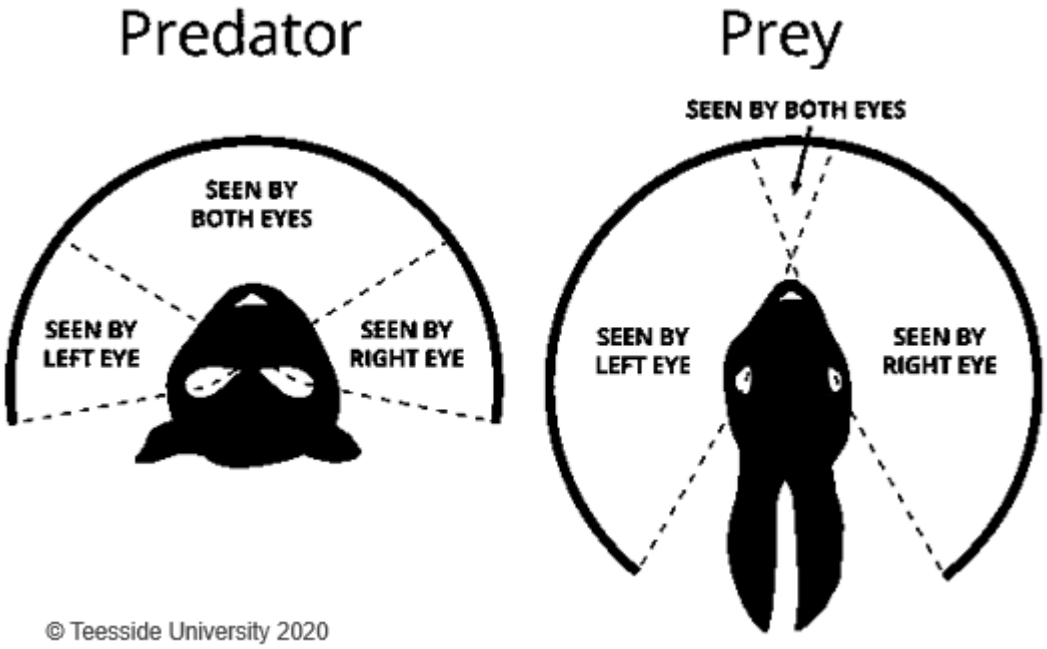
Reading a Skull: Predator and Prey Differences

The skull of an animal is a useful tool in understanding how predator and prey animals interact with their surroundings. When it comes to looking at skulls, two important features that we can notice are the location of the eyes and the type of teeth.

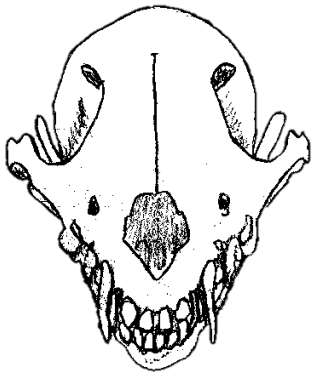
Reading the eyes

Differences in Predator-Prey Eye Locations

The location of eyes on an animal is an **adaptation** that can give us a clue about whether the animal is a **predator** or **prey** animal. The skull of an animal shows us how the eyes are positioned based on the location of the eye sockets, or the holes in the skull where the eyes rest. The location of the eyes on a skull determines how much an animal can see around them.

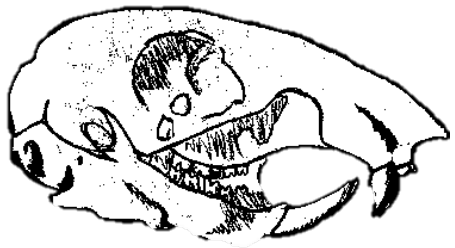


Predators often have eyes located in the front of their skull. Eyes facing front give predators the ability to focus on and target their prey. A coyote is an example of a predator. The picture below shows the front-facing eyes of the coyote. When we look at the coyote skull head-on, we can see that the eye sockets face front.



