

Three Rivers: Writing Our World

In the Tularosa Basin of New Mexico, three dry rivers converge near an old basaltic ridge. Nearby, fifty acres of rock art adorn the site, and a state park called Three Rivers Petroglyphs Site preserves the ancient stone writings. In all directions, unusual geological formations spread out to form a landscape of contrast. To the north, black lava fields called the Valley of Fires, or the Malpais (“badlands”), make up a plain that looks like plowed earth. To the south, the smooth white gypsum dunes of White Sands National Monument offer a stark reversal. To the east, the Sacramento and White Mountains, and to the west, the San Andres

Mountains form the rim of the basin, which boasts one of the most beautiful and inscrutable landscapes of the southwestern United States.

Half a million years ago, the basin was a shallow inland sea fed by many rivers. The rivers' depositional sediments formed a buildup of limestone, shale, gypsum, and sandstone. The sea was pushed upward like the crust of a rising loaf of bread by tectonic action, and when it sank in the middle, it created a 60-mile wide and 150-mile long depression. Water from the mountains flowed into the depression but had no way of escaping except by evaporation. At the end of the last ice age, about 10,000 years ago, the climate was wetter and there was water in the large lake. Today, the lake is almost dry and is what geographers call an alkali flat.

What makes the Three Rivers site such an intriguing gallery is its 21,000 petroglyphs. Images of plants, animals, insects, sky and earth objects, and abstract designs are chiseled into the rocks. They were carved a thousand years ago by the Jornada Mogollon culture, a people probably related to the ancient Mimbres. The three-quarter-mile long trail that wound through the rocks was well marked, and as my traveling companion and I climbed, we tried to match the petroglyphs on the stones with the pictures in the park brochure. There was a stick man, a fish, and a stick man inside a fish (Could this be a Jonah-in-the-belly-of-the-whale story?), a deer with arrows in its side, a turtle, a rattlesnake, a bighorn sheep, a lizard, and more. It seemed the people who inscribed these stones were determined to create a pictorial list of all the creatures and objects in their world. The abstract signs, squares, triangles, circles, coils, mazes, and ripples were equally vivid, but we could only guess what they represented.

As we moved through the boulders, I wondered why we humans make images that represent our world. Why do we write our world? When I was eight, I was fascinated by live oaks; my third-grade notebook was full of penciled trees. When I learned to write sentences, I wrote poems about live oaks. Nature writers offer many reasons for writing our world (the American Society for Literature and the Environment's bibliography gives a list of such

nature writers [ASLE 2005]). Some claim that we write to “make place,” to make sense of our world, or to bring order (Dobrin and Keller 2005); some (McKibben 2003) suggest that we write to defend it, while others (Dallmeyer 2004) suggest that it allows us to envision a better world. Solnit (2007, 1) proclaims “It was place that taught me to write.” Phillips, in *The Truth of Ecology: Nature, Culture and Literature in America* (2003), explains that we simply need to describe our world. He distinguishes nature writing from natural history according to the involvement of the narrator. Though both are descriptive, nature writing has a more involved narrator than natural history. He claims that “nature writers . . . present themselves as both keen observers and as spiritual barometers sensitive to the pressures that weigh upon body and soul here on earth” (Phillips 2003, 187). For me, writing has been a way of honoring the world and a way to declare love. My childhood loves were names written on the white pages of my notebook. But that was only the beginning. The list increased, and over the years the words became more than people’s names, more than places, more than trees. What I write today is still oaks and plants and birds and the natural world. I write to make connections, to make conversation, and with the hope that I might help others make connections. Was that what the petroglyphs were for? Are we as writers always trying to be part of a connection, part of a larger conversation? Did those ancient peoples need to write their world as much as I do?

From the highest point on the scripted rocks, White Sands was a hazy dust cloud on the horizon. The day before, we had trudged up the powdery dunes carrying plastic sleds and tobogganed down the calcium hills. For hours, we were kids on the slide. So different from the hard quartz sand of Florida beaches, this sand was like talcum powder. My toes became so dehydrated they looked like white raisins. It was only when I remembered that I had used this same mineral, calcium sulfate, as a desiccator in the laboratory that my dry, cracked feet made sense. Calcium sulfate takes the water out of everything.

