Smithsonian

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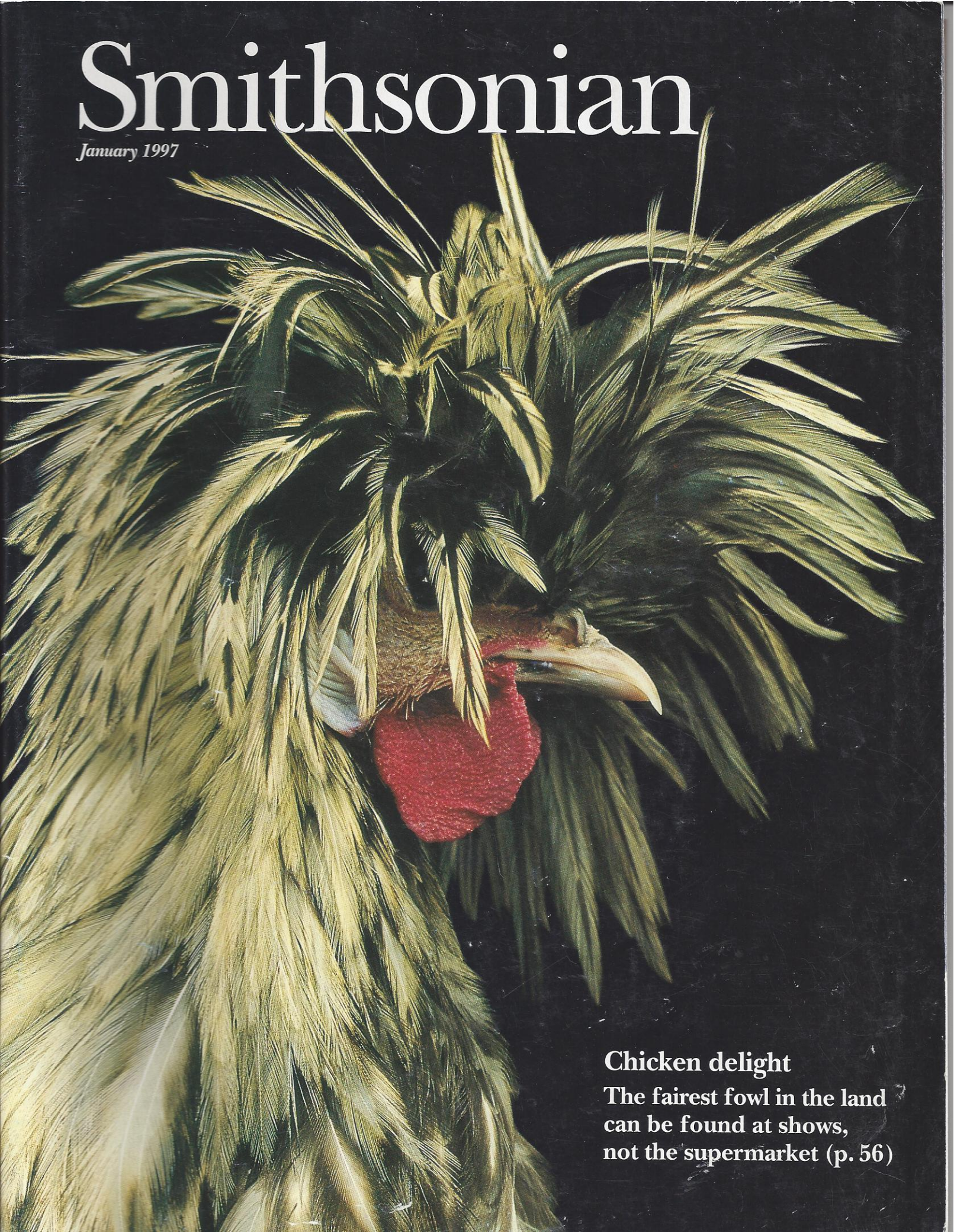


Chicken delight

The fairest fowl in the land can be found at shows, not the supermarket (p. 56)

GRAMPTON
Peyton Skipwith
World of the Coyote
World of the Bobcat
World of the Black Bear
Lion of the Americas · Tinsley
THEIR WORLD
WHITETAILS
STACKPOLE BOOKS
LIPPINCOTT
MALLARD PRESS
Deer of North America
YELLOWSTONE ELK
Kroll
BOBCAT LYNX WOLVE, COYOTE, FOX MUSTELIDS
COUGAR BOBCAT LYNX SYMPOSIUM
HOME RANGE SOCIAL ORGAN/
FINAL ENVIRONMENTAL REPORT COUGAR
VULNERABILITY OF COUGARS
BOBCAT LYNX COUGAR + COYOTE STUDIES
COUGAR + BOBCAT
BOBCAT RESEARCH
RECOVERY PLAN EASTERN COUGAR + 63 ARTICLES
EXAMINATION OF SCENT TRAILS
CONSERVATION + MANAG/ ISSUES/ COUGAR
MOUNTAIN LION - BIOLOGY + ECOLOGY
FLORIDA PANTHER
RECOVERY
COUGAR IN ALBERTA
AMERICAN LION · KEVIN HANSEN
MOUNTAIN LION IN NEVADA
ARIZONA BLACK BEAR RESEARCH
YELLOWSTONE BEARS BLACK + GRIZZLY
YELLOWSTONE ELK · FORESTS + GEN/ WILDLIFE
YELLOWSTONE FIRES - ECOLOGY - WILDLIFE
GRIZZLY BEAR COMPENDIUM · MONTANA
GAME FURBEARER MANAG/ CALIF.
ECOLOGY

