

National Park Service  
U.S. Department of the Interior

Zion National Park



# Adaptation Auction

Activity Materials



# Adaptations for Auction

- Prehensile tail
- Sticky foot pads
- Large eyes
- Fur
- Fast speed
- Horns
- Changeable pigmentation
- Compound eyes
- Large ears
- Whiskers
- Omnivorous
- Long tongue
- Sound making
- Wings
- Great swimming ability
- Stinking spray
- Waterproof coat
- Eyespots
- Scales
- Stinger
- Invisibility
- Sharp quills
- Fire breath
- Hibernation or aestivation
- Flashy coloration
- Migration
- Camouflage
- Sharp canine teeth
- Long neck
- Large hind legs



# Wetland





# Wetland

- A *wetland* habitat is where the ground is saturated with and sometimes covered in water.
- In Zion, wetlands include swamps and marshes and are typically found near rivers and streams.
- Many different plants and animals (both land and water dwelling) find homes in wetlands.
- Zion wetland features:
  - Unavoidable water, often in shallow pools
  - Humid air
  - Moist, soft soil
  - Sun on the outside and shade beneath the larger plants

# Cliff



# Cliff

- A *cliff* is a large, vertical, exposed rock.
- In Zion, cliffs are made of sandstone and tower about 1,000-2,000 feet over the canyon floor.
- Some very hardy plants and animals find homes on a cliff.
- Zion cliff features:
  - Occasional water from rain or snow
  - Exposure to wind and extreme temperatures (hot and cold)
  - Little-to-no soil
  - Sun on the cliff face, shady in overhangs
  - Difficult to access
  - Lots of cracks, alcoves, and small caves



# Riparian



# Riparian

- The *riparian* habitat is the area where land and flowing water meet.
- In Zion the riparian habitat occurs mostly along the Virgin River and small streams.
- Many different plants and animals (both land and water dwelling) find homes in riparian habitats.
- Zion riparian habitat features:
  - Water readily available, still pools of water sometimes present
  - Moist, nutrient-rich soil
  - Sun on the outside and shade on the interior of the tree canopy
  - Annual flash floods rush through the area
  - Rocks and flood debris are often present



# Desert





# Desert

- A *desert* habitat is where potential for water loss (by plant and animal use, and by evaporation) is greater than gain.
- In Zion, desert habitat covers the park's lowest elevation.
- Very hardy plants and animals find homes in a desert.
- Zion desert features:
  - Little water availability
  - Very dry air, sometimes windy
  - Dry and often salty soil
  - Lots of sunlight
  - Extreme heat in summer, cold in winter
  - Bare rocks and cliffs are sometimes present



# Pinyon-Juniper Woodland



# Pinyon-Juniper Woodland

- A *pinyon-juniper woodland* is a forest community dominated by juniper and pinyon pine trees.
- In Zion the pinyon-juniper woodland is the most common habitat.
- Various plants and animals find homes in a pinyon-juniper woodland.
- Zion pinyon-juniper woodland features:
  - Limited water availability, mostly from monsoon rains or snow
  - Dry air
  - Bare rock and crumbly soil
  - Occasional wildfires
  - Exposure to summer heat and winter cold



# Ponderosa Pine Forest





# Ponderosa Pine Forest

- A *ponderosa pine forest* is a habitat dominated by ponderosa pine trees.
- In Zion, this forest is found at the highest elevations of the park, typically on plateau and mountain tops.
- Many different plants and animals find home in a ponderosa pine forest.
- Zion ponderosa pine forest features:
  - Some water availability, largely from monsoon rains or snowmelt
  - Dry air most of the year
  - Occasional fires, particularly in spring and fall
  - Sun on the outside and shade on the interior of the tree canopy
  - Warm summers and cold, snowy winters



# Prehensile Tail

# Large Eyes

## Prehensile Tail

- This is a long tail that can grasp and hold objects.
- Some have a bare “friction patch” to aid gripping.
- Animal Examples: monkey, possum  
In Zion: none known

## Large Eyes

- These are large eyeballs with extra-wide pupils.
- Large eyes can collect and process more light, improving vision in low-light and nighttime situations.
- Animal Examples: owls, mice  
In Zion: Mexican spotted owl, kangaroo rat



# Fast Speed

# Changeable Pigmentation

## **Fast Speed**

- This helps animals catch prey or avoid predators.
- Fast speed typically comes in short sprints or bursts.
- Animal Examples: cheetah, antelope  
In Zion: peregrine falcon, black-tailed jackrabbit

## **Changeable Pigmentation**

- This is a special type of camouflage.
- The color and pattern of an animal's skin changes to match the surrounding environment.
- Animal Examples: chameleon, squid  
In Zion: canyon treefrog



# Large Ears

# Omnivorous Diet

## **Large Ears**

- These trap more sound allowing better hearing.
- Large ears can help cool the body by allowing heat to escape through the many exposed blood vessels.
- Animal Examples: mules, elephants  
In Zion: mule deer, desert cottontail

## **Omnivorous Diet**

- This animal will eat both plants and animals.
- Omnivores typically have different types of teeth (flat and pointed) for use on different types of food.
- Animal Examples: humans, pigs  
In Zion: ringtail, coyote



# Sound Making

# Great Swimming Ability

## **Sound Making**

- This is a helpful feature for communication.
- Sounds can be chirps, wails, cries, songs, etc.
- Animal Examples: whale, cricket  
In Zion: house finch, coyote

## **Great Swimming Ability**

- This helps animals live in or near water.
- Swimming ability is found in animals that live in water both full and part time.
- Animal Examples: dolphin, otter  
In Zion: beaver, Virgin River spinedace



