

GRADE LEVELS: 1, 3

CORRELATION TO NEXT GENERATION SCIENCE STANDARDS: 1-LS3-1, 3-LS1-1, 3-LS3-1

SKILLS/PROCESSES: observation, data collection & interpretation, analysis, grouping, fact-finding, identification, application, inference

OBJECTIVE: Students will become familiar with the basic categories and functions of mammal teeth.

TEACHER'S GUIDE



UNIT TWO ■ LESSON THREE

The Right Teeth

BACKGROUND

There are three types of mammal teeth: **incisors** (used for cutting and gnawing) located in the front and center of one or both jaws; **canines** (used for stabbing and tearing) located on each side of the incisors; and **premolars** and **molars** (for grinding and shearing) situated along the sides of the jaws.

Because each tooth type is designed for specific functions, they have evolved differently in different mammal species, depending on eating habits. Based on these relationships, mammals are categorized into four groups:

1. **Herbivores** are mammals that eat mainly vegetation. There are two sub-groups: plant-tearing mammals (deer) and plant-gnawing mammals (beavers, squirrels and mice). Plant-tearing mammals have incisors in their lower jaws only, no canines at all and flat, sharp-edged molars. This arrangement is best for tearing leaves, stems, bark and grasses.

Plant-gnawers have sturdy, sharp incisors on both jaws for cutting through nuts, bark, wood and grasses. They lack canines and have flat molars for grinding.

2. **Carnivores**, or meat-eating mammals (such as coyotes, bobcats and foxes), have small but sharp incisors in both jaws for grabbing and holding; long, fanglike canines for stabbing and tearing; and large, sharply edged premolars and molars for slicing through flesh, bone, skin, scales, fur and feathers.
3. **Insectivores**, or insect-eating mammals (like shrews, moles and some bats), have long incisors for picking insects out of dirt and leaves and small but sharply edged canines, premolars and molars for chewing hard-shelled beetles, other insects and worms.
4. **Omnivores** (such as raccoons, opossums and humans) eat almost anything edible. These mammals develop all three types of teeth, with no one category more prominent than the others.

AMERICAN
BEAVER



PROCEDURE AND DISCUSSION

Review the student information with your class and emphasize the three types of teeth and how they relate to other mammalian characteristics (such as fur, feet, etc.). Encourage them to think of examples of Illinois mammals with each of the four teeth categories.

1. What are the three kinds of mammal teeth, and what are their functions?

Incisors, for holding, cutting and gnawing. Canines, for stabbing and tearing. Premolars and molars for grinding and shearing.

2. What is an omnivore? An insectivore? An herbivore? A carnivore?

An omnivore is any animal that eats plants and animals. An insectivore is any animal that eats only insects. An herbivore is any animal that eats only plants. A carnivore is any animal that eats only the flesh of other animals.

VOCABULARY

canines—those teeth located on either side of the incisors, in one or both jaws, used for stabbing and tearing

carnivore—any animal that eats only the flesh of other animals

herbivore—any animal that eats only plants

incisors—those teeth located in the front and center of one or both jaws, used for holding, cutting or gnawing

insectivore—any animal that eats only insects

omnivore—any animal that eats plants, the flesh of other animals and anything else that is edible

premolars/molars—those teeth located along the sides and back of one or both jaws, used for grinding and shearing

CHALLENGE YOURSELF EVALUATION

1. Animals other than mammals use a beak, different types of teeth, jaws or grabbing and swallowing as their methods of eating their food.
2. Sometimes mammals in one feeding category can eat food from another feeding category. Omnivores can eat from all the categories. Herbivores could accidentally eat an insect. Carnivores can eat plants, fruits and insects.
3. herbivore: eats plants
carnivore: eats meat (flesh)
insectivore: eats insects
omnivore: eats a variety of items

Examples will vary but could include the following mammals from the “Species Sheets:” herbivore—American beaver, eastern fox squirrel, thirteen-lined ground squirrel, plains pocket gopher, white-tailed deer, eastern cottontail, prairie vole; carnivore—coyote, bobcat; insectivore—eastern red bat, northern short-tailed shrew; omnivore—raccoon, Virginia opossum, white-footed mouse, eastern chipmunk.

ACTIVITY PAGE EVALUATION

- little brown bat—insectivore; 2
raccoon—omnivore; 7
eastern gray squirrel—herbivore; 5
North American river otter—carnivore; 6
bobcat—carnivore; 3
eastern mole—insectivore; 1
white-tailed deer—herbivore; 4

EXTENSION

Borrow an IDNR *Illinois Wild Mammals* resource trunk and use the skulls it contains to help you teach about mammal teeth. Let students identify teeth types and decide whether the mammal was an herbivore, carnivore, insectivore or omnivore. Visit <http://www.dnr.illinois.gov/education/Pages/ItemsForLoan.aspx> to find a lending location near you.

