

HOW TO LEARN TRACKING

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Tracking is a modern “survival” skill because it strengthens our awareness of what is around us and helps maintain a dynamic relationship with the natural world. It’s used by hikers, biologists, teachers, trail riders, parents, hunters, in short anyone spending time in the outdoors, to know and understand the environment.

Learning to track includes identifying tracks, interpreting tracks and signs, and following trails. While tracking is largely self-taught (i.e. requires a lot of individual practice no matter how else you learn it), there are distinct advantages to taking one or more classes or finding a mentor. At least one really good field guide is also essential.

Now, some thoughts about how best to learn this skill.

Whether you take a class or not, you’ll need to practice on your own, so your most important task is to FIND A GOOD TRACKING AREA! This means an area with soil (or snow) that will record tracks clearly enough to identify and study them. An area rich with wildlife is a plus, but urban or suburban areas will also work because you can learn much from cats, dogs, skunks, opossums, raccoons and mice. If your area is overgrown or it has been raining for weeks, do not despair; there are always places you can find tracks. Try these:

- Dirt roads & hiking trails, especially early morning before people traffic begins
 - Under road bridges
 - Edges of ponds, lakes or creeks
 - Edges of roads
 - Edges of plowed fields
 - Drainage ditches & culverts
 - Gravel pits
 - Dirt areas under fallen logs
 - Near dumpsters
 - Sandy washes
 - Soil patches excavated by gophers in grassy fields
 - Playground sand boxes
 - Golf course sand traps
 - Pavement where muddy tracks might be recorded when an animal crosses.
- Or try this: Cover an area with playbox sand or sifted dirt, and come back in the morning—or set out track stations.

Tracking resources available at Earth Skills:

TRACKING WORKBOOKS available at www.earthskills.com! Designed for self-study or with a group.

Mammal Tracking Workbook I: Track Identification (digital file)

Mammal Tracking Workbook II: Gaits & Track Interpretation (digital file)

Gaits for Trackers (6 videos compiled by Jim Lowery), and *Animal Movement pages with videos viewable at no cost, at www.earthskills.com*

ALSO AT EARTH SKILLS—

The Tracker's Field Guide

Walk with the Animal (printed or digital)

Beginning and Advanced Tracking Workshops

Monographs

Many free downloads of newsletters and tracking subjects

OUR COMPANION WEBSITE--

www.walkwiththeanimal.com: Merge intuitive & technical tracking

1. TRACK IDENTIFICATION

Identifying tracks consistently and not by accident requires that you learn and practice a methodology. There are two simple steps, narrow the choices and fine-tune the identification. You can, and in fact, must be flexible in this process as I will explain, but if you don't practice this strict methodology (even if it's not your favorite thing to do), you will simply get frustrated; trust me, I have watched thousands of tracking students.

Identifying tracks requires that you look at BOTH the clear footprint AND the track pattern. Looking at only one gives you maybe a 5% chance of correct identification! To narrow the choices, begin with whatever evidence looks best, say the clear print. In this case, from the number of toes, the shape and size of the track, you can usually narrow the choices down to two or three animals. Then, move to the other element, in this case the track pattern, to narrow the choices even further. Fine-tuning the identification, then, usually involves measuring the tracks and parts of the track pattern such as stride, and looking at fine detail while consulting your field guide.

(There will be cases in which it's quicker to look at the track pattern first, narrow the choices and then move to the clear print.)

From the foregoing, it's evident that you need pretty good tracks, especially when you're just starting out. My advice: don't spend time on really challenging tracks until you've done some field work. Instead, choose tracks where you can see some sort of pattern and some detail in the prints. Also, use a field guide that gives you what you need when you get to the fine-tuning stage: it must include clear print drawings or photos with lots of detail, and ranges of measurements (not just averages) for each species' tracks. (Field guides are listed at the end of this article.) Finally, it helps immensely to know the mammals in your habitat. Get a list and carry it with you in your tracking pack.

