

ALDO LEOPOLD'S  
**LAND ETHIC**

A LEGACY FOR PUBLIC LAND MANAGERS

PROCEEDINGS

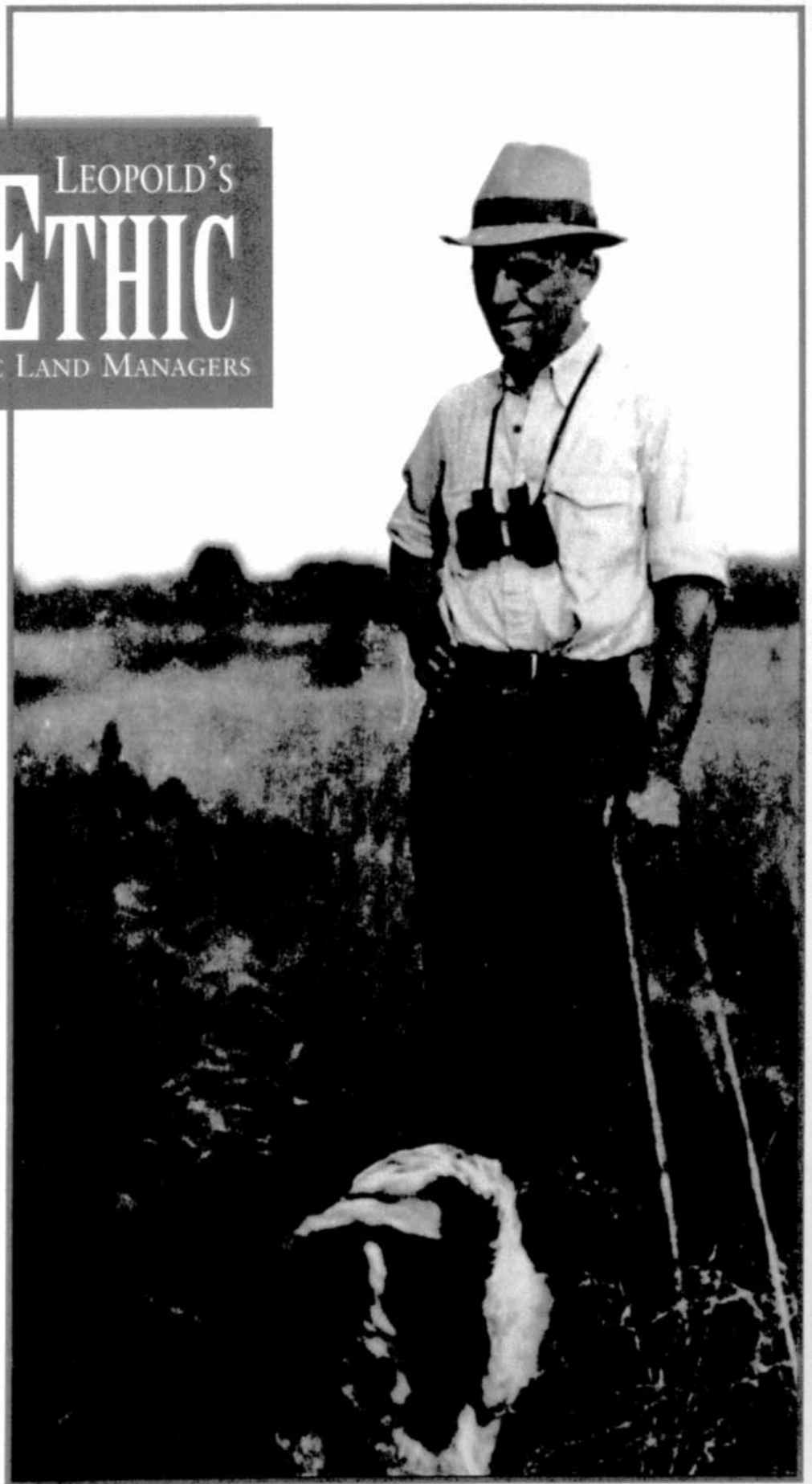


MAY 14-15  
1999

NATIONAL  
CONSERVATION  
TRAINING CENTER

SHEPHERDSTOWN  
WEST VIRGINIA

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# ALDO LEOPOLD'S LAND ETHIC

A LEGACY FOR PUBLIC LAND MANAGEMENT



*May 14-15, 1999*

*National Conservation Training Center  
Shepherdstown, West Virginia*

## PROCEEDINGS

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# Preface

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BY STEVEN CHASE

CHIEF, DIVISION OF FACILITY OPERATIONS AND ADMINISTRATION  
U.S. FISH AND WILDLIFE SERVICE

The last year of this century has been an important one for followers of the pioneering American ecologist Aldo Leopold (1887-1948). It was 50 years ago in 1949 that his book, *"A Sand County Almanac,"* was published. This thin, green, cloth-bound volume, with its illustrated white dust jacket, was published posthumously with little fanfare. Leopold scarcely could have imagined the profound impact this collection of essays would have on students, scientists, conservationists, philosophers and all those who care about the American landscape in the second half of the century. The many tattered paperback editions that sit on the bookshelves or rest in the backpacks of contemporary conservation professionals speak to its enduring influence. A pioneering work, Leopold's prose opened our eyes, ears and minds to the interconnectedness of humans and their environment.

In the final section of that book, Leopold proposed new responsibilities for human civilization, a land ethic, that, for the first time, values the nonhuman world. It is a legacy unmatched in significance to the development of the American conservation movement as it stands today, at the brink of the 21st century. Those interested in the land from all sectors—government officials, farmers, teachers and activists—agree that Leopold's influence has been central to their work and accomplishments. They also understand that 50 years later, Leopold's land ethic has yet to be fully accepted and much work remains to be done to achieve his ambitious goal.

Groups of conservationists agreed that this important anniversary deserved recognition, and a number of events across the country celebrated Leopold's life and words. In May, a gathering was held at the U.S. Fish and Wildlife Service's National Conservation Training

Center in Shepherdstown, West Virginia. The event was sponsored by a diverse group of organizations, including the Department of Defense, Leopold Education Project, Aldo Leopold Foundation and U.S. Fish and Wildlife Service. NCTC would like to extend a special thanks to Jamie Rappaport Clark, Director of the U.S. Fish and Wildlife Service; Sherri W. Goodman, Deputy Undersecretary of Defense (Environmental Security); all conference organizers and speakers; and especially Nina Leopold Bradley and Estella Leopold for making this conference an extraordinary event.

Entitled Aldo Leopold's Land Ethic, A Legacy for Public Land Managers, the conference brought together those involved in public land management to listen and discuss Leopold's legacy with members of his family, his colleagues, environmental historians and philosophers, land ethic practitioners, and conservation leaders from government agencies and private organizations. The conference was divided into four parts: history, philosophy, practical applications and a culminating distinguished panel. One hundred twenty-five conservationists gathered to assess how far we have come in achieving a land ethic and how much work remains. The diverse participants left with a feeling of hope, kinship and renewed commitment to their own conservation work.

Herein are the proceedings from the conference that reflect the energizing sense of community that emerged. These compelling words hopefully will provide new insight on the life and times of Leopold and emphasize the challenges we face in a rapidly changing world. Just as *"A Sand County Almanac"* inspired the generation that followed, we hope this new collection suggests future directions for a new conservation community.

# Welcome to the National Conservation Training Center

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BY JOHN R. LEMON

DIRECTOR

NATIONAL CONSERVATION TRAINING CENTER

Good morning. I'm Rick Lemon. I have the privilege of working here at the National Conservation Training Center, and I wanted to take a minute to welcome you before I introduce our first speaker.

The National Conservation Training Center has been open for about a year and a half now. For those of you who have not been here before, it's quickly becoming more than a training center—and that really was the vision for the center in the first place. It's becoming a home for the U.S. Fish and Wildlife Service, and more importantly to us here today, a home for everyone who cares about the land and works to conserve natural resources. A part of the NCTC that I am proud of is the fact that we are surrounded by our heritage here. Please take the time to look at our displays, exhibits and photographs. Some of the folks on the walls are even here today.

I am humbled by the people who are in this room today. You have come from all over the country to share your love and passion for a man and his lasting legacy. I feel very fortunate because I get to meet conservation professionals every week who come here to share their love for our land and our wildlife. Aldo Leopold began his career working for the federal government, in our sister agency the USDA Forest Service. From the first day he arrived in Arizona in 1909, fresh from Yale, he performed his job with vigor and passion. Leopold's experience in public service taught him a great deal about American conservation, lessons he would later expand upon in his role as an author and educator. Professional conservation and continuing environmental education serve as our ongoing mission here at NCTC.

Leopold was a lot like conservation professionals I meet in the halls of the NCTC today, people whose vigor and passion for the land is strong. Leopold's passion is a feeling that we all can connect with. I hope that you'll feel that sense of connection here, too, certainly with the other people at this conference, but also with the heritage around you. It makes the problems that we face, at least

for me, a little less daunting. It re-energizes and motivates me to redouble my efforts to conserve natural resources. It also gives me a sense of peace that my efforts are connected to the thousands of conservationists who have preceded us and the thousands more that follow.

Finally, I hope that you will come to see this place as your home as well, because it is your home. Your temporary homes here reflect our respect for our conservation legacy in the Rachel Carson, Ding Darling and, of course, Aldo Leopold lodges. It's a home for all of us who care about conservation to share our passion, and it's a place where you're always welcome.

Now, it is a great privilege for me to introduce our first speaker, Jamie Rappaport Clark, Director of the U.S. Fish and Wildlife Service.

Jamie is here fairly often because she leads by example. She cares about the people who come here; she cares about the troops. When she tells them that it is important to continue to learn and grow throughout their career, she leads by example. She's out here taking courses, and interacting with our leaders and new employees.

She also is a courageous leader. Before becoming director, Jamie worked in the Washington, D.C., office, primarily dealing with endangered species—not an easy position, but a very important one. She worked in the Southwest regional office down in Albuquerque. Before that, she worked with the Department of Defense, overseeing management of fish and wildlife on military lands. Jamie has degrees in wildlife ecology and wildlife management.

When I introduced Jamie a few weeks ago, while she was here talking to some new employees, I said, "She has spent so much time with endangered species, and you all understand what a contentious, difficult program that can be. That really shows her courage." Then she corrected me. She said she didn't know if that was courage or foolishness. I prefer to believe it is courage, and it is a great honor for me to introduce our first speaker, Director Jamie Rappaport Clark.

# Conference Welcome

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BY JAMIE RAPPAPORT CLARK  
DIRECTOR  
U.S. FISH AND WILDLIFE SERVICE

Welcome, everyone, to the National Conservation Training Center. As you spend the next two days here, I hope you take time to roam the campus not only to soak in the scenery, birds and wildflowers, but also to seek out the many exhibits, displays and photographs about the history of conservation in this great country of ours. Within the halls of this facility, whether it's the dining hall, lodges or instructional buildings, you'll find countless reminders of those who came before us—of those conservation professionals who dared to dream, take risks and use innovation to protect our nation's wildlife and wildlands heritage for future generations. Who knows, you might even see a photograph of someone you worked with or knew!

For the U.S. Fish and Wildlife Service, the National Conservation Training Center has become a place where we have discovered a sense of home and history of the incredible profession to which we have dedicated our lives, hearts and passion. You can't help but be proud, humbled and honored when gazing upon the likes of Teddy Roosevelt, John Muir, Rachel Carson, Ding Darling, Aldo Leopold and the many other conservation heroes profiled here.

For the next two days, we are here to celebrate, commemorate, explore and reflect upon Aldo Leopold's land ethic—how to tread lightly on the land. In simple, elegant prose, "A Sand County Almanac," published 50 years ago, provided the engine that would, over the next five decades, drive our profession into recognizing that every "cog and wheel" does indeed matter.

I doubt that there is one nature lover among us or in this country who doesn't have at least one copy of "A Sand County Almanac," and for most of us, there are several. In our household, there are at least four copies in various stages of wear, and that doesn't include the copies my husband and I each have in our offices.

A reviewer in Audubon magazine once wrote that "A Sand County Almanac" is "the closest text to a Bible the conservation movement has produced." Fifty years have yet to diminish the power of Leopold's words. It often has been said that the true test of a classic is its ability to remain fresh to a new generation, and "A Sand County Almanac" exceeds this test. Just read the opening sentence from the book's foreword, "There are some who can live without wild things, and some who cannot.

These essays are the delights and dilemmas of one who cannot." As I look among you this morning, I know I am with those who cannot live without wild things.

Among us this weekend are representatives from the many public land management agencies: U.S. Fish and Wildlife Service, National Park Service, Bureau of Land Management, USDA Forest Service and Department of Defense. I'd like to offer two quotes from "A Sand County Almanac" that are every bit as applicable today as guides to managers of our public lands as they were when Leopold wrote them, "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise" and "The last word in ignorance is the man who says of an animal or plant: 'What good is it?' If the land mechanism as a whole is good, then every part is good, whether we understand it or not. If the biota, in the course of eons, has built something we like but do not understand, then who but a fool would discard seemingly useless parts? To keep every cog and wheel is the first precaution of intelligent tinkering."

These are two of the most recognized and enduring passages ever written about our connection to nature and the value of practicing a land ethic. I believe the challenge for us as public land managers is to ensure that we look at the land as espoused in "A Sand County Almanac" and, in particular, how these two quotes apply to living lightly on the land.

This conference has brought together many notable conservationists from academia, state and federal government, conservation organizations, and Leopold's circle of family and friends. During the conference, they will share with you their insights and perspectives on Leopold's life, his land ethic, and the relationship of the land ethic to public land stewardship today and in the future.

The conference has four parts. We will examine Leopold's challenge for public land managers, engage in a philosophical discussion of the land ethic, explore ongoing field efforts demonstrating a land ethic to resource conservation, and, with a distinguished panel, explore ideas about the land ethic and the future of public lands in the next century.

I hope you enjoy your stay at the National Conservation Training Center. This will be a memorable two days.

# Welcome From the Aldo Leopold Foundation

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BY WELLINGTON "BUDDY" HUFFAKER IV  
EXECUTIVE DIRECTOR  
ALDO LEOPOLD FOUNDATION, INC.

**M**y wife Marcy and I have been given cause for celebration; we are expecting a new family member. This will be our first child and, as some of you probably can sympathize, the initial overwhelming joy quickly gives way to an uneasy feeling of inadequacy and fear of the vast unknown. Marcy and I have begun a new dialogue about our relationship. We have been doing a lot of soul searching, reflecting on our past family and personal experiences, talking with our elders for their insights, evaluating the current condition of our lives, home, finances and community, and talking to our peers about raising a family today and looking to the future to consider what kind of world we will be bringing a child into.

To be honest, it is terrifying at times. Incidents such as the shooting at Columbine High School in Colorado make us all think about the problems that exist in our society. We all have conservation issues in our own parts of the world that scare each of us personally. Just this week I took an alternate route home from work one evening conducting a visual search for garlic mustard, an exotic species quickly gaining a stronghold on our landscape in Wisconsin. My concern quickly became reality as I discovered new populations in several locations. I had just returned from Pennsylvania and Illinois and had seen huge populations of garlic mustard in urban and natural landscapes. Sure enough, traveling from our nation's Capitol and then even here along the paths at the National Conservation Training Center, I found it again like a dark shadow following me and haunting my dreams. The most frustrating part is that the problem is well beyond me. I could not, even if I worked full-time pulling garlic mustard, solve this problem alone.

As I was getting ready for this trip, Marcy and I had a conversation about whether this conference warranted our separation in this early stage of pregnancy. I certainly thought so; although at the time of my departure, Marcy still was undecided. I think it is so important because this conference is a professional parallel to the very dialogue Marcy and I are having personally.

This gathering lets us get together to reflect on where we have been, allowing new kids on the block to learn from our elders. It allows us to evaluate where we are, what is currently working and what isn't. And it allows us to plan and strategize for the future.

I have faith that Marcy and I will continue to gain confidence, and while we surely will make mistakes, we will offer a loving, healthy, safe life for our new child. We won't do it alone; it will take each other's support, the support of our family and friends, and our entire community.

I think we all individually, and more importantly, collectively, do good things for the land through a similar process. It will continue to require hard work by dedicated individuals who draw inspiration and guidance from those who came before them on behalf of those that will follow.

This gathering is only a step in the process, but an important step. Contacts and friendships that are established here will be the foundation for future initiatives to solve environmental and social problems.

On behalf of the sponsoring organizations, I welcome you. On behalf of my family and everyone else's family, I thank you for all the good work you do to make the world a better place.

# Welcome From the Department of Defense

BY BRUCE DEGRAZIA

ASSISTANT DEPUTY UNDERSECRETARY OF DEFENSE  
DEPARTMENT OF DEFENSE

While putting this conference together, we often had people express surprise that the Department of Defense was involved, not to mention a cosponsor of the conference. When you get right down to it, people shouldn't be surprised. After all, the Department of Defense manages 25 million acres of land used by our military to test and train. Our installations contain some of the finest examples of such rare habitats as old-growth forests, tallgrass prairies and vernal pool wetlands, and are home to more than 200 federally listed species. So, it isn't all that surprising that we at DoD are not only attending but also cosponsoring.

However, the challenge of performing our national security mission while being good land stewards is becoming more and more difficult, particularly given the fact that the way we train is becoming extremely complex. We have a diminishing land base. Frankly, we're concentrating more training on less land.

In the previous presentation, Jamie Clark quoted Aldo Leopold, who said to keep every cog and wheel is the first precaution of intelligent tinkering. Leopold's emphasis on the complete biotic community, the ecosystem rather than the individual parts, is essential to ensuring that we maintain the land base that we rely on in the military to test and train.

People should not be surprised that we can support our mission and be good land stewards. I don't know how many of you were privileged to be at the hearings before the Senate Armed Services Committee on land withdrawal, an issue we have been working on very closely with the Department of the Interior. This issue came up when a senator asked a witness whether one of the areas we used for training should be turned into a national park. This particular witness, who was not, I might add, from the Department of Defense, said, "You know, people think that a national park would be more protective of the environment than having the Department of Defense managing the land, and I can tell you in my personal opinion that it ain't necessarily so."

Although our job is challenging, I believe that DoD is as dedicated and devoted to land stewardship as any other agency of the federal government. Our representatives, including the ones who are here—*particularly the ones who are here*—are among the most dedicated conservationists I know.

I'd like to take this opportunity to thank a number of people. First, of course, I'd like to thank Jamie Clark and Rick Lemon of the U.S. Fish and Wildlife Service for hosting this event. I'd like to thank Russ Sewell of the Leopold Education Project and Pheasants Forever for cosponsoring the conference. I'd particularly like to thank Estella and Nina Leopold and the Aldo Leopold Foundation for their support and participation.

When I give these kinds of presentations, somebody else on my staff often writes my notes. These particular notes were written by Bruce Beard. As a consequence, there's a very big gap among the people who I need to thank. We all need to thank Bruce Beard and Jim Van Ness from DoD. I had, of course, heard of Aldo Leopold and read "A Sand County Almanac," but I had no idea about the commitment that Leopold inspired in conservationists and people who loved the land until Bruce and Jim presented the idea for this conference, and I think that it couldn't have come about without them. Although we joked about Bruce and Jim when they told us how the conference program was developing—we called them "true believers" and asked, "where is your commitment?"—we knew that theirs was the right commitment. I think the fact that Bruce did not include his own name and that of Jim Van Ness was a terrible omission in my notes. We're going to talk about that when we get back to the office.

Finally, I'd like to thank the distinguished presenters who are going to make this a success. I'm sorry that I can't be here for all the presentations, but I am glad that there are opportunities for everyone to hear about Aldo Leopold's heritage and the commitment that he inspired in people.

On behalf of the Department of Defense, I welcome each and every one of you.

# Leopold Legacy

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# Aldo Leopold on the Path Toward Unity of Knowledge

BY NINA LEOPOLD BRADLEY  
MEMBER BOARD OF DIRECTORS  
ALDO LEOPOLD FOUNDATION, INC.

Today, we have begun to understand that solving environmental problems necessitates connecting theory and facts across many disciplines.

We see two powerful trends occurring in science. One is a kind of evolution toward specialization. The other is an increasing focus on microscopic and submicroscopic levels. As revealing of nature as these are, there is something missing. For example, we know that to understand the processes and ramifications of climate change, we must integrate the knowledge of paleoclimatologists, wetland ecologists, geomorphologists, agronomists, atmospheric chemists and economists—all of these at a macro level.

But there still is something missing. There is a need for social historians and even humanists. If we understand climate change and humanity's role as a causing force, we must make judgements about what we may do as well as what we understand.

In E.O. Wilson's important 1998 book, "Consilience," his central focus is to draw together the sciences and the humanities. He suggests that in order to understand our planet as a unified entity and meet the challenges of international environmental issues, we must integrate knowledge from what may appear to be far-flung fields. He appeals for a powerful conservation ethic as a part of ecology and even as a part of religion. He calls for a return to the idea of unification of knowledge.

C. P. Snow wrote in 1959 that the polarization between the sciences and the humanities "is sheer loss to us all ... it is at the same time practical, intellectual and creative loss."

It is my position that Aldo Leopold integrated a remarkable range of knowledge—scientific, literary, biologic and poetic. While in Germany in 1935, he expressed his concern for the ongoing fragmentation of knowledge and the need for more interdisciplinary thinking.

Sitting in a Berlin hotel room one evening, Leopold jotted down some notes on the back of a piece of hotel stationery. He expressed his concern over the compartmental tendencies in ecology. He wrote:

"One of the anomalies of modern ecology is that it is the creation of two groups, each of which seems barely aware of the existence of the other. The one studies the human community almost as if it were a separate entity, and calls its findings sociology, economics, and history. The other studies the plant and animal community and comfortably relegates the hodge-podge of politics to the 'liberal arts.' The inevitable fusion of these two lines of thought will, perhaps, constitute the outstanding advance of the present century."

In this paper, I will discuss some of the reasoning and experiences in Leopold's life that contributed to his aspirations, his hopes for this fusion of disciplines which he anticipated to be the "outstanding advance of the present century."

Throughout Aldo Leopold's life, he persisted in his personal, intellectual struggle to understand better the land community and his own participation in it. Recording and integrating all the strands of his own firsthand experience, he came to his final statement of the land ethic, a product of the heart as much as of the mind. With his use of the words loved and respected, we can see already that he was integrating his factual science with a much broader humanism. "That land is a community is the basic concept of ecology, but that land is to be *loved* and *respected* is an extension of ethics."

During the course of Leopold's life, he worked to blend his ecological science with philosophy and even biblical history. David Orr touched me deeply when he wrote, "It will take decades to fully grasp what Leopold meant by a 'land ethic' and considerably longer to make it a reality." David also reminds us that interdisciplinary, environmental education is an urgent necessity. He suggests that the separate disciplines that enabled us to industrialize the Earth may



not necessarily help us heal the damage this industrialization has caused.

In tracing my father's love of the outdoors, I have reviewed many of his letters. In those days, people did write letters, and in this case, many of them were saved. The outpouring of letters to his family in Burlington, Iowa, began at Lawrenceville prep school in New Jersey (1904 to 1905) and would not let up until long after his college days. Sent off at a rate that sometimes reached four or five letters a week, Aldo's correspondence was his reprieve from school work, literary training ground, naturalist's notebook and private connection to his family. From Aldo's letters home, we feel a strong family bond which sustained him with caring and love.

Aldo's letters allowed him to explore and express his absorbing relationship with nature. They became a regular chronological record of the natural events of the seasons. He took any opportunity to put down on paper his thoughts on natural history, blended with his thoughts on sportsmanship and man's relation to land, including the animals and plants which grow upon it. He learned to write by writing. His sensitivity to land and biological interconnectedness increased with the volume and quality of his observations. I suspect that the blend of keeping records and his expanding skills with writing made him ready to introduce the sweeping demands of ethics as a part of his definition of how people should cherish and care for the land. In this spirit, Leopold wrote, "Keeping records enhances the pleasure of the search and the chance of finding order and meaning in these events."

Near the end of his life in 1945, Aldo published a phenological record from 13 years on his sand county farm. The published paper expressed new dimensions to his depth of understanding:

"Many of the events of the annual cycle recur year after year in a regular order. A year-to-year record of this order is a record of the rates at which solar energy flows to and through living things. They are the arteries of the land. By tracing their responses to the sun, phenology may eventually shed some light on that ultimate enigma, the land's inner workings."

Aldo Leopold realized in 1947, and today we know even more clearly, that phenology is a powerful tool for monitoring the biotic response of plants and animals to weather and climate fluctuation, yielding a glimpse into "the land's inner workings."

The time at which plant species flower is determined by both genetic and environmental factors and their interaction. Flowering may be dependent on photoperiod in many species. Other species are regulated by temperature, or species may be blind to both photoperiod and temperature, and depend on other genetic signals for

flowering. The responses of natural ecosystems and agricultural species will reflect interactions of genetics with climate and climate fluctuations.

As science is beginning to reveal the complexity of natural systems, the emerging field of ecology has become entwined with hormonal, metabolic and genetic components that regulate how plants, animals, soil, water, etc., operate as a community—a web of interdependencies. The renewed sense of interconnectedness with nature expands the complexity with which individuals must appraise their role in the new environmentalism. That role is not technical alone. It involves judgements of right and wrong.

Again I quote from Leopold:

"... just as important as the origin of plants, animals and soil is the question of how they operate as a community. Darwin lacked time to unravel any more than the beginnings of an answer. That task has fallen to the new science of ecology, which is daily uncovering a web of interdependencies so intricate as to amaze—were he here—Darwin himself, who of all men should have the least cause to tremble before the veil."

While in Germany in 1935, Leopold was appalled by the highly artificial system of management of the German landscape. In the slick, clean simplified forests, Aldo detected not the lack of wilderness per se but the lack of wildness and biodiversity. He wrote:

"The forest landscape is deprived of a certain exuberance which arises from a rich variety of plants fighting with each other for a place in the sun. It is almost as if the geological clock had been set back to those dim ages when there were only pines and ferns. I never realized before that the melodies of nature are music only when played against the undertones of evolutionary history. In the German forest one now hears only a dismal fugue out of the timeless reaches of the carboniferous."

Leopold realized that the German forests were an example of "pure ... economic determinism as applied to land use." Germany was striving for maximum yields of both timber and game, and they got neither. The intricate ecological processes of nature had been overlooked.

In the 1930s, Aldo visited the Rio Gavilan River in northern Mexico. This river still ran clear between mossy, tree-lined banks. Fires burned periodically without any apparent damage, and deer thrived in the midst of their natural predators, wolves and mountain lions. "It is here," Leopold reflected years later, "I first realized ... that all my life I had seen only sick land ... here was a biota still in perfect aboriginal health."



Here, the vital new idea for Leopold was the concept of biotic health. Here was a shift from the older conservation idea of economic biology to a new biotic ecology. Here was a biota so complex by interwoven cooperations and competitions that "no man can say where utility begins or ends." This marks a new maturity in Leopold's thinking—"a fountain of energy flowing through a circuit of soils, plants, and animals." With this experience, he gained a new humility about the possibility of ever understanding how the whole system functioned. He realized that science leads to structural understanding, and with luck, this may result in a stronger basis for an ethic.

Aldo Leopold's land ethic expresses a moral theory that begins, literally and philosophically, with what we know best—firsthand experience. Through his own participation in the land community, he came to a deeper personal understanding and appreciation of the land community. On his Wisconsin sand county farm, the Shack, he struggled to rebuild a diverse, healthy, aesthetically satisfying biota on his own abused land. Here again, Leopold experienced a profound humility as he became acutely aware of the complexity of factors involved in life and death, growth and decay. Ethical and aesthetic values guided his decisions.

At Leopold's Shack, his wisdom grew from his own awareness that his science was nourished by his personal contact with the soil. Probably most important, his land ethic would similarly be nourished by loving human relationships—his wife and his family—loving and being loved, living in webs of relationships that define and sustain us. He wrote, "There are two things that interest me, the relationship of people to each other and the relationship of people to land."

Another strong sensitivity Leopold had was a remarkable perception, unraveling and dramatizing natural events. He articulated the concept of land health and the relationships between economics, biology and esthetics—a tangled web of relationships. "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise."

As Leopold's voice was emerging, "Marshland Elegy" was a breakthrough essay in terms of conservation writing. It introduced a sense of drama and poetry into the image of ecology:

"A dawn wind stirs on the great marsh. With almost imperceptible slowness it rolls a bank of fog across the wide morass. Like the white ghost of a glacier the mists advance, riding over phalanxes of tamarack, sliding across bog-meadows heavy with dew. A single silence hangs from horizon to horizon."

In a splendid essay reviewing "Marshland Elegy," Curt Meine wrote, "This was not the language of science, or policy, or pedagogy, or philosophy, although strong undertones of these hummed in, and in between, the lines. Rather, this voice carried a 'certitude' not unlike that of the cranes of which he wrote."

In my father's essays, we hear an emotional thread of consilience. He brought together nature and culture, emotion and intellect, philosophy and science, ethics and aesthetics.

The renewed sense of interconnectedness with nature and the willingness of individuals to act on that basis may be the core of the new environmentalism. Environmental issues are no longer narrow and vague. They have reached our very backyards, be it pollution, toxins, chemical residues, climate change or human populations. We know that environmentalism is more than a problem of chemistry, biology or economics. Progress toward more integrated learning may expand our ability to recognize and act upon our moral responsibility to the future.

In 1947, Aldo Leopold defined the necessity for the integration of a wide span of knowledge, leading to man's ethical relation to the land. In the subsequent 50 years, others have refined such statements and helped reinforce the need for a unity of knowledge.

But we are only just beginning.

# Aldo Leopold — Mentor and Friend

BY ARTHUR S. HAWKINS  
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We're all here for the same purpose: to celebrate the wisdom of Aldo Leopold, so concisely and beautifully stated in his book, "A Sand County Almanac," and to ponder the applications of its central theme, the land ethic, in today's world. I know that my former professor would be tremendously pleased by this gathering of land managers from across the country for this purpose. He wore many hats during his career in forestry and later in game management. He has been called "Father of Modern Game Management," "General in the Wilderness Battle" and "America's Greatest Naturalist." I think it would be equally fitting to call him "Father of Modern Land Management" in its broadest sense.

