Conservation in the Old World seems to have evolved gradually. No doubt, a parallel, but very different, practice and conception of conservation also independently evolved in the New World. With the wholesale devaluation and destruction of American Indian cultures that occurred during four of the five hundred years of European discovery, conquest, colonization, and finally complete domination of the Western Hemisphere, indigenous New World conservation thought and practice was all but lost.

The depopulation of North America was so thorough-going—owing more to what might be called inadvertent biological warfare than to conventional warfare—that the English colonists could imagine that they had settled in a wilderness, not in a country once fully inhabited and significantly transformed by its indigenous peoples. Thus, two allied myths established themselves in the Euro-American consciousness: one, that the whole of North America was a "virgin" wilderness of continental proportions; the other, that North America’s natural resources and especially its forests were inexhaustible. The second of these is conventionally called "the myth of superabundance."

While the wilderness myth has only been recently debunked, the myth of superabundance was abandoned around the turn of the century. With the completion of the transcontinental railroad, the slaughter of the bison herds, and the subjugation of the Plains Indians, the North American frontier palpably closed and the idea of the limits of North America’s natural resources dawned on thoughtful Euro-Americans. Against the background of laissez-faire exploitation—unregulated hunting and fishing, logging, mining, plowing, and so on—the necessity of conservation received a good deal of conscious reflection.

Early Conservationists

George Perkins Marsh is generally credited with first articulating an American conservation philosophy in the 1860s in his prophetic book, Man and Nature or The Earth as Modified by Human Action. Marsh was mainly concerned about the adverse effects of deforestation on stream flow, soil stability and fertility, and climate. His conservation ethic was an early American version of contemporary Judeo-Christian stewardship.

Ralph Waldo Emerson and Henry David Thoreau had not attained the essential ecological understanding of the relationship among vegetation, soil, water, and climate that Marsh had. They were principally concerned rather with the aesthetic, psychological, and spiritual paucity of the prevailing American materialism and vulgar utilitarianism. As an antidote, they turned to wild nature—contact with which, they argued, invigorates and strengthens the body, inspires the imagination, energizes the mind, elevates the soul, and provides an occasion for transcending finite human consciousness. Because wild nature is a psychospiritual, as well as a material, resource, Emerson and Thoreau argued that Americans should preserve a significant portion of it undefiled.

Emerson and Thoreau thus stand at the fountainhead of the wilderness preservation philosophy of conservation. Thoreau was probably the first American to advocate what eventually became a national wilderness preservation policy: "I think that each town," he wrote, "should have a park, or rather a primitive forest, of five hundred or a thousand acres...where a stick should never be cut—nor for the navy, nor to make wagons, but to stand and decay for higher uses—a common possession forever, for instruction and recreation."

This philosophy of conservation was energetically promoted by John Muir at the...
turn of the century. Through his lively writing, thousands of American readers vicariously experienced the beauty and spiritual redemption that he experienced directly and personally during his many and lengthy wilderness sojourns.

From Nature to Natural Resources

Gifford Pinchot, a younger contemporary of John Muir, articulated a very different philosophy of conservation, one firmly grounded in utilitarian values and closely associated with the world view of modern classical science. Pinchot crystallized the resource conservation philosophy in a motto—"the greatest good of the greatest number for the longest time." Pinchot bluntly reduced the "Nature" with which Marsh, Emerson, Thoreau, and Muir were variously concerned to "natural resources." And he even equated conservation with the systematic exploitation of natural resources: "The first great fact about conservation," Pinchot noted, "is that it stands for development."

For those who might take the term "conservation" at face value and suppose that it meant, if not nature preservation, then at least saving some natural resources for future use, Pinchot was quick to point out their error: "There has been a fundamental misconception," he wrote, "that conservation means nothing but the husbanding of resources for future use. There could be no more serious mistake."

It was none other than Pinchot who characterized the Muirian contingent of preservationists as aiming to "lock up" resources in national parks and other wilderness reserves. For Pinchot, conservation meant the efficient exploitation of "natural resources" and the fair distribution of the benefits of doing so. Science was the handmaid of efficiency, and macro-economics of fairness.

Thus Pinchot's philosophy of conservation was wedded to the eighteenth- and nineteenth-century scientific world view, according to which nature is a collection of bits of matter, assembled into a hierarchy of independently existing chemical and organismic aggregates that can be understood and manipulated by reductive methods. It was also wedded to economics—the science of self-interested rational individuals pursuing preference satisfaction in a regulated market.

The Conservation Schism

John Muir and Gifford Pinchot were, for a time, friends and allies. Their very different philosophies of conservation, however, led to a falling out. The personal rift between Muir and Pinchot symbolizes the schism that split the North American conservation movement into two mutually hostile camps at the beginning of the twentieth century. Pinchot commandeered the term "conservation" for his philosophy, while Muir and his followers came to be known as "preservationists."

Pinchot's philosophy dominated conservation in the public sector of the United States—the Forest Service (of which Pinchot himself was the first Chief), the Fish and Wildlife Service, the Bureau of Land Management, and state departments of natural resources. Muir's philosophy prevailed in non-governmental conservation organizations such as the Sierra Club (which Muir founded), The Wilderness Society, and the Nature Conservancy.

