

Plants and animals have particular characteristics that help them to live successfully in their environment. These characteristics, such as fur or a keen sense of smell, are called adaptations. If living things do not adapt to their environment, they will not survive. People survive by walking upright, have specialized teeth, hands with opposed fingers and so on. Animals and plants adapt in similar ways. Often they have special characteristics about their bodies that help them to find food, move or regulate their temperature. Unlike animals, people have the ability to add to the adaptations that nature has provided. For example, we can adapt to cold weather by wearing warm clothing. We can shield ourselves from the sun by seeking shade, wearing a hat or applying sunscreen.

Water Birds of Alberta

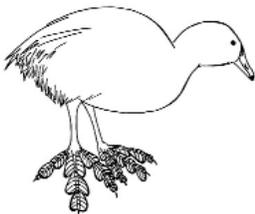
The wetlands of Alberta are home to many different species of water birds. Waterfowl are the best known and abundant group of water birds and include ducks, geese and swans. By getting to know these species we can teach students to become more familiar with their wetland environments.

1. Common Merganser – Female



The merganser is a diving master. These underwater torpedoes are well adapted to their aquatic environment. Their bodies are sleek and slender which allows them to move quickly through the water to catch their fast-moving prey. All three toes are webbed with a specialized “lobed” hind toe. This lobed toe may act as a rudder underwater or just help them to swim. Their long, slender bill armed with saw-like edges and a distinct hook allows them to hold onto their slippery meal, which is usually fish or invertebrates. Their legs are located well back on their bodies. This adaptation aids them in diving, but makes them awkward on land. Like the merganser, most diving ducks must run across the water in order to take off! The merganser nests in tree hollows.

2. American Coot – Sexes look the same



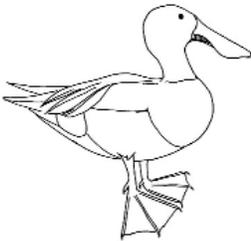
If there were a clown among waterfowl, the American coot would be it. Its rather odd combination of body parts allows it to dive, dabble and walk on land quite well. Its feet are the most eye catching however; its toes have lateral lobes that permits them to walk on the surface of wet mud and helps them push through the water when swimming. They also use their strong feet and claws to fight and to defend themselves. Although it is not an agile flyer, its chicken-like bill is well-adapted for pecking a variety of food - plant material, invertebrates, fish, crustaceans, mollusks and even other bird eggs. It uses its pointed bill to feed their downy young and as a defense against other coots and animals.

3. American Avocet – Sexes look the same



The American avocet is a strikingly beautiful wetland inhabitant. Although many shorebird species seem to be competing for the same foods, it's their specially adapted bills and feeding techniques that allow them to co-exist. While most shorebirds probe and stab in the mud for food, the Avocet is a skimmer. Its highly sensitive bill and tongue, in addition to its slightly upturned bill shape, allow it to skim the waters surface for food. It eats tiny invertebrates, plant material, seeds and small crustaceans. Its exceptionally long legs and partially webbed feet also give it an advantage over other shorebirds who typically don't have either.

4. Northern Shoveler - Male



The northern shoveler has a peculiar bill. Shaped like an upside down spoon, and fitted with food filters, this bird was designed for marsh feeding. These adaptations allow it to filter tiny wetland invertebrates out of the water in an efficient manner, much like a baleen whale does. It also eats plant material, snails and fresh water shrimp. Unlike the diver, the dabbling shoveler has its legs located towards the center of its body. It “tips up” for its food but is not a strong diver. It also has a smaller hind toe. Dabblers can take off directly from the water due to a larger wing-to-weight ratio. The northern shoveler nests in grassy areas and are good walkers.

Other Wetland Wildlife

Moose



Moose live in all parts of Canada, mostly in forests and marshy areas. During warmer months moose are found near lakes and marshes. The moose has very long legs, big hooves, a humpback and a very short tail. It has large ears, a wide droopy nose and an overhanging top lip. The long legs helps the moose travel through water of varying depths, while the long snout and overhanging top lip helps the moose grasps wetland vegetation, which it eats. Moose can move fast, even when it is wet and muddy. The two large toes on their hooves spread wide apart to keep the animal from sinking. Moose are also good swimmers and will lie in shallow water to get away from biting insects, or to cool off. The male moose's big strong antlers help protect the moose against predators, and when fighting other males for a female mate. A mother will fight to protect her young by kicking with her sharp powerful hooves. The moose has poor eyesight and relies on a keen sense of smell. It stops and listens often while eating, to make sure it knows when predators are on the prowl!

