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This is Jim Halfpenny, along with some of the tools of his trade—plaster casts of tracks he's followed over the years.

jim halfpenny
MASTER TRACKER

by **Sam Curtis** · photographs by Dean Miller

RHINOS IN AFRICA, ARGALI SHEEP IN CHINA, POLAR BEARS IN THE ARCTIC, COUGARS IN COLORADO, MAMMALOGIST JIM HALFPENNY HAS TRACKED THEM ALL. Whether he is teaching his students to track grizzlies in Yellowstone National Park or training wildlife managers to document wolverines in the Rocky Mountains, Jim is at home with his nose to the ground.

While visiting Jim in his laboratory/classroom in Gardiner, Montana, where he heads an educational organization called A Naturalist's World, I ask him for some advice for hunters.

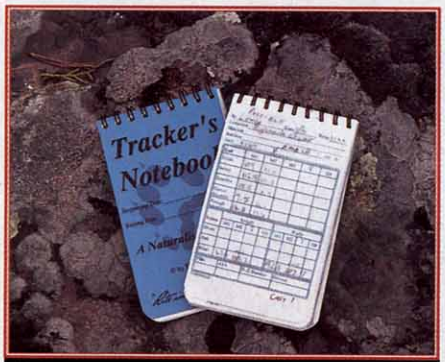
"**Tracking is a science**, and science is hypothesis testing," says Halfpenny.

Tracking as a science started with the earliest hunters who used description, comparison, and hypothesis in a scenario that might have gone something like this:

"There's a cloven hoofprint that's three fingers long. And there's one that's four fingers long. I think the four-finger print will give me more meat than the three-finger print."

So the prehistoric hunter tracks and kills a couple of three-finger print makers and a few four-finger print makers, and proves his hypothesis. "The hunters who failed their hypothesis testings died. **It's that simple**," Halfpenny says.

Since those early days, tracking has been refined considerably by people such as Ernest Thompson Seton (*Animal Tracks and Hunter Signs,* 1925), Olaus Murie (*Field Guide to Animal Tracks,* 1954), and, most recently, Jim Halfpenny himself (*A Field Guide to Mammal Tracking in North America,* 1986).



Memory is a fragile thing, but notes endure. Halfpenny records everything in a pocket pad and uses it in his teaching.

To make some of these refinements clear, Jim has me trying to identify plaster tracks by closing my eyes and feeling them with my fingers. He explains how the wall, the sole, and the pad of even-toed ungulates relate to human fingernails, and how the pad of an elk takes up much less space within the wall of the hoof than the pad of a moose. "Feel how the rounded pad drops away right there? That tells you this is an elk print. A moose print is flat all the way to the front."

Jim goes on to explain that there are two basic tracking skills. The first is finding a footprint and identifying it. "You have to develop a search image—a mental picture of what you're looking for. You need to know how big the footprint should be and where the pads should be. A good tracker will spot just the faint tips of the walls of a deer track in the dirt."

The second skill is understanding gaits and reading the stories they tell. "The biggest weakness of would-be trackers is identifying gaits." When you come upon tracks, Jim says, there are three questions you need to answer: 1) Is it the species you're after? 2) Is it the sex and size animal that you want? 3) Is the track fresh?

The question of species may be easily answered if the area you hunt has only whitetails, for example. But when deer, elk, moose, and maybe Herefords occupy the same territory, identification may be more difficult. That's when size, shape, and hoof anatomy come into play. Other clues such as habitat niches and scat must also be considered.

"There is no single clue that tells the difference between whitetail and mule deer tracks," Jim tells me. "You need to collect all the clues, including your knowledge of the area, habitat, track size, and behavior. Then you can make an educated deduction about the track maker's identity."

TO DETERMINE THE SEX OF THE TRACK MAKER, you use all the clues available, including foot size. Large prints may suggest a male animal, but you must know ahead of time the average size of male and female tracks in the area you're hunting. "You need to do your homework," Jim tells me.

Urine stains are an important clue to determining sex too. "When a male deer urinates, the stain is well in front of the hind feet. A female's stain is between the feet." So you must be able to distinguish the front feet from the hind feet.

A lifetime of tracking has gotten Jim Halfpenny into some precarious situations, as well as some high adventure.

During a Texas study designed to estimate climatic changes going back 40,000 years by dating the contents of packrat middens, Jim dusted captured packrats with fluorescent powder and tracked them at night by the glowing particles they left behind.

