

# Tracks and Traces

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Unit: Henry as Naturalist

Topic: Wildlife tracking, observing, and writing

## Thoreau Quotations

“Here is the distinct trail of a fox stretching [a] quarter of a mile across the pond. Here was one expression of the divine mind this morning. The pond was his journal, and last night’s snow made a *tabula rasa* for him. I know...whether it moved slowly or rapidly, but the greater or less intervals and distinctness, for the swiftest step leaves yet a lasting trace.”

—*Journal*, January 30, 1841

“[Following a fox’s track] At first it was difficult to trace, to *investigate*, it, amid some rabbit tracks, of which I did not know whether they had been made before or since. It soon led out of the woods on to the ice of the meadow to a slight prominence, then turned and followed alongside of the wood, then crossed the meadow directly to the riverside...It was then mixed with rabbit-tracks, but was easily unraveled. Passed out of the wood over some mice or mole tracks, then over the middle of Brown’s meadows westward...”

—*Journal*, February 5, 1854

“I see the broad tracks of squirrels, probably red, where they have ascended and descended the trees, and the empty shells of walnuts which they have gnawed left on the snow. It imparts life to the landscape to see merely the squirrels’ track in the snow at the base of the walnut tree. You see not merely bare trees and ground which you might suspect that a squirrel had left, but you have this unquestionable and significant evidence that a squirrel has been there since the snow fell, - as conclusive as if you had seen him.”

—*Journal*, December 14, 1855

## Background

As we can see in these excerpts from Thoreau’s journal, great tales are written every day, by the pen of animal tracks. It is relatively easy to learn the tracks of the animals common to your area, and to tell one from another. Seeing animal tracks opens a window on the many wild dramas that unfold, which are most often hidden from our view because they happen at night or only when people aren’t around. Animals leave very clear tracks in fresh snow, mud, wet sand, and other places. Additionally, you may see scat, discarded parts of food, or homes to help you see the stories written by animals.

## Objectives

1. Learn to recognize tracks of common wildlife in your local area.
2. Learn what measurements are useful in identifying tracks, and how to take those measurements.

3. Be a wildlife detective. Discover evidence—either tracks, discarded food, or maybe damage—on or near the school yard, and determine what left it.
4. Tell or write a story, based on your tracking observations, that would explain who left the evidence you found, and what might have taken place.

## Method

Students will spend one class period (or portion of) learning footprint patterns for common animals that are expected in their area. Time should also be devoted to discussing what other kinds of evidence indicate wildlife (discarded food or shells, excrement/scat, etc.).

Brainstorm things to look for while searching for evidence of animals. Evidence will be examined closely, and recorded in detail during a field trip to the school yard or surrounding natural area. Complete the exercise with writing or telling stories about the events resulting in the evidence observed.

## Time Required

2.5 hours, split into: one 45 minute period, one 75 minute period, and one 30 minute period

## Materials

- Field note book
- Pencils
- Rulers
- Magnifying glass (optional)
- Camera (optional)
- Wildlife track cards, field guide, or online tracking guide (see additional resources)

## Procedure

1. Prepare for the lesson by learning about the types of animals that live in your local area (you can focus on birds, mammals, reptiles, amphibians or a little bit of everything) and the signs they leave behind. Students can research different animal signs through field guides or the online resource under additional resources.
2. Spend at least 45 minutes outdoors, preferably in an area that is likely to be a conducive habitat for a range of different animals (a sandy area, wooded area or an area around a pond or vernal pool is ideal). This activity is ideally done after a snow fall or a rain, as animals leave many clues behind in the snow and mud! (Prior to taking students out for this lesson, the instructor might want to visit the area you will take the class, to see if you can find any tracks or traces, in case you need to help gently guide the students to the clues.)
3. Instruct students to take notice of any prints or other evidence they find that has been left by an animal. Don't just look on the ground! As noted in one of Thoreau's journal entries, tracks and traces can be found on and in trees, as well. Ask them to draw a picture of and take measurements of what they find. If they find footprints, have them note the distance between each print, as well. If using cameras, have them take pictures.

