Outdoor Science! Week 1

Day 1: Flora & Fauna All Around Me!

Teacher/Parent Background:

- In this activity, students will observe examples of flora (plants) and fauna (animals) in which they share a habitat with! Through "tours" of the outdoors, students will actively engage with the main flora and fauna of their area to determine what factors are necessary for supporting life in their habitat.

Related Standards:

- Develop and use models to explain that plants and animals (including humans) have internal and external structures that serve various functions that aid in growth, survival, behavior, and reproduction.

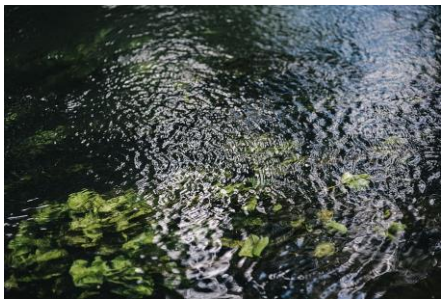
Key Terms:

Flora: the plants of a specific habitat
Fauna: the animals of a specific habitat
Habitat: an environment or home to native flora and fauna

Materials List:

- Internet access
- *Example Habitat Pictures* - included in the *Activity Description* section
- Parental/adult supervision
- Safe, outdoor areas
    - Frontyard, backyard, neighborhood sidewalks, nearby field or park, etc.
- Journal
- Pen/pencil
- Colored pencils/crayons
- Computer/phone with audio - optional for *Extensions* section

Activity Description:

- Ask students to consider what makes a home a space that helps us live and carry out necessary life functions. Discuss the following key factors:
    - Shelter/protection from the elements
    - Access to food
    - Access to water
    - Space to move around
- Just like us, animals and plants need a "home" that supports their needs too! But, where do plants and animals live; where are their "homes"?
- Show students the *Example Habitat Pictures* below. Ask students to discuss what kinds of plants and animals would live in the particular "homes". Examples are as follows:
    - **Deserts** - cacti, coyotes, etc.
        - 
    - **Forests** - oak trees, deer, etc.
        - 
    - **Freshwater** - mosses, fish, etc.
        - 
    - **Oceans** - seaweed, sharks, etc.

- **Grasslands** - grasses, elephants, etc.

- **Tropical rainforests** - orchids, parrots, etc.

- **Polar** - shrubs, polar bears, etc.

- It seems like there are a lot of "homes" in which different types of plants and animals live! In the science community, we use the term *habitat* to describe the different types of homes/environments in which certain plants and animals live! Each kind of habitat meets the needs of different animals and plants. For example, a forest habitat meets the needs of oak trees, deer and bears while an ocean habitat meets the needs of seaweed, fish and sharks.

- We also use the terms *flora*, meaning plants and *fauna*, meaning animals, to describe the types of living things that you would find in different habitats!
- Let's now just think about the flora and fauna that live outdoors, in our very own neighborhood; a city/urban/desert habitat! What kind of flora and fauna live outside in our neighborhood? Where have they made their "homes"?
    - With adult/parental supervision, take a "tour"of the safe, easily accessible outdoor areas of your neighborhood. This may include: your front and backyard, sidewalks around your neighborhood, a nearby field or park, etc.
    - During the tour, ask students to record their observations through the use of drawings with labeled words/phrases. Main details should include:
        - Location - outdoor areas
            - front and backyard, sidewalks around your neighborhood, a nearby field or park, etc.
        - Location features - what things are in the area?
            - fences, dirt/concrete paths, lawn furniture, etc.
        - Flora descriptions - what does it look like?
            - grasses, shrubs, trees, plants, flowers, etc.
        - Fauna descriptions - what does it look like? what is it doing?
            - dogs, cats, birds, insects, squirrels, rabbits, etc.

