

# Tracking, an ancient science

## Indoor/Outdoor activity

**Curriculum: Science, Literacy, Physical and Outdoor Education, Career & Technology Studies, Art**



Winter provides the ideal tapestry for engaging students in the art and science of tracking. In this activity, students will build upon their natural curiosity to interpret and identify a variety of animal tracks discovered in their nearby nature while building connections to the wildlife and the land they share it with. Tracking and the stories they unveil support a deeper understanding of Alberta's biodiversity and the underlying interactions and ecosystems shaping it. Learning extensions offer opportunities to model a wildlife tracking study, to connect students to place through an Indigenous lens and to capture tracks via a casting activity.

### Materials:

- Tracking guides, (Nature Source has guides to common animals in [Kananaskis Country](#) you can download. Check your library for other resources specific to your region.)
- Measuring tape
- Journal
- Camera (optional)

### Instructions

- Watch this 12 minute video, "[Winter Wildlife Tracking](#)", to get students excited about winter tracking. In this video, they will learn the basics of how to identify tracks, stories they may tell us and how Alberta Park Ecologists gather and use tracking data.

- Distribute tracking guides to students and provide a quick explanation on how to use them.
- Head outside to your schoolyard, nearby nature or Local Park to explore animal tracks (within a defined area) that students may discover. Find one track to identify together as a group, reviewing the essential tracking measurements introduced in the video they will need to document including:

**Track Pattern** – Animals have unique trail patterns formed by the repetition of their prints. Track patterns are grouped into the following categories: Diagonal Walker, Hopper and Bounder.

**Track Width** – The width of an individual print measured at the broadest part of the print.

**Track Length** – The length of an individual print, measured from the top of the longest toe pad to the trailing rear edge. This does not include claws.

**Straddle** – This is the width of an animal's trail, measured from the outside of the left heel print to the outside of the right heel print.

**Stride** – This is the distance measured from the toe pad of one track to the toe pad of the next track on the same side. Think of it as the distance between steps.

- Using the tracking guides and measuring tapes provided, students should attempt to identify an individual animal print, sketching and labelling their observations in their journal.
- Encourage students to follow a set of tracks and to try to interpret what the animal was doing. Look for kitchens, bathrooms, beds; following tracks allows students to gain an intimate understanding of an animal's behavior. Like a page in a book, tracks reveal a story of how an animal interacts with its environment while meeting its needs to survive.
- In their journal, have students interpret the unique story of their animal's trail. If time, have them share their animal's story.

## Learning Extension – Wildlife Study

As an extension to the general tracking activity, this wildlife study engages students in a transect line data collection technique used by Park Ecologists to understand a “probability of occurrence”. Based on student data collection, they will be able to glean the likelihood of finding animals with respect to habitat type, terrain and/or snow depth.

**Materials:** pin flags or flagging, copy of [data sheet](#), tracking guides, meter ruler, compass

## Instructions:

- Identify a park or natural area close to your school to conduct this study. Ideally, it would have a mix of habitat types and slope.
- Prior to your study day, either with or without your class, you will need to flag your transect lines. A transect line is a sampling technique used by ecologists that is pre-determined, straight and intersects your study area.
  - plan on having one 50 (or 100 meter) transect line for every 5 students
  - Each transect line needs to be straight and subdivided into 5 m (or 10 m) sections using pin flags or flagging tape. Use a compass to ensure you are walking in a straight line.
  - Label each segment (1-1, 1-2, 1-3, 1-4, 1-5; 2-1, 2-2, 2-3, 2-4, 2-5; etc.)
  - Each transect line should be a minimum of 20 meters apart from one another
- Wait until there is a fresh snow. **Ideal conditions for this study are 24-72 hours after a recent snowfall.**
- Ensure students come prepared for being outside with the appropriate winter clothing including, hats, mitts, boots, and a warm coat.
- Assign students to working groups of 5 and provide them with a copy of the [data sheet](#) and tracking guides. Alberta Parks Nature Source portal has a few guides you can download for common animals in [Kananaskis Country](#). While useful throughout the Province, libraries may also be a good source for local guides to your region.
- Head outside to our local natural area and pre-determined study site.
- Assign working groups to specific transect lines.
- After each group has collected their data (approximately 1 hour), provide time for groups to share data. Easiest format would be for students to create a shared Google Doc spreadsheet where they could enter their group's data.
- After students have had time to analyze all data collected, and answer their reflection questions, provide time for student discussion and to build upon each others learning.

