



Unit 7:  
Wildlife  
Identification



# SKULLDUGGERY

Overview – Students use multiple senses to explore animal skulls and identify them as herbivore, carnivore or omnivore.

Grade level - 4-7

Learning Station – This activity can be done anywhere where students can comfortably sit for most of the lesson.

## Materials

- Set of skulls
- 1 blindfold per student
- Poster – “herbivore, carnivore, omnivore”
- Poster – animal pictures

## Activity –

- Use the attached “Skullduggery” activity sheet for directions.
- A poster that summarizes the main traits of herbivores, carnivores and omnivores is available to be used.

## Extension

Have the students try to match their skull with the pictures of the animals on the animals poster.

# SKULLDUGGERY

## In a Nutshell

Blindfolded students will be introduced to a diversity of mammal skulls. A variety of different skull adaptations will be discussed, especially those relating to the structures and functions of different types of teeth. Grade Levels 4-8.

## Objectives

Following the activity the students will be able to:

- ...define the terms herbivore, omnivore, and carnivore.
- ...give two examples of mammals that are herbivores, omnivores, and carnivores.
- ...describe the purpose or functions of incisors (cutting, canines or fangs (ripping and tearing), and molars (grinding or shearing).
- ...distinguish between herbivores and carnivores by the teeth adaptations (canines-carnivores; molars overlap for shearing surface - carnivores; molars come together flat for grinding - herbivores).
- ...explain how omnivores have tooth adaptations of both herbivores and carnivores (eg. bears have canines for ripping and tearing like carnivores, but the molars come together for grinding like herbivores with only a small overlap).
- ...classify humans as herbivores, carnivores, or omnivores based on teeth adaptations.

## Warm-up

Have the group form a tight circle with shoulders touching, then sit down in place. Tell them they are going to explore some natural object using their senses. What are the five senses? Have them "wake-up" their senses by cleaning out one sense at a time. Clean out your eyeballs by pulling them out one at a time and sticking them in your mouth. Clean the wax out of your ears and listen for a moment. Blow your nose, then take a deep breath. Wipe off your tongue. Connect your fingertips up to your brain. What other parts of your body can you touch with? Finally connect your "sense of humor". Ask the students which sense we use the most? "We are going to temporarily chop out that sense and become blind. What will happen to your other senses?"

## Preparation by Leader

Become familiar with the basic skull adaptations of herbivores, carnivores, and omnivores. In particular, note adaptations of tooth structures, patterns, and functions (see insert). Be able to separate the three groups by sight if possible (usually it is easiest to remember the omnivores). Find a suitable learning station. Place all the skulls in a closed box so the skulls are not visible to the students.



## activity cont'

### Activity

Pass out the blindfolds. Have the students put them on -- no peeking! Give a different skull to each student. Emphasize careful handling of the object, since they are very fragile. Have each student explore their "object" without saying anything about it. Ask a series of questions to lead them. "How big is it? Does it fit in the palm of your hand? How heavy is it? How much does it weigh (compare to familiar objects)? Rub it against your cheek. Is it smooth or rough? Do some parts feel different than others? Smell it. Can you think of anything it smells like? You probably would not care to taste it. Shake it gently and listen. What shape does it remind you of? Are there any caves in it or places where spiders could hang out?" They should get to know the object so well they could tell it apart from all other similar objects. Now go around the circle having each student in turn verbally describe his or her object to the rest of the group. They should try to paint a verbal picture of the object, but they cannot use the name of the object, the name of any of its parts, or tell what it is made of. (Students that normally might be shy about talking, will often open up more when they know the other students are blindfolded.)

Give everyone "one last feel" of their objects, then collect the skulls. Place them in a pile in the center of the circle with any extra skulls and all lower jaws that were not handed out. Have the students remove their blindfolds and, just from where they are sitting, try to see which skull is theirs. Then turn them loose and let them pick up their skulls. Suggest closing their eyes to check for positive identification of their own skulls.

Once everyone has found theirs, demonstrate how the lower jaws fit into the upper sockets. Have the students match

up all the lower jaws with the respective skulls. As each jaw is matched collect the skulls and sort them into three rows corresponding with herbivores, carnivores, and omnivores. Once all the skulls are sorted, tell the students that you have sorted them out on the basis of similar adaptations. "What are adaptations? What type of adaptations could they be sorted by? What are the adaptations for? Bring out the idea of herbivores, carnivores, and omnivores, as animals with adaptations for different types of feeding habits. Discuss the various adaptations of each group concentrating on types and functions of teeth (cutting, grinding, ripping and tearing, shearing), and any other adaptations appropriate. Omnivores have teeth that combine functions from both herbivores and carnivores. Sorting the carnivores (order Carnivora) further into the three main families, the dog family (Canidae), cat family (felidae), and the weasel family (Mustelidae), will allow the students to see their common ancestry more clearly. It is probably best to leave identifications for last. Once we have a name for things we generally stop thinking about them.

### Pulling Things Together

Have the students form a sharing circle and discuss these questions:

How do the skull adaptations help the animal fit into its habitat?

What would happen if the animal's food source disappeared? Could a carnivore eat plants? What about an omnivore?

What other types of adaptations do animals have besides skull adaptations?

How do scientists come up with groupings and names for all the animals?

Ask the children to feel their jaws and teeth. Have the group decide:

What type of teeth do humans have? What are they adapted for? How does this reflect our diet? If we had:

ing things together cont'

human skull, which group of all the mammals would it most closely resemble? How do our skull adaptations help us to survive in our habitat?

Ask the students to share what they learned during the lesson.

#### OPTIONS

Popcorn/Peanut Warm Up

As an option to the warm-up, the student's senses may be warmed up by investigating a type of food which is small and can be handled easily. Popcorn or peanuts both work well.

For example, begin with hearing (objects should be contained in a brown sack). Shake the bag and have them guess the contents (keep taking guesses even if the right answer is given). Smell - what room in the house or place does it smell like? Go through the senses and, last of all, have them eat the object.

IMPORTANT: as practice for the activity, stress that they must never name the object or any part of it directly. Rather, they should describe it by texture, shape, size, weight, etc.

Extra Time?

Introduce the students to the Field Guide to the Mammals by Burt and Grossenheider as a reference they can use to look up skulls they may find. Give each student a different skull (mix them up again) to look up and match with the skull pictures in the back of the guide. Use the list of dental formulae following the pictures to assist with the identification (count the different types of teeth). Once the skull has been identified have them look up the picture of the animal itself, and then try to find out just what it eats (generally found in the text descriptions of the species or sometimes the family). "Is it a carnivore, herbivore, or omnivore? What other adaptations does it have for feeding (camouflage, long legs or neck, speed, strong muscles, etc.)?"