Some critics attempt to belittle Leopold's many achievements. One critic, for example, castigated Leopold for statements he made regarding quail in his book "Game Management," published in 1933. That same year, Leopold became the first professor of game management in the country. Since then, there have been hundreds of professors of game management and thousands of researchers studying game management problems. In Leopold's time, sophisticated research aids such as satellites, televisions and computers didn't exist. Surely, refinements in Leopold's hypotheses of 66 years ago should be expected. Most of them, however, stand the test of time. In fact, his land ethic becomes more relevant with every passing day as the human population explodes with corresponding pressures on all natural resources, including land, water and air.

It was not the best of times when Leopold brought the experiences of his first career as a forester into sharp focus with his land ethic statement. After the stock market crash in 1929, things went from bad to worse. Bread lines and soup kitchens sprang up in every city to feed a growing army of unemployed. Leopold himself was among the unemployed briefly between jobs, until the University of Wisconsin hired him. To add to the misery of the country, dust clouds so dense that they turned daylight into darkness spread across the plains and prairies, the nation's

bread basket. As wetlands dried up and the dust bowl spread, duck populations dropped to unprecedented lows.

In March 1933, Franklin D. Roosevelt became president of the United States, determined to bring the nation out of the deepest depression in its history. He and his advisers quickly concocted a program called alphabet soup by its critics. It involved the creation of new agencies such as the Civil Conservation Corps, Works Progress Administration and Soil Erosion Service as components of a well-funded conservation program, including a huge manpower pool to reduce unemployment.

Aldo Leopold became one of the generals in this battle to save the country from blowing away. He was asked to help coordinate erosion control efforts in the southwestern United States, and he also played an important part in establishing the first national demonstration area of land use at Coon Valley in southwestern Wisconsin.

In December 1933, President Roosevelt called on Leopold to become a member of a three-man committee on wildlife restoration. The other two members of the committee were Ding Darling<sup>1</sup> and Thomas Beck.<sup>2</sup> On January 2, 1934, exactly one year before I arrived on the scene, he faced his first class as a teacher, 18 young farmers eager to learn about game management. One of the students described Leopold as follows, "He impressed me as a man; he carried himself with the grace of an athlete, slightly built but finely coordinated, quick of eye, ever ready with a smile, impeccably attired, neatly groomed."

The man who ushered me into his office in the basement of the Soils Building at 8:30 a.m. on January 2, 1935, matched that description. By that time, his department consisted of a secretary and two other graduate students, one studying cycles, the other prairie chickens. My job was to study the irruption of bobwhite quail—the spread of the quail into previously uninhabited range.

I knew nothing about my new professor and dreaded our first encounter, but he treated it as a renewal of an old friendship. As I entered the office, he told Ms. Horn not

to permit any interruptions. He told me in an informal, conversational way what he hoped to learn from the quail project which I was about to begin. I'm sure he learned a lot about me from this painless, informal approach. The morning passed quickly, and as noon approached, he invited me to have lunch at his home so that I could meet his family. The Leopolds lived about a mile from the office, and we got there not by car, but by walking. There I met Mrs. Leopold and their daughters, Nina and Estella. After lunch, he excused himself while he had a brief nap and I got better acquainted with his family. I learned later that it was his habit to go to the office very early to do his writing before regular office hours started, hence his need for a nap. By the end of that first day, any reservation I might have had about going to Wisconsin had evaporated. Subsequent meetings were much the same. He always made one feel that no issue or project matched yours in importance, and he paid attention as though you were the top authority on the subject being discussed.

Everyone who has read "A Sand County Almanac" knows about the Shack. Aldo celebrated his 49th birthday on January 11, 1935, 10 days after I first met him. The next day, he met his friend, Ed Ochsner, and together, they drove around the countryside near the Wisconsin River. They came across an abandoned farm for sale which appealed to Leopold, and later he bought it. This rundown farm with its dilapidated chicken house has become a mecca for conservationists around the world. Even Secretary of the Interior Bruce Babbitt has been there recently.

My quail study called for study areas in five Wisconsin counties. The purpose was to measure populations which had resulted from a series of hot, dry summers and mild winters, enabling the quail to move into areas where they were not usually found. One study area was where Dr. Paul Errington had conducted his studies several years earlier. Another was at Coon Valley, site of the first national experiment in watershed management, using the combined resources of the CCC, SES and university specialists to assist local farmers. Leopold was a major adviser, and two of his sons, Starker and Luna, worked on the project. Another study area was in central Wisconsin, a northern extension of the quail range, where I was based at a CCC camp. The study area that became most important to me is described as follows by Curt Meine in his biography of Leopold:

"About this time (early 1930s), Leopold became involved in one of his most important long-term management projects. He was asked to advise a group of farmers near Lake Mills, east of Madison in Jefferson County, on the prospects for increasing wildlife on their farms. The lands turned out to be ideally suited for management experiments, containing crop land, pastures, hardwood forest, tamarack swamp, river bottom and a valuable tract

of virgin prairie. Just as important, the farmers of the area, led by octogenarian Stoughton Faville, were enthusiastic about the idea.

"Faville, one of the area's early homesteaders and a leading dairyman in Wisconsin, was an accomplished naturalist, and his strong interest in Leopold's work was instrumental in making the project a success. Leopold greatly admired Faville and the Faville Grove farms were to exert a major influence in Leopold's thinking about land use and the people behind it . . . the farmers joined together to create the Faville Grove Wildlife Experiment Area. Like the Riley farms, Faville Grove originated as a cooperative game management area, but as Leopold began taking on grad students, both became vital research sites, training grounds for the University's first generation of wildlife managers."

When it became evident that the quail irruption, which I had been hired to study, had been broken by a severe winter dieoff, I moved to Faville Grove to become the first manager of the Wildlife Experimental Area. It was there that I finished my research requirements leading to a master's degree in 1937, the first advanced degree attained under Leopold.

Professor Leopold enjoyed visiting the study areas, and his students as well as the farmers enjoyed his visits. He often brought another professor, a visitor or a member of his family with him. He always spent time talking with Mr. Faville and any of the other local residents available, and everyone liked him. He was welcomed at noontime dinner if he was there at that time. He made it a point to discuss projects with the students involved and spend as much time in the field as he could. He especially liked to visit the Crawfish Prairie. He carried a walking stick which proved useful in finding nests, pointing out plants, etc. Occasionally during the hunting season, he brought his gun, and I furnished the dog, my German short hair, Gus, who was trained for census purposes. After getting my degree and on leaving Wisconsin for a position with the Illinois Natural History Survey, I gave my dog to Aldo.

Leopold was not one to blow his own horn or expound on his philosophy about land use. After being his student for a year, I had only a vague inkling of his national prominence or advanced ideas. The opportunity to see him as a national leader came in February 1936, when he made it possible for me to attend the first North American Wildlife Conference, held in Washington, D.C. It was no small matter for the professor to find the funds to pay my expenses to this conference. He was operating from a salary of \$8,000 per year, out of which all expenses for his program and travel, presumably including mine, would come. At any rate, on February 2, he and I boarded the sleeper at Madison for the overnight ride to



Washington to attend the conference which President Roosevelt had called. There I quickly found out how highly regarded Leopold was by all the prominent conservation leaders of the day. I recall particularly the inspiring speech by Ding Darling, soon to become the director of the U.S. Bureau of Biological Survey, later to become the Fish and Wildlife Service. Leopold seemed in constant demand during the conference, but he made it a point to introduce me to dignitaries at every opportunity. This was one of his trademarks—not to forget his students when he met with important people.

Finally, I come to the part of this presentation most meaningful to me and my family—Aldo Leopold's enduring legacy. Since the day I met him 64 years ago, nothing has been the same. His influence as a teacher, great as it was, was only the beginning. When I left the campus at Madison, a master's degree tucked under my arm, my bond with my professor only grew stronger. As a member of the Illinois Natural History Survey, I traveled around the state, and at his urging, I soon met his family still living on Prospect Hill in Burlington, Iowa, where Aldo grew up. There I met his mother, brothers Carl and Frederic and his sister Marie. My friendship with his younger brother, Frederic, remained close until his death 10 years ago at age 93. Since then, my involvement with the Aldo Leopold Foundation and Leopold Education Project has not permitted me to stray far from the Leopold influence.

Even during the four and a half years that I was in the military, Aldo kept in touch, inviting me when on leave to join him on hunting trips or sending newsletters and reprints of current articles. He sometimes sent drafts of essays he was working on, including one entitled "Gus's Last Hunt," later published in his book of essays, "Round River." This was the same Gus I gave him when I moved to Illinois. After I left the military and joined the U.S. Fish and Wildlife Service, he invited me to share his limited office space at 424 University Farm Place, at no cost to the government. In exchange, I filled in if needed when he was ill or called away, or I advised graduate students as long as it didn't interfere with my job as flyway biologist in the Mississippi Flyway.

Before the war, under agreement with the Illinois Natural History Survey, I returned to Madison as often as possible to complete unfinished manuscripts, but also to court Betty Tillotson, granddaughter of Stoughton W. Faville, then patriarch of Faville Grove where I did most of my graduate work. We were married in 1941 on the Crawfish Prairie at Faville Grove, while I was in training at Camp Grant. Now we are long past our 50th anniversary. Her support over the years has been critical in bringing up a conservation-minded, Leopold-oriented family and one as close to the land as circumstances permitted.

Forty-five years ago, we bought a rundown dairy farm, and we still live there. Our three children grew up

involved in our restoration efforts, a kind of sand county north operation which, like Leopold's farm, provided few financial benefits to show for our efforts.

At present, our son, Tex, is a U.S. Fish and Wildlife Service watershed biologist on the Upper Mississippi River. His job is to help local citizens protect and restore habitat for wildlife and prevent erosion through government-sponsored programs such as the Partners for Fish and Wildlife Program. This month, he is one of the U.S. delegates attending the International Biodiversity and Wetland Treaty meetings in San Jose, Costa Rica. He has been chosen to serve for the next three years as U.S. representative on the Scientific and Technical Review Panel for the conservation of globally significant wetlands for waterfowl and other migratory birds.

Our older daughter, Ellen, works for the USDA Forest Service as a wilderness ranger in the Boundary Waters Canoe Area Wilderness of the Superior National Forest. She also is regional forest service coordinator for the national Leave No Trace program. During winter months when the lakes are frozen, she and two others drive to schools preselected around Minnesota to introduce curriculum and model learning activities that are designed to instill a wilderness ethic in the children who will be land stewards of the next generation.

Our younger daughter, Amy, is a talented nature artist and is the grassroots conservation activist of the family. As a member of the Lino Lakes Environmental Board, she reviews and comments on all development proposals. Through volunteer work several days each week at the Otter Lake Elementary School, she is introducing teachers and students to the Lessons in a Land Ethic curriculum of the Leopold Education Project, sponsored by Pheasants Forever. She was instrumental in our family's effort to preserve our farm in perpetuity through the Minnesota Land Trust.

Over the years, each family member has found new ways to express the land ethic that was directly or indirectly passed on to us by our mentor, Aldo Leopold. The Hawkins' farm, now permanently protected from development through the Minnesota Land Trust, is gradually being restored to ecological health. We have dug a dozen ponds, planted thousands of trees and several acres of native prairie, and have erected dozens of boxes for wood ducks, blue birds and swallows. The rewards have been great but not in economic terms.

In 1935, Leopold published an article in *American Forests* entitled, "Coon Valley, An Adventure in Cooperative Conservation." He used this nation's first model watershed partnership to demonstrate how collective conservation efforts can become more than the sum of their parts. Leopold sent me to Coon Valley to help assess some of the wildlife restoration efforts as reflected by quail population counts.



Today, Coon Valley attests to the wisdom of Leopold's vision and the capacity of the Mississippi River's Driftless Area for regeneration and wildlife restoration. More than 60 years after my Coon Valley assignment, Tex revisited the area to write a chapter for a forthcoming book, to be released by the Minnesota Land Stewardship Project. In his "Return to Coon Valley," Tex evaluates the long-term implication of the model for possible large-scale implementation through watershed partnerships.

I'll end this with my favorite Leopold quotation, which like so many, states the problem and then proposes a solution in his own very special way:

"There must be some force behind conservation more universal than profit, less awkward than government, less ephemeral than sport, something that reaches into all time and places where men live on land, something that brackets everything, from rivers to raindrops, from whales to hummingbirds, from land estates to window boxes. I can see only one such force: a respect for land as an organism; a voluntary decency in land-use exercised by every citizen and every landowner out of a sense of love and obligation to that great biota we call America. This is the meaning of conservation and this is the task of conservation education."

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## ENDNOTES:

<sup>1</sup> J.N. Ding Darling was Iowa's Pulitzer Prize-winning cartoonist, dedicated sportsman and chief of the Bureau of Biological Survey.

<sup>2</sup> Thomas Beck edited Collier's Magazine, chaired the Connecticut Board of Fisheries and Game and founded More Game Birds, forerunner to Ducks Unlimited. He was a personal friend of President Roosevelt.





# Extending the Leopold Legacy Into the 21<sup>st</sup> Century

BY MARK VAN PUTTEN  
PRESIDENT  
NATIONAL WILDLIFE FEDERATION

I'm sure many of you in your careers have had the experience of being called on to give some remarks and having a moment of anxiety. "Why me?" What could I add in a group that includes people such as Nina Leopold Bradley, Estella Leopold and Art Hawkins? What is it that I possibly could bring to this discussion, given that these folks have been so critical in articulating, popularizing and keeping alive the land ethic?

Something Art said a few moments ago helped to calm my stomach, when he mentioned getting on the train and heading off to Washington, D.C., for a meeting with Professor Aldo Leopold. It was at that meeting that the then-named General Wildlife Federation was founded, the organization that I now have the responsibility to steward for a short period of time.

I realized that I am, in that sense, an inheritor of Dr. Leopold's legacy, because it is expressed not only in the individuals who have been so motivated by him, but also in the continued vitality of organizations such as the National Wildlife Federation, Wilderness Society and Izaak Walton League of America—organizations that he had a critical role in founding and leading.

I also realized that a real legacy is one that lives and one that lives beyond those who personally knew the individual. In that sense, maybe I do have something to say. I'm one of those kids who started college about the time of the first Earth Day and first encountered "A Sand County Almanac" in that context.

In fact, as I was looking at the very nice, new copies of "A Sand County Almanac" set out this morning, I was tempted to take one, but I couldn't bear not having the one I got back in college and not having that one be my copy of "A Sand County Almanac." It seemed almost as though it would be an act of betrayal to pick up a new one, even though for a Dutchman like me, anything that is free is very, very tempting. But I didn't, because my copy has meant so much to me over so many years, and it is something that I come back to time and time again. So I thought perhaps, as one who never had the great honor to meet the man, I might have something useful to say about

the legacy and what the legacy means for future generations who will follow us.

That brings me to the ethic. What are the fundamental qualities of an ethic? What is it about the land ethic that endures and provides all of us who have chosen careers in this field with guideposts for action in our daily lives?

I quickly realized, in thinking about this, my tendency to define things initially by what they are not. In thinking about an ethic, and a land ethic, I realized that ethics are not laws. Ethics are not regulations. Ethics are not prescriptive in the sense of someone else watching over your shoulder and telling you what to do.

The essence of an ethic is this: it is what you do when no one is watching. It is something that has been instilled in you that motivates your action when no one else will know the decision you had to make in the office that day, the action you had to take that might affect those lands. That is one of the essential qualities of an ethic. It cannot be coerced. It must be instilled. It must be inspired. If we don't do that, we won't have an enduring land ethic.

When it comes to instilling or inspiring an ethic, I'm going to speak briefly about knowledge. I'm going to speak about passion. And I'm going to speak about action, because it seems to me that any ethic that endures is founded on knowledge, inspired by passion and results in action.

In thinking about knowledge, Art Hawkins and other speakers mentioned conservation education. This must be a critical element of Leopold's legacy. We must impart to new generations the type of knowledge that he represented. That includes the types of programs that Pheasants Forever and others have developed to bring a new generation to that understanding of what a land ethic means, the qualities of that web of interrelationships and that way of looking at the world.

That is something that the National Wildlife Federation has been committed to since our inception. It is, I think, how we carry forward Leopold's legacy, whether it's through Ranger Rick® magazine or teacher classroom



materials. That sense of instilling the knowledge in our next generation is absolutely critical if we are going to carry forward the land ethic.

As important as that aspect is, there's an element of knowledge that I find in Dr. Leopold's life that is even more inspiring. Although he was an eminent scientist, although he had an intellect without peer in his profession, he understood—as Nina Leopold Bradley said again this morning—the value of experiential knowledge, that intuitive knowledge, that understanding.

Perhaps a better word is the *wisdom* that only comes from actually interacting with the natural world and being a part of it, and experiencing in some way that web of relationships. That intuitive understanding comes no matter what our technologies might become; we cannot separate ourselves and stand apart from the web of life and its destiny. The destiny of the land is, in fact, *our* destiny.

I think the challenge for us as we look at the next millennium is this: as we develop those excellent curricula for teachers and students, as we impart the intellectual knowledge, we need to pay equal attention to the opportunities for those intuitive experiences, for that wisdom that actually comes from experiencing the natural world.

I think many of us, when we think about this and about the types of landscapes that inspire people, find it easy to think of those landscapes that are really scenic and view those as the opportunities that might bring intuitive knowledge.

I think it is more important to find those opportunities for children and for people in urban settings. We live in an urban society. It will become ever more urban. We need to have opportunities to experience the natural world in a daily way near where people live, work and play. They can gain the same type of intuitive understanding, and I believe even wisdom, from those places that they can from our greatest national parks.

To quote from "A Sand County Almanac," in what is one of the less frequently quoted passages, Leopold wrote, "The weeds in a city lot convey the same lesson as the redwoods. The farmer may see in his cow pasture what may not be vouchsafed to the scientist adventuring in the South Seas."

"Perception, in short, cannot be purchased with either learned degrees or dollars. It grows at home as well as abroad, and he who has little may use it to as good an advantage as he who has much." We need to find ways for those who have little opportunity to experience the natural world in landscapes of grandeur to find it in their backyards and city parks, and make it part of their daily lives. The same kind of wisdom and knowledge that is the foundation of an ethic can grow as easily from those places as it can from a barren sand prairie in Wisconsin or from one of our greatest natural wonders.

I have seen students in an inner-city high school in Detroit reclaim a small part of an urban park for a butter-

fly wildlife habitat through our Backyard Wildlife Habitat™ program. I've had the opportunity to meet those students and their teachers, and a few years later, one of them pursued a career in a related field.

I had the opportunity a few weeks ago to meet a leader in an urban part of Washington, D.C., whose job, he told me, was to save gang members. The way he does it, as an African-American man, is to get them into natural experiences, using the natural world to call forth from these young cynics a sense of awe and wonder once again. I was so inspired to see what he was doing, I thanked him at the end of the day for the inspiration I drew from him, and he said, "I'm about saving lives, not the natural world, but I need the natural world as a hook to save these lives." I think Dr. Leopold would be very proud to see that kind of mentoring, that kind of introducing people to the natural world.

So the challenge for us, it seems to me, is to find those opportunities to encourage experiences of the natural world in an increasingly urbanized world. As we do that, I think we also will address another element of the land ethic that Leopold was so perceptive in articulating—it is about people, too. It is about the human community. It is about the types of relationships that we tend to forge in the natural world which often are somehow more deep and more meaningful than those we forge in the rest of our harried lives.

As I travel the country and visit with members of our organization, the volunteers who provide so much leadership to conservation in the National Wildlife Federation and our state affiliates, I always ask them, "Tell me your story. Tell me the story of your interest in conservation. Tell me how that spark first was lit."

Invariably, it is a story about a place, but it also almost always is a story about a person—about the grandparent, parent, uncle or aunt who took them to the natural setting where they formed their personal relationship and began to develop a sense of an ethic.

I think of Curt Meine's biography of Leopold and its passages about Aldo hunting with his father along the river, and the slides that Art Hawkins showed, with the attribution of some of his ethic to what his father taught him about hunting—even if there were no bag limits, you didn't take more than you could use. So that relationship with those natural places nearby and those relationships with the people who introduce you to them are, to me, a key element of that intellectual and intuitive knowledge that is the essence of an ethic.

Every conference seems to have a theme. The first speaker usually sets the theme. Buddy Huffaker did that this morning by talking about the child he soon will have. I have a son who is 19 years old, my oldest son. My fondest memory of him that I treasure is an evening when he was 14 years old. We went out fishing together at dusk on the Pigeon River in northern Michigan. We waded a long



way downstream. It got dark. We didn't want to make the mistake that so many novice anglers make when it gets dark by taking the shortcut and getting out of the river to head in the direction that you think the camp is in.

So we waded back up river, and as we were wading upriver in the near dark, he stepped in a hole and he went in over his waders. As we waded further up, I felt him all of a sudden in the dark—he took my hand.

Now, to those of you who have 14-year-old sons, do they take your hand? As soon as we saw the light of the campfire where we were camped, he let go of my hand. I don't think that kind of thing happens in video game arcades. I've never seen a parent and child standing next to each other, with one of them reaching out to take the other's hand. I don't think it happens as often in settings other than the natural world. There is something about being a part of those relationships with natural things that reminds us of the importance of our relationship with others, as Leopold taught us. I see the challenge we face as being not just about the land community, but also about the human community and restoring it along with the natural community.

Let me say a word about passion. I've spoken of knowledge and the importance of having both intellectual and intuitive knowledge (I like the word "wisdom" better). But it's equally important for any ethic that there be passion, a strong sense of things that are right and things that are not, and a commitment to change those things that are not right.

It seems to me, in many ways over the last decade or two, at times, we in the environmental movement have lost our way. We've become enamored of our own expertise. We have talked about parts per trillion of discharges of toxic substances and not talked as often about whether it is right or wrong to pollute our lakes and streams. I think we need to reclaim the moral high ground. I think we need not be embarrassed to admit that we have passion, we have a cause, and we are committed to the land ethic.

Another of my favorite quotations from "A Sand County Almanac" that I use almost every time I speak to a group of scientists is his wonderful admonition to scientists to "be careful that you do not become as callous as undertakers at the mysteries at which you officiate." I think that he was admonishing his fellow scientists and professionals that no matter how adept you become at what is in your head, never forget what is in your heart, and never be embarrassed about it.

Ethics founded in knowledge and ethics driven by passion must lead to action. An ethic that does not result in changed behavior is nothing more than cheap rhetoric. So the test of every ethic to me is, is there action? Is there action that you can trace back to knowledge, wisdom and the commitment to changing the way things are?

As I look at that, and as I look at the dawn of the next century, I think there are some examples of action

that Professor Leopold would find worthy. I have reflected recently, with the 50th anniversary of the publication of "A Sand County Almanac," that at the same time that he was penning those words, the U.S. Army Corps of Engineers was developing the plan to replumb the Everglades. A half century later, the same Army Corps of Engineers will submit a plan to Congress to *unplumb* the Everglades and restore one of the world's greatest ecosystems to ecological health.

There are two things about this that I think Dr. Leopold would find very inspiring, and he would be very proud of us for it. The first is restoration. It is the belief in the human capacity to right what has been wronged and correct mistakes we have made.

Without knowing him, and in everything I've read about him, I've always believed him to be an optimist, to believe in the capacity of people to change and fix their mistakes. What grander example in his honor could there be than to restore the Everglades? As Marjory Stoneman-Douglas once said, the Everglades are a test. Take good care of them, and you get to keep the planet.

The second thing about the Everglades restoration that I find compelling, and for which I think he would be very proud of us, is the involvement of these agencies—many of your agencies. The measure for success that has been articulated is one I think he would be proud of. It does reflect that larger view that Nina Leopold Bradley spoke of so compellingly this morning. It is spoken of in terms of ecological processes, of returning those natural sheet flows across South Florida to all the organisms that depend on them. The fact that we are at a point where we will articulate success in those terms, and not just in terms of one species or a particular commodity benefit to be gained from our lands and our landscapes, is a very optimistic sign.

I had opportunity last autumn to spend three days in the Okefenokee National Wildlife Refuge with Skippy Reeves, the manager of that refuge. I asked him, in terms of his management goals, what is the one measure of success for this landscape? How will you know 10, 20 or 30 years from now if you've been a good steward of this landscape? His one-word answer was "fire." If we have a landscape where fire is the main determinant, where fire has the frequency, intensity and duration that it has seen both in historical times and now, we will know that we have restored that landscape.

I thought of that example this morning while listening to Nina Leopold Bradley, because I think Aldo Leopold would be very proud of the land managers who articulate goals in terms of ecological processes such as fire and the movement of water. The environmentalist author Edward Abbey once said that it's really good for humans to go where they aren't at the top of the food chain. It reminds us of a certain humility that we often forget. Grizzly bears do that for us. We can choose whether or not to experience it, but I think it is essential

that places exist where we know with every step that we are not in charge.

I am particularly proud of the example of grizzly bears, because the proposal pending before the U.S. Fish and Wildlife Service right now was developed by the National Wildlife Federation and Defenders of Wildlife in conjunction with the timber industry in Idaho and Montana. It includes a proposal to give a voice to the local people in the management of the bears, the people who will have to live with them when they return.

For environmental groups, giving up that kind of control often is a difficult task, but I think that, as Leopold taught us, we have to be able to integrate human concerns into the well-being of wildlife and wild places. If we really believe in an ethic and the capacity to instill it, then we must put our money where our mouth is, and we must give people who will have to live with grizzly bears a voice in their management. How can you expect people to practice an ethic if you never give them a chance?

I've spoken about action, and as is typical in giving a speech, you pick the big actions, the ones that people know about, but I would be remiss if I left here having spoken only of those actions. I am someone who believes there is no action too small, no action that doesn't matter. After all, an ethic isn't whether you pick up litter in a national park during your one-week vacation. An ethic is about what you do every single day. An ethic is something that is integrated into your daily life, not something you practice only when you are conscious of it.

It is important for those of us who have devoted our careers to this, who constantly cite the types of examples

I have chosen, not to make the mistake of setting standards that appear so high to so many who simply aren't capable of spending that kind of time or making that kind of commitment. We need to find ways for everyone to practice the land ethic.

Two National Wildlife Federation programs of which I am most proud are our Backyard Wildlife Habitat™ and Schoolyard Habitats® programs. They encourage homeowners apartment dwellers to do something to make their balcony, backyard or schoolyard a more hospitable place for wildlife. We certify it, and we send a press release to their local newspaper. It always amazes me how many small-town newspapers run big stories and send photographers to record what these folks are doing.

I offer that example of action because, it seems to me, the minute someone changes their behavior in some way because of a consciousness and become part of the land community, we have achieved a significant victory. That is an ethic. If people begin by landscaping their backyard differently because of a sense that it isn't just their backyard, but it is shared by other creatures, they then have the responsibility to manage it in a way that makes it better. I find that to be a very exciting victory. All of the great accomplishments are really those small victories totaled up.

I am excited and optimistic because of the examples I have cited—action on the part of people and restoration of damaged ecosystems. I believe that the Leopold legacy is alive, and I believe it will live into the next century. One of the reasons I believe that most strongly is the actions I see by people who never have heard of Aldo Leopold, but in whom the ethic has been instilled.



# The Secret Leopold, or Who Really Wrote “A Sand County Almanac”?

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“Aldo Leopold was a forester and wildlife ecologist who wrote “A Sand County Almanac,” a collection of essays about the natural world and conservation. The book was published posthumously in 1949. “A Sand County Almanac” went on to become one of the key texts of the environmental movement. Leopold is closely identified with ‘The Land Ethic,’ the final essay in the “Almanac,” in which he argued that people are part of the ‘land community,’ and so bear moral responsibilities that extend beyond the realm of the human to include the non-human parts of that community.”

This would be a fair and accurate answer to the question: “Who was Aldo Leopold?” But is it a sufficient answer? To conservationists and historians, at least, the question is increasingly urgent. Leopold defined challenges that remain at the core of conservation thought and practice more than a half-century after his death, even as conservation concerns increasingly overlap other issues in contemporary life. The social, philosophical, political, economic and cultural demands being made upon Leopold’s legacy are increasing. At the same time, the living memory of Leopold must inevitably fade as direct connections to Leopold slip into the all-welcoming past. Paradoxically, it will become both harder and easier to answer the question: “Who *really* wrote ‘A Sand County Almanac’?” What we may gain in detachment and critical judgment, we shall lose by having first-hand impressions no longer available to us.

That these concerns are of more than passing importance is plain. We may turn, for example, to the January 1998 issue of the *Journal of Forestry*, the field’s premier professional journal. Its cover featured Aldo Leopold and beckoned with the question: “Has Leopold Supplanted Pinchot?” (i.e., as the guiding philosophical force behind American forestry). The lead article, by a professor of forestry, offered “Another Look at Leopold’s Land Ethic”—a harsh critique of the ideas in Leopold’s famous essay. The first sentence of the article read: “Aldo Leopold’s influence is based largely on a brief essay, 20

pages long, that outlines what he calls the ‘land ethic.’”<sup>1</sup> The author’s argument and a counter argument by environmental philosopher and Leopold scholar, J. Baird Callicott, in the same issue prompted intense discussion among foresters and others and led to further rounds of discussion within the journal.<sup>2</sup>

The point here is not to examine the play in this particular volley of critique and response, but to note that our knowledge of Leopold is, and must be, increasingly contingent not on the reality of the living human being, but on the received images and impressions of that reality. Leopold the human being belongs to the ages. Leopold the source and symbol has been and will be shaped according to the ideas, questions and requirements—and also the fears, blind spots and prejudices—of subsequent generations.

The above-quoted lead sentence from the *Journal of Forestry* article illustrates how time inevitably narrows the field of impressions of the rich, complex, multi-dimensional reality that is an individual human life. In the case of Aldo Leopold, attention often has focused largely on his writings in “A Sand County Almanac” (or even, as in the above instance, just one essay within the “Almanac”). This focus profoundly shaped our ways of thinking about Leopold. There is Aldo Leopold, who lived a life and wrote, toward the end of it, a memorable book. Then there is “The Author of ‘A Sand County Almanac,’” a figure who, for 50 years, has been a mirror to our relationship with the natural world and has borne the burden of our environmental hopes and fears. There is some confusion between the two.

## A LEGACY ENTIRE

For readers, reviewers and scholars, Aldo Leopold displays as many facets as there are perspectives. Consider the variety of fields that can and do legitimately claim Leopold as an important figure in their development: forestry, wildlife ecology and management, outdoor recreation, range management, sustainable agriculture, wilderness protection, conservation biology, restoration ecology, environmental history, environmental ethics, environmental law,



environmental policy, environmental education, literature, among others.<sup>3</sup> Leopold remains a compelling figure and "A Sand County Almanac" an irresistible focal point, in part because all these perspectives were integrated tightly in his personality and prose. There are, in a sense, many Leopolds. How, then, do we reconcile these many Leopolds with the singularity of Aldo Leopold as a human being?

