



Tracking Mammals

4th Grade



In this program, students use wildlife cameras to document the movements and habits of mammals, such as otters, skunks, raccoon, deer, and perhaps coyote, at Cedar Tree Neck. This program addresses many of the 4th grade animal adaptations standards. Students use the web, Google Earth, specimens, and skills of inquiry as they make inferences and draw conclusions about mammal behaviors.



Massachusetts Science and Technology/Engineering Standards- 2016

4-LS1-1. Construct an argument that animals and plants have internal and external structures that support their survival, growth, behavior, and reproduction. [Clarification Statement: External animal structures might include legs, wings, feathers, trunks, claws, horns and antennae. Animal organs might include eyes, ears, nose, heart, stomach, lung, brain, and skin.

3-LS4-2. Use evidence to construct an explanation for how the variations in characteristics among individuals within the same species may provide advantages to these individuals in their survival and reproduction (ie. color variation)

Big Ideas/Enduring Understandings

- Scientists classify organisms based upon their physical features. Mammals are one class of the larger group called vertebrates. Mammals as a group, share certain features that make them distinct from the other classes: birds, reptiles, amphibians, and fishes.
- Individual species of mammals display diversity in their physical features. These diverse features enable certain functions and behaviors, which help them to survive in their environments.
- Evidence (in the form of observations and measurements) can be used to make inferences about mammal features and their functions. Those inferences may need to be revised when new evidence is gathered.

Students will know...Concepts

- Characteristics mammals share include: hair, warm-blooded, and mammary glands. Most, but not all, give birth to live young.
- Mammals have different kinds of teeth for different purposes. Three types of teeth are incisors, canines, and molars. The diet of mammals can be inferred from their teeth.
- Evidence from mammals such as scat or tracks provide clues from which we can draw inferences about the animal such as diet, movement patterns, and/or behavior.
- Other animal structures such as eyes, fur, feet/claws, aid an animal's survival its environment (e.g. by camouflage or defense).
- Names of mammal species that live on Martha's Vineyard: skunk, raccoon, squirrel, rabbit, chipmunk, river otter, deer, and perhaps coyote.
- Mammals have specific food needs depending on the season and resource availability.

Essential Questions

- What kinds of inferences about behavior and survival can be made from observations of physical features?
- How are form and function related?
- Where do mammals travel at Cedar Tree Neck and for what purposes?

Students will be able to...Skills

- Identify signs of mammals in the field (fur, tracks, scat, game trails, etc.)
- Identify best locations to place wildlife cameras based on observations of mammal sign.
- Identify different types of adaptations in animals (camouflage, nocturnal, foot/ teeth/ tail shape) and explain their functions for survival.
- Describe season specific behaviors.
- Explain how a mammal's need for a specific type of food or habitat may affect the path it travels.
- Participate in all steps of the scientific process.

Before You Visit

Each school will receive a kit that includes materials and instructions for the following activities:

1. Pre-Unit Performance Task

Use the Pre-Unit Assessment Task sheet to activate prior knowledge and assess what students know about mammals as a group, and to see what they know about species of animals that live on Martha's Vineyard. You can use their ideas to build a classroom K-W-L chart for the unit. Students or teacher could chart what students "Think they Know" and "Wonder About" mammals on a class chart. Continually add wonderings and "Learnings" as the unit progresses in journals/and to chart.

2. Introduction to Wildlife Cameras and Locating Animal Sign

- Taking Action Opportunities <http://www.dnr.state.mn.us/projectwild/tao/index.html>
- Lights, Camera, Capture: online video interviews with real scientists using wildlife cameras for research <http://mediamill.cla.umn.edu/mediamill/display/52060>
- Preview similar projects from other regions of the country (Colorado and California)
<http://www.fcgov.com/naturalareas/wildlife-camera.php>
http://www.smcf.org/?page_id=327

3. Computer Lab Activity: Using Google Earth to Explore Large Mammal Habitats Worldwide-- see file *MammalsWorldGoogleEarth*

4. Research mammal species

Research identification, habitats, food sources, and behaviors of each mammal species (i.e. nocturnal, migratory, breeding season, camouflage, other adaptations, etc.)

<http://www.biokids.umich.edu> Critter Catalog has excellent information for kids. They also have an online **track identification tool!**

5. Sort MV Mammal Species: Using the photo cards of mammals (found in Curriculum Kit), have students do an open sort of the cards. Observe how they categorize the animals and guide them further (they may sort by size, color, what they eat, habitat, etc.)

6. Learn to Identify Common Mammal Tracks

Explore field guides, use animal track rubbing plates, and other materials in the classroom kit to develop background knowledge

7. Mammal Skulls and Teeth Studies:

- Online Skull Presentation: <https://umconnect.umn.edu/p28203754/>. This is a great introduction to teeth types and analyzing mammal skulls
- Felix Neck has a collection of skulls, teeth, and activities that they bring into classrooms. This would provide excellent background knowledge.

8. Baited Schoolyard Experiment: see description attached.

9. Mammal Signs Science Table: Have students bring in signs of animal activity (fur, eaten acorns, pinecones, scat, etc) for a science table.

First Trip

Trip #1 Explore the property, look for animal signs and set-up cameras and/or baiting areas. Stop at each camera location, and spend 10-15 minutes brainstorming and recording questions and making predictions (hypotheses). Use the *Tracking Mammals Student Sheet #1* on this trip.

Between Trips

Review photos from the wildlife cameras in the classroom or computer lab. Use the *Tracking Mammals Student Sheet #2* to record observations. Discuss external and internal structures of animals seen. Could also start research for final project at this time.

Second Trip (optional)

Trip #2 Based on the mammals that appear in the photos, students now return to the camera sites and look for signs of the animals they saw (did they leave fur, scat, tracks, partially eaten food, game trails, etc.).

- Students could photograph or draw a map of the area around the camera, including vegetation, and any of the mammal signs found.
- Have students find an animal track to make a plaster cast of. Cast materials are in curriculum kits, and directions are on the container. Bring water!

After You Visit

Analyze data and draw conclusions. Summarize your investigation and have students post observations to Google Map, including any special still photos, location of the camera, date, time, and species seen. See *Tracking Mammals Student Sheet #3* sheet.

Final Project Ideas:

Individual or group research projects about local mammals. Could include: photograph (from wildlife camera if available), original art/scientific drawing, track rubbings, photo of scat. Writing and research component could include student written information, notes, or labels about how physical body parts lend to species survival and growth, behavior, and reproduction. Final poster could be digital or paper.

Post Assessment Performance Task

Use the Post-Unit Assessment Task sheet to re-assess what students know about mammals as a group, and to see what they have learned about species of animals that live on Martha's Vineyard.

Complete **The Important Thing About Cedar Tree Neck** sheet as a group or individually and return to SMF.

Sources and Resources:

Taking Action Opportunities <http://www.dnr.state.mn.us/projectwild/tao/index.html>
Background information, ideas for using trail cameras in schoolyards, and more!

Lights, Camera, Capture: <http://mediamill.cla.umn.edu/mediamill/display/52060>
A video introducing kids to use of wildlife cameras for global mammal research

City of Fort Collins, Colorado. Wildlife Cameras in Fort Collins Natural Areas.
<http://www.fcgov.com/naturalareas/wildlife-camera.php>