By Richard Wolkomir

Following the footsteps of fox and bear

Naturalist-sleuth Susan Morse and her fellow conservationists at Keeping Track monitor wildlife in order to pinpoint critical habitat

Susan Morse leads her four pack-bearing German shepherds up a slushy Vermont mountainside. We straggle behind in the rain, 12 neophytes on a quest. We have come to learn the rudiments of animal tracking, from a nationally known expert. "Here's a tight, sweet little track," Morse announces, leaning on the hiking staff she cut from a sapling. We crowd around. In the sodden April snow, we see shapeless indentations. We don't have a clue.

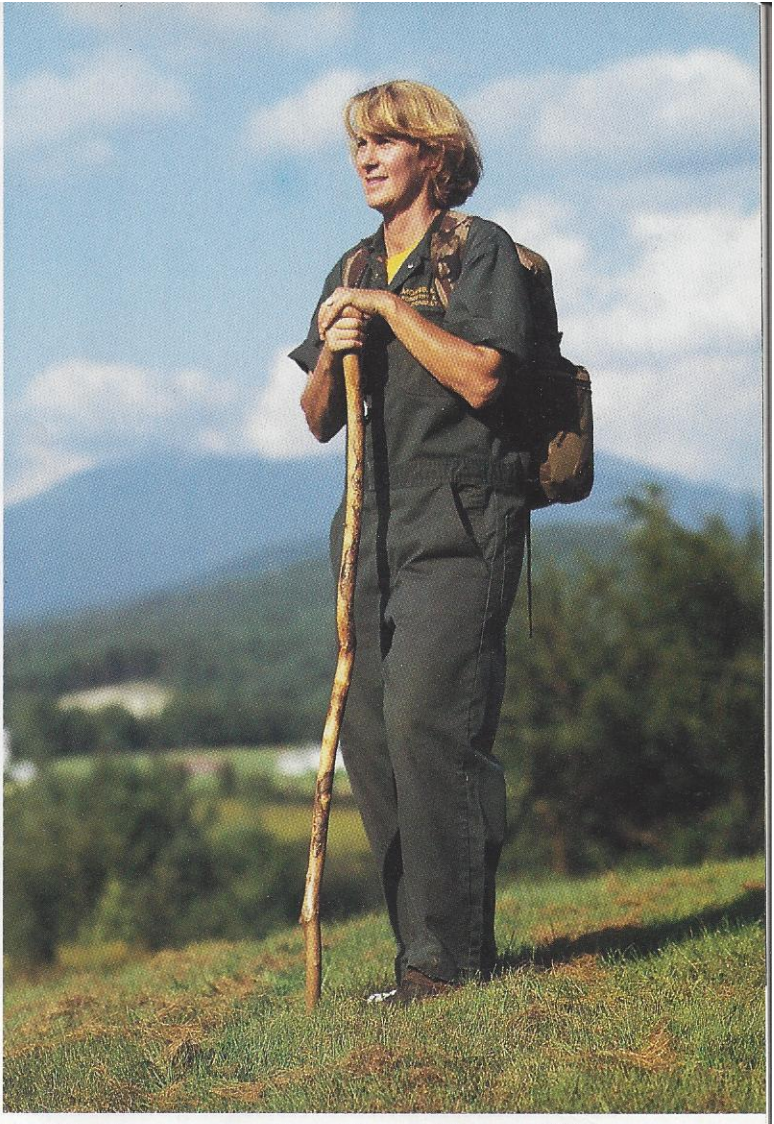
"Well, is it the dog family or the cat family?" Morse prompts. It looks like the blob family. But Morse urges us to kneel, nose to print, for a close-up inspection. I begin to make out the four hollows pressed into the snow by the animal's toes, a claw's indentation, the chevron-shaped heel pad.

As the only one here who had a previous session with Morse, I feel on the spot. I finally remember what she said about heel pads: the feline heel's forward edge is indented ("So it looks like the cat's two little ears sticking up"). The canine heel's forward edge comes to a single point ("Like a wolf's pointed nose").