We may begin with a brief review of the basic facts of Leopold's life and the wide range of his contributions. For those who know of Leopold purely through "A Sand County Almanac," the story bears retelling.<sup>4</sup>

Leopold belonged to the first generation of trained American foresters, graduating from Yale University's Forest School in 1909. In a nearly 20-year career with the U.S. Forest Service, he gained expertise in a wide range of sub-fields, including soil and water conservation, game protection, range and watershed management, and recreational planning. Leopold earned a reputation within the Forest Service as one of its most able and creative leaders, highly regarded for his innovations in forest administration. In the 1920s, he spearheaded the movement to protect wildlands under the jurisdiction of the Forest Service and was largely responsible for designation of the nation's first wilderness area, the Gila, on the Gila National Forest, in 1924. A decade later, in 1935, he helped to found the Wilderness Society, providing a broad philosophical and professional base for the new organization. Leopold also conducted important field research in forest ecology during his Forest Service years and, in 1924, was appointed assistant director of the Forest Products Laboratory in Madison, Wisconsin. He remained in that position for four years.

After leaving the Forest Service in 1928, Leopold devoted himself to game (later wildlife) management as it emerged as a distinct field within conservation. Drawing upon contemporary advances in animal ecology, Leopold provided the field with its first textbook, "Game Management," published in 1933.<sup>5</sup> He was named the nation's first professor of game management, also in 1933, at the University of Wisconsin. He guided the field through its first important decade, leading it beyond its original mission of perpetuating populations of game animals and integrating it with other conservation fields. In the process, he provided foundations for later developments in ecology, sustainable agriculture and conservation biology.

Leopold also was an early advocate and practitioner of ecological restoration—professionally at the University of Wisconsin's arboretum and other lands, and personally at his farm property in Sauk County, Wisconsin (which the Leopold family acquired in 1935). He was a widely respected communicator, constantly writing and speaking to varied audiences on a wide range of conservation topics. As a teacher, he instructed leading professionals as well as hundreds of undergraduate students at the University of Wisconsin. He participated actively in dozens of professional societies and conservation organizations at the local, state, national and even international

levels, and was a prominent player in the development of conservation policy throughout his career.

As notable as Leopold's achievements were, all of the foregoing (and much else besides) occurred before he had even begun to contemplate the collection of essays through which the world would come to know him. Leopold's list of professional accomplishments was impressive long before he began work on the manuscript that became "A Sand County Almanac"—before, in fact, the voice of the "Almanac" had matured.

When did that voice first emerge, and how did it find its full expression in the "Almanac"? "A Sand County Almanac" was the product of the last 10 years of Leopold's life.<sup>6</sup> Leopold would work some earlier materials into his evolving manuscript, but he began to sound the new tone in his essay-writing only after two hunting trips, in 1936 and 1937, to Mexico's Sierra Madre Occidental. After the first trip, Leopold prepared an essay he called "The Thick-Billed Parrot of Chihuahua," published in the ornithological journal *The Condor* in early 1937 (it would eventually appear in the "Almanac" as "Guacamaja"). Shortly thereafter, Leopold composed "Marshland Elegy," his moody reflection on Wisconsin's cranes and wetlands. American Forests published it later in 1937.

These new expressions reflected a new turn in Leopold's work. Increasingly in the late 1930s, Leopold found himself teaching and writing toward a non-professional audience. In 1938, he published the first in an ongoing series of popular essays on wildlife conservation for the *Wisconsin Agriculturist and Farmer*, and in 1940, he wrote two more essays about Mexico and the Arizona, "Song of the Gavilan" and "Escudilla." Leopold was not yet thinking about collecting these essays into a book. However, he was encouraged by the positive response of friends and colleagues and continued to write in this new vein.

The voice of Aldo Leopold in "A Sand County Almanac," then, was late in its development. It first emerged in the late 1930s, just as Leopold was fully integrating his conservation ideas (a phase culminating in 1939 with publication of his essay "A Biotic View of Land" in the *Journal of Forestry*).<sup>7</sup> The Aldo Leopold that most of the world knows, admires and criticizes is really the late Leopold, and then only a part of that. It was, of course, one of the ironies of Leopold's life that he would not live to see "A Sand County Almanac" published or know its influence. Indeed, he would never even know his book by that title, which was assigned posthumously; his name and the book title became paired only after Leopold's death in April 1948.

## CHANGING PERSPECTIVES ON LEOPOLD

What perspectives on Aldo Leopold's legacy do we inherit? How has public understanding and appreciation of his work changed? Because Leopold's legacy still is being discovered by environmental professionals and the



general public, and is revisited constantly by those who do know it, the answers to these questions remain dynamic. In retrospect, however, we can identify several general phases in the evolution of Leopold's public reputation. Those phases, in turn, tell us much about what various audiences have sought out or neglected in the record of Leopold's experience.

## LEOPOLD AMONG HIS CONTEMPORARIES

We can begin by assessing Leopold's reputation during his own lifetime, or more precisely in the last years of his life, as he was pulling together the manuscript that became "A Sand County Almanac." It is useful to distinguish between Leopold's local and "more-than-local" reputation. Within the state of Wisconsin, and especially at the University of Wisconsin, Aldo Leopold was a recognized figure, though by no means famous. He had played a leading role in several important conservation policy initiatives at the state level in the late 1920s. In 1933, he joined the university, assuming a new and experimental Chair of Game Management within the College of Agriculture's Department of Agricultural Economics. Leopold was not an academic by background, and his field of expertise had not yet gained intellectual definition or professional acceptance. Securing wildlife conservation's foothold in academe would be one of Leopold's premier accomplishments in the remaining 15 years of his life.

For some time, Leopold remained, in the words of Arthur Hawkins, one of his early graduate students, "suspect." Hawkins recalled that Leopold was "not part of the academic crowd" and "a real novice" in understanding the social ecology of the university campus.<sup>9</sup> In the words of another student of the time, Frances Hamerstrom, he was "very thoroughly respected by a rather small, select group; in general, he wasn't even noticed."<sup>10</sup> By the late 1930s and early 1940s, when Hawkins and Hamerstrom worked most closely with him, Leopold had acquired a large circle of good friends and colleagues within Madison, but continued to lead a relatively quiet academic life.

By contrast, Leopold was very well known and highly regarded among his professional colleagues in conservation around the country. His national reputation had risen steadily over the decades, especially as wildlife management staked out its own territory among the conservation professions in the 1930s. Another student, H. Albert Hochbaum, with whom Leopold collaborated during the early stages of the "Sand County Almanac" manuscript, saw that this wider reputation had to color Leopold's writing. He wrote to Leopold in 1944: "If you will put yourself in perspective, you might realize that within your realm of influence, which is probably larger than you know, Aldo Leopold is considerably more than a person; in fact, he is probably less a person than he is a Standard . . . Just for fun, then, as you round out this collection of essays, take a sidewise glance at this fellow and decide just how much of him you want to put on paper . . ."<sup>11</sup>

Of those few who were reading Leopold's draft essays, Hochbaum most deeply appreciated the task of self-reflection and self-expression Leopold had taken on. He also may have had the keenest sense of how others viewed Leopold. In 1947, after attending a conference of wildlife managers, Hochbaum wrote to Leopold, "For a long time the crowd has been more or less following (and sometimes objecting to) the *rules* of wildlife management that you have prescribed. Now they are beginning to follow your *philosophies*, by and large without realizing whence they came. That is progress!"<sup>12</sup> Hochbaum, a pioneer in waterfowl biology who also was a skilled illustrator and writer, saw into dimensions of Leopold's private life and public persona that others missed, and he understood well the larger creative challenge that Leopold had assumed in the "Almanac" essays.

During his lifetime, Leopold's reputation reflected many qualities: his facility with words, the effectiveness of his teaching, the breadth of his conservation philosophy and especially the degree to which he matched word and thought with deed. His professional impact was far-reaching, especially within wildlife management and forestry. By the end of his life, Leopold was well aware of his professional prominence, and it is fair to say that he was quietly proud of it. At the same time, the older he grew—particularly in the last three years of his life, from the end of World War II until his death—the more he could look back on his accomplishments with a mature and self-confident modesty. He was certainly humbled by his own earlier mistakes. He communicated this most notably and famously in the essay "Thinking Like a Mountain," in which he recounted his role in the extirpation of the wolf from the American Southwest.<sup>13</sup>

Leopold, however, was far from universally admired by his contemporaries. He often found himself caught in thickets of controversy. The most prominent instance of this derived from his role in Wisconsin's "deer wars," the drawn-out and vitriolic battles over the state's deer management policy in the 1940s. Leopold's determined advocacy of herd reduction made his name well known, and oft-blasted, among some portions of Wisconsin's populace (including many hunters, anti-hunters and resort owners). Leopold neither welcomed nor enjoyed the notoriety. Although decades of front-line conservation battles had thickened his skin, he now felt as viscerally as ever the difference between his view of conservation and that of "that collective person, the public."<sup>14</sup> Out of such controversies came the self-awareness that Leopold expressed only rarely and guardedly, the calm sadness in his observation that "one of the penalties of an ecological education is that one lives alone in a world of wounds."<sup>15</sup>

The deer management fight was only one of many instances in which Leopold staked out unpopular or controversial positions. He continued to wage wilderness protection battles until the end of his life. He did not hesitate to use his voice directly and forcefully to protect threat-





ened wild lands, counter indiscriminate wartime incursions into untrammelled country, slow the post-war juggernaut of dam-building or restrict what he saw as inappropriate uses of designated wilderness areas. He remained an adamantly active member of The Wilderness Society until his death. The cause of wilderness protection had not yet achieved the wider acceptance that would come with the battle of the early 1950s over the proposed Echo Park dam within Dinosaur National Monument. As America entered the era of post-war economic boom and political paranoia, Leopold occasionally found himself at odds even with old colleagues within the conservation movement over the wilderness issue.

Leopold was known among his peers as a hard-headed critic, though a fair, constructive and thoughtful one. In the last decade of his life, Leopold became increasingly blunt in his view of the direction taken by universities and government agencies. He was notably critical of the trend toward increasing specialization and toward what he called "power science" within the academy. He wrote in 1946, "Science, as now decanted for public consumption, is mainly a race for power. Science has no respect for the land as a community of organisms, no concept of man as a fellow passenger in the odyssey of evolution."<sup>16</sup> Some of Leopold's most forceful prose (published and unpublished) addressed this theme. In many ways, "The Land Ethic" itself was the ultimate expression of his concern.

At the end of Leopold's life, then, his conservation work was well known, widely appreciated and occasionally contentious, but he himself was little known outside of the professional conservation world. He was one of several voices from within the movement (including especially William Vogt and Fairfield Osborn) that in the immediate post-war years sought to communicate the importance of the science of ecology to a broader public. As the manuscript of "A Sand County Almanac" went to press, however, its author remained "very thoroughly respected by a rather small, select group."

## LEOPOLD REACHES A BROADER AUDIENCE

A second phase in public awareness of Leopold began with the publication of "A Sand County Almanac" and extended roughly to the mid-1960s. This spans the time from the first appearance of "A Sand County Almanac" to its later republication as a mass paperback. During these years, two essentially opposing trends played out: on the one hand, the level of popular environmental awareness rose dramatically; on the other hand, the traditional conservation fields found themselves internally divided over the fundamental principles that Leopold and others had sought to define.

"A Sand County Almanac" helped to stimulate environmental literacy among the American public; conversely, readership of "A Sand County Almanac" and recognition of Leopold's contributions grew along with

that increasing awareness. This mutually reinforcing process can be traced back to the earliest reviews of the book. The book was widely reviewed both locally and nationally, both by readers familiar with Leopold and those learning of him for the first time. Because of the confluence of events, many reviews served in essence as obituaries of Leopold, as reviewers used the occasion to reflect upon Leopold's legacy. The reviews of the day thus provide a fair portrait of the state of his public persona.

August Derleth, perhaps Wisconsin's best known regional writer, reviewed "A Sand County Almanac" for Madison's Wisconsin State Journal. Derleth knew of Leopold's work and was well familiar with the Wisconsin landscapes described in the "Almanac." Although he and Leopold were not themselves intimates, they shared many acquaintances. Derleth wrote in his review, "All genuine conservationists throughout Wisconsin and the Midwest generally realize that in the death of Aldo Leopold, Wisconsin lost one of its most able men in the field of conservation. Posthumous publication of his book offers ample evidence that his death deprived us *also of an author of no mean merit* [emphasis added]. His book is one of those rare volumes to which sensitive and intelligent readers will turn again and again."<sup>17</sup> Derleth's phrasing is instructive. For most readers, Aldo Leopold would be known first and foremost, and often only, as an author. For Leopold's contemporaries, and especially local contemporaries, Leopold was known primarily as a conservationist.

Many of the national reviews of "Sand County" were marked by a similar tone of surprise, delight and deep respect, although the reviewers knew little if anything of Leopold's professional accomplishments. Lewis Gannett, in the New York Herald-Tribune, wrote:

"Aldo Leopold died fighting a neighbor's fire in the spring of 1948. I am sorry, for I should like to have known him. I do not recall ever hearing his name until I stumbled on this book; to read it is a deeply satisfying adventure. This was a man who wrote sparsely, out of intense feeling and long experience. You will find here no statistics about erosion, no screaming warnings to 'do something about the soil.' Aldo Leopold was primarily concerned with the importance of feeling something. He himself felt deeply, and his feeling gives a rich texture to this too-short book."<sup>18</sup>

Gannett did not know, of course, about Leopold's years of devoted statistic-taking on erosion, his many forceful pleas for action, his constant emphasis on the vital role of scientific research in conservation. Yet, all that was beside the point. Gannett was quite correct; in "A Sand County Almanac," Leopold was "primarily concerned with the importance of feeling something."

It is an important point. New readers from beyond Leopold's personal or professional circles found here



something unusual. The tone and style of "A Sand County Almanac" were quite different from that of other prominent conservation books of the time, in particular Vogt's "Road to Survival" and Osborn's "Our Plundered Planet," both of which were published in 1948. These two prescient books on the state of the global environment were chock full of statistics and warnings. Their authors read the future, and it was not pretty. Both books gained an immediate, sizable and influential audience. Leopold shared their profound concern—he, in fact, knew both Vogt and Osborn, and had read Vogt's book in manuscript—but he spoke in subtler tones. Leopold's book sold more modestly but, as it turned out, more steadily. "A Sand County Almanac" continued to gain readers through the 1950s and into the 1960s. By the mid-1960s, some 20,000 copies had been sold, but mostly among dedicated conservationists and readers of natural history.

The significance of the "Almanac" becomes clearer when viewed in relation to the second general trend in this period: the ambivalence with which many conservation professionals regarded the path that Leopold and his like-minded colleagues had blazed (if they regarded it at all). Through the 1950s, the professions in a sense left behind Leopold and those who shared his more integrated outlook on conservation challenges and solutions. In "The Land Ethic," Leopold had expressed concern over the growing division between conservationists who "[regard] the land as soil, and its function as commodity production," and those who "[regard] the land as a biota, and its function as something broader."<sup>19</sup> The former were gaining a firm upper hand.

Through the post-war era, the professions and disciplines became increasingly segregated. Engineering solutions replaced more agronomic or naturalistic approaches. "We are remodeling the Alhambra with a steam-shovel," Leopold lamented in "The Land Ethic," "and we are proud of our yardage." Soil conservation, agriculture, forestry, recreational planning, and range, fisheries and wildlife management bent increasingly toward utilitarian ends, while ecology turned increasingly experimental, quantitative and model-oriented. As the professions "modernized," Leopold and his generation came to be seen as important albeit old-fashioned predecessors. The kernel of their legacy—the integration of the natural sciences and humanities in the service of conservation—fell under the heavy tread of the steam-shovels.<sup>20</sup>

## LEOPOLD AND THE ENVIRONMENTAL AWAKENING

That seed, however, would prove hardy. A third phase in public appreciation of Leopold began in the mid-1960s and would last roughly into the mid-1980s. Paperback editions of "A Sand County Almanac," published in 1966 and 1970, brought Leopold to the very forefront of the incipient environmental movement. Rachel Carson's

"Silent Spring" (1962), Stewart Udall's "The Quiet Crisis" (1963) and other books of the period created a growing critical mass of readers as "A Sand County Almanac" reappeared in its more accessible and affordable form.

As the paperback worked its way into the backpacks and reading lists of the baby boomers, a generation gap began to emerge in perceptions of Leopold and the application of his ideas. On one side were the more senior conservationists, many of whom knew and worked with Leopold or his contemporaries personally. On the other side stood the growing corps of younger environmentalists who knew of Leopold only through the "Almanac" essays. These younger devotees came into their environmental awareness as the landmark legislation of the era—the Wilderness Act (1964), National Environmental Protection Act (1970), Clean Air Act (1970), Clean Water Act (1972) and Endangered Species Act (1973)—redefined the context of the older conservation movement.

Older and younger readers alike would invoke Leopold in support of their causes and adapt him in their approaches, but those causes and approaches did not always jibe. Underlying differences—in, to cite just a few examples, the aims of resource management, attitudes toward hunting, appreciation of wilderness and the role of political activism in solving environmental problems—divided these audiences. Importantly, however, Leopold also served as a bridge across the generations. All were reading from the same book, a fact that would prove highly significant in the long run.

## LEOPOLD AND THE REINTEGRATION OF CONSERVATION

By the 1980s, another demographic shift began to play out. Within the conservation professions, elders from the post-World War II generation began to approach their retirement years, older baby boomers rose through the professional ranks, and younger baby boomers, trained in the post-Earth Day era, entered those ranks. Meanwhile, non-professional readers of "A Sand County Almanac" went about their lives in their communities, the paperbacks still residing on their bookshelves, the words still working their quiet influence.

By the late 1970s and early 1980s, changes in society, in politics and in the environment itself cast Leopold's words in new light. Systemic environmental problems—increasingly vitriolic disputes over national forest management policy, groundwater pollution problems due to intensified agricultural practices, climate change, global-scale threats to biological diversity, incessant suburban sprawl and on down the list of modern conservation dilemmas—demanded more systemic solutions. Such solutions came to be explored under many names, including *ecosystem management*, *conservation biology*, *ecological economics*, *community-based conservation* and *sustainable agriculture*. New terms—*biodiversity* and *sustainability*





prominent among them—were invoked to broaden the conceptual ground on which conservation stood.<sup>21</sup> These responses, while novel in name, often returned to the fundamentals of integrated conservation, as outlined by Leopold and his contemporaries, for grounding. As a result, Leopold's intellectual stock continued to rise through the 1980s and 1990s.

As we still are working within this most recent phase, we are unable to read it with clarity. But as the waves of passion in the conservation and environmental movements have swelled and subsided, Leopold's legacy has ridden through them all and remained robust. Why and how? It has to do in part, of course, with the historic record of his accomplishments and the quality of his writing and thinking. But it also has to do with the welter of forces that keep Leopold relevant, that bring us invariably back to him, more sober but perhaps more ready to consider the subtleties of his work. These forces might include the following:

- **The fact of continuing environmental degradation and the need for more integrated responses that are informed by ethics.** For those who see our fragmented approach to landscapes, their biota and their human communities as a primary cause of environmental degradation, the search for solutions leads back to the integrated view that Leopold articulated finally in "The Land Ethic." Leopold's declaration of the ethical underpinnings of conservation has continued to gain attention and have substantial impacts on national policy (through, for example, the shift toward ecosystem management in the land management agencies and in many conservation organizations).<sup>22</sup> Leopold regarded the lack of attention from philosophy and religion as "proof that conservation [had] not yet touched [the] foundations of conduct"; the consolidation of environmental ethics and the greening of religion now may be regarded as proof that it has at least begun touch those foundations.<sup>23</sup>
- **The anti-environmental "wise use" movement.** As forces of opposition to conservation and environmentalism assumed greater power in the 1980s and 1990s, many younger environmentalists were compelled to revisit their roots and learn (often for the first time) their connections to the older conservation movement. Likewise, more conservative conservationists also were led to examine their political loyalties. Even staunch conservatives began to rethink their priorities when Ronald Reagan named James Watt his Secretary of the Interior. For many in this period, Aldo Leopold stood out as one who did not place his politics before his conservation commitments. The relationship between political conviction and

conservation action always has been complex. In his writing, Leopold does not come across as an ideologue, and in life he was not. He has remained a relevant and flexible voice during a period of intense politicization of conservation.

- **The erosion of community.** During these same years, many have sensed and tried to define the changes that are transforming our human communities.<sup>24</sup> Somewhere between the shoals of unwarranted nostalgia and uncritical economic optimism lies (we may hope) safe passage, but the route is difficult to discern. Renewed attention to communitarian values is an important part of contemporary social criticism. A parallel expression has emerged from within conservation, emphasizing the need to *re-place* communities, to see them in terms of the biophysical environments in which they are embedded. "Community" was a key word in Leopold's lexicon, and the "extension" of community that Leopold advocated in "The Land Ethic" accordingly has assumed increased importance.
- **The interdisciplinary imperative.** This pertains particularly to academia, where hyper-specialization and reductionism move on apace, opportunities for "thinking time" shrink and the selective pressures on success continue to intensify. Such trends tend to overwhelm efforts to maintain connections among the sciences, arts and letters. Leopold's characteristic interdisciplinary approach carries authority here. He stands as an example and reminder of a time before the need to specialize was ratcheted up several additional notches, and a greater share of rewards still accrued to those whose training, teaching and work were broad and diverse. These forces—and no doubt many others—have allowed Leopold's readers to see him in a new light, as one who identified tendencies that increasingly would characterize American society and the American landscape through the 20th century. The implicit messages in Leopold's essays, spoken amid the bugling of cranes and the songs of wild rivers, have become more explicit. Yet, new readers still can respond to the faith Leopold felt down to his very marrow: that the future of the human enterprise on this (and any other) continent is tied fundamentally, if not always clearly, to the future of our wild co-inhabitants and landscapes.

## A TAXONOMY OF RESPONSES

Since "A Sand County Almanac" was published, most of its readers have remained unaware of the life that gave it shape, responding not so much to Aldo Leopold the historical personage as to "The Author of 'A Sand



County Almanac'." For the general reader, this may be of small consequence; a good book stands on its own, and its quality endures regardless. (Does it matter that we know so little of the author of the Book of Job? That Shakespeare's life remains opaque to us? We know the author through the words and the story.)

It is the duty, however, of the historian and literary biographer to fill in the facts, to weigh the text against the life and provide the book with a sort of narrative *habitat*. Such scrutiny enriches our understanding of the creature itself—robbing it perhaps of some of its immediate mystery, but providing a richer appreciation of its existence. With such perspective, we may see in our prior responses and images a little less of Leopold and a little more of ourselves. What do we see when we reexamine "The Author of 'A Sand County Almanac'"?

### LEOPOLD THE PROPHET

We encounter first, of course, Leopold the environmental "prophet." Leopold's daughter Nina Leopold Bradley, when asked to speak of her father's conservation philosophy, sometimes has referred to "that poor old land ethic." It is a great deal to ask one essay, or book or person to bear the weight of society's need to transform its relationship with the natural world. Over the decades, a disproportionate amount of that weight has fallen upon Aldo Leopold.

Among Leopold's contemporaries were several who recognized the full depth of Leopold's conservationist critique and first employed the all-but-inevitable tag of prophet. Roberts Mann, a Leopold friend and superintendent of the Cook County (Illinois) Forest Preserve District, published an article in 1954 entitled, "Aldo Leopold, Priest and Prophet."<sup>25</sup> Ernie Swift, another friend and colleague who led Wisconsin's Conservation Department, followed in 1961 with "Aldo Leopold, Wisconsin's Conservation Prophet."<sup>26</sup> Historian Roderick Nash, in his classic 1967 book, "Wilderness and the American Mind," called his chapter on Leopold simply "Aldo Leopold, Prophet."<sup>27</sup> The trope has endured. Wallace Stegner, not one given to hyperbole, regarded "A Sand County Almanac" as "the utterance of an American Isaiah . . . almost a holy book in conservation circles."<sup>28</sup> "A Sand County Almanac" continues to be referred to regularly as the "Bible" or "scripture" of the environmental movement.

This "prophet" tradition, whether one regards it as appropriate invocation or unnecessary overstatement, is instructive. Aldo Leopold has reflected a strong social need. Any social movement (especially in its emergent phase) requires a prophetic voice to give itself coherence and direction. Martin Luther King was the pre-eminent prophetic voice of the modern civil rights movement. For complex reasons, there was no equivalent iconic figure in the environmental movement. But environmental reformers could and did look back to find not only

Leopold, but John Muir, Henry David Thoreau and, among contemporaries, Rachel Carson and David Brower, Sigurd Olson and Barry Commoner, Edward Abbey and Gary Snyder. They became the movement's prophets. As conservation itself continued to evolve at the turn of the 21st century, Leopold (among these others) continued to fulfill the prophet function.

### LEOPOLD THE ALL-PURPOSE HERO

One key factor set Leopold apart even within the pantheon of environmental prophets: he coupled the inspiration of his prose, thought and activism with the authority of his experience. Leopold, unlike the others, wrote from a varied professional background in on-the-ground forestry, range management, wildlife management, wilderness protection and restoration work. He was a respected figure in each of these fields and could speak to all his professional colleagues in their own languages. And so, Leopold served another posthumous function: as an all-around, acceptable and accessible "conservation hero," able to appeal to a broad range of conservation factions—at least as long as the deeper tensions within conservation lay dormant.

One of the more interesting variations on this image of Leopold involved an unlikely source. The February 18, 1956, edition of the *Saturday Evening Post* featured a realistic sketch of Leopold in a full-page advertisement for the Weyerhaeuser company. The ad depicted Leopold, on bended knee with a fawn under his protective watch, against a clear-cut mountainside in the background. Aldo Leopold by this time apparently was seen as a reasonable conservationist who could support, as the text of the ad put it, "*true conservation* through the wise use and perpetuation of industrial forest uses" [emphasis in original].<sup>29</sup>

This Leopold-as-conservation-hero motif reflected conservation's growing mainstream constituency. By 1956, conservation, however vague, fuzzy and pliable its definition, had become acceptable across a broad demographic spectrum. As long as Leopold represented the kindly and constructive school of *reasonable* conservation, even a major industrial force such as Weyerhaeuser could present his image in one of their prominent advertisements. It could, for the time being, ignore the fact that Leopold was a dedicated activist, a critical scientist, politically involved and often courageous, and not one to shrink from unseemly controversies over conservation policy.

### LEOPOLD THE RADICAL ENVIRONMENTALIST

If Leopold's work and words had helped to build a broader, more popular, better funded, more respectable, more mainstream environmental movement, it also inspired the counter response. As environmentalism became more acceptable, it became, in the view of others, more diluted. And so we find another reading of Leopold's

legacy in ascendance: Leopold as radical environmentalist and deep ecologist.

The most prominent example of this "redeployment" of Leopold came through the actions of the 1980s Earth First! movement. When Dave Foreman, Edward Abbey and their compatriots launched the movement, they drew heavily upon Leopold in raising high the bar of compromise in conservation politics. Leopold's powerful image of the faltering "green fire" in the eyes of the dying wolf of "Thinking Like a Mountain" came to symbolize for this new generation of wilderness activists the loss of the North American wilds. "A militant minority of wilderness-minded citizens," they read in Leopold's essay "Wilderness," "must be on watch throughout the nation and available for action in a pinch."<sup>30</sup> At the same time, their philosophical standard-bearers in the deep ecology movement could point to "The Land Ethic" as a foundational document.<sup>31</sup>

Of course, counter responses ensued. Hence, the disgruntled forester, who groused in the *Journal of Forestry* that Leopold was merely a "starry eyed . . . pipe-smoking academician." Another suggested that the pipe held more sinister substances, noting that he [the reader] had "seen nothing that Aldo Leopold had to say that does not make me think that he was anything but the original pot-head."<sup>32</sup>

What do we learn from Leopold the deep and radical ecologist? He reflected the increasing polarity within the environmental movement as its influence rose through the 1970s and 1980s. During these years, the ranks of environmental professionals and bureaucrats burgeoned. Prior to that, if one were engaged in environmental work, one was likely an amateur—poorly paid (if paid at all) and engaged primarily out of a sense of public duty. By the mid-1970s, the scene was changing. Membership in the major environmental organizations was on the rise. As paid staffs expanded, professional expertise began to overshadow grassroots activism. Passion was nice, but a master's degree got you the job and respect. As the environmental professional class grew, however, the grassroots activists, driven by powerful social, political and spiritual motives, hardly went away. The result, in a sense, was a splitting of the Leopold legacy. Suited professionals could see Leopold as a sort of master diplomat and spokesman, able to speak to all sides on environmental issues. Activists could see Leopold as a committed and deeply honest radical, whose message provided intellectual armor.

### LEOPOLD THE NAÏVE INTERLOPER

This category encompasses an entire suite of images. It refers to the response evoked as Leopold's interdisciplinary influence has come to be felt in fields not his own. This response may be traced in any number of fields; it will suffice here to examine it in philosophy, politics and conservation itself.

As J. Baird Callicott and Michael Nelson have point-

ed out, that Leopold in fact *made* any contribution to philosophy is not a view that all philosophers have shared.<sup>33</sup> Consider the following statements. H. J. McCloskey, an Australian philosopher, suggested that "there is a real problem in attributing a coherent meaning to Leopold's statements, one that exhibits his 'Land Ethic' as representing a major advance in ethics rather than a retrogression to a morality of a kind held by various primitive peoples." Far from an advance in ethics, then, Leopold offered only retrogression. Another regarded Leopold the philosopher as "something of a disaster, and I dread the thought of the student whose concept of philosophy is modeled principally on these extracts from Leopold's writings." Another reviewer saw "The Land Ethic" as "dangerous nonsense."<sup>34</sup> In short, for a few of the more formally trained philosophers, Aldo Leopold's forays in this field are hardly worthy of serious consideration.