Closure:

- Return home to discuss the results of the tour. Engage students in a discussion of questions:
    - What locations (outdoor areas) did you observe in our urban/desert habitat?
    - What were the main features (things in the outdoor areas) of the locations you observed?
    - What kinds of flora and fauna did you observe in the locations? What did they look/act like?
    - Based on what you observed, do you think the flora and fauna live in a good habitat? Why or why not? If not, what might happen to the flora and fauna?
        - Make connections to key factors of a habitat that support the needs of living things:
            - Shelter/protection from the elements

- Access to food
    - **Note:** Either through the process of consuming other organisms or by producing their own food using sunlight
- Access to water
- Space to move around

Extensions:

- Watch & Play!
    - BrainPOP jr. - *Habitats*
        - Request **free** access during the school closure period using this link.
- Read!
    - National Geographic Kids - *Habitats*

Outdoor Science! Week 1

Day 2: What's Your Function?

Teacher/Parent Background:

- In this activity, students will make connections to various internal and external structures of flora and fauna and how these structures aid in carrying out necessary life functions. Through digital resources, students will closely observe crucial structures of the flora and fauna of their very own urban/desert habitat!

Related Standards:

- Develop and use models to explain that plants and animals (including humans) have internal and external structures that serve various functions that aid in growth, survival, behavior, and reproduction.
- Plan and carry out investigations to demonstrate ways plants and animals react to stimuli.

Key Terms:

Structure - something that is made up of parts that are connected in a certain way
Function - a purpose for a specific need/job
Internal structure - structures found on the inside of living things
External structure - structures found on the outside of living things

Materials List:

- Internet access
- *Urban/Desert Flora & Fauna Pictures & Videos* - included in the *Activity Description* section
- Computer/phone with audio
- Journal
- Pen/pencil
- Colored pencils/crayons

Activity Description:

- Ask students to review the flora and fauna observations in their journals from *Day 1: Flora & Fauna All Around Me!*. Briefly recap the main ideas from Day 1's activity:
    - What flora and fauna did we observe on our tour? What did they look/act like?
    - What was their habitat like? How did their habitat support their needs?
- As we have seen, different habitats support the needs of certain types of flora and fauna. But, how do these flora and fauna survive in their habitats? What about them/what do they do that helps them survive?
    - Living things have certain *structures*, or body parts that serve a purpose/help accomplish a "job", or *function*.
    - These structures can either be found inside the bodies of living things, called ***in**ternal structures*, or found outside the bodies of living things, called ***ex**ternal structures*.
- What kind of basic life functions (breathing, moving, growing, etc.) need to be carried out by the flora and fauna we observed? What kinds of internal and external structures do they have that help them carry out these functions?
    - Ask students to discuss and share their initial ideas, referencing their recorded observations from Day 1's activity in journals.
- To best help us identify the types of structures and functions of our habitat's flora and fauna, let's take a closer look!
    - Show students the *Urban/Desert Flora & Fauna Pictures & Videos* below.
    - Ask students to discuss and record in journals the structures and functions they can observe in each picture and/or video. Picture and video examples are as follows:
        - **Dog** - uses legs to move/run, uses strong teeth to chew hard food, uses lungs to breath, etc.
-  

- **Rose** - moves/bends towards sunlight to grow/make food, uses stem to transport water, uses roots to soak up water, etc.
  - 
  - *Parts of a Plant*
    - BrainPOP jr Resource: Request **free** access during the school closure period using this link.
  - GPhase - *Plant Time-Lapse Bending Towards Light*
  - GPhase - *Bean Roots Time-Lapse Soil Cross Section*
- **Pigeon** - uses wings to move/fly, uses beak to pick up small pieces of food, uses lungs to breath, etc.
  - 
- **Cactus** - uses long roots to soak up water, uses its stem to store water and grow/make food using sunlight, uses prickly spines to protect itself from predators, etc.
  - 
  - Planet Earth - *Cactus Stem Structure & Function*
- **Grasshopper** - uses legs to move/jump, uses tong-like mouthpart to chew food like leaves, uses wings to move/fly, etc.

-  

Closure:

- Based on our observations and picture/video evidence, it seems as though these flora and fauna have internal and external structures that help them carry out basic life functions, like moving, growing, etc.! Let's continue these conversations by considering the following:
    - Do any of the flora and fauna have similar structures? If so, what are the structures?
    - Do these similar structures serve similar functions? If so, what are the functions?
    - What would happen if these flora and fauna did not have the structures they needed to carry out basic life functions or if these structures were damaged?

