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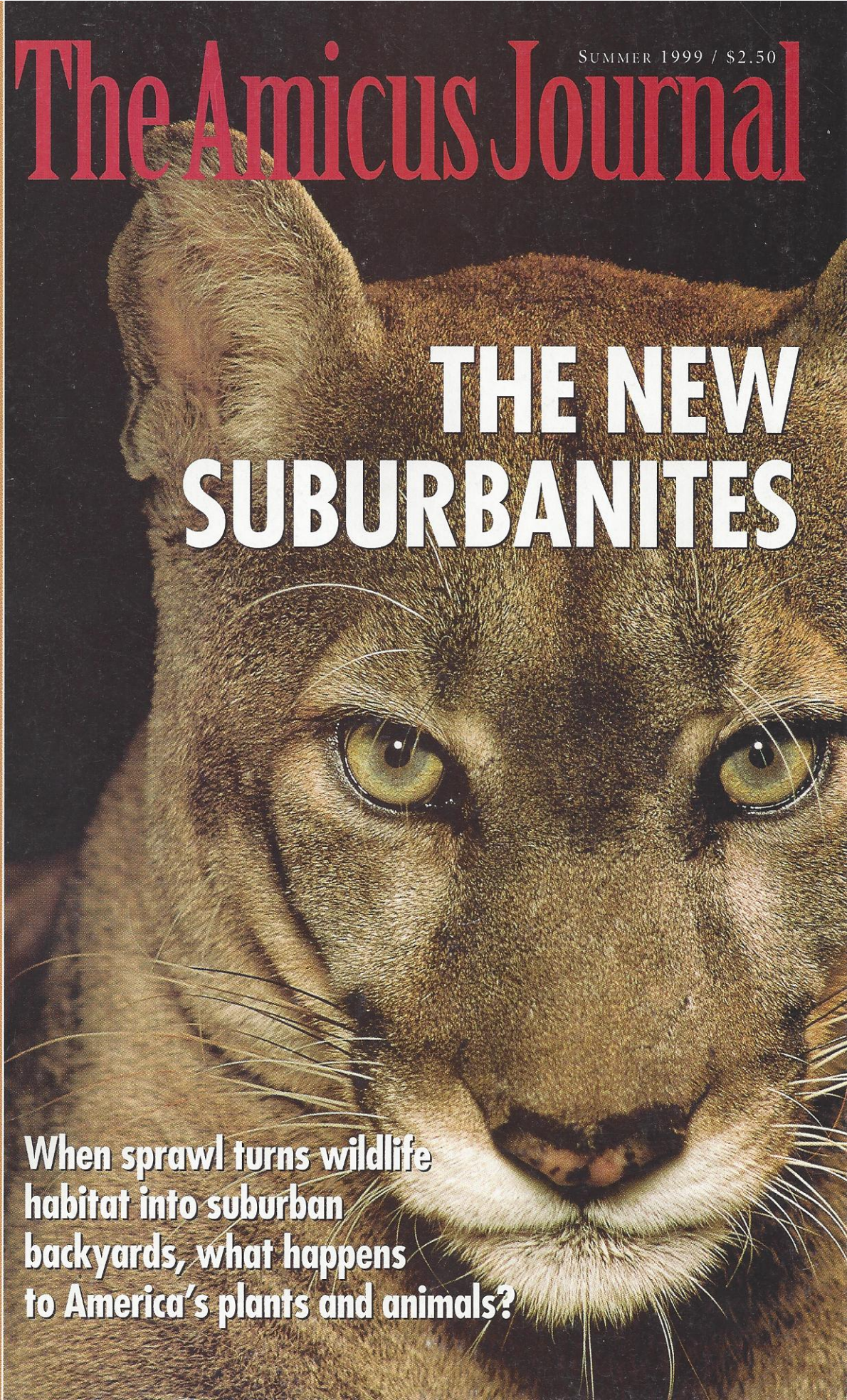

THE NEW SUBURBANITES

When sprawl turns wildlife habitat into suburban backyards, what happens to America's plants and animals?

