

Tracking the Wily Gestalt

A wide-eyed approach to reading animal signs

By David Quammen

The man holds up a bone. It is a large bone, roughly the same girth as a billy club, and tallowy yellow in color, suggesting that the animal hasn't been dead long enough for its skeleton to be thoroughly, sterilely bleached. An unsavory bone. But then this particular man is not squeamish about what he touches, having already shown this morning that he will happily lift a morsel of bison puck to his nose. Valuable evidence, he has explained. Use all of your senses. Well, all except taste, maybe. Carry some Ziploc bags for collecting specimens, and just remember to wash your hands before lunch. The bone he brandishes at us is from the leg of an unlucky elk. One end of it, where a ball should fit into a hip socket, is gone—shattered or chewed away. Down inside that open end, feasting on marrow, is a squad of earwigs. Several of the elk's ribs have also been snapped, the skull is damaged,

and the lower jaw is missing, but there are still remnants of hair and hide and sinew, plus a single entire hoof. "Tell me the story," says the man. "How many bears have been feeding on this carcass?"

Duh. How many bears. One? we guess. No, wait. A female with cubs?

"Look again," says the man. So we look. But all we see are a jagged antler stump, a few broken ribs, and a hollow leg bone full of earwigs. Mystification. What is it that's so apparent to him and so hidden from us? Have we overlooked the dainty footprints from three adult grizzlies, a wisp of polar bear fur caught on a bush, and the telltale one-tire track of an escaped Ringling's bear that pedaled up on its unicycle?

"Five," someone tries desperately. "A covey. A whole herd."

Wrong again. No bears at all is how many have been feeding on this carcass.



Freeze frame: raccoon tracks in winter

The signs, for those who can read them, indicate an alternative pattern of events (about which, more below). Under the impetus of our haste and our preconceptions, we have charged off to a faulty assumption, and the man has goaded us to it for the sake of making a point. The point is this: Learn to *see* before you think. The man is Jim Halfpenny, of the Institute of Arctic and Alpine Research in Boulder, Colorado, and he has spent much of the past 20 years studying and teaching the art of tracking animals.

I ENCOUNTERED JIM HALFPENNY AND HIS tracking techniques last June in Yellowstone Park, during preseason training for the park's naturalists, in which I had been invited to play a small kibitzing role. Halfpenny's workshop was one of the sessions I kibitzed with particular interest. Like most people who ever take a walk in

the woods, I was curious about animal tracks and almost totally ignorant of whatever information they might convey. Greek. Chinese ideographs, there in the mud. I felt reasonably confident that I could, on the basis of footprints alone, tell a mountain lion from a poodle, an antelope from a snowshoe hare, a moose from a pack horse; but the finer discriminations were beyond me. For instance, how could a person distinguish coyote tracks from the prints of a black Labrador? What was the secret of telling a moose track from that of an elk? A bighorn sheep from a white-tail deer? A bobcat from a lynx? A bison from a Hereford? Surely, I thought, these animals must all have their unique and unmistakable footprints, which I would be able to recognize as soon as Halfpenny supplied me the magic key.

But no, it wasn't nearly so simple. Learning the shapes of a lot of animals' footprints would be only as useful, I discovered, as memorizing vocabulary in a new language without bothering to study any grammar. Jim Halfpenny teaches a different approach—one that is more complicated, more holistic, more ecological. I call it (without his permission) gestalt tracking. Recognition of individual signals is just the necessary first step toward seeing a larger picture, and the whole will be more than the sum of its parts.

The first thing Halfpenny did in that workshop was to have us get down on hands and knees and begin measuring each other along the shoulder-to-hip dimension, as though we were quadrupeds. (According to my notes, I come in at 22 inches along that dimension, roughly the same size class as a badger.) Then we took turns crawling across the carpet, and were measured for length of stride. The significance of this humbling exercise lay in what we would learn about the predictable relations among stride lengths, various types

of gaits, and the behavior of various species in various situations. There turn out to be quite a few variables involved in the art of tracking as practiced by Jim Halfpenny.

Let's consider just a few. Foot anatomy itself is the most basic and essential. Among the mammals of North America, some (notably bears and humans) lay a heel onto the ground, and then roll forward onto a set of toes; most others (including all of the dog family, the cat family, and the ungulates) walk and run on their toes only, the back of the foot having been permanently cranked up off the ground through the course of evolution. It is important to understand that the larger pad we see at the base of a cat or dog print, from which the toes radiate like daisy petals, is *not* a heel but something more like the ball of our own foot—important to understand that point, otherwise the tracks of rodents, which may or may not show a true heel, are liable to be ungodly confusing. It is also useful to know that heel-

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planting mammals generally move slower and spend less time trotting and galloping than do toe-walkers. The speed of a given animal's movement, and the rhythm of its foot placement, are significant clues that show up in a sequence of tracks, helping to identify the animal and explain its behavior.

