Animal Adaptation Slides
Teacher Sheet (Grade 2,3,4)
For the files Arctic, Desert and Rainforest Animal Adaptations

Overview
Animals have developed an enormous range of adaptations to survive in different environments. The files here highlight a variety of adaptations animals have in three different environments – the **arctic**, **desert**, and **rainforest**.

We choose these three environments as the extreme environments make it easy for students to grasp how animals' bodies and behaviors must be suited to their environment to ensure survival.

The files are not meant to be a full lesson but can be used to supplement other media and lessons. Links on each slide lead to more information. Googling many of the animals will turn up great videos highlighting different animal adaptations.

What do animals need to survive?
Prior to learning about adaptations – students should have a discussion on the basic need animals need to survive. Broadly, animals need 1. Food, 2. Water, 3. Safety from predators, 4. Temperature regulation, 5. Safety from the environment, 6. To mate or reproduce.

There is enormous diversity in the animal kingdom and animals get their needs met with an endless range of adaptations. The files here highlight only sliver of the survival needs and adaptations.

Physical and Behavioral Adaptations
Animals' adaptative traits include both physical traits and behaviors. Both should be considered! For example, burrowing to escape the heat is a behavioral adaptation. Claws that are efficient for digging the burrow are a physical adaptation.

Crosscutting Concepts
Have students find **patterns** in different animal adaptations. For example, students may notice many arctic animals are white to blend in!

Students can also consider **structure and function**. Animals' physical adaptative traits are evolved, or structured, in such a way to give them a function that allows the animal to survive.

Caveats
Our slides tend to focus on the more extreme areas of the listed environments. For example, we focused on hot and dry deserts, but cold deserts also exist. Many photos we show of the arctic

tundra are snowy, but this biome includes areas that thaw out in the summer. Although not addressed in these slides, it is helpful for students to understand the range of biomes that exist.

Students should understand:
1. There are a range of biomes; “desert” or “rainforest” does not just mean one thing.
2. Many animals can be found in a range of biomes or habitats. (Some adaptations are useful in multiple environments, others are not)
3. There are often variable species or subspecies that exhibit different adaptive traits. For instance, there are multiple species of toucans.
4. Animals shown on these slides do not necessarily live near each other! There are rainforests and deserts all across the globe, and even the arctic is a large region.

Desert Adaptations

The desert – particularly the “hot & dry desert” that is focused on in these slides - is a harsh environment. Little water means less life, and less life means food can be scare for the animals that do live there.

Animals that live in the desert usually have multiple ways to obtain and conserve water. Many animals can also go without food for some time – for example, the camel stores fat in its hump to get through dry spells.

Animals often burrow and/or are nocturnal or crepuscular to escape the daytime heat. Students may notice a tan/sandy color is common among desert animals. They also may be surprised some animals have fur! Fur – usually thought of as a way to keep warm – can protect animals from the sun’s hot rays. Additionally, fur can be reflective and keep out the heat.

On these slides students learn about the fennec fox who has large ears to help dissipate heat. To help this make sense to students ask them what they would do on a hot summer night to cool down – curl their body up or stretch all their limbs out? What do they do if they are outside and chilly, spread their limbs out or curl into themselves? A large surface area helps dissipate heat.

Rainforest Adaptations

With the enormous number of animals in the rainforest, you can find an endless array of unique adaptations. Whereas you tend to find some commonalities among desert and arctic animals (most of the former have ways to conserve water, while arctic animals need physical and behavioral adaptations to stay warm), there isn’t a similar common thread in rainforest animals. Animals that live in the same area may never cross paths if they live in different layers of the forest, showing just how varied animals experiences in the rainforest can be.

In the rainforest you can see really incredible examples of camouflage, with insects mimicking dead leaves or flowers.

Leafcutter ants are also fascinating creatures which are good examples for another NGSS 3rd grade standard (3-LS2-1) *Construct an argument that some animals form groups that help members survive.*

Arctic Adaptation

An obvious need in the arctic is to stay warm. Most larger animals have blubber, or thick fur, or both. Even insects are often fuzzy and have other adaptations to survive the cold. Many animals migrate south during the winters. Some animals' coats changes colors with the seasons to camouflage year-round.

Although not discussed in the slides, the effects of climate change are especially severe in arctic regions.