

## NATURE'S LABORATORY

*"One who walks in another's tracks leaves no footprints."*

-- Proverb

Wild animals are simply that — wild. Sometimes, it's hard to believe you share your backyard with anything more than a squirrel. But even though some creatures are reclusive and rarely seen, they still leave a record of their presence in the way of footprints. Footprints are fleeting traces of their makers' passage. Forgotten, they'll fill in, weather away, or get blanketed beneath leaves. To a wary eye, though, footprints can tell stories, including who frequents your backyard.

Footprints follow almost anywhere an animal treads: in snow, sand, mud or soft soil, even across hard surfaces if their perpetrator has wet or muddy feet. A single footprint is referred to as a track, distinguished by characteristics such as toe pads, claws, dewclaws and webbing.

A single print can betray its maker. Deer and their relatives, for example, have cloven hoofs. Bird prints show three outward facing toes and one backward facing toe — sometimes they're webbed, other times not. Dogs, wolves and their relatives display four clawed toes and a pad, while cats, cougars, and their relatives display four toes and a pad, absent of claws. Even bears leave prints, human-like treads with five evenly-spaced toes, each tipped with a claw.

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Smaller creatures leave footprints too; frogs, toads, salamanders, lizards, rodents, rabbits, raccoons, opossums and weasels, not to mention your everyday cats and dogs. And while snakes lack legs and feet, they too leave serpentine trails when their scaled underbelly undulates across the ground.

Altogether, a series of footprints is called a trail. And whereas a track can tell you what species passed by, a trail can tell you how. Quadrupeds, animals with four legs, travel in some basic gaits: they can walk, trot, lope, gallop, bound, and prong. Walks and trots are symmetrical, the left and right tracks being mirror images of each other, offset only by the alternation of footsteps (left... right... left...). The trot's stride is longer than that of the walk.

A lope, gallop, bound or prong brings about an asymmetrical gait, wherein the left and right tracks are not mirror images. The feet that lead the stride while in motion determine the shape and regularity of tracks. In a gallop, for instance, a raccoon might lead with its

right front and left hind leg, leaving a C-shaped group of tracks along a trail. Another creature leading instead with the front and hind legs of the same side will leave behind a Z-shaped group of tracks. A slower gallop, however, is known as a lope.

A prong, or stot, is characterized by all four feet striking the ground simultaneously, front and hind legs paired. Bounds or hops, characteristic in frogs, toads, chipmunks and mountain lions, are instead when the hind feet strike the ground side by side simultaneously, while the front feet strike paired (full bound) or staggered (half bound).

You can also determine the track-makers' size by measuring the distance between footprints in a walking gait. An animal's stride, the distance between one foot's track and its next, is between 1.1 to 1.25 times larger than the distance between the hip and the shoulder joint.

With practice, you can even determine if an animal had its head turned to one side of the trail or the other by deviations in a trail's pattern. If their heavy head swings to the left to spot prey or a predator while running, this shift will be reflected in their trail as their body adjusts to the movement. These side trot and gallop gaits are known as "dog trots" or "dog gallops."

**Hands On:** Photographs and plaster casts are great ways to collect and record footprints you encounter. When photographing a footprint, make sure the footprint fills the viewfinder so that you have a large image to work with. It is also important to place a straight edged ruler or an object of a known size alongside the print to give a sense of scale. A penny works great for a deer mouse, but a ruler is more practical when you've stumbled across bear tracks.

Plaster casts are a more physical, hands-on way to record footprints. To make plaster casts, you'll need the following items: plaster of paris, hydrocal, ultracal or hydrostone (all are suitable); a narrow putty knife or spatula; a large plastic cup for mixing; and paper to wrap the finished cast for transport.

Before you make a cast, isolate one footprint in particular that has distinct and characteristic highlights and features. Build a sort of frame around the track with slats of wood, earthen mounds, or stones to create a box within which to pour the plaster. As a general rule, mix two parts plaster to one part water to attain a cake batter-like consistency.

Pour the plaster carefully over the spatula blade so that it waterfalls into the track — this will keep the plaster from washing out the print. Fill in the deepest and most delicate recesses first, then fill in the retaining frame to a thickness of 0.25 to 0.50 inches. This will ensure a thick base to prevent the cast from cracking later.

Within half an hour, the cast will be dry enough to wrap and take home. To fully set and harden the cast, expose it to the sun for four or five days. Now you'll have something to show your friends!

To learn more about animal tracks, pick up a copy of James C. Halfpenny's *Falcon Guide: Scats and Tracks of the Pacific Coast*.

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