

# Leopold's Evolving Legacy: Key Trends in Conservation Ideas, Science, and Practice

By CURT MEINE

In his influential essay “The Land Ethic,” completed in the final year of his life, Aldo Leopold summarized the lessons he had learned across four decades as a conservation scientist, advocate, practitioner, and teacher. Leopold argued that the next phase of human ethical development must include expanding our sphere of moral concern to encompass the land. Only through such an expanded ethic, he held, could human and natural communities, in all their diversity, productivity, and beauty, function well and thrive together over the long run. “I do not imply that this philosophy of land was always clear to me,” Leopold admitted. “It is rather the end-result of a life-journey, in the course of which I have felt sorrow, anger, puzzlement or confusion over the inability of conservation to halt the juggernaut of land abuse.”<sup>1</sup>

In 1988 I traced that “life journey” in a biography, *Aldo Leopold: His Life and Work*. One did not have to be especially prophetic to see that Leopold’s legacy would not only remain relevant to conservation, but would continue to evolve in important new ways. Leopold’s passion for wild places, for vibrant human landscapes and communities, for sound economies rooted in ecological realities, and for adventure and exploration crossed the sensitive fault lines of modern environmentalism and political ideology. Leopold anticipated our attention to global-scale human impacts on what he called “the land”—the soil, water, atmosphere,

oceans, plants, animals, and people—even while being focused on the local and particular. He had useful and incisive things to say about many urgent, specific concerns (such as watershed function or the ecological function of fire), about great themes (such as the broad history of human-land interactions), and about the connections among them. Devoted to positive and progressive reform, he was also a pragmatist with deep understanding of human dilemmas and the impediments to change. In the heyday of an environmental movement and an emerging anti-environmental backlash—both often in the news, but usually lacking in historical perspective—I found Leopold’s story to be powerfully *grounded* and *grounding*. It provided connections across generations, perspectives, and landscapes. It exposed forgotten foundations and offered continuity amid complexity.

In examining Leopold’s life and work, I had the advantage of building upon decades of environmental scholarship, commentary, and criticism. In the decades following Leopold’s passing in 1948, a generation of writers—including such voices as Lewis Mumford, Joseph Wood Krutch, Rachel Carson, Wallace Stegner, Peter Matthiessen, Sigurd Olson, Wendell Berry, Gary Snyder, N. Scott Momaday, Edward Abbey, and Annie Dillard—had risen up to speak for and from the American land. They gathered the “cultural harvest” from the land that Leopold had anticipated.<sup>2</sup>

Moreover, whole new fields of study were emerging to inform the task. In the sciences, the boundaries of established disciplines and natural resource management specialties (forestry, fisheries and wildlife

management, range management, etc.) dimmed as new and more integrated fields gained ground: conservation biology, restoration ecology, sustainable agriculture, landscape ecology, and ecological economics.<sup>3</sup> Social scientists began to examine in new ways the intimate connections among culture, communities, economies, and the natural world. Environmental ethics, environmental history, and a burgeoning literature of *place* started to explore the vital spaces between traditional academic domains.

Scientists, scholars, writers, and conservation practitioners in all these fields recognize a kinship with Aldo Leopold. Leopold was one who understood, on both practical and theoretical grounds, the hazards of rigid disciplinary thinking. “All the sciences and arts are taught as if they were separate,” he once wrote. “They are separate only in the classroom. Step out on the campus and they are immediately fused. Land ecology is putting the sciences and arts together for the purpose of understanding our environment.”<sup>4</sup> That boldness in fusing fields of knowledge was characteristic of Leopold. Increasingly we appreciate how necessary this is, not only to enrich our understanding, but to solve our problems, sustain our economies, fulfill our responsibilities, express our hopes, and deepen our joys.