The first twenty times, draw and measure the tracks you see and go through the methodology even if you "know" what the tracks are. Convince yourself why they can't be anything else. After this field work (OK maybe forty times) the process will become natural and it will be much easier to identify new species because you've already seen the ten most common mammal tracks in your area.

Figure 1 is an example of working through track ID.

Figure 1: Track ID example

Let's say I have a four-toed, oval shaped track, pictured at right, that shows claw impressions. Because the tracks are not round and show claw impressions, the cat family is ruled out and the tracks have to be either in the dog or rabbit family.

The presence of a clear heel pad rules out the rabbit family, because rabbits and hares have furred feet that don't show heel pad impressions. Also, looking at the track pattern, the two tracks at right are one hind track and one front track (they have to be, because one track is smaller than the other and the heel pad shapes also differ). This is a trotting pattern (see inset). This gait also rules out rabbits and hares, who virtually never trot. Therefore, the tracks have to be in the dog family.

Looking at the mammal list in the area where this photo was taken, the possibilities are domestic dog, coyote, red fox and gray fox.

Fine-tuning the ID begins with measuring. The hind track measures 1 5/8 inches wide. This rules out gray fox, whose tracks are smaller. The claw impressions are sharp, not blunt; this rules out domestic dog, leaving us with coyote or red fox. Finally you notice the chevron-shaped depression in the front track, which only the red fox has. Identification accomplished!



2. TRACK AND SIGN INTERPRETATION

Tracks and signs invite you into the animal's world, so from Day 1 of tracking you'll want to go beyond track ID as you ask questions about why the animal is there and what it's doing. There are two access points. One is the **animal's biology**: what it eats, how it hunts or forages, when the young disperse, how an animal marks its territory, and scores of other questions. The track or sign you've come upon is not random; it will lead you to the relevant questions and answers, some of these accessible through exploration (for example, looking for feeding signs to learn about current diet), and some of them described in books and scientific articles. Besides my book there are several excellent resources that will help you answer questions. For me, the most fruitful way to learn animals' biology through tracks and signs is to take advantage of each situation you find, then explore and read about it. (See Figure 2 for an example of exploring the animal's biology.)

Figure 2: Tracks and the Animal's Biology

The tracks at right are of an adult and very small bobcat traveling together. This must be a female and kitten, because male bobcats have no role in raising young. First, these tracks give some information about the breeding time for this female, because bobcat kittens first accompany their mother away from the natal den eight weeks after birth, and gestation is about 63 days, putting breeding at 17 weeks or a little more before these tracks were seen. [This information comes from Notes for the Tracker in my Tracker's Field Guide.] Second, the tracks suggest some interesting exploration that I might do. Since the female's current home range will probably be small while caring for kittens, I could look for other tracks to establish the extent of her movements. I'd measure her tracks and those of the kitten carefully to distinguish them from other bobcats in the area, knowing that her home range probably wouldn't overlap with another female's but would with an adult male's. Finally I'd look for changes in the female's gait here and there, to learn where she's in a hunting mode (slow walking and stalking for example) and where she's just passing through (trotting or walking in a straight line).



The other access point to track interpretation is the **visualization of its movement**, which can be read through the track pattern (which shows the animal's gait) and pressure releases, that is soil movement caused by the moving foot. ("Pressure releases" is a term from Tom Brown, Jr.) There's a huge difference between intellectually recognizing, say, a trotting pattern and actually being able to visualize the animal's motion, posture and mood through its tracks. The latter brings you into immediate contact with the animal in that moment, and you can notice things from the tracks that you might not have even noticed had you actually seen the animal. I will not pretend that mastery of track interpretation is easy and even many experienced trackers shy from venturing very far on this path. However reading tracks for motion is doable, even for beginning students, as long as they work diligently and don't try to overinterpret. I have seen sixth graders correctly interpret tracks their first time out!