Justice Scalia's Slash-and-Burn Crusade

The Sex Lives of Freshwater Mussels

NRDC Explodes the Bottled Water Mystique

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A Walk on the Wild Side

Community volunteers track wildlife to help save natural habitat

BY STEVE LERNER

PHOTOGRAPH BY KEN COLLINS

ON A SUB-FREEZING MORNING IN MID-JANUARY, I find myself standing on the side of a mountain in northern Vermont, shod in snowshoes, listening to a wildlife expert explain how to identify wide-ranging predators by the smell of their urine. My teacher is Susan Morse, founder and program director of Keeping Track, an outfit that trains volunteers in techniques for monitoring signs of wildlife.

Morse twirls her walking stick in a faint yellow stain in the snow, which none of our ragtag troupe of two dozen trainees had noticed before she pointed it out. Having wet the stick to her satisfaction, she holds the end up to her nose and takes a whiff. "If it smells like skunk it's a fox," Morse explains, offering its sodden tip to any who would venture a sniff. "If it smells like musk it's a coyote. If it smells like pee it's your neighbor's dog. And if it smells like Budweiser it's your neighbor." The stick is passed around, and, sure enough, it stinks like a skunk: a red fox has visited last night.

This is vintage Morse. She is a forester and carnivore expert who, for the last twenty-three years, has walked these northern Vermont woods collecting data on wildlife. To pass on some of her knowledge, she devises amusing ways of making succinct information stick in the mind, entertaining her trainees with short jingles such as "eyes at the front means you hunt; eyes at the side, run and hide."

No sooner is the mystery of the red fox solved than Morse is trudging off in her snowshoes, trailblazing, tirelessly lecturing. Bareheaded, she ducks beneath branches as she works her way through the tangled secondary growth. The pace is fast, but the only sign of Morse's exertion is that her short blond hair is plastered to her forehead with sweat.

SUE MORSE FOUNDED KEEPING TRACK IN 1994 out of her love of the land. The goal of her small nonprofit organization is to teach people to monitor wildlife in their townships in order to identify and protect habitat areas the animals require to survive. Her hope is that, over time, the data citizens collect on the movement of wildlife can be used to enrich and inform local land-use planning efforts. Officials will then be in a position to use these findings to make more rational decisions about where to site houses, subdivisions, and strip malls, and how and where to leave critical wildlife habitat undisturbed.

The program has taken off remarkably quickly, and

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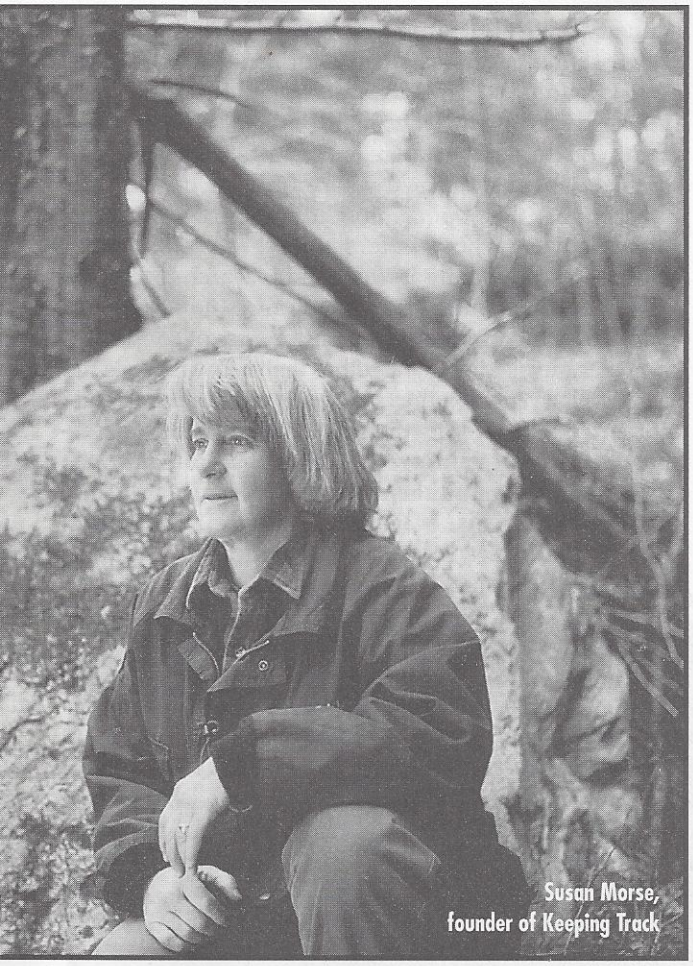

