

THE SOUND OF SILVERBELLS

I'd never wanted to live in the South, but when my husband's job took us there I duly learned the flora and tried to cultivate affection for the drab oaks when I longed for fiery maples. Even if I did not feel fully at home, the least I could do was help my students develop a sense of botanical belonging.

In pursuit of this humble goal, I had taken my premed students to a local nature reserve where the forest marched up the slope in bands of color signifying ribbons of different species from the floodplain to the ridge. I asked them to invent a hypothesis or two to explain why the striking pattern existed.

"It's all part of God's plan," said one student. "You know, the grand design?" After ten years of immersion in the primacy of materialist science as the explanation for the function of the world, I had to swallow hard. Where I'm from, an answer like that would have drawn laughter or at least rolled eyes, but in this group it simply yielded nods of assent, or at the least tolerance. "That's an important perspective," I said carefully, "but scientists have a different explanation for the distribution of vegetation over the landscape, maples in one place, and spruce in another."

This was a dance I was trying to get used to, teaching in the Bible Belt. I stumbled over two very left feet. "Have you ever wondered how the world got to be put together so beautifully? Why certain plants grow here and not there?" Judging by their polite blankness, this was not a burning question for them. Their total disinterest in ecology pained me. To me ecological insight was the music of the spheres, but

to them it was just one more requirement in their premed education. A biological story that wasn't about humans was of little interest. I didn't understand how one could be a biologist without being able to see the land, to know natural history and the elegant flow of natural forces. The earth is so richly endowed that the least we can do in return is to pay attention. And so, with a little evangelical fervor of my own, I set my sights on the conversion of their scientific souls.

All eyes were on me, waiting for failure, so I paid attention to every little detail, just to prove them wrong. Vans idled in the circle in front of the administration building while I checked my list one more time: maps prepared, campsites reserved, eighteen pairs of binoculars, six field microscopes, three days of food, first aid kits, and reams of hand-outs of graphs and scientific names. The dean argued that it was too expensive to take students into the field. I argued that it was too costly not to. Whether the passengers were willing or not, our little convoy of college vans was headed down the highway through the sheared-off mountaintops of coal country where the streams run red with acid. Shouldn't students devoted to a profession in health see this firsthand?

The hours on a dark highway gave me plenty of time to consider the wisdom of trying the dean's patience in my very first job. The college was already struggling with finances, and I was just a part-time instructor teaching a few classes while I finished my dissertation. I'd left my baby girls at home with their dad in order to introduce other people's children to something they cared little about. This exclusive little college had built its reputation in the South on the successful admission of its students to medical school. Accordingly, the sons and daughters of the bluegrass aristocracy were sent here for their first step toward lives of privilege.

In keeping with this medical mission, the dean ritually donned a white coat every morning as a priest dons his vestments. His desk calendar called only for administrative meetings, budget reviews, and alumni functions, but the lab coat was a fixture. Though I never saw him in an actual lab, it was no wonder that he harbored doubts about a flannel-shirt scientist like me.

The biologist Paul Ehrlich called ecology “the subversive science” for its power to cause us to reconsider the place of humans in the natural world. So far, these students had devoted several years to the study of a single species: themselves. I had a whole three days to be subversive, to distract them from *Homo sapiens* for a glimpse of the six million other species with whom we share the planet. The dean voiced his concerns about funding a “mere camping trip,” but I argued that the Great Smoky Mountains were a major reservoir of biodiversity and promised that it would be a legitimate scientific expedition. I was tempted to add that we’d wear lab coats for good measure. He sighed and signed the requisition.

The composer Aaron Copland got it right. An Appalachian spring is music for dancing. The woods dance with the colors of wildflowers, nodding sprays of white dogwood and the pink froth of redbuds, rushing streams and the embroidered solemnity of dark mountains. But we were here to work. I got out of my tent the first morning with clipboard in hand and lessons in mind.