Pictured: A coyote is a predator. Looking at a coyote (left) we can see that its eyes face front. When we look at the skull of a coyote (right), we see that the eye sockets also face forward. (Photo Credit: coyote_06 by Jethro Taylor, CC BY-NC 2.0)

Prey often have eyes located on the sides of their skull. Eyes on the side of the head give prey a larger field of vision. Prey can see more around them, helping prey to notice predators that may be sneaking up or approaching them. A chipmunk is an example of a prey. The picture below shows the side-facing eyes of the chipmunk. When we look at the chipmunk skull, we can see that the eye sockets are positioned on either side of the skull.



Pictured: A chipmunk is a prey animal. Looking at a chipmunk (left) we can see that its eyes are on the sides of its skull. When we look at the skull of a chipmunk (right), we see that the eye sockets are also located on the sides of the skull. (Photo Credit: "Uintah Chipmunk" by joel, CC BY-NC-SA 2.0)

A useful rhyme to help us remember eye adaptations in predators and prey is the following:

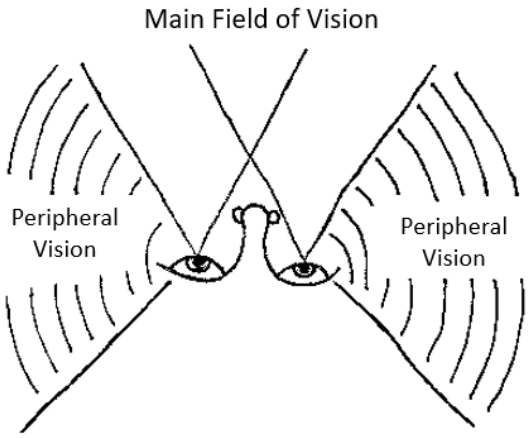
"Eyes in front, I hunt. Eyes on side, I hide."

Activity: Testing Your Vision

In this activity, we will briefly explore our own eyes. You can do this activity on your own or with a partner.

Based on what you learned about eye location in predators and prey, are human eyes more like predators or prey? Why?

Humans have eyes that face front. It is hard for us to understand what it is like to have eyes on the side of our skulls, but we can loosely understand it through investigating our **peripheral vision**. Peripheral vision is what we see to the left and right when we are looking straight forward. See the picture below.



Your Turn!

To investigate your peripheral vision, do the following:

1. Hold out your arms straight in front of you.
2. Put both thumbs up in a "Thumbs-up, good job!" position. Look straight forward at your thumbs.
3. Slowly begin to move your arms apart, moving your hands away from each other. Keep looking straight forward, where your thumbs used to be.
4. As you slowly move your arms to the side approaching a T-shaped pose, notice when you cannot see your thumbs in your side vision.
5. When you can no longer see your fingers, you have found the edge of your peripheral vision.

Reading the Teeth

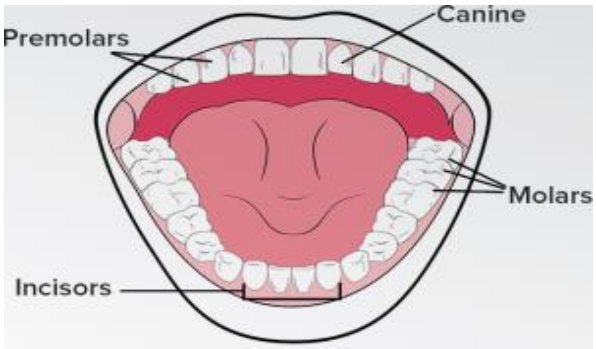
Tooth Touch

Before starting this activity, be sure to wash your hands thoroughly.
Take some time to investigate your own teeth with your **tongue**. Use your tongue to feel the different kinds of teeth. How many types of teeth do you notice? When you eat, what actions do the different teeth perform? What moves when you chew? How does your tongue move when you bite, chew, and swallow?
Try eating different types of food, like apples, celery, etc., and write down your observations for how your teeth are moving.

Food item	Observations

Types of Teeth

Just like how we use different parts of our teeth to eat different foods, different animals use types of teeth helps them eat different types of material.



