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Adaptations

What is adaptation?

- The condition of being made suitable to an end
- Adjustment to a changing environment

What are some typical desert plant adaptations?

- Some plants, called succulents, store water in their stems or leaves
- Some plants have no leaves or small seasonal leaves that only grow after it rains. The lack of leaves helps reduce water loss during photosynthesis. Leafless plants conduct photosynthesis in their green stems
- Long root systems spread out wide or go deep into the ground to absorb water
- Some plants have a short life cycle, germinating in response to rain, growing, flowering, and dying within one year. These plants can evade drought
- Leaves with hair help shade the plant, reducing water loss. Other plants have leaves that turn throughout the day to expose a minimum surface area to the heat
- Spines which discourage animals from eating plants for water
- Waxy coating on stems and leaves helps reduce water loss
- Flowers that open at night lure pollinators who are more likely to be active during the cooler night
- Slower growing requires less energy. The plants don't have to make as much food and therefore do not lose as much water

What are some typical desert animal adaptations?

1. Avoid Heat:

- Use burrows to escape the heat
- Use shady habitats
- Migration
- Nocturnal or crepuscular activity
- Hibernation/estivation during the hotter and/or cooler times of the seasons

2. Dissipating Heat:

- Gular/tongue fluttering
- Enlarged appendages to promote heat loss
- Excretion on the feet and legs (urohydrolysis) cools as it evaporates
- Coloration

3. Retain Water:

- Burrowing into moist soil during the dry daylight hours
- Obtain their entire moisture needs from the food they eat
- Efficient kidneys which shunt water from waste products
- Insulation in form of feathers, hair or body fat

Propagation/ Pollination

What do propagation and pollination have in common?

They are either forms or means of reproduction

What is reproduction?

The biological process by which new individual organisms are produced

What is plant propagation?

It is the growing of new plants from seed or from part of existing plants

Some common pollinators that help in seed production:

- Bees
- Ants
- Butterflies
- Bats
- Beetles
- Hummingbirds

What are breeding programs and why are they needed?

Breeding programs identify and match individuals with desired genetic traits. This helps ensure that captive and/or endangered populations continue to have sufficient genetic diversity to thrive.

Endangered Species

What is an endangered species?

- An “endangered” species is one that is in danger of extinction throughout all or a significant portion of its range
- A “threatened” species is one that is likely to become endangered in the foreseeable future

Why do plants and animals become endangered?

- Destruction of habitat
- Pollution
- Hunting and fishing
- Introduction of exotic species
- Competition from other species

What are some endangered or threatened species you might see at The Living Desert?

- Desert pupfish
- Desert tortoise
- Peninsular bighorn sheep

Habitat

What is Habitat?

A habitat is the ecosystem a species needs to live in a swamp, rainforest, woodland, limestone bog, desert, etc.

What are some desert habitats?

- Wash
- Dunes
- Oasis
- Playa

What kinds of animals or plants will I find in North American or African Deserts?

1. Water

- Mosquito Fish
- Pupfish
- Toads and Frog
- Dragon Fly
- Algae

2. Some common plants

- Palm Tree
- Mesquite
- Cottonwood
- Arrow weed
- Drought and saline tolerant grasses and shrubs

3. Some common animals of North America:

- King Snake
- Western Yellow Bat
- Hooded Oriole
- Roadrunner
- Owls
- California Tree Frog
- Palm Boring Beetles
- Carpenter Bees and Wasps
- Rodents
- Lizards

4. Some common animals of the African Deserts

- Gazelle • Horned Vipers
- Fennec Fox • Lizards
- Sand Cat • Hares
- Oryx • Scorpions
- Addax • Beetles
- Jackal • Ants
- Jerboa • Locust

Food Chain

What is a 'food chain'?

A sequence of organisms, each of which uses the next, lower member of the sequence as a food/energy source

What does a typical food chain look like?

Producers:

- These are living things which take the nonliving matter from the environment, such as minerals and gases, and uses them to support life. Green plants are considered producers and they are at the beginning of the food chain.

Consumers:

- Animals that eat plants are called **herbivores**. They are considered consumers and are next in the food chain.
- Animals that eat other animals are called **carnivores**. They are also considered consumers and are a link farther along on the food chain since they need the herbivores for their food.
- Animals and people who eat both animals and plants are called **omnivores**, and they are also part of the consumer piece of the ecosystem.

Decomposers:

- These are the living things which feed off dead plants and animals and reduce their remains to minerals and gases again. Examples are vultures, fungi, such as mushrooms, and bacteria.