The range spread out above us in our valley campsite. The Smokies in early spring are a patchwork of diffuse colors, like a map with individual nations colored: pale green for the newly-leafed poplars, gray blocks of the still-dormant oaks, and dusty rose for the maples breaking bud. Here and there, hot pink tracts of redbud and swaths of white reveal where the dogwoods bloom and lines of dark green hemlock trace the watercourses like a cartographer’s pen. Back in the classroom, hands white with chalk dust, I had diagrammed the gradients of temperature, soils, and growing season. Before us, the mountainside spread the pastel map of our field trip, the abstract translated into flowers.

Moving up the mountainside was the ecological equivalent of walking to Canada. The warm valley floor could give us a Georgia summer, while the five-thousand-foot summits are akin to Toronto. “Bring your warm jackets,” I told them. An increase of one thousand feet is equivalent to moving a hundred miles northward and therefore many steps back into spring. The dogwoods on the lower slopes were in full bloom, creamy-white sprays against the emerging leaves. Moving upslope they

reversed like a time-lapse camera running backward from open blossoms to tightly bound buds not yet awakened by heat. Midway up the slope, where the growing season is too short, the dogwoods disappear altogether, their place taken by another tree more tolerant of the late-season frosts, silverbells.

For three days we wandered over this ecological map, traversing elevational zones from deep cove forests of tulip poplar and cucumber magnolia to the summits. The lush coves were a garden of wildflowers, glossy patches of wild ginger and nine species of trillium. The students dutifully wrote down whatever I told them, creating a mirror image of my internal checklist of things to see without much apparent interest. They asked for the spelling of scientific names so often that I felt like I was in a woodland spelling bee. The dean would be proud.

For three days I checked the species and ecosystems off the list to justify the trip. We mapped vegetation, soils, and temperature with the fervor of Alexander von Humboldt. At night we drew graphs around the campfire. Oak-hickory at midelevation, coarse gravelly soil—check. Reduced stature and increased wind speed at high elevation—check. Phenological patterns with elevational change—check. Endemic salamanders, niche diversification—check. I so wanted them to see the world beyond the boundaries of their own skins. I was conscientious not to waste a single teaching opportunity and filled the quiet woods with facts and figures. My jaw ached at the end of the day when I crawled into my sleeping bag.

This was hard work. When I hike, I like to do it quietly, just looking, just being there. Here I was constantly talking, pointing things out, generating discussion questions in my head. Being the teacher.

I only lost it once. The road became steeper as we approached the top of the range. The vans labored around sharp switchbacks and were buffeted by strong winds. No more soft maples and pink froth of redbud. At this elevation the snows had only recently melted away from beneath the firs. Looking out over the land, we could see how narrow this band of boreal forest was, a thin strip of Canadian habitat way down here in North Carolina, hundreds of miles north from the

nearest spruce-fir woods, just a remnant from the day when ice covered the north. Today these high mountaintops offer a refuge that feels like home to spruce and fir, islands in a sea of southern hardwoods, perched high enough to duplicate the Canadian climate.

These islands of northern woods felt like home to me too, and in the fresh cold air I slipped the leash of my lectures. We prowled among the trees, breathing in the scent of balsam. The soft mattress of needles, wintergreen, trailing arbutus, bunchberry—all my familiars from home carpeted the forest floor. They made me realize suddenly how displaced I felt to be teaching in someone else's home forest, when I was so far from my own.

I lay down on a carpet of moss and held class from a spider's perspective. High on these summits live the world's last populations of the endangered spruce-fir moss spider. I didn't expect premed students to give a damn, but I had to speak up for the spiders. They have persisted here since the glaciers picked up and left, living their tiny lives spinning webs among mossy rocks. Global warming is the major threat to this habitat and these animals. As the climate warms, this island of boreal forest will melt away and with it the last of many lives, never to return. Already insects and disease from warmer elevations are claiming them. When you live on the summit, there's no place else to go when the hot air rises. They will balloon away on strands of spider silk, but there will be no refuge.