How does Leopold fare among politicians and political theorists? Somewhat better, actually, especially in recent years. Because Leopold's conservation politics defied conventional ideological pigeonholing, those searching for deeper political lessons have found his work in this arena especially instructive.<sup>35</sup> The same maverick quality, however, also has left Leopold open to easy criticism. Such criticism has come, on the one hand, from those who have preferred a more direct political approach to environmental issues. Thus, in 1974, still in the wake of the high wave of the environmental movement, we find an article entitled, "The Inadequate Politics of Aldo Leopold." The author found Leopold's politics to be:

"wholly conventional, some would say naïve. From one point of view the wonder is not that he accomplished so much as a political operator, but that he accomplished so little . . . One reason for Leopold's frustration was his own inability to face the likelihood that so fundamental a change in people's attitudes as he advocated would involve concomitant changes in the economic system and probably in the political superstructure. Again and again in his writing he seemed on the verge of some sort of ideological breakthrough, but appeared to draw back from the brink of discovery. In the political and administrative sector . . . this inexperienced administrator had little to offer for implementation of his 'land ethic' beyond a very traditional reliance on high-minded moral persuasion."<sup>36</sup>

If some saw Leopold's politics as naïve and inadequate in the highly politicized context of 1970s environmental activism, others would see his approach in a new light as that context continued to change. A decade later, Leopold's biographer (i.e., this author) could receive inquiries from a conservative journal interested in an article on Aldo Leopold, because they felt he was "an environmentalist they could live with." This is not as surpris-



ing as it may seem. Conservatives and libertarians can find much to agree with in "The Land Ethic." A core component of "The Land Ethic" is, in fact, Leopold's belief that individuals had to assume greater responsibility for the health of the land; that absent such responsibility, governments would need to step in, and governments simply could not assume or carry out all necessary conservation functions. The editors evidently saw here an opportunity to explore these "conservative" elements of "The Land Ethic."<sup>37</sup>

Aldo Leopold's politics were not naïve. As Susan Flader has shown, Leopold's sense of citizenship and civic responsibility was keen and evolved along with the changing currents in the conservation movement.<sup>38</sup> That we can read his politics as conservative and progressive, naïve and sophisticated, personal and public, again tells us as much about ourselves as it does about Leopold. It says, perhaps, that we have yet to evolve a politics that can respond in a healthy and democratic fashion to complex conservation dilemmas; that we still are struggling to find ways to protect, in Leopold's words, "the public interest in private land"<sup>39</sup>; that we continue to paw among our traditional political ideologies in search of solutions and find it very difficult to imagine where constructive alternatives may lie. For those deeply involved in the struggle to forge new relationships on and with the land and among the people who inhabit it, Leopold's politics, far from being naïve, remain instructive and encouraging.

The Leopold-as-naïve-interloper view occasionally has found currency within the conservation world as well. Many of Leopold's precepts of conservation were beyond the pale in his own day, and many remain so. More specifically, the breadth of perspective he brought to conservation was highly unusual, so that those who inhabited one portion of the conservation spectrum could not always appreciate his comprehensive view. (The story is told, for example, of the joke that went around the hallways of Wisconsin's state Conservation Department, about how to spell this word "aesthetic" that the Professor was always using).

Leopold was both a specialist (in several fields) and a generalist. But as the conservation professions specialized further in the years following his death, it became very easy for some to look back and regard Leopold as a dilettante in their increasingly insular fields. Hence, for example, latter day foresters could ignore Leopold's credentials in the field and claim in effect that he wasn't much of a forester after all.

Another sub-heading in this particular category involves the problematic (for some) fact that Aldo Leopold also was a life-long hunter. For this, Leopold has received his share of criticism from at least some anti-hunters, activists and environmental ethicists. Conversely, he has been held high by conscientious hunters as a premier example of the ethically sophisticated and environmentally committed sportsman.

Leopold confronted the chasm in attitudes toward hunting directly and regularly in his own lifetime. The chasm would grow only deeper in the years since. No less

a figure than Rachel Carson, for example, had an outright disdain for the only Leopold, apparently, that she knew: the one of "Round River," the collection of Leopold's hunting journal entries first published in 1953.<sup>40</sup> Carson's conservation ethic, of course, was more closely aligned with Albert Schweitzer's "reverence for life" philosophy than with a Leopoldian land ethic. "Round River's" portrait of Leopold the hunter was more than she could tolerate. The same response can be found, again, in the recent *Journal of Forestry* critique, where we find the following lambaste: "Leopold preached the extension of ethics to all fellow members of the land community, and he practiced killing them until the end of his life."<sup>41</sup> Suffice it to say that this critic chose the bluntest of rhetoric to address one of the most sensitive issues in conservation and one of the most complex of human behaviors—one, it is safe to say, that Leopold pondered carefully and consciously on a daily basis for decades.

These dismissals of Leopold by selected philosophers, political activists and even conservationists again track broad trends in society. In them, we can read the impact of increased specialization and politicization in conservation. Divided into areas of special knowledge and special interest, conservation, like other fields, struggles to find coherent connections between the present and the past, the abstract and the actual, the sciences and the arts, philosophy and practice. By contrast, Leopold's written record reveals a mind at ease with complexity, open to mystery as well as to new data, and resistant to reductive tendencies in both science and politics.

He was, by all but unanimous consent of historical sources, a decent and delightful person to know and work with, an inspiration to those working in conservation, tolerant of human foibles and lacking in hidden demons. Ironically, such qualities may account for the challenge some have in "handling" Leopold. Modern readers, accustomed to irony and alienation and sensitive to political subtexts, may find Leopold's personality an increasingly difficult kind to get a hold on. In our contemporary attempts to resolve postmodern dilemmas, we may project them onto Leopold.

Several illustrations may serve to make the point. For years, a portrait of Leopold has hung on the walls of the Department of Wildlife Ecology at the University of Wisconsin in Madison. The artist chose to depict Leopold with cigarette in hand (an intermittent smoker, he however preferred his pipe to cigarettes). Graduate students—if not the genuflectors—have appreciated the humanity in that particular icon. Then there was the survey question in *Sierra* magazine. The editors asked readers to respond to the query, "Can you eat meat and consider yourself an environmentalist?" Among the responses: "Remember: Aldo Leopold ate meat, Adolph Hitler did not."<sup>42</sup> The past calls out to us . . . from the far side of the post-modern minefield.



## LEOPOLD THE ECO-FASCIST

More extreme examples of the above may be found on the far fringes. Because Aldo Leopold is a focal point for discussion of environmental ideas and strategies, he occasionally is criticized as an advocate of oppressive social and governmental actions to safeguard the environment. The reasoning is this: Leopold, in "The Land Ethic," places the good of the collective, the community, the whole, the ecosystem, above the good of the constituent parts; he, therefore, would have the whole impose its will on the constituent members of that whole. (The irony, of course, is easily lost on many such critics, i.e., that Leopold saw individual responsibility, as articulated in "The Land Ethic," as the only sure antidote to such eventualities.)

Many of these criticisms arise out of reasoned consideration of the difficult questions that Leopold's work—indeed, that conservation generally—poses. These arguments, well developed and thoughtful, appear in our academic journals and conference proceedings; so do effective counter arguments.<sup>43</sup> Not all such exchanges, however, are so rational. One of the strangest, a 1993 letter to the editor of *Iowa State Daily*, criticized the mission of Iowa State University's Leopold Center for Sustainable Agriculture. Not content to question the institution, the letter-writer attacked Leopold as "racist," stating that "He believed in the superiority of the Nordic race. He believed that population growth has to be stopped; he rejected the sanctity of life and he scorned human beings so much that he believed the population of a country could be managed like an animal reservation."<sup>44</sup> However bizarre such rantings may seem, they are not to be dismissed lightly. We read into Leopold (however undeserving) not only our hopes and concerns, but our uneasiness and our fears.

There are, no doubt, other "Leopolds" that bear consideration. As the taxonomy fills out, we can begin to identify several basic tendencies that mark much Leopold commentary and criticism. The most common, noted above, is to assume that Aldo Leopold existed only as "The Author of 'A Sand County Almanac'"; that it is unnecessary to take into account other aspects of his conservation career; that the historical and personal context of the "Almanac," however interesting, is of incidental importance. One may find this view among Leopold's devotees as well as his detractors.

A second common tendency is to divorce Leopold's publications from his practice. Leopold was a man of action as well as words, and the dynamic between these two spheres of his life may be the most significant of his many contributions. He tried to define a workable standard for conservation to follow and work toward. But he also worked toward it himself and thereby humanized it.

A third common tendency is to read only that part of Leopold with which one feels most comfortable or conversant and avoid confronting the entirety of the person, his expertise and his record. Hence, we have the critic

who attends only to one of the several disciplines Leopold worked in, or one of the professions he practiced. Evidence of this tendency can be found in many of the fields to which Leopold contributed, from wildlife ecology and agriculture to economics and philosophy.

Finally, another common tendency is to consider Leopold's work only up to a certain point in time. Hence, for example, the occasional wildlife manager will read "Game Management" and appreciate it as the profession's founding volume, while ignoring or slighting the epic progression from "Game Management" (1933) to "A Sand County Almanac" (1949). Again, evidence of this tendency is widely distributed.

Leopold, in short, has been a mirror to our environmental responses. We see in him a succession of reflections over the decades since his death. In the years immediately following World War II, awareness of widespread environmental problems increased, and our fears grew apace. Leopold offered a way of understanding the human dimensions of these problems and imagining possible solutions. He cast warnings, as did others of the time, but tempered the warnings with wonder and wry humor, humility and poetry. In one essay after another, he leavened his conservation message not only through his expressions of love for "things natural, wild, and free," but also through his understanding of the human condition and of human shortcomings (including, of course, his own).

As the environmental movement coalesced in the 1960s and early 1970s, many found inspiration in Leopold's words. Leopold recognized clearly the harsh realities of environmental degradation, but provided a positive response to those realities. In the academic and policy arenas, he showed how the sciences, literature, history and philosophy not only could be, but *had* to be, brought together to address problems and suggest solutions. He contributed to the foundations upon which new, more integrated environmental policies and programs could be built.

Into the 1970s and 1980s, Leopold's words provided guidance not only for far-reaching policy changes but, in a sense, for their complement: a well tempered understanding that conservation problems could not merely be legislated or administered away, but had to be addressed from within—within ourselves, our communities, cultures, agencies, businesses, organizations and institutions. A sense of the limits of purely technical or political solutions gained ground. Stated another way, Leopold's land ethic now was read not just as a rationale for short-term technical fixes or policy initiatives, but as a guide to necessary longer-term social and cultural changes.

Finally, it seems of late that readers are responding increasingly to the degree of personal commitment that they find in Leopold. Leopold, although profoundly aware of harsh conservation realities, avoided the mire of despair. One of his most notable character traits was his capacity to face squarely and honestly a difficult conser-



vation dilemma and address it in a constructive manner despite overwhelming odds. This trait marked his literary endeavors as well, and never more so than in completing "The Land Ethic." Despite serious health problems and other difficult personal circumstances, he found the internal resources to pull together "The Land Ethic" as he completed his collection of essays in the summer of 1947. That strength of character rests between every line of "A Sand County Almanac."

## WHITHER LEOPOLD'S LEGACY?

How will future generations respond to the Leopold legacy? What will they look for there, and what will they find? How will Leopold's work and thought reflect back upon them? Those questions are, of course, unanswerable, but we may speculate around the fringes.

The various disciplines and professions to which Leopold contributed still are struggling to gain historical self-awareness. Few foresters are taught the history of forestry. Few wildlife managers are taught the history of wildlife management. Ecologists sometimes are taught the history of ecology. Most professionals have a strong curiosity about their professional past and seek it out, but only recently have more formal opportunities to understand this past arisen. Many still find Leopold's "A Sand County Almanac" a better history text than anything they receive through their formal training. Environmental history has emerged to fill in some of these gaps, but we still lack comprehensive treatments of the development of conservation through the 19th and 20th centuries. This situation, if nothing else, will ensure that attention will continue to focus on Leopold, for the simple reason that his life provides a unique medium through which to address recurring issues, debates, developments and trends in conservation. His life story will continue to offer critical insights into not only the past, but the future.

An inescapable dilemma will need to be taken into account. As noted above, Leopold's legacy is likely to become even more important with time, even as the immediate connections to that legacy inexorably fade. Conservationists will continue to examine that legacy, but Leopold's insights cannot serve if they are regarded as inert museum specimens. Leopold's legacy, if it is to remain vital, must be able to grow and evolve, to tolerate dissent, resist dogma and welcome criticism.

Leopold's legacy already comes with built-in defenses. He was in many ways his own sharpest critic and anticipated many of the forces that might have led to the fossilization of his ideas. Many a critic will yet discover that Leopold often was there first and already had taken his own weakest points into account. Moreover, Leopold was not alone in his prescient views. He was, to borrow his words from "The Land Ethic," part of a "thinking community" that struggled to meet the conservation challenges of its day. We build upon the work, not simply of

Leopold, but of a generation whose achievements and frustrations he articulated.

Students of Leopold's work are fortunate to have the testimony of primary sources, many of whom, in the year 2000, are still with us. They have as well a generous inheritance of recorded impressions of Aldo Leopold upon which to draw. Alfred Etter, who studied with Leopold, penned in 1948 one of the more sensitive accounts. It appeared as an obituary and described a day afield with Leopold. Etter's account captured well the enduring personal qualities of Leopold. At the family's shack, wrote Etter:

"[Leopold] tried to piece together answers to the questions which Nature so often tempted him to solve. From pads of moss or patches of quack grass he learned a piece of history. From a tangle of ash logs a suggestion of some principle dawned upon him. From a broken pine a brief diagram of the balance of the forces in the environment was devised. Above all, this farm was a place where his children could learn the meaning of life and gain confidence in their ability to investigate small problems and discover things which no one knew."<sup>45</sup>

For those who consult the historic record, this understanding of Leopold's way of thinking and observing and conducting himself offers resistance to distortion. Paul Errington, another contemporary, also spoke to this, again in a 1948 obituary:

"Let no one do [Leopold] the disservice of fostering Leopoldian legends or Leopoldian dogmas. Knowing him as I have, I can say that he would not wish these to arise from his having lived. I can imagine his gentle scorn at the thought of anything like elaborate statuary in his memory, while despoliation and wastage of the land and its biota continue as usual."<sup>46</sup>

Readers returning to Leopold no doubt will continue to find their own growth reflected in his words. Not uncommonly, readers who first encountered Leopold in their idealistic youth through "A Sand County Almanac" return years later to its pages to find the earlier inspiration now enriched by more subtle wisdom. Leopold for many has become the proverbial parent who has "grown so much wiser since I was young."

A fine example of this can be found in a 1988 essay published in the North Dakota Quarterly. The author, Patrick Nunnally, recalled that he had first read "A Sand County Almanac" in the politically charged 1970s, when he was involved in wilderness protection battles in the southern Appalachians. He later moved to Iowa, where he found himself interacting more regularly with farmers. He also found himself asking what Leopold had to offer under those different circumstances. Nunnally recalls



returning to the "Almanac," only to find a broader appreciation of its value:

"[Leopold] establishes a grounding, a framework for conversation, without foreclosing much in the way of intelligent reflection and inquiry. It seems to me that I formerly used Leopold to end conversations: 'This is what Leopold says, and that is the final word.' Instead, I look to him now to keep me focused and to keep me reminded of the larger conversation and stakes of which individual land protection discussions are a part. His principles provide a steady foundation that guides my discussions with individual farmers about the possibilities for conservation tillage and that grounds abstract philosophizing about the need to overthrow the Western world view for an ecologically-just society. He still has value as a source for quotations—he writes better on

this subject than nearly anyone else who has tried, and his particular phrases ring better than any of my own. But it is more important to me now that he provides exemplary inquiry to complicated problems, with more than one viable position but only one best position. What formerly I cited as received dogma, now, I hope, I can use as wisdom of a thinker who has preceded me in the land conservation debate."<sup>47</sup>

This is the more measured and better-balanced view of Leopold that we can anticipate and work toward. Finally, five decades after Leopold's death, we may appreciate his continuing influence without having to make him over into a deity or a devil, a hero or a threat, without having to regard him as naïve, radical, old-fashioned or prophetic. This is the kind of critical attitude that pays due honor to Leopold by reflecting not merely our desires or our fears, but our growth.

## ENDNOTES

<sup>1</sup> Boris Zeide, "Another Look at Leopold's 'Land Ethic,'" *Journal of Forestry* 96,1 (January 1998), 13-19.

<sup>2</sup> J. Baird Callicott, "A Critical Examination of 'Another Look at Leopold's 'Land Ethic,'" *Journal of Forestry* 96, 1 (January 1998), 20-26. The April 1998 issue of the *Journal of Forestry* featured eight further commentaries. These articles were reprinted by the Society for American Foresters in a Forestry Forum publication, "The Land Ethic: Meeting Human Needs for the Land and Its Resources" (Bethesda, MD.: SAF, 1998).

<sup>3</sup> For a compilation of Leopold's writings, with commentary, in these diverse fields, see Curt Meine and Richard L. Knight, "The Essential Aldo Leopold: Quotations and Commentaries" (Madison, WI: University of Wisconsin Press, 1999).

<sup>4</sup> For biographical treatments of Leopold, see Susan L. Flader, "Thinking Like a Mountain: Aldo Leopold and the Evolution of an Ecological Attitude Toward Deer, Mountains, and Forests" (Columbia, MO: University of Missouri Press, 1974; reprinted by the University of Wisconsin Press, 1994); Curt Meine, "Aldo Leopold: His Life and Work" (Madison, WI: University of Wisconsin Press, 1988); Marybeth Lorbiecki, "Aldo Leopold: A Fierce Green Fire"

(Helena and Billings, MT: Falcon Publishing Co., 1996).

<sup>5</sup> Aldo Leopold, "Game Management" (New York, Charles Scribner's Sons, 1933; reprinted by the University of Wisconsin Press, 1986).

<sup>6</sup> See Dennis Ribbens, "The Making of 'A Sand County Almanac,'" pp. 91-109 in J. Baird Callicott, ed., "Companion to 'A Sand County Almanac': Interpretive & Critical Essays" (Madison, WI: University of Wisconsin Press, 1987); Curt Meine, "Moving Mountains: Aldo Leopold & 'A Sand County Almanac,'" *Wildlife Society Bulletin* 26:4 (1998), 697-706.

<sup>7</sup> Aldo Leopold, "The Thick-billed Parrot in Chihuahua," *The Condor* 39:1 (January-February 1937), 9-10; Leopold, "Marshland Elegy," *American Forests* 43:10 (October 1937), 472-474; Leopold, "Song of the Gavilan," *Journal of Wildlife Management* 4:3 (July 1940), 329-332; Leopold, "Escudilla," *American Forests* 46:12 (December 1940), 539-540. The Wisconsin Agriculturist and Farmer can be found in J. Baird Callicott and Eric T. Freyfogle, eds., "For the Health of the Land: Previously Unpublished Essays and Other Writings" (Washington, D.C. and Covelo, CA: Island Press, 1999).

<sup>8</sup> Aldo Leopold, "A Biotic View of Land," *Journal of Forestry* 37:9 (September 1939), 727-730; pp.



- 266-273 in Susan L. Flader and J. Baird Callicott, eds. "The River of the Mother of God and Other Essays by Aldo Leopold" (Madison, WI: University of Wisconsin Press, 1991).
- <sup>9</sup> Arthur Hawkins, interview with author, 4 December 1999.
- <sup>10</sup> Frances Hamerstrom, quoted in Meine, "Aldo Leopold: His Life and Work," 378. The most extensive first-person account of Aldo Leopold's activities and interests during his later Wisconsin years is Robert E. McCabe, "Aldo Leopold: The Professor" (Madison, WI: Rusty Rock Press, 1987).
- <sup>11</sup> H. Albert Hochbaum, quoted in Meine, "Aldo Leopold: His Life and Work," 456-457.
- <sup>12</sup> H. Albert Hochbaum, quoted in Meine, "Aldo Leopold: His Life and Work," 511.
- <sup>13</sup> Aldo Leopold, "A Sand County Almanac and Sketches Here and There" (New York: Oxford University Press, 1949), 129-133.
- <sup>14</sup> Aldo Leopold, "Adventures of a Conservation Commissioner," pp. 149-154 in Flader and Callicott.
- <sup>15</sup> Aldo Leopold, "Round River: From the Journals of Aldo Leopold" (New York: Oxford University Press, 1953), 165.
- <sup>16</sup> Leopold, "On a Monument to the Passenger Pigeon," pp. 3-5 in *Silent Wings* (Madison, WI: Wisconsin Society for Ornithology, 11 May 1947).
- <sup>17</sup> August Derleth, "Of Aldo Leopold," *Capital Times* (WI), 5 November 1949.
- <sup>18</sup> Lewis Gannett, "Books and Things," *New York Herald Tribune*, 27 October 1949.
- <sup>19</sup> Leopold, "A Sand County Almanac," 221.
- <sup>20</sup> Curt Meine, "The Oldest Task in Human History," pp. 7-35 in Richard L. Knight and Sarah F. Bates, eds., "A New Century for Natural Resources Management" (Washington, D.C. and Covelo, CA: Island Press, 1995). Leopold's reference to the Alhambra may be found in "A Sand County Almanac," 225.
- <sup>21</sup> Curt Meine, "Conservation Biology and Sustainable Societies: A Historical Perspective," pp. 35-61 in Max Oelschlaeger, ed., "After Earth Day: Continuing the Conservation Effort" (Denton, TX: University of North Texas Press, 1992).
- <sup>22</sup> See Richard L. Knight and Peter B. Landres, "Stewardship Across Boundaries" (Washington, D.C. and Covelo, CA: Island Press, 1998); Eric T. Freyfogle, "Bounded People, Boundless Lands: Envisioning a New Land Ethic" (Washington, D.C. and Covelo, CA: Island Press, 1998).
- <sup>23</sup> Leopold, "A Sand County Almanac," 210.
- <sup>24</sup> See Daniel Kemmis, "Community and the Politics of Place" (Norman, OK: University of Oklahoma Press, 1990); Wes Jackson, "Becoming Native to This Place" (Lexington, KY: University of Kentucky Press, 1994); Ted Bernard and Jora Young, "The Ecology of Hope: Communities Collaborate for Sustainability" (Gabriola Island, BC and East Haven, CT: New Society Publishers, 1997); William Vitek and Wes Jackson, eds., "Rooted in the Land: Essays on Community and Place" (New Haven and London: Yale University Press, 1996).
- <sup>25</sup> Roberts Mann, "Aldo Leopold: Priest and Prophet," *American Forests* 74, 2 (February 1954), 23, 42-43.
- <sup>26</sup> Ernest Swift, "Aldo Leopold: Wisconsin's Conservation Prophet," *Wisconsin Tales and Trails* 2,3 (Fall 1961), 2-5.
- <sup>27</sup> Roderick Nash, "Wilderness and the American Mind," 3<sup>rd</sup> ed. (New Haven and London: Yale University Press, 1982; original edition 1967), 182-199.
- <sup>28</sup> Wallace Stegner, "Living on Our Principal," *Wilderness* 48, 168 (Spring 1985), 5-21. Reprinted as "The Legacy of Aldo Leopold," pp. 233-245 in Callicott, "Companion to A Sand County Almanac."
- <sup>29</sup> "Making Forestlands Serve America Better Through Good Management," *Saturday Evening Post*, 18 February 1956.
- <sup>30</sup> Leopold, "A Sand County Almanac," 200.
- <sup>31</sup> In the extensive literature of deep ecology, see, for example: Bill Devall and George Sessions, "Deep Ecology: Living as if Nature Mattered" (Salt Lake City, UT: Peregrine Smith Books,



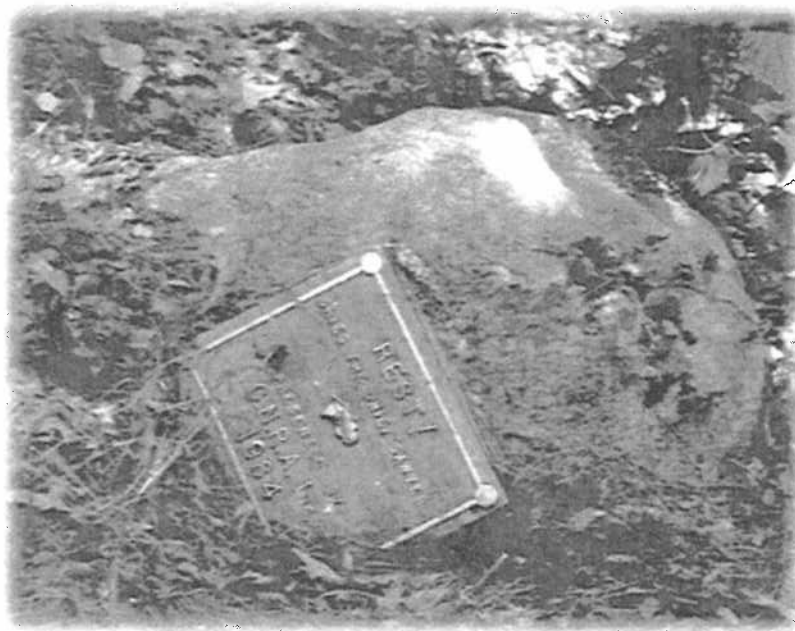
- 1985); Dave Foreman, "Confessions of an Eco-warrior" (New York: Harmony Books, 1991); and Max Oelschlaeger, "The Idea of Wilderness: From Prehistory to the Age of Ecology" (New Haven and London: Yale University Press, 1991). See also Susan Zakin, "Coyotes and Town Dogs: Earth First! and the Environmental Movement" (New York: Viking Press, 1993).
- <sup>32</sup> Letters to the editor in the *Journal of Forestry* 88,2 (February 1990), 4; and *Journal of Forestry* 89,9 (September 1991), 5.
- <sup>33</sup> J. Baird Callicott, "The Conceptual Foundations of the Land Ethic," pp. 75-99 in "In Defense of the Land Ethic: Essays in Environmental Philosophy" (Albany, NY: State University of New York Press, 1989); Michael Nelson, "Leopold, Land, and Leopards: Aldo Leopold's Contribution to Philosophy," *Transactions of the Wisconsin Academy of Sciences, Arts and Letters*, in prep.
- <sup>34</sup> Quoted in Callicott, "In Defense of the Land Ethic," 75-76, 279 n. 4.
- <sup>35</sup> See, for example, Robert Paehlke, "Environmentalism and the Future of Progressive Politics" (New Haven and London: Yale University Press, 1989); C. Brant Short, "Ronald Reagan and the Public Lands: America's Conservation Debate, 1979-1984" (College Station, TX: Texas A&M Press, 1989); Bryan G. Norton, "Toward Unity Among Environmentalists" (New York: Oxford University Press, 1991); and H. Lewis Ulman, "Thinking Like a Mountain: Persona, Ethos, and Judgment in American Nature Writing," pp. 46-81 in Carl G. Herndl and Stuart C. Brown, eds., "Green Culture: Environmental Rhetoric in Contemporary America" (Madison, WI: University of Wisconsin Press, 1996).
- <sup>36</sup> Norris Yates, "The Inadequate Politics of Aldo Leopold," pp. 219-221 in *Proceedings of the Fifth Midwest Prairie Conference* (Ames, IA: Iowa State University, 1978).
- <sup>37</sup> At the time, I was a busy graduate student, and had no time to take on the article. As I remember, my response at the time was: "I'll tell you what. I'll write the article, and if you can get *The Progressive* to publish it simultaneously, I'll do it." Nothing came of the suggestion.
- <sup>38</sup> Susan Flader, "Aldo Leopold and Environmental Citizenship," *Transactions of the Wisconsin Academy of Sciences, Arts and Letters* v. 87 (1999), 23-35.
- <sup>39</sup> Flader and Callicott, 215.
- <sup>40</sup> Meine, "Aldo Leopold: His Life and Work," 525.
- <sup>41</sup> Zeide, "Another Look at Leopold's 'Land Ethic.'"
- <sup>42</sup> "Can You Eat Meat and Consider Yourself an Environmentalist?" *Sierra* 76, 6 (November/December 1991), 122.
- <sup>43</sup> J. Baird Callicott, "The Conceptual Foundations of the Land Ethic"; Michael Nelson, "Holists and Fascists and Paper Tigers... Oh My!," *Ethics and the Environment* 1(2):103-117.
- <sup>44</sup> Francis Lepine, "Shut Down Leopold," *Iowa State Daily*, 26 February 1993.
- <sup>45</sup> Alfred G. Etter, "A Day with Aldo Leopold," *The Land* 7,3 (Fall 1948); reprinted, pp. 384-389 in Nancy P. Pittman, ed., "From The Land" (Washington, D.C. and Covelo, CA: Island Press, 1988).
- <sup>46</sup> Paul Errington, "In Appreciation of Aldo Leopold," *Journal of Wildlife Management* 12,4 (October 1948), 341-350.
- <sup>47</sup> Patrick Nunnally, "A Mind at Work: Aldo Leopold's 'A Sand County Almanac,'" *North Dakota Quarterly* 56, 3 (Summer 1988), 79-86.



# The Land Ethic

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PHILOSOPHICAL UNDERPINNINGS



# Aldo Leopold and Environmental Citizenship

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In the outpouring of books and articles in recent years on the meaning of citizenship, many lamenting the weakening of civic bonds in America, there has been scant attention paid to the role of citizenship with respect to the environment.<sup>1</sup> Even among environmentalists, who realize that citizen action has been a hallmark of the "new environmental movement" from the time of the first Earth Day (1970), there is little appreciation of the extent to which our citizenry has played a vital role in shaping American environmental policy ever since the nation's origin.<sup>2</sup>

As we seek the historical roots of our quest for environmental quality and the means for sustaining it, it is worth pondering the roles and responsibilities of citizens and the relationship between the citizenry and the state—in short, how American democracy works. In this exploration, we may seek insights from Aldo Leopold, who was profoundly conscious of the American democratic tradition within which he was working and who thought hard throughout his career about the meanings and implications of environmental citizenship.

I am acutely conscious of addressing an audience comprised mostly of public land managers, who probably identify most strongly with their roles as professionals, about the meanings of citizenship. Many public land managers have had their professional judgments challenged by citizen activists from right, left or center, with their own ideas about land management and environmental ethics. But professionals are citizens, too. No one knew this better than Aldo Leopold, or better appreciated the extent to which some reflection on the meanings of citizenship may be a healthy antidote for an excess of professionalism. Let us look, then, at the American tradition of citizenship.

