



# Recreate the Gait

## Summary:

Students will learn about the different ways animals walk and the tracks they leave behind.

## Grade Levels:

3rd—9th

## Setting:

Classroom/Outdoors

## Duration:

45 mins

## Vocabulary

Adaptation, bound, diagonal walk, digitigrade, gait, gallop, intergroup length, plantigrade, sign, stride length, track, unguligrade, waddle, walk



## Objectives:

Students will be able to

- define the vocabulary terms listed
- understand what gait is, and how different methods of movement or medium an animal walks on may affect it

## Background:

Looking for evidence of wildlife is one method of determining what animal species live in a certain area. Animal **sign**—an indicator of activity or disturbance such as burrows, nests, scat (feces) or food litter—can be seen and identified, but some of the easiest signs to interpret are animal **tracks**.

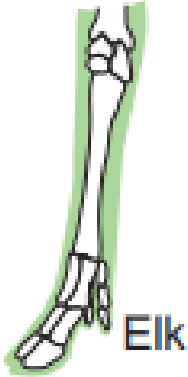
**Tracks** are the identifiable imprint or disturbance left behind by the animal. Tracks may also be referred to as trace, imprint, mark, spoor, and impression.

Animal tracks can be the basis for several types of investigations. Students can develop an animal species list by the tracks found in the region. Wildlife population estimates can be made by observing the number of tracks found during a specified length of time. Habitat requirements of certain species can be determined by finding their tracks in some areas and not others.

Once tracks have been observed, the animal that made them can be identified. For example, all mammals have basically the same foot structure, but they use parts of the foot in different ways. Some animals walk **plantigrade**, planting the heel of the foot, rolling forward the length of the foot, and then pushing off with the toes, creating a track



that shows the heel, sole of the foot, and toes. Raccoons, humans and bears all walk plantigrade. Some animals walk **digitigrade**, standing and walking on their toes or digits, with their heels permanently raised. Bobcats and coyotes and walk digitigrade, with their tracks showing the pads of toes and the ball of the foot. Deer and elk walk **unguligrade**, which is standing and walking on the very tips of their toes, which are protected by hooves. Tracks may be from one toenail (i.e. hoof of a horse) or from two toenails (i.e. hoof of a deer or elk).



Understanding the similarities and differences of animal's feet is key to understanding the importance of **adaptations**. An adaptation is a body part, feature, or behavior that helps the animal better survive in its environment or habitat. Animals feet are adapted for different purposes, and they are shaped in ways that help that animal run, dig, crawl, climb, catch prey, or swim. Animals with furless, webbed feet are good swimmers, while others have fully furred feet to help keep them warm. Some animals, like bobcat, have retractable claws so that foot impressions leave only pad markings and no claw imprints. Animals in the canine family have all their claws exposed and leave easily identifiable prints in mud or snow.

Depending on the type of ground that an animal walks on will many times determine how well the track shows up. Wet snow or mud will leave great impressions, while frozen bare ground or dry sand might make it difficult to determine what animal left a track. An animal's **gait** is their method of movement—aka how they walk—and will also determine how clear a track is that an animal leaves.

- **Pace/Waddle:** Front feet and hind feet are shaped differently. Short legs. One foot in front of the other usually with two parallel rows of alternate and even spaced tracks. A normal unhurried pace. Examples: Raccoon, skunk, opossum, muskrat, groundhog, bear.
- **Diagonal walk:** Long-legged animals with front and back feet of similar size and shape. Appears as a nearly straight line of single prints. Examples: Human, deer,

domestic dog, coyote, red and gray fox, bobcat.

- **Bound:** Long bodies and short legs. Feet are of similar size. The hind feet landing on or in front of the tracks made by the front feet. Examples: River otter, weasels, mink, fisher
- **Gallop/hop:** One of the fastest gaits and usually produces groups of four tracks at a time. 2 large hind feet, small front feet. While galloping there is a period of time when all four feet are off the ground. This space between sets of four tracks is called and "**intergroup length**". After the suspended period, the front feet contact the ground first and then the hind feet register. The animal is usually moving fast enough that the hind feet hit the ground in front of the front feet. Examples: rabbit, hare, chipmunk, shrew, squirrel, mice

An animal's **stride length** is the linear distance between two successive steps of the same foot. Larger animals, like bears, tend to take fewer, longer strides, while smaller animals, like rabbits, take many shorter strides.

