Extended Read 2

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One Body, Many Adaptations

by Judi Black

1 Animals live in many different places. Some animals live in hot deserts. Others live in frigid oceans. However, all have become adapted to where they live. Where an animal lives determines its adaptations. Animals rely on these special features to survive.

2 Adapted body parts are called structural adaptations. An animal might use body covering, camouflage, and special body parts to survive. The octopus, the penguin, and the camel are animals with many structural adaptations.

The octopus's body covering helps it hide.

The Octopus

3 The octopus lives in the ocean. Its body is very soft and slimy. This slimy exterior lets an octopus slide into small spaces between rocks on the ocean floor. Its body covering helps the octopus hide from its predators.

The projections on this giant octopus help it blend into its surroundings.

4 The octopus also uses camouflage to survive. There are many different colors on the ocean floor. To blend into its surroundings, the octopus has projections sticking out of its skin and special color-changing skin cells. Within one second, its body can match the colors, patterns, and textures around it. The octopus is much like the chameleon in this way.

Body Parts to Survive

5 An octopus's body has several parts that help it survive, too. Its best-known body parts are its eight arms with suction cups. An octopus uses its arms for moving, hunting, eating, tasting, and even mating. If it loses an arm, no problem — another arm will grow in its place.

6 To get away from a predator, an octopus will squirt black ink from its body. The predator cannot see. Then the octopus can escape unnoticed. An octopus also has a body part that helps it escape quickly. A funnel-shaped tube shoots out water that helps propel the octopus.

7 The octopus mainly eats shellfish. It uses its mouth to hold down prey and to eat. Its powerful beak-like jaws break open the shells. Its razor-sharp tongue scoops the animals out.

Adaptations of an Octopus

Type	Adaptation	How It Helps
Camouflage	color cells in skin	blend in with surrounding colors
	projections on skin	blend in with surrounding textures
Body Parts	eight arms with suction cups	move, hunt, eat, taste, mate
	black ink	block predator's sight
	funnel	squirt water to propel fast
	beak	open shells, hold down prey, eat
Body Covering	soft and slimy	squeeze into tight spaces

The Penguin

8 Penguins mostly live in very cold places, such as Antarctica. These flightless birds swim a lot. They spend more than half of their time swimming in icy ocean waters. Predators fly above them and swim below them. So, how does the penguin survive these challenges? Adaptations.

9 First, the penguin's body covering helps it survive in cold places. Under its skin, the penguin has a layer of fat called blubber. This layer keeps the penguin warm. So do its feathers. Like the duck, the penguin has oil on its feathers to keep its skin dry and warm.

Penguins' black-and-white coloring is good camouflage on land (above) and in the water (below).

10 Next, the penguin uses camouflage to survive. Its coloring helps keep it safe. The penguin's black back blends in with the dark water. This makes it hard for predators flying above to spot a penguin swimming. Its white belly blends in with the snow and sunlight. This white coloring makes it hard for predators swimming below to spot them.

Body Parts to Survive

11 Penguins have wings, but they can't fly. Instead, their wings work like flippers to help them swim. Penguins, like ducks, also have webbed feet for better swimming.

12 Penguins do not have teeth. Their bill is hooked at the end to catch prey. They then swallow their food whole. Penguins only swim in salt water. When they catch their food, they take in salt water. Penguins have a special gland in their body that filters excess salt.

Adaptations of a Penguin

Type	Adaptation	How It Helps
Camouflage	black back	blend in with dark water color when seen from above
	white belly	blend in with snow and sunlight when seen from underwater
Body Parts	flipper wings	swim
	webbed feet	swim
	bill with hook at end	grab food
	special gland and grooves in bill	filter salt out of water
Body Covering	blubber	keep body warm
	tight layers of feathers	keep body dry and warm
	oily feathers	keep body dry

King penguins grab food with a hooked bill.

