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A COMPANION TO AMERICAN ENVIRONMENTAL HISTORY

Edited by

Douglas Cazaux Sackman

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Contents

Chapter One

Paths Toward Home: Landmarks of the Field in Environmental History

Louis S. Warren

This is nature – it must be.

Getting here was not easy. You drove five hours out of the city, then parked at Mammoth Ski Resort on the eastern slope of the Sierra Nevada. There you unloaded your gear, and boarded the shuttle bus to the trailhead in Reds Meadow. On disembarking, you lifted your backpack and began a dusty hike through the foothills, until you came up a steep set of switchbacks to the outlet of Shadow Lake. Now, hiking along the lakeshore, you've come to your campsite. Here you pause.

You could hardly imagine a place more natural. The mountain slopes you ascend are part of the Ansel Adams Wilderness Area, which contains some 230,000 acres of the eastern Sierra Nevada. This rugged geography practically reverberates with the grand personalities and events of environmental history. A haunt of John Muir, who exhorted Americans to take to the wilderness as early as the 1870s, this mountain was first draped in the protective codes of conservation with a flurry of laws passed in 1890, when the federal government temporarily attached much of it to Yosemite National Park (which today abuts the Ansel Adams Wilderness just north of here). Three years later, the ground where you stand became part of the national system of "forest reserves" (now the national forests), and Theodore Roosevelt added more of the mountainside to that system in 1907 (Rose 2000: 77).[1]

In 1964, Congress compounded its protections by enshrining this very spot in a designated wilderness area. The Wilderness Act of that year declared this "an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain" (Wilderness.net 2009; US Congress 1964). Originally called the Minarets Wilderness – after the jagged peaks that crown this section of the mountain range – authorities posthumously honored the nation's leading wilderness photographer by renaming it the Ansel Adams Wilderness in 1984.

The stunning beauty of this place is fitting tribute to Adams, whose images of unpopulated mountains and meadows are imprinted across everything from calendars and posters to coffee cups and T-shirts. To a significant degree, Adams taught millions of Americans the meaning of wilderness as it became enshrined in the Wilderness Act, the place "where man himself is a visitor who does not remain."

If you could look past the relatively few hikers and campers in view you might be tempted to see this as a mountain outside of history, a place indeed "untrammeled by man." From the crashing cataract in the stream below your campsite beside Shadow Lake to the thick trunks of Jeffrey pine surrounding it and upward to the soaring mountain peaks, this "community of life" could indeed fool you into thinking you have stepped into an Adams photograph.

But for a place without history, there sure are a lot of rules here. To enter the trailhead from the road, you had to show your permit to a ranger. This is a popular destination, and for the permit itself you had to apply months in advance, and pay a fee.

Then you had to find a way in. Entrance is permitted only on official trails, and you entered on the one assigned to you by the National Park Service, which administers this wilderness. Now that you're here, you're on deadline. The permit requires you to enter the wilderness on a particular day, and leave within a set number of days to make room for the next permittee.

The permit spells out a host of other regulations you must obey: You cannot have fires if you camp at elevations above 10,000 feet. You cannot cache equipment, and you cannot take along any wheeled cart to carry any of it. You cannot camp within fifty feet of any stream or lake, and you have to carry all your garbage out. You cannot play touch football or participate in any other "competitive event." You cannot bring a dog.

These administrative proscriptions have a history of their own, some of which is inscribed into the very earth. To discourage cross-country rambling – which erodes slopes and damages meadows – the Park Service maintains trails (which you are required to use). In many places a steady column of hikers has worn them deep into the soil. On hard terrain, where pathways might become less legible, temporary laborers have carved them into the earth with shovels and adzes. The switchbacks about a mile below were lined with stones, and graded with carefully placed steps. In one place above, they are even blasted into bedrock with dynamite and reinforced with concrete.

The trails and rules serve similar purposes. They exist because so many visitors resort to these peaks that they easily reproduce urban problems. Thus, if you collect water from that cascade below, you would be wise to endure the tedium of pumping it through a filter to avoid ingesting *giardia intestinalis*, a parasite that infests watersheds all over the rural US in part

because of the feces of backcountry hikers. (Containing *giardia* is one of the reasons for the ban on camping within fifty feet of a lake or stream.)

The rules also stipulate you must stow your food in a small, fiberglass barrel provided by Forest Service headquarters. This "bear can" is impervious to assault by the black bears. Once the animals were rare, but in the last two decades the abundant refuse and ill-tended provisions of hikers have provided them with enough food to colonize this mountain, even to elevations where they have little or no natural habitat.

So authorities manage hikers to preserve as much as possible of the "untrammeled" wilderness experience they – you – seek. The rules are a means of making this landscape look and feel the way you want, reflecting the fact that you are part of a powerful constituency that deploys votes and money to support the regulatory system that governs this slope. It is not too much to say that if recreationists like you were not here then the Ansel Adams Wilderness would not be here either. The condition of this mountain is partly an expression of the power of its visitors.

And this is a remarkable thing, because wherever you might be from, the vast majority of people who visit here actually live in distant cities and suburbs. How did the mountain end up in the hands of people who live so far away, in landscapes so different from this one? What compels so many of them to seek respite in this place? How is this landscape connected to the one they flee or, more specifically, how has the making of this place been connected to the making of that one? What are the implications of city-dweller dominance for near-by people, and for the natural systems of this mountain, and how did the government – "the state" in scholarly parlance – gain the power to direct your travels and your behavior across a landscape that symbolically represents anarchic American freedoms?

Environmental historians explore the changing connections between people and nature, a project that has been dominated by questioning, abrading, interrogating, and otherwise troubling the boundary between nature and culture. In recent years, they have expanded their field to include landscapes close to most homes, and the environmental history of suburb and city is now a major component of our work (Hurley 1995; Tarr 1996; Kelman 2003; Orsi 2004; Klingle 2008; Melosi 2008; Walker 2008a). This essay, which introduces some of the major insights and debates of environmental history, might just as easily have considered a city as a wilderness area.

But in the end, to confront the landscape of the Ansel Adams Wilderness is to risk a profound sense of bewilderment at how a superficially pristine and natural landscape in fact represents a weird and potent mix of country and city, nature and culture, a mélange whose history is complex, confusing, and for that reason all the more intriguing. Thinking as a historian on this journey means confronting questions of law and the state, race and class and gender, work and leisure, the confluence of the natural and the artificial, and the forces that draw them together. To find your way through

this place and its history is to discover that the Ansel Adams Wilderness is less a world apart from the city than a peculiar, contingent expression of the city's connections to the most remote rural landscapes. To understand what you see on the trail to Mt. Ritter and back is to travel not only through space but to consider key connections to environmental histories of country, city, and the spaces between.

Your backpack weighs in around 60 pounds. Loaded with almost everything you need for your survival, it suggests a cultural connection to the mountains and your ecological separation from them. Onerous as it is, it is also a material, historical legacy of Victorian naturalists like John Muir, who first crossed the Sierra in 1869, descending toward the eastern lowlands via a canyon not far north of where you are standing at Shadow Lake. Like you, he was a seasonal visitor, a lowland dweller who sought respite from his daily cares in the sublime mountain peaks and canyons. And like you, he carried urban goods on his back, everything he required for his journey.

As he made his way down this eastern Sierra slope, he encountered a band of Indians from Mono Lake headed the other direction, "on their way to Yosemite for a load of acorns" (Muir 1911: 294).

In that passing, two ways of seeing the Sierra Nevada and of understanding its creatures also passed. Muir was hiking for fun. The Mono Paiutes were hiking for food.

Muir and the Monos differed, too, on what these mountains were. Muir saw them through a lens at once secular and religious. An intellectual heir to Romantics like William Wordsworth and William Blake, his nature was the home of a God who seemed, after the scientific and industrial advances of the eighteenth century, profoundly distant from everyday experience. Although Muir published scientific articles on the geologic origins of the Sierra, his mountain wilderness was also benign and holy, the creation of a decidedly merciful God who intended it to serve as "the People's Playground."

The Mono Paiutes also loved the mountains, and still do, but in ways profoundly different from Muir. To them as to many other Indians, the land was not part of a unitary "Nature" but the home of many powerful spirits who had to be appeased to retain luck in the hunt, in childbirth, in health. Good fortune flowed only to those who made the proper offerings and gifts to spirits like Kwi'ina, Golden Eagle, who created the Sierra Nevada when he flew so low his wings touched the soft mud of the young earth and raised it into mountain peaks (Beesley 2004; Lee 1998; Heizer and Elsasser 1980; Nelson 1983).

For Mono Paiutes, the mountains were not a mere playground, but home. They played here, to be sure, but unlike Muir and you, they also worked here, fashioning lodges, food, and tools from these forests. You can believe in a mythical land, untouched and "untrammeled" if you want, but if you know where to look there are traces of Indian occupation – Indian

labor – everywhere. By the trail, here and there, flakes of obsidian glitter in the sun, detritus left by Indians crafting knives, hide scrapers, arrow straighteners, and weapons from the black, volcanic glass.

And then there is the path itself. The first people to enter the Sierra Nevada probably came the same direction you have, the same way those Mono Paiutes did on the day they met John Muir: up the slopes from the Great Basin some 8,000 years ago, on the heels of the retreating glaciers (Beesley 2004: 20).

For them and for succeeding generations, there were many reasons to travel into these mountains. Perhaps the biggest prize was protein-rich pine nuts, which drew gatherers who collected them by the ton in the fall of each year. These and other resources from the Sierra, such as acorns, sustained even distant villages, helping to make the future state of California one of the most densely populated regions in early North America.