Interpreting a set of tracks requires that you visualize the sequence in which each of the four feet hit the ground, and then from the tracks imagine how each foot hit, moved and exited. True, it may seem that there are endless possibilities, given the twisting of the foot and toes to keep balance during every microsecond; however with practice you will begin to realize that there are learnable principles stemming from simple biomechanics. A loping animal, for example, produces characteristic soil disturbances, as does an animal that looks suddenly 90 degrees to the right. In my experience, the only difference between a person who can and can't read a given set of tracks is that the former is willing to invest however long it takes to role-play and visualize to the finest detail. No one except the animal will be able to tell you if you're correct, so you need to eliminate all possibilities but the correct answer. In that moment your contact with the animal is complete. (See Figure 3 for an example of visualizing motion.) Your confidence in reading tracks will grow if you watch animals move whenever you can: cats, dogs, raccoons, deer, coyotes. Go to an equestrian center and watch people exercise their horses; go to a dog park where people throw sticks and

frisbees. Look at video of animals moving, on the internet, on TV, or at the Earth Skills website: the gait video page (www.earthskills.com/gaitvideos.html) and the animal movement page (www.earthskills.com/animal-movement.html). Both allow free viewing. Try to understand balance and motion with the same attention as an equestrian or dog-shower, and you are well on your way to visualize how tracks are made.

Also, experiment by making tracks as you do different things, such as change direction, carry something on your back, look over your shoulder, etc., and then see how the tracks look. These experiments can be done even indoors, with a half-inch layer of wet playbox sand compacted on some old carpeting. Also, you can use a dog or other pet to study its tracks.

At Earth Skills, we do offer workshops on animal movement as well as track interpretation, and the Mammal Tracking Workbook II: Gaits & Track Interpretation is a new and unique resource.. But the activities above were how I learned.

The essential text if you want to go far into pressure releases is Tom Brown, Jr.'s *The Science and Art of Tracking*.

Figure 3: Interpreting Tracks for Motion

These mountain lion tracks proceed across a flat wash heading toward a two-foot rise just beyond the top of this photo. From this photo, it can be read that the cougar was trotting, that it anticipated the jump upslope prior to these tracks, and that it widened its stance and leaned off to the right for stability just before it pushed off of its left hind leg alone to hop up onto the rise. For this interpretation, the tracker needs to consider the spacing of the tracks, the width of the cougar's trail, the pitch (i.e. orientation of each track relative to the direction of travel), the internal pitch (i.e. the relative depth of different portions of each track), the soil movement caused by each foot, and toe movement evidenced by what are called "toe ridge pressure releases." Each of these is considered while visualizing and role-playing, all the while rejecting any possible explanation that does not fit all of the evidence, until the single correct interpretation becomes clear.

Track interpretation can be a rigorous and demanding task, especially when first learning; for example several hours of study and experimentation may be required with a single set of tracks before a confident reading is achieved. But the reward is a magical entry into that moment of an animal's life, a connection made more powerful because of the work the tracker has invested.



3. TRAILING

Following an animal's trail can be an exhilarating experience, because it calls upon all of your tracking skills and more importantly, allows you to travel with the animal, experiencing its choices, its mood and personality.

Of course you are responsible for evaluating the safety of doing so, and must know the dangers involved! Also you must respect animals' space so that you do not harass them or interfere, for example, with raising young or essential feeding. Know the animal's biology!

You can follow very fresh trails, or even ones that are weeks old. With an older trail, your goal may be to discover where the animal bedded down, or how it hunted or foraged. In my view, finding the animal is not always possible or necessary; being on the trail long enough to "become the animal" and learn its behavior can be reward enough.

The key to trailing is being able to move forward with enough confidence and trust that you're not stuck in tedious track-by-track progress. However, you must also confirm every now and then that you're still on the trail. It also expands your experience if you stop to read tracks once in a while to discover behavior or mood changes that will make your trailing easier.

When you begin to trail an animal, invest some time studying a number of tracks carefully, so that you have an image of the size and shape of the track, and can distinguish tracks of this exact age from others you may encounter. Mark every one of a series of tracks your animal made, with a popsicle stick or bamboo skewer right behind each one, so that you can picture its gait and stride. The animal's unique walking personality, reflected in nuances of the track pattern, also bears study. (In our experience, most students who lose the trail have not made this investment, so they struggle when they need to confirm a track.) Then, focus your commitment strongly to learn from this particular animal as you trail it, establishing a relationship with it, if you will.