The Leopoldian Land Ethic

Aldo Leopold was employed by the Forest Service for 15 years. Thus, he began his career as a conservationist solidly in the Pinchot camp. Nevertheless, he gradually came to the conclusion that Pinchot's conservation philosophy was inadequate because it was based upon an obsolete pre-ecological scientific paradigm.

As Leopold put it: "Ecology is a new fusion point for all the sciences...The emergence of ecology has put the economic biologist in a peculiar dilemma: with one hand he points out the accumulated findings of his search for utility in this or that species; with the other he lifts the veil from a biota so complex, so conditioned by interwoven cooperations and competitions that no man can say where utility begins or ends."

From an ecological point of view, nature is more than a collection of discontinuous useful, useless, or noxious species furnishing an elemental landscape of soils and waters. Rather, it is a vast, intricately organized and tightly integrated system of complex processes. And human beings are not specially created and uniquely valuable demigods any more than nature is a vast emporium of goods, services, and amenities. We are very much a part of nature.

Leopold realized that the Muir-Pinchot schism had left North American conservation in an unfortunate "zero-sum" dilemma: either lock up and preserve pristine nature or efficiently and fairly develop it...and, in doing so, necessarily degrade or destroy it. Reflecting the unequal political strength of the conservationists and the preservationists, the contiguous forty-eight United States eventually became segregated into large development zones dotted here and there (mostly west of the Mississippi) with wilderness preserves adding up to only 2 or 3 percent of the total. Hoping to break out of this dilemma, Leopold advocated a "win-win" philosophy of conservation, stressing ways of inhabiting and using nature that are at the same time ecologically benign. As he put it, "the impulse to save wild remnants is always, I think, the forerunner of the more important and complex task of mixing a degree of wilderness with utility."

Photo courtesy of the Huntington Library.
Accordingly, Leopold set out to define conservation in the following terms: as "a universal symbiosis with land, economic and aesthetic, public and private"; as "a protest against destructive land use"; as an effort "to preserve both utility and beauty"; as "a positive exercise of skill and insight, not merely a negative exercise of abstinence and caution"; and, finally, as "a state of harmony between men and land."

**Leopold's Legacy**

How should we assess twentieth-century North American conservation philosophy as we approach the twenty-first century? Pinchot's philosophy of conservation is no longer viable since it is based on a reductive, pre-ecological scientific paradigm. Even the Forest Service is admitting that old-growth forests are not just senescent stands of timber, over due for clear cutting and replanting to even-aged monotypical blocks of fast-growing trees.

Muir's philosophy of wilderness preservation is equally obsolete. No less than Pinchot's, it perpetuates the pre-evolutionary strict separation of "man" from "nature." It simply puts an opposite spin on the value question, defending bits of innocent, pristine, virgin "nature" against the deprivations of greedy and destructive "man." It ignores the presence and the considerable impact of indigenous peoples in their native ecosystems.

North and South America, for example, had been fully inhabited and radically affected by Homo sapiens for 10,000 or more years before European discovery. Muir's philosophy also assumes that if preserved, an ecosystem will remain in a stable steady state, while current thinking in ecology stresses the importance of constant, patchy, perturbation and the inevitability of change.

Leopold's harmony-with-nature philosophy of conservation is the only twentieth-century North American philosophy of conservation that seems likely to be viable in the twenty-first century. It recognized that human beings are as much a part of nature as any other species. But it would urge that, like most other species, we human beings learn to live symbiotically with our fellow-denizens in the various ecosystems that we inhabit.

**Lessons for Ecosystem Management**

From the perspective of Leopold's harmony-with-nature philosophy of conservation, what is ecosystem management? And how does it differ from resource management? Ecosystem management aims, first and foremost, to maintain the health and integrity of ecosystems. Commodity production is a secondary and subordinate aim, to be pursued to the extent that it is compatible with maintaining the health and integrity of ecosystems.

Leopold defined ecosystem (or "land") health as "the capacity of the land for self-renewal." Currently the concept is understood to refer to the capacity of ecosystems to maintain their functions. "Ecosystem integrity," on the other hand, refers to an ecosystem's historic structure—its complement of component species in their characteristic numbers. Maintaining ecosystem integrity, so understood, is a more exacting norm of ecosystem management, since ecosystem functions may be little impaired by the incidental loss of non-keystone species, by the competitive exclusion of native species by exotics, or by the gradual and orderly change from one type of community to another.

In addition to directly managing ecosystems to maintain their health and integrity—by prescribed burns, afforestation, culling weedy species, excluding or eradicating exotics, protecting or reintroducing natives, and so on—ecosystem management entails managing human economic activities. It means finding new ways of living on the land. Leopold himself was especially distressed by the increasing industrialization of agriculture during the mid-twentieth century and looked for ways of making agriculture more compatible with ecosystem health and integrity.

A human harmony-with-nature conservation philosophy is more consistent with evolutionary and ecological biology than are both preservationism and resourcism. The ideal of this philosophy of conservation is to share the Earth with all our "fellow-voyagers...in the odyssey of evolution" and to provide all the Earth's species with adequate living space.

As things presently stand, however, to nurture biological diversity at every scale takes more than setting aside habitat. It requires ecosystem management, which is managing ecosystems primarily for their health and integrity, not for our commodity production.