"Dog family?" I venture. "Now Richard will tell us which species it is," Morse announces, grinning. I stare at the track numbly. No wolves live here in the Green Mountains; I know that. "Golden retriever?" A wild guess. "Instead of looking at one print, look at the whole track sequence—what can you tell from studying the *pattern*?" Morse asks.

It looks like dots across the snow. But Morse points out that the tracks are single file, a dainty line. "So that's a fox," she says. Foxes are so narrow-bodied, she explains, that they can generally place one foot almost directly in front of the other. Somebody asks, red fox or gray? Morse points out that the heel pad's indentation is a little blurred. That is because the pad was furred over. "Red fox, then," she says. Gray foxes have "naked" (hairless) heels. "This was probably Reynard," Morse tells us, starting back up the mountain.

She has been monitoring animals in this stretch of the Green Mountains so long she knows some as individuals, and has given them names. But her tracking is serious, and the 12 of us following her today are not here for fun. Morse is the executive director of Keeping Track, a nonprofit organization that teaches tracking to community groups from New Hampshire to California.



Trekking her home territory, Morse relies on a hiking staff and a pack to hold data-recording equipment.

Morse's Vermont cabin reveals a researcher-detective's tools: study molds of tracks and an extensive library.

Photographs by Richard Howard and Susan Morse

While Morse looks on, Keeping Track trainee Debra Kraemer hugs a tree to try to re-create the action that left teeth marks behind on this trunk. Visualizing the event often helps to identify the creature that made the sign or mark, in this case, a black bear.

In another visualization exercise (opposite), a tracking novice from the same Thetford, Vermont, group tries to simulate the gait of an animal by following its tracks. The rolling waddle that she enacts offers a reliable clue: the pattern is in fact typical of the raccoon.

These volunteers then use tracking to generate data on habitat use, which local planning boards, conservation organizations and governments can use in trying to preserve critical habitats. "If you have, for instance, a North woods beech forest that turns out to be essential to bears, maybe the town can direct proposed development to some other site," observes Morse.

I have come along with a group from Montpelier, the Vermont capital. They are starting a Keeping Track program to study a swath of woods and farmland, gathering data for town planning and conservation commissioners. I'm all for it. I've lived nearby for years, and it's been painful watching straitened farmers sell off their pastures, which then sprout neo-Colonials with minivans parked out front on macadam driveways. I hope some land can be saved for muskrats and moose.

This is the group's first of six training sessions. After they are proficient trackers, they will set up "transects," paths crossing wetlands, hardwood stands of maple, birch and beech, boreal forests of fir and spruce, and farmland reverting to woodland. Once each season, volunteers will patrol the transects.

They will note signs left by the five animals Keeping Track has selected as key local species for Vermont—black bear, fisher, river otter, mink and bobcat. "These species," says Morse, "are particularly vulnerable to habitat loss because they require relatively large home ranges and have low population densities and reproductive rates." They serve as indicators of the health of their wild habitat. When these key species wane, it is a warning that habitat is fragmenting. "Protecting habitat for these species ensures that habitat will be protected for other species, too," says Morse.

But to save habitat, we must learn to track. And so we continue sloshing up this mountainside logging trail in a spring rain, following Morse, with her blonde blunt-cut hair and her phalanx of German shepherds. The dogs wear search-and-rescue packs stocked with emergency gear, in case a ridgetop misstep sends one of us tumbling headlong.

"Look at this," Morse says, pointing at a log upon which some creature has deposited a long, twisted dropping. She whips out tweezers and a lens and peers intently at the scat. "There's a good quill in here," she announces, as gleeful as an archaeologist finding pharaonic gold. "Who eats porcupines?" she asks, and answers herself: "Fisher!" So one of the weasel's large cousins passed here. "Maybe it's Mr. Softie!" Morse says.

A few years ago she received an orphaned fisher kit to raise. To keep the fisher wild, she set up a lonely cage in the woods. Food was no problem. "I gave him cat food," she says, "and he loved grapes."

Keeping aloof was hard. "Only on the last day did I take his picture—unbelievable self-restraint!" says Morse, an accomplished wildlife photographer. Bringing his food, she took to making a high-pitched squeak. Her idea was for the fisher to associate the squeak with food, so that after she freed him, if he seemed in trouble, she could put out food and signal him. It was to be a "soft release," the freed fisher's guardian angel secretly watching over him. And so she named him Mr. Softie.

Several times during Mr. Softie's first wild winter he took advantage of Morse's summoning squeak to find food she had cached in trees. She also made snowshoe trails for him. Two years ago, a bitter winter, Mr. Softie's tracks vanished. But in the spring they reappeared. Jubilant, Morse tracked her protégé all day, finally coming to a tree with a small, high hole. Littering the snow below were scraps of flying squirrel hide. She tapped the tree with her hiking staff. High up, a head poked out: Mr. Softie. He looked down at her, yawned, and then went back inside. He had, clearly, mastered being a wild fisher. "He found squirrels in there and ate them and then took a nap in their nest," Morse says.