By striving, as he memorably put it, to “think like a mountain,” Leopold altered the course of conservation history. We can see his continuing influence in the trends that have reshaped conservation thought, science, policy, and practice since the biography was first published:

*Dynamic ecology and landscape change.* Among ecologists the notion of a stable and static natural world tending toward a state of perpetual balance has faded, replaced by a view that emphasizes patterns of change, flux, and resilience in ecosystems. As early as the 1920s Leopold explicitly rejected simplistic notions of the “balance of nature,” based especially on his growing understanding of landscape history and the dynamics of wildlife populations. Through the chaotic environmental conditions of the 1930s Leopold developed an ever-deeper appreciation of the intricate functioning of biotic communities and of what he began to call “land health.” Change, at all scales of time and space, was basic to Leopold’s emerging ecological worldview.<sup>5</sup>

*Biodiversity and conservation biology.* These terms had not yet been coined in Leopold’s day. His

work prepared the way for their emergence and adoption in the mid-1980s. A growing recognition of the value of biological diversity runs like a bright line across Leopold’s career. It transformed his definition of conservation from one based on the Progressive Era’s quantitative standards of economic efficiency and sustained yield to one based on the quality of entire, healthy, functioning landscapes and communities, with special emphasis on the maintenance of biological diversity. As the field of conservation biology came together to help guide this new approach, Leopold has come to be recognized as one of its early exemplars.<sup>6</sup>

*The critique of wilderness.* Since the 1980s biologists, historians, philosophers, geographers, and others have strongly challenged, on various grounds, long-established ideas about the definition, nature, and value of wilderness. Lively debates have focused especially on the definition of wilderness as pristine space, separate (and *separable*) from historical, cultural, and ecological realities. Amid the smoke, there has been some cleansing flame. This critique has yielded a more subtle understanding of the social, cultural, environmental, and political context of wilderness; of the evolving role of native peoples worldwide in shaping

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landscapes and ecosystems over the millennia; of the varied values associated with wildlands at all scales; and of the role of protected areas as a conservation strategy. It has also called into question one of Leopold’s core concerns as a conservationist. Leopold has long been recognized as one of America’s foremost champions of “wild things” and wild places. The postmodern critique of wilderness has brought more careful scrutiny of the evolution in Leopold’s

wilderness ideas and advocacy, highlighting especially his integration of wilderness within a comprehensive conservation vision.<sup>7</sup>

*Landscape-scale approaches.* Natural resource managers—including foresters, fish and wildlife managers, range managers, soil and water conservationists, civil engineers, and urban and land use planners—no longer have the luxury of thinking of themselves in isolation from one another. They work within the same landscapes, watersheds, and communities. Their lines of activity invariably intersect, and the state of the land testifies to their ability—or failure—to work together. Leopold strove to communicate this theme through his entire conservation career. In the last twenty years, this perspective has gained ground through the science of landscape ecology (among other interdisciplinary fields) and in the adoption of ecosystem management as a unifying approach within the various natural resource professions. It has also served to bind conservation efforts together across the landscape, from our wild and rural lands to our suburbs and cities, and including our shared oceans and atmosphere.<sup>8</sup>

*Private land conservation.* “The thing to be prevented,” Leopold wrote in 1934, “is destructive private land-use of any and all kinds. The thing to be encouraged is the use of private land in such a way as to combine the public and private interest to the greatest possible degree.”<sup>9</sup> Through the 1960s and 1970s the environmental movement focused strongly on issues involving public lands, while neglecting the challenge of private land conservation. Over the last two decades that has changed. Around the country conservationists have fostered “smart growth” programs, a robust land trust movement, and other efforts to protect and restore “working” farms, rangelands, and forests. In 1996 the USDA’s Soil Conservation Service was rechristened the Natural Resource Conservation Service, with a strengthened mandate to help the nation’s private landowners in becoming better land stewards.<sup>10</sup> The challenge of conserving private land is plainly monumental and sobering; nonetheless, the reclaiming of this aspect of conservation history has been one

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of the key achievements of the last several decades.

*Food, agriculture, and conservation.* Closely tied to the theme of private land conservation is the surge of interest in organic, sustainable, and local (including urban) food production. Many of the forces driving the dominant industrial agricultural model first gained traction in the years following World War II, as war-spawned technologies, demographic trends, economic incentives, and government programs changed the face of farming and ranching.<sup>11</sup> Leopold lived just long enough to see the impact of those gathering forces. He warned in 1945 that the “tremendous momentum of industrialization” on the farm, left unchecked, would “[generate] new insecurities, economic and ecological, in place of those it was meant to abolish. In its extreme form, it is humanly desolate and economically unstable.”<sup>12</sup> The intimate connections among land, food, health, security, and community have now come into focus again. They will continue to reshape conservation and agriculture into the indefinite future.