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There are three main types of teeth that are found in most animals: incisors, canines, and molars. **Incisors** are at the front of the mouth, and used for cutting. **Canines** are the dagger-like

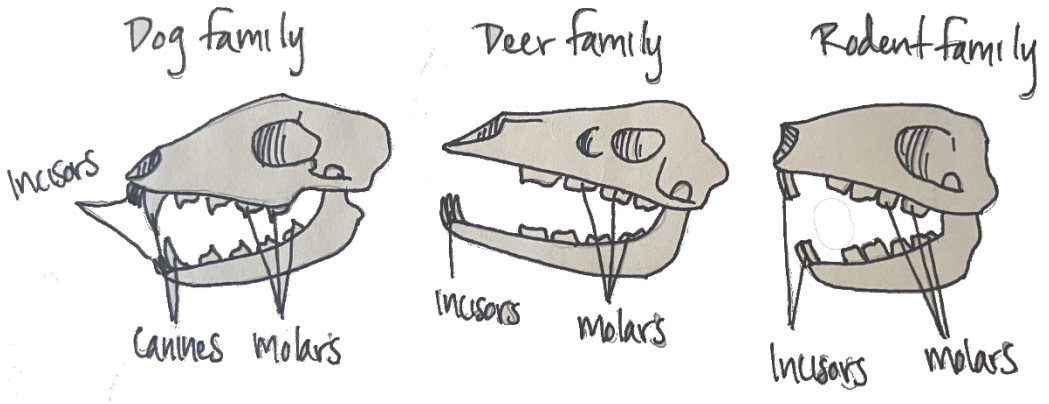
sharp teeth that are used for tearing and shredding meat. **Molars** are at the back of the mouth and used for grinding food materials.

Remember that for predator animals, they eat mostly meat in their diet. Animals that only eat meat are called **carnivores**, and some types of carnivores in New Hampshire are coyotes, bobcats, and lynx.

Most prey animals eat a lot of plants for their food. Animals that eat only plants are called **herbivores**, and types of New Hampshire herbivores are deer, moose, and mice.

For animals like humans, who eat a mixture of plants and animals, they are called **omnivores**. Some types of omnivores in New Hampshire are raccoons, skunks, and bears.

Below, there are photos of different types of skulls that have different types of teeth. Keep in mind what they diet of each animal is, and how the teeth they have would help them eat. Closely look at the differences and write out what you notice for each!



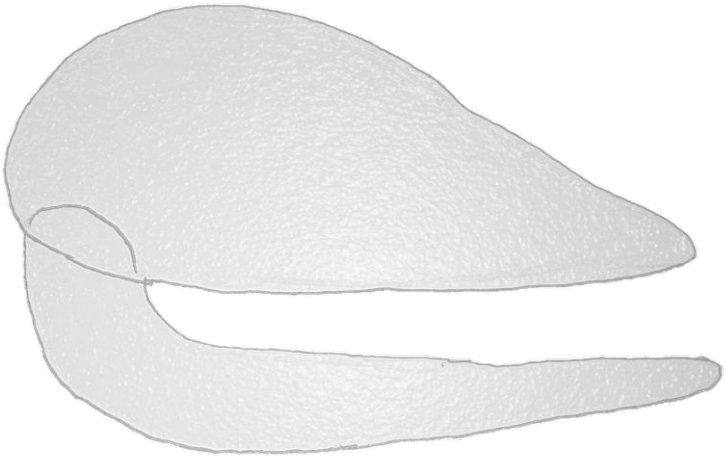
Dog Family	Deer Family	Rodent Family
Observations:	Observations:	Observations:

Carnivores have all three types of teeth. They do not use their incisors often, and rely on them for nipping and biting. They use their sharp canines for grabbing their prey. They also have distinct and sharp molars that are used for cutting and tearing food.
Herbivores do not have canine teeth, since they do not meat. Because of their plant-based diet, herbivores use the incisors to bite off leaves or plants, and their molars to grind up the materials.
Omnivores have all three sets of teeth, but the differences in the skulls changes a lot for different types of animals. Humans and squirrels are both omnivores, but the skulls look very different!

Complete a Jaw!

As we have seen, different animals have different types of teeth to help them eat. For each of the questions below, draw out what type of teeth may be necessary for the animal to survive! Think about the different types of food that carnivores and herbivores eat, and how that changes the type of teeth they need.

1. Create a jaw for a large animal that eats meat.



2. Create a jaw for a small animal that eats nuts.