Earlier that morning, we had hiked to the alkaline lake and walked among the fields of crystalline selenite. Here the calcium was hard crystalline gypsum. Bizarre amber shards protruded from the rock, creating a trail of broken glass. This arid land, with its calcium dust and calcium glass, its white talc and glassy outcroppings, was mineral chemistry at its most artistic.

The White Mountains that form the eastern lip of the basin contain a fifty-thousand-acre wilderness that is part of the National Wilderness System. A few days earlier, we had discovered a Lewis's woodpecker in Nogales Canyon feeding on elderberries. The dark bird was a stunning sight against a background of autumn mountain foliage. Back and forth the bird flew from the elderberry tree to the yellow oaks. Against a backdrop of pale auburn Rocky Mountain maples and a blue denim sky, with the high slopes covered in yellow aspens and dark evergreens, the bird was the centerpiece of a majestic canvas.

Watching the woodpecker, I thought about how much I loved birding. The recent rash of books about birders (Osborne 2003; Cocker 2003; Cashwell 2003; Obmascik 2004; Koepfel 2005, to cite only a few of the best-sellers) describes an activity that has become both popular and popular to write about. These books offer some of the reasons why people bird. They describe birders who travel all over the country (some all over the world) and birding as an eccentric hobby, a game, a competition, even a social event. In an article entitled "13 Ways of Looking at An Ivory-Billed Woodpecker," Hitt (2006, 43) explains that "the act of birding, ultimately, is an act of storytelling." For me, birding has always been a connection with the natural world, and with that connection has come an awareness and an understanding that we must keep what is left of the natural world and try to restore what has been destroyed. Maybe if I write well enough, maybe someone will be moved to do the political and economic things needed to keep our world as natural as possible. Maybe, like Scheherazade, my life depends on it.

Beyond the mountains, the high chaparral of Lincoln County rolls on like a Christmas holiday, with its red hills and green junipers. The day before, we had walked one of the evergreen-speckled canyons with Anne. Her ranch in Arabella was a gathering place to share a potluck dinner with the Lincoln County Bird Club. After a smorgasbord of tasty southwestern cuisine, Anne led us to an old ranch site and cantina. Along the way, Gene discovered a perfect arrowhead the size of a thumbnail. Pat spotted a horned toad lizard, and we watched it flatten its body against the rock like a shadow. When its camouflage didn't work and we were still there, the mini-dinosaur scampered off, its spiky head trembling in fierce retreat. Pat pointed out the amethyst shards of old bottles and told us how old glass contained minerals. The manganese, with age, turned the glass the color of plums. Anne showed us the remains of the old stone foundations and cellar. She told us the family had six kids and lived totally off the land. A goat pen revealed the probable source of milk and meat, and we speculated where the garden might have been and how water was brought up to the garden from the stream nearly a mile down the canyon. We marveled at the resourcefulness of people who could live in such a harsh land. And yet the history of all indigenous Native Americans was just that subsistence story.

To the north of Three Rivers, the dry flatland known as Jornada del Muerto ("the valley of death") stretched out to another hazy horizon. Here, Trinity Site marked the testing of the first atomic bomb in 1942. This was the place where my country (the only country to ever use the nuclear bomb) made weapons of mass destruction. To create a thing of such destruction, to use it to destroy other living creatures, even my country's enemies, was beyond my understanding. I would never be able to make order of that. It has been argued that the dropping of the bomb on Hiroshima saved countless American lives, but all those survival arguments of "it was either them or us" just don't make sense. I wondered if there were petroglyphs that stood for fear and madness.

The afternoon sun beat down from a cloudless sky, and the plains rippled with heat. We climbed down from the hot rocks and left the ancient graffiti of Three Rivers. Driving over the dry river beds, I imagined the people who had carved the petroglyphs leaving with perhaps the same thoughts I had when I finished writing. Maybe someone would read what I had written and be moved by it; maybe they would know that I had tried to evoke for them the beauty of the natural world. In that knowledge they might find an awareness of a grand and beautiful connection, an essential connection that rivers can make, even if they are dry.