When Columbus crossed the Atlantic, there were probably 100,000 Indians living in these mountains, including not only Mono but Sierra Miwok, Pit Rivers, Maidu, Nisenan, Awhaneechee, and others (Beesley 2004: 21). Many of the trails so carefully reinforced by today's Park Service were first worn into the Sierra soil and rock by Indian travelers, who carried obsidian along with pine nuts, red paint and sinew-backed bows to trade west of the Sierra. There, Yokuts, Miwoks, and others offered skins of deer, antelope, and elk, baskets of willow bark, acorns and shell beads (Farquhar 1965: 12–13).

Beyond trails and flaked tools, you have to look more carefully for clues to the Indian peoples who lived here. Indians pruned and coppiced mountain plants and thereby influenced the size and composition of thicket and glade. In valleys like Yosemite, for example, Awhaneechee people cut the ends of branches off oak trees to enhance acorn production the following year. Here by Shadow Lake, Mono women cut specific elderberry bushes to ground level, which actually made them grow faster and increased production of berries, and they sometimes transplanted productive plants nearer trails for easier access (Anderson 2005: 138–9).

But their most powerful tool was fire. In the words of Stephen Pyne, fire is both a force of nature and an implement of culture – "the first product of the natural world" domesticated by people (Pyne 1982: 3). Like North American hunters east and west, Indians of the Sierra Nevada fired underbrush to encourage the growth of meadows and forage for game. An occasional burn increased the availability of food plants like gooseberry, chia, and wood strawberry. Flames consumed decaying plants first, making room for the healthier plants that survived. They scorched insects and diseases that threatened wild food and basketry plants. And burning off the old brush encouraged sprouts that were most useful for making baskets, fish weirs, and clothing (Anderson 2005: 136; Lewis 1993).

Along the trail on the way to your campsite, nearly hidden in the forest, are old burned stumps, clues to a fire in decades past. You might also note

a profusion of wild onions growing here. Perhaps it is a coincidence, but Mono Indians once fired gentle slopes like this – for the onions that grew from the ashes (Anderson 2005: 138–9).

To reveal Indian traces in the land is to discredit one of the oldest tropes of "savagery" in the European canon, the powerful stereotype of Indians who lived without working. In fact, what Indians created here on the eastern slope of the Sierra Nevada was a mixed landscape where labor and natural processes wove together in what Thomas Andrews calls a "workscape." The Mono workscape was neither completely natural nor completely cultural, but a "constellation of unruly and ever-unfolding relationships" in which people and the natural world constantly responded to and reshaped one another. Indian work required understandings of mountain slopes and their natural communities that have all but vanished (Andrews 2008: 125). Not only did working in the land reshuffle its biotic communities and contribute to Indian sustenance, it also shaped Indian identity, as people of this place.

You keep your fire carefully at night and douse it completely before you leave camp in the morning. If once this was a landscape tended with fire, today it is a monument to fire suppression. A series of lightning strikes ignited a blaze not far from Shadow Lake just a couple of months ago. The area is so remote that it burned for over a week before authorities got word of the blaze and dispatched a helicopter with fifty firefighters to extinguish it (*McClatchy News* 2008a).

Whether this mountain remains a workscape is a question we shall return to below. For now, if cultivating a landscape through fire is work, so is firefighting. And as work, a century of firefighting has made of the eastern Sierra a dramatically different place from the one we have just described. Whereas the forests around Shadow Lake used to burn every ten to twenty years, at current rates two hundred years might elapse between sustained blazes. The effects may not be immediately visible to the untrained eye, but they are all around you. Trees unculled by fire grow more closely together. They are thinner in diameter. In part because the trees compete with one another for water, they grow weaker, and insects that once were minor pests become major threats. Stands are more uniform. Where once the most useful plants for Indian cordage and baskets were abundant, today they are often rare (Beesley 2004; Anderson 2005).

The ecology of this new workscape is remarkably different from the old. In the long decades between blazes, deadwood accumulates. When fire does come, it tends to burn much hotter and more extensively. A century ago, fires were frequent enough that they seldom generated enough heat to kill large stands of trees. Today, Sierra fires rampage through hundreds of thousands of acres at a time, at temperatures so extreme they incinerate every living thing – and the soil, too (McKelvey et al. 1996; Walker 2009; *McClatchy News* 2009).

How fire suppression became such a major strand of modern management is an issue to which we shall return, but of course, the removal of Indian fire from these forests began with the removal of Indians, and that began centuries ago with colonial expansions that pushed Indian populations sharply downward. The Spanish colonists who claimed the California coast in 1769 brought not only weapons of war, but also Eurasian pathogens such as smallpox, measles, influenza, and malaria. The arrival of these microscopic organisms constituted an ecological revolution. Because they had been isolated from Eurasia since before these diseases evolved, Indian bodies had never developed resistance to them. As Alfred Crosby and others have made so clear, this "ecological imperialism" was responsible for sweeping away millions of Indian people. In California, epidemics repeatedly hammered the coastal missions and the surrounding countryside. The Sierra Nevada was somewhat protected from these outbreaks because of its distance from the coastal missions, but even here some disease, possibly smallpox, decimated villages in 1800 (Crosby 1972, 1986; Hackel 2005; Runte 1990: 9).

Along with diseases, the missionaries and their soldier escorts brought other invaders. As you proceed up the mountain, you are on occasion obliged to step out of the way for pack outfits. Horses have their own history here, and it begins, too, with the Spanish, who brought not only horses to California but cattle, pigs, sheep, and goats as well as alien plants, including not only farm crops but weeds in animal feed.

Initially, livestock remained on coastal meadows, far from the Sierra Nevada. But by the first decades of the nineteenth century, Spanish and Mexican ranches were raising vast herds of cattle to provide leather for the factory belts and other goods needed for the industrial revolution in the United States. To manage the cattle, they also accumulated huge horse herds.

By the 1830s, Shoshones, Utes, and Paiutes from east of the Sierra Nevada routinely stole large numbers of these horses and drove them over the mountains – at times, perhaps, on this trail. Once over the Sierra Nevada, the animals went to trade fairs on the Great Plains, where some of them sold to the expanding Plains nomads. Others went as far east as Missouri, where they were snatched up by residents of the burgeoning United States (Fountain 2007; Flores 1999: 81–124).

The *sale* of these animals is a clue to another dimension of the environmental revolution that came with European colonialism. Today, this area is a retreat from commerce: there is nothing to buy and no place to pay for it in the Ansel Adams Wilderness. But if trade between Indian peoples helped motivate ancient peoples to carve trails through these mountains, market capitalism would have even greater impacts. Work in nature long pre-dates capitalism, as we have seen. But market exchange had a way of dramatically altering the ends toward which people worked the land.

Thus, even in the earliest days of European expansion, colonists often showed up in North America owing money to creditors back home. And, as the world economy expanded in the nineteenth century, debt and the dream of profits drove the conversion of American nature into urban commodities, so that country and city continually remade each other. Meadows became pastures for producing hide, beef, cheese, butter, and milk; forests became timber for ships and houses; fur-bearing animals from beaver to bears became simply furs. In New England, the vast European appetite for these goods drove the region's transformation from a patchwork of biological communities shaped by Indians to a largely deforested farmland by 1800. Indian and non-Indian hunters combined to trap fur bearers for cash and trade goods, and many Indians took up horse-powered nomadism to exploit the market in bison robes (which sold as cold weather gear in the United States). In Mexican California, cattle and horses ravaged native grasses and helped spread wild oats and other European grasses naturally selected for grazing – all processes which accelerated after the US annexed California in 1848, and again when the transcontinental railroad was completed in 1869.[2]

Here, in the Sierra Nevada, the horse trade may have been a tenuous link to Euro-American markets, but the full force of urban commerce arrived with the suddenness of an earthquake in 1848, in the form of the Gold Rush. For all its gaudy mythology, the rush represented a gigantic intrusion of urban exchange into these mountains. Gold lubricated trade in London, Paris, New York, and every industrial capital around the world. The quest for it brought hundreds of thousands of miners. Their camps lined virtually every Sierra stream, no matter how small, and the workscapes they created were profoundly different from what came before. Miners were at once laborers in nature, often exposed to the natural world in ways utterly new to their experience, but also dependent on small town or even city markets in Sacramento and Stockton to provide their food, clothing, and other supplies. The eastern Sierra did not see the massive removal of slopes by hydraulic mining outfits that prevailed on the western side of the mountains. But even here, miners in pursuit of the precious metal diverted entire rivers, pillaged stream beds, and poured millions of gallons of mercury into Sierra waters in hoping to aggregate flecks of it into clumps big enough to catch in the riffled bottoms of the sluices they built from the trees they felled (Isenberg 2005).

Like the Mono Paiutes, the miners' work in nature was a key to their identity. While we do not know as much as we would like about Chinese, Mexican, or other minority mining groups, US miners saw themselves as profoundly "natural" laborers who drew wealth directly from the land (at least until their claims failed). Many idealized the work as essentially masculine. Panning and digging seemed to be (but usually were not) means of earning independence through labor in nature, like the farming of an earlier era.

Such dreams proved especially appealing in the middle of the nineteenth century, when increasing numbers of men and women were drawn into the rapidly expanding market economy, where they found themselves ever more vulnerable to business cycles and industrial accidents, and ever more dependent on credit (Morse 2003; Johnson 2000; Rohrborough 1997; Streeby 2002; Isenberg 2005).

In the Sierra, miners' labor required their complete attention, for hours on end. In the summer months, they worked relentlessly and to the exclusion of their other needs like food (for which they paid cash or gold). To miners, Indian work seemed like leisure. Combined with pre-existing notions of their inborn superiority because of their "white" natures, miners' perceptions of Indian work led them to see themselves as radically different from (and better than) the prior inhabitants of these mountains.