Susan Morse, founder of Keeping Track

already there are some fifty-five organized Keeping Track groups with approximately 600 members, either trained or in training. Most are in New England towns, but there are groups around the nation. Morse herself does the hands-on training, going out into the forest with her troops in the best and worst of conditions, and the work is rigorous. What you get for your money—$3,000 per town or $150 per person with twenty participants—is not a bunch of sit-down classes at a chalkboard, or garden club–style walking tours, but rather serious "dirt time." Volunteers commit themselves to six day-long hikes, the first and last of which take place on Wolf Run, the 165-acre property where Morse lives. The four middle sessions are scheduled one per season in the area where the group will be doing its wildlife monitoring.

The response has been extremely positive. Keeping Track is growing, hiring new personnel, and in the black. "People are optimistic about Keeping Track because it draws on local energy from the grass roots," says Morse. "We offer the average citizen something physical they can do for wildlife in the community to stop the damage they see happening." She believes the positive response is part of a new zeitgeist now forming as citizens watch their own communities eating into wilderness areas. "The success of what we're doing may be growing proportionately to a certain level of desperation that caring people feel about what is going on in the world. I don't use the word 'desperation' lightly. People are frantic about what they see going on."

THE SNOW IS THIGH-DEEP, WITH A HARD CRUST THAT sometimes holds and sometimes breaks beneath our weight. Under some hemlock trees we discover deer tracks sprinkled with pellet-sized scat, or feces. Morse gathers us around for a talk about "practicing safe scat": don't pick it up bare-handed because it might be infested with parasites; don't rely on it solely to determine which animal you are following because it changes its appearance with the animal's diet. With that she holds up a handful of what appear to be pellets of moose and deer scat, and then pops one in her mouth. In fact, they are black olives, which are soon doled out among us.

Just beneath the top of a ridge we pause to catch our breath. We maneuver our snowshoes into a rough circle around a red pine as Morse slips off her backpack and extracts an orange ski cap. With a flourish, she pulls a bear skull out of the cap and holds it aloft, reciting, "Alas, poor Yorick!" Using the skull as a prop, she demonstrates how its living cousin bit into the tree, scratched it, climbed it, and rubbed against it, leaving a residue of hair and odeur-de-bear. Trees become veritable bulletin boards. The markings tell other bears that the neighborhood is temporarily occupied; they also function as the equivalent of a personal ad, which, could we read it, might say, "Hey, if you're that lusty bear I mated with two seasons ago, I'm still interested."

Maintaining genetic diversity in the bear population can be a real problem if the corridors between core wildlife areas are cut, Morse explains. Through development—particularly for sprawling, low-density housing—mountaintop areas, often protected as state or federal public lands, are becoming island wildlife habitats in a sea of human uses. This fragmentation strands wildlife populations and prevents them from refreshing their genetic diversity. The situation is particularly dire for large carnivores, which need vast tracts of land for survival. "Bears know their landscape like we know our houses," Morse says. "I have data on one female bear who, I am convinced, has used the same babysitter tree for all the litters of cubs she's had for the last twelve years. Imagine if she woke up after hibernation one winter with her new cubs to find a road and sprawling suburban neighborhood in place of that tree. What would she do?"

Morse argues strenuously that we must work to identify critical wildlife corridors and core areas to prevent habitat fragmentation. "We urgently need to make a planned attempt to create buffer-lands around wilderness areas and protect the rural working landscapes," she says. This will require comprehensive, regional wildlife habitat protection planning, as well as financial rewards for sustainable management of the rural economy that serves as kind of cushion between these wild

lands and more intensive human activities. Fair market value must be paid for protecting these lands, warns Morse—"otherwise we will lose the rural working land base in our lifetimes." And that will be the end of the line for many creatures now in our midst.

SUSAN MORSE GREW UP IN SOUTHEASTERN PENNSYLVANIA and spent much of her time hiking the woods on her grandfather's nearby 2,500-acre family farm. Over the years, his property was sold off in bits and parcels due to poor zoning and to accommodate strip development, and that loss had an enormous impact on her. Morse majored in forestry at Pennsylvania State University and there developed a fondness for naturalist writers, including Frost, Faulkner, and Thoreau. She soon transferred to the University of Vermont in 1969, where she majored in English and eventually went on to study Shakespeare in graduate school.