Apalachicola and Other Rivers of Three Corners: Fossil Rivers

A weekend looking at plants might not seem very exciting, but that was how we members of the Florida Native Plant Society, Long Leaf Pine chapter, spent a few days one November in the Three Corners region of Florida, Georgia, and Alabama. The region is unique because ancient Pleistocene rivers molded the land and created a rare mixture of habitats: southern Appalachian hill forest, southern hardwood swamp, and sand hill pine barrens. Cutting through underlying limestone, the ancient rivers created ridges, ravines, and rolling hills. With the exposed limestone and deciduous hardwood forests, the terrain has the

appearance of the Appalachian foothills. Yet in the floodplains, the lowlands are wet hollows typical of southern hardwood bottomlands, and the drier uplands have all the characteristics of the piney woods.

Three state parks—Three Rivers, Torreya, and the Marianna Caverns—provide access to the habitats, and John Tobe, a state botanist and expert on the ecology of the region, provided the expertise. He led our band of curious botanizers on a merry exploration of this land sculptured by fossil rivers.

“Get in here, right now!” the lady hollered in an angry voice. The snibbling of a cranky kid as he crawled into the tent was muted by another yell. “Don’t you . . .” and the rest of the scold was garbled. We plant society members dashed into the woods to get away from the shouts. Packed in like graham crackers, the campers were a nosy bunch, and the campground at Three Rivers State Park was buzzing with the comings and goings of pickup trucks, boats being docked, and people milling around. We found the trail and moved away from the loud gatherings as quickly as possible.

The Chattahoochee and Flint Rivers meet to form Lake Seminole, and from this lake, the Apalachicola River meanders down to the Gulf of Mexico. On the southeast shore of Lake Seminole, the Lakeside Trail creeps up piney hills, through hardwood forests, and loops back to the river front. The trail begins as a damp path along the river where dense shoreline vegetation blocks much of the river’s view, but occasionally the path leads directly down to the water’s edge. At these clearings the confluence of the rivers can be seen as the amoeboid lake. Supposedly, the lake supports good fishing for bass, blue gill, speckled perch, and bream. Formed when the Jim Woodruff Dam was completed in 1956, it is now a flooded river swamp. Although few fishermen were out on the lake, the sound of someone cranking a boat motor time and time again filled the air with an awful grating noise.

The trail follows the lake’s edge for about a quarter of a mile and then veers off up a hill. Blood root is common, and banana

spiders were busy hanging their nets like laundry between every other tree. A colony of mushrooms had settled on a fallen log, adding a touch of yellow to the trail, but there was not much else of interest. Not a single bird was about, the sky was overcast, and we were glad at the end of the afternoon to return to our lodging for the evening. Maybe it was the crowded campgrounds, maybe it was the weather, maybe the dam, but the river seemed oppressive and congested. There is something about a dam that takes the spirit out of a river; there is something about a crowd that takes the beauty out of a riverside.

The next morning we eager botanizers gathered at Torreya State Park. The directions to the park were a little confusing, so we wandered a bit among the back roads through hardwood and longleaf pine forests before we finally found it. Located on the Apalachicola River about twenty miles south of Marianna, Florida, the park is surrounded by land purchased over a thirty-year period by The Nature Conservancy. The six-thousand-acre Nature Conservancy preserve called the Apalachicola Bluffs and Ravine Preserve, described by Vaughan (2004), has an ecosystem of ravines called steepheads. With a touch of humor, Means (1991) dubs the region “Florida’s canyon lands” because of these ravines and gullies.

Torreya State Park has several botanically interesting trails, including the Weeping Ridge Trail, which circles the park, and the Bluffs Trail, which loops from the high bluffs near an old colonial house down to the river’s edge and back. We trekked off with John Tobe leading the way to explore the plants along both trails.

In a patch of sandy soil near the Weeping Ridge trailhead, we spotted an interesting herb called the purple milkwort (*Polygala polygama*). This thin-leaved perennial, also known as bitter or racemed milkwort, is found throughout the eastern United States in sandy wooded areas and prairies—and in the eastern but not the western part of the Florida Panhandle. What makes the plant unique is that it produces a flower below ground; botanists call this a cleistogamous flower (Kaul et al 2000). This characteristic is so rare that of all the 250,000 species of flowering plants, only thirty-six species

produce such cryptic flowers. The very idea of an underground flower seems contradictory. After all, if the function of a flower is to be seen, to be showy, to attract attention so that some creature might come along and pollinate it, why hide in the ground?