Thus, as with colonists and Indians on nearly every front, the Gold Rush brought war between Indians and miners, whose race hatred reached genocidal proportions. Miners and other settlers frequently raided Indian villages, slaughtering the adults and selling children into *de facto* slavery, helping to drive California Indian populations from perhaps 150,000 in 1848 to 23,000 by 1880. Just north of here, in 1852, after a number of conflicts with miners and farmers from the lowlands, a band of Awhaneechee drove a party of miners out of Yosemite Valley; Army volunteers soon retaliated by killing five of the Awhaneechee and driving the rest temporarily into hiding (Hurtado 1988: 100; Russell 1926).

To nineteenth-century Americans, making commodities was perhaps the highest use of natural goods. Theirs was a far more market-oriented workscape than that of the Indians whom they murdered and dispossessed.

But on the heels of the Gold Rush and its genocide, there emerged a distinctive way of seeing the Sierra Nevada, one that foreshadowed recreation of the city dwellers who today flee to the Ansel Adams Wilderness. Soon after soldiers related the stunning mountain glories of Yosemite to journalists, a series of writers and artists began to extol their beauties. By 1865, the Yosemite Valley had become a state reserve for tourists to retreat to the wilderness.

This enthusiasm for the wilderness was a new cultural phenomenon. But as with the mania for resource extraction, tracing its origins leads us to the city, which was in many ways its point of genesis and the site of its most vigorous consumption. The first writer to promote the valley's natural attractions was J. M. Hutchings, a San Francisco publisher who was educated in Birmingham – a smoky, roaring crucible of England's industrial revolution. The first artist, Thomas Ayres – whose paintings of the serene valley surrounded by craggy peaks mimicked popular paintings by Hudson River School artists like Thomas Cole and Frederick Church – was born in New Jersey and worked in an engineering firm in St. Paul, Minnesota before emigrating to California. Hutchings and Ayres, each dependent on the city

to provide their respective livelihoods, also shared popular longings to escape the industrial, urban revolution that was creating modern metropolises like New York, Chicago, and San Francisco (Runte 1990; Russell 1926; Palmquist and Kailbourn 2000; Browning 1990; Hutchings 1962).

Their success in promoting Yosemite suggests how much the romance of wilderness had already captured American imaginations by 1859. Traditionally, Americans were most fond of pastoral landscapes, the farms that represented the reclaiming of the Edenic garden from the looming, forbidding wilderness. But as industrialism and commercialism expanded, wilderness came to seem less forbidding, a welcome redoubt from modern life, an Eden in its own right (Marx 1964; Merchant 2003). The depths of anxiety provoked by America's urbanization can be deduced from the vehemence of Frederick Law Olmsted, who became the first chairman of the state commission that governed the valley in 1864. Olmsted was a Bostonian who had designed New York's Central Park to be a retreat from urban anxieties and commercial stress and a place for the fractious community to regroup. In his view, Yosemite's wild nature would allow Americans to recover from the ills of urban living, which included "the severe forms of softening of the brain, paralysis, palsey ... [and] insanity ... mental and nervous excitability, moroseness, melancholy ... [and] irascibility" (Olmsted 1865; Hickman forthcoming).

Olmsted's litany of symptoms would soon be pathologized as an actual illness – neurasthenia. Supposedly, this malady most threatened white, middle- and upper-class people because they were most prone to "over-civilization," to the softening of their minds and bodies in the offices, banks, and managerial desks where they disproportionately worked. Because it dampened their sexual ardor, neurasthenia allegedly threatened the fertility and dynamism of the Anglo-Saxon race (Bederman 1995; Lears 1981). Such threats were particularly ominous as immigration brought millions of Irish and Germans to the US prior to the Civil War, and millions more southern and eastern Europeans in the closing decades of the nineteenth century. As Jake Kosek has observed, the wilderness movement was born in part from a national moment "filled with obsession over the purity of bloodlines and the nation's body politic" (Kosek 2006: 154). Romantic wilderness retreats promised to shore up beleaguered white masculinity. In the right circumstances (which often meant in the company of the right class of white men), its meadows and streams appeared as sites of reproductive energy that promised to strengthen femininity, too. Yosemite became a healing place for gender norms, a tonic for white Americans seized with dread by the city of the future, ever more nostalgic for the frontier receding into the past (Scharff 2003; Merchant 1980, 2003; Schrepfer 2005).

Although Olmsted and other Yosemite advocates often believed they were preserving an uninhabited wilderness, in reality they had to create it first. Across the United States – at Grand Canyon, Yellowstone, Glacier, Death Valley, and other national parks – the campaign to preserve monumental landscapes often entailed eviction of Indians who lived among them. In Yosemite, the ideal of uninhabited wilderness obscured how much Indian coppicing and burning – Indian work – had contained the oak groves and maintained the valley meadows that Americans now saw as pristine wilderness. Indeed, Indians continued to live in Yosemite long after it became a park. They survived by combining old forms of work – acorn gathering, hunting, and fishing – with new forms: day labor, selling baskets to tourists, and performing dances and stories for money. The long-running effort to exclude Indians from the valley would end with their expulsion in the 1930s, as a "degraded," modern people who were unsuitable for tourists in search of the primeval (Spence 1999; Warren 1997; Jacoby 2000).

Today, wilderness recreation is ostensibly open to all. But to an unsettling degree, the early history of wilderness as resource for whiteness continues to ramify through modern politics. California was the first state in the modern age to see its white majority slip into a minority, in 1999 (Quay 2008: 9). But even now, wilderness enthusiasts – the people around you – are overwhelmingly white and middle class. Indian peoples still contest resources in national parks and wilderness areas, while the increasingly non-white populations of California and the nation relate to nature in ways that, for now at least, exhibit little enthusiasm for wilderness (although as Solnit [2005] observes, there are far more non-white visitors to Yosemite now than there used to be).

Of course, race was not the only marker of exclusion at Yosemite. There were class lines, too. Miners, market hunters, herders, and loggers all saw their work curtailed or banned. Increasingly, US legal codes inscribed elite assumptions that those who used the wilderness should be cash-paying recreationists who packed in their gear rather than laboring ruralites who depended on natural goods of the landscape (Jacoby 2000).

After the first legal protections of Yosemite in 1864, the Sierra Nevada and many other places were at the center of an increasingly intense clash of environmental ideals – the one that saw nature as resources waiting to be extracted and marketed, the other that believed it a retreat from the modern world. The lines between these schools of thought were not always clear. Indeed, enthusiasm for wilderness solitude on the one hand and wilderness destruction on the other often waxed in the same individuals, simultaneously. When Frederic Law Olmsted proposed protecting the Yosemite Valley from mining and timber felling, he was supervising those two activities himself as manager of a near-by gold mine (Hickman, forthcoming).

So the growing reputation of the Sierra as romantic retreat ran headlong into the expanding exploitation that was rapidly changing them. In the 1870s, as John Muir began extolling the beauties of the Sierra as a vacation resort in popular magazines, ranchers in the San Joaquin and Sacramento

Valleys sent millions of sheep into the high Sierra for summer grazing, so as to provide more wool and mutton not only to the population of booming San Francisco, but to overseas markets, too. At the foot of the eastern Sierra, mining towns like Aurora, Mammoth Lakes, and Bodie erupted. Their loggers and herders and sheep and cattle exacted a fearsome toll from the forests.

These kinds of work dramatically altered the pre-existing Indian workscape. Climbing upward, as you reach the outlet of Garnet Lake, you may stop to rest on a small meadow among the boulders. This patch of grass probably would not have been here had you visited a century ago, when sheep stripped the mountains practically bare, unleashing severe erosion. As one visitor here put it in 1898, "The great obstacle to the explorer is not the danger of crag or chasm," but the starvation of his pack animals because of "the destruction of the fine natural meadow pasturage by sheep" (McKelvey and Johnston 1992: 232).

The work of sheep herders was not completely dissimilar from the work of Indians. In fact, some of them *were* Indians: beginning in the 1870s, the Mono Paiutes began running their own livestock on these slopes, alongside herds tended by Basque, Greek, Mexican-American, and white shepherds. Like earlier Indian inhabitants of this forest, sheep herders often set fires to stimulate meadow growth. But their exclusive focus on creating food for sheep contrasted sharply with Indian cultivation of variegated stands of grass and cordage, wood, and food for people (sheep grazing itself often deprived Indian women of the grass seed they gathered to feed families). In the end, pastoralism in the high elevations brought weed invasions, increased uniformity of plant types, and dramatic erosion.

The gnarled trunks of the forest and the thick green meadows around you are a sign that something changed between then and now, and the change is so dramatic that you might believe for a moment that nothing of the old lumbering and grazing workscape persists. But signs of it endure – in the decaying stumps you might notice among the Jeffrey pines (a prime lumber tree) and in the weeds which proliferated with grazing and which flourish still. As you rest here, you may still pluck from your socks the spearhead seeds of cheatgrass that brushed off on your shoes at the trailhead. Kentucky bluegrass, a European import, punctuates even these high alpine meadows, and in many places native sagebrush has colonized the grassy swards of bygone days (D'Antonio et al. 2004).

A crucial difference between you and those mountain shepherds, loggers, and miners is that you are not here to work. You are here to play. Although it contains elements of workscape in fire suppression and trail maintenance, this mountainside is now a landscape of leisure, enforced by the state. Law and regulation constituted the primary bridge from the overcut, overgrazed workscape of the past to this landscape of tall Jeffrey pines and lush high country

meadows. John Muir and other preservationists helped build that bridge, turning to the state to remake this place as "the People's Playground."

Of course, law and the state had been a major force in the shaping of the mountains for decades. Law guaranteed so few rights for Indians that killing and dispossessing them seldom brought consequences. California's legislature and the US Congress ensured that claims to just about every kind of resource – minerals, timber, land, and water – were easy to stake and easy to transfer for American white men, enabling them to profit from commerce in mountain resources. The making of a market in land and other natural goods was a primary achievement of the American legal system in the nineteenth century (Hurst 1956; McEvoy 1986; Isenberg 2005).

