

Foreword

We change, the world we live in changes, and our appreciation of how change occurs is itself subject to constant change. For all those who care about the continually evolving relationship between people and the living earth, these basic facts of life have become increasingly and inescapably pertinent.

Conservation—never an easy endeavor—used to be so much easier: draw boundaries around a refuge or reserve or a park and let it be; provide a market incentive or a government program and watch it work; protect a habitat or limit a harvest and see the populations recover. But we are dynamic creatures living in a dynamic world, and that realization has made conservation more difficult. We must now seek ways, in writer-naturalist Terry Tempest Williams's arresting phrase, to "find refuge in change." This volume helps all of us to find that refuge. It allows us to better understand how landscapes have changed, how we may investigate and interpret that change, and how our own conservation actions—and the ecosystems we inhabit—may benefit from that knowledge.

By chance, I am writing these words in a place where the fact of change is strongly in one's face. I am on the extreme western edge of the North American Plate near Point Reyes, California. A mile away to the west, Douglas firs and Bishop pines adorn the granitic Inverness Ridge (gaunt silhouettes of pines, remnants of a 1995 fire, darken one stretch of the ridge line). The ridge marks the eastern edge of the Pacific Plate. That side is grinding northward relative to this side. In the narrow basin between lies the San Andreas Fault. The fault zone here is buried beneath wetlands . . . or what once were wetlands, a coastal salt marsh. Between the mid-1800s and mid-1900s, settlers channelized the feeder streams, built dikes to control the tidal ebb and flow, and filled in the marsh to make pasture. The streams now run straighter toward their meeting with the sea. Two hundred Holsteins are meandering toward the main dike during their morning munch. But the dairy farmer and local conservationists have recently found uncommon ground here, and there are plans to restore the marsh's flux of brackish waters, and to bring back the saltgrass and pickleweed. The native Coast Miwok, who in 1579 greeted Francis Drake and the *Golden Hind* here, are silent. They were uprooted from this place in the early 1800s and by the end of that century their few survivors had scattered northward.

The scales of time—from geologic to ancient to historic—and the types of change—from the purely natural to the human-induced—are displayed dramatically here along the California coast. But

every place offers its past to those who seek it. Read it in the thick mud sediments of the Anacostia River basin in Washington, D.C.; in remnant stumps of white pine that still record the epic deforestation of the upper Great Lakes in the late 1800s; in the spread of cheat grass across the rangelands of the intermountain West. But you may also find the past in the excavated sites of the old ones; in stories still vivid in an elder's memory; in yellowed notes and records, filed away and forgotten. Every landscape provides materials by which we may calibrate its unique history of change. The contributors to this volume describe the tools and techniques we need to carry out this task.

It is worth pausing to consider just how profoundly the past few decades have altered our view of the earth's past. Geologists, climatologists, paleontologists, evolutionary biologists, and biogeographers have been hard at work. They have revealed how the changing configuration of the earth's tectonic plates, periodic asteroid impacts, differential rates of exchange of atmospheric gases, shifts in deep ocean currents, rising and falling sea levels, advancing and melting ice sheets, and the dispersal, extinction, and adaption of life-forms have conferred upon us our contemporary landscapes, seascapes, and biotas. Geneticists and paleo-anthropologists have sharpened our understanding of the origins, development, and diaspora of the human population over the millennia. Archaeologists, anthropologists, paleoecologists, cultural geographers, and environmental historians have shown how humans and ecosystems have influenced each other over varied scales of time and space. Ecologists and conservation biologists have challenged us to see the evidence of recent ecological change, and to understand how biological diversity is shaped by ecosystem disturbance, landscape-level processes, and, of course, people.

All of this has upset traditional approaches to "managing" a static and constant nature. It has rendered suspect our set formulae for conservation and compelled us to review our conservation philosophies. We no longer see the world as a piece of divine clockwork or as a superorganism whose behavior we can predict or control. But neither do we see change as simply random, chaotic, or inexplicable. The world is an integrated whole, and it has people in it. Its patterns of change are, to some extent, discernable. Landscapes have been shaped both by nonhuman forces and by human action, to varying degrees at varied times and places. All who work to reconstruct the past have brought us closer to that reality. In the process, they have disabused us (we may hope) of some of our naive, our hubris, and our illusions.

In charting future directions in conservation, these recent scientific advances yield information that is absolutely essential, and yet insufficient. Science offers us knowledge, but it cannot tell us how to synthesize and use it, how to weave it into the stories that we confer on the land. It cannot motivate us to seek ways of living that replenish the systems that we depend on. It cannot protect the wild, or revive damaged systems, or reconnect people to their surroundings, or promote more just, durable, and resilient human communities. But the daily work of conservation, restoration, and environmental reform requires the reality check of science and history. Historical ecology, as the meeting ground of disciplines, is where we seek information and counsel. We need the diagnostic tools of historical ecology to help us get our bearings, to guide our restoration practices, and to inform our search for a viable conservation ethic.

