiarize students with the Table Rocks wildlife or as a review of information learned on your hike. Discuss with your students specific characteristics of *reptiles*, *amphibians*, *insects*, birds, and *mammals* (refer to the cards accompanying this lesson for guidance). Explain to your students they will be testing their knowledge by playing a memory game with their classmates.

Copy and prepare a set of memory cards for each group (30 cards total). Templates are provided with this lesson. Note there are different sets for Grades 1-3 and 4-5. Students should be divided into small groups of two or three students each and given a quiet place to play the game.

### **Activity:**

In their small groups have students spread the cards out face down in front of them. Then they take turns flipping the cards over two at a time. If the two cards match, the student keeps that pair and gets to try again. If they don't match, they turn the cards back over and the next student takes a turn. The goal of the activity is to:

- **Grades 1-3:** Match an animal card with a class card. For example, a matched pair would be a “Western Fence Lizard” animal card with a “*Reptile*” class card. Fonts for each correct pair are identical to double check answers (this is for the teacher to know, not students).
- **Grades 4-5:** Match an animal card with a characteristics card. For example, a matched pair would be a “Western Fence Lizard” animal card with a *reptile* characteristics card: “Cold-blooded; young resemble adults; thick, dry, scaly skin; and use lungs to breathe.”

The game is over when all matches have been made. The student with the most pairs gets to shuffle and deal the next round. You could have a tournament in your class by switching groups and playing multiple rounds.

## **Extensions:**

**Grades 1-3:** Have students draw a picture of their favorite animal on the Table Rocks. Encourage them to include characteristics that demonstrate its classification (e.g. *reptile*, *mammal*, bird, etc.) including habitat, food source, adaptations, or distinguishing features. The student's artwork can then be presented and displayed to the class in a School Animal Zoo. They can act out and mimic the sounds their animal makes when sharing their animal, or even make a charades/guessing game out of the activity.

**Grades 4-5:** Students can take the concept further by using the characteristics cards to create a new species! In their groups of 2-3, students can create and then draw a new *amphibian* (or *reptile*, *mammal*, etc.) that has all of the adaptations and characteristics listed on the card. New

animals can then be presented and displayed to the class in a New Animal Zoo. The characteristics of each new animal should be described, presented, or acted out.

**Note:** Master cards have been prepared to print and are included. Correct matches are in the same font. Make sure to print, copy, or paste onto thicker paper of a uniform color so students cannot see through the backs of cards.

## Discussion Questions:

### How do animal adaptations help them survive in their environment?

*There are many ways adaptations help animals survive. Here are a few examples:*

***Mammals** produce milk for their offspring which allows the parents to spend less energy looking for food for their young. **Reptile** eggs have a hard, leathery shell that helps protect them from predation. These hard, leathery shells resist crushing or breaking if dropped by a predator. The hard, leathery shell also keeps the egg from drying out. Some **insects** can appear as a 'stick' and hide on a branch so that birds do not notice them. Others have distinct markings on wings that look like eyes which birds may be frightened of or avoid. Other adaptations include the ability to camouflage, the ability to run fast to escape being prey or to catch prey, the ability to fly, and the ability to burrow under ground to escape danger. Birds also have a variety of beak shapes and sizes specialized for obtaining the type of food that bird eats. For more adaptations, refer to the Chapter Introduction and other Wildlife activities.*

### Do certain animals require a specific habitat?

*Yes. At some point in their life most **amphibians** must live near water or a moist environment. They don't have a protective covering for their skin like **reptiles** or **mammals** do, therefore they must remain near moist areas so their skin doesn't dry out.*

## References:

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Corkran and Thoms. Amphibians of Oregon, Washington and British Columbia. Renton: Lone Pine Publishing, 1996.

The Earthlife Web. Gordon Ramel. 2008. Earth-Life Web Productions. 4 February 2008 <<http://www.earthlife.net/birds/breath.html>>.

Eder, Tamara. Mammals of Washington and Oregon. Renton: Lone Pine Publishing, 2002.

Sibley, David Allen. The Sibley Field Guide to Birds of Western North America. New York: Alfred A. Knopf, Inc., 2003.

Table Rocks Environmental Education. 2007. USDI BLM. 16 October 2007 <<http://www.blm.gov/or/resources/recreation/tablerock/index.php>>.