But now, preservationists followed on their successes at Yosemite by invoking the state as a means to constrain market activity. In 1892, scientists from the University of California and wilderness enthusiasts created the Sierra Club to lobby for mountain protections, with John Muir as its first president and figurehead. Even before they founded the Sierra Club, many of the same people joined in a successful campaign for Sequoia National Park and General Grant National Park[3] in the southern Sierra Nevada, and a Yosemite National Park to surround the earlier state reserve (for a brief time they even expanded its protections to include much of the area that is now in the Ansel Adams Wilderness) (Runte 1990: 55–6; Worster 2008: 323–30).

From those tentative beginnings the state has become a primary force in the making of Sierra nature. California forests have never been so closely regulated as they are now. Even outside wilderness areas, the state of California and the US Forest Service, having determined that forests are overcut, have clamped down on the lumber industry. Throughout California, over sixty lumber mills have closed since 1990 (Knudson 2003). And sawmills are only among the most recent workplaces to disappear in the Sierra. Like the other wilderness areas that straddle the crest of this mountain range, the Ansel Adams Wilderness is a space where most kinds of work – such as lumbering, grazing, and mining – are now forbidden.

To put it mildly, locals have been unsettled by the absence of work opportunities. In today's rural West, a living wage is a rare thing, and a working sawmill is one of the few places you might find it. A wilderness area offers little consolation for the unemployed, and not just because there are few jobs in them. Because the Wilderness Act of 1964 defines wilderness areas as roadless, wilderness designation means a ban on new roads and often the closing of old ones. For hikers, this is paradise. But to hunters, fishers, and off-road vehicle enthusiasts – many of whom live nearby – wilderness areas often seem to be an assault on the rural economy and rural identity by well-heeled, urban elites.

Aggravating these disputes over work and mobility is an abiding rural sentiment that country people sacrifice for wilderness in ways urban

recreationists do not. Despite the rural poverty that rolls in waves around each shuttered sawmill, in the cities there is no shortage of wood. When California timber disappeared from markets, builders went right on making homes, office parks, apartments, and the furniture that fills them by cutting forests that are out of state and conveniently out of sight. The old-growth, boreal forests of Canada have been clearcut in some places to meet the demand. In 2001, Canada shipped enough wood to the US to build a city the size of San Diego (Knudson 2003).

Such are the dynamics of capitalism. When the forests of Wisconsin and Pennsylvania were cut to exhaustion in the late nineteenth century, local jobs vanished. Cities kept growing – with wood from the Pacific Northwest. Their residents barely noticed the change (Cronon 1991).

But in today's Sierra, declining incomes, constrained mobility, and unapologetic urban blindness about the real costs of urban appetites have fueled booming anti-wilderness sentiment. They help to explain the bombings and vandalism of Forest Service offices in neighboring Nevada in recent years, and the appeal of anti-wilderness politics in rural western counties generally, where the industry-funded Wise Use Movement garners much of its local support. By eliding or obscuring the connection among work, nature, and identity, historians have too often omitted a central feature of human experience and a major force in shaping the natural world and the politics that swirl around and through it (White 1996; Montrie 2008; Andrews 2008).

To the degree that the wilderness around you is a functioning natural system, it is a monument to environmental consciousness, and a vital reserve of ecological networks.

To the degree that the Ansel Adams Wilderness allows you to ignore your appetites and their costs – the two-by-fours and plywood from the hardware store and the new pine trim around your doors – it is arguably helping to destroy distant woodlands. Thus the wilderness you are enjoying and whose management you have assisted with your permit fees simultaneously expresses environmental virtue and environmental blindness (Cronon 1996b; Price 2000).

But assessing the modern fights over wilderness begs a central question. How did we get from the (arguably overworked) workscape of the 1890s, to this landscape where there is practically no work at all? To answer that is to see why there is no easy way to change the management of the Ansel Adams Wilderness. For the mostly work-free mountain and its forests continue to serve utilitarian purposes that are reinforced by their Romantic attractions.

You may meditate on this at the base of Mt. Ritter. At 10,000 feet, snowbanks endure into August. Where the melt rushes out from under the snow, you can drink: no parasites, no filter. Mix snow with a shot of tequila

and a package of Gatorade powder, and you have a margarita – sort of. Savor it while you watch the stream rush down the mountainside to cobalt blue Lake Ediza. There it pools before plunging through an outlet, out into another stream, and down the mountain.

Follow that stream and you would learn that this deceptively premodern landscape has in fact been created partly to serve one of the most modern, complicated, and heavily manipulated in the world. These are the headwaters of the San Joaquin River, which gathers run-off from the eastern Sierra Nevada, curves south and west around the mountains and then heads north. Along its course, the river waters the Chinook salmon's southernmost spawning site on the entire globe. Not far to the east of San Francisco, just before it empties into the Pacific Ocean, it pours into the world's largest inland river delta.

That is, it used to. Today, the dams, siphons, and diversions throughout its course mean that it often dries up completely at various points along its 150-mile length. In the nineteenth century, private irrigation companies and wealthy ranchers – among them the West's dominant firm of Miller & Lux – carved out a lucrative farm landscape by mixing river water with earth via irrigation canals (Igler 2001; Hundley 2001).

In the twentieth century, the US Bureau of Reclamation, the Army Corps of Engineers, and the state of California spent billions to spread the San Joaquin over one million acres of valley farmland. The gift of water in the arid summer created a year-round growing season in what has become the nation's most productive agricultural landscape. The valley today produces annually billions of dollars in apricots, almonds, beans, and cherries, thousands of tons of alfalfa and wheat, vast herds of dairy cows, and tractor trailers packed with beehives (Worster 1985; San Joaquin County 2006). There is in fact an excellent chance that, a year or so ago, the stream before you flowed into the peaches, apricots, and almonds that were subsequently picked and dried before being packaged as that trail mix you bought at the grocery store last week and have now carried in your backpack up to these headwaters … to eat with your margarita.

In addition to farmland, cities, too, spring from these mountain streams. Fresno receives 40 percent of its water from the San Joaquin River (City of Fresno 2007). Other Sierra streams become even more metropolitan. To the east, down the mountain and a little south, are the headwaters of the Owens River. Follow those and you would come to the town of Bishop, and soon after that you would reach the diversion channel of the Los Angeles aqueduct, through which most of the Owens River crosses 200 miles of desert before watering the second largest city in the United States.

If the San Joaquin Valley is in your food, there's a strong likelihood that Los Angeles, too, has a claim on your visit. Your lightweight gear is manufactured from petroleum-based synthetics and high-energy products like aluminum and plastic. If your equipment was not made in the City of Angels, it likely came through there (LA's port is now the biggest in the nation).

Moreover, your gear and your food are processed with petroleum – in fact, food production with its combines, petroleum-derived fertilizers, and long-distance transport requires more fossil fuel energy than the food itself conveys to you in calories. As you were driving from home to this mountain, you might have considered that since Los Angeles County provides over half the refined oil in California, and 6 percent of the oil refined in the US, there is a good chance that some quantity of LA oil powers your wilderness sojourn (Thornton 2009).

Incongruous as it might seem, the flow of these mountain rivers into such heavily corporatized farmlands and densely populated urban landscapes is not a historical accident. These streams are wild, but the laws that preserve them are expressions of politics. Those politics, in turn, have long reflected visions and plans for lowland cities and golden harvests, dreams that drove preservation of Sierra forests at the expense of the pastoral and lumbering workscape of the Gilded Age. In the early 1860s, at the same time Frederick Law Olmsted was urging protection of Yosemite Valley to ensure racial health, George Perkins Marsh was making a different but related case for protecting high country forests. A one-time ambassador to Turkey, Marsh was fascinated with the mysterious disappearance of civilizations in the Mediterranean. What had caused the collapse of the great cities of Greece, the empires of Rome and the Near East? And would the United States follow them into oblivion?

In 1864, Marsh published his conclusions in his classic study *Man and Nature*, explaining that overgrazing and deforestation were keys to the puzzle. By devastating their forests and fattening their herds on high country grasses, the ancients had eroded mountains into rivers, desiccating the land and turning fertile plains into deserts. By allowing unrestrained cutting and grazing in modern forests, and by not suppressing the numerous wildfires that swept through them, Americans were taking the same dark path (Marsh 1864).

Man and Nature became a touchstone for the modern conservation movement, its warnings becoming more pressing as the era of frontier expansion approached its close. The appeal of Marsh's prescriptions mounted as prospects for new infusions of lumber dimmed, and as the public became more anxious to maintain America's traditional abundance of resources and avert the downfall of American civilization. Thus, almost immediately upon the closing of the frontier in 1890, Congress passed the Forest Reserve Act of 1891, which authorized a system of forest reserves to constrain grazing, lumbering, and wildfire, and thereby to prevent erosion. Influential Californians like Muir echoed the call, and some officials were pointing out that severe erosion from the Sierra was filling the higher reaches of the San Joaquin River with mud. Farmers and farm country advocates soon joined the clamor for watershed protection to protect the irrigated lowlands of the San Joaquin Valley (McKelvey and Johnston 1992).

Responding to these concerns, President Benjamin Harrison in 1893 created the Sierra Forest Reserve. Blanketing five million acres of the San Joaquin headwaters with new protections, the reserve was the biggest in the United States. Although timber harvesting, grazing, and mining could continue in the new reserve, they would be more rigorously controlled and scientifically managed. By the late 1890s, cavalry patrols were enforcing the new regulations, seizing livestock from Mono Paiutes and forcing others to pay for permits or find new range. The forest remained a workscape, but it was no longer a home. In the words of Mono Paiute historian Gaylen Lee, the new regulations in the 1890s "effectively closed the Sierra National Forest to habitation" (Rose 2000: 79; Lee 1998: 123).