*Ecological restoration.* In his introduction to *A Sand County Almanac*, Leopold stated, “On this sand farm in Wisconsin, first worn out and then abandoned by our bigger-and-better society, we try to rebuild, with shovel and axe, what we are losing elsewhere.”<sup>13</sup>

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It was the most personal of Leopold’s career-long efforts to restore natural things: game and wildlife populations, watersheds, forests and rangelands, prairies and wetlands, diversity and beauty, ecosystem function and land health. Beginning in the 1934, Leopold and colleagues at the

University of Wisconsin Arboretum in Madison pioneered a new dimension of conservation: ecological restoration. Especially since the 1970s, the science and practice of restoration have spread to institutions, agencies, and ecosystems worldwide, providing conservationists with a broader range of tools and an active complement to the preservation and sustainable use of land.

*Ecosystem services.* Even by his own standards, Leopold could be especially succinct on the theme of economics: “We fancy that industry supports us, for-

getting what supports industry.”<sup>14</sup> Since the 1980s creative economists and conservationists have together explored new methods of assessing natural assets, emphasizing especially the value of such ecological “services” as carbon sequestration, pollination, freshwater filtering, flood protection, and pest control. Long ignored by traditional schools of economics, these values are now at least part of the discussion, and the idea has moved from the realm of abstract concept to real-world policy-making.

*Community-based conservation.* As a young ranger in the early U.S. Forest Service, Aldo Leopold personified the top-down approach of the Progressive conservation movement. Over his career, however, as he wrestled with such geographically extensive challenges as soil erosion, watershed rehabilitation, and wildlife restoration, he pioneered new ways of involving local landowners and other citizens in their home landscapes. Over the last several decades this same need to work from the bottom up has inspired work through a tremendously diverse array of local conservation organizations. This trend is evident not only in the United States but in conservation programs around the world.<sup>15</sup>

*The greening of religion and philosophy.* In “The Land Ethic” Leopold observed ruefully that “No important change in ethics was ever accomplished without an internal change in our intellectual emphasis, loyalties, affections, and convictions. The proof that conservation has not yet touched these foundations of conduct lies in the fact that philosophy and religion have not yet heard of it.”<sup>16</sup> It is no longer unusual for philosophers, ethicists, and theologians to address the moral and ethical dimensions of our environmental challenges and human-nature relationships. The last two decades have been a time of vibrant scholarship and reflection, as students within a wide array of faith communities and philosophical schools have reexamined the ecological insights of their traditions. Philosophy and religion have now “heard of” conservation, while many conservationists have come to listen differently to the language of belief and philosophical inquiry.<sup>17</sup>

*Environmental justice.* The face of conservation in Leopold’s day was largely white, male, and rural, with its strongest base of support among sportsmen, farmers, and foresters. The face of environmentalism was largely dominated by urban and suburban baby-boomers, and was especially attentive to outdoor

recreation and environmental quality issues. Entire segments of American society and culture were underserved and underrepresented in the conservation arena until a new wave of advocates unfurled the banner of environmental justice beginning in the early 1990s. Aldo Leopold spoke or wrote explicitly on matters of race, class, gender, and ethnicity only infrequently (despite the fact that his wife Estella was Hispanic by background). However, Leopold’s call for a durable ethic of “love and respect” for land as a community resonates increasingly among those working to build a more inclusive conservation movement, as well as those seeking to understand the historical roots of environmental justice issues.<sup>18</sup>

*Sustainability and resilience.* Since the 1980s, *sustainability*—however awkward the term—has served to bind together the many intersecting social and environmental issues of our day, from climate change, energy, and biodiversity loss to population growth, global poverty, and public health. The term is, in a sense, a proxy. We needed a word to convey the idea of connection in the world among multiple needs and concerns. It indicates that we are still striving, as Leopold did, to “[put] the sciences and arts together for the purpose of understanding our environment.” And

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*resilience* has come to signify our commitment to making those connections healthier. It in fact adheres very closely to Leopold’s definition of land health as “a state of vigorous self-renewal” within our comingled human and natural communities.<sup>19</sup>

These many trends have been converging in ways that are fundamentally reconfiguring traditional conservation and environmentalism. For some, this is a long-unfulfilled hope and a long-overdue need, especially in the face of mounting environmental woes. For others, these changes may be vaguely threatening—as, in fact, they are to any simple notion of what conservation was, is, and will become. Aldo Leopold’s story shows that, in reality, many of these trends have deep historical roots whose shoots are only now greening up. “Conservation,” Leopold

wrote in 1940, “viewed in its entirety, is the slow and laborious unfolding of a new relationship between people and land.”<sup>20</sup> That new relationship is far from being fully developed. But it continues, vigorously, to unfold.