As we observed the plant, I recalled an even rarer group of underground flowers, the underground orchids (Jones 1988). To date only two species of underground orchids, *Rhizanthella gardneri* and *R. slateri*, have been found and only in Australian mallees (eucalyptus-dominated shrub lands). These rare, down-under orchids spend their entire life cycle as subterraneans, buried beneath the sandy soils of the desolate scrublands. The orchid species, *R. gardneri*, the parasitic broombush, *Melaleuca uncinata*, and a mycorrhizal fungus form an interdependent threesome whose exact chemical relationships are unknown. The orchid is pollinated by gnats that crawl under the leaf litter and incidentally by termites and mosquitoes (yes, these annoying insects have a practical function beyond aggravating us and being disease vectors). Seeds produced in a small berry are dispersed by animals that eat the berries and defecate, transporting them to a new spot. When cut, the flowers smell like formalin. Almost nothing about the biology of the other orchid species, *R. slateri*, is known. Unlike the orchids, the milkwort is a more “normal-looking” plant. It has leaves and long stems and produces an above-ground flower that blooms in June. The purple aerial flowers smell a little like spice cake.

Observing the milkwort, I thought, if a flower produced a scent, even if it was a scent like formalin, as is the orchids', or spice cake in the case of milkwort, and if that scent attracted ground-burrowing insects, and those insects pollinated it, the flower had done what flowers were meant to do. How remarkable it is that plants have so many ways of doing what needs to be done. In the botanical world, it gives new meaning to the phrase, “there are many paths to the mountain.”

The red clay trail sloped down through a longleaf pine-wiregrass habitat, and the morning sun reflected off pine needles and long

blades of wiregrass. Everything shimmered. Every surface sparkled and spangled like a tinsel Christmas tree. A Bachman's sparrow flitted into a thicket, and pine warblers chattered high in the branches. Almost before we had time to realize that we were in a longleaf pine forest, the terrain suddenly changed and we were in a hilly deciduous forest. John pointed out some of the common trees: elm, ash, hickory, beech, and oaks formed the taller canopy with Florida maples (*Acer barbatum*) and chalk maples (*Acer leucoderme*) filling in the understory. With the leaves raining down like a New England autumn, John showed us the difference between the two maples. Chalk maples, he said, have droopier leaves with hairy undersides.

When the chalk maples' seeds dropped, they whirled to the ground like helicopter blades. John shook a small tree to illustrate the seed type (botanists call them samara) and they fluttered to the ground like whirligigs. Two of our troops dashed about trying to catch them. Stuffing them into their pockets, they exclaimed they were going to plant them when they got home and grow chalk maples. Not a bad idea. Trying to grow a non-indigenous variety, such as a New England maple in a Florida yard, is not a good idea because it usually will not do well. But planting a native species, such as a chalk maple (especially if limestone is available) or a Florida maple, is far more likely to work. It is a concept that should apply to all planting efforts. In other words, plant native.

Brown nuggets speckled the trail. The ground looked like a marble tournament with so many hickory nuts. There were mocker nuts, pig nuts, and bitternuts. When one of the group picked up the little shells, we teased her about bringing home treasures. We laughed when she admitted that she was going to use them as home decorations. I thought, how strong is this need to bring the beauties of the natural world back into our homes, and it does not stop when we outgrow Campfire Girls or stop thinking of nut shells as fairies' caps.

We descended onto the Apalachicola River floodplain and the terrain changed again. The trail was steep, a reminder of why the

term *steepheads* has been used to describe these ravines. Spike moss, liverworts, and climbing hydrangea clung to the limestone banks; horsetail, southern shield, and Christmas ferns grew in the flatter spots. Tupelo, sweet gum, and cypress rose from the spongy soil, their flared trunks resembling a group of teenagers in bell-bottom jeans hanging out. Southern magnolia, the rare Ashe's magnolia (*Magnolia ashei*), chinkapin oak, shumard oak, black oak, and box elder made up the complex mosaic of other hardwoods.

Along the Bluffs Trail, John pointed out the Florida yew (*Taxus floridana*) and the Torreya tree (*Torreya taxifolia*), whose branches and needles look a bit like spruce. The rarest of the rare, the Torreya tree is found only in this small region along the banks of the Apalachicola River. It grows nowhere else on earth. The idea that some species have such narrow home places, while other species have such a wide range, made me wonder about what makes home. How is it that some plants, like the Asian climbing fern, well known as a troublesome invasive which we encountered all over the trail, can grow almost anywhere, while others, like the Torreya tree, can only grow in this one tiny spot in all the world?