The Sierra Forest Reserve was but one example of how conservation implied state bounding of resources – from forests to fish, game, and water – as forms of public property, often at the expense of the poorest local people. "The first duty of the human race is to the control the earth it lives upon," wrote Gifford Pinchot, first head of the US Forest Service. In his view, that control should be exercised to secure "the greatest good to the greatest number for the longest time" (Pinchot 1910: 45, 48). In practice, this often meant diverting local resources from minority users. By controlling who used natural resources and how, and by utilizing scientific methods to make trees, animals, and plants produce a "sustained yield," conservationists hoped that resource abundance could become a permanent feature of national forests and the American landscape (Hays 1955).

Indeed, for conservationists, science quickly became a kind of technological fix, the means to split the baby of nature between the competing demands of resource extraction and scenic recreation (Taylor 2000). At times, the compromises were unsustainable. The Sierra Nevada was site of the period's most famous battle between utilitarian and preservationist ideals, the struggle over the damming of Hetch Hetchy Valley in Yosemite National Park to provide water to San Francisco (Righter 2005).

But on the whole, utility and preservation were usually enshrined together in Sierra management regimes. "In California," observed Theodore Roosevelt in 1903, national forests meant nature would be preserved "for the sake of its use *and* of its beauty" (McKelvey and Johnston 1992: 225; emphasis added). In 1907, Roosevelt added the Inyo National Forest to this region of the eastern Sierra, further ensuring water for lowland users and recreation for high country tourists (Rose 2000). Thus was created the system whereby mountain streams would be preserved for manipulation by farm and city.

But if conservation married science and the state to achieve perpetual abundance, the long-term results were often disappointing. "People indeed make their landscapes," Mark Fiege reminds us, "but they do not make them exactly as they please" (Fiege 1999: 209). Instead of healthy forests thick with timber, suppressing fires produced trees with thinner trunks that are more prone to pest invasion – and the fire threat is greater than ever.

Wildlife biologists too often assumed that breeding stocks alone determined a species "yield" in a given year, and failed to recognize the wide array of habitat factors, from the availability of food and cover to the levels of pollutants in water and competition from other species that might drive fish and game populations up or down (McEvoy 1986; Langston 1999; Warren 1997). In 2009, as Congress was committing some $800 million to restore a continual flow to the San Joaquin River and hopefully save its faltering salmon, the salmon runs of the much better protected and less polluted Sacramento River suddenly and mysteriously collapsed. Scientists hope to restore Sacramento River salmon by planting fry in the soon-to-be-restored San Joaquin (Weintraub 2009).

And if the state has succeeded in keeping the San Joaquin River flowing into the valley, the results have not always been what even the best science might have predicted. Nature's dynamics shaped the fields and the ditches, and at times the mixing of nature with technology and farmland proved disastrous. In the most notorious episode, for a period in the 1970s and 1980s, run-off from farms on the west side of the San Joaquin Valley was diverted into what was conceived as a restorative wetland and waterfowl habitat at Kesterson Reservoir, which was part of the San Luis National Wildlife Refuge. But the run-off deposited concentrations of naturally occurring elements, especially selenium, in toxic proportions. This led to monstrous deformities – legions of one-legged, one-eyed chicks, and chicks with no eyes at all – and finally an enormous battle over the fate of the reservoir and the obligations of growers and the state to clean it up. By the late 1980s, the reservoir had been closed, capped with soil, and declared a toxic waste dump (Garone 2006).

The pungent odor of mosquito repellent emanates from your clothes days after you spray it on. If your brand is effective, it likely contains the miracle chemical DEET (technically known as *N,N*-diethyl-*m*-toluamide), which is the most widely used insect repellent and until very recently the only one approved by the EPA (Environmental Protection Agency 2009).

You mean to repel mosquitoes, not kill other creatures. But you can never do just one thing in nature. DEET, it turns out, is hazardous to fungi and freshwater zooplankton. It may bioaccumulate – increasing in concentrations in the bodies of hosts as it moves up the foodchain. As thousands of backcountry sojourners spray repellent onto their clothes even now, so molecules of DEET drift into streams and lakes, permeating small organisms in the water and perhaps gathering in Sierra fish (Seo et al. 2005). What will the chemical do to them? EPA assurances aside, what is it doing to you? Whatever its effects, hiker enthusiasm for DEET is particularly ironic, insofar as what brings so many of them to this wilderness is, in part, its assumed remoteness from chemical dangers.

In contrast, few places in America have been more identified with such perils than the San Joaquin Valley. The fashioning of California's agricultural

dominance was intimately linked to pesticides, which became a central technology in modern agriculture after World War II. In particular DDT, a chlorinate organic hydrocarbon, achieved widespread popularity among farmers soon after 1945. As insects developed resistance to this "miracle chemical," the growers of the San Joaquin eagerly embraced newer pesticides, including highly toxic organophosphates. By the mid-1960s, they applied more pesticides in greater variety than any farmers anywhere else on earth. Over 16,000 different pesticides drifted onto fields along the San Joaquin River, in literally dizzying combinations that could bring on unforeseen and often fatal interaction in workers. By that time, California's migrant workforce – which was overwhelmingly Mexican – had the highest incidence of occupational disease in the state (Nash 2006; Russell 2001; Dunlap 1982).

"Unequal distribution of environmental pollution burdens based on race," as scholar Julie Sze observes, would come to be known as environmental racism only in the 1980s (Sze 2007: 13). But for scholars of the subject, one of the primary and most salient examples was in the San Joaquin of the 1960s.[4] As early as 1967, California farm workers mounted a campaign to separate pesticides from their bodies. Their efforts drew substantially on Rachel Carson's *Silent Spring*, which appeared in 1962 and achieved a wide public readership. Carson's warning against the unforeseen effects of DDT exposure and the hubris of "economic entomology" did much to discredit the old conservationist ideal of managing nature exclusively to produce goods for people. As Carson argued (with a jab at Gifford Pinchot), "The 'control of nature' is a phrase conceived in arrogance, born of the Neanderthal age of biology and philosophy, when it was supposed that nature exists for the convenience of man" (Nash 2006; Carson 1962: 297).

Exposures of working people to toxics in California's farm fields and in other industrial settings had been among Carson's case studies, and after the book was published, farm worker rhetoric was crucial to building public support for Carson's warnings. Amid mounting concerns about radiation in fall-out of Cold War nuclear testing, *Silent Spring* and news of farm worker poisonings helped reinvigorate older ideas about environmental health as a kind of balance between a body and its natural surroundings, and to create a radically new consciousness of ecological systems. Insofar as the modern environmental movement drew its inspiration from *Silent Spring*, we might say that it was a product of the modern workscape, for it was workplace encounters that gave Carson much of the data for her arguments (Pulido 1996; Sellers 1997; Nash 2006).

But by the same token, public awareness of pesticides heightened the appeal of "untouched" landscapes like the Ansel Adams, driving ever more recreationists here.

That the poisoned bodies of workers helped galvanize support for the Wilderness Act and leisured landscapes in which few of those workers recreated is one of the chief ironies of our story. By the early 1990s, the

unwillingness of major environmental organizations to address environmental health of the workplace or public health more broadly led activists to form what has become known as the environmental justice movement, one of the most diverse and engaged sectors of environmental activism today (Sze 2007; Bullard 1997, 1999, 2005).

Today, environmentalists discover they cannot avoid issues of environmental justice, in part because even the most remote Romantic escape is no guarantee of safety. If few people thought about chemical pesticides before World War II, you have been aware of such threats practically since you could read. That is why you wonder about DEET. And you will not be completely surprised to learn that even here you are at some risk. Occasionally, plumes of valley insecticides drift high into the Sierra Nevada. In minute quantities, they are likely in that snow, and in your drink. And so they run back down into the San Joaquin River, into fish and into the bodies of consumers in Fresno, and workers in the fields (McConnell et al. 1998).

In a sense these mountains, the river, and the valley below comprise what Richard White has called an "organic machine." We depend on the mix of river, land, and technology to generate goods, including farm crops, electricity, drinking water, fish, and waterfowl. To secure these, we manipulate the river and manage it much like a factory. Dammed into reservoirs, drained through hydroelectric generators, pumped onto fields, mixed with petroleum-based fertilizers, misted with pesticides, infused with feedlot growth hormone, and transpired into the cellulose of plants seeded by computer-monitored machines, what reaches the delta that the San Joaquin shares with the Sacramento is no longer the same river it was at its headlands.

But for all that – for all the fertilizer, pesticides, and other technological wonders imposed upon the river – the goods we derive from it can only be produced by its natural dynamics. And these remain in many ways mysterious.

As White has observed about a different river, when Californians struggle over the fate of the San Joaquin River, they confront a system "they in part create but which contains within it, at its heart, something they have not made" (White 1995: 111). The river's nature remains the central engine of production in our machine, even if we do not know how it works, let alone how to control it. We cannot take this machine apart to fix it or even to see how it functions. We cannot shut it down without causing enormous political and social damage. For all the harm we continue to inflict on it intentionally or not, we labor mightily, and sometimes blindly, to keep the river from failing completely. This is the Faustian bargain of the organic machine. All we can do is attempt to manage it – and that imperative entails a thousand disputes, among them how best to behave at its headwaters so the river, however unnatural it may be, can continue to flow.

One long day of hiking will get you from the base of Mt. Ritter to the trailhead at Reds Meadows. There you catch the shuttle bus back to town,

where you parked your car. As you wait for the shuttle, cars and trucks occasionally roll past on the road. Strange to see cars after days away from them, stranger still to ride a bus after hiking so many miles.

This tension between driving and hiking can easily obscure how profoundly connected they are. The car is in a sense a parent to this and every other modern wilderness area. To understand that, we might return to America's most car-obsessed city, that mighty creation of the Owens River, Los Angeles.