In the United States, we have had a tradition of a limited or weak state. It may not seem that way today when people complain of a bloated federal bureaucracy, but relative to the strong central states in the democracies of Western Europe and certainly to authoritarian regimes, our government is decidedly limited, and our citizens always have had a healthy skepticism about most everything that government tries to do. In this weak state, we traditionally have had rather low legal expectations of our citizens. Citizens are expected to obey the law and pay taxes; even voting is optional. Yet, we have had in America a concomitantly vibrant tradition of voluntary citizen action.

The foremost interpreter of the era of the American Revolution, Gordon Wood, has termed the phenomenon of revolutionary citizen action "the people out of doors." He likely was not thinking environmentally, but rather portraying "people out of doors"<sup>3</sup> as citizens acting voluntarily outside of the formal channels of government to shape the kind of community they wanted. When we look back at the controversies of the era, however, we see citizens acting often on environmental issues. Local groups organized, with some success, to prevent new dams from blocking the passage of salmon upstream, for example, seeking to protect their community's customary right to fish against interference by new industrial mills.<sup>4</sup>

When we think of the origins of the nation, we tend to think of citizens struggling for liberty, for the right of the individual to pursue his own self-interest. This is a concept of American history that became cemented in our imaginations especially during the Cold War, when we were fighting the menace of international communism and trying to picture America as everything that the Soviet Union was not. Yet, historians returning to the original documents of the revolutionary era several decades ago began to see some ideas that were startling at first, because they were so at odds with the usual interpretation. What they found were people who thought of

themselves as citizens of a republic in which the greatest virtue was civic consciousness, a willingness to subordinate one's own self-interest to the good of the community. "Civic virtue," they called it, or "civic republicanism," referring to the participatory civic values of a republic similar to ancient Athens.<sup>5</sup> We tend to celebrate America as a country grounded in individual rights, such as the freedoms of speech and of the press and of assembly enshrined in the first article of the Bill of Rights. But a case can be made that these rights pertain to communities as well as to individuals; they protect the opportunity for ordinary citizens to organize and communicate with each other outside of the formal channels of government to shape the environment of their communities or the policies of their governments.<sup>6</sup>

The complex of republican values so pervasive in revolutionary America was largely overwhelmed, scholars agree, by democratic egalitarianism, liberal individualism and capitalist development in the early 19th century, ushering in the liberal democratic state we celebrate today. But the tradition of civic organizing has persisted in American history. It has not been mandated by law; it has been voluntary. The tendency of Americans to form voluntary groups—"associations," Alexis de Tocqueville called them<sup>7</sup>—could be used to sustain traditional community values; it could also be used to protect economic self-interest. This tradition of citizen action, especially in its "civic republican" strain, is the tradition out of which much of our American conservation movement grew. It also may be the tradition from which several strands of what we may think of today as anti-environmentalism emerged—groups devoted to "wise use," property rights and county supremacy.<sup>8</sup> Citizens organize for a variety of purposes.

It must be noted that not everyone regards voluntary citizen action as key to the shaping of society or environmental policy. Many would argue that ours is a *representative* democracy, and that the shaping and administration of policy is the responsibility of elected representatives and executive agencies. Indeed, much of the administrative capacity of the modern American state was developed in the Progressive Era at the turn of the 20th century, in large part in response to environmental concerns. The USDA Forest Service, in which Aldo Leopold began his career, has been regarded by scholars as the quintessential example of a progressive agency.<sup>9</sup> The National Park Service was cast in the same mold. Gifford Pinchot, the first chief of the Forest Service, sought to place technically trained experts—professional foresters such as Leopold—in government, and let them establish specific policies and manage the resources. This was a model of governance that elevated the values of order, efficiency and control, values that may be quite incompatible with democratic participation. Pinchot once said, "The first duty of the human race is to control the earth it lives upon," and I think Leopold himself once may have

believed that.<sup>10</sup> From the perspective of a later day, however, we may note that the progressive model, in elevating the virtues of professionalism and technical expertise, tended to crowd out the citizenry and also their elected representatives, the politicians.

Inasmuch as Aldo Leopold began his career as a professional in the employ of the modern administrative state and is today regarded as something of a prophet of the new environmental consciousness, which elevates the responsibilities of citizenship, we may look to him for insights into the meanings of environmental citizenship—into the role of citizens in the modern state, the tension between the rights of individuals and the claims of the community, and the tension also between professional resource managers and citizen activists. We look first at what Leopold had to say about citizenship in "A Sand County Almanac," the slender volume of nature sketches and philosophical essays that represents the distillation of his mature thought, and then explore the evolution of his thinking during the course of his career.

As we page through "A Sand County Almanac," we meet our first citizen in the very first essay, "January Thaw": "The mouse is a sober citizen who knows that grass grows in order that mice may store it as underground haystacks, and that snow falls in order that mice may build subways from stack to stack: supply, demand, and transport all neatly organized."<sup>11</sup> The mouse is what kind of citizen?—an ordinary citizen who goes about his own business and pursues his own interests. We have many such in our communities.

Skipping perhaps a few citizens, we come to "Pines Above the Snow." "Each species of pine," Leopold tells us, "has its own constitution, which prescribes a term of office for needles appropriate to its way of life." He continues with his analogy between human constitutions and the regimen of various pine trees, the white pine retaining its needles for a year and a half, red and jackpines for two and a half years. "Incoming needles take office in June, and outgoing needles write farewell addresses in October."<sup>12</sup> These pines are going about their own business, but they also are meeting the legal requirements of citizenship, acting according to their constitutions, even taking office in a perfunctory way.

Next, we meet the thick-billed parrots of Chihuahua, who "wheel and spiral, loudly debating with each other the question ... whether this new day which creeps slowly over the canyons is bluer and goldier than its predecessors, or less so."<sup>13</sup> They are debating the criteria of the good life, which in Aristotelian thought is an activity of citizenship more fundamental even than that of developing legal constitutions. The vote being a draw, Leopold observes, they head to the high mesas for breakfast.

In "Clandeboyne," the great prairie marsh of Manitoba, we find the grebe, a species of ancient evolutionary lineage impelled, Leopold believes, by "pride of



continuity." His is the call that dominates and unifies the marshland chorus, "Perhaps, by some immemorial authority, he wields the baton for the whole biota."<sup>14</sup> Here is the grebe as ethical citizen, as a leader directing the chorus of the marsh for the long-term betterment of the whole community.

Not until the more philosophical essays in the last section of the book do we meet *human* citizens. In "Conservation Esthetic," Leopold discusses the various components of the recreational process, beginning with the most basic motivation of trophy seeking, common to hunters with both shotgun and field glass as well as to most conservationists and even professionals. He goes on to discuss other more highly evolved components of the recreational process, such as a feeling of isolation in nature or the perception of natural processes, and then reaches what to him is the ultimate component, a sense of husbandry. This component, he tells us, "is unknown to the outdoorsman who works for conservation with his vote rather than with his hands. It is realized only when some art of management is applied to land by some person of perception. That is to say, its enjoyment is reserved for landholders too poor to buy their sport, and land administrators with a sharp eye and an ecological mind." So, to Leopold, husbandry is the highest form of citizenship—actually working with one's hands, participating actively to build or maintain the land community. Yet the government, in substituting public for private management of recreational lands, he observes, "is unwittingly giving away to its field officers a large share of what it seeks to offer its citizens. We foresters and game managers might logically pay for, instead of being paid for, our job as husbandmen of wild crops."<sup>15</sup>

Leopold expresses his concept of environmental citizenship most memorably in "The Land Ethic": "In short, a land ethic changes the role of *Homo sapiens* from conqueror of the land-community to plain member and citizen of it. It implies respect for his fellow-members, and also respect for the community as such."<sup>16</sup> Here, Leopold offers us a concept of citizenship in a community larger even than humankind; we are plain members and citizens of a community that embraces the land and all the plants and animals that are a part of it. The usual formula for conservation—"Obey the law, vote right, join some organizations, and practice what conservation is profitable on your own land; the government will do the rest,"—he tells us is too easy. "It defines no right and wrong, assigns no obligation."<sup>17</sup> Leopold's formula implies personal responsibility to participate actively as an ordinary citizen in maintaining or restoring the health of the biotic community.

This review of "A Sand County Almanac" suggests that Leopold's mature concept of environmental citizenship, with its emphasis on obligation to the community, is similar in some respects to the concept of civic virtue in the republican ideology of the American Revolution,

though he conceives the community much more broadly. One would not necessarily expect to find these ideas early in his career, when he was working for the U.S. Forest Service, modeled on a different conception of the relationship between citizens and the state.

Throughout his career, Aldo Leopold was a consummate professional, extremely efficiency-oriented during his years in the Forest Service and fascinated by the intricacies of administrative procedures and standards.<sup>18</sup> And yet, we get a sense from one of his earliest publications that he was not wholly satisfied with the Forest Service model of governmental administration. Shortly after he had become supervisor of the Carson National Forest in New Mexico at age 25, he was stricken with an illness that nearly led to his death and required more than a year of recuperation. During this time, he addressed a letter "to the forest officers of the Carson" reflecting on their responsibilities. The problem that concerned him was how to measure success in forest administration. Was success simply a matter of efficiently following prescribed policies and procedures, or was there something else? "My measure," Leopold wrote, "is *the effect on the forest*." Even at the start of his career he was concerned about the *ends* of administration, what was happening to the land, not only the procedures or *means*.<sup>19</sup>

It was a preoccupation he would continue to pursue into the early 1920s, when he was chief of operations in charge of roads, trails, fire control, personnel and finance on 20 million acres of national forests in the Southwest. In order to improve the efficiency of administration while focussing attention on "the effect on the forest," he developed an intricate system of tally sheets for a new system of forest inspection that would enable foresters to diagnose local problems and monitor the effectiveness of management solutions. Leopold regarded this elaborate system of inspection as one of his points of greatest pride during his career in the Southwest. Indeed, his lifelong fascination with tracking the dynamics of change and the efficacy of management for the total biotic system, begun during his inspection forays in the Southwest, would lead him to be acknowledged in our day as the exemplar of the new philosophy of ecosystem management recently adopted by the Forest Service, Park Service and other land management agencies.<sup>20</sup>

Clearly, Leopold was enlarging the responsibilities of professional land managers by extending the boundaries of the community of concern to include the entire biota—soils, waters, plants and animals—as well as trees and scenery and the interests of the people who used them. But there was scant room for ordinary citizens in Leopold's model of public land management. Though he recognized the difficulty of determining the *objectives* of management—a problem that bedevils ecosystem management today—he concluded that these decisions should be made by "only the highest authority."<sup>21</sup> Yet, the



essay in which he dealt most directly with what he called "standards of conservation" tails off in mid-sentence and remained unpublished, suggesting that Leopold may have realized he was caught in an unresolved problem of authority: who decides the objectives and on what basis? A kind of "super-inspector" would crop up in his writing from time to time over the years, but I am not sure he was ever really comfortable with this type of authority.<sup>22</sup>

Despite Leopold's commitment to professional expertise in resource management, he saw roles for citizens in related endeavors. Indeed, when his illness prevented him from resuming his post as a forest supervisor, he began developing a new line of activity in the Forest Service, game management, and in conjunction with this he traveled all across Arizona and New Mexico organizing game protective associations—citizen conservation organizations—in local communities and statewide. These associations of sportsmen, ranchers and townspeople would work for non-political game wardens, predator control and refuges. They were grassroots citizen-action groups in a longstanding American tradition.

Leopold addressed the subject of citizenship in a number of lectures early in his career, including one on "Home Gardens and Citizenship" to students at the University of New Mexico in 1917, just after the American entry into World War I. A home garden, he said, was one mark of a useful citizen. Nobility is won by soiling your hands with useful labor, by building something. Leopold was always one for building something. If your job doesn't allow enough play for creativity, he told the students, you can be creative by working the ground, whereupon he went into a soliloquy about how to raise spectacular tomatoes in your Albuquerque backyard. In a world threatened with food shortage, what right have we to hold idle some of the best agricultural lands in our backyards, he asked. Better to turn them into gardens and learn to be good citizens.<sup>23</sup>

A year later, he spoke to the women's club on "The Civic Life of Albuquerque." Having left the Forest Service to become secretary of the Albuquerque Chamber of Commerce, Leopold was now asking "What has the 20th-century American city contributed to human progress?" His answer was public spirit. He defined it as "year-round patriotism in action; ... intelligent unselfishness in practice." He tried to trace the idea historically, contrasting Confucius, whom he saw as more interested in personal virtues and family ties than in obligations to others, with Socrates, who knew that citizens had a moral obligation to support and improve their government. But then he lost the thread, explaining that "it would require a better scholar than I am to even attempt to trace the idea of public spirit through the era of individualism and the political revolutions of the 18th and 19th centuries."<sup>24</sup>

From this we realize that the concept of civic virtue, the republican ideology of the American Revolution, had

been lost to consciousness by 1918. Leopold was assuming a revolutionary America dedicated to individualism; he had lost the thread of public spirit, though he sensed it must have been there somewhere. In fact, historians would not rediscover it until the late 1960s, 20 years after his death. He went on to define the "modern idea"—modern as of 1918—of public spirit: "It means that a democratic community and its citizens have certain reciprocal rights and obligations." Not only rights, but obligations as well. "The man who cheerfully and habitually tries to meet this responsibility," he says, "we call public-spirited."

Leopold went on to offer a critical assessment of the public spirit of Albuquerque, confiding his dream that his own Chamber of Commerce might serve as the "common center" to organize the "democratic welter" of professional societies, women's groups, religious, political, labor and other voluntary associations of citizens toward accomplishment of common goals for the betterment of Albuquerque. He also admitted to some frustration—businessmen unwilling to welcome representation in the chamber by labor and craft organizations, for example.

After little more than a year, Leopold left the Chamber of Commerce to rejoin the Forest Service. A few years later, still feeling the effects of his experience in the chamber, he delivered a scathing "Criticism of the Booster Spirit" to an Albuquerque civic society in which he excoriated "the philosophy of boost." Boost was premised on growth by unearned increment rather than investment in basic resources, he charged, using as an example the recent demand for a national park for New Mexico by boosters concerned solely with attracting tourists.<sup>25</sup> In his quest for fundamental improvement in the resource base, he began looking to enforced responsibility of landowners. In "Pioneers and Gullies," for example, he described numerous valleys of the Southwest torn out by erosion, and he predicted, for the first time in print, that one day proper land use would be a responsibility of citizens: "The day will come when the ownership of land will carry with it the obligation to so use and protect it with respect to erosion that it is not a menace to other landowners and the public."<sup>26</sup>

Leopold left the Southwest in 1924 to accept a job in Madison, Wisconsin, as director of the Forest Products Laboratory. Though the laboratory's focus on industrial products after the tree was cut proved ultimately frustrating for one so committed to the growing forest and he would leave after only four years, he did manage to extract from the experience a lesson for citizens. In an article, "The Home Builder Conserves," he admonished people, before they castigated the "wasteful lumberman," to think about how their own arbitrary demands as consumers and home builders cause waste. The thinking citizen has power not only in his vote but in his daily thoughts and actions, and especially in his habits as a buyer and user of wood. "Good citizenship is the only effective patriotism,"



he concluded, "and patriotism requires less and less of making the eagle scream, but more and more of making him think." This theme of the responsibility of the citizen as intelligent consumer is one Leopold would return to from time to time, most notably during World War II in "Land Use and Democracy."<sup>27</sup>

Shortly after his move to Wisconsin, Leopold became involved with the state chapter of the Izaak Walton League of America, which was the most vibrant citizen conservation organization in the 1920s. He worked with the league to promote a nonpartisan conservation commission and a forestry policy for Wisconsin. Still hewing to his professional orientation as a forester, however, he warned members to eschew the tendency to actually *write* policy: "It is a pretty safe rule to remember that while groups of men can insist on and criticize plans, only individuals can create them."<sup>28</sup> Leopold himself was a professional writer of policies, as he demonstrated both in the Forest Service and after he left in 1928 to conduct game surveys and recommend conservation policies in the midwestern states, when he drafted an "American Game Policy" adopted by the American Game Conference in 1930, and when he helped write a "Twenty-Five Year Conservation Plan" for his home state of Iowa in 1931.

Leopold was tremendously impressed by the citizen commitment to conservation in Iowa, and genuinely proud of the plan for integration of all aspects of conservation—parks, forests, wildlife, fish, water quality, soil conservation—that the team of nationally recognized experts wrote. Iowa was clearly a leader among the states in conservation thought and practice in these years. But buried in Leopold's correspondence are intimations of foreboding. He warned his colleagues in Iowa that they needed to make a special effort to educate the public about what was in the plan, lest people buy into it without personally engaging with it. He was concerned especially about the protection-minded women so active in the parks movement who might become upset if they were suddenly to discover that the plan aimed to produce game to shoot. "There is grave danger," he said, "that the conservationists will blow it up before they even understand what it is."<sup>29</sup>

In 1933, shortly after he accepted a newly created chair of game management at the University of Wisconsin, Leopold proposed to the dean of agriculture the development of a conservation plan for Wisconsin farms similar to the Iowa plan. The purpose, as in Iowa, would be to get all the government agencies working together to encourage farmers and other landowners to care for their lands in a more conservative way—or, as he put it, to "integrate economic with esthetic land use." But the means would differ. In Iowa, the plan was produced by imported experts who did not participate in its execution, an arrangement that clearly left Leopold uneasy, whereas in Wisconsin he proposed to *evolve* a plan "rather than to *write* one out-of-hand."<sup>30</sup>

Leopold's emphasis on evolving a plan from the grassroots was prophetic not only of the emerging emphasis on public involvement in resource planning in our own day but of the situation in Iowa at the time. By 1935, the Iowa conservation plan disintegrated, at least in Leopold's view. After Iowa merged all relevant agencies into a single department, as recommended in the 25-year plan, the new Iowa Conservation Commission bypassed the man whom to Leopold was the obvious director, and most of Leopold's friends in fish and game resigned or were fired. The issue apparently had to do with the Iowa commission's insistence on an immediate showing of quick results by government through public works rather than, as Leopold and his colleagues preferred, a long-term emphasis on building a new conservation consciousness in the citizenry, especially among landowners.<sup>31</sup>

In the wake of the Iowa debacle, Leopold commented to a friend that the only state conservation effort to survive was in Michigan, "strangely enough, by a process of internal disharmony. I am tempted to draw the conclusion that complete unanimity within a state [such as in Iowa] is a symptom of approaching dissolution."<sup>32</sup> In other correspondence and articles in the 1930s, he addressed the problem of factions within the conservation community, especially the shotgunners versus the field glass hunters, arguing for tolerance, a capacity for self criticism, and an institutional structure within which factions could argue out their conflicts. "It is a question of applying the democratic process to conservation," he concluded.<sup>33</sup>

Leopold's thoughts on democracy and conservation were further stimulated by travel in Germany in 1935, where he observed an elaborate system of law, public administration, ethics and customs that was "incredibly complete and internally harmonious." Though he could observe no real distinction between the government, acting hierarchically from the top down, and popular acceptance from below, he recognized that the German system, with its strong central governmental authority, was "manifestly a surrender of individualism to the community."<sup>34</sup> While he could admire it in Germany (before he understood the connection with the Nazi movement), he knew that it wouldn't work in America.

Leopold addressed the tension between the claims of the community and the rights of the individual in America in a number of essays in the 1930s in which he dealt with the role of government. He often asked: how can we get conservation? His answer was we can legislate it, buy it or build it. Government's initial efforts at conservation had been through laws prohibiting hunting, fishing or cutting, a first step but inadequate. The second step, augmented by the open money bags of the New Deal, was to buy land for conservation, but that could be carried only "as far as the tax-string on our leg will reach." The solution had to be found on private land.<sup>35</sup>





By the time he wrote "Land Pathology" under the menacing clouds of the Dust Bowl in 1935, Leopold saw only two possible forces that could effect change in private land use. One was the development of institutional mechanisms for protecting the public interest in private land—a quest he had been on for more than a decade, especially after his new chair of game management was lodged in the University of Wisconsin's famed Department of Agricultural Economics with its institutional bent. The other was his new preoccupation with "the revival of land esthetics in rural culture." Out of these forces he hoped might eventually emerge what he was even then beginning to term a "land ethic."<sup>36</sup> After his friend and fellow conservationist Jay "Ding" Darling cautioned him that his search for institutional controls could lead to socialization of property,<sup>37</sup> Leopold seemed increasingly to emphasize development of a personal sense of obligation to the land community, a sense of husbandry.

During the 1930s, Leopold searched for and experimented with various forms of citizen organization to encourage the practice of husbandry on private lands. One venture, the Coon Valley Erosion Project near LaCrosse, Wisconsin, involved cooperation of local landowners with government agencies in a pathbreaking demonstration of erosion control and integrated land use on a watershed scale. Other efforts functioned entirely outside the formal channels of government, including farmer/sportsman cooperatives he was instrumental in establishing at Riley and Faville Grove, Wisconsin, to encourage conservation of wildlife habitat and landscape beauty. He described these experiments in community conservation as *vertical* rather than horizontal planning, focusing a battery of minds simultaneously on one spot. "It may take a long time to cover the country spot by spot," he admitted, "but that is preferable to a smear."<sup>38</sup> He even proposed public/private cooperation in the inventorying and planning for conservation of threatened species, with local conservationists or associations entrusted with custodianship of particular remnants.<sup>39</sup>

As war clouds darkened the horizon and called into question his earlier admiration for Germany's tightly regimented system of resource administration, Leopold lectured to his wildlife ecology students about "Ecology and Politics," presenting the case for an evolutionary mandate for individualism. Individual deviations from societal norms in land management, like individual evolutionary variations, he suggested, might enable certain individuals to survive catastrophe even when most members of a species were eliminated.<sup>40</sup> This was an individualism not of economic self-interest but of creative experimentation, in the sense of solutions generated from the bottom up by individual citizens or communities rather than mandated by government on all alike. It was in this spirit that Leopold looked to the evolution of a land ethic.

American entry into World War II further defined the issue. "We must prove that democracy can use its land decently," Leopold argued in a seminal essay, "Land Use and Democracy." Here he called for conservation from the bottom up instead of from the top down. Vicarious conservation through government simply could not do the job alone, as he illustrated through the inability of national parks and other sanctuaries to protect wildlife: "It seems to me that sanctuaries are akin to monasticism in the dark ages. The world was so wicked it was better to have islands of decency than none at all. Hence decent citizens retired to monasteries and convents. Once established, these islands became an alibi for lack of private reform." True conservation had to begin with "that combination of solicitude, foresight, and skill which we call husbandry," practiced by landowners on their own land. But non-landowning citizens had responsibilities in their roles as consumers as well. They could refuse to buy "exploitation milk" from cows pastured on steep slopes and insist on "honest boards" from properly managed forests. There was an indispensable role for government as "tester of fact vs. fiction" or guardian of standards, Leopold acknowledged, but farmers could scrutinize their own practices through courageous use of their self-governing Soil Conservation Districts, and there were opportunities also for self-scrutiny by industrial or citizen groups.<sup>41</sup> More than half a century later, the Forest Stewardship Council's independent third-party certification of forest products and other examples of the movement for green production and consumption standards would attest to the validity of Leopold's visionary argument.

Aldo Leopold's ideas about the roles of government and citizens in the shaping of environmental policy were tested in the last decade of his life as never before by his involvement in the traumatic deer debates of the 1940s in Wisconsin. After being nearly hunted to extirpation in the early decades of the century, the state's deer herd had increased to such an extent that by the early 1940s it needed to be reduced for the good of both deer and forest, and Leopold sought to work with the Conservation Department to build a case for an any-deer season, for killing does as well as bucks. The call for reduction stirred disbelief and resentment among both hunters and the general public, to whom conservation of deer was a good thing. In response, the Conservation Commission organized a Citizens' Deer Committee, appointing Aldo Leopold as chairman.<sup>42</sup>

Leopold's committee had a cross-section of citizens, mostly from northern Wisconsin, most of them distrustful of the policy he was urging on the department. For the first meeting he prepared maps and charts to provide a historical review of deer irruptions nationwide. But he was upstaged by another member of the committee, Joyce Larkin, editor of the Vilas County News Review. She didn't think there were too many deer, and she arrived at the meeting armed with a printed booklet of history and local opinion about the deer situation in Vilas County. We





don't know how Leopold reacted to Larkin that day, but we do know that he decided to take the committee and several newspaper reporters on a three-day tour of deer yards, to let them discuss what they were actually seeing on the ground. Joyce Larkin, among others, was impressed. She went back to Vilas, got the county board to accept Leopold's challenge to bring clashing interests together to look at the problems locally, and came to a subsequent meeting of the committee with a new report in favor of an any-deer season.<sup>43</sup>

However successful Leopold proved at changing attitudes among the members of his Citizens' Deer Committee by letting them argue out their views with respect to conditions in particular locales, the deer problem proved too widespread and public attitudes too entrenched for him to make much headway in the state as a whole. A new newspaper, *Save Wisconsin's Deer*, ridiculed and castigated him in virtually every issue and offered fuel to those who opposed his reasoning. Yet he never gave up on his effort to educate the citizenry, individually and collectively. It is likely that the unrelenting stress of dealing with the deer issue in the public arena during the 1940s helped send Leopold to an early grave.

Still, he had been appointed to a six-year term on the Wisconsin Conservation Commission and he believed it was his responsibility as a citizen to serve.<sup>44</sup>

During those years, he took solace in the exercise of another type of citizenship that he had advocated since the days of his backyard garden in Albuquerque: he practiced husbandry as plain member and citizen of the land community at the sand farm his family called the Shack. He expressed this form of citizenship—citizenship as creative individualism—perhaps most poignantly in his essay, "Axe-in-Hand," which includes a definition of a conservationist that could as easily be read as his definition of a citizen:

"I have read many definitions of what is a conservationist [citizen], and written not a few myself, but I suspect that the best one is written not with a pen, but with an axe. It is a matter of what a man thinks about while chopping, or while deciding what to chop. A conservationist [citizen] is one who is humbly aware that with each stroke he is writing his signature on the face of his land. Signatures of course differ, whether written with axe or pen, and this is as it should be."<sup>45</sup>

## ENDNOTES

<sup>1</sup> See "A Nation of Spectators: How Civic Disengagement Weakens America and What We Can Do About It" (Final Report of the National Commission on Civic Renewal, 1998); and Robert D. Putnam, "Bowling Alone: America's Declining Social Capital," *Journal of Democracy* 6:1 (January 1995), 65-78. Much of the recent attention to citizenship in the United States has been stimulated by scholarly writing concerning the forging of civil society in new democracies around the world, especially since the fall of the Iron Curtain. See, for example, Andrew Arato, "Interpreting 1989," *Social Research* 60:3 (Fall 1993), 609-46; Michael Bernhard, "Civil Society after the First Transition: Dilemmas of Post-Communist Democratization in Poland and Beyond," *Communist and Post-Communist Studies* 29 (1996): 309-30; Shu-Yun Ma, "The Chinese Discourse on Civil Society," *The China Quarterly* 137 (1994); James Bohman, "Complexity, Pluralism, and the Constitutional State: On Habermas's *Faktizität und Geltung*," *Law & Society Review*, 28:4 (1994), 897-930; and Nancy Fraser, "Rethinking the Public Sphere: A Contribution to the Critique of Actually Existing Democracy," in "Justice Interruptus: Critical Reflections on the 'Postsocialist' Condition" (New York: Routledge, 1997), 69-98.

<sup>2</sup> Susan L. Flader, "Citizenry and the State in the Shaping of Environmental Policy," *Environmental Review* 3:1 (January 1998), 8-24.

<sup>3</sup> Gordon S. Wood, "The Creation of the American Republic," 1776-1787 (New York: W.W. Norton and Co., 1972), 319-28.

<sup>4</sup> See, for example, Gary Kulik, "Dams, Fish, and Farmers: Defence of Public Rights in Eighteenth-Century Rhode Island," in "The Countryside in the Age of Capitalist Transformation," ed. Steven Hahn and Jonathan Prude (Chapel Hill: University of North Carolina Press, 1985), 25-50.

<sup>5</sup> See Robert E. Shalhope, "Republicanism and Early American Historiography," *William and Mary Quarterly* 39 (1982):334-56; Joyce Appleby, ed., "Special Issue: Republicanism in the History and Historiography of the United States," *American Quarterly* 37 (1985); Gordon S. Wood, "The Radicalism of the American Revolution" (New York: Alfred A. Knopf, 1992).