Extensions:

- Watch!
    - National Geographic Kids - *Pigeon Genius*
    - National Geographic Kids - *Dog Genius*
    - National Geographic Kids - *Goofy Growers Gallery/Slideshow* & *Twisting Trees*

Outdoor Science! Week 1

Day 3: Survival 101

Teacher/Parent Background:

- In this activity, students will use digital resources to identify and describe how certain structures of various flora and fauna provide helpful survival advantages. Through "tours" of the outdoors, students will actively engage with the main flora and fauna of their own habitat in order to identify the adaptations that help the flora and fauna around them survive!

Related Standards:

- Analyze and interpret environmental data demonstrate that species either adapt and survive, or go extinct over time.

Key Terms:

Adaptations - structures or behaviors that help living things survive in their habitats
Structural adaptations - physical parts of living things that help them survive
Behavioral adaptations - actions living things do that help them survive
Camouflage - the process of living things blending into their surroundings

Materials List:

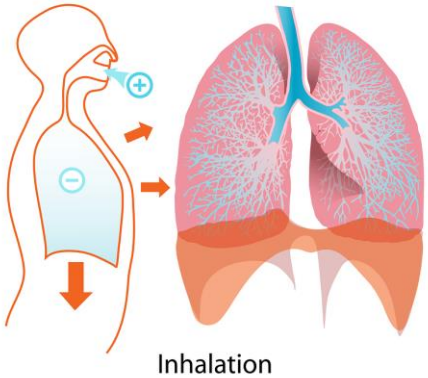
- Parental/adult supervision
- Internet access
- *Lung & Gills Picture/Video* - included in the *Activity Description* section
- *Adaptations of Flora & Fauna Pictures/Videos* - included in the *Activity Description* section
- Computer/phone with audio
- Supplies for optional *Blubber Glove* experiment by Steve Spangler Science - included in the *Activity Description* section
    - Parental/adult supervision
    - Bucket or large bowl
    - Cool water
    - Ice cubes
    - Zipper lock bags

- Shortening
- Spoon
- Duct tape

- Journal
- Pen/pencil
- Colored pencils/crayons

Activity Description:

- Ask students to review examples of structures and functions of flora and fauna in their journals from *Day 2: What's Your Function?*. Briefly recap the main ideas from Day 2's activity:
    - What were some of the structures and functions of the flora and fauna we observed/discussed?
    - How do these structures and functions help them carry out basic life functions?
- For instance, you and I use our lungs to take in oxygen by breathing in air. Fish, on the other hand, use their gills to take in oxygen.
    - Show students the *Lung & Gills Picture/Video* below.



Inhalation

        - **Lungs** -
        - **Gills** - American Museum of Natural History - *Fish Using Gills to Breathe*
- As we have learned, lungs and gills are examples of structures, as lungs and gills are body parts that perform a function or job; in this case, helping us all breathe!
    - Structures that help living things survive in their habitats are called *adaptations*. Lungs are an adaptation for living on land while gills are an adaptation for living in water. A behavior or action can also be an adaptation, for example, desert fauna, like mice, hide underground or under rocks during the day to escape the heat!

        - Gill and lung example adapted from *Science Saurus, A Student Handbook* - Great Source Education Group
    - Adaptations give living things a great survival advantage, giving them the best chance at living in their habitats.
- Let's take a closer look at some awesome examples of flora and fauna structural and behavioral adaptations!
    - Show students the *Adaptations of Flora & Fauna Pictures/Videos*.
    - Ask students to identify the adaptation and discuss/record the survival advantage of each adaptation. Picture/video examples are as follows:
        - Blubber, Fur & Huddling - SciShow Kids - *Staying Warm in Polar Habitats*
            - Try this *Bubble Glove* experiment by Steve Spangler Science to test how blubber works with simple, household materials!
        - *Camouflage*, or the process of living things blending into their surroundings.
            -  
            - Camouflaged Animals - National Geographic Kids - *Hidden Animals Gallery/Slideshow*
            - Camouflage - BrainPOP jr - *Camouflage*
                - Request free access during the school closure period using this link.
        - Plant Adaptations for Accessing Sunlight, Water, Nutrients, etc., - BrainPOP jr - *Plant Adaptations*
            -  