Pocketing her magnifying glass, she returns the fisher scat to the ecosystem. She gives us its lesson, "Morse's 23rd Rule": tracks are only one clue in identification. Droppings are important. So are bitten-off grass blades, snagged hairs, marked trees and overturned stones.

"Most people think tracking is looking at the ground, but maybe 50 percent is not on the ground; it's other stories being told," Morse explains. And a few minutes down the trail we practice that precept. Morse leans on her hiking staff, gazing at a boulder the size of a hassock. She waits for us to notice whatever she is noticing.

On our knees, we peer at the rock like jewelers evaluating the mother of all uncut diamonds. Faint scratches! And bare spots where the moss was torn off. "I've found it's instructive to *become* the animal," Morse tells us.

One trainee gingerly puts her hands on scratch marks where the animal's left and right paws must have gone. She pretends to strain and move the boulder, although it is too heavy. Instantly, we all see it was a bear.

"The story behind this is last summer's drought," Morse says, beaming at what has become her honors class. "Everything dried up, and the bears didn't have much in the way of berries and other foods, so they went after colonial insects, like the ants and beetles that probably lived under this rock."

I had telephoned Morse after reading a newspaper

Richard Wolkomir reports that since writing this story, he has gotten into the habit of walking head down, scanning for clues in dust or in snow.

story about Keeping Track, and she invited me to visit. She lives a half-hour from Vermont's largest city, Burlington, where developments slowly spread across the meadows like weeds. To get to her house, I drove along a maze of byways and old cow paths, then past a horse farm onto a bumpy dirt road through pastures and spruce jungles, and finally—with the Green Mountains' western flank rising ahead—onto a rutted lane under maples that dead-ended at Morse's cabin.

"I just got back from setting up a Keeping Track program in San Diego, and it's taken me three days to decompress from the population density," she says.

She grew up outside of Philadelphia, where she was a kind of "wild child." She spent hours prowling forests along Wissahickon Creek, and on her grandfather's 2,000-acre farm in the Pennsylvania countryside. Her family had been landscapers for generations.

Her cabin's walls are lined with books, both literature and natural history, interspersed with her vivid photographs of cougars, lynx and bobcats. On display in one corner are molds of animal tracks and sets of rubber reproductions of animal feet.