<sup>6</sup> See Jack N. Rakove, "Parchment Barriers and the Politics of Rights," in "A Culture of Rights: The Bill of Rights in Philosophy, Politics, and Law—1791 and 1991," ed. Michael J. Lacey and Knud Haakonssen (Cambridge: Cambridge University Press, 1992),

- 103; and William A. Galston, "Practical Philosophy and the Bill of Rights: Perspectives on Some Contemporary Issues," *ibid.*, 234.
- <sup>7</sup> Alexis de Tocqueville, "Democracy in America," ed. Phillips Bradley (New York: Vintage, 1945), I:ch. 12, II:ch. 5.
- <sup>8</sup> See Philip D. Brick and R. McGregor Cawley, eds., "A Wolf in the Garden: The Land Rights Movement and the New Environmental Debate" (Lanham, MD.: Rowman and Littlefield, 1996).
- <sup>9</sup> See Stephen Skowronek, "Building a New American State: The Expansion of National Administrative Capacities, 1877-1920" (New York: Cambridge University Press, 1982); and Samuel P. Hays, "Conservation and the Gospel of Efficiency: The Progressive Conservation Movement, 1890-1920" (Cambridge: Harvard University Press, 1950).
- <sup>10</sup> Gifford Pinchot, "The Fight for Conservation" (Garden City, NY, 1910), IV:6. Compare Leopold: "It is no prediction, but merely an assertion that the idea of controlled environment contains colors and brushes wherewith society may some day paint a new and possibly a better picture of itself;" in "The Conservation Ethic," *Journal of Forestry* 31:6 (October 1933), 634-643.
- <sup>11</sup> Aldo Leopold, "A Sand County Almanac and Sketches Here and There" (New York: Oxford University Press, 1949), 4.
- <sup>12</sup> *Ibid.*, 87.
- <sup>13</sup> *Ibid.*, 138.
- <sup>14</sup> *Ibid.*, 161.
- <sup>15</sup> *Ibid.*, 166-67, 175.
- <sup>16</sup> *Ibid.*, 204.
- <sup>17</sup> *Ibid.*, 207-8.
- <sup>18</sup> For details of Leopold's biography see Curt Meine, "Aldo Leopold: His Life and Work" (Madison: University of Wisconsin Press, 1988), and Susan L. Flader, "Thinking Like a Mountain: Aldo Leopold and the Evolution of an Ecological Attitude toward Deer, Wolves, and Forests" (1974; Madison: University of Wisconsin Press, 1994).
- <sup>19</sup> "To the Forest Officers of the Carson," *The Carson Pine Cone* (July 1913), reprinted in "The River of the Mother of God and Other Essays by Aldo Leopold," ed. Susan L. Flader and J. Baird Callicott (Madison: University of Wisconsin Press, 1991), 41-46 [hereafter cited as "River"].
- <sup>20</sup> See Susan Flader, "Aldo Leopold and the Evolution of Ecosystem Management," in "Sustainable Ecological Systems: Implementing an Ecological Approach to Land Management," ed. W. Wallace Covington and Leonard F. DeBano (USDA Forest Service General Technical Report RM-247, 1994), 15-19.
- <sup>21</sup> "Standards of Conservation" (handwritten ms., c. 1922), General Files—Aldo Leopold, Series 9/25/10-6, Box 16, University of Wisconsin Division of Archives [hereafter cited as LP 6B6 (Leopold Papers, Series 6, Box 16)], reprinted in "River," 82-85.
- <sup>22</sup> See, for example, "Conservation Economics," *Journal of Forestry* 32:5 (May 1934), 537-544, reprinted in "River," 201. For discussion of the problem of authority as related to the relationship between professionals and citizens see Terry L. Cooper, "Citizenship and Professionalism in Public Administration," *Public Administration Review* 44 (March 1984), 143-149; and J. Douglas Wellman and Terence J. Tipple, "Public Forestry and Direct Democracy," *The Environmental Professional* 12 (1990), 77-86.
- <sup>23</sup> "Home Gardens and Citizenship," 23 April 1917, 7pp. tps., LP 8B8.
- <sup>24</sup> "The Civic Life of Albuquerque," 27 September 1918, 9pp tps., LP 8B8.
- <sup>25</sup> "A Criticism of the Booster Spirit," 6 November 1923, 10pp tps speech to Ten Dons, LP 6B16, reprinted in "River," 98-105. The national park reference may have been to a proposal by Secretary of the Interior Albert Fall for establishment of a park from a series of discontinuous segments of land near his home in south central New Mexico, part of which is now White Sands National Monument.
- <sup>26</sup> "Pioneers and Gullies," *Sunset Magazine* 52:5 (May 1924), 15-16 and 91-95, reprinted in "River," 106-113. Leopold's language on the obligation of landowners was similar to that in a speech he had written in December 1922 for the New Mexico



- Association for Science, "Erosion as a Menace to the Social and Economic Future of the Southwest." The speech was published many years later in *Journal of Forestry* 44:9 (Sept 1946), 627-33.
- <sup>27</sup> "The Homebuilder Conserves," *American Forests and Forest Life* 34:413 (May 1928), 276-78 and 297, reprinted in "River," 143-147; "Land-Use and Democracy," *Audubon Magazine* 44:5 (Sept-Oct 1942), 259-265, reprinted in "River," 295-300.
- <sup>28</sup> "Izaak Walton League and Its Relation to Forestry in Wisconsin," [n.d., c. 1925], 10pp tps, LP 6B16.
- <sup>29</sup> Leopold to Claude V. Campbell, 15 October 1932, LP 3B5, and associated correspondence. See also Jacob L. Crane, Jr., and George Wheeler Olcott, "Report on the Iowa Twenty-five Year Conservation Plan" (Des Moines: Meredith, 1933).
- <sup>30</sup> "A Conservation Plan for Wisconsin Farms," 23 October 1933, 6pp tps., LP 6B16.
- <sup>31</sup> See Leopold to William Schuenke, 10 July 1935; I.T. Bode to Leopold, n.d. [c. July 1935]; and Leopold to I.T. Bode, 19 July 1935, all in LP 3B5. See also Rebecca Conard, "Places of Quiet Beauty: Parks, Preserves, and Environmentalism" (Iowa City: University of Iowa Press, 1997), 120-136.
- <sup>32</sup> Leopold to P.S. Lovejoy, 18 July 1935, P.S. Lovejoy Papers, Michigan Historical Commission Archives, Lansing, RG63-12 B12F6.
- <sup>33</sup> "A House Divided," *Wisconsin Sportsman* (October 1940), 5. See also "Game and Wild Life Conservation," *The Condor* 34:2 (Mar-Apr 1932), 103-106, reprinted in "River," 164-68. For recent examples of local democratic participation in decisionmaking see Daniel Kemmis, *Community and the Politics of Place* (Norman: University of Oklahoma Press, 1991); and Mark Sagoff, "The View from Quincy Library: Civic Engagement in Environmental Problem-Solving" (Working Paper #16, The National Commission on Civic Renewal).
- <sup>34</sup> "Notes on Game Administration in Germany," *American Wildlife* 25:6 (Nov-Dec 1936), 85, 92-93.
- <sup>35</sup> See, for example, "The Conservation Ethic," *Journal of Forestry* 31:6 (Oct 1933), 634-43 ["River," 181-92]; "Conservation Economics," *Journal of Forestry* 32:5 (May 1934), 537-44 ["River," 193-202]; "Conservation in the World of Tomorrow," lecture notes 29 March 1937, 5pp tps, LP 6B14; and "The Farmer as a Conservationist," *American Forests* 45:6 (June 1939), 294-99, 316, 323 ["River," 255-265].
- <sup>36</sup> "Land Pathology," 15 April 1935, 8pp tps, LP 6B16, reprinted in "River," 212-217. Leopold observed that mechanisms, economic and moral, to encourage conservation of landscape beauty on private lands might also help prevent the otherwise inevitable degradation of public parks: "Parks are over-crowded hospitals trying to cope with an epidemic of esthetic rickets; the remedy lies not in hospitals, but in daily diets.".
- <sup>37</sup> J.N. Darling to Leopold, 20 November 1935, LP 6B16.
- <sup>38</sup> "Farmer-Sportsman Set-ups in the North Central Region," "Proceedings of the North American Wildlife Conference," February 3-7, 1936 (Senate Committee Print, 74th Cong., 2d sess., 1936), 279-285. See also "Coon Valley: An Adventure in Cooperative Conservation," *American Forests* 41:5 (May 1935), 205-208 ["River," 218-223]; "Helping Ourselves" (with Reuben Paulson), *Field and Stream* 39:4 (August 1934), 32-33, 56 ["River," 203-208]; and "History of the Riley Game Cooperative, 1931-1939," *Journal of Wildlife Management* 4:3 (July 1940), 291-302. For recent examples of the burgeoning movement in community conservation, see the special issue of the *Journal of Forestry* 96:3 (March 1998) on community forestry.
- <sup>39</sup> "Threatened Species: A Proposal to the Wildlife Conference for an Inventory of the Needs of Near-Extinct Birds and Animals," *American Forests* 42:3 (March 1936), 116-119 ["River," 230-234].
- <sup>40</sup> "Ecology and Politics," WLE 118 Introductory Lecture, n.d. [c. 1941], 7pp tps, lp 6B16 ["River," 281-89].
- <sup>41</sup> "Land-Use and Democracy," *Audubon Magazine* 44:5 (Sept-Oct 1942), 259-265 ["River," 295-300].
- <sup>42</sup> See Flader, "Thinking Like a Mountain," 168-260.
- <sup>43</sup> *Ibid.*, 183-193.
- <sup>44</sup> *Ibid.*, 194.
- <sup>45</sup> "A Sand County Almanac," 68.



# Leopold's Land Ethic, Ecofeminist Philosophy and Environmental Ethics

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## INTRODUCTION

From a historical perspective, perhaps the most important lines written in defense of an environmental ethic are from Aldo Leopold's famous 1949 essay, "The Land Ethic." Consider just three brief passages from "The Land Ethic":

"The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land . . . . In short, a land ethic changes the role of *Homo sapiens* from conqueror of the land-community to plain member and citizen of it."<sup>1</sup>

"It is inconceivable to me that an ethical relation to land can exist without love, respect, and admiration for land, and a high regard for its value. By value, I of course mean something far broader than mere economic value; I mean value in the philosophical sense."<sup>2</sup>

"A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise."<sup>3</sup>

These three simple but powerful passages constitute what many environmental ethicists claim are three fundamental presuppositions of any environmental ethic: (1) humans are co-members of the ecological community; (2) humans should love and respect the land; and (3) it is wrong to destroy the integrity, stability and beauty of the biotic community. Indeed, it is difficult to see how any position which denies the sensibilities expressed in these three claims could constitute a *bona fide* environmental ethic.

My overall goal in this essay is to provide the reader with sufficient background material on the nature of environmental ethics to both appreciate Leopold's legacy and understand the sorts of issues that arise among competing positions. To that end, I do three things. First, I describe the field known as environmental ethics and provide an overview of a variety of positions in environmental ethics. Second, I describe key features of Leopold's land ethic and locate the land ethic within the context of environmental ethics. Third, I discuss my own position, ecofeminist ethics, vis-a-vis Leopold's land ethic, identifying six key areas of common ground and potential coalition building between Leopoldians and ecofeminist ethicists.<sup>4</sup>

## WHAT ARE ENVIRONMENTAL ETHICS?

Environmental ethics are about human relationships to nonhuman nature. They focus on such issues as: the nature of our responsibility to the natural environment; when and why we are obligated to preserve wilderness areas, protect endangered species, engage in sustainable development and appropriate technology; and whether some theoretical approaches to resolving environmental problems are more fruitful than others.

What is an environmental ethic? Environmental ethicists distinguish between an ethic *concerning* the environment and an ethic *of* the environment. An ethic concerning the environment is one which does not make the nonhuman environment (and/or its nonhuman members) morally considerable. An ethic of the environment is one which makes the nonhuman natural environment (and/or its nonhuman members) itself deserving of human moral consideration. In the language of environmental ethicists, nature is "morally considerable." Only the latter generates a *bona fide* environmental ethic.

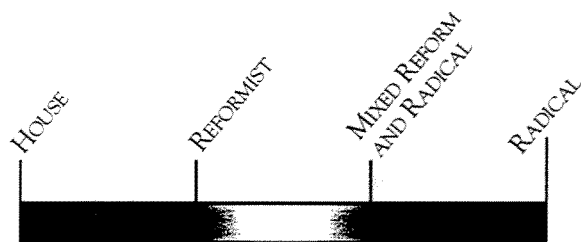
All environmental ethicists agree the nonhuman natural environment (and/or its members) is morally considerable. Commitment to the moral considerability of nonhuman animals and/or nature is what makes an environmental ethic an environmental ethic.



There is considerable disagreement among environmental ethicists, however, about the basis of nature's moral considerability. Typically, it is claimed that nature has certain properties which make it morally considerable—properties which are shared by all and only morally considerable entities. The properties commonly argued for include rationality, sentience, the ability to use a language, possession of a soul, possession of morally relevant interests, or being “the subject of a life.” These properties make nature intrinsically valuable—nature is a good in itself because of its own intrinsic properties and not because of its usefulness for some (human) purpose or end.

## A CONTINUUM OF ETHICAL POSITIONS

Within the Western philosophical tradition alone, there are a variety of well-known positions which differ in significant ways from Leopold's land ethic. Four types of positions along a continuum tend to emerge.<sup>5</sup> Visually, these four types of positions may be represented in relation to each other in the following way:



Consider examples of each type of position.

The most conservative of ethical positions are what I call mainstream positions of the house. I call them “house” positions because they are a diversity of competing positions in mainstream Western philosophical ethics which are housed under the same roof and built on a similar foundation of shared assumptions. One way they all are alike is that they do not view the nonhuman environment as morally considerable. As such, house positions do not, by themselves, generate an environmental ethic.

House positions are of two main types—*consequentialist theories* which assess human conduct in terms of the consequences of that conduct and *non-consequentialist theories* which assess human conduct in terms other than consequences (e.g., in terms of motive, duty, rights, intrinsic value, what an all-good, all-knowing, all-powerful God commands or forbids, or what virtue requires).<sup>6</sup> House positions have had very little to say about moral responsibilities of humans toward nonhuman animals and the natural environment. When they do provide arguments (e.g., Immanuel Kant's philosophical arguments against cruelty to animals), those arguments are based on moral obligations humans

have to other humans where animals are concerned. They are not moral obligations humans have directly to animals themselves. Since house positions are positions concerning (rather than to) the nonhuman environment, they do not generate a genuine environmental ethic.

Each of the remaining three types of positions does generate an environmental ethic. Reformist positions are those which revise house accounts in ways which make the nonhuman natural environment, or at least some members of it, morally considerable, but do so without introducing relatively new and different ways of thinking about humans and ethics. They are moral extensionist positions. As such, reformist environmental ethics fall into the traditional house division of consequentialist and non-consequentialist theories.

Two of the most popular reformist positions are consequentialist and non-consequentialist versions of animal welfarism.<sup>7</sup> Animal welfarism makes nonhuman animals (e.g., deer, cows, chicken and fish) morally considerable, typically because they share with humans some morally relevant set of properties. Peter Singer's utilitarian-based animal welfarism asserts that sentience is what qualifies a being for moral considerability. Tom Regan's non-consequentialist rights-based animal welfarism makes anything which is the subject of a life morally considerable. Since these two positions are at odds with some of the main claims of a Leopoldian land ethic, it is important to be familiar with them.

Singer's consequentialist animal welfarism draws on the work of utilitarian Jeremy Bentham. Bentham says, “The question is not, Can they *reason*? Nor Can they *talk*? But, Can they *suffer*?” Singer agrees with Bentham that the ability to suffer, not rationality, is what makes a being morally considerable.<sup>8</sup> Singer claims that anyone who fails to realize that animals deserve moral consideration is simply being “speciesist.” “Speciesism—the word is not an attractive one, but I can think of no better term—is a prejudice or attitude or bias towards the interests of members of one's own species and against those of members of other species.”<sup>10</sup>

Insofar as one accepts utilitarian ethics (of the house), animal suffering must be included in the suffering that counts morally. Singer's consequentialist version of animal welfarism was instrumental in putting the issue of factory farming on the ethical map:

“Factory farm animals need liberation in the most literal sense. Veal calves are kept in stalls five feet by two feet. They are usually slaughtered when about four months old, and have been too big to turn in their stalls for at least a month. Intensive beef herds, kept in stalls only proportionately larger for much longer periods, account for a growing percentage of beef production. Sows are often similarly confined when pregnant, which, because of



artificial methods of increasing fertility, can be most of the time. Animals confined in this way do not waste food by exercising, nor do they develop unpalatable muscle.”<sup>11</sup>

Singer’s critique of factory farming documents all sorts of abuses of animals. While animal welfarism will require great changes on the part of humans (e.g., ending factory farming, adopting moral vegetarianism and ceasing vivisection practices), Singer argues that animals deserve just that moral consideration.

Tom Regan’s rights-based version of animal welfarism reaches very similar conclusions as Singer’s consequentialism-based version, but on very different ethical grounds. Regan argues that animals are subjects of a life. He claims:

“We are each of us the experiencing subject of a life; each of us a conscious creature having an individual welfare that has importance to us whatever our usefulness to others. We want and prefer things; believe and feel things; recall and expect things . . . . As the same is true of those animals who concern us (those who are eaten and trapped, for example), they, too, must be viewed as the experiencing subjects of a life with inherent value of their own. Since all subjects of a life have rights, animals have rights. Hunting, zoos, the use of animals in scientific experiments are all wrong because they violate an animal’s rights.”<sup>13</sup>

Since all subjects of a life are right-holders, animals are rights-holders:

“When it comes to the case for animal rights, then what we need to know is whether the animals who, in our culture are routinely eaten, hunted, and used in our laboratories, for example, are like us in being subjects of a life. And we *do* know this. We *do know* that many—literally, billions and billions—of these animals are the subjects of a life in the sense explained and so have inherent value if we do. And since, in order to have the best theory of our duties to one another, we must recognize our equal inherent value, as individuals, reason—not sentiment, not emotion—reason compels us to recognize the equal inherent value of these animals. And, with this, their equal right to be treated with respect.”<sup>14</sup>

A different sort of reformist position is the theologically based position known as stewardship ethics. Stewardship ethics typically rely on Judeo-Christian texts which give humans “dominion over the fish of the sea and over the birds of the air and over every living thing that

moves upon the earth” (Genesis 1: 26-29), where dominion is interpreted in the sense of stewardship, not domination, over the nonhuman natural environment. Advocates of stewardship ethics claim that, just as shepherds (or stewards) have moral responsibilities to tend to the well-being of their flocks and other living things, humans have stewardship responsibilities to nonhuman animals and nature.

Jay B. McDaniel endorses a stewardship ethic. He argues that a spirituality of the earth must involve not only a respect for the earth’s intrinsic value, but stewardship of it:

“A healthy and biblically nourished idea of stewardship will not see nature as an alien substance from which we are detached and which we can manipulate at will. Rather—along with the first chapters of Genesis (2: 4-4: 16), various psalms (8, 19, 74, 104), passages from Isaiah (40: 12-31, 45: 9-13, 48: 12-13) and Jeremiah (27: 5 and 32: 17), and themes from wisdom literature (Proverbs 3: 19-20, 8: 22-31)—it will recognize that humans are a part of, rather than apart from, nature . . . . An ecologically sensitive expression of stewardship will begin with the assumption shared by biblical perspectives and process theology; namely, that humans are united with their fellow creatures in being part of a single ontological order: an order named ‘the creation’.”<sup>15</sup>

McDaniel’s theologically based stewardship ethic assumes that nature is a God-given gift to humans, and we must “consciously choose to be the caretaker and shepherd of the soil.”<sup>16</sup>

Mixed reform and radical positions are those which borrow conceptually from the house but introduce radically new ways of thinking about ethics. I place Leopold’s “The Land Ethic” among mixed reform and radical positions. Consider why.

I began this paper by noting three key insights of a Leopoldian land ethic. Claim (3) is the famous Leopoldian principle that “an act is right when it tends to preserve the integrity, stability, and beauty of a biotic system; it is wrong when it tends otherwise.” As stated and by itself, this suggests that Leopold’s land ethic is a consequentialist position. But, if Leopold’s land ethic were only that, it would be a reformist ethic; it would be interpreted as extending moral consideration to animals, trees, rocks, rivers and whole ecosystems—what Leopold calls simply “the land”—on familiar, though revised, consequentialist grounds.

Viewing Leopold’s land ethic as a reformist ethic would be a serious philosophical mistake. For one thing, unlike reformist positions, Leopold’s land ethic has an ecologically *holistic* cast; its emphasis is on ecosystems as deserving of moral consideration. This holistic approach



is a departure from both house and reformist positions, which focus moral concern on discrete, separate, individual, particular entities. In fact, Leopold was the first to suggest that ecological wholes (e.g., populations, communities, species and ecosystems) are morally considerable. For a second thing, Leopold offers what he takes to be an equally pressing moral principle as constitutive of the land ethic, "One ought to love and respect the land," in claim (2). Leopold believed that both "the head and the heart," both ethical obligation and ecological conscience, are central to the land ethic. As Leopold claims, "Obligations have no meaning without conscience, and the problem we face is the extension of the social conscience from people to land. No important change in ethics was ever accomplished without an internal change in our intellectual emphasis, loyalties, affections, and convictions."<sup>17</sup>

When Leopold writes that "It is inconceivable to me that an ethical relation to land can exist without love, respect, and admiration for land, and a high regard for its value," he is expressing his deeply held conviction that "the evolution of a land ethic is an intellectual as well as emotional process."<sup>18</sup> For these two reasons, then, I think Leopold's land ethic is best interpreted as a mixed reform and radical position.

Radical positions branch out in conceptually revolutionary ways vis-a-vis the house, most notably by offering more comprehensive concerns than those offered in traditional accounts of philosophical ethics. Texts in environmental ethics typically include deep ecology, bioregionalism, social ecology and ecofeminism as radical positions. They also sometimes include non-European perspectives, such as American Indian and Taoist positions. Later in this essay, I will discuss briefly one of these positions, ecological feminism (or ecofeminism), in relation to Leopold's land ethic.

This fourfold categorization of types of positions in environmental ethics is not meant to suggest that every position in environmental ethics must fit neatly into one of these camps. Rather, it is intended as a helpful heuristic device for revealing basic similarities and dissimilarities among various ethical positions in terms of the basic values, beliefs, assumptions and principles they do or do not endorse.

Recognizing the similarities and dissimilarities among these positions has valuable practical ramifications.<sup>19</sup> For example, one's views about capitalism and the role of market remedies for environmental destruction will differ depending on whether one views humans as individual, rational, self-interested pleasure maximizers (a house position), or as ecological selves who are co-members of an intrinsically valuable biotic community (a mixed reform/radical and radical position). Similarly, one's views about moral vegetarianism will differ depending on whether one views animals as moral subjects which have equal capacities for suffering or equal rights to life as humans (animal welfare positions), or whether one views

animals as members of ecosystems, where ecosystemic stability, integrity and beauty are the most important considerations (a Leopoldian land ethic). One's views about the role of ethical principles in environmental ethics also will differ depending on whether one endorses the view that there is one absolute, cross-culturally valid, transcendent principle of morality (many house and reformist positions), or whether one endorses the view that there are a plurality of equally plausible ethical principles, and one must appeal to the context to decide which is morally relevant in a particular case (the ecofeminist position I sketch below). These differences occur because the basic assumptions, values, attitudes and beliefs—the conceptual frameworks—underlying the various positions in environmental ethics differ. Consequently, they yield different practical implications for environmental practice and policy.

I turn now to a reconsideration of Leopold's land ethic—this time from the ethical perspective which characterizes my own position in environmental ethics. That position grows out of ecofeminist philosophy and is known as ecofeminist ethics.

## ECOFEMINIST PHILOSOPHY

I began this essay by citing three Leopoldian sensibilities, expressed in claims (1), (2) and (3), as central to any environmental ethic. However, to endorse these three sensibilities as central to any environmental ethic is not necessarily to endorse, verbatim, the language, arguments or applications Leopold offers. In this section, I suggest important common ground between ecofeminist philosophy and a Leopoldian land ethic—common ground for useful theoretical and practical coalition building. I also want to suggest how ecofeminist philosophy could contribute to an updating of a Leopoldian land ethic.

There is not just one version of ecofeminism. However, all ecofeminists endorse at least two basic claims: (1) there are important connections between the dominations of women and other human groups (e.g., people of color, the poor) and the domination of nature; and (2) a failure to take these connections seriously results in inadequate environmental decision making, policy and ethics. These connections are historical, empirical, linguistic, symbolic and literary, epistemological, political, ethical, conceptual, and theoretical. Ecofeminist philosophers such as myself use conceptual analysis and argumentation to show the nature of these connections and propose remedies to gender, race/ethnic, class and cultural biases in environmental decision making, policy and ethics.

Consider just two connections between women and nature—empirical and linguistic connections. Ecofeminist philosophers are interested in empirical issues of environmental justice, particularly around the disproportionate harm suffered by women, people of color, the poor and children around a variety of environmental ills. For exam-





ple, whether it is trees, forests and forestry, unsanitary water, food production and agriculture, or training in environmental technologies, it typically is poor women and children, particularly women and children of color in the South, who suffer disproportionately the effects of environmental degradation. Poor rural women and children throughout the South walk farther for fuel wood and fodder, experience disproportionately higher health risks in the presence of unsanitary water, and grow food on depleted soils. It is women who experience the burdens of a gender division of labor which gives women unequal access to cash, crops and credit, and it is women who experience the inappropriateness of technologies developed without a basic understanding of women's daily lives and needs.

Sometimes environmental justice issues are about race. In 1987 in the United States, the United Church of Christ Commission for Racial Justice published a stunning and already classic report entitled "Toxic Waste and Race in the United States."<sup>20</sup> Using sophisticated statistical analysis, the report indicated that race (not class) is the primary factor in the location of hazardous waste in the United States. Three out of every five African and Hispanic Americans (more than 15 million of the nation's 26 million African Americans, and more than 8 million of the 15 million Hispanics), and more than half of all Asian Pacific Islanders and American Indians, live in communities with one or more uncontrolled toxic waste sites. The nation's largest hazardous-waste landfill, receiving toxins from 45 states, is in Emelle, Alabama, which is 79.9 percent African American. Probably the greatest concentration of hazardous waste sites in the U.S. is located in the predominately African-American and Hispanic South Side of Chicago. In Houston, Texas, six of eight municipal incinerators and all five city landfills are located in predominately African-American neighborhoods.

Ecofeminist philosophers also are interested in linguistic connections between sexist, racist language and naturist language (or language which inferiorizes nonhuman nature). Euro-American language is riddled with examples of sexist-naturist language, i.e., language which depicts women, animals and nonhuman nature as inferior to (having less status, value or prestige) men and male-identified culture. Women routinely are described in pejorative animal terms: dogs, cats, catty, pussycats, pussies, pets, bunnies, dumb bunnies, cows, sows, foxes, chicks, bitches, beavers, old bats, old hens, old crows, queen bees, cheetahs, vixen, serpents, bird-brains, hare-brains, elephants and whales. Women cackle, go to hen parties, henpeck their husbands, become old biddies (old hens no longer sexually attractive or able to reproduce) and social butterflies. Animalizing women in a *patriarchal culture* where animals are seen as inferior to humans thereby reinforces and authorizes women's inferior status.

Similarly, language which feminizes nature in a *patriarchal culture* where women are viewed as subordinate and

inferior reinforces and authorizes the domination of nature. Mother Nature (not Father Nature) is raped, mastered, controlled, conquered and mined. Her (not his) secrets are penetrated, and her womb is put into the service of the man of science (not woman of science or, simply, scientist). Virgin timber is felled, cut down. Fertile (not potent) soil is tilled, and land that lies fallow is useless or barren, like a woman unable to conceive a child. In these cases, the exploitation of nature and animals is justified by feminizing (not masculinizing) them; the exploitation of women is justified by naturalizing or animalizing (not masculinizing) them.<sup>22</sup>

## ECOFEMINIST PHILOSOPHY AND "FRUIT BOWL" ETHICS

For ecofeminist philosophers, *caring about others*, including nonhuman others and the land, is central to ethics.<sup>23</sup> I have argued elsewhere for what I call care-sensitive ethics. It has three key conditions. First, an essential aspect of moral reasoning and moral motivation is that humans can and must *care about* the objects of our moral concern. Second, there are a plurality of relevant ethical principles—principles about rights, duty, utility and virtue. Third, the appropriateness of a given ethical principle is determined, in part, by whether use of that principle in a given context enhances or does not unnecessarily interfere in the health, well-being or flourishing of the objects of moral concern (i.e., results in "care practices").

To provide an image of what I am arguing, consider a fruit bowl full of lots of kinds of fruit, e.g., apples, oranges, bananas, mangoes, pineapples, tangerines and blueberries. All and only fruits (e.g., not books, shoes or vegetables) are appropriate candidates for the fruit bowl *qua* fruit bowl. Which particular fruit is selected from the fruit bowl as the most appropriate or best suited fruit for a particular situation depends on that situation. For example, if one is baking a banana cream pie, bananas are best-suited; if one is going backpacking or fixing an apple pie, apples are better. It is not that one fruit is better than the others in some abstract sense; it's just that one fruit (or several fruits) may be better than others in the circumstances.

The ecofeminist ethics I defend are like a fruit bowl with different kinds of fruit.

Different ethical principles in Western philosophy (e.g., principles of utility, duty, rights or virtue) are candidate fruits in the fruit bowl. Whether any candidate principle really qualifies as a bona fide ethical principle—gets in the fruit bowl—turns on whether it meets two conditions of care-sensitive ethics: an ethical principle which does not make any room for both rational intelligence and emotional intelligence;<sup>24</sup> particularly the importance of caring about oneself and others, in ethical reasoning and conduct would not qualify; nor would a monist ethical principle which posits the primacy of one moral value and





reduces all other moral values to this one primary value. Whether any ethical principle is morally appropriate in a given context will depend on whether application of the principle results in care practices.

## ECOFEMINIST ETHICS AND LEOPOLD'S LAND ETHIC

With this very brief description of ecofeminist philosophy and fruit bowl ethics in place, consider six areas of common ground between Leopoldian land ethics and ecofeminist philosophy. Although there is not space to defend my claims here, these are six potentially fruitful areas of coalition building among Leopoldians and ecofeminist philosophers.<sup>25</sup>

The first area of common ground is that both Leopoldian land ethics and ecofeminist philosophy provide *contextual* accounts linking ecology with ethics. This occurs partly through a shared ecological interpretation of history. Leopold writes, "That man is, in fact, only a member of a biotic team is shown by an ecological interpretation of history. Many historical events, hitherto explained solely in terms of human enterprise, were actually biotic interactions between people and land. The characteristics of the land determined the facts quite as potently as the characteristics of the men who lived on it."<sup>26</sup>

Leopold's "ecological interpretation of history"<sup>27</sup> is central to his development of the concept of land as a community and to his extension of ethics to the land "to include soils, waters, plants, and animals, or collectively: the land."<sup>28</sup> This is, I think, the most important contribution of Leopold's land ethic. He provides an explicitly ecological context for rethinking who humans are and what ethics imply. "In short, a land ethic changes the role of *Homo sapiens* from conqueror of the land-community to plain member and citizen of it. It implies respect for his fellow-members, and also respect for the community as such."<sup>29</sup> Both Leopoldian land ethics and ecofeminist philosophy contextualize ethics positing that *what* a thing is and *how* a thing ought to be treated are partly functions of *where* it is.

Similarly, ecofeminist philosophy provides an ecological interpretation of history. The classic example of this is Carolyn Merchant's book, "The Death of Nature: Women, Ecology, and the Scientific Revolution."<sup>30</sup> What ecofeminists contribute to an ecological interpretation of history is the role of gender in the Western intellectual tradition in shaping the dominant images, language and symbol systems for nature, and providing a "justification" for the "domination of nature."

The second area of common ground between a Leopoldian land ethic and ecofeminist philosophy is *ontological* (i.e., about what sorts of entities are real). Leopold's land ethic recognizes that land is composed of both discrete objects (organisms and individuals) and energy flows. Recognition of the significance of discrete individ-

uals is apparent from Leopold's Foreword to "A Sand County Almanac," "There are some who can live without wild things, and some who cannot. These essays are the delights and dilemmas of one who cannot."<sup>31</sup>

"A Sand County Almanac" is replete with stories about wild things, such as geese, woodcocks, grouse, partridges, chickadees, warblers, pigeons, cranes, field sparrows, prairie chickens, tamaracks, hawk, deer, rabbits, wolves, coyotes, prairie plants, fish and trees. Leopold's stories are the "delights and dilemmas" of someone who cannot live without individual wild things.