4. When you return to the classroom, have the students work in pairs or small groups to pool the evidence they've found. Using their field guides, ask them to guess which animals they discovered through their detective work! Make sure they are able to explain why their evidence points to the presence of a specific animal.
5. Have the students write a story about the animals they discover, what they were doing at the time that they left the trail and, and if more than one animal was discovered, how the animals might have interacted with each other.

## Reflect and Explain

- Explain what kinds of substrates record better tracks, and why.
- What were the conditions of the ground when you were looking for tracks and traces? Dry, wet, snowy? How did that impact the amount of evidence you found?
- If tracks are not found during a field trip, what might that tell us?

## Extensions

1. Make a plaster cast of a footprint.
2. Have students bring drawings or photographs of tracks they find at home. Make a class field guide covering any animals that are found by students, including those from your field trip.

## Vocabulary

**cast** - to give a shape to (a substance) by pouring in liquid or plastic form into a mold and letting harden without pressure.

**gait** - the paces of an animal; the manner in which an animal moves on foot (walking, running, trotting, etc.).

**scat** - an animal fecal dropping.

**sign** - traces of a usually wild animal.

**substrate** - the earthy material in/on which an organism lives.

**tabula rasa** - blank slate

**track** - a mark left on the ground by a moving animal.

## Common Core Standards

### English Language Anchor Standards (all grades)

- CCSS.ELA-LITERACY.CCRA.W.3  
Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details and well-structured event sequences.

- [CCSS.ELA-LITERACY.CCRA.W.4](#)  
Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- [CCSS.ELA-LITERACY.CCRA.W.8](#)  
Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
- [CCSS.ELA-LITERACY.CCRA.W.10](#)  
Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.
- [CCSS.ELA-LITERACY.CCRA.L.1](#)  
Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
- [CCSS.ELA-LITERACY.CCRA.L.2](#)  
Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
- [CCSS.ELA-LITERACY.CCRA.L.4](#)  
Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.
- [CCSS.ELA-LITERACY.CCRA.L.5](#)  
Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.
- [CCSS.ELA-LITERACY.CCRA.L.6](#)  
Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.

### Math Practice Standards (all grades)

- [CCSS.MATH.PRACTICE.MP2](#) Reason abstractly and quantitatively.
- [CCSS.MATH.PRACTICE.MP3](#) Construct viable arguments and critique the reasoning of others.
- [CCSS.MATH.PRACTICE.MP5](#) Use appropriate tools strategically.
- [CCSS.MATH.PRACTICE.MP6](#) Attend to precision.

### Grade 3 Content Standards

- [CCSS.MATH.CONTENT.3.MD.B.4](#)  
Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.

## Additional Resources

- <http://www.naturetracking.com/> lots of photos in all categories of identification (tracks, scat, and signs) and type of animal (mammal, birds, invertebrates, and herps), plus an app for field identification
- [http://www.biokids.umich.edu/guides/tracks\\_and\\_sign/](http://www.biokids.umich.edu/guides/tracks_and_sign/) good website for walking students through the identification process plus provides other signs that show animals have been
- [https://outdooraction.princeton.edu/sites/default/files/files/articles/trackcard\\_0.pdf](https://outdooraction.princeton.edu/sites/default/files/files/articles/trackcard_0.pdf) basic categories of mammals, plus a good resource for understanding mammal gaits
- <http://education.usgs.gov/kids/tracks.html> - how to make plaster casts of tracks
- [https://www.nature-watch.com/%C2%A0-tracks-c-160\\_195.html?items=all&osCsid=tesci6451887vk7v6er9hfuj6](https://www.nature-watch.com/%C2%A0-tracks-c-160_195.html?items=all&osCsid=tesci6451887vk7v6er9hfuj6) - lots of options for extending this lesson with games, rubbings, etc.
- <https://www.nwf.org/kids/family-fun/crafts/animal-tracks-twister-game.aspx> - make your own animal track twister game