Animals of Table Rocks Memory Cards 4-5

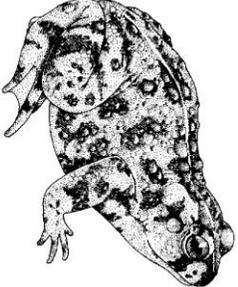
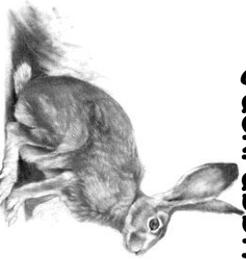
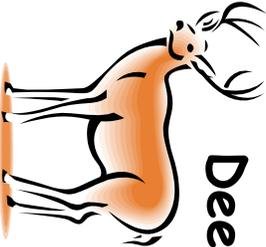


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<ul style="list-style-type: none"> <li>• Have fur/hair</li> <li>• Give birth to live young</li> <li>• Produce milk</li> <li>• Warm-bl ooded</li> </ul>	<ul style="list-style-type: none"> <li>• Have fur/hair</li> <li>• Give birth to live young</li> <li>• Produce milk</li> <li>• Warm-bl ooded</li> </ul>	<ul style="list-style-type: none"> <li>• Have fur/hair</li> <li>• Give birth to live young</li> <li>• Produce milk</li> <li>• Warm-bl ooded</li> </ul>



Animals of Table Rocks Memory Cards 4-5



 <p><b>BEE</b></p>	 <p><b>OAK GALL WASP</b></p>	 <p><b>BUTTERFLY</b></p>
 <p><b>Turkey Vulture</b></p>	 <p><b>Acorn Woodpecker</b></p>	 <p><b>Great Horned Owl</b></p>
 <p><b>Western Fence Lizard</b></p>	 <p><b>Western Skink</b></p>	 <p><b>Western Rattlesnake</b></p>
 <p><b>Pacific Tree Frog</b></p>	 <p><b>Western Toad</b></p>	 <p><b>Tadpole</b></p>
 <p><b>Black-tailed Jackrabbit</b></p>	 <p><b>Coyote</b></p>	 <p><b>Black-tailed Deer</b></p>



Animals of Table Rocks Memory Cards 1-3

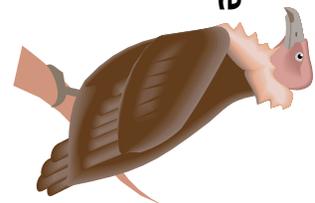
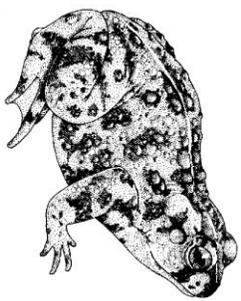
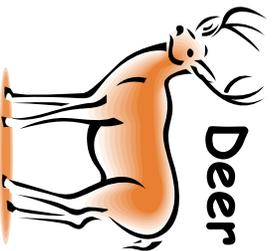
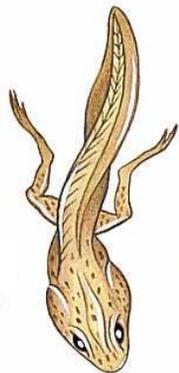


<b>INSECT</b>	<b>INSECT</b>	<b>INSECT</b>
<b>Bird</b>	<b>Bird</b>	<b>Bird</b>
<i>Reptile</i>	<i>Reptile</i>	<i>Reptile</i>
<i>Amphibian</i>	<i>Amphibian</i>	<i>Amphibian</i>
<b>Mammal</b>	<b>Mammal</b>	<b>Mammal</b>



Animals of Table Rocks Memory Cards 1-3



 <p><b>Black-tailed Jackrabbit</b></p>	 <p><i>Pacific Tree Frog</i></p>	 <p>Western Fence Lizard</p>	 <p>Turkey Vulture</p>	 <p><b>BEE</b></p>
 <p><b>Coyote</b></p>	 <p><i>Western Toad</i></p>	 <p>Western Skink</p>	 <p>Acorn Woodpecker</p>	 <p><b>OAK GALL WASP</b></p>
 <p><b>Black-tailed Deer</b></p>	 <p><i>Tadpole</i></p>	 <p>Western Rattlesnake</p>	 <p>Great Horned Owl</p>	 <p><b>BUTTERFLY</b></p>