Leopold remains a unique link between Progressive-era conservation, modern environmentalism, and the still-emerging successor to these movements. This suggests another theme: Leopold’s lifelong search for common ground in conservation. In Leopold’s time as in ours, the forces of self-interest, parochialism, specialization, and crass materialism served to divvy up the land and its values, to pit one generation against the next, to distract us tragically from shared commitment to the common good. In a 1939 article, “The Farmer as a Conservationist,” Leopold pithily skewered the attitude that had brought on the Depression and the Dust Bowl. Of his times Leopold wrote, “Everybody worried about getting his share; nobody worried about doing his bit.” History, it seems, has brought us around the circle once more.

The quest to build a more durable and self-renewing relationship between people and land is the para-

mount challenge for this generation, and for as many generations as we care to look into the future. That challenge contains within it the other, multiple challenges we face involving energy, climate, the oceans, biodiversity, water, food, human health, and the creation of a healthful economy. With his distinctive mix of pragmatism and idealism, Leopold recognized that “We shall never achieve harmony with land, any more than we shall achieve absolute justice or liberty for people. In these higher aspirations the important thing is not to achieve, but to strive.”<sup>21</sup> Aldo Leopold’s is a human story, of one who strove. By knowing his story, we can see deeper into conservation’s story. By knowing conservation’s story, we gird ourselves for the work ahead.

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<sup>1</sup> A. Leopold, "Foreword" (unpublished foreword to *A Sand County Almanac*), in *Companion to A Sand County Almanac*, ed. J. Baird Callicott (Madison: University of Wisconsin Press, 1987), 282.

<sup>2</sup> A. Leopold, *A Sand County Almanac and Sketches Here and There* (New York: Oxford University Press, 1949), ix.

<sup>3</sup> See R.L. Knight and S.F. Bales, *A New Century for Natural Resources Management* (Washington, DC: Island Press, 1995); B.A. Minter and K.E. Manning, *Reconstructing Conservation: Finding Common Ground* (Washington, DC: Island Press, 2003); and R.L. Knight and C. White, *Conservation for a New Generation: Redefining Natural Resources Management* (Washington, DC: Island Press, 2009).

<sup>4</sup> A. Leopold, "The Role of Wildlife in a Liberal Education," *Transactions of the Seventh North American Wildlife Conference* (Washington, DC: American Wildlife Institute, 1942).

<sup>5</sup> For a critical assessment of this theme in Leopold's work, see J. Baird Callicott, "Do Deconstructive Ecology and Sociobiology Undermine Leopold's Land Ethic?" *Environmental Ethics* 18, no. 4 (1996): 353-72; and J. Baird Callicott, "From the Balance of Nature to the Flux of Nature: The Land Ethic in a Time of Change," in *Aldo Leopold and the Ecological Conscience*, ed. R.L. Knight and S. Reidel (New York: Oxford University Press, 2002), 90-105.

<sup>6</sup> See R. Noss, "Aldo Leopold Was a Conservation Biologist," in *Aldo Leopold and the Ecological Conscience*, ed. Knight and Reidel, 105-117; C. Meine, *Correction Lines: Essays on Land, Leopold, and Conservation* (Washington, DC: Island Press, 2004), 117-31; C. Meine, M. Soulé, and R. Noss, "A Mission-Driven Discipline: The Growth of Conservation Biology," *Conservation Biology* 20, no. 3 (June 2006): 631-51.

<sup>7</sup> Many of the core historical and contemporary commentaries on wilderness have been gathered in two collections: J. Baird Callicott and M.P. Nelson, eds., *The Great New Wilderness Debate* (Athens: University of Georgia Press, 1998); and M.P. Nelson and J. Baird Callicott, eds., *The Wilderness Debate Rages On: Continuing the Great New Wilderness Debate* (Athens: University of Georgia Press, 2008). See also Meine, *Correction Lines*, 89-116.