Strictly speaking, modern Los Angeles is a product of the Southern Pacific Railroad, which reached the place in 1887 and promoted settlement to attract customers. But the city boomed after World War I (after the Owens River water arrived) and thereafter it grew up with the emergent transportation technology of the day, the automobile. As Douglas Sackman has observed, Los Angeles "initially portrayed itself as the most natural city on earth." Paradoxically, the automobile became a key component of that image. Americans moved to LA for detached suburban homes, private dwellings on private lots in the garden setting of the orange groves. But the more popular this mode of settlement became, the more geographically dispersed Los Angeles grew. In this sense was the private car – today associated with traffic jams and air pollution – the means to a more *natural* way of living: a dwelling in the garden with easy connections to work, schools, and shopping. By the mid-1920s, more cars drove on Los Angeles streets each day than were registered in all of New York state, and the intersection of Adams and Figueroa, through which nearly 70,000 cars traveled on a typical day, was the busiest in the United States (Sackman 2005: 24; Starr 2005: 185; Fogelson 1967).

This pattern of dispersed development woven together by auto traffic continued even as the burgeoning aerospace industry led southern California into its industrial age. With abundant water from city and state water projects (which rerouted to LA not only the Owens River but the Colorado and even the Sacramento), cheap food from California's agribusiness, and plenty of affordable real estate, Los Angeles and the state grew prodigiously. In the 1960s, California became the nation's most populous state, and its top agricultural producer. Soon after, it became the nation's leading manufacturer. Californians commanded a relatively high degree of disposable income and leisure time, and they were among the nation's most urbanized people. Today, 97 percent of Californians are metropolitan residents (Nash 2006: 130; Quay 2008: 9; Walker 2008b: 85; US Department of Agriculture 2009).

Where American nature enthusiasts once had to content themselves with traveling into the countryside by train, by the 1920s increasing numbers had turned to the car. The results were dramatic. Traffic jams at the Yosemite entrance, and the explosion of motorist amenities there in other national parks, and the proliferation of roads in ever more remote places, led to

widespread concern that the "natural" qualities of parks and forests were diminishing (Belasco 1979).

So a backlash gathered against the road and the car itself. In the early 1930s, Aldo Leopold and Arthur Carhart helped craft the "Special Primitive Area" designation for select areas of national forests, in which new roads would be forbidden in order to preserve the natural setting and the "pioneer" heritage of backcountry hiking. One of the first such public areas was in today's Hoover Wilderness just east of Yosemite. To carry the fight further, Leopold joined with other prominent conservationists to create the Wilderness Society, which became the leading force for wilderness preservation in the United States (Sutter 2002; Louter 2006).

Developments of the postwar era strengthened public demand for wilderness. In many cities, and particularly in Los Angeles, mass production of suburban developments after World War II facilitated even more rapid population growth. Like their prewar predecessors, postwar suburbanites hoped for a healthy mix of nature and culture on their private lawns. But as each wave of new suburbanites watched surrounding fields and ravines fill with still newer developments, votes in favor of preserving open space and natural systems multiplied, and sympathy for Sierra Club wilderness campaigns grew (Rome 2001; Hays 1987).

Partly because of demand for postwar homebuilding, lumbering in national forests skyrocketed. Increasingly, outdoors enthusiasts bemoaned the timber-oriented policies of the US Forest Service, the agency which had exclusive control over "special primitive areas" and which all but refused to designate new ones after 1939 (Hirt 1994). After decades of struggle to expand wilderness areas, activists persuaded Congress to pass the Wilderness Act of 1964, thereby securing more "primitive" landscapes as recreational retreats and ecological reserves – as places where one could escape not only the city, but the car and its attendant roads, gas stations, traffic, noise, and exhaust (Harvey 2007).

California's ongoing love triangle between the car and the mountain perhaps helps to explain some peculiarities of its political ecology. The state that has one of the nation's most urbanized populations also has what is arguably the greatest dependence on the automobile; Californians consume more gasoline and diesel fuel than any country in the world except the United States itself (California Energy Commission 2007: 11). In the context of its wealth and auto dependence, it begins to make considerable sense that the state today has the greatest concentration of wilderness in the lower 48 states. California's abundant wealth in the postwar period, and particularly in the 1960s and 1970s, led to a vast increase in auto ownership and wilderness recreation. With the San Francisco-based Sierra Club leading the way, the state's environmentalists fought hard for new wilderness areas, and they often won. The Sierra Club was critical to remaking vast acreages in the Sierra and Inyo National Forests into the Minarets Wilderness

in 1964, and finally into the Ansel Adams Wilderness twenty years later, in 1984. That same year, in the same piece of legislation, much of the crest of the Sierra Nevada was swept into the wilderness system, and most of its lumbering, grazing, and mining was banned. Today, California has more acres of designated wilderness than any state but Alaska.[5] It has more distinctive designated wilderness areas than any state, even the Last Frontier (Beesley 2004: 199–201; US Forest Service 2009).

The shuttle will take you to the town of Mammoth Lakes – population 7,000 – where you may buy dinner and beer from people whose primary employment is providing services to tourists. For all the care you took on the mountain, what you and others do here is likely to have at least as much impact on the nature of the Ansel Adams Wilderness as anything you did there. In the last twenty-five years, the glaciers of the high Sierra have declined by 31 percent. A warming climate has seen the pika, a small mammal, move to higher elevations, and it – along with many other species – may soon be extinct (*McClatchy News* 2008b). The molecules of CO_2 in your car exhaust and pouring out the smokestacks of electrical plants that power your home will soon be multiplied many times over as Asia industrializes. The earth's heat-trapping atmosphere will continue to expand. Once you had to be in the forest to change it. Then, as markets in forest products took shape, local people would do the work of changing the forest on your behalf. Now, all you need do is start your car, or heat your home, or leave your lights on. You don't need to do any work at all to change the world in ways you never intended. Around the globe as electric lights click on at the end of the petroleum age, so the Sierra peaks grow darker.[6]

Notes

1 This essay is inspired by a wide range of readings, most of which are cited parenthetically. Of particular influence have been William Cronon (1990, 1992, 1996a), Jennifer Price (2000), Donald Worster (1990), Richard White (1990), Steven Pyne (1990), and Carolyn Merchant (1990).

2 These themes are so ubiquitous in the literature as to make simple citation impossible. But major works include Cronon (1983, 1991), Worster (1979), Flores (1991), Isenberg (2000), Brosnan (2002), White (1980), and Preston (1998).

3 General Grant National Park was absorbed into the larger Kings Canyon National Park in 1940.

4 How labor, race, and place combine in the reshaping of nature and community have inspired some remarkable new works of environmental history, and how farm workers and other laborers have sought to manipulate nature toward their own ends is a fertile field for further research. See Montrie (2008), Stewart (1996), Sackman (2005: 123–53), Kosek (2006: 103–41), and Chiang (2008).

5 California has 4,491,055 acres in 54 designated wilderness areas; Alaska has 5.8 million acres in 20 wilderness areas. See US Forest Service (2009).

6 A representative sampling of Sierra Nevada glaciers in 2004 revealed declines between 31 and 78 percent over the past century (Braasch 2009); the image of dark peaks is a reference to Orlove et al. (2008).

References

Anderson, M. Kat. 2005. *Tending the Wild: Native American Knowledge and the Management of California's Natural Resources.* Berkeley: University of California Press.

Andrews, Thomas. 2008. *Killing for Coal: America's Deadliest Labor War.* Cambridge, MA: Harvard University Press.

Bederman, Gail. 1995. *Manliness and Civilization: A Cultural History of Gender and Race in the United States, 1880–1917.* Chicago: University of Chicago Press.

Beesley, David. 2004. *Crow's Range: An Environmental History of the Sierra Nevada.* Reno: University of Nevada Press.

Belasco, Warren James. 1979. *Americans on the Road: From Autocamp to Motel, 1910–1945.* Cambridge, MA: MIT Press.

Braasch, Gary. 2009. *Earth Under Fire: How Global Warming is Changing the World.* Rev. ed. Berkeley: University of California Press.

Brosnan, Kathleen. 2002. *Uniting Mountain and Plain: Cities, Law, and Environmental Change Along the Front Range.* Albuquerque: University of New Mexico Press.

Browning, Peter. 1990. "Editor's Introduction." In J. M. Hutchings, ed. *In the Heart of the Sierras: Yo Semite Valley and the Big Tree Groves.* Lafayette, CA: Great West Books.

Bullard, Robert D. 1997. *Unequal Protection: Environmental Justice and Communities of Color.* Berkeley: Sierra Club Books.

Bullard, Robert D. 1999. *Confronting Environmental Racism: Voices from the Grassroots.* Cambridge, MA: South End Press.

Bullard, Robert D. 2005. *The Quest for Environmental Justice: Human Rights and the Politics of Pollution.* Berkeley: Sierra Club Books.

California Energy Commission and California Air Resources Board. 2007. California State Alternative Fuels Plan. December 16. Available at www.energy.ca.gov/2007publications/CEC-600-2007-011/CEC-600-2007-011-CMF.PDF (accessed July 24, 2009).

Carson, Rachel. 1962. *Silent Spring.* New York: Houghton Mifflin.

Chiang, Connie. 2008. *Shaping the Shoreline: Fisheries and Tourism on the Monterey Coast.* Seattle: University of Washington Press.

City of Fresno. 2007. Resolution 2007–147. April 17. Available at www.fresno.gov/NR/rdonlyres/0F44A4F2-B91D-44EC-AB10-EFC25B96A672/0/Reso2007147SupportingSB59ReliableWaterSupplyBond.pdf (accessed July 17, 2009).

Cronon, William. 1983. *Changes in the Land: Indians, Colonists, and the Ecology of New England.* New York: Hill and Wang.

Cronon, William. 1990. " Modes of Prophecy and Production: Placing Nature in History," *Journal of American History* 76 (4): 1122–1131.