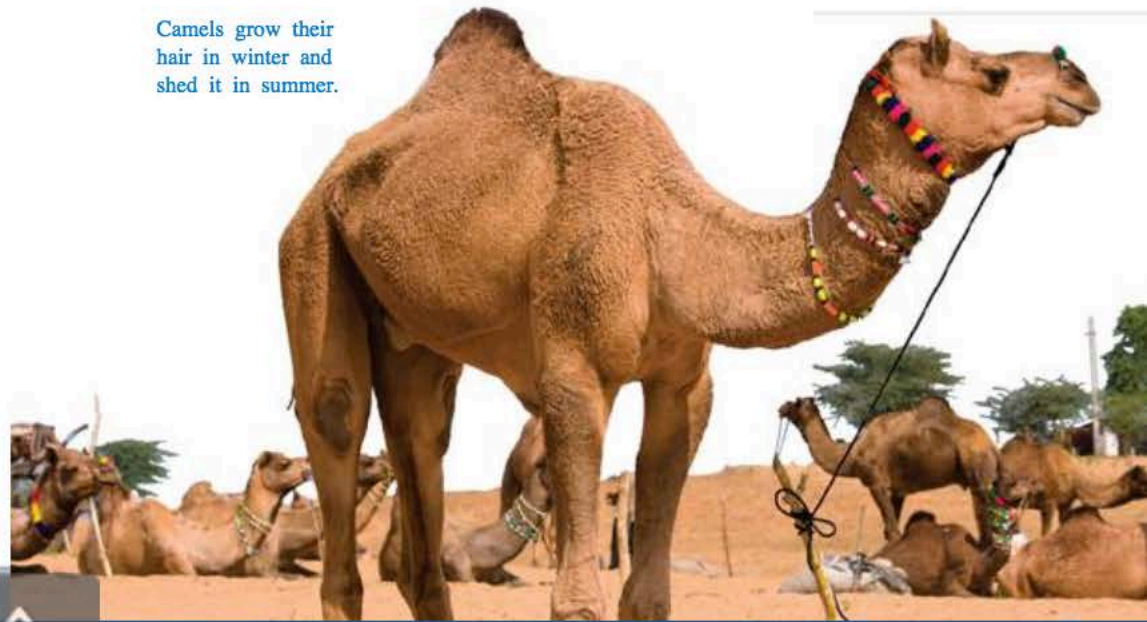
The Camel

13 Dry deserts are home to the camel. There are two kinds of camels: the Arabian camel (or dromedary) and the Bactrian camel. Both types have many structural adaptations for surviving in deserts.

14 Camels have thick fur that changes in summer and winter. Even desert temperatures get very low in winter, so a camel's fur grows long to keep its body warm. In summer, a camel's fur sheds so the camel stays cool. Its body covering helps it survive.

15 Camels use camouflage to keep safe, too. Sand covers much of the desert. A camel's brown-colored fur blends in with the sand. This makes the camel harder to spot.

Camels grow their hair in winter and shed it in summer.



Body Parts to Survive

16 All camels have humps on their backs. An Arabian camel has one hump. A Bactrian has two.

17 Why do camels need humps? Water in hot, dry deserts is limited, or scarce. So camels store fat in their humps. A camel's body can change the fat into water when needed. Like some other desert animals, camels don't sweat. This allows their bodies to hold fluids for a long time.

18 These structural adaptations allow camels to travel up to 160 km (about 100 miles) without a sip of water. When camels do drink, reports the website Live Science, they can soak up 115 liters (about 30 gallons) of water in thirteen minutes.

19 When camels get low on fat, and water is not available, they eat desert plants. Cactuses are thorny desert plants that hold a lot of water. Camels have large, thick, leathery lips, which help them eat these spiky plants.

20 Deserts are often windy with sand blowing. The San Diego Zoo reports that camels have bushy eyebrows and two layers of eyelashes to keep sand from their eyes. Their nostrils close to keep sand out of their noses, too.

Adaptations of a Camel

Type	Adaptation	How It Helps
Camouflage	tan to brown coloring	blend in with desert sand
Body Parts	humps	store fat to be used as water
	large, tough lips	eat thorny plants to get water
	nostrils that close	keep sand out of their noses
	bushy eyebrows and two layers of eyelashes	keep sand out of their eyes
Body Covering	long fur that sheds	Long fur keeps camels warm in cold winters and sheds in hot summers to keep camels cool.

Surviving in Different Environments

21 Octopuses live deep in the ocean. Penguins swim safely in cold water. Camels survive in the hot, dry desert. Adaptations help these animals live in very different environments.

22 Animals have many adaptations to help them survive. Body coverings help keep animals warm or cool, allowing them to live in cold or hot places. Camouflage helps them hunt for food and keeps them safe from predators. Different structural adaptations help them eat, hunt, and live in different environments. For these animals, their adaptations all mean one thing: survival.