Morse ended up staying in Vermont, where she joined the local planning commission. And this was where things began to percolate for her. "I felt that that these planning commissions were making decisions in the absence of knowledge, and I was frustrated. I became convinced that where natural resources are concerned, we must do field work," she reflects. "I also realized that the opportunity did not exist for the ordinary citizen, who is in fact quite the extraordinary citizen, to participate in this field research. I felt we needed an opportunity for all natural-resources enthusiasts to be involved in the urgent process of conservation planning." Morse shared her theories with a friend who is a lawyer; soon they had done the legal work and gotten a board together to launch Keeping Track—and the clients came in droves. "We just had to light one match and drop it in the dry leaves," she recalls. "And it's been a raging fire ever since."

From the outset, Morse saw it as critical that the participants of Keeping Track be as diverse as the wildlife

HANDS ACROSS AMERICA

In record numbers, Americans are volunteering to help with the monitoring of wildlife. Here are some examples:

The National Audubon Society's Christmas Bird Count, begun ninety-nine years ago, is the granddaddy of citizen monitoring programs and the longest-running ornithological database in the world. Approximately 45,000 volunteers throughout the Americas count as many bird species as possible in any twenty-four-hour period that falls roughly between mid-December and early January. The data have been vital in assessing the status and health of continental birds. www.audubon.org, 212-979-3000

The National Audubon Society and the Cornell Laboratory of Ornithology have jointly launched two related programs. The 42,000 participants in the Great Backyard Bird Count collect data on birds they see in backyard feeders, local parks, and other areas. In a project to monitor the migration patterns of the broad-winged hawk, individual sightings are recorded and then plotted on a map. birdsource.cornell.edu

Through the Science Center of Connecticut, 150 volunteers participate in the Amphibian Monitoring Program (CAMP) to detect changes in species over time. 860-231-2830, ext. 28

Florida's Reef Environmental Education Foundation recently joined forces with the annual Great American Fish Count to train divers in fish identification and data collection techniques. The result is an on-line system that now contains 15,000 fish entries from the Caribbean, Florida, the Gulf of Mexico, and the Pacific Northwest; the data are helping scientists map where certain species may be found and monitor changes in fish populations. www.fishcount.org, or www.reef.org and click on the Fish Count link. 305-451-0312

In Oshkosh, Wisconsin, hundreds of people volunteer for the Sturgeon Guard along the Wolf and Embarrass rivers to protect the fish from illegal harvest during their spawning period. (For information, e-mail Carolyn Kelly at kellyc@dnr.state.wi.us, or call her at 920-424-3057.) Volunteers are also involved in salmon counts in northern California, Oregon, and Washington, in monitoring harbor seals in California, and in watching right whales off the coast of New England.

Some people even pay for the privilege of volunteering. Earthwatch Institute, in Watertown, Massachusetts, pairs people up with 113 professional wildlife monitoring (and other scientific) programs worldwide. People spend one or two weeks netting platypuses in Australia, tracking cougars in Idaho, monitoring butterflies in Costa Rica, checking manatees in Florida, or counting humpback whales in Hawaii. For example, for $1,495, one can help track black bears in North Carolina's Pisgah National Forest. www.earthwatch.org, 800-776-0188

Because funding for wildlife monitoring is inadequate, citizen involvement can give an invaluable boost to research efforts. Some 50,000 volunteers in Washington state, trained in species identification and map reading, participate in a program called Nature Mapping, which supplements professionally generated studies of wildlife. Their sightings are kept as a separate database and used as an overlay to mapping data generated by professionals. www.fish.washington.edu/naturemapping, 206-543-6475

Virginia offers a similar statewide wildlife mapping program, run out of the Department of Game and Inland Fisheries, involving 330 observers. www.dgif.state.va.us, 804-367-8747

—S.L.

they were trying to protect. If she widened the appeal of her workshops, she knew, she could mobilize a larger wedge of the population. Today, she notes with pride that "we get all kinds of people: hunters, trappers, loggers, card-carrying Earth Firsters, corporate executives, and even politicians." That diversity also makes members harder to dismiss when they present their findings before local planning commissions.