**Materials:** For this game, students will be demonstrating different ways animals move and exploring several types of animal gaits. The only material required is comfortable shoes to move around in.

**Procedure:** Students will be exploring 2 different types of movement and 4 different gaits. This activity is best played outside in an open field or inside your gym if it is bad weather.

#### **Part 1: Plantigrade vs. digitigrade**

1. Line students up in a straight horizontal line. Explain that they will be walking plantigrade. Go over the definition again and have students pick an animal that walks this way (bear, racoon, human, skunk, opossum). On the count of 3, yell go! And students can walk to the other side (10-15 yds). Have students really focus on their steps, noticing the movement of their feet from back to front. Explain that some students will have different stride lengths because they are taller, etc. just like animals have different stride lengths.
2. Repeat for digitigrade. Students will be walking on their

tip-toes for this part of the activity. Animal choices include, pet cat, pet dog, bobcat, red fox, gray fox, coyote.

3. Explain that humans can't physically walk unguligrade (though some may want to try). Discuss different examples of animals that walk this way, including horses, deer, sheep, goats, cattle, elk.

### Part 2: Gaits

1. Explain that they will now be "recreating" 4 different types of animal gaits. The first is pacers or waddlers. Explain the definition from the previous page. Have students pick an animal they want to be. Have students hands be the front feet and their feet be the hind feet. On the count of 3, yell go! And students will pace/waddle to the other side (10-15 yds). The motion should look like this, with the 1s (left front, left hind) **moving first** and the 2s (right front, right hind) **moving second**. Yell go again, and allow students to return.

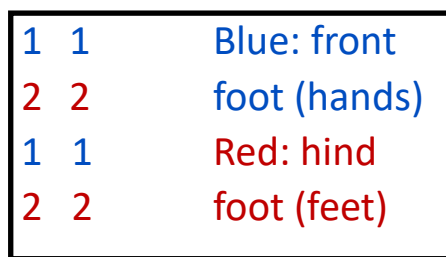


2. Repeat with Diagonal walkers. The motion looks like this, with the two front feet moving first and the hind feet following.



3. Repeat process with bounders. The motion looks like this, with the front feet moving first and the hind feet

following.



4. Finally, repeat the process with gallopers/hoppers. The movement should be like this, with the front feet moving first, and the hind feet moving together second.



### Extension

1. Play a game of tag. Split the students up into waddlers, diagonal walkers, bounders, and gallopers. Have one group be "it" in the middle while the other groups try to run to the other side. Play 4 rounds so all groups have a chance to be it. Have a discussion with the class to see if students noticed one group was easier to tag than the others, or harder. Have students think about why this might be the case.
2. Have students (individually or in a group) pick an animal to research. Give an oral or written report on the basic biology of the animal, its tracks, and how it moves. Have students describe its method of walking (plantigrade, digitigrade, unguligrade). Include pictures and drawings.

### Assessment

1. Vocabulary quiz, True/False questions, Fill in the blanks.
2. Have students print out or create their own Gait Cards on the next page. Can include just picture and type of gait, or can include additional information for each animal including biology, habitat, diet, reproduction, and its gait/method of movement.