- Bird Beaks & Feeding Habits - Naturalist Outreach - *Beaks: Bird Feeding Adaptations*
    -  
- As we can see, there are many examples of the structural and behavioral adaptations of different types of flora and fauna!
- Let's now just think about the flora and fauna that live outdoors, in our very own neighborhood; an urban/desert habitat! What kinds of adaptations do our urban/desert flora and fauna have? How do these adaptations help them survive?
    - With adult/parental supervision, take a "tour"of the safe, easily accessible outdoor areas of your neighborhood. This may include: your front and backyard, sidewalks around your neighborhood, a nearby field or park, etc.
    - During the tour, ask students to record adaptations and the survival advantages of the flora and fauna they observe, through the use of drawings with labeled words/phrases.

Closure:

- Return home to discuss the results of the tour. Engage students in a discussion of questions:
    - What kinds of flora adaptations did you observe during the tour? How do those adaptations help them survive in their habitat?
    - What kinds of fauna adaptations did you observe during the tour? How do those adaptations help them survive in their habitat?
    - What would happen to the flora and fauna if their habitat changed or what if something in their habitat changed? Would their adaptations still be beneficial? Why or why not?

Extensions:

- Watch!
    - PBS Nature Works - *Adaptation*
- Play!

- Arizona Sonora Desert Museum - *Desert Adaptations Game*

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Day 4: I Need You & You Need Me!

Teacher/Parent Background:

- In this activity, students will engage in a read aloud video of the book *Cactus Hotel* to identify and describe the interdependence between flora, fauna and non-living things in a desert habitat. Through "tours" of the outdoors, students will actively explore the interdependence of the living and non-living things in their very own urban/desert habitat!

Related Standards:

- Construct an argument from evidence that organisms are interdependent.

Key Terms:

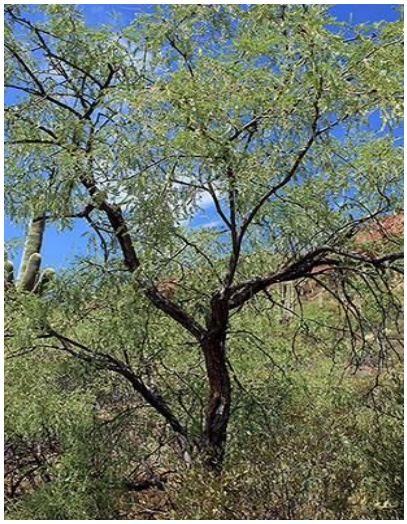
Interdependence - a dependence or reliance between living things and non-living things in a habitat

Materials List:

- Internet access
- *Desert Flora, Fauna & Non-living Things Pictures* - included in the *Activity Description* section
- Computer/phone with audio
- *Cactus Hotel Read Aloud Video* by Rebekah Wall
    - *Cactus Hotel* - written by Brenda Z. Guiberson
- Journal
- Pen/pencil
- Parental/adult supervision
- Safe, outdoor areas
    - Frontyard, backyard, neighborhood sidewalks, nearby field or park, etc.
- Colored pencils/crayons

Activity Description:

- Ask students to review examples of adaptations and survival advantages of the flora and fauna in journals from *Day 3: Survival 101*. Briefly recap the main ideas from Day 3's activity:
    - What were some of the flora and fauna adaptations we observed/discussed?
    - How do these adaptations provide the flora and fauna with survival advantages in their habitats?
    - What might happen to the flora and fauna if their habitat changes or if something in their habitat changes? Would their adaptations still be beneficial? Why or why not?
- As we have learned, structural and behavioral adaptations give flora and fauna a greater chance at survival in their habitats! But, adaptations can only help so much. Flora and fauna actually depend on one another and on non-living things like air, water, rocks, sunlight, etc., in their habitats to help them survive! In the science community, we call this *inter**dependence***.
    - For example, think of what you do during an average day. Who or what do you depend on?
    - Just like the flora and fauna all around us, we depend on other living things and non-living things to help us each day!
- Let's take a closer look at interdependence in our own desert habitat! How might desert flora and fauna depend on one another and on the non-living things in their habitat; what might they need each other for?
- For example, consider the following desert flora, fauna and non-living things.
    - Show students the following *Desert Flora, Fauna and Non-living Things Pictures* below. Ask students to discuss and record the possible interdependence between the flora, fauna and non-living things. Pictures are as follows:
        - **Saguaro Cactus (with fruit)**
- 

