

Place-Based Education at Our Table Cooperative Farm  
Spring 2020: Beavers: Animals have both internal and external structures that serve various functions

**Fourth Grade – Life Science 4-LS1-1 From Molecules to Organisms: Structures and Processes**

**Structure and Function:** Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior and reproduction. (4-LS1-1)

Beavers are the engineers of the animal world. They use their specially designed anatomy to fell trees and build dams and lodges. They are constantly cutting and moving materials with their long sharp teeth, powerful legs and rudder-shaped tail. Beavers build a **dam** to create a suitable living habitat. The beavers' **lodge** provides shelter and protection for the beaver.

Both of these are external structures needed for survival, growth and reproduction.

Beavers are rodents. The word **rodent** means "THE BEAST THAT GNAWS." All rodents (except one) have two upper front teeth and two lower front teeth called **incisors** that continue to grow throughout the animal's life. They use these teeth to slice and grind through things like a pair of scissors. All rodents (except one) also have grinding **molars** in the back. The beaver uses their teeth to gnaw on tree trunks to fell trees.

In order for this mammal to live a semi-aquatic life, beavers utilize a host of adaptations that help them navigate the water. Beavers have powerful front claws and webbed back feet that help them transport branches and easily swim through the waterways. **Nose and ear valves** shut to keep out water while submerged, and **nictitating membranes** or transparent "third eyelids" act as goggles. Perhaps most useful is that their lips close behind their oversized front teeth, allowing the beaver to transport building materials and food without drowning. They use their wide rudder-shaped tails for swimming as well as for slapping against the water to communicate with other beavers that there could be danger nearby.

Beavers have what is called **underfur**, short, thick, gray and fuzzy hairs found underneath the long, silky **guard hairs**. Each hair of the **underfur** is covered in dozens of tiny barbs like fishhooks. Beaver fur has up to 100,000 hairs per square inch. Beavers also have a special gland that produces oil. They come out of the water to groom themselves and spread the oil over their fur. This oil makes them waterproof, keeping them warm and dry in the water. Felted beaver fur is the toughest and strongest felt in the world and is why they were almost hunted to extinction.

These are internal structures that assists in their growth and survival.