Indigenous palms, such as the needle palm and the sabal palm, grew among their more common relative, the saw-tooth palmetto. A barred owl spooked and flew off towards the river, hooting her annoyance at being disturbed. Dutchman's pipe vine, the host plant for the pipevine swallowtail, tangled in the top of a thicket. Stinging nettle, host to the red admiral butterfly (with its lovely genus name, *Vanessa*), also grew in patches along the trail. When someone remarked that the red admiral circumnavigates the world, I paused to let that sink in. Circumnavigate? Could that be true? It was hard enough to imagine an arctic tern circling the globe, but a delicate butterfly, well, that bordered on the miraculous.

Water oats and trillium filled in the shaded places where only a little sunlight was able to sneak through the dense branches. A parade of shade-loving plants, like sensitive fern, fox grape, a silver bell tree, butterweed, and others, lined up along an "abracadabra"

creek. Water oozed up from the ground, meandered a little ways, and then vanished again into the ground like magic. The creek's milky blue waters, full of calcium, supported rare fish and salamanders, John said. Somehow it seems fitting that in this place of rare plants and animals, an aquamarine creek would suddenly appear, flow a short distance, and then just as suddenly disappear back into the limestone. Abracadabra!

We returned to the high bluffs overlooking the river and watched the syrupy waters of the Apalachicola bend around a lazy curve. After a time watching the river ooze its way south, we headed off to our next destination, the Marianna Caverns.

About thirty miles west of Three Rivers State Park, the Marianna Caverns also had a Bluffs Trail, and it ran along the east side of the Chipola River floodplain. The underlying limestone, known as karst topography, was full of lacy underground caverns, sinkholes, and pits, and the Bluffs Trail was a lime-lover's paradise. Columbines and zephyranthes known as atamasco lilies (*Zephyranthes atamasco*) covered the water-carved boulders that lined the trail. Atamasco lilies, or rain lilies, are not really lilies but amaryllises, and after spring rains they bloom into white stars. Our expert botanist, John Tobe, explained that in March the rocks turned into stunning wildflower gardens that looked like the hanging gardens of Babylon. He was so enchanted with the limestone rock gardens that he decided to make one at home by getting some "feral cement" and planting some of these wildflowers on the concrete.

The idea of "feral concrete" had never occurred to me. I think of concrete as an alien substance, a plant terminator, of sidewalks that mow down grass, of parking lots that wipe out meadows, of concrete buildings that displace forests. I think of concrete drains diverting billions of gallons of water from the soil to sewage treatment plants. To imagine concrete as something to assist plants was a new way of thinking. Of course, concrete is limestone, so why not imagine it in a new way, as a plant helper? I began to imagine cities where high-rises served as trellises, where freeways became long

row gardens, where driveways became orchards. The idea was really appealing. If we could make concrete a life-giving substance rather than a life-destroying one, what a wonderful world it would be. And the term *concrete jungle* might turn into something entirely true.

We walked past crevices in the ground covered with metal bars. Openings to the bat caves where grey bats made their home, the pits looked like entrances to the underworld. The metal bars were there to keep out curiosity seekers and cavers. It was hard to imagine anyone wanting to enter such a hole, but apparently there are many people who do. Even after reading the lovely *Entering the Stone: On Caves and Feeling Through the Dark* (Hurd 2003) and learning that a lot of people explore caves with great relish, I found it difficult to imagine entering a cave. Hurd's writing is beautiful and enticing, but still, I could not understand someone actually enjoying the process of entering the darkness of a cave. I get shivers just thinking about the physical reality of it. If the cave serves as Hurd's metaphor for death, and if I had a choice of metaphors, I would choose not to enter the cave. I would, like Virginia Woolf, fill my pockets with stones and walk into the river.

As our day ended and we sat on the limestone blocks at the end of the trail, I wondered about the nature of fossil rivers. Those wild ancient rivers once cut through the land exposing the underlying limestone bedrock and, in doing so, created unique environments. The environments in turn supported unusual plants and, in some cases, plants so rare they could only be found in this one place on all the earth. Perhaps the legacy of some rivers is the creation of unusual landscapes, and with the creation of such habitats, the river gives the gift of rarity.