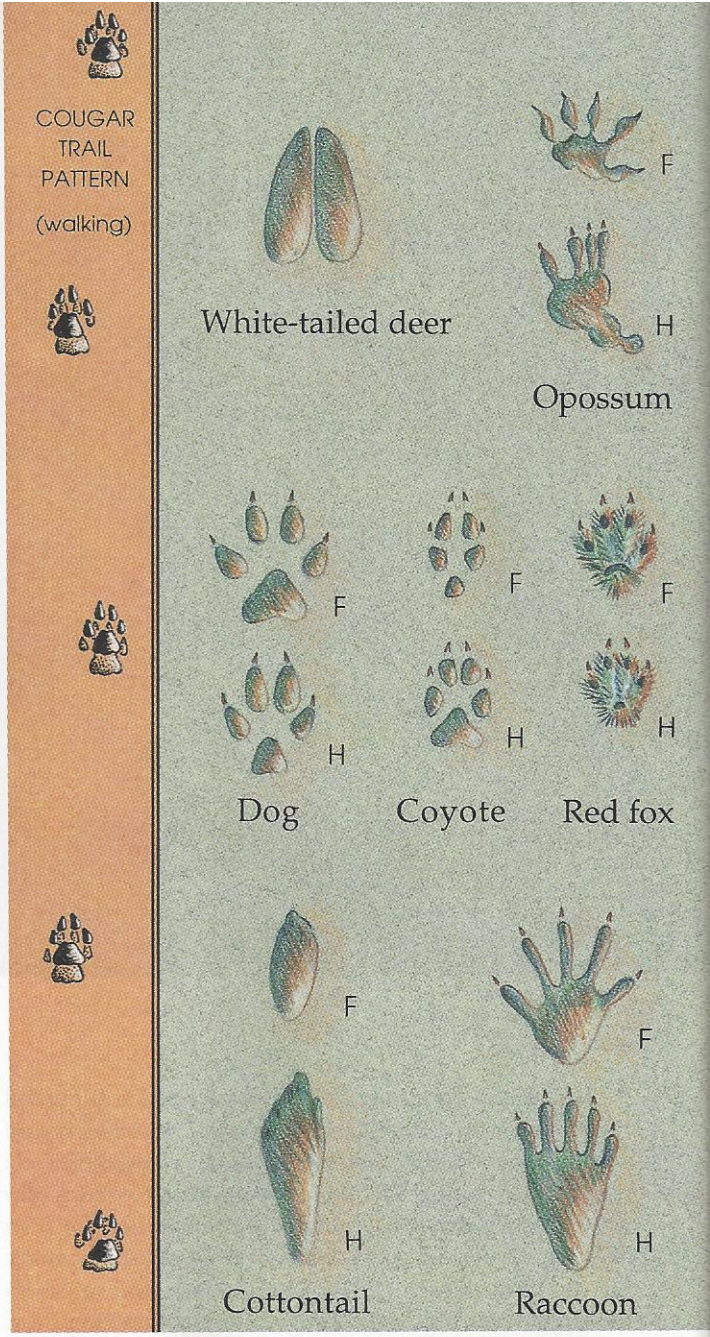
Since childhood, a love for the wild

Her fascination with wild things began before she was old enough to remember. As a child, she shoveled snow and chopped wood to earn money to travel in the Western deserts with friends of her family. Recognizing the girl's passionate interests, her naturalist grandfather gave her rock specimens for Christmas and encouraged her love for wild animals and their habitats. Another family friend got her started tracking.

She majored in forestry at Pennsylvania State University. But there seemed to be, at that time, little connection between the discipline's dry underpinnings—calculus, statistics and chemistry—and exploring and saving the habitat she loved. And so she drifted into the university's literary life, probably the only student forester publishing poems in journals.

After her sophomore year, Morse transferred to the University of Vermont, where she majored in English. She liked Thoreau, Frost and Faulkner. "But by my senior year I had fallen head over heels in love with Shakespeare," she says. In graduate school it was Shakespeare she studied. But she never left the outdoors, and ultimately, the outdoors, as a career choice, won out over literature. Partly it was because, just after moving to Vermont in 1969, Morse had a tracking epiphany.

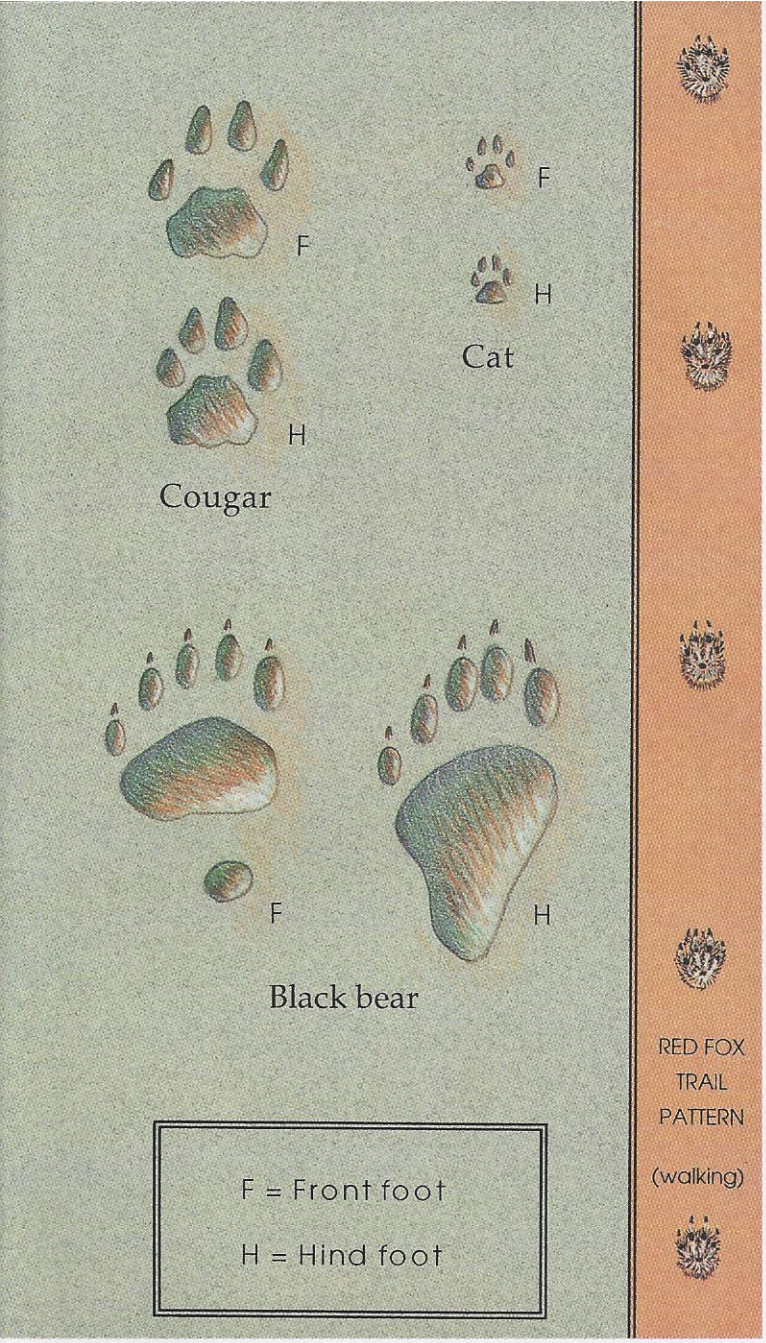
One dead-of-winter dawn, she hiked along a ridge above her house. Snow melted in a January thaw had refrozen, with a dusting of star-like snow crystals. She found the tracks of a bobcat. She seemed to actually "see" the cat, where it crouched behind a spruce, then advanced and crouched again.