## Learning Extension – Tracking through an Indigenous Lens

**Materials:** journals, pen, sit cushion (e.g. backpack; newspaper wrapped in a plastic bag); an animal story ideally from a local Indigenous Nation or Indigenous Knowledge Keeper

### Instructions:

- After students have completed their tracking exercise, share an Indigenous animal story from your region. If you have connections to your local Indigenous Nation, reach out to see if they can come in person. If not, look for stories within the public domain.
- Discuss with students how an underlying tenant to Indigenous peoples is the connection they have to all living and nonliving elements of their world along with a deep identification to place. Ecological Knowledge Systems are valuable resources and are important connections to understanding our natural places.
- Encourage students to find a solo spot close to where they were tracking where they can sit quietly for 20 minutes and soak in their senses. Provide the following reflective questions for them to consider, journal thoughts on, and to discuss after their sit spot.

### Traditional Blackfoot Story

#### Makoyohsokoyi (The Wolf Trail)

Makoyiwa, the wolves, were some of the first Earth Beings to help us.

One winter, when our people were starving, a young man and his family were camped by themselves as they searched for food. The wolves found the family and appeared to them as young men bringing fresh meat to the lodge. The wolves took this family with them, showing the man how to cooperate with other people when he hunted buffalo and other animals. The wolves introduced the people to the other animals in their world. The human beings learned that animals with hooves and horns were all right to eat, but that animals with paws and claws should be left alone.

The wolves disappeared in the spring, but we still see them in the sky as makoiohsokoyi, the Wolf Trail (the Milky Way). These stars constantly remind us of how we should live together.

(Courtesy of Glenbow Museum)

### Reflection Questions:

1. Who lives here?
2. Are animals you tracked connected to other animals, plants and non-living elements such as earth, air and water in this place? Describe or draw a picture to show possible connections.
3. What is your connection to this place?

4. How would a Biologist describe this place? How would an Indigenous person describe this place? What is similar? What is different?
5. Does your connection to this place affect how you interact with the land? What does this connection look like?
6. What questions do you have about this place?

## Discussion:

Discovering animal tracks and identifying them is an exciting activity on its own. A deeper understanding to how these animals interact with its environment supports the ecological concept of an ecosystem and a Traditional Ecological Knowledge (TEK) perspective that everything is connected, including ourselves. Reflection questions are open-ended and allow for a group discussion facilitating a knowledge building exercise. Student questions provide opportunities to pursue further student Inquiry and investigations.

## Learning Extension – Track Casts



Preserving tracks is a fun and easy activity to create a permanent record of a track discovery.

**Materials:** spray bottle filled with water, plaster of paris, water, snow, mixing bowl, spoon, long strip of cardboard approximately 10 cm x 50 cm

## Instructions:

- Place a small cardboard strip rim around the track.
- Spray a fine mist of water on the track. This will create a thin ice coating.
- Add powdered plaster of paris to a small mixing container (e.g. bowl, tin can).
- Add a small amount of water and stir with a spoon (or twig) to create a uniform mixture. Add a handful of snow to the mixture to cool its temperature as this will help to prevent melting of the track. Mixture should be thin enough to pour into the track. Work fast as it will harden quickly!
- Pour the mixture into the track. It will take 10-15 minutes for this to harden.
- Lift track from snow and remove cardboard rim.
- Celebrate the success! Consider displaying track casts in a common sharing space.