# Waterproof Coat

# Scales

## Waterproof Coat

- This is a layer of fur or feathers waterproofed with oil produced by the body.
- Like a raincoat, the oil keeps water from penetrating the animal's fur or feathers.
- Animal Examples: duck, sea otter  
In Zion: beaver, American dipper

## Scales

- These are small, stiff plates that grow from an animal's skin.
- On reptiles, scales help protect the animal and also help keep the animal from drying out.
- Animal Examples: snake, lizard  
In Zion: all snakes, lizards, desert tortoise



# Invisibility

# Fire Breath

## **Invisibility**

- This is a mythical (imaginary) adaptation. In this state, animals cannot be seen.
- Invisibility might be used to evade predators or hunt prey.
- Animal Examples: unicorn  
In Zion: none

## **Fire Breath**

- This is a mythical (imaginary) adaptation. The animal exhales fire.
- Fire breath might be used for defense or attack.
- Animal Examples: dragon  
In Zion: none



# Flashy Coloration

# Camouflage

## Flashy Coloration

- This is like an advertisement, used to communicate something to other animals.
- Flashy coloration can be used to attract mates, warn predators, or fend off rivals.
- Animal Examples: parrot, poison dart frog  
In Zion: monarch butterfly, striped skunk

## Camouflage

- This allows an animal to blend into its surroundings.
- Camouflage may be solid colors or markings (like a tiger's or zebra's stripes).
- Animal Examples: tiger, grasshopper  
In Zion: bighorn sheep, garter snake



# Long Neck

# Sticky Foot Pads

## **Long Neck**

- A long neck extends the animal's reach.
- Long necks can be used to get food or watch for predators.
- Animal Examples: giraffe, ostrich  
In Zion: wild turkey, California condor

## **Sticky Foot Pads**

- These are surfaces on the feet and toes that help the animal cling (hold) to vertical surfaces.
- Sticking ability can come from tiny hairs, sticky mucus, or discs that work like suction cups.
- Animal Examples: gecko, octopus  
In Zion: Zion snail, canyon treefrog

# Fur

# Horns



## **Fur**

- Fur is a covering of hair.
- Some animals have multiple fur layers for extra warmth. Others have fur that changes color or thickness based on the season.
- Animal Examples: bear, dog  
In Zion: bobcat, muskrat

## **Horns**

- These are permanent bone structures on an animal's head, most often in a pair.
- Horns are used for defense, communication and courtship.
- Animal Examples: bulls, rhinoceros  
In Zion: desert bighorn sheep

# Compound Eyes

# Whiskers

## Compound Eyes

- These eyes are made up of many small lenses instead of one large one like a human's.
- Compound eyes allow a larger angle of view and better detection of fast movement.
- Animal Examples: bees, crabs  
In Zion: dragonflies, butterflies

## Whiskers

- These are special stiff hairs or feathers used for feeling.
- Whiskers usually grow from the face, but are also found on the feet or legs.
- Animal Examples: housecat, mouse  
In Zion: bobcat, desert woodrat



# Long Tongue

# Wings

## Long Tongue

- This is not only used for taste but also for grabbing food.
- Some tongues are so long they curl inside the mouth.
- Animal Examples: cow, frog  
In Zion: sphinx moth, collared lizard

## Wings

- Wings are typically used for flight.
- Wings come in many shapes, sizes, and sometimes in pairs.
- Animal Examples: birds, flies  
In Zion: bats, birds

# Stinking Spray

# Eyespots



## **Stinking Spray**

- This bad or strong smelling liquid can be ejected from the body.
- Some sprays are used for defense; others for territory marking.
- Animal Examples: skunk, housecat  
In Zion: striped skunk, spotted skunk

## **Eyespots**

- These are markings which appear to be, but are not, eyes.
- They are good for scaring or confusing predators and may even be used for communication and courtship.
- Animal Examples: peacock, butterfly fish  
In Zion: northern pygmy-owl, some butterflies

# Stinger

# Sharp Quills

## **Stinger**

- This is a sharp body part that pierces another animal and delivers some type of venom.
- They are usually located at the tail end and may be used for defense or offense.
- Animal Examples: wasp, hornet  
In Zion: scorpion, honey bee

## **Sharp Quills**

- Quills are long, stiff hairs with barbed ends.
- Animals cannot shoot their quills, but can move their body so the quills are more prominent.
- Animal Examples: porcupine, hedgehog  
In Zion: porcupine



# Hibernation/ Estivation

# Migration

## Hibernation/Estivation

- This is a period of dormancy when an animal is inactive to avoid temperature extremes.
- During hibernation an animal avoids cold conditions. In estivation the animal avoids extreme heat.
- Animal Examples: bear (hibernation),  
crocodile (estivation)  
In Zion: lizards (hibernation)  
desert tortoise (estivation)

## Migration

- This is a seasonal movement to better habitat.
- Migration may be triggered by changing seasons, changing climate, or a need for food.
- Animal Examples: many songbirds, wildebeest  
In Zion: most songbirds, monarch butterflies

Sharp Canine  
Teeth

Large Hind Legs

## **Sharp Canine Teeth**

- They are long, pointed teeth, sometimes called fangs.
- They are used for holding and tearing food and occasionally for defense.
- Animal Examples: dog, tiger  
In Zion: coyote, mountain lion

## **Large Hind Legs**

- These enlarged back legs help animals jump high or long distances.
- They are often used for escaping predators.
- Animal Examples: kangaroo, frogs  
In Zion: kangaroo rat, canyon treefrog