Whenever the animal moves across a new substrate, for example moving from dirt to dried grasses, recalibrate your search image. Deer or other hoofed animals are the easiest quarry to start with, because their tracks tend to be crisp and deep, and the edges of their hooves often bruise or crease vegetation that's stepped on, providing good confirmation. Eventually you can trail foxes, chipmunks or mice, and the tracks you find that confirm you're still on the trail may be as subtle as a single grain of gravel dislodged on hard-packed ground. Though tracking a kangaroo rat instead of an elk may depart from your idea of what trailing ought to be about, it certainly challenges your awareness skills, and it allows entry into a micro world, allowing you to learn the choices your animal makes, how it moves and what it senses, in ways you'd likely never discover in any other way.

When trailing an animal, listen to your inner voice as well. We humans can perceive much more than our rational minds admit. The information we rely on to follow a trail often comes from subtle cues on several levels, so that we can be confident we're "still on the trail" though we'd be hard-pressed to explain exactly why. Conversely, an inner voice of doubt can speak out when we haven't interpreted a track correctly, or have failed to consider an important clue. "Hitting the wall" every now and then—that is, losing the trail or losing confidence that you're still on it—is a fact of life in trailing. Often, when that happens you need to step back, take a deep breath, and go back to the trail with a fresh attitude and an open mind. Over-analysis and trying too hard definitely throw obstacles in your path.

RESOURCES TO LEARN TRACKING

1. FIELD GUIDES

I will never talk you out of buying a particular tracking field guide of your choice; I have more than two dozen for North America and have used all of them at some time, so each has its benefits. Use my recommendations as a starting point, and consider others as your needs dictate.

For animal track identification, you need a reference that has a) really good track drawings and/or photos for a large variety of mammals, b) the normal range (not just an average) of track measurements for each mammal, c) tips about identifying tracks that are similar, and d) examples of track patterns with discussion about how these help in track ID.

Six references (see list at the end of this section) contain all of these:

Lowery TTFG, *Elbroch (2003)*, *Elbroch (2012)*, *Rezendes*, *Moskowitz*, *Evans*

For animal sign identification, you need a reference that has a) good drawings and/or photos of scats and other signs, and b) discussion about interpreting these signs.

Elbroch (2003) has the most comprehensive animal sign presentation. *Elbroch (2012)* has good illustration for that region. *Rezendes* has good discussion and more limited illustration. *Lowery TTFG* has photos of animal signs in the context of the "Notes for the Tracker" pages. *Halfpenny* has an excellent section on scat identification and interpretation. The old standby, *Olaus Murie*, has good drawings especially of scats. *Moskowitz* has abundant, high quality photos of signs and tracks for mammals of the Pacific Northwest. *Evans* has good photos with concise captions.

For biology of the animal as it relates to interpreting tracks and signs, you will probably want two kinds of resources: a guide that can be used in the field to answer questions and drive informed exploration as you study or follow tracks, and resources that describe biology and behavior more fully and that can be studied at home.

Lowery TTFG has concise summaries of each species' biology and behavior in categories such as "breeding," "development," "social habits" and "feeding," written with the tracker's field needs in mind and distilled from reading more than 950 primary sources. This guide also has a "Track Windows" page for each entry, relating biology and behavior to tracking possibilities. **Evans** links to Wikipedia entries.

For home study, **Feldhamer**, though an expensive 1100 page volume, contains very detailed accounts of each mammal species regarding ecology, range, behavior, physiology, feeding habits, etc. The American Society of Mammalogists publishes single-species accounts, "**Mammalian Species**," which can be accessed from many libraries; ask a librarian for help.

Elbroch and Reinhart (2011) contains a very useful and readable account of the behavior and biology of about 50 terrestrial mammals.