# Waddlers



Skunk



Black bear



Raccoon



Groundhog



Muskrat



Opossum

# Diagonal walkers

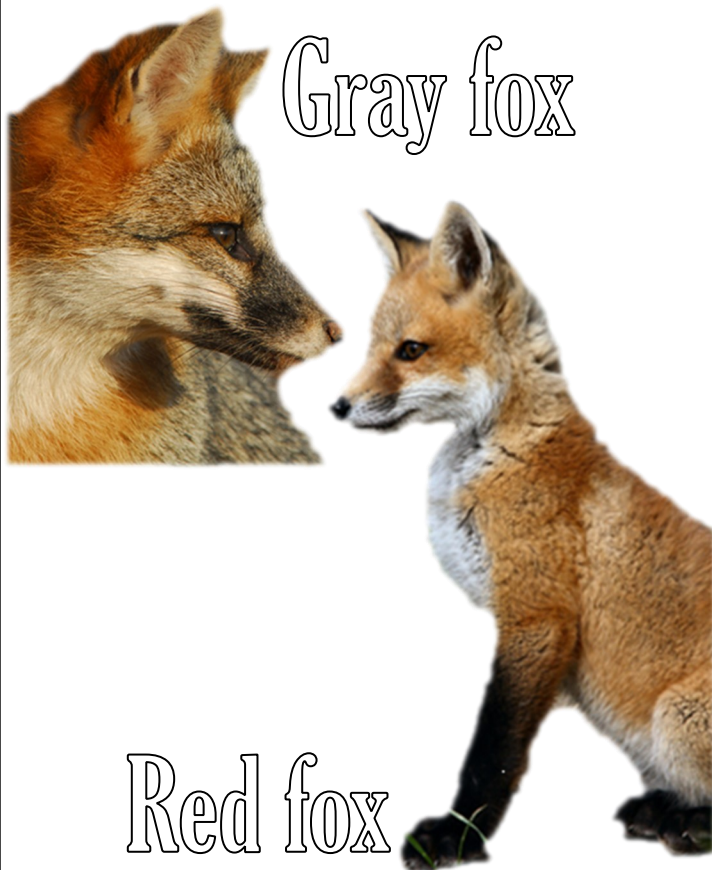


White-tailed deer



Photo credit: Matt Miles

Bobcat



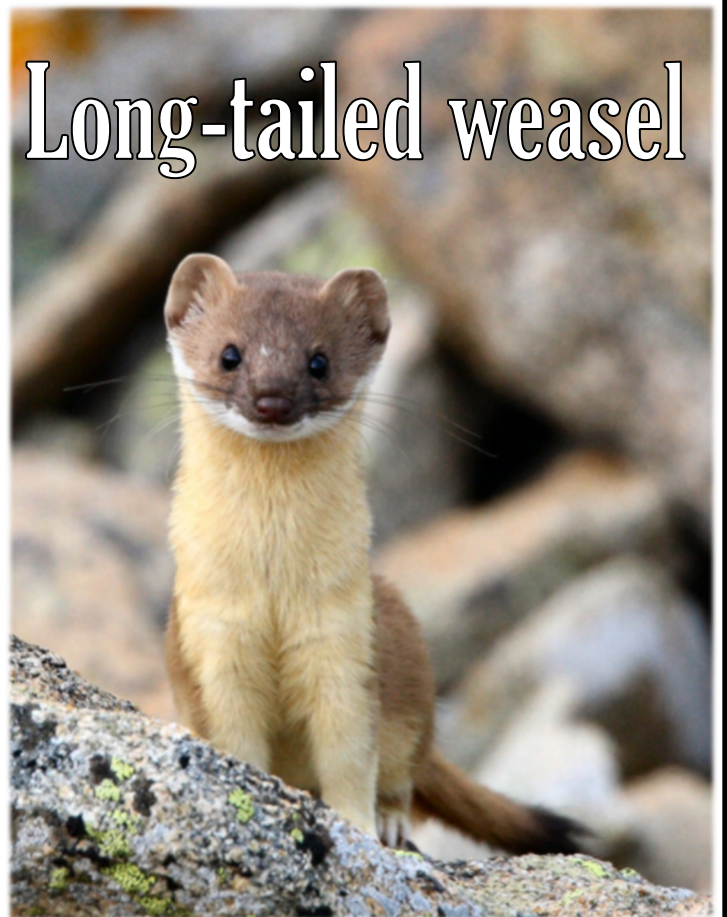
Gray fox

Red fox



Coyote

# Bounders



# Hoppers