It is fitting that our editors, Dave Egan and Evelyn Howell, have prepared this volume based on their many years of experience at the University of Wisconsin in Madison. There, in the spring of 1934, at the dedication of the university's arboretum, Aldo Leopold helped to inaugurate a new direction in conservation work. In his dedicatory remarks, Leopold laid out a vision for the site that emphasized the "reconstruction of original Wisconsin . . . to serve as a bench mark, a starting point, in the long and laborious job of building a permanent and mutually beneficial relationship between civilized men and a civilized landscape." In an era when the ecologies and economies of middle America were in crisis, the message rang sharply. "The time has come for science to busy itself with the earth itself," Leopold suggested. "The first step is to reconstruct a sample of what we had to start with."

Leopold may actually have missed a step. For even before reconstruction comes research. Others before Leopold had explored, from different angles, the place where the natural sciences and human history met: George Perkins Marsh in his classic *Man and Nature*; or, *Physical Geography as Modified by Human Action* (1864); Frederick Jackson Turner in his explication of the frontier thesis (1893); Alfred Russell Wallace, Charles Darwin, John Wesley Powell, Charles Van Hise, Carl O. Sauer, Walter Prescott Webb, Victor Shelford, Charles Elton (among other integrating minds in history, geography, and the biological sciences). The rivers of natural history and human history had joined, though their waters had not yet fully mingled.

With the emergence of ecology as a science, and ecological restoration as an applied art, history assumed a more prominent role in conservation. Understanding the history of the land, its biota, and its interactions

The contributors to this volume invite us to see the world in a pollen grain, a tree ring, a packrat midden, a soil layer. They ask us to mark time through the land record, the map, the oral tradition. Out of these fragments we reconstruct the earth's past. Even the case histories seem laden with the symbolic: Nantucket, where great ships under masts of white pine once went to sea, and where the cod ships and whalers came to harbor; the Indiana Dunes, where over a century ago the pioneer ecologist Henry C. Cowles first sought to understand changes in plant communities over time; the Grand Canyon, where all eyes may gaze into the sedimentary layers of deep time; and San Francisco Bay, near where the Coast Miwok met Drake at the west portal to North America.

We have changed since then, and so has our continent. Through the tools placed here in our hands, we may come to know this place better, to inhabit it more wisely, to restore some of what we have broken, and so begin to find our refuge in change.

Curt Meine
Point Reyes, California
May 15, 2000

(including the role of human beings) became the first task in restoration. Among other things, this placed new and greater importance on the continent's remnant wildlands. "The recreational value of wilderness has been often and ably presented," Leopold wrote in 1941, "but its scientific value is as yet but dimly understood." Increasingly, Leopold (and others as well) argued for the protection of wildlands as reference points, where the "science of land health" could find its "base datum of normality, a picture of how healthy land maintains itself. . . ." In the wild, it might be said, the past spoke with special clarity to the present.

Now historical ecology has emerged to help mingle the waters more purposefully. But beware: the awareness that historical ecology offers can be a burden. I have, for example, a friend whose family refuses to take a vacation with her anymore, because during a trip to Hawaii she would not stop complaining about all the beautiful but exotic plants engulfing the islands' native flora. "One of the penalties of an ecological education," Leopold wrote, "is that one lives alone in a world of wounds." If because of Leopold and other conservation visionaries we are no longer quite so alone, we must still find ways to reconcile ourselves to the temporal dimension of our work.

History complicates things. It undermines easy answers. It makes people, with all our confounded behavior, an unavoidable part of the puzzle. It messes with deeply rooted views of wildness and wilderness. To incorporate history in one's research and conservation plans takes time, money, persistence, imagination, concentration, self-criticism, attention to detail, a lot of reading, respect for the obscure, breadth of interest, and a capacity for respectful collaboration.

But history offers compensations. It bestows necessary knowledge. It makes the story of any landscape even more interesting. It can bring together people whose passions and philosophies may otherwise conflict. As well illustrated by the four case studies in this volume, it requires the tapping of diverse human talents, experiences, and perspectives. It helps us to appreciate wildness, not as a nostalgic illusion, but as an inherent attribute of all living things and all places. It records the steps in our fitful progress toward respect for that wildness. History does not confine us to the temporal dimension; rather it allows us to inhabit it with greater self-awareness, and perhaps even with grace.

In *Auguries of Innocence*, William Blake invited us

To see the World in a Grain of Sand
And Heaven in a Wild Flower
Hold Infinity in the Palm of your hand
And Eternity in an hour.