Lowery TTFG also has a "Recommended Reading" list of primary literature (scientific journal articles and books) that are especially useful for trackers; they can often be obtained on-line from JSTOR at a university library near you. You may also email jim@earthskills.com to receive this list.

For learning how to visualize animal movement from tracks, some book references help to supplement what you observe in the field and by watching video.

Lowery TTFG has a discussion of gaits and another section on interpreting track patterns; there are also numerous interpretative examples of gaits and pressure releases in the species pages. **Lowery Mammal Tracking Workbook II** contains extensive discussions and examples of interpreting tracks for gaits and posture, and offers assignments and practice photos for trail interpretation. **Elbroch** and **Halfpenny** have good sections on mammal gaits with diagrams of associated track patterns. **Liebenberg** contains a good section about gaits and their interpretation. **Harris** is an excellent reference on horse gaits, with many illustrations, and is a useful crossover for study of other mammals. **Brown, Jr.'s The Science and Art of Tracking** is the only published reference that thoroughly discusses pressure releases.

To learn trailing, techniques and examples can be found in **Lowery WWTA**. Methods to merge intuitive with technical tracking are available at **Lowery and Brooks' website walkwiththeanimal.com**, a site that contains many stories from tracking students. There is also a link there to Lowery's "Principles and Study Tasks to 'Walk with the Animal'," a free download. Also **Liebenberg** provides techniques and many case examples for trailing larger animals.

- Brown, Tom, Jr., *The Science and Art of Tracking*. New York: Berkley Books, 1999
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- Elbroch, Mark and Kurt Reinhart, *Behavior of North American Mammals*. New York: Houghton Mifflin, 2011
- Elbroch, Mark, *Animal Tracks and Scat of California*. Berkeley, CA, University of California Press, 2012
- Evans, Jonah, *iTrack Wildlife*, app for iPhone and Adroid devices
- Feldhamer, George A., Bruce C. Thompson and Joseph A. Chapman, eds., *Wild Mammals of North America. Biology, Management and Conservation*. Baltimore, Johns Hopkins University Press, 2003
- Halfpenny, James C., *A Field Guide to Mammal Tracking in North America*. Boulder: Johnson Books, 1986
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- Lowery, James C., *The Tracker's Field Guide*. Guilford, CT: Globe Pequot Press, 2006 and 2013. (=Lowery TTFG)
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- Moskowitz, David, *Wildlife of the Pacific Northwest. Tracking and Identifying Mammals, Birds, Reptiles, Amphibians and Invertebrates*. Portland, OR: Timber Press, 2010
- Murie, Olaus J. and Mark Elbroch, *A Field Guide to Animal Tracks*. Third Edition. New York: Houghton Mifflin, 2005
- Rezendes, Paul, *Tracking & the Art of Seeing*. New York: HarperPerennial, 1999

2. SCHOOLS

In the past five to ten years there has been an explosion of interest in tracking, and with it, of individuals and schools who teach it. I will not try to list all the possibilities, because your own search is most likely to find a school or teacher matching what you're looking for. I do encourage you to consider Earth Skills¹ classes if you're able to come to California; we have classes suitable for novice to expert and we cover some aspects of tracking (intuitive and track interpretation) that many other schools do not.

Tom Brown, Jr.'s Tracker School², where we were introduced to tracking, is always to be recommended. Halfpenny's A Naturalist's World³ is rooted in a field biology approach with a solid history. Walnut Hill Tracking⁴ in MA has a long history, as does the Wilderness Awareness School⁵ in WA.

Good lists of tracking schools can be found at Nature Tracking⁶ and TrackerTrail⁷

¹ <http://www.earthskills.com>

² <http://www.trackerschool.com/>

³ <http://www.tracknature.com>

⁴ <http://www.walnuthilltracking.com/>

⁵ <http://www.wildernessawareness.org/>

⁶ <http://www.naturetracking.com/tracking-schools>

⁷ <http://trackertrail.com/other/links/schools.html>

I wish you good tracking!