<sup>8</sup> Landscape ecology and its conservation implications are explored in R.L. Knight and P.B. Landres, eds., *Stewardship Across Boundaries* (Washington, DC: Island Press, 1998); M.G. Turner, R.H. Gardner, and R.V. O'Neill, *Landscape Ecology in Theory and Practice: Pattern and Process* (New York: Springer, 2001); and K.J. Gutzwiller, ed., *Applying Landscape Ecology in Biological Conservation* (New York: Springer-Verlag, 2002).

<sup>9</sup> A. Leopold, "Conservation Economics," *Journal of Forestry* 32, no. 5 (1934): 542.

<sup>10</sup> See *America's Private Land: A Geography of Hope* (Washington, DC: USDA Natural Resources Conservation Service, 1996).

<sup>11</sup> A concise history of sustainable agriculture can be found in R.S. Beeman and J.A.

Pitchard, *A Green and Permanent Land: Ecology and Agriculture in the Twentieth Century* (Lawrence: University Press of Kansas, 2001).

<sup>12</sup> A. Leopold, "The Outlook for Farm Wildlife," *Transactions of the Tenth North American Wildlife Conference* (Washington, DC: American Wildlife Institute, 1945), 168.

<sup>13</sup> Leopold, *A Sand County Almanac*, viii.

<sup>14</sup> *Ibid.*, 178.

<sup>15</sup> A rich literature of community-based conservation has developed over the last two decades. A sampling includes: D. Western and M.C. Pearl, eds., *Conservation for the Twenty-First Century* (New York: Oxford University Press, 1989); R.M. Wright, D. Western, and S.C. Strum, eds., *Natural Connections: Perspectives on Community-Based Conservation* (Washington, DC: Island Press, 1994); W. Vitek and W. Jackson, eds., *Rooted in the Land: Essays on Community and Place* (New Haven, CT: Yale University Press, 1996); T. Bernard and J. Young, *The Ecology of Hope: Communities Collaborate for Sustainability* (Gabriola Island, BC, Canada: New Society Publishers, 1997); G.K. Meffe, L.A. Nielsen, R.L. Knight, and D.A. Schenborn, *Ecosystem Management: Adaptive, Community-Based Conservation* (Washington, DC: Island Press, 2002); Minter and Manning, *Reconstructing Conservation*; R.L. Knight and C. White, *Conservation for a New Generation: Redefining Natural Resources Management* (Washington, DC: Island Press, 2008); and P. Hawken, *Blessed Unrest: How the Largest Movement in the World Came into Being and Why No One Saw It Coming* (New York: Viking Press, 2007).

<sup>16</sup> Leopold, *A Sand County Almanac*, 200-210.

<sup>17</sup> I am especially grateful to my friends and mentors Gretchen Schoff, Baird Callicott, Cal DeWitt, and Ron Engel for helping me to understand more fully the nature of these transformations. Particularly useful contributions in this work include the ten-volume World Religions and Ecology Series (published between 1997 and 2004 by Harvard University Press); the related work of the Forum on Religion and Ecology (FORE), led by Mary Evelyn Tucker and John Grim; and B. Taylor and J. Kaplan, eds., *Encyclopedia of Religion and Nature* (London, UK: Continuum International Publishing Group, 2005).

<sup>18</sup> See W. Berry, *The Hidden Wound* (Boston, MA: Houghton Mifflin, 1970); P.S. Wenz, *Environmental Justice* (New York: SUNY Press, 1988); R.D. Bullard, ed., *Unequal Protection: Environmental Justice and Communities of Color* (San Francisco, CA: Sierra Club Books, 1994); A.H. Deming and L.E. Savoy, eds., *The Colors of Nature: Culture, Identity, and the Natural World* (Minneapolis, MN: Milkweed Editions, 2002); C. Merchant, "Shades of Darkness: Race and Environmental History," *Environmental History* 8, no. 3 (July 2003): 380-94; and S. Hood Washington, *Packing Them In: An Archeology of Environmental Racism in Chicago, 1865-1954* (Lanham, MD: Lexington Books, 2005).

<sup>19</sup> Meine, *Correction Lines*, 63-85. Also see p. 465 of this volume.

<sup>20</sup> A. Leopold, "Wisconsin Wildlife Chronology," *Wisconsin Conservation Bulletin* 5, no. 11 (1940): 6.

<sup>21</sup> L.B. Leopold, ed., *Round River: From the Journals of Aldo Leopold* (New York: Oxford University Press, 1953), 55.