"I got snakeproof chaps, but they didn't protect my butt or my nose. And here I was on my hands and knees crawling along trying to track packrats. The first thing I saw was a 3-inch fluorescent streak whiz past my nose. I found out it was a scorpion. They fluoresce naturally, a fact I didn't know at the time. I also found out there are a hell of a lot of rattlesnakes in Texas in the middle of the night."

In 1976, Jim was the leader of an expedition that kayaked up the biggest fjord system in eastern Greenland, following rumors that there were still Inuit there who had never seen white people. They found no Inuit, but Jim tracked musk ox, polar bears, and arctic fox for the first time.

And then the expedition got iced in. "We walked out 150 miles carrying our boats and gear. We'd get up in the morning, load our packs with 200 pounds of gear, walk 5 miles down the beach, drop it, and walk back for another 200 pounds. We'd cover 15 miles a day with only 5 miles' actual progress.

"It became too iced-up to fish, and we didn't see a single musk ox. There were eight of us, and we finally got down to 2 pounds of rice. We had to cross an icebound fjord before going south to the northernmost Inuit village where we had a food cache. That night, about midnight, we boiled the last of rice and shared it. Then we ended up shooting arctic hares to eat."

Food was not a problem in 1986 on the joint American/Chinese Expedition to the Tibetan Quinghai Plateau. There Jim filled his belly with caterpillars, chicken heads, camel tendons, and wok-fried cows' hooves. "The caterpillars were kind of chewy and salty," he recalls.

The purpose of the expedition was to help the Chinese set up wildlife-management guidelines and to educate Chinese biologists in the practice of wildlife management. Expedition members also collected mammal specimens for American and Chinese museums. They ate everything they shot, including gazelles, sheep, rabbits, and wolves. And Jim was there to identify the tracks of animals they did not get to see, including, says Jim, "... anything that could be yeti tracks."

Yeti remained elusive.

With students in Yellowstone Park, he once watched a sow grizzly kill an elk calf and drag it into some aspen, leaving her two cubs behind. The calf's mother proceeded to attack the cubs and run them up a ridge near Jim and his students. When the sow found the cubs missing, she charged up the hill. Blood dripped from her jowls, and she stared everybody in the eye before she too ran up the ridge.

"We were all saying, 'Wow, what an incredible experience,' when *thump, thump, thump,* the sow and her two cubs dropped off the road cut maybe 15 feet behind me. She started forward, and I knew somebody was had. But the students just parted, like the Red Sea, and she went between them, back across the road, down the hill, and into the aspen where the calf carcass lay.

"The students said, 'Wow, Jim, what next?' I said, 'Next, we go home.'"

Then there was the time Halfpenny spied a coyote on the frozen expanse of Yellowstone Lake. Jim squeaked like a mouse, and the coyote came to within 100 feet of him before it sensed something was wrong, and headed in the direction of Jim's camp.

"Returning to camp, I discovered my pots were gone from beside my tent. In the moonlight, I located coyote tracks and followed them ¼ mile onto the ice. There were the pots in a pile.

"As I cooked breakfast the next morning, the full extent of the coyote's prank became apparent. A strong, acrid odor signaled the melting of coyote urine in my oatmeal pot. The coyote had scent-marked my pots, telling me that this was its territory and that it didn't appreciate my trick."—S.C.

Things are getting complicated. I flip open Jim's book, *A Field Guide to Mammal Tracking in North America,* and read, "Dew claws are farther from the hooves on the hind feet than on the front feet. Front feet are larger than hind feet, and when the animal is moving fast or on soft ground, the front hooves splay more than the hind hooves."

I'm back on track.

Next there's the critical task of aging a track, for which Jim suggests three tests.

First is the step test, which involves walking up to a track, putting your own print down next to it, then asking yourself, "What would have had to happen to make my print look as old as the animal print?"

Over time, gravity rounds off sharp edges. In addition, sun, wind, rain, snow, and freezing temperatures all affect tracks in a way that will only make sense, Jim tells me with a wry smile, if you've done your homework with a step-test test pit.

"For a step-test test pit, go in your backyard. Put a footprint down. Come back in an hour. Put another footprint beside it, and make notes about the difference between a fresh track and a 1-hour-old track. Come back in 2 hours, 4 hours, 8 hours, 16 hours, and each time take notes.

