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# TEACHER INFO

## ADAPTATIONS AND THE ENVIRONMENT
## GRADES 3-5

## COMMON MISCONCEPTIONS

- Adaptations happen quickly
  Physical adaptations happen over many generations of animals. An individual animal's body doesn't change to adjust to its environment.

## PREREQUISITES

Coming into this lesson, students need to have an understanding about what a habitat is (the environment where an animal lives, eats and reproduces), and that adaptations can be physical, behavioral or both. They should also have some understanding of predator/prey relationships and keep in mind that humans are also animals and also have adaptations.

## ADAPTATIONS

An adaptation is a characteristic of a living thing that helps it survive in its environment. At the upper elementary level, students begin by exploring adaptations that different creatures have that help them to survive by allowing them to obtain food, protect themselves and reproduce within their environments. This early discussion of adaptations leads to more in depth understanding of change over time, natural selection, genetic variation of traits to help students understand evolution as they move into middle and high school. At this level when we state that "animals adapt to their environments" we actually mean that different types of animals have adapted to the environments they are specialized for over long periods of time. It is important for teachers at this level to understand how adaptations occur even though it is not at the forefront of this activity because student misconceptions about adaptations at this level could lead to misconceptions about the other concepts later.

In this lesson, students observe adaptations (specialized characteristics of animals) that when combined with their behaviors provide evidence that support connections between the characteristics and the animal's ability to survive in its environment. How adaptations occur is background knowledge necessary for the teacher. Animal characteristics do not change simply because an individual is moved to a different environment. Instead, as animal's environments change, those individuals with favorable characteristics are better equipped to survive and reproduce, leading to more

animals with those favorable adaptations. It is a process that occurs over many, many generations. It is important to separate the content at this level, which is the animals' characteristics and how they can be used to help the animal within its environment, and how those adaptations came about—which is something students will learn about later in their schooling.

## BIRD BEAKS

Bird beaks are often discussed when talking about animal adaptations. Bird beaks were key for Charles Darwin's work in the field of evolution by natural selection. Although Darwin and his work are not referenced at this level, bird beaks still provide an accessible route to understanding how animal adaptations help different types of animals survive in their environments. Examples given in the video include:

- Robins—tiny beaks, tiny seeds
- Pelicans—large pouch like beak to scoop up fish
- Hawks and eagles—sharp hooked beaks to eat small animals

The DIY investigation is a classic activity to help students understand how different characteristics provided advantages or disadvantages for obtaining food.