- Sunlight
  - 
- Sand/Rocks
  - 
- Rodent
  - 
- Palo-verde Tree
  - 
- Rain

- **Jack Rabbit**

- Now that we have discussed the possible ways in which these desert flora, fauna and non-living things might depend on one another, let's carefully explore their relationships by watching a read aloud video of the book, *Cactus Hotel*!
    - Play the *Cactus Hotel Read Aloud Video* from timestamp 0:00-2:47.
    - While students are watching the video, prompt them to record examples of how the flora, fauna and non-living things depend on one another in journals, through the use of drawings with labeled words/phrases.
    - After stopping the read aloud video at timestamp 2:47, discuss the following questions with students:
        - How did the flora, fauna and non-living things demonstrate interdependence? How did they depend on one another?
        - Which examples of interdependence did you find the most surprising or interesting?
        - So far in the *Cactus Hotel*, the growing cactus is about 25 years old and only measures about 2 feet tall! Considering that these cacti can continue to grow and live for about 150-200 years, what might happen to the relationships between the flora, fauna and non-living things around the cactus

environment? What other examples of flora and fauna might rely on each other and "the cactus hotel", as time moves on and the cactus grows?

- Resume playing the *Cactus Hotel Read Aloud Video* until timestamp 6:46 and ask students to discuss and record the continuation and introduction of new interdependence examples among flora, fauna and non-living things. Some new examples may include:
    - Birds, bees and bats eat the nectar of the cactus flowers.
    - A Gila Woodpecker eats the cactus fruit and lives inside the cactus.
    - The Gila Woodpecker eats insects that can bring disease to the cactus.
    - The sandy ground around the cactus provides homes for ants, rodents, lizards, snakes, rabbits, and foxes.
    - As the cactus grows, more birds, insects and rodents make the Saguaro Cactus their home.
- After discussing the interdependence example, ask students:
    - Now the Saguaro Cactus is 150 years old! If the cactus is near the end of its life, what might happen to the relationships between the flora, fauna and non-living things around the cactus environment? What other examples of flora and fauna might rely on each other and "the cactus hotel", as time moves on and the cactus dies?
- Conclude playing the *Cactus Hotel Read Aloud Video*. Ask students to discuss and record the continuation and introduction of new interdependence examples among flora, fauna and non-living things. Some new examples may include:
    - A gust of wind brings the cactus down to the sandy ground, making the cactus a new home for other living things like millipedes, scorpions, ants, and termites.
    - As new living things find a home in the resting cactus, lizards and snakes visit the area to find things to eat or to rest in the shade of the cactus limbs.

Closure:

- We have examined many examples of the interdependence between flora, fauna and non-living things in a desert habitat by watching/reading *Cactus Hotel*. Let's now explore the interdependence between the flora, fauna and non-living things outdoors, in our very own urban/desert habitat!
    - With adult/parental supervision, take a "tour"of the safe, easily accessible outdoor areas of your neighborhood. This may include: your front and backyard, sidewalks around your neighborhood, a nearby field or park, etc.
    - During the tour, ask students to discuss and record their observations of the interdependence between flora, fauna and non-living things through the use of drawings with labeled words/phrases.

Extensions:

- Watch!
    - Animal Wonders Montana - *How Animals and Trees Help Each Other*

Outdoor Science! Week 1

Day 5: My Home is Your Home!

Teacher/Parent Background:

- In this activity, students will engage in various "habitat scenarios" to describe how flora and fauna are positively and negatively impacted by natural and human-caused changes to their habitats. Through "tours" of the outdoors, students will actively explore the natural and human-caused impacts on the flora and fauna in their very own habitat!

Related Standards:

- Obtain, evaluate, and communicate evidence about how natural and human-caused changes to habitats or climate can impact populations.