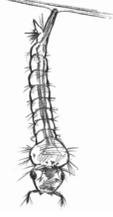
Beaver

One adaptation beavers have are their wide, flat, scaly tails that they use to steer itself through water. Their tails are also useful altering other beaver's when danger is near. They slap the water to warn the other beavers!

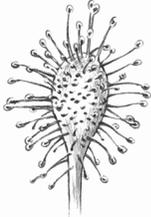
Another use for the beaver's tail is when they are towing heavy logs; they use their tails as a counterbalance for the weight they are towing. A second adaptation is the beaver's coat. It keeps them very warm because it has two layers; the outer layer has long, shiny guard hair to protect the beaver from predators. The layer under the top layer is a thick, woolly layer of shorter fur. Beavers have two double hind claws on each hind foot. These hind claws open like a tiny pair of pliers to untangle its fur and keep it clean. These claws are also good for gripping the ground when on land. Near the beaver's tail there is a pair of glands where special oil is made. They spread this oil through their fur with their paws. Even after an hour of swimming, a beaver's body stays dry and cozy inside its oily, waterproofed coat. Beaver's also have protection for their eyes. When it swims, extra pair of transparent eyelids closes over its eyes.



Animal Adaptations

Animal	Adaptation
<p>Mosquito</p> 	<p>Mosquito larvae can hang upside down from the surface of water to breathe and to trap food with the bristles around their mouths.</p>
<p>Caddisfly Larvae</p> 	<p>This larvae glues together pieces of plants and small pebbles to form a case. The case camouflages the larvae on the bottom of ponds and protects them from predators.</p>
<p>Frog</p> 	<p>Green, yellow or brown skin with dark blotches and lines act as camouflage. Their moist, thin skin absorbs oxygen and water. Bellies are white to blend with light above water, and camouflage it from predators below.</p>
<p>Duck</p> 	<p>Oily, waterproof feathers prevent skin from getting wet and cold; webbed feet for paddling through the water. (See poster for Bottoms Up!)</p>
<p>Dragonfly</p> 	<p>Have two sets of wings that can move independently. This allows the insect to hover and fly forward and backward quickly enough to catch mosquitoes.</p>
<p>Muskrat</p> 	<p>Dark, brown coat is waterproof. Slightly webbed hind feet help them to swim. Long skinny tail acts as a rudder.</p>
<p>Beaver</p> 	<p>Thick undercoat for warmth and long outer guard hairs coated with oil for waterproofing. Webbed hind feet for swimming. Tail acts as a rudder, is used to warn other beavers (slapped on the water surface) and helps them sit up. Teeth for cutting trees for food, lodges and dams. Two sets of eyelids - one set is clear for underwater vision.</p>
<p>Grebe</p> 	<p>Swims low in the water and therefore is difficult to see. They are excellent divers.</p>

Plant Adaptations

Plant	Adaptation
Cattail	 <p>Have air cells in stalk. Two ways to reproduce: 1) male and female flowers are on the same stalk and seeds are blown by wind or 2) spread by rootstalk like a lawn.</p>
Bladderwort	 <p>Submerged leaves have tiny sacs with sensitive bristles to detect tiny aquatic animals that it eats and are filled with air to float in the water.</p>
Water Lilies	 <p>Upper leaf has tiny openings to take in gas. Young leaves take in oxygen for the roots and older leaves give off carbon dioxide. This is efficient for roots buried in the low-oxygen muck. Large floating leaf collects sunlight for photosynthesis.</p>
Pondweeds	 <p>Air spaces allow the stems to float and thus absorb carbon dioxide and release oxygen.</p>
Sundew Plant	 <p>Leaves are reddish due to a fringe of hairs that release a sticky fluid to trap small insects. A carnivorous (meat-eating) plant grows in nutrient-poor bogs.</p>
Pitcher Plant	 <p>Tubular leaves collect rainwater and a striking reddish lip to attract insects inside. Insects provide nutrients that are not available in the nutrient-poor bog where this carnivorous plant grows.</p>
Peat moss	 <p>Ability to hold 200 times its weight in water so it can live in waterlogged conditions.</p>