One success story is the Piscataquog Watershed Association (PWA), based in Weare, New Hampshire. Gordon Russell, a naturalist and the president of the PWA, is a fan of Keeping Track: "I don't know any other group that gives people an opportunity to go out and do something physical about saving wildlife habitat," he says. Some eighteen members of the PWA have set up two Keeping Track groups, which now have three years' worth of tracking data. In one instance, Keeping Track monitors convinced a town in the watershed to relocate a proposed transfer station by presenting data that documented the use of the site by bobcats. PWA also used its data to defeat plans for a snowmobile trail through a steep area inhabited by bobcats.

"We get all kinds: hunters, trappers, card-carrying Earth Firsters, and even politicians."

In Charlotte, Vermont, another Keeping Track group successfully opposed a town policy requiring that houses be sited in wooded areas. The goal of the policy was to preserve a particularly scenic view—but its effect was to harm the area's wildlife. "Sue pointed out to us that all you need is a few dogs in houses at the edge of the woods to have a terrible impact on wildlife," says Linda Radimer, chair of the Charlotte Conservation Commission, tutor at the local Pine Ridge School in Williston, Vermont, and Keeping Track member. From that point on, Morse "became part of our initial effort to become educated about wildlife and tracking. She was really the cornerstone," says Radimer. Morse was also brought in to do a study of the potential impact on wildlife of a proposed development of thirteen houses on a large property. "Ultimately," Radimer adds, "we were able to limit construction to three houses and limit the depth to which they penetrated the woods."

KEEPING TRACK DOES HAVE ITS DETRACTORS, SOME OF whom dismiss the data as unprofessional and others of whom question the political motives of volunteers who monitor wildlife. During the debate over the proposal to establish a National Biological Survey (NBS), a federal agency that would have deployed citizen volunteers as part of an effort to monitor plants and wildlife nationwide, some congressional critics suspected that activists might carry out a radical environmental agenda while disguised as wildlife monitors. "More than likely you are going to have self-interested groups coming in as volunteers," said Representative Jack Fields (R-TX). "And in essence we are creating an environmental Gestapo that will go on people's private property." This kind of thinking eventually snuffed out the NBS, which died in Congress.

Others, such as Sheila Peck, author of *Planning for Biodiversity*, offer more tempered, scientific criticism. Peck believes Keeping Track's greatest accomplishment is that it has "tapped into an underutilized resource: citizen volunteers proud of their local areas, eager to learn about wildlife, and enthusiastic about conservation." But she notes that tracking large predators has limited efficacy for conservation issues as a whole. "In conservation it is important to step back and look at the big picture," she stresses. "Maybe what is important in one area is protecting endangered plant species," while elsewhere it may be more critical to protect foothills where mountain lions roam.

In fact, many conservation biologists favor Morse's approach. "I think Sue Morse has introduced a new approach and a very appealing one. Keeping Track brings some very interesting science to the field, kind of a populist science," says Bill Weber, director of North American Programs for the Wildlife Conservation Society, which is funding some of Morse's work in the Adirondacks. While acknowledging an inherent weakness in the protocol—"What tracking data can't do is give you an accurate sense of the size or makeup of the population"—on balance, Weber is a staunch Morse supporter. "She gets people out with good enough training so they can make some valid observations, and, up to a point, the groups that follow her approach can generate some very useful information on the presence or absence of wildlife."

STANDING AT THE TOP OF A SNOW-FILLED RAVINE, MORSE has us take off our snowshoes and stamp "post-holes" with our boots through the snow to make the steep descent safer. It isn't long, however, before half the volunteers find themselves skidding down the icy incline on their backsides, whooping it up as they grab at trees to slow their momentum. It is at the bottom of this descent, just below the area of rocky cliffs Morse has dubbed the "Bobby Knob" because it is frequented by bobcats, that we find a perfect indent in the snow where a bobcat has lain watching for prey downslope.

Standing in the snow, I look down at the impression. This sign—the palpable evidence that the cat lay in wait right here, the heat of its body melting the snow into a perfect cast—puts me in intimate contact with a feral world largely absent from my everyday life. It mutely poses the question: Will humans permit sprawl, habitat loss, and fragmentation of the landscape to create a world without bobcats? Perhaps. But not if Sue Morse has anything to say about it. •