Key Terms:

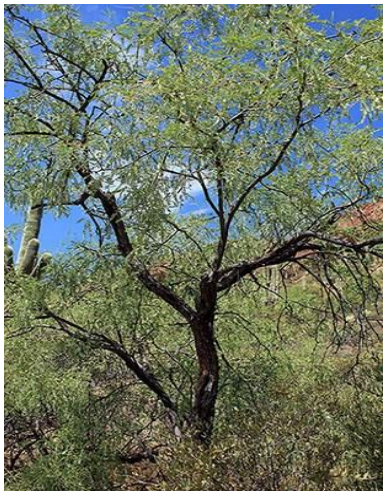
Populations - a group of the same living things in a habitat
Human-caused changes - changes that are caused by human actions
Natural-caused changes - changes that are caused by natural forces or by the actions of living things

Materials List:

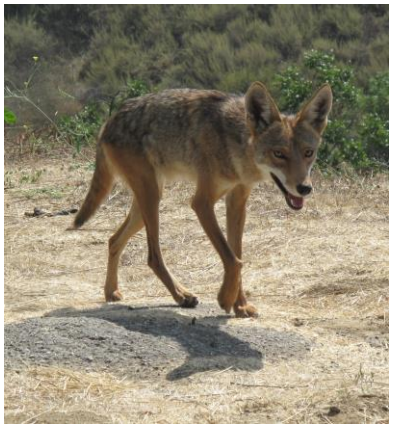
- Internet access
- *My Home is Your Home! Pictures & Scenarios* - included in the *Activity Description* section
- Journal
- Pen/pencil
- Colored pencils/crayons
- Parental/adult supervision
- Safe, outdoor areas
    - Frontyard, backyard, neighborhood sidewalks, nearby field or park, etc.
- Computer/phone with audio - optional for *Extensions* section

Activity Description:

- Ask students to review examples of interdependence among flora, fauna and non-living things in journals from *Day 4: I Need You & You Need Me!*. Briefly recap the main ideas from Day 4's activity:
    - Why do living things rely on other living things and non-living things?
    - What were some of the interdependence examples among flora, fauna and non-living things we observed/discussed?
- As we have learned, flora and fauna depend on one another and on non-living things like air, water, rocks, sunlight, etc., in their habitats to help them survive! But as we saw in *Cactus Hotel*, sometimes outside things impact the flora and fauna living in the habitat, like a strong gust of wind!
    - In fact, there are many changes that occur in habitats that impact the *populations*, or groups of the same living things in a habitat. For example, in *Cactus Hotel* there was a population of Saguaro Cacti living in the same desert habitat and a gust of wind knocked one cactus down.
    - Sometimes, changes to a habitat are *human-caused,* or caused by human actions. For example, taking up space/building in habitats. Other times, changes to a habitat are *naturally-caused*, or caused by natural forces or by the actions of living things. For example, a strong rain/wind knocking down places of shelter for flora and fauna or a mouse carrying the seeds of trees on its whiskers and therefore, distributing the seeds in its habitat, growing the population of trees.
        - Not all human and natural-caused changes to habitats are negative!
        - What are some other examples of positive ways humans and natural-forces/actions change habitats? Ask students to discuss.
            - Possible examples may include humans planting trees, rainfall providing a large supply of water for flora and fauna, etc.
- Now that we have discussed some examples of human and natural-caused changes, let's explore how these changes directly impact populations of desert flora and fauna by engaging in a few "habitat scenarios", or possible situations that may occur in a habitat!
    - Tell students that we will be focusing on a few flora and fauna populations within a desert habitat. Show students the *My Home is Your Home! Pictures.*

- Ask students to observe and record the following flora and fauna details in science journals, through the use of labeled drawings. Pictures are as follows:
  - **Saguaro Cactus (with fruit)**
    - 
      - Makes its food using sunlight.
      - Uses roots for structure/support and to obtain water.
      - Grows fruit/flowers.
  - **Palo-verde Tree**
    - 
      - Makes its food using sunlight.
      - Uses roots for structure/support and to obtain water.
      - Grows leaves.
  - **Rock Pocket Mouse**