But Leopold also talks about land as a circuit of energy flows. In this context, he introduces the biotic pyramid as a symbol of land. "Land, then, is not merely soil; it is a fountain of energy flowing through a circuit of soils, plants, and animals. Food chains are the living channels which conduct energy upward; death and decay return it to the soil."<sup>32</sup>

Earlier, in "The Upshot," Leopold writes, "There is value in any experience that reminds us of our dependency on the soil-plant-animal-man food chain, and of the fundamental organization of the biota."<sup>33</sup> So, Leopold recognizes that both individuals and energy flows are real, without reducing one to the other.<sup>34</sup>

This is similar to the ecofeminist philosopher's insistence that ethics based on an "object ontology" is *not* obsolete, as J. Baird Callicott has claimed.<sup>35</sup> Ecofeminist philosophy insists that beings (humans, animals and organisms) always are *beings-in-relations* (or relational beings). But they also insist that relational beings are *both* discrete individuals and members of the food chain with its energy flows and fluxes. Both are real.

A third area of common ground is *epistemological*—ecological and ethical knowledge require recognition that those who work the land often know more about the land than outside experts. Leopold, like ecofeminist philosophers, is interested in preserving the epistemic value of what those who work the land often know about the land. For example, Leopold claims, in "The Conservation Esthetic," that one need not have a Ph.D. in ecology in order to *see* his country. "On the contrary, the Ph.D. may become as callous as an undertaker to the mysteries at which he officiates . . . . The weeds in a city lot convey the same lesson as the redwoods; the farmer may see in his cow-pasture what may not be vouchsafed to the scientist adventuring the South Seas. Perception, in short, cannot be purchased with either learned degrees or dollars."<sup>36</sup>

Here, Leopold not only acknowledges occasions when those who work close to the land may have important knowledge about it unavailable to the professionally trained ecologist; he also acknowledges the importance of urban ecology—that "the weeds in a city lot convey the same lesson as the redwoods."

Similarly, ecofeminist philosophers insist that as land managers, local women often have indigenous technical knowledge of forestry, water collection and processing,



and food production that is unavailable to both outside (e.g., First World) experts and local men. Ecofeminists insist that epistemological accounts of human/nature relationships must include as knowledge what local women, communities of color and others know about the land.

A fourth area of common ground between Leopoldian land ethics and ecofeminist philosophy is *ethical*. For both, not only is the land deserving of moral consideration, an ethical relationship to the land “requires both head and heart.” As Leopold writes, “It is inconceivable to me that an ethical relation to land can exist without love, respect, and admiration for land, and a high regard for its value [in the philosophical, not economic, sense].<sup>37</sup> We can be ethical only in relation to something we can see, feel, understand, love or otherwise have faith in.”<sup>38</sup>

Just as ecofeminist care-sensitive ethics require that humans care about nonhuman nature, so Leopold’s land ethic requires an emotional component to ethical reasoning and conduct based in love, respect and admiration. Again, Leopold makes this clear when he writes, “The evolution of a land ethic is an intellectual as well as emotional process.”<sup>39</sup>

The “ability to see the cultural value of wilderness,” wrote Leopold, requires both a scholarly attention to ecological data and a love and respect for the land itself.<sup>40</sup> For both Leopold and ecofeminist philosophers, caring about the land through appropriate rational and emotional responses and actions is central to any environmental ethic.<sup>41</sup>

A fifth area of common ground is that both critique the basic value dualism, “man versus nature.” Throughout his writings Leopold rejects claims about “man the conqueror *versus* man the biotic citizen; science the sharpener of his sword *versus* science the searchlight of his universe; land the slave and servant *versus* land the collective organism.”<sup>42</sup> Leopold argued for a conception of humans as both “plain members of the biotic community” and yet also different from rocks, mountains and ecosystems in our abilities to reason, understand, formulate a land ethic, recognize value and confer rights, and show respect and love for the natural world.

Similarly, critiques of “man versus nature” dualisms are at the heart of ecofeminist philosophy. Like Leopold, ecofeminist philosophers include the land in the moral community without thereby making humans totally the same as or totally different from other animals and the land. Humans are both reasoning individuals and members of the ecological community.

The sixth area of common ground is that both connect *biological and cultural diversity* in mutually reinforcing ways. Leopold explicitly links the two when he writes, “Wilderness was never a homogenous raw material. It was very diverse, and the resulting artifacts are very diverse. These differences in the end-product are known as cultures. The rich diversity of the world’s cultures reflects a corresponding diversity in the wilds that gave them birth.”<sup>43</sup>

Leopold laments the “exhaustion of wilderness” and “world-wide hybridization of cultures” as the destruction of both ecological and cultural diversity. For Leopold, the “wild roots” of cultures and the importance of our ecological heritage are part of human cultural heritage which should be preserved. He makes this view explicit in “Wildlife in American Culture” when he writes, “The culture of primitive [sic] peoples is often based on wildlife. Thus the plains Indian not only ate buffalo, but buffalo largely determined his architecture, dress, language, arts, and religion.”<sup>44</sup>

For both Leopold and ecofeminist philosophers, the value and loss of cultural diversity is intimately connected with the value and loss of biodiversity. Both see biotic diversity and land health as intimately connected with cultural diversity.

These six areas of commonality establish important common ground between Leopold’s land ethic and ecofeminist philosophy. However, there also are important contributions ecofeminist philosophy can make to an updated Leopoldian land ethic.

First, ecofeminist philosophy can provide a gender analysis and social justice perspective that is lacking in current Leopoldian land ethics. Fortunately, embryonic forms of both can be found in Leopold’s writings. In fact, the opening lines of “The Land Ethic” read as follows: “When Odysseus returned from the wars in Troy, he hanged all on one rope a dozen slave-girls of his household whom he suspected of misbehavior during his absence. This hanging involved no question of propriety. The girls were property. The disposal of property was then, as now, a matter of expediency, not of right and wrong.”<sup>45</sup>

Leopold’s rare reference to gender here is significant, not only because it occurs in 1949 as the opening lines of “The Land Ethic,” but because it explicitly makes an analogy between conceptions and treatment of land as mere property and conceptions and treatment of “girls” as mere property—both of which are unacceptable for Leopold. Leopold continues with the analogy in the next few pages of “The Land Ethic,” “There is as yet no ethic dealing with man’s relation to land and to the animals and plants which grow on it. Land, like Odysseus’ slave girls, is still property. The land-relation is still strictly economic, entailing privileges but no obligations.”<sup>46</sup>

It is fundamental to Leopold’s land ethic to reject the view of land as having merely economic value, as being, “like Odysseus’ slave girls,” mere property. Ecofeminist philosophy can contribute key insights by showing the many ways both gendered conceptions of nature, and connections between the domination of women and the domination of nature, contribute to the subordination of both women and nature.

Second, ecofeminist philosophy can emphasize the institutional nature of much of contemporary environmental destruction. For Leopold, the philosophical (not eco-

nomic) value of the land will be realized only through significant efforts of landowners. While Leopold appreciates the role government plays in the management of forests, fisheries, migratory birds, soil and watersheds, and parks and wilderness areas, he argues that, ultimately, a system of conservation depends on assigning "more obligations to the private landowner."<sup>47</sup> An ecofeminist philosophical perspective can provide a critical dimension to that analysis by reminding Leopoldians that a lot of citizens (in the U.S. and around the globe) are not private landowners and that the disproportionate burdens they suffer from environmental degradation often are due to the activities of private landowners and multinational corporations. Furthermore, institutional (and not merely personal or private landowner) issues are about both the distribution and conception of environmental justice which an ecofeminist philosophical perspective is well-poised to provide.

As a related third point, an ecofeminist perspective can be used to highlight the ways in which ecosystem health (well-being, flourishing) is intimately connected to the relative health or unhealth of human social systems. Ecofeminist philosophy can make explicit links between unhealthy sexist, racist and colonial domination of humans and unhealthy domination of the land.

Fourth, ecofeminist philosophy can deepen the analysis of the pitfalls of value dualistic thinking by showing the roles gender, race and class contribute to the observations, analyses and theories of environmental ethics. In particular, ecofeminist philosophy can show how rationalism—the Western tradition of viewing humans as superior to nature in virtue of our ability to reason—has bred a multiplicity of harmful dualisms (e.g., mind *versus* body, reason *versus* emotion, nature *versus* culture) which have functioned historically to justify the mutually reinforcing domination of nature and the domination of human subordinated groups (e.g., women, people of color, children).<sup>48</sup>

Fifth, an ecofeminist philosophical perspective can promote a view about animals that places significant constraints on the hunting and consuming of animals as food. Leopoldians tend to view animals *solely* as members of an ecological "net of biospherical relationships." They forget that animals are *also* individuals, with sentience, interests, desires and needs. Leopold knew this. It would be a seriously disingenuous reading of, for example, the famous wolf passage, to assume otherwise.

Of course, pointing out that Leopold saw wolves as individuals will not make Leopold's views any friendlier to ecofeminists who argue against all hunting and consumption of animals. Leopold was a recreational hunter and meat eater. Nothing an ecofeminist says about the land ethic will or could change that. Leopold also did not associate the objectification of women with the objectification of animals as meat, which is central to some ecofeminist arguments concerning hunting and eating meat.

Leopold's land ethic is not, and cannot plausibly be interpreted as, the basis for any ethic (ecofeminist or otherwise) against all forms of hunting or animal consumption. Insofar as an ecofeminist ethic prohibits the sort of hunting and consuming of animals that Leopold supports, there cannot be a Leopoldian-based ecofeminist ethic. That Leopold's land ethic is not, by itself and unrevised, an ecofeminist ethic is part of what makes the contributions of an ecofeminist ethic distinct and significant.

## CONCLUSION

Perhaps Leopold's most significant legacy is that he helped so many of us see the importance of caring about the land. The importance of caring about the land and "earth others" was profoundly brought home to me during the summer of 1997, when my daughter, Cortney, and I spent nearly one week swimming with wild spotted bottlenose dolphins off the coast of Key West, Florida. What I learned through relating to these incredibly beautiful, sensitive, responsive, intelligent creatures changed how I think about myself, others and ethics.

During the week, there were many occasions when I would encounter the dolphins underwater; I would get to swim around them for 10 or 15 seconds at a time. But, unlike Cortney, throughout the week, I had not experienced the joy of swimming with them, of being part of their community. As the last day of the swim approached, I began to think about my motivation for swimming with dolphins. I realized that, although I knew better, I had pursued the dolphins with my own agenda and timetable: I wanted to swim with them, and I put all my energy into trying to make it happen. Never asking whether they wanted to swim with me, I exercised my will to try to control the outcome in much the same way I initially climbed mountains—by imposing my will on them without genuine regard for their well-being. Despite good intentions, my perception and behavior were arrogant, not loving.

On the last day, that changed. On this day, I focused on what was genuinely within my control—using my will to change my motivation and attitudes about swimming with these dolphins. On this day, when I entered the water, I didn't swim anywhere. I just stayed still by the boat. Although I couldn't see the dolphins in the murky ocean water, I closed my eyes and began speaking quietly to them, telling them that I would be grateful if they would permit me to swim with them, to join their community for a while.

Before I knew what was happening, several adult dolphins came and took me to their pod. At first I was breathless; I could hardly believe what was happening. But as I looked to each side, I saw that this was real. I was surrounded by wild dolphins—under me, in front of me and on both sides—who had invited me to be part of their community for what turned out to be a timeless hour.



Reflecting later on that swim, it was profoundly clear to me that the dolphins had *chosen* to swim with me—to swim slowly so that I could be with them, to include me as they engaged in their ordinary activities of feeding, playing, being sexual and touching each other. It also was clear to me that the dolphins had not changed over the course of the week; it was I who had changed. I had let go of my attempts to control the outcome. A space had been created where I could simply be present to them. As we swam together, I was overcome with the wondrous joy of living in the moment. And I knew that the internal changes in me had made it possible for these intelligent and sensitive creatures to invite me to swim with them.

I also came to see ethics differently during that swim. At one point, I turned to a calf swimming by my side and began voicing what was for me a profound realization. Looking directly in each others' eyes, I said to the calf, "Even if you are sentient, capable of language and communication, rational, a rights-holders, deserving of respect and protection—even if all this is true, which I believe it is—that's not what is morally basic. What is morally basic is that *we care about you*. Because if we don't care about you, there is no moral motivation for us to ponder whether rights, duties, utility, God's commands or developing

a virtuous character are the best avenues to pursue to secure your preservation."

That swim was transformative for me. It helped me realize that, despite a myriad of reasons to protect and honor these magnificent creatures, whether we do so ultimately depends upon whether we humans care about them. Traditional principles of rights, duty, justice, utility and self-interest may provide important philosophical avenues to secure protection of dolphins in different circumstances, but they do not, by themselves, get at what is and ultimately must be the motivation for human moral conduct. They do not, by themselves, give expression to what is morally fundamental to human interaction with selves and others. To get at *that*, one must talk about and cultivate the ability to care about earth others and care about them as earth others—as dolphins, not simply as sources of enjoyment or other benefit for humans.

That swim brought home for me that one simply cannot fit the whole moral story about selves and others (humans and nonhumans) into the shoe of rights, or duty, or justice or utility *without* loss of crucial moral value. To tell the proper moral story of the matter, attention to and cultivation of human capacities to care and engage in care practices are needed. Providing that missing moral piece is what I think both Aldo Leopold's land ethic and ecofeminist care-sensitive ethics attempt to do.

## ENDNOTES

<sup>1</sup> Aldo Leopold, "The Land Ethic" in "A Sand County Almanac and Sketches Here and There" New York: Oxford University Press, 1974, 204.

<sup>2</sup> Leopold, "A Sand County Almanac," 223

<sup>3</sup> Leopold, "A Sand County Almanac," 224-225

<sup>4</sup> The discussion in this paper draws from my book, "Ecofeminist Philosophy: A Western Philosophical Perspective on What It Is and Why It Matters" Lanham, MD: Rowman and Littlefield, 1999: forthcoming.

<sup>5</sup> I say "continuum" because these four types should not be viewed as boxed categories that are fixed and rigid. Rather, they represent ethical tendencies in ways of thinking about environmental concerns which permit a given position to slide into shades of interpretation along a continuum of options.

<sup>6</sup> While some philosophers might describe three positions (consequentialist, deontological and virtue theories), I am using the more traditional characterization in terms of consequentialist and non-consequentialist positions, including virtue theories among the latter

<sup>7</sup> Some environmental ethicists do not view theories of animal welfarism as genuine environmental ethics because, it is argued, they do not view non-human nature as morally considerable, only non-human animals. The account I offer here does not prejudice or resolve that dispute; by speaking of "nonhuman animals and/or nature," I acknowledge that dispute without getting bogged down in it.

<sup>8</sup> Peter Singer, "Animal Liberation," in "People, Penguins, and Plastic Trees: Basic Issues in Environmental Ethics," eds, Christine Pierce and Donald VanDeVeer. Belmont, CA: Wadsworth Publishing Company, 1995: 52. The quote by Bentham is from "The Principles of Morals and Legislation," Ch. XVII, Sec. 1, footnote to paragraph 4.



<sup>9</sup>Singer, "Animal Liberation," 52

<sup>10</sup>Peter Singer, "Animal Liberationism A New Ethics for Our Treatment of Animals" New York: Avon Books, 1975: 7. Singer credits Richard Ryder with coining the term "speciesism."

<sup>11</sup>Singer, "Animal Liberation," 57

<sup>12</sup>Singer, "Animal Liberation," 57

<sup>13</sup>Tom Regan, "The Case for Animal Rights," in "People, Penguins, and Plastic Trees," 77

<sup>14</sup>Regan, "The Case for Animal Rights," 78

<sup>15</sup>Jay B McDaniel, "Earth, Sky, Gods & Mortals: Developing an Ecological Spirituality." Mystic, CT: Twenty-Third Publications, 1990, 97-98.

<sup>16</sup>McDaniel, "Earth, Sky, God, & Mortals," 101

<sup>17</sup>Leopold, "A Sand County Almanac," 209-210

<sup>18</sup>Leopold, "A Sand County Almanac," 223, 225

<sup>19</sup>I do not discuss here theoretical implications of similarities and differences among the four types of positions

<sup>20</sup>"Toxic Waste and Race in the United States: A National Report on the Racial and Socioeconomic Characteristics of Communities with Hazardous Waste Sites," 1987, Commission for Racial Justice, United Church of Christ, 105 Madison Avenue, New York, NY 10016

<sup>21</sup>See Joan Dunayer, "Sexist Words, Speciesist Roots," in "Animals & Women: Feminist Theoretical Explorations," eds, Carol J. Adams and Josephine Donovan. Durham, NC: Duke University Press, 1995: 13.

<sup>22</sup>The point of these examples of sexist-naturist language is not to claim that only female humans are denigrated by the use of animal language. That would be false; some nonhuman animal terms are used pejoratively against men and boys. For example, men and boys are called studs, wolves, sharks, skunks, snakes, toads, jackasses, weasels, old buzzards and goats. Nor is it to claim that all uses of animal or nature language to describe humans is derogatory. That also would be false: some nonhuman ani-

mal terms are complimentary. For example, in Western culture, it generally is complimentary to describe someone as busy as a bee, eagle-eyed, lion-hearted or brave as a lion. Rather, the point is that, *within patriarchal contexts*, the vast majority of animal terms used to denigrate women, and the vast majority of female terms used to describe animals and nature, function differently than those animal terms used to denigrate men. And that functional difference is significant: the majority of animal terms used to denigrate women identify women as inferior bodies, sexual objects, domesticated pets or playthings, man's property, spiritually sinful or sin-prone ("temptress") creatures vis-a-vis (at least ruling class) men identified as superior minds, sexual subjects and agents, intellects, spirits, rulers, sovereigns who have power over both women and nature. This is a cultural difference which occurs within a historical, material context which sees women, animals and nature as inferior to (at least ruling class) men.

<sup>23</sup>See Warren, "Ecofeminist Philosophy," forthcoming

<sup>24</sup>For a discussion of these two kinds of intelligence, see Daniel Goleman, "Emotional Intelligence: Why It Can Matter More Than IQ" New York: Bantam Books, 1995.

<sup>25</sup>For a defense of this position, see Warren, "Ecofeminist Philosophy," Chapter Seven

<sup>26</sup>Leopold, "A Sand County Almanac," 205

<sup>27</sup>It is interesting to note that, in her book, "The Death of Nature: Women, Ecology and the Scientific Revolution" (San Francisco: Harper & Row, 1980), ecofeminist historian Carolyn Merchant, for example, also provides an ecological interpretation of history, though one informed by a feminist perspective

<sup>28</sup>Leopold, "A Sand County Almanac," 203-204

<sup>29</sup>Leopold, "A Sand County Almanac," 204

<sup>30</sup>For an explicitly ecological feminist interpretation of history, see Carolyn Merchant's "The Death of Nature"

<sup>31</sup>Leopold, Foreword to "A Sand County Almanac," vii

<sup>32</sup>Leopold, "A Sand County Almanac," 216



<sup>33</sup> Leopold, "A Sand County Almanac," 178

<sup>34</sup> For a discussion of my reasons for disagreeing with J Baird Callicott's interpretation of Leopold's land ethic as "holistic with a vengeance" and as making an "object ontology obsolete," see Warren, "Ecofeminist Philosophy," Chapter Seven.

<sup>35</sup> J Baird Callicott, "The Metaphysical Implications of Ecology" in "Environmental Ethics," Vol. 8, no. 4 (Winter, 1986): 301.

<sup>36</sup> Leopold, "A Sand County Almanac," 174

<sup>37</sup> Leopold, "A Sand County Almanac," 223

<sup>38</sup> Leopold, "A Sand County Almanac," 214

<sup>39</sup> Leopold, "A Sand County Almanac," 225

<sup>40</sup> Leopold, "A Sand County Almanac," 200

<sup>41</sup> For a discussion of two kinds of intelligences, rational intelligence and emotional intelligence, see Daniel Goleman, "Emotional Intelligence: Why It Can Matter More Than IQ" New York: Bantam Books, 1995.

<sup>42</sup> Leopold, "A Sand County Almanac," 223

<sup>43</sup> Leopold, "A Sand County Almanac," 188

<sup>44</sup> Leopold, "A Sand County Almanac," 177

<sup>45</sup> Leopold, "A Sand County Almanac," 201

<sup>46</sup> Leopold, "A Sand County Almanac," 203

<sup>47</sup> Leopold, "A Sand County Almanac," 213

<sup>48</sup> See Val Plumwood, "Nature, Self, and Gender: Feminism, Environmental Philosophy, and the Critique of Rationalism" in "Hypatia" 1991 6 (1): 3-27

# Aldo Leopold and the Foundations of Ecosystem Management

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In 1924, Aldo Leopold packed up his family and moved from the Southwest back to the Midwest (Meine 1988). He was 37 years old, had a wife and four children, and worked for the USDA Forest Service (Meine 1988). Born in Burlington, Iowa, Leopold relocated for the last time to Madison, Wisconsin, transferring to the Forest Products Laboratory (Meine 1988).

Among Leopold's enduring farewell bequests to the Southwest was the first federal wilderness reserve surrounding the headwaters of the Gila River (Meine 1988). Leopold campaigned hard to protect these lands, and the new reserve was dedicated only days after his departure (Meine 1988). The idea of wilderness and wildlands preservation was among his greatest concerns in the waning years of his southwestern sojourn. This is indicated by the fact that, in the year after his departure, no fewer than five articles advocating wilderness preservation by Leopold (1925a, 1925b, 1925c, 1925d, 1925e) appeared in print. They all made much the same argument—the need for an unconfined, virile type of recreation, especially big game hunting and motorless travel—but each was addressed to a different audience. In addition, a sixth essay, “The River of the Mother of God,” was rejected by his alma mater's literary magazine, the *Yale Review* (Leopold 1991a). By the time the fruits of his wilderness thinking were published, he was settled into Madison and learning a new, more sedentary side of Forest Service work.

Ten years later, Robert Marshall and a small cadre of other likeminded men formed The Wilderness Society (Meine 1988). Marshall beseeched Leopold to accept the presidency (Meine 1988). By then, however, Leopold's interest in conservation had taken on a different focus, and he declined the offer. He had become the owner of a worn-out, 80-acre farm north of Madison along the Wisconsin River. He was giving his mind to “the more important and complex task,” as he wrote in 1935, the same year the society was founded, “of mixing a degree of wildness with utility” (Leopold 1991b: 227) in the mid-

dle, rural landscape between the poles of urban civilization and areas untrammelled by man, where man is a visitor who does not remain.

In 1928, Leopold grew tired of his job at the Forest Products Lab, and quit the Forest Service for good (Meine 1988). He supported his growing family—a fifth child had been born in Wisconsin—as a “consulting forester,” funded mainly by the Sporting Arms and Ammunition Manufacturers' Institute to conduct game surveys in the northcentral region of the country (Meine 1988). As the Great Depression deepened, that work dried up (Meine 1988). In 1933, after months without income, Leopold secured a position at the University of Wisconsin in the Department of Agricultural Economics as the nation's first professor of game management (Meine 1988).

In both his careers as forester and professor, Leopold situated himself at the margin of his main field. In response to his wilderness work, John D. Guthrie, supervisor of the Apache National Forest, to which Leopold was first posted, commented, “Forestry is not aesthetics, is not ‘natural areas,’ nor wilderness per se, but the putting to use, and *commercial use* at that, of all the resources in the country. We are getting away from the forestry ideas in this country, and more and more making the national forests into half-baked national parks” (*vide* Meine 1988: 257). Most agronomists would also say that agriculture is not aesthetics either, is not wild animals and plants per se, but the cultivation of land for the purpose of producing domesticated crops. Leopold's notion of agriculture, however, was just as unorthodox as his notion of forestry. “The term ‘farmer,’” he commented, “means one who determines the plants and animals with which he lives” (Leopold 1999a: 125). Further, Leopold declared, “...bread and beauty grow best together. Their harmonious integration can make farming not only a business but an art; the land not only a food factory but an instrument of self-expression, on which each can play music of his own choosing” (Leopold 1933: 641-642). Providing farmers with extension services as professor





of game management in a college of agriculture at a land grant university in the upper Midwest was a large part of the task to which Leopold devoted himself for the rest of his life (Meine 1988). This was the task that inspired and informed "A Sand County Almanac," his masterpiece. This was the task that led him to formulate a land ethic. It also stimulated him to think up a new philosophy of conservation.

Around the last turn of the century, Gifford Pinchot had articulated a philosophy of conservation and molded the USDA Forest Service in its image (Fox 1981, Hays 1959). As a student at the Yale Forest School, founded with Pinchot family funds, and as a young ranger in the Forest Service, the first chief of which was Gifford Pinchot himself, Leopold was thoroughly steeped in Pinchot's utilitarian philosophy of resource conservation (Meine 1988). Its motto is "wise use" (now, unfortunately, a phrase appropriated and perverted by the self-styled Wise Use Movement). Its maxim is "the greatest good of the greatest number for the longest time." According to Pinchot (1947: xix), "there has been a fundamental misconception that conservation means nothing but the husbanding of resources for future generations. There could be no more serious mistake. The first great fact about conservation is that it stands for development." What distinguishes conservation from resource rapine, in Pinchot's view, is efficiency and equity. Informed by science, foresters and other resources stewards could ensure that the renewable natural resources in their care were not exploited wastefully or over exploited and rendered incapable of regeneration. As federal officers with police powers, they also could ensure that the nation's publicly owned natural bounty was not commandeered by "robber barons."

Pinchot doubtless meant to head off any tendency to conflate resource conservation with nature preservation, then the only alternative philosophy of conservation. Nature preservation was championed vigorously by Pinchot's older contemporary, John Muir (Fox 1981). Preservationists thought—and the bolder among them, such as Muir (1916), actually said—that Nature (with a capital "N") is sacred. To conserve it was to protect it from human despoliation. While resource conservation implied "wise use" or efficient and equitable exploitation of natural resources, nature preservation implied setting aside—Pinchot (1947) called it "locking up"—especially inspiring natural areas and prohibiting all extractive or consumptive uses of them. Just as the national forests are the legacy of the resource conservation paradigm, the national parks and monuments are a legacy of the nature preservation paradigm of conservation (Fox 1981). One might enter them as one enters a magnificent cathedral, not to set up house or shop, but to see, pay homage and leave.

Leopold's well-known advocacy of a system of wilderness areas in the national forests tends to make us view him—just as he was viewed by his former boss, John D. Guthrie—as a conservationist who began his career in the

Pinchot camp and gradually came over to the Muir camp. But that would not tell the whole story. In the Southwest, the internecine conservation battle lines were drawn between efficient and equitable resource exploitation and wilderness preservation. But the Midwest lacked extensive back country, let alone national park grandeur. Except for the Quetico-Superior Boundary Waters, little wilderness was left to preserve. Conventional agronomy was devoted to making the exploitation of the land as efficient as possible, but the consequences disturbed Leopold's conservationist sensibilities. Something was missing. Big wilderness to offset resource exploitation was out of the question. Short of wilderness, a professional conservationist could hope perhaps to integrate a degree of wildness into the working landscape mosaic of cultivated fields, pasture, woodlots and wetlands. But how to define this third conservation paradigm? Leopold struggled during his professor years to formulate it variously as: "a universal symbiosis with land, economic and aesthetic, public and private" (Leopold 1933: 639); "a protest against destructive land use [that] seeks to preserve both the utility and beauty of the landscape" (Leopold 1991c: 212); "a positive exercise of skill and insight, not merely a negative exercise of abstinence and caution" (Leopold 1939: 296); and "self-expression in [the] landscape, rather than blind compliance with economic dogma" (Leopold 1939: 323). Finally, and most simply, Leopold settled on the definition of conservation that we find in "A Sand County Almanac" — "a state of harmony between men and the land" (Leopold: 1949: 207).

Central to this third, human-harmony-with-land paradigm of conservation, Leopold also articulated a new conservation concept that he called "land health." Once again, he anticipated by half a century recent developments in conservation philosophy. For only in this decade has the "new" concept of ecosystem health become broadly current. There is a new International Society for Ecosystem Health, a journal named *Ecosystem Health* and several international congresses on ecosystem health were convened in the 1990s. As now more fully developed, land or ecosystem health refers to the functionality of ecosystem processes (Callicott 1995, Callicott et al. 1999). It is different from and complementary to another concept with which it often is conflated, biological integrity (Callicott 1995, Callicott et al. 1999). A biotic community has integrity if all of its native species are present in their characteristic numbers interacting in their natural ways (Callicott 1995, Callicott et al. 1999). An ecosystem is healthy if it produces biomass, recruits, retains and cycles nutrients, holds the soil, modulates water flow, and maintains other ecosystem processes—whether these processes are carried out by native or exotic, or wild or domestic species (Callicott 1995, Callicott et al. 1999).

Leopold introduced the concept of land health for the first time, it seems, in an essay titled, "The Farmer as Conservationist" — "The fields and pastures of this [his





imagined ideal] farm, like its sons and daughters, are a mixture of wild and tame attributes, all built on a foundation of good health. The health of the fields is their fertility" (Leopold 1939: 323). Note especially that the presence of the tame does not compromise land or ecosystem health, provided that it is appropriately mixed with the wild.

Leopold more fully developed the concept of land health in a 1941 essay titled, "Wilderness as a Land Laboratory." There, the primary argument for wilderness preservation is not recreation, not sublime, awe-inspiring scenery, nor even habitat for threatened species, although all of these rationales for wilderness set-asides, especially the last one, remained important to him. By 1941, Leopold had become so focused on private-lands conservation in the middle, rural, humanly inhabited and economically exploited landscape that, to him then, the most important reason for wilderness preservation was to provide "a base-datum of normality, a picture of how healthy land maintains itself as an organism" (Leopold 1941: 3).