Cronon, William. 1991. *Nature's Metropolis: Chicago and the Great West.* New York: W. W. Norton.

Cronon, William. 1992. "Kennecott Journey: The Trails Out of Town." In William Cronon, Jay Gitlin, and George Miles, eds. *Under an Open Sky: Rethinking America's Western Past.* New York: W. W. Norton, pp. 28–51.

Cronon, William, ed. 1996a. *Uncommon Ground: Rethinking the Human Place in Nature.* New York. W. W. Norton.

Cronon, William. 1996b. "The Trouble with Wilderness, or Getting Back to the Wrong Nature." In William Cronon, ed. *Uncommon Ground: Rethinking the Human Place in Nature.* New York: W. W. Norton, pp. 69–90.

Crosby, Alfred. 1972. *The Columbian Exchange: The Biological and Cultural Consequences of 1492.* Westport, CT: Greenwood Press.

Crosby, Alfred. 1986. *Ecological Imperialism: The Biological Expansion of Europe.* New York: Cambridge University Press.

D'Antonio, Carla M. et al. 2004. "Invasive Exotic Plant Species in Sierra Nevada Ecosystems." In Dennis D. Murphy and Peter A. Stine, eds. Proceedings of the Sierra Nevada Science Symposium. Gen. Tech. Rep. PSW-GTR-193. Albany, CA: Pacific Southwest Research Station, Forest Service, US Department of Agriculture: 176–180. Available at www.fs.fed.us/psw/publications/documents/psw_gtr193/psw_gtr193_5_2_DAntonio.pdf (accessed June 19, 2009).

Dunlap, Thomas. 1982. *DDT: Science, Citizens, and Public Policy.* Princeton: Princeton University Press.

Environmental Protection Agency. 2009. "DEET Factsheet." Available at www.epa.gov/opp00001/factsheets/chemicals/deet.htm (accessed July 24, 2009).

Farquhar, Francis P. 1965. *History of the Sierra Nevada.* Berkeley: University of California Press.

Fiege, Mark. 1999. *Irrigated Eden: The Making of an Agricultural Landscape in the American West.* Seattle: University of Washington Press.

Flores, Dan. 1991. "Bison Ecology and Bison Diplomacy: The Southern Plains from 1800 to 1850," *Journal of American History* 78 (2): 465–485.

Flores, Dan. 1999. *Horizontal Yellow: Nature and History in the Near Southwest.* Albuquerque: University of New Mexico Press.

Fogelson, Robert. 1967. *The Fragmented Metropolis: Los Angeles 1850–1930.* Cambridge, MA: Harvard University Press.

Fountain, Steven Michael. 2007. "Big Dogs and Scorched Streams: Horses and Ethnocultural Change in the North American West, 1700–1850." PhD dissertation, University of California, Davis.

Fox, Stephen. 1981. *John Muir and His Legacy: The American Conservation Movement.* Boston: Little, Brown.

Garone, Philip Frank. 2006. "The Fall and Rise of the Wetlands of California's Great Central Valley: A Historical and Ecological Study of an Endangered Resource of the Pacific Flyway." PhD dissertation, University of California, Davis.

Hackel, Steven. 2005. *Children of Coyote, Missionaries of St. Francis: Indian-Spanish Relations in Colonial California, 1760–1850.* Chapel Hill: University of North Carolina Press.

Harvey, Mark. 2007. *Wilderness Forever: Howard Zahniser and the Path to the Wilderness Act.* Seattle: University of Washington Press.

Hays, Samuel P. 1955. *Conservation and the Gospel of Efficiency.* Cambridge, MA: Harvard University Press.
Hays, Samuel P. 1987. *Beauty, Health, and Permanence: Environmental Politics in the United States, 1955–1985.* New York: Cambridge University Press.
Heizer, Robert F. and Elsasser, Albert B. 1980. *The Natural World of the California Indians.* Berkeley: University of California Press.
Hickman, David. Forthcoming. "Landscapes of Green and Gold: The Environmental Imagination and the Development of Rural California." PhD dissertation, University of California, Davis.
Hirt, Paul. 1994. *A Conspiracy of Optimism: Management of the National Forests Since World War II.* Lincoln: University of Nebraska Press.
Hundley, Norris, Jr. 2001. *The Great Thirst: Californians and Water – A History.* Rev. ed. Berkeley: University of California Press.
Hurley, Andrew. 1995. *Environmental Inequalities: Class, Race, and Environmental Pollution in Gary, Indiana, 1946–1980.* Chapel Hill: University of North Carolina Press.
Hurst, James Willard. 1956. *Law and the Conditions of Freedom in the Nineteenth-Century United States.* Madison: University of Wisconsin Press.
Hurtado, Albert. 1988. *Indian Survival on the California Frontier.* New Haven: Yale University Press.
Hutchings, J. M. 1962. "The Great Yo-Semite Valley." *Hutchings' California Magazine* 4 (October 1859). Reprinted in Roger R. Olmsted, ed. *Scenes of Wonder and Curiosity from Hutchings' California Magazine 1856–61.* Berkeley: Howell-North.
gler, David. 2001. *Industrial Cowboys: Miller & Lux and the Transformation of the Far West, 1880–1920.* Berkeley: University of California Press.
senberg, Andrew. 2000. *The Destruction of the Bison.* New York: Cambridge University Press.
senberg, Andrew. 2005. *Mining California: An Ecological History of the Gold Rush.* New York: Hill and Wang.
acoby, Karl. 2000. *Crimes Against Nature: Squatters, Poachers, Thieves, and the Hidden History of Conservation.* Berkeley: University of California Press.
ohnson, Susan Lee. 2000. *Roaring Camp: The Social World of the California Gold Rush.* New York: W. W. Norton.
Kelman, Ari. 2003. *A River and Its City: An Environmental History of New Orleans.* Berkeley: University of California Press.
Klingle, Matthew. 2008. *Emerald City: An Environmental History of Seattle.* New Haven: Yale University Press.
Knudson, Tom. 2003. "State of Denial: Chapter 2 – Scarring the Boreal." *Sacramento Bee,* April 27. Available at www.sacbee.com/static/live/news/projects/denial/c2_1.html (accessed September 7, 2008).
Kosek, Jake. 2006. *Understories: The Political Life of Forests in Northern New Mexico.* Durham, NC: Duke University Press.
Langston, Nancy. 1999. *Forest Dreams, Forest Nightmares: The Paradox of Old Growth in the Inland Northwest.* Seattle: University of Washington Press.
Lears, T. J. Jackson. 1981. *No Place of Grace: Antimodernism and the Transformation of American Culture, 1880–1920.* New York: Pantheon.

Lee, Gaylen D. 1998. *Walking Where We Lived: Memoirs of a Mono Indian Family.* Norman: University of Oklahoma Press.
Lewis, Henry T. 1993. "Patterns of Indian Burning in California: Ecology and Ethnohistory" [1973]. In M. Kat Anderson and Thomas Blackbourn, eds. *Before the Wilderness: Environmental Management by Native Californians.* Menlo Park, CA: Ballena Press, pp. 55–80.
Louter, David. 2006. *Windshield Wilderness: Cars, Roads, and Nature in Washington's National Parks.* Seattle: University of Washington Press.
McClatchy News. 2008a. "New Fire Discovered in Sierra National Forest," *Fresno Bee,* July 1. Available at www.fresnobee.com/263/story/706472.html (accessed September 8, 2008).
McClatchy News. 2008b. "Climate Change Puts Heat on High Country," *Sacramento Bee,* August 3.
McClatchy News. 2009. "2007 Fire Illustrates Need to Thin Trees, Some Say," July 12. Available at www.sacbee.com/capitolandcalifornia/story/2019141.html (acccessed July 23, 2009).
McConnell, Laura L. et al. 1998. "Wet Deposition of Current-Use Pesticides in the Sierra Nevada Mountain Range, California, USA," *Environmental Toxicology and Chemistry* 17 (10): 1908–1916.
McEvoy, Arthur. 1986. *The Fisherman's Problem: Law and the California Fisheries, 1850–1950.* New York: Cambridge University Press.
McKelvey, Kevin S. and Johnston, James D. 1992. "Historical Perspectives on Forests of the Sierra Nevada and the Transverse Ranges of Southern California: Forest Conditions at the Turn of the Century." In *The California Spotted Owl: A Technical Assessment of Its Current Status.* Albany, CA: Pacific Southwest Research Station; USDA Forest Service Gen. Tech. Rep. PSW-GTR-133, ch. 11.
McKelvey, Kevin S. et al. 1996. "An Overview of Fire in the Sierra Nevada." In *Sierra Nevada Ecosystem Project: Final Report to Congress,* vol. 2: *Assessments and Scientific Basis for Management Options.* Davis: University of California, Centers for Water and Wildland Resources, ch. 37.
Marsh, George Perkins. 1864. *Man and Nature: Physical Geography as Modified by Human Action.* London: Sampson Low, Son and Marston.
Marx, Leo. 1964. *The Machine in the Garden: Technology and the Pastoral Ideal in America.* New York: Oxford University Press.
Melosi, Martin. 2008. *The Sanitary City: Environmental Services in Urban America from Colonial Times to the Present.* Pittsburgh: University of Pittsburgh Press.
Merchant, Carolyn. 1980. *The Death of Nature: Women, Ecology, and the Scientific Revolution.* San Francisco; Harper and Row.
Merchant, Carolyn. 1990. "Gender and Environmental History," *Journal of American History* 76 (March): 1117–1121.
Merchant, Carolyn. 2003. *Reinventing Eden: The Fate of Nature in Western Culture.* New York: Routledge.
Montrie, Chad. 2008. *Making a Living: Work and Environment in the United States.* Chapel Hill: University of North Carolina Press.
Morse, Katherine. 2003. *The Nature of Gold: An Environmental History of the Klondike Gold Rush.* Seattle: University of Washington Press.
Muir, John. 1911. *My First Summer in the Sierra.* New York: Houghton Mifflin.