"You have to do this in wet sand, dry sand, wet mud, dry mud, wet snow, and dry snow because all surfaces behave differently. Only by experience can you see what happens and then compare it in the field."

JIM'S SECOND AGING TEST IS THE BREATH TEST. You get down, find the most fragile area of the print, and blow on it. If the particles of dust or snow fly away, you know it's fairly fresh. An older track would be more stable.

Finally, there's the ditch test. With your knife or finger, drag a ditch through the track and observe what happens. If the dirt in the ditch is moist, but the dirt in the track is dry, for example, the sun or air has had time to dry the print. It may already be too old to follow.

I'm beginning to think *I* may already be too old to follow, but Jim's a good teacher.

The results of all three aging tests and a determination of the animal's gait will help you decide whether it's worth following a trail of tracks. The ideal situation is to follow the fresh tracks of a walking animal.

"The most important part of being a tracker is dirt time."

"But before you start," Jim says, throwing in another variable, "You should look at the big picture.

"If you're going to track, you've got to think like an animal. If you wound an animal out there and it's getting dark, you can't spend 30 minutes looking for the next clue. You may have to look at the big picture and say, 'If I were a fleeing animal, I would be going downhill. And there's a cut through the trees down there. That's where I should go look for the next clue.' And then you've got to get over there and look for it. So there's an intuitive end of tracking that comes from thinking like an animal, and that's very important to the hunter."

THERE IS NO QUESTION IN JIM HALFPENNY'S mind—or in mine, at this point—that a good tracker has a definite edge over a poor tracker when it comes to finding wildlife. Not only does a good tracker have an edge, he's got a leg up on the ability to take care of a wounded animal.

Understanding gait becomes especially important because a wounded animal moves in different ways and leaves clues to where and how critically it was hit, Jim explains. A good tracker has to be able to identify the blood trail that is left. Did it come from a vein, artery, or lung? "Lung blood is frothy. An artery is going to leave rich, oxygenated blood; it's going to be bright red."

Jim hands me deer, elk, moose, and antelope legs and has me feel and describe their unique foot anatomy. We examine plaster casts of tracks that are spread over long tables. He gives me printout sheets with labels like "Criteria for Evaluation of Field Tracks," and "Discriminant Analysis, Wolf Example."

And when it's time to leave, he offers some final words of advice: "You've got to practice in any way you can. It may mean walking into a museum and looking at how big feet are, how long legs are, what the hip-to-shoulder distance is on an animal. Look at pets. Say, 'Well, that dog is that tall; it ought to have feet this big,' and then go check it out.

"The more time in the field, the better you get. And the better the field notes you keep, the better off you are because you forget if you don't write it down.

"But the single most important thing, if you want to be a tracker, is to put in dirt time. Get down on your hands and knees and do it."

Halfpenny places markers in a series of tracks in order to precisely measure the width between them and the length of stride.

THE TRAIL OF THE TRACKER

Jim Halfpenny found his calling in 1957 when his Boy Scout leaders in Scottsbluff, Nebraska, suggested he read Ernest Thompson Seton's *Animal Tracks and Hunter Signs.*

Jim had plenty of mud for tracking along the North Platte River, and the hobby shop his parents ran supplied him with copious amounts of plaster of Paris. He still has the plaster animal tracks he made when he was ten.

By the time Halfpenny was twenty, he was teaching tracking and other outdoor skills for the National Outdoor Leadership School in Wyoming where he also spent the hunting seasons as a professional big-game guide.

In 1976, Jim was cataloging the animals in Great Sand Dunes National Monument and Canyonlands National Park by the signs they left behind. Later, the Colorado Division of Wildlife hired him to search for evidence of wolverine and lynx in that state.

He has unraveled the circumstances of human run-ins with bears and mountain lions by reading the stories told in their tracks, and has even studied dinosaur tracks on an expedition sponsored by the National Geographic Society. And he has hunted and lived off the wildlife in Kenya, Tanzania, People's Republic of China, Greenland, and North America.

"The most important thing I do now," Halfpenny says, "is verify, across the country, the presence of wolves, lynx, lions, wolverines, fishers, and martens. They've been listed as 'sensitive' species by the Forest Service, and they're getting harder to find. Lynx, especially, are going down the tubes in the continental United States. If we lose them, it indicates the loss of health in our wilderness."—S.C.