

<b>School Program Name:</b>	Tracks and Traces
<b>Name of Sanctuary:</b>	Moose Hill Wildlife Sanctuary
<b>Grade Level:</b>	Grades 2 - 5
<b>Location Options:</b>	At sanctuary
<b>Time:</b>	2 hours or can be combined with a second program for a full-day field trip
<b>For more info:</b>	<a href="mailto:moosehilledu@massaudubon.org">moosehilledu@massaudubon.org</a>

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### Program Description

Students will enjoy an interactive indoor lesson about animal track patterns and as well as an outdoor exploration of our trails during this two hour program. Learn how the physical characteristics of body shape, leg length and foot type determine each animal's track pattern and apply this knowledge to solve track mysteries. Explore the forest trails and meadow edge for the signs animals leave behind and discover how chew marks, burrows and scat are used to identify an animal!

Significant savings are offered when you select a second program to create a full-day of hands-on learning at Moose Hill. This program combines well with Habitat Hunt, Native American Life, Trees are Terrific, Rock On or Maple Sugaring. Because of our large trail system and full-day option, we can serve up to 130 students for many programs. We provide a ratio of one Moose Hill teacher-naturalist to 12 to 14 students.

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### Massachusetts State Curriculum Frameworks

<b>Subject:</b>	Science and Technology
<b>Topic:</b>	Life Science

### Learning Standards

#### Characteristics of Plants and Animals

3-5 Life Science #1: Classify plants and animals according to the physical characteristics that they share.

#### Structures and Functions

3-5 Life Science #5: Differentiate between observed characteristics of animals that are fully inherited (e.g., body structure) and characteristics that are affected by the climate or environment (e.g., size of print, scat—shape and type vs meal).

#### Adaptations of Living Things

3-5 Life Science #6: Give examples of how inherited characteristics may change over time as adaptations to changes in the environment that enable organisms to survive, e.g., length of leg, placement of eyes on head, length of neck, shape of teeth, color.

3-5 Life Science #8: Describe how organisms meet some of their needs in an environment by using behaviors (patterns of activities) in response to information (stimuli) received





from the environment. Recognize that some animal behaviors are instinctive (e.g., flight or fight response), and others are learned (e.g., hunting techniques).

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### Massachusetts State Curriculum Frameworks

**Subject:** English Language Arts

**Topic:** Language

### Learning Standards

#### Discussion

PreK-12 Language #1: Students will use agreed-upon rules for informal and formal discussions in small and large groups.

#### Questioning, Listening, and Contributing

PreK-12 Language #2: Students will pose questions, listen to the ideas of others, and contribute their own information or ideas in group discussions or interviews in order to acquire new knowledge.

#### Vocabulary and Concept Development

PreK-12 Language #4: Students will understand and acquire new vocabulary and use it correctly in reading and writing.

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### Massachusetts State Curriculum Frameworks

**Subject:** Math

**Topic:** Math

### Learning Standards

#### Patterns, Relations, and Algebra

PreK-6 Math #PI: Understand patterns, relations, and functions.

#### Measurement

PreK-6 Math #M1: Understand measurable attributes of objects and the units, systems, and processes of measurement.

PreK-6 Math #M2: Apply appropriate techniques, tools, and formulas to determine measurements.



## Lesson Objectives

Students will know and be able to:

- Explain the connection between an animal's physical characteristics of body shape and leg length and the animal's track pattern.
- Classify mammals that exhibit the waddle as their most used gait as being wide (fat) and having short front and rear legs (e.g., porcupine, skunk, beaver).
- Classify mammals that exhibit the gallop (hop) as their most used gait as having short front legs and long back legs (squirrel, rabbit).
- Identify the track pattern of a deer.
- Match four mammals to their sign, ex. chewed nuts to squirrel, hole to chipmunk, deer scat.
- Distinguish between instinctive and learned behaviors of squirrels.

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## Vocabulary

Track	Hoof	Carnivore
Gait	Weasel	Gnaw
Straddle	Rabbit	Chew
Stride	Squirrel	Burrow
Step	Coyote	Drey (a squirrel's leafy nest)
Gallop	Trace	Instinct
Bound	Scat	Learned
Waddle	Herbivore	

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## Assessments

How will the Mass Audubon educator know that the students have met the standards?

- Students will demonstrate their understanding of mammal track patterns by participating in a track mystery activity.
- Mass Audubon educator will observe students exploring, observing, and identifying animals and their signs—scat, chews, and nests.
- Students will demonstrate an understanding of behaviors that have been learned and practiced as compared to instinctive behaviors.
- Students will participate in answering teacher prompted questions.



## Summarizer

How will the Mass Audubon educator close the lesson to see if students met your objective?

For the Track portion of the program the educator will ask specific questions during the track mystery activity that will demonstrate that the learning concepts have been met.

For the Traces portion of the program the students will complete a handout that matches the mammal to the sign that it leaves behind.

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## Mass Audubon School Programs

At Mass Audubon we strive to create learning experiences that are enriching, innovative, meaningful, and engaging. All our school programs are aligned with Massachusetts Curriculum Frameworks. Our network of wildlife sanctuaries and nature centers located in urban, suburban, and rural communities around the state enable us to have strong relationships with local schools.

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## Our Education Foundations

- Place-based education is an educational philosophy that connects learning to what is local for an individual. We help build conservation communities, working with students and teachers in cities and towns to develop place-based environmental education that is linked directly to their home community.
  - Inquiry-based learning is focused on teamwork, being learner-centered, questioning ourselves and the world around us, providing a more focused, time-intensive exploration, promoting lifelong learning, communication, and learning as fun.
  - We are fully committed to creating a positive and supportive environment for all learners.
  - We strive to be culturally sensitive, recognizing and embracing cultural differences.
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## Differentiated Instruction

- We strive to create a positive learning environment that is inclusive, supportive to all learners, and sensitive to cultural diversity.
  - Outdoor classroom experiences are structured to meet the needs of the particular learners.
  - Students work in small groups using hands-on materials.
  - A variety of educational media are used, including colorful illustrations.
  - With advance notice, efforts will be made to accommodate all learning styles and physical needs.
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## Notes

- Nature exploration is dependent upon the weather and other conditions. A class might observe different wildlife than they expected to see. An outdoor lesson can sometimes provide unexpected, but enriching teachable moments on a natural history topic that was not planned.
- Mass Audubon nature centers each have a unique landscape and will customize programs to work best at their particular site.





- Our lessons can be adapted to incorporate a classroom teacher's needs when given enough notice.



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