



Build A Shorebird

Teacher Shorebird Adaptations

Concepts

- Shorebirds have many physical, or *morphological*, adaptations to help them walk, find food, and reproduce in their habitat, and to fly long distances in migration.
- Shorebirds are also adapted *physiologically* to their migrating lifestyle, particularly in their fat-loading abilities which enable them to maintain energy for their long flights.
- Adaptations are naturally selected for over a long period of time, and specialized animals like shorebirds cannot adapt overnight to damage or alteration of their habitat.

General Information

One definition of *species* is a group of *organisms* (lifeforms) that can breed and produce fertile offspring. In other words, bulldogs and collies belong to the same species (dog) because they can mate and produce puppies which can grow up and have their own puppies. Another, perhaps easier to picture, definition of species is a group of organisms which have similar physical traits. All dogs are mammals with a certain type of teeth, skull structure, etc.. Different species have different physical *traits*, or characteristics.

These traits help a plant or animal (or other organism) use particular resources found in their habitat for food and reproduction. A habitat is the environment in which an organism lives, its "home." You will learn more about shorebird habitat later. Say an individual bird is born with a trait which differs slightly from other members of its species. If that trait gives it an *advantage* (extra boost or help as compared to what other individuals of the species have) in *surviving to breed* (reproduce), it will successfully pass on the genes for that trait. The trait may persist as long as it gives the bird an advantage, or at least the possibility of *competition*, in its environment.

The helpful traits are called *adaptations* because they help an organism *compete* (perform as well as other individuals in such actions as surviving to breed) in its particular environment. The Theory of *Natural Selection* explains this process. If something in the organism's environment changes, say the climate or a food source, the old trait may not be as helpful as another adaptation. Perhaps the organism will eventually not survive to pass on its genes.

Shorebirds are birds with adaptations to help them survive in the environment of the shore or other open wetlands. Some of these adaptations include: plumage that conceals chicks and adults from predators (it is the color of the shore or speckled like the tundra), long legs for wading, and bill shapes that help them probe for buried food items. Other adaptations are behavioral, such as parents distracting intruders away from their nests.

Although adaptations may be physical or behavioral, the activities in this section will focus primarily on physical traits of shorebirds. Physical adaptations have to do with an organism's morphology, physiology or both. *Morphology* refers to *anatomy*, or the *form* and appearance of an organism. *Physiology* refers to the bodily *functions*, like reproduction or digestion, of the organism.

You will find behavioral adaptations like migrating and nest defense explored in later sections. Of course, many behavioral and physical adaptations are very closely entwined! For instance, the shape of a shorebird's bill affects the way it uses it, or is it the other way around?! Also, if a shorebird chick's defense is camouflage (a physical adaptation), will it be more likely to behave in a way that conceals or draws attention to itself? We don't know all the answers yet, but science is all about discovery!