Whether you live in the city, near the woods, or at a canyon's edge, you may find tracks in your backyard.

She came to the tracks of a snowshoe hare nibbling twigs beside an old logging skid road. She saw the bobcat's final crouch behind a stand of spruce. She saw where its paws kneaded the snow. Then came the spring. She found hare fur on the snow, and drops of blood. "And then the track of the kitty dragging the hare off," she says. She found the spot where the bobcat ate the hare, leaving only fur and churned snow and part of the colon, feet and skull. Deciphering tracks turned out to be like interpreting a literary passage. Morse decided to become Thoreauvian, a self-directed biospheric scholar. Tracks would be her text.

In the 1980s, she telephoned Harley Shaw, then an



This chart offers a guide for identifying prints from coyote to cottontail and representative trail patterns.

Arizona Game and Fish Department biologist known nationally for his cougar research. He agreed to teach her cougar tracking and to record tracks along transects. "It's low-tech because we don't do radio tracking or spotting from airplanes," Shaw tells me when I telephone. "I felt we needed ways to monitor these animals less intrusively, with less time and cost." With tracking, he says, "you can establish presence for the animal, and over time you can monitor population trends."

Morse joined Shaw and an expanding cadre of volunteers, from as far off as Germany, to survey cougar spoor along transects at Fort Huachuca, a sprawling Army base in southern Arizona. "It began as a joint project between the fort and the Arizona Game and Fish Department, but after I retired we kept at it," Shaw recalls. Fort Huachuca became Keeping Track's model, and Shaw applauds Morse's expansion of the work and seeding of groups nationwide. It needs to be done, he says, because funds for biological fieldwork are dwindling. "I think well-trained volunteers will be increasingly important—the alternative is no information at all."

Cougars in southern Arizona exemplify an animal needing Keeping Track's kind of help. They live on "sky islands," forested mountains thrust up from the desert. To maintain genetic diversity, Shaw explains, a species needs at least 500 breeding animals, and 500 cougars need about 10,000 square miles. "But that's only if the habitat is perfect," he says. "In the real world, it's more like these big cats need 30,000 square miles."

Morse has pondered this issue, too. "Corridors between those sky islands are essential," she says, "and if the valleys fill up with houses and highways, cutting off the cougars' routes between the mountains, they'll be gone." Morse now codirects the Fort Huachuca project on a volunteer basis and makes an annual pilgrimage there to train new volunteers and track big cats. She is also a consultant. Recently, for instance, she determined that a particular tract of Vermont mountainside did indeed serve as critical bear habitat. But since 1994, when she and fellow conservationists founded Keeping Track, most of her time has been devoted to training community volunteers.

Surviving in the freeway's shadow

When I first visited her, she had just returned from San Diego, called in by the Friends of Los Penasquitos Canyon Preserve. Houses line the 3,500-acre wildlife preserve's rim. Freeways roar overhead. Yet, the canyon is home to more than 175 species of birds, 500 species of plants, and even cougars and bobcats.

"We already had trackers among our members," says Mike Kelly, the organization's president. "But we flew Sue Morse out to help us get on a more scientific footing, like how do we design good transects?" Morse also decided the volunteers needed more skills identifying scat and other nontrack signs. And now, in the wake of her visit, the group has laid out transects and picked key animals—coyote, long-tailed weasel, gray fox, badger, mule deer, cougar and bobcat. Bobcats in San Diego may sound surprising, but Morse found their tracks even under the dozen-plus freeway lanes where Interstates 5 and 805 merge.

In Vermont, following Morse up the mountain in the rain, we find no sign of bobcat. But, as she predicted, tracks are just part of the story. We find, for instance, a tree with two parallel gouges, like the numeral 11. A moose, Morse observes, has dug its lower incisors into

the bark and raked them upward, exposing inner bark in order, she theorizes, to ingest minerals found there.

We stop at a huge 200-year-old "witness tree," a hemlock preserved to mark a farm's boundaries. It is also a "baby-sitter tree," up which generations of mother bears have shooed cubs so the mothers could forage unencumbered. Morse shows us the cubs' scratch marks.