- 
    - Lives in holes in the sandy desert, near cacti and trees.
    - Eats the fruit of cacti.
    - Drinks water from the leaves of trees.
- **Gila Woodpecker**
    - 
    - Lives inside cacti.
    - Eats the fruit of cacti.
    - Eats insects that may bring diseases to cacti.
- **Long-nosed Snake**
    - 
    - Lives in holes in the sandy desert, near cacti and trees.
    - Eats a variety of fauna, including rabbits, rodents and birds.
    - Can be a food source for coyotes and large birds.
- **Coyote**

- 
    - Lives in dens, near cacti and trees.
    - Eats a variety of fauna, including rabbits, rodents, snakes, and birds.
    - May also eat flora, like fruit and grass.
- Read aloud each "habitat scenario" statement below and prompt students to discuss and record in journals the cause of the change in the habitat and the impacts on the flora and fauna populations. Scenario statements are as follows:
    - "An earthquake shakes the desert surface, uprooting and knocking down trees and cacti."
        - Negative, natural-caused change.
        - Direct impacts: A decline of the Saguaro Cactus and Palo-verde Tree populations, as they have been knocked down.
        - Additional impacts: Rock Pocket Mouse and Gila Woodpecker populations would decrease, as they rely on the Saguaro Cactus and Palo-verde Tree populations for food and shelter. If severe enough, this may also impact the Long-nosed Snake and Coyote populations, as they eat the Rock Pocket Mouse and Gila Woodpecker populations.
    - "Humans dump their garbage in the desert habitat, some of which leaks into underground water sources."
        - Negative, human-caused change.
        - Direct impacts: A decline of the Saguaro Cactus and Palo-verde Tree populations, as the water would become polluted and impact the growth/health of the flora.
        - Additional impacts: Rock Pocket Mouse and Gila Woodpecker populations would decrease, as they rely on the Saguaro Cactus and Palo-verde Tree populations for food and shelter. If severe enough, this may also impact the Long-

nosed Snake and Coyote populations, as they eat the Rock Pocket Mouse and Gila Woodpecker populations.

- "During a dry period, humans visit the desert habitat weekly to water the soil/sandy areas of the cacti and trees."
  - Positive, human-caused change.
  - Direct impacts: An increase in the health and growth of the Saguaro Cactus and Palo-verde Tree populations, as the increase of water during a dry period will help the flora grow.
  - Additional impacts: Rock Pocket Mouse and Gila Woodpecker populations would increase, as they rely on the growth of healthy Saguaro Cactus and Palo-verde Tree populations for food and shelter. If severe enough, this may also impact the Long-nosed Snake and Coyote populations, as they eat the Rock Pocket Mouse and Gila Woodpecker populations.
- "On a windy day, a strong wind carries many fruit seeds of the Saguaro Cactus all across the desert habitat."
  - Positive, natural-caused change.
  - Direct impacts: An increase in the Saguaro Cactus populations, as the distribution of its seeds will cause more to grow.
  - Additional impacts: Rock Pocket Mouse and Gila Woodpecker populations would increase, as they rely on the growth of the Saguaro Cactus populations for food and shelter. If severe enough, this may also impact the Long-nosed Snake and Coyote populations, as they eat the Rock Pocket Mouse and Gila Woodpecker populations.

Closure:

- We have seen many examples of how human and natural-caused changes to habitats impact flora and fauna populations. Let's now explore the outdoors, in our very own urban/desert habitat, to see if we can find other examples of human and natural-caused changes in our habitat!
  - With adult/parental supervision, take a "tour"of the safe, easily accessible outdoor areas of your neighborhood. This may include:

your front and backyard, sidewalks around your neighborhood, a nearby field or park, etc.
    - During the tour, ask students to discuss and record their observations of the human or natural-caused changes and how these changes have impacted/might impact the flora and fauna populations, through the use of drawings with labeled words/phrases.

Extensions:

- Watch!
    - Crash Course Kids - *Big Changes in the Big Apple*
        - Human-caused changes
    - Crash Course Kids - *Big Changes in the Big Forest*
        - Natural-caused changes