Together, the speed and the rhythm of footfalls constitute the gait. Halfpenny specifies four main gaits used by most mammals—walking, trotting, galloping, jumping—and describes how to recognize each in a track pattern. A walking animal, for instance, will generally place each hind foot squarely on top of (or just slightly in front of) the print of the front foot on the same side. Until a person learns to look very closely at each print, and to recognize a double (a hind print superimposed almost exactly upon a front print), half of the footprints left by a walking animal may be overlooked entirely, and the track itself therefore wildly misread. As a mammal increases its speed from a

walk to a trot, then to a gallop, the hind print will show up increasingly far *forward* of the front print—because the animal is stretching, reaching, sailing. Therefore, the gap from front print to hind print will give a rough indication of how fast the animal is moving. Of course, the tricky part, when you or I try to apply that neat bit of knowledge, is figuring out which prints were made by the front feet and which by the hind. Considerately, a bear will usually set down its rear heel, and not its front; the hind foot of a rabbit will be, predictably, larger; but what about those other beasts? Crouched over a path of damp clay, gazing at a jumble of mute tracks, a person can discover that it is proverbially difficult to tell one end of a horse from the other.

Again, Halfpenny helps. He teaches that rodents and bears and rabbits tend to have larger hind feet, yes, as do weasels and raccoons and opossums, but that among canines, felines, and ungulates the

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reverse is true. A moose puts its biggest feet forward, where they can support its big head; likewise with a mountain lion, a wolf, an elk, and the other members of those families. Consequently, when you inspect a deer track and find one set of prints to be larger than the others, you can assume that the smaller represent hind feet; then as those hind prints shift out in advance of the fore prints—a little way at first, and then suddenly quite a lot—you can deduce that the deer at this point broke into a gallop. Maybe it was spooked by something. Are there bear prints nearby? Is there any sign of Vibram?

Jim Halfpenny's knowledgeable instruction covers a whole matrix of such interconnected anatomical and behavioral variables: For instance, how does stride length correlate with an animal's body size? Do canine prints always show claw marks? If small-bodied lynx have feet as large as big-bodied lions, how can a tracker tell between them? What are the giveaways that may distinguish that black Labrador

from a coyote? Such variables represent themselves not just in footprints, but in all types of animal signs (including tooth marks, scratch marks, marks from dragging and digging, blood spoor, territorial markings committed with urine and scat), all of which can serve as clues in the sort of gestalt tracking that Halfpenny himself does so well. Most of those clues cannot even be mentioned here, for lack of space—but then a brisk summary treatment does them no justice anyway. The art of interpreting animal signs, as taught by this fellow, involves not just a checklist of physical marks but also a tapestry of ecological knowledge and an attitude of patient, fastidious observation to be followed, at the last, by careful deduction. Gather all possible clues, before you leap to conclusions. Learn to *see* before you think. And if you can't kibitz a Halfpenny workshop yourself, the best alternative is his book, an ingenious little creation that carries the bland title *A Field Guide to Mammal Tracking in Western America*, and that may be the most useful new work on the subject in 30 years.

"LOOK AGAIN," THE MAN SAYS, HIS FAVORITE incantation. And so we do.

Despite those few broken-off ribs, the elk carcass is mainly intact, vertebrae all in a line and most of the other parts still whole and in place. Not likely that any bear would have been so gentle, Halfpenny posits. Possibly a porcupine has gnawed at the ribs. What about that skull? he asks. Again we inspect the skull, and this time we notice that one antler has been cut off cleanly, leaving a perfectly flat stump. Duh, only a saw could have made that cut. Halfpenny nods encouragement. Duh, the saw would have been in the hand of a human, illegally collecting antler from inside the Yellowstone boundaries. Right again. So should we expect to find a sign of a poacher's bullet somewhere on this carcass? asks Halfpenny. Probably not, he answers himself. Look where we are, after all: on an open hillside just yards from a road, and within eyeshot of Gardiner, Montana. Consider the context. Consider the probabilities. A poacher would probably not risk such exposure. Probably the elk was already dead. Probably it was a winter kill, he says.

Now this again, says Halfpenny, offering the leg bone. Look. OK, well, obviously it *has* been chewed upon, we say. Look down inside. Look carefully, he insists. So we obey. The bone is still hollow, and the hollow is still full of earwigs. Finally now, too, we notice a whole series of fine striations, scarcely more than scratches, as though someone spent many painstaking hours scraping the marrow out with a dental tool.

"Tooth marks," says Halfpenny. "Not a bear. A mouse." ☐