Under a hemlock sapling we find the snow strewn with small branches, nipped off by a browsing porcupine. Next door is a girdled beech. Morse announces: "There's a little story here." Gnawing its way around the beech, the porcupine reached the spot where the two trees grew close together. Enterprisingly, to get at every bit of the tasty beech bark, it wedged itself between the two trees. Morse shows us quill pricks in the hemlock.

We pass a five-story cliff she has dubbed the Bobcat Brownstones, where the cats hide from enemies, such as coyotes. We go on bobcat-track alert. Above a beaver pond, Morse abruptly points at a patch of mud. We see nothing, until a woman shouts, "Oh my God, you're right!" Now we see a perfect imprint, rounded, the four teardrop-shaped toes in an asymmetrical arc, the heel pad's leading edge with a characteristic indentation.

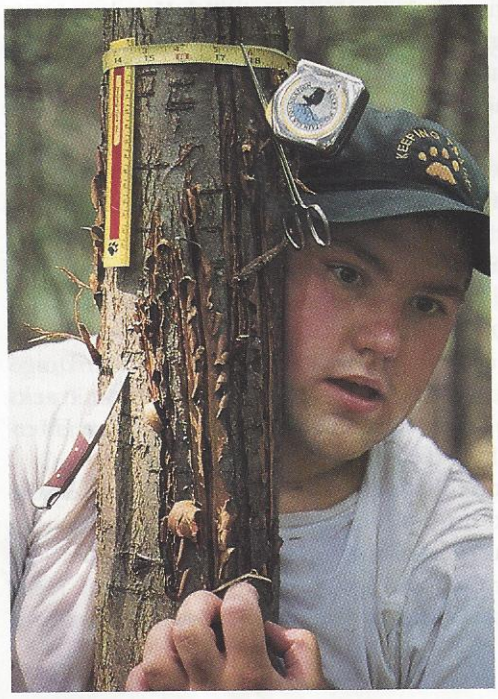
Topping another ridge, we find a mystery track. It amazes us: at this height, a web-footed water-loving otter. But Morse says otters think nothing of climbing mountains like this to reach the next valley's wetland.

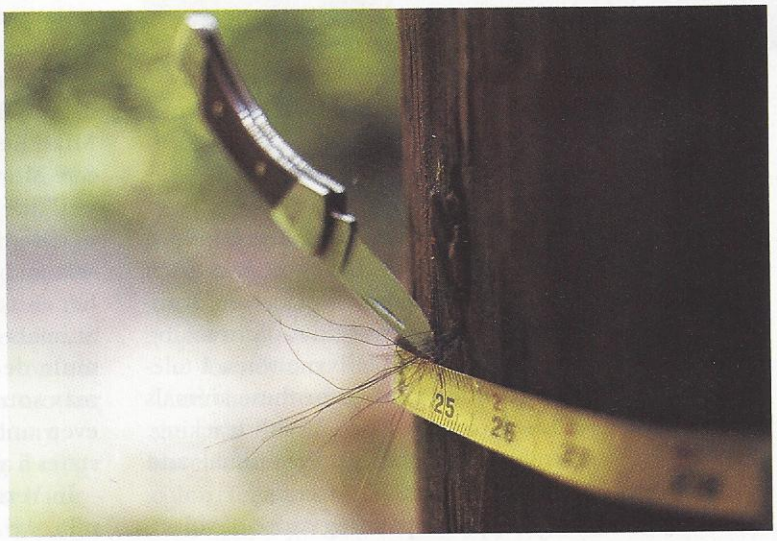
Our next stumper is a wild cherry tree with broken-off branches piled at its base. But there's an overt clue: one bear hair, snagged at the end of a jagged branch. "Hungry bear climbs to the top and gets so far out on a skinny branch that it breaks," Morse says. "The bear falls, snapping off limbs all the way down until it crashes on top of its pile of broken branches." Black bears are relentless in preparation for hibernation; adult bears may gain as much as 1½ pounds a day. This massive weight gain may require eating 25,000 calories a day for several months.

Hiking back down the mountain, Morse points out a final sign, broken-off branches stored, four stories up, in a towering beech. It is a "bear's nest": a bear has broken off branches laden with beechnuts and piled them in a crotch, convenient for munching.

So far, I think, we have learned how much we don't know. Standing beside my car before driving home, I ask Morse what it takes to become a tracker. "Dirt time," she answers. Tracking guidebooks help, she adds, but they can be confusing. Tracks change with the animal's gait and how hard it presses down its foot, splaying the toes. Tracks look different on crusty snow, soft snow, deep snow, slushy snow or snow-dusted ice, and in soft ground, dust, wet mud, drying mud, sand, wet sand. Tracks change with age; and tracks made in the open sun may not resemble tracks made in a cedar's shade.