The Right Teeth

STUDENT'S GUIDE

Most mammals have three kinds of teeth: **incisors** used for grabbing, cutting and gnawing; **canines** used for stabbing and tearing; and **premolars** and **molars** for grinding and shearing. The type of teeth a mammal has will determine how and what it can eat. Mammals can also be grouped by what they eat.

Herbivores

Mammals that eat only plants are called herbivores.

There are two kinds of herbivores.

Plant-tearing herbivores, such as deer and goats, have incisors only in their lower jaws, no canines and flat, sharp-edged premolars and molars.

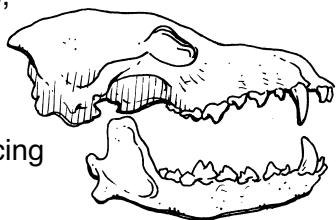


Plant-gnawing herbivores, like beavers and squirrels, have large, sharp incisors in both upper

and lower jaws, no canines and flat premolars and molars.

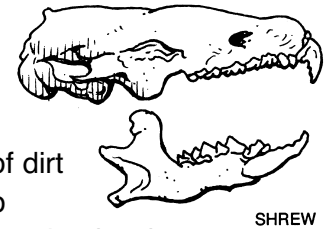
Carnivores

Mammals that eat only other animals are called carnivores. Bobcats, foxes and coyotes are some Illinois carnivores. They have small but sharp incisors for grabbing and holding; long, fanglike canines for stabbing and tearing; and large, sharply edged premolars and molars for slicing through flesh, bone, skin, scales, fur and feathers.



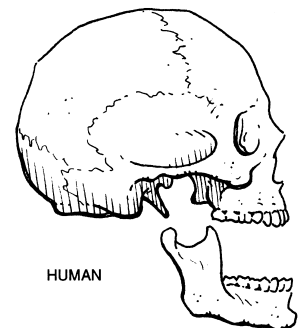
Insectivores

Like shrews, moles and some bats, some animals eat only insects. They are called insectivores. They have long incisors for picking insects out of dirt and leaves and small, but very sharp canines, premolars and molars for chewing hard-shelled beetles, other insects and worms.



Omnivores

Some animals, like raccoons and humans, are called omnivores. They have all three types of teeth, allowing them to eat plants and flesh.



CHALLENGE YOURSELF

1. How do animals other than mammals—like birds, fishes, insects and reptiles—bite, chew and eat their food?
2. Can mammals in one category eat the food of mammals in other categories? Why or why not?
3. Explain the difference between the four feeding categories and give an example of a wild Illinois mammal in each category. (HINT: Use the “Species Sheets” to find the examples.)

VOCABULARY

canines
carnivore
herbivore
incisors

insectivore
omnivore
premolars/molars

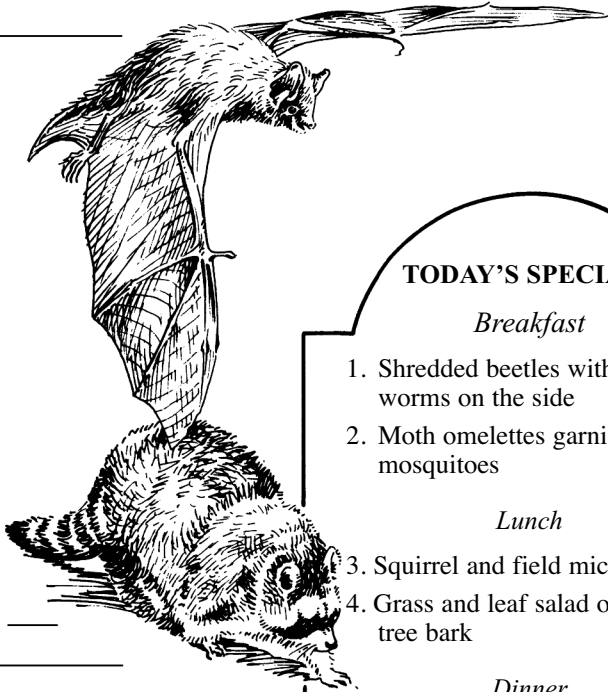
ACTIVITY PAGE: Menu of the Day

WHAT YOU DO

In the long blank, indicate whether the mammal is an herbivore, insectivore, carnivore or omnivore. In the short blank, put the number of the menu item it would be most likely to eat.

LITTLE BROWN BAT _____

BOBCAT _____



RACCOON _____



EASTERN MOLE _____



EASTERN GRAY SQUIRREL _____



NORTH AMERICAN RIVER OTTER _____



WHITE-TAILED DEER (FAWN) _____

TODAY'S SPECIALS

Breakfast

1. Shredded beetles with earth-worms on the side
2. Moth omelettes garnished with mosquitoes

Lunch

3. Squirrel and field mice stew
4. Grass and leaf salad on bed of tree bark

Dinner

5. Berry soup with nuts, bark and buds
6. Frog legs and fish, turtle and muskrat soup

Leftover Special

7. Chef's salad of crayfish, fishes, mice, nuts, berries, grain and fruits