I ran my hand over a mossy rock, thinking of the unraveling of ecosystems and the hand that pulls the loosened thread. "We have no right to take their homes from them," I thought. Maybe I spoke out loud or had a zealot's look in my eye, because one student suddenly asked, "Is this like your religion or something?"

Ever since a student had challenged my teaching of evolution, I'd learned to tread lightly on these matters. I felt all of their eyes upon me, good Christians, every one. So I hemmed and hawed about loving the woods, started to explain about indigenous environmental philosophies and kinship with the other members of Creation, but they looked at me so quizzically that I stopped and then hastened off to point out

a nearby clump of sporulating ferns. At that time in my life, in that setting, I felt that I couldn't explain the ecology of spirit, a sense that went so far from Christianity and science alike that I was sure they wouldn't understand. And besides, we were there for Science. I should have just answered yes.

After many miles and many lectures, at last it was Sunday afternoon. Job done, mountains climbed, data collected. My premed students were dirty and tired, their notebooks filled with more than a hundred and fifty nonhuman species and the mechanisms behind their distributions. I'd have a good report for the dean.

We hiked back to the vans in the late golden light, through a stand filled with the pendant blooms of mountain silverbell that seemed to glow from within like pearly lanterns. The students were awfully quiet, tired, I imagined. With mission accomplished, I was happy just to watch the slant of hazy light over the mountains for which the park is justly famous. A Hermit Thrush sang out from the shadows and a little breeze brought a shower of white petals around us as we walked in that amazing place. I was suddenly so sad. In that moment, I knew that I had failed. I had failed to teach the kind of science that I had longed for as a young student seeking the secret of Asters and Goldenrod, a science deeper than data.

I had given them so much information, all the patterns and processes laid on so thick as to obscure the most important truth. I missed my chance, leading them down every path save the one that matters most. How will people ever care for the fate of moss spiders if we don't teach students to recognize and respond to the world as gift? I'd told them all about how it works and nothing of what it meant. We may as well have stayed home and read about the Smokies. In effect, against all my prejudices, I'd worn a white lab coat into the wilderness. Betrayal is a heavy load and I plodded along, suddenly weary.

I turned to see the students coming down the trail behind me, a petal-strewn path in gauzy light. One person, I don't know who, began to sing, ever so quietly, those familiar first notes. The ones that open your throat, irresistibly calling you to sing. *Amazing grace, how sweet*

the sound. One by one they joined in, singing in the long shadows and a drift of white petals settling on our shoulders. *That saved a wretch like me. I once was lost but now I'm found.*

I was humbled. Their singing said everything that my well-intentioned lectures did not. On and on they went, adding harmonies as they walked. They understood harmony in a way that I did not. I heard in their raised voices the same outpouring of love and gratitude for the Creation that Skywoman first sang on the back of Turtle Island. In their caress of that old hymn I came to know that it wasn't naming the source of wonder that mattered, it was wonder itself. Despite my manic efforts and my checklist of scientific names, I knew now that they hadn't missed it all. *Was blind, but now I see.* And they did. And so did I. If I forget every genus and species I ever knew, I'll never forget that moment. The worst teacher in the world or the best teacher in the world—neither can be heard over the voices of Silverbells and Hermit Thrushes. The rush of waterfalls and the silence of mosses have the last word.

As an enthusiastic young PhD, colonized by the arrogance of science, I had been fooling myself that I was the only teacher. The land is the real teacher. All we need as students is mindfulness. Paying attention is a form of reciprocity with the living world, receiving the gifts with open eyes and open heart. My job was just to lead them into the presence and ready them to hear. On that smoky afternoon, the mountains taught the students and the students taught the teacher.

As I drove home that night, the students slept or studied by dimming flashlight. That Sunday afternoon changed forever my way of teaching. A teacher comes, they say, when you are ready. And if you ignore its presence, it will speak to you more loudly. But you have to be quiet to hear.