I listen to all this glumly. Tracking turns out to be no snap course. Besides, my own urge to track comes mostly from books—probably my first encounter was Robinson Crusoe, discovering that footprint in the sand. But what really fired me up as a kid was Sherlock Holmes. In *The Hound of the Baskervilles*, for instance, Holmes must ponder the unfortunate Sir Charles Baskerville's footprints down his yew-lined walk, en route to his mysterious death. And, as the attending physician told Holmes, the walk had other tracks, too. Dr. Mortimer looked strangely at Holmes and his friend, Watson. His voice





Precision is essential to data collection: at left, a volunteer, demonstrating raking action, takes dimensions of a bear scrape; above, black bear hairs caught on a pole are demarcated.

sank to a whisper: "'Mr. Holmes, they were the footprints of a giant hound!'"

What got me to actually try tracking was the *Scout Field Book*. It described exploits of Scouting's founder, the British officer Sir Robert Baden-Powell. Standing in the African sand, he began speculating about tracks he identified as women's, heading toward the hills where an enemy encampment was thought to be located. What knocked me out was what he and his companion, a Zulu tracker, learned from a leaf they found about ten yards off the treeless track. Baden-Powell knew that the species grew in a village 15 miles back. The leaf was damp and smelled of the local beer, so he deduced the women were carrying the brew in leaf-stoppered pots. He knew they had passed in the early morning, before 5 A.M., when the winds had stopped. No leaf could have been blown off the track after that. And he deduced what time the men hidden in the hills would have received the beer, and that they would now be too muddled to notice him reconnoitering.

Stalking the wild Barbary ram

One leaf! I scoured my neighborhood for such telltale signs, but got discouraged. Luckily, I had not then read the memoirs of another Britisher, Sir Alfred Pease, a Kenyan big-game hunter who introduced Teddy Roosevelt to the thrill of tracking big cats and gunning them down. Pease praised Algerian trackers who had guided him to a wild Barbary ram by noticing a bush with one nibbled-off twig tip. But the most amazing tracker was a man called Ibrahim. Pease saw Ibrahim touch hoofprints in the desert sand with his big toe and pronounce whether the gazelle had passed a half-hour ago, or four hours ago, by whether the print had collected nighttime dew that crusted in the sun.

My toe will never match the IQ of Ibrahim's. But when Susan Morse invites me back to test my new skills, such as they are, I am gung ho. She has scheduled a "business trip" with one of Keeping Track's directors, Judy Bond, a professional natural resources mapper.

Bond will use a handheld satellite link (the Global Positioning System or GPS) to accurately line out a transect through a six-square-mile section of mountains Morse is studying. It is part of a 185-square-mile stretch—much of it wild—along the Green Mountains' northwestern flank. Morse's habitat studies have already convinced one town to preserve a wetlands corridor here. But she hopes Keeping Track's data will persuade the state and local governments to encourage private landowners to protect and preserve their holdings.

Meanwhile, today's hike will give Bond practice lining out transects using the GPS satellites. Her goal is to perfect the technique so that Keeping Track groups can present planning commissions with more precise habitat maps. Our last hike was in rain and mist. Today, sunlight sharpens everything, and blobs of snow melting from hemlock branches plop onto our heads. We have not gone far under this slaphappy bombardment when we "cut" our first track, which I get right: coyote. So far, my grade is an A.

We find another coyote track, and Morse asks me to say when it was made. But I have no idea. "It was between 8 and 10, last night," she says. "You can see it crossed this puddle of muddy water and left a wet track that froze. It got down to 28 degrees last night, but warmed up this morning, so the track froze before morning. And it has a light dusting of snow. It snowed heavily last night, but tapered off after 8 P.M., so the coyote must have walked by around then."

I miss the tiny tooth marks left in a tree by a squirrel after sap. A waddling raccoon track stumps me. My grade sinks even lower when I miss the claw marks left by a fisher climbing for berries. At the next clawed tree, I announce, "Fisher!" But it was a porcupine.

I won't be a dropout. Tracking is teaching me that landscapes where nothing seems to be going on are full of business, if you learn to read the memos and reports written in the mud. I plan to keep at it. In fact, as we hike, Morse keeping us on the transect, Bond tapping her satellite-link keys, and me desperately seeking tracks to get my grade up, I finger a talisman I put in my jacket pocket. It is a photocopy of Henry David Thoreau's journal entry for January 30, 1841, a tracker's credo.

"Here is the distinct trail of a fox stretching a quarter of a mile across the pond," Thoreau wrote. "I know which way a mind wended this morning, what horizon it faced, by the setting of these tracks; whether it moved slowly or rapidly, by the greater or less intervals . . . for the swiftest step leaves yet a lasting trace."

Member of weasel family, the fisher has rebounded in northern New England. Opposite: Morse says tracks are those of Mr. Softie, a fisher she released to the wild.