Nash, Linda. 2006. *Inescapable Ecologies: A History of Environment, Disease, and Knowledge.* Berkeley: University of California Press.
Nelson, Richard. 1983. *Make Prayers to the Raven: A Koyukon View of the Northern Forest.* Chicago: University of Chicago Press.
Olmsted, Frederick Law. 1865. "Yosemite and the Mariposa Grove: A Preliminary Report." Available at www.yosemite.ca.us/library/olmsted/report.html (accessed June 25, 2009).
Orlove, Ben et al. 2008. *Darkening Peaks: Glacier Retreat, Science, and Society.* Berkeley: University of California Press.
Orsi, Jared. 2004. *Hazardous Metropolis: Flooding and Urban Ecology in Los Angeles.* Berkeley: University of California Press.
Palmquist, Peter E. and Kailbourn, Thomas R. 2000. *Pioneer Photographers of the Far West: A Biographical Dictionary 1840–1865.* Stanford: Stanford University Press.
Pinchot, Gifford. 1910. *The Fight for Conservation.* New York: Doubleday, Page.
Preston, William. 1998. "Serpent in the Garden: Environmental Change in Colonial California." In Richard Orsi and Ramon Gutierrez, eds. *Contested Eden: California Before the Gold Rush.* Berkeley: University of California Press, pp. 260–298.
Price, Jennifer. 2000. *Flight Maps: Adventures with Nature in Modern America.* New York: Basic Books.
Pulido, Laura. 1996. *Environmentalism and Economic Justice: Two Chicano Struggles in the Southwest.* Tucson: University of Arizona Press.
Pyne, Steven. 1982. *Fire in America: A Cultural History of Wildland and Rural Fire.* Princeton: Princeton University Press.
Pyne, Steven. 1990. "Firestick History," *Journal of American History* 76 (4): 1132–1141.
Quay, James. 2008. "Defining California Through Culture." In William Deverell and David Igler, eds. *A Companion to California History.* Oxford: Wiley-Blackwell, pp. 3–21.
Righter, Robert. 2005. *The Battle Over Hetch Hetchy: America's Most Controversial Dam and the Birth of Modern Environmenatlism.* New York: Oxford University Press.
Rohrborough, Malcolm. 1997. *Days of Gold: The California Gold Rush and the American Nation.* Berkeley: University of California Press.
Rome, Adam. 2001. *The Bulldozer in the Countryside: Suburban Sprawl and the Rise of American Environmentalism.* New York: Cambridge University Press.
Rose, Gene. 2000. *San Joaquin: A River Betrayed.* Clovis, CA: Word Dancer Press.
Runte, Alfred. 1990. *Yosemite: The Embattled Wilderness.* Lincoln: University of Nebraska Press.
Russell, Carl P. 1926. "Early Days in Yosemite," *California Historical Society Quarterly* 5 (December): 328–341. Available at www.yosemite.ca.us/library/early_years_in_yosemite/ (accessed June 18, 2009).
Russell, Edmund, III. 2001. *War and Nature: Fighting Humans and Insects with Chemicals from World War I to Silent Spring.* New York: Cambridge University Press.
Sackman, Douglas Cazaux. 2005. *Orange Empire: California and the Fruits of Eden.* Berkeley: University of California Press.

San Joaquin County Office of the Agricultural Commissioner. 2006. *2005 Crop Report,* May 23. Available at www.co.san-joaquin.ca.us/agcomm/Docs/CropReport.pdf (accessed June 25, 2009).
Scharff, Virginia A., ed. 2003. *Seeing Nature Through Gender.* Lawrence: University Press of Kansas.
Schrepfer, Susan R. 2005. *Nature's Altars: Mountains, Gender, and American Environmentalism.* Lawrence: University Press of Kansas.
Sellers, Chris. 1997. *The Hazards of the Job: From Industrial Disease to Environmental Health Science.* Chapel Hill: University of North Carolina Press.
Seo, J. et al. 2005. "Biodegradation of the Insecticide N,N-Diethyl-m-Toluamide by Fungi: Identification and Toxicity of Metabolitesm," *Archives of Environmental Contamination and Toxicology* 48 (3): 323–328. Available at www.springerlink.com/content/h7j51110835263pr/ (accessed July 20, 2009).
Solnit, Rebecca. 2005. *Yosemite in Time: Ice Ages, Tree Clocks, Ghost Rivers.* San Antonio: Trinity University Press.
Spence, Mark David. 1999. *Dispossessing the Wilderness: Indian Removal and the Making of the National Parks.* New York: Oxford University Press.
Starr, Kevin. 2005. *California: A History.* New York: Modern Library.
Stewart, Mart. 1996. *"What Nature Suffers to Groe": Life, Labor, and Landscape on the Georgia Coast, 1680–1820.* Athens: University of Georgia Press.
Streeby, Shelly. 2002. *American Sensations: Class, Empire, and the Production of Popular Culture.* Berkeley: University of California Press.
Sutter, Paul S. 2002. *Driven Wild: How the Fight Against Automobiles Launched the Modern Wilderness Movement.* Seattle: University of Washington Press.
Sze, Julie. 2007. *Noxious New York: The Racial Politics of Urban Health and Environmental Justice.* Cambridge, MA: MIT Press.
Tarr, Joel. 1996. *The Search for the Ultimate Sink: Urban Pollution in Historical Perspective.* Akron: University of Akron Press.
Taylor, Joseph E., III. 2000. *Making Salmon: An Environmental History of the Northwest Fisheries Crisis.* Seattle: University of Washington Press.
Thornton, Gary. 2009. *Los Angeles Almanac.* Available at www.laalmanac.com/energy/en16.htm (accessed June 26, 2009).
US Congress. 1964. "The Wilderness Act." Public Law 88–577. Sept. 3. 78 Stat, pp. 890–891.
US Department of Agriculture. 2009. "State Fact Sheets: California." Economic Research Service. Available at www.ers.usda.gov/Statefacts/CA.htm (accessed August 14, 2009).
US Forest Service. 2009. Homepage. Available at www.fs.fed.us/land/staff/lar/LAR06/table7.htm (accessed July 17, 2009).
Walker, Richard. 2008a. *The Country in the City: The Greening of the San Francisco Bay Area.* Seattle: University of Washington Press.
Walker, Richard. 2008b. "Defining California Through the Global Economy." In William Deverell and David Igler, eds. *A Companion to California History.* Oxford: Wiley-Blackwell, pp. 75–96.
Walker, Roger. 2009. "Formulating Adaptive Management Strategies for Restoring Forest Health in the Eastern Sierra Nevada." Reno: Nevada Agricultural Experiment Station. Available at www.cabnr.unr.edu/NAES/Research_Details.aspx?GrantID=473 (accessed July 5, 2009).

Warren, Louis S. 1997. *The Hunter's Game: Poachers and Conservationists in Twentieth-Century America.* New Haven: Yale University Press.
Weintraub, Daniel. 2009. "River Restoration Project Offers a Sprinkling of Hope," *Sacramento Bee,* April 26.
White, Richard. 1980. *Land Use, Environment, and Social Change: The Shaping of Island County, Washington.* Seattle: University of Washington Press.
White, Richard. 1990. "Environmental History, Ecology, and Meaning." *Journal of American History* 76 (4): 1111–1116.
White, Richard. 1995. *The Organic Machine: The Remaking of the Columbia River.* New York. Hill and Wang.
White, Richard. 1996. "'Are You an Environmentalist or Do You Work for a Living?': Work and Nature." In William Cronon, ed. *Uncommon Ground: Rethinking the Human Place in Nature.* New York: W. W. Norton, pp. 171–185.
Wilderness.net. 2009. "Ansel Adams Wilderness." Available at www.wilderness.net/index.cfm?fuse=NWPS&sec=wildView&WID=12 (accessed August 30, 2008.)
Worster, Donald. 1979. *Dust Bowl: The Southern Plains in the 1930s.* New York: Oxford University Press.
Worster, Donald. 1985. *Rivers of Empire: Water, Aridity, and the Growth of the American West.* New York: Pantheon.
Worster, Donald. 1990. "Transformations of the Earth: Toward an Agroecological Perspective in History," *Journal of American History* 76 (4): 1087–1106.
Worster, Donald. 2008. *A Passion for Nature: The Life of John Muir.* New York: Oxford University Press.

Chapter Two

Air

Nancy Langston

The air within our lungs ties us to our planet's past and to its precarious future. Each molecule within the atmosphere circulates through the biosphere time and again. Those molecules cross scales, moving inwards through our lungs, and outwards into atmospheric currents that moderate the planet's temperature and protect us from the sun's radiation. Scientists with spare time on their hands have estimated that one to ten molecules breathed by the Buddha in his last breath are making their ways through our lungs right now. The carbon taken up by forests in Brazil once may have moved through your body; the carbon that threatens our shared futures on earth comes from the coal once taken up by plants in ancient forests. Across time and space, the atmosphere connects us all (Fleming et al. 2006: ix–x).

Anxiety about climate change and its potential effects on society dominates contemporary environmental concerns, but it is important to recognize that anxieties about climate are not new. For centuries, climate concerns have been part of discourses about colonization, power, and place. This essay explores the environmental history of air, using climate change as its central theme. It will focus on America, but because the atmosphere escapes national boundaries, and because political concerns about the atmosphere challenge our understanding of these boundaries, I will consider examples outside of America as well. Air encompasses many topics other than climate, of course, and this essay could equally well have focused upon pollution or energy.

The essay will begin with a brief examination of changing climates over earth's deep history, focusing on a few key episodes of abrupt change with powerful repercussions for life on earth. I will then turn to a history of scientific and public concern about climate change, asking when that concern began and what social and political forces shaped it. Finally, I will explore