

What Can I Learn From a Skull?

Animal skulls have evolved for millions of years to protect vertebrate's brains and sensory organs. Many of an animal's dietary and social patterns can be deduced by examining its skull and teeth.

		
HERBIVORE White-tailed Deer (<i>Odocoileus virginianus</i>)	OMNIVORE Virginia Opossum (<i>Didelphis virginiana</i>)	CARNIVORE Coyote (<i>Canis latrans</i>)

TEETH SHOW DIET.

The hardest and longest-lasting bone in the body is tooth enamel. The most common fossils are teeth, followed by jaws. Unlike other animals, mammals have only two sets of teeth, the first (often called 'milk teeth') erupts after birth. After puberty, a larger set, with more and bigger teeth to fill larger jawbones, emerges.

There are four different types of teeth -

- **Incisors** are the front teeth, used for cutting and grasping.
- **Canines** are next to incisors and are used for tearing.
- **Premolars**, located behind the canines, have sharp edges for crushing food.
- **Molars**, the very back teeth, are broad, flat grinders.

Generally, herbivores have large incisors to nip vegetation and premolars and molars to grind it into food; very few have canines. Carnivores, who eat meat, generally have small incisors, very large canines and sharp premolars and molars. Omnivores eat almost everything and their teeth reflect their

preferences; they have all four types of teeth. In fact, if you'd like to see an excellent example of an omnivore's teeth, look in the mirror.

EYE PLACEMENT IDENTIFIES PREDATORS.

Carnivores generally have large eyes, placed so that the eyes look forward and the areas of vision of the two eyes overlap. This means that they have *binocular vision* and they see objects with both eyes at the same time. This gives good depth perception.

On the other hand, herbivores have eyes that face to the side, giving them *monocular vision*; an object is seen with only one eye at a time. While herbivores lack depth perception, they can watch for approaching predators in all directions. Some speedy herbivores, like deer, have eyes that overlap slightly. This provides limited depth perception so they don't run into trees as they flee from danger.

Omnivores generally have eyes facing mainly to the front. This gives them partly binocular vision and helps them in their search for a wide variety of food.

WHAT ABOUT NOSES?

The area in front of the eye orbits, called the rostrum, houses the sense of smell. A large rostrum suggests that the animal hunts through scents or uses its nose to probe the ground or flowers. A deer's long nose allows him to scan for predators while grazing. Coyotes hunt by scent and their long noses contain millions of scent receptors. Cats (like the bobcat) hunt by sight and have short noses.

HOW ABOUT HEARING?

Two pea-shaped structures, called the auditory bulba, house the mammals inner ear. The larger these nodes are, the better the animal's sense of hearing.

WHAT DO JAWBONES TELL US?

Like teeth, jawbones help identify a mammal as carnivore, herbivore or omnivore. Carnivore jaws are attached so that they only open and close; the teeth can not move from side to side. In contrast, herbivore jaws are fastened loosely; this side-to-side motion allows the animal to grind plant material with his molars. Omnivore jaws are more like carnivore jaws because, in general, omnivores eat fruit and seeds not grass and branches.