7th-12th grade: Critters and Climate

Participants will explore the impact that our changing climate has on the wild habitats of many animals.

Description: The changes in our climate impact many habitats and the living things there.

Location at Zoo: Manatee Springs, Birds of the World, Africa (savannah habitat)   **Materials**: Pencil

Background information:
When we power our lives by burning coal, oil, and natural gas, we release carbon dioxide (CO_2) into the air in larger quantities than would naturally occur. This extra CO_2, called "rampant CO_2" is going up into the atmosphere where it creates something like a heat-trapping blanket (HTB) around our Earth. This HTB allows the heat from the sun in, but then traps too much of it, preventing it from leaving again. The result is that our global climate is changing, and our oceans are warming. These changes can be seen in many forms, including increasing temperature, rain variability, more intense and frequent storm events (such as hurricanes), and rising sea levels.

Activity 1: Head to Manatee Springs and observe the manatees and fish that share a habitat.
In the coastal waters and oceans where these manatees live, the changing climate is impacting manatees. The rise in global ocean temperatures is melting land ice, resulting in a rise in sea levels. The sea grass that manatees eat depends on warm, shallow waters to grow. As the water covering traditional seagrass beds rises, less sunlight penetrates, and this impacts the food availability for manatees and shelter for the many small aquatic animals and baby fish that find protection and food within the seagrass beds.

1. Name at least one biotic and one abiotic factor in the manatees' habitat that is being impacted by global climate change and how this impact affects manatees.

    Abiotic:

    Biotic:

2. How do the impacts of climate change affect the flow of energy in this ecosystem?

3. Draw or write out a food chain that could be found where manatees live and demonstrates the flow of energy in a healthy ecosystem

Activity 2: Head to Wings of the World and observe the Atlantic puffins in their habitat

The changing climate is impacting the coastal waters and oceans where puffins forage. The schools of fish (called fish stocks) upon which the puffins forage on the Northeast Continental Shelf are shifting their ranges in response to the warming of the ocean. Some of the stocks are moving north to colder waters and others are moving to deeper, colder water, shifting to more suitable water temperature. As the fish move, they impact the ability of nesting seabirds, such as puffins, to utilize them for feeding themselves and their young. Traveling to forage burns energy, so seabirds have limits to how far they can travel from their nest to find food.

1. What are the long- and short-term impacts of the changes in fish stock locations on puffin populations?

2. Name at least one impact on the puffin's habitat by global climate change and how this impact affects the biodiversity in this habitat.
   Abiotic:

   Biotic:

3. Puffins have many adaptations that help them to survive.
   a. Name at least one adaptation that puffins have evolved that could help them survive despite climate change.

   b. Now, name one adaptation that could hurt their chances of surviving the impacts of climate change.

Activity 3: Head to the Africa area of the Zoo and observe the different hooved animals and birds on the savannah habitat.

The African country of Namibia is one of the largest and driest countries south of the Sahara due to its variable rainfall and temperatures. The changing climate is predicted to cause increasing temperatures, shifts in rainfall distribution, and increased evaporation. These changes in water availability will place increased stress on the plants and animals, already living in a harsh environment, further impacting their distribution and ranges.

1. Name at least one abiotic factor in this habitat that will be impacted by a changing climate.

2. How do the impacts of climate change affect the flow of energy in this ecosystem?