The basic idea here is that untrammelled areas provide the benchmarks of healthy ecosystems—normal rates of primary production, normal ratios of nutrient gains and losses, normal disturbance regimes, normal population cycles of component species, and so on and so forth. With these control areas, we can compare similar areas that we exploit in various ways—on which we practice forestry, agriculture and other land uses, large and small—and to which we introduce, intentionally or inadvertently, non-native species. From this perspective, the areas targeted for wilderness designation should not be confined to scenic hinterlands, but also should include unspoiled examples of every type of ecosystem—grasslands as well as montane meadows and wetlands as well as painted deserts.

When Leopold (1921) began campaigning for wilderness set-asides in the 1920s, he argued that every state should have a designated wilderness area for the convenience of its citizens who wanted a primitive and unconfined recreation experience. By the 1940s, he was arguing that every ecosystem should contain a designated wilderness area as a base datum of normality for that biome. As he put it in his own inimitable prose, "One cannot study the physiology of Montana in the Amazon; each biotic province needs its own wilderness for comparative studies of used and unused land" (Leopold 1941: 3).

"Wilderness as a Land Laboratory" most fully characterizes not land health but land sickness. "When soil loses fertility or washes away faster than it forms, when water systems exhibit abnormal floods and shortages, the land is sick" (Leopold 1941: 3). In addition to these symptoms of land sickness, Leopold adds "the disappearance of plant and animal species without visible causes, despite efforts to protect them, and the irruption of others as pests, despite efforts to control them" (Leopold 1941: 3). In "Conservation: In Whole or in Part?" written in 1944 but

unpublished until recently, Leopold more positively and generally characterized land health as follows, "The land consists of soil, water, plants, and animals, but health is more than a sufficiency of these components. It is a state of vigorous self-renewal in each of them, and in all collectively" (Leopold 1991d: 310). He also added qualitative as well as quantitative "deteriorations in land crops," and the outbreak of exotic diseases, parasites and pests to the catalog of land-sickness symptoms (Leopold 1991d: 313). Further, in this essay, Leopold hypothesizes a causal relationship between the diversity and complexity of the biotic sectors of ecosystems and their healthy functioning.

Leopold's most sustained treatment of this topic is found in two essays written in the mid-1940s and published for the first time in 1999—"Biotic Land-Use" and "The Land-health Concept and Conservation." In the latter, he defines land health as "the capacity for self-renewal in the biota," and adds, "a general tendency towards the shortening of species lists and of food chains, and a worldwide dominance of plant and animal weeds" to the catalog of land-sickness symptoms (Leopold 1999b: 219). Perhaps most important, Leopold manages to unite the two goals of conservation toward which he seemed alternately inclined: (1) biological integrity, the preservation of the full complement of the native components of biotic communities in their characteristic numbers; and (2) ecosystem health, the preservation of the normal functioning of ecological processes. "It is necessary to suppose," he wrote, "that a high degree of interdependence exists between the capacity for self-renewal [or land health] and the integrity of the native communities" (Leopold 1999b: 221). But how is the preservation of biological integrity possible anywhere except in wilderness areas where man is a visitor who does not remain, where the community of life is untrammelled by man and his works? Leopold (1999b: 222) acknowledged "that we must alter the distribution of species before we understand the consequences of doing so." His suggested solution in "The Land-health Concept and Conservation" was four-fold (Leopold 1999b).

First, though reductions in numbers are inevitable, extirpate no native species. Reductions are reversible; extinction is forever.

Second, eschew violence in the form of large-scale earth moving, such as dams and drainage ditches, and in the form of synthetic chemicals. Here, as in 'The Land Pyramid' section of "The Land Ethic" from "A Sand County Almanac," Leopold recommended a kinder, gentler approach to land use and modification. That implied a preference for biotic as opposed to mechanical techniques—preventing streambank erosion, for example, by using revegetation rather than concrete revetments, or controlling pests by fostering their natural enemies rather than using pesticides.

Third, inculcate a sense of responsibility in landown-

ers for the integrity of the biota on which the health of the land depends.

Finally, try to limit the population of human members of the biotic community no less than that of other members.

The following quotation from this as-yet little-known gem from the master's hand summarizes its general tenor:

"No land unnecessarily mutilated is useful (if indeed it is still there). The true problem of agriculture and all other land use, is to achieve both utility and beauty, and thus permanence. A farmer [or any other landowner] has the same obligation to help, within reason, to preserve the biotic integrity of his community as he has, within reason, to preserve the culture which rests on it. As a member of the community he is the ultimate beneficiary of both" (Leopold 1999b: 224-225).

Beginning with a memorandum to regional foresters and station directors from Dale F. Robertson (1992), then chief, the USDA Forest Service has been reorienting its management philosophy from the Pinchot paradigm of maximum sustained yield to something called ecosystem management. Supplanting Gifford Pinchot, Chief Robertson (1992) named only one person as a philosophical guide for the new Forest Service lands management policy, Aldo Leopold (Flader 1993). This course change in management policy, from Pinchot's philosophy of conservation to Leopold's, has been held steady by Robertson's two successors, Jack Ward Thomas and Mike Dombeck. Increasingly, the concept of ecosystem management has been linked closely with that of ecosystem health, especially by Chief Dombeck. The Service, as the most venerable federal lands management agency, historically has been a trendsetter for others (Flader 1993). Thus, the emphasis on ecosystem management and ecosystem health in federal forests management policy suggests to me that a sea of change is occurring in federal public lands management generally. Clearly, the philosophy of conservation that Aldo Leopold developed half a century ago, primarily in the context of private lands management, now strongly influences public lands management.

In "Biotic Land-Use," Leopold most clearly anticipated the current paradigm shift underway in public lands management. There he notes that, "Until the technologies"—which he specifies as "agronomy, erosion control, flood control, pasture management, forestry, and wildlife management"—"accept as their common purpose the health of the land as a whole, coordination [among them] is mere window dressing, and each will continue in part to cancel the other" (Leopold 1999c: 202). Ecosystem management for land health does not preclude commodity extraction; rather, it makes commodity extraction an

ancillary or subordinate goal, to the extent that such is consistent with land health. As Leopold (1999c: 202) put it, "The acceptance of this common purpose"—ecosystem management for land health—"does not call for the surrender of their separate purposes (soil, timber, game, etc.) except as these conflict with the common one."

Since Leopold's day, ecology has undergone some developments that bear on our contemporary decoupling of ecosystem health and community integrity that (though defined differently, the former in functional terms, the latter in compositional terms) were linked strongly in Leopold's mind (Botkin 1990, Hagen 1989).

The first significant development would be a schism in ecology, dividing the science into two distinct approaches, evolutionary ecology and ecosystem ecology (Hagen 1989). The evolutionary ecologist sees the living world as composed of organisms, aggregated into gene-exchanging species populations which interact with one another in biotic communities (Hagen 1989). The ecosystem ecologist sees the world as a "fountain of energy" which is captured through photosynthesis by primary producers and passed up the food chain first to grazers and browsers, then to omnivores, then to middle-sized predators and scavengers, and finally to large-bodied, long-lived top carnivores (Hagen 1989). Decomposers, i.e., fungi and bacteria, reduce the material components of organisms to their elemental forms, making them available once again to primary producers. In short, the evolutionary ecologist sees the living world as composed primarily of entities; the ecosystem ecologist sees the world as composed primarily of processes. The basic entities for the one are organisms of various kinds; for the other, the basic processes are energy flows and nutrient cycles.

Both evolutionary ecology and ecosystem ecology once posited a balance of nature, each in its own terms (Botkin 1990, Pickett and Ostfeld 1995). For evolutionary ecologists, biotic communities were maintained in a state of equilibrium, mainly by predator/prey relationships (Gause 1934). Predators held prey in check which prevented their overeating the vegetation. For ecosystem ecologists, the balance of nature was expressed in terms of a unit ratio of production to respiration, and of a unit ratio or better of nutrient recruitment from the parent material to nutrient loss through erosion (Odum 1969). Also, gas exchanges between the biota, oceans and atmosphere were represented as in dynamic equilibrium (Odum 1969).

Leopold's careful distinction between community integrity and land health indicates that he was incipiently aware of the distinction that later would emerge more clearly between ecosystem and evolutionary ecology (Leopold 1999b). Once again, a biotic community has integrity if all its component species populations, i.e., its native species, are present in their characteristic numbers and interacting in their characteristic ways, and if they continue indefinitely to do so, within certain



parameters of gains and losses or normal population cycles (Leopold 1999b). A community lacks integrity if it is dominated by exotic species populations, or has lost an appreciable number of its native species populations, or the natives have appreciably increased or decreased in number (Leopold 1999b). Leopold (1999b, 1999c) defined land health primarily in terms of ecosystem processes—normal rates of erosion and normal hydrology, fertility (another word for primary production), length of food chains, complexity of food webs, absence of disease epidemics, and so on.

As I pointed out, in "The Land-health Concept and Conservation," Leopold (1999b) suggested that community integrity is a necessary condition for land health. In light of the sharper distinction between ecosystems and biotic communities and, especially in light of the abandonment of belief in a balance of nature in ecology, it would be more accurate to say that community integrity is a sufficient but not necessary condition for land health. That is, if its associated biotic community has integrity, we can be sure that an ecosystem is healthy. But an ecosystem may be healthy even when its associated biotic community lacks integrity.

In "Biotic Land-Use," Leopold offered a less rigorous necessary condition for land health that is more consistent with contemporary thinking. There, he first equated land health with land stability:

"Soil, the repository of food between its successive trips through the chains, tends to wash downhill, but this downhill movement is slow, and in healthy land, is offset by the decomposition of rocks. Some animals likewise accomplish an uphill movement of food.

"Stability is the continuity of this organized circulatory system. Land is stable when its food chains are so organized as to be able to circulate the same food [i.e., what a contemporary ecologist would call nutrients] an indefinite number of times" (Leopold 1999c: 205).

Next, Leopold (1999b) postulated the classic connection—since impugned, in ecology, but now being revived—between stability and diversity. He wrote, "What in the evolutionary history of this flowering earth, is most closely associated with stability? The answer to my mind is clear: diversity of fauna and flora" (Leopold 1999c: 203). But a diverse fauna and flora are not necessarily native fauna and flora:

"We have now modified both the species-composition of the food chain and the characteristic numbers of the constituent species. Chains now begin with corn and alfalfa instead of oaks and bluestem.

The food instead of flowing into elk, deer, and Indians, flows into cows, hogs, and poultry; farmers, flappers, and freshmen. The remaining wildlife eats tame as well as wild plants" (Leopold 1999c: 206).

Between the mid- and endpoints of the 20th century, the flux of nature paradigm, as some ecologists call it, has replaced the balance of nature paradigm in ecology (Pickett and Ostfeld 1995). Species are not so tightly integrated in biotic communities as they were portrayed to be in Leopold's day. They come and go, and mix and match, as the pollen record proves (Davis 1986). Indeed, a biotic community is more like an aggregate of populations of species adapted to similar gradients of temperature, moisture, pH and the like, interacting catch as catch can, than a unit composed of coevolved symbionts. Moreover, biotic communities are disturbed by forces such as wind, fire and flood—not infrequently and abnormally, but routinely and regularly (Pickett and White 1985). For these reasons and others, it is possible, cautiously, to substitute economically more desirable for less desirable species in biotic communities, provided they are adapted to similar gradients and fill similar niches, without compromising ecosystem health. Ecosystem health, the normal functioning of ecosystem processes, can be, therefore, maintained in the absence of biological integrity.

Amazingly, in "Biotic Land-Use," Leopold anticipated even this recent turn in contemporary ecology. He wrote:

"At this point I digress to refute the notion, unhappily cultivated by ecologists, that the land mechanism has a kind of Dresden china delicacy, and falls to pieces at a loud noise. The whole history of civilization shows land to be tough. Lands differ in toughness, but even the most sensitive took several generations of violence to spoil" (Leopold 1999c: 207).

Finally, in "Biotic Land-Use," Leopold (1999c: 207) crafted yet another definition of conservation, "The term land includes soils, water systems, and wild and tame plants and animals. Conservation is the attempt to understand the interactions of these components of land and to guide their collective behavior under human dominance."

How can we update and apply Leopold's integrated philosophy of conservation, which was forged in the crucible of mid-20th century Midwestern America, to 21st century public lands management?

Leopold's vision of a healthy, rural Midwest landscape, stripped of his rapturous poetic expression, comes to something like this. The landscape scale is the quarter-section (160 acres) Midwestern farmstead. Leopold never put a figure on it, but let's say that, judging from his description, 25 percent (40 acres) would be devoted to habitat for native species; the rest would be domestic crops (Leopold 1939). That uncultivated 25 percent would not be one



square 40-acre polygon, but a 20-acre cow- and pig-proof woodlot, a 10-acre undrained wetland, a cow- and pig-proof stream gallery adding up to 5 acres, and an odd 5 acres of fencerows, draws, roadside prairie and the like. In addition, the conservation-minded farmer would cultivate his croplands and graze his pastures using conservation methods—no-till (or at least no autumn plowing), manure fertilizers, paddock grazing and so on (Leopold 1939). So even at this middle scale, the acres devoted to community integrity and those to land health are not the same. At the farmstead scale of resolution, they are integrated, at the acre-by-acre scale of resolution, they are not.

Let's scale up to the much larger national mosaic of public and private lands. What would Leopold's human-harmony-with-nature philosophy of conservation look like at this scale? Let's start with 25 percent of the total dedicated to the preservation of biological integrity—that, again, would be native species populations, in their characteristic numbers, interacting in their characteristic ways. Such lands we would preserve for their own sake, that is, for the sake of their integrity, as habitat for native species populations. They also would serve a less exalted, more pragmatic purpose, as benchmarks of normal ecosystem function—norms of ecosystem health—for the 75 percent of the land we deliberately modify for economic reasons such as timber extraction, livestock grazing and crop production. These "bio-integrity reserves," therefore, would have to be scattered across the continent to fully represent every biotic province, and also be connected.

Under the aegis of the old Muir-Pinchot one-two conservation combination, if we managed to devote 25 percent of the country to what would amount to wilderness set-asides, the only criterion for the working 75 percent would be maximum sustained yield. Under the aegis of the scaled-up Leopold human-harmony-with-nature paradigm, that criterion would be replaced by the criterion of ecosystem health. How can we harvest trees and replant forests, not necessarily only with native species, but in such a way that we do not increase soil erosion, adversely affect stream flow and water quality, diminish

fertility, shorten food chains, eliminate niches for large-bodied, long-lived top carnivores, encourage disease epidemics, or threaten neighboring bio-integrity reserves (i.e., wilderness areas) with being overrun by exotic species? How can we graze livestock without increasing soil erosion, reducing soil fertility, adversely affecting stream flow and water quality, all the while tolerating large-bodied, long-lived, wide-ranging predators? How can we grow crops without increasing soil erosion, reducing soil fertility, and adversely affecting stream flow and water quality? Based on his understanding of community integrity and land health developed over the last decade of his life and updated to account for changes in ecology over the subsequent 50 years, these are the challenges of ecosystem management that Leopold laid down for today's public lands managers. I'll end with a final quotation from the master himself:

"In this ... list of unanswered problems and dilemmas there lies concealed, but I hope not undiscovered, a story of almost romantic expansion in professional responsibilities.

"Our profession began with the job of producing something to shoot. However important this may seem to us, it is not very important to the emancipated moderns who no longer feel soil between their toes.

"We find that we cannot produce much to shoot until the [typical American] changes his ways of using land, and he in turn cannot change his ways until his teachers, bankers, customers, editors, governors, and trespassers change their ideas about what land is for. To change ideas about what land is for is to change ideas about what anything is for.

"Thus we started to move a straw and end up with the job of moving a mountain" (Leopold 1940: 346).

## REFERENCES

- Botkin, D. B. 1990. *Discordant harmonies: A new ecology for the twenty-first century*. Oxford University Press, New York. xii + 241 pp.
- Callicott, J. B. 1995. The value of ecosystem health. *Environmental Values* 5: 345-361.
- Callicott, J. B., L. B. Crowder and K. Mumford. 1999. Current normative concepts in conservation. *Conservation Biology* 13: 22-35.
- Davis, M.B. 1986. Climatic instability, time lags and, community disequilibrium. Pages 269-284 in J. Diamond and T. J. Case, eds., *Community ecology*. Harper and Row, New York.
- Flader, S. L. 1993. Aldo Leopold and the evolution of ecosystem management. Pages 15-19 in W. W. Covington and L. F. DeBano, eds., *Sustainable ecological systems: Implementing an ecological approach to land management*. Rocky Mountain Forest and Range Experiment Station, USDA Forest Service, Fort Collins, CO.



- Fox, S. 1981. John Muir and his legacy: The American conservation movement. Little Brown, Boston, MA. xii + 436 pp.
- Gause, G. F. 1934. The struggle for existence. Williams and Wilkens, Baltimore, MD. ix + 163 pp.
- Hagen, J. B. 1989. Research perspectives and the anomalous status of modern ecology. *Biology and Philosophy* 4: 433-455.
- Hays, S. P. 1959. Conservation and the gospel of efficiency: The progressive conservation movement, 1890-1920. Harvard University Press, Cambridge, MA. xiii + 297 pp.
- Meine, C. 1988. Aldo Leopold: His life and work. University of Wisconsin Press, Madison. xv + 638 pp.
- Leopold, A. 1921. The wilderness and its place in forest recreational policy. *J. Forestry* 19: 718-721.
- \_\_\_\_\_. 1925a. Conserving the covered wagon. *Sunset Magazine* 54 (March): 21, 56.
- \_\_\_\_\_. 1925b. The pig in the parlor. *USDA Forest Service Bull.* 9, 23 (June): 1-2.
- \_\_\_\_\_. 1925c. The last stand of the wilderness. *American Forests and Forest Life* 31: 599-604.
- \_\_\_\_\_. 1925d. Wilderness as a form of land use. *J. Land and Public Utility Economics* 1: 398-404.
- \_\_\_\_\_. 1925e. A plea for wilderness hunting grounds. *Outdoor Life* 56: 348-350.
- \_\_\_\_\_. 1933. The conservation ethic. *J. Forestry* 31: 634-643.
- \_\_\_\_\_. 1939. The farmer as a conservationist. *American Forests* 45: 294-299, 316, 323.
- \_\_\_\_\_. 1940. The state of the profession. *J. Wildlife Management* 4: 343-346.
- \_\_\_\_\_. 1941. Wilderness as a land laboratory. *Living Wilderness* 6 (July): 3.
- \_\_\_\_\_. 1949. A sand county almanac, and sketches here and there. Oxford University Press, New York. xiii + 226 pp.
- \_\_\_\_\_. 1991a. The river of the mother of god. Pages 123-127 in S. L. Flader and J. B. Callicott, eds., *The river of the mother of god and other essays by Aldo Leopold*. University of Wisconsin Press, Madison.
- \_\_\_\_\_. 1991b. Wilderness. Pages 226-229 in S. L. Flader and J. B. Callicott, eds., *The river of the mother of god and other essays by Aldo Leopold*. University of Wisconsin Press, Madison.
- \_\_\_\_\_. 1991c. Land pathology. Pages 212-217 in S. L. Flader and J. B. Callicott, eds., *The river of the mother of god and other essays by Aldo Leopold*. University of Wisconsin Press, Madison.
- \_\_\_\_\_. 1991d. Conservation: In whole or in part? Pages 310-319 in S. L. Flader and J. B. Callicott, eds., *The river of the mother of god and other essays by Aldo Leopold*. University of Wisconsin Press, Madison.
- \_\_\_\_\_. 1999a. The farm arboretum. In J. B. Callicott and E. T. Freyfogle, eds., *For the health of the land: Previously unpublished essays and other writings on conservation*. Island Press, Washington, D.C.
- \_\_\_\_\_. 1999b. The land-health concept and conservation. In J. B. Callicott and E. T. Freyfogle, eds., *For the health of the land: Previously unpublished essays and other writings on conservation*. Island Press, Washington, D.C.
- \_\_\_\_\_. 1999c. Biotic land-use. In J. B. Callicott and E. T. Freyfogle, eds., *For the health of the land: Previously unpublished essays and other writings on conservation*. Island Press, Washington, D.C.
- Muir, J. 1916. A thousand-mile walk to the gulf. Houghton and Mifflin, Boston, MA. xxxiv + 218 pp.
- Odum, E. P. 1969. The strategy of ecosystem development. *Science* 164: 262-270.
- Pickett, S. T. A. and R. S. Ostfeld. 1995. The shifting paradigm in ecology. Pages 261-277 in R. L. Knight and S. F. Bates, eds., *A new century for natural resources management*. Island Press, Washington, D.C.
- Pickett, S. T. A. and P. S. White. 1985. The ecology of natural disturbance and patch dynamics. Island Press, Washington, D.C. xiv + 472 pp.
- Pinchot, G. 1947. Breaking new ground. Harcourt Brace, New York. xxvi + 522 pp.
- Robertson, F. D. 1992. Ecosystem management of the national forests and grasslands. Memorandum to regional foresters and station managers, June 4. USDA Forest Service, Washington, D.C.

# Keynote: Fireflies

BY JAMIE RAPPAPORT CLARK  
DIRECTOR  
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For those of you not familiar with the seasons in the Mid-Atlantic, you could see today that spring is one of the best times to be “East.” I hope everyone has had a chance to take in the sights, sounds and aromas of an Appalachian spring at the National Conservation Training Center—the kaleidoscope of colorful wildflowers, and the symphonic rhapsodies of indigo buntings and wood thrushes.

I’ve heard that, during late spring and summer evenings, the meadows around campus come alive with thousands of lightning bugs. How many of you, as kids, ran through a field illuminated with the green glow of lighting bugs? I’m sure many of you even captured them in a Mason jar...I did.

Last summer, my husband and I took an evening stroll through our neighborhood in Leesburg, Virginia. When we moved there six years ago, there were 50 homes in the community. Now there are more than 450. Almost every field has been cleared, and now, in early spring, we no longer hear woodcock peenting or see them performing aerobatic displays. The bluebirds that remain in the area seem confused about where to go, and the goldfinches are searching elsewhere for fertile ground. Our most common songster these days is the mockingbird—its repertoire of the melodies of other birds that should be around gives our neighbors a false sense that our few remaining fields and woodlots are full of birds. The spring peepers aren’t peeping as much, and the fireflies, as evidenced by our stroll that evening, are quickly becoming a memory as well.

I believe every one of you is well aware of our responsibilities as public land managers to take care of our nation’s natural heritage. I also know that many of you have been embracing a land ethic approach to resource conservation for many years. But for some reason, I keep thinking about those fireflies, and I wonder, are we doing enough, as much, for the fireflies as we have for the other critters that keep us company?

There should be no misperception about the good things we are doing for critters and the land. Our profession is full of proud individuals who have dedicated their lives to protecting our wildlife heritage. We, as a profession, have started incorporating into our work those sim-

ple steps that Leopold so gracefully wrote about. But is it enough? Not really. Can we do more? Definitely. Is this an easy approach to take? Not in the least. But are the rewards great? Well, if you like fireflies in the meadows and spring peepers in the ponds, then you know the rewards are infinite.

Government should be responsible for exemplifying the best in land stewardship. It isn’t something that should come from a statute or regulation, and it isn’t something that just came to the forefront with publication of “A Sand County Almanac,” the celebration of the original Earth Day or passage of the Endangered Species Act.

Let me quote a passage:

“...Before we plow an unfamiliar patch  
It is well to be informed about the winds,  
About the variations in the sky,  
The Native traits and habits of the Place,  
What each locale permits, and what denies.”

This quote is from Virgil, the *Georgics*, circa 30 B.C.—quite a bit of time before Aldo Leopold, John Muir and Henry David Thoreau arrived on the scene. This quote befits not only public land managers; I doubt there were many in 30 B.C.

Long before Leopold, the land ethic was and remains a matter of personal responsibility. For us, a land ethic requires a renewed perspective, a progressive attitude on how we look at and care for our natural world. A land ethic requires a fresh focus and approach in how we protect and conserve our natural heritage, and it requires a commitment on our part to take a much broader look at our wildlands. Just how do all the pieces fit? Should we really do anything to the land before we know what was there before we arrived on the scene? Government, private, corporate and individual—we all have a responsibility in some form to practice the land ethic.

Many of us entered this profession because of our interest in the science of life. For a budding biologist, there is nothing sweeter than to be in the middle of a marsh or forest, counting things, watching things and analyzing things. A land ethic, however, involves and requires much more than just counting widgets. It



demands from us a passion from the heart for all things natural, wild and free. For the profession, the heart strings should remain sensitive to the touch—the touch of a stunning sunrise, a flock of sandhill cranes taking flight over a marsh or an alligator basking along the shoreline of a cypress swamp. Each of these should create a sense of excitement in all of us.

Do they for you? Do you still revel in the splendor of a foggy morning along the coast? Are you still fascinated by the wonders of bird migrations? Does your heart still retain that sensitive touch to the natural gifts that each season brings to us? Are you still catching fireflies?

Sadly, I think that, at times, we have become too busy to notice that the passion we need is missing from our hearts. But I believe the spirit hasn't disappeared, instead it has gone into hibernation, waiting for us to reignite the spark that makes the heart soar for nature. As Leopold wrote, "One of the penalties of an ecological education is that one lives alone in a world of wounds." Many of us do live in world of wounds, and I suppose, we do become a bit weary from battling those that deem clean air, clean water and wildlands mere inconveniences. I know I certainly get weary at times. There's a simple remedy to this, a way to renew the spirit. You guessed it: a summer evening, a sky filled with the diamond sparkles of a billion stars, a wild meadow and fireflies. A Mason jar is optional, but childlike curiosity is required—our spirit can't survive without it.

One of the most difficult things for human beings to accept is change, and our profession is no exception to this. Leopold wrote, "To change ideas about what land is for is to change ideas about what anything is for." With these words, he let us know that a change of attitude toward the land is a change so profound that it must take root in the human conscience. As I said earlier, this is not something the government can mandate. Nor should it. But as land managers for the stewardship of our nation's public lands, we do have a responsibility to care for our trust resources. For many in our public land agencies, the change from a traditional view of the land to Leopold's land ethic was and remains a challenge. For some, it was a threat.

The U.S. Fish and Wildlife Service has made a commitment to ecosystem conservation. In 1994, the service adopted the ecosystem approach to fish and wildlife conservation, answering Leopold's call to treat the landscape as a community, a whole much greater than the sum of its parts. I am continually heartened by folks in the service that already have ingrained a sound land ethic in their hearts.

Our National Wildlife Refuge System, the largest and most comprehensive collection of lands in the world dedicated to the sole purpose of wildlife conservation, has made a drastic and positive transition in how they manage land. All species matter, from wading birds to waterfowl to Neotropical migrants, from alligators to turtles to frogs, from trillium to cacti to koa. Instead of just creating

and enhancing habitats, we are restoring and protecting the last of the best and the best of the rest. We have a long way to go, but I'm proud of how all segments of the service are working together for the refuge system.

As much as the service can do still is not enough. As much as the National Park Service, Bureau of Land Management, USDA Forest Service and Department of Defense accomplish as public land managers is not enough either. We clearly cannot do it alone.

Public land managers don't hold any special magic potions or keys to cure all that ails our landscapes. That we cannot do it alone isn't a new concept to any of us, but it bears repeating. Without the support and participation of private landowners, the protection of our nation's wildlands and wildlife will be for naught. Private landowners, after all, are important players on the landscape. Instead of conservation by the government, Leopold advocated a better alternative—conservation by the people.

The proper role of government, therefore, is not to lead forcefully by imposing a land ethic, but rather to lead in another, more subtle way by promoting a land ethic and encouraging good stewardship practices. It is a role similar to the one that Leopold assumed as professor. To his students, he said, "I am trying to teach you that this alphabet of 'natural objects' (soils and rivers, birds and beasts) spells out a story, which [one] may read—if he knows how. Once you learn to read the land, I have no fear of what you will do to it, or with it. And I know many pleasant things it will do to you."

Our challenge is to encourage the public to embrace the land ethic. This is no easy task, considering that more and more Americans are living in urban and suburban landscapes, where the comforts of civilization make it easier to take for granted the priceless value of the land. As Leopold noted, "There are two spiritual dangers in not owning a farm. One is the danger of supposing that breakfast comes from the grocery, and the other that heat comes from the furnace."

These spiritual dangers are growing increasingly prevalent as, more and more, the daily land connection of our citizens is either limited to a suburban lawn or obstructed entirely by asphalt. Now more than ever, it is imperative that we reconnect the public to the land so that the wisdom of the land ethic will be clear and meaningful to them.

That brings me to the central challenge we and our successors in conservation will face in the next millennium. With the growing human population and its need for resources, how will we preserve the landscape and its wild creatures? I recently heard that the carrying capacity of our planet is 11 billion, and world population already has topped 6 billion and is increasing exponentially. In a society where we protect the rights of individuals to lead their own lives, make their own decisions and do what they wish on their own land, how can government save wild places and wild things, especially with this booming population?



First, I believe it is our role to promote the land ethic by setting a good example. We need to manage our lands as models of conservation. Second, we need to give people good, accurate information about the state of our resources. Document changes, conduct research and get the information out there. And third, we need to find innovative ways to allow people to get involved in conservation. The public desire to get involved in conservation is blossoming. It's all about joining forces and leveraging our expertise and resources to effect maximum gains on the ground for long-term natural resource conservation.

Innovative partnership efforts across the country are stimulating individual and community involvement in conservation, and in that way, we are helping to instill a national conservation ethic. Although Leopold intended the land ethic as an individual and personal credo, we are strengthening its power by joining together to face the common moral obligation it sets forth.

We now are counting down the days to a new millennium. Are we on the right track? There is an essay in "A Sand County Almanac" called "Good Oak." In it, Leopold tells of sawing through an old oak tree. He describes the blade cutting into the trunk, traversing through the rings of history with each biting slice. What has this tree seen—the bootlegger of the Great Depression who destroyed the soil on Leopold's Sand County farm, the systematic draining of wetlands for the sake of agriculture, Wisconsin's farewell to the cougar in 1908, the death of the last passenger pigeon in 1899? The saw cuts through the past ... a mostly unhappy past, from the conservationist's point of view.

Have we made a difference since "A Sand County Almanac"? What have the trees around us seen? Out on the edge of campus there is an old oak. If you'll follow me down to the river in your minds, we'll take the saw in hand and get to work. We'll cut into the 1990s, a decade that began with the northern spotted owl conflict and moved toward a greater focus on ecosystem conservation. We'll slice into the '80s, when the brown pelican became the

first recovered endangered species to be delisted and 54 million acres of some of the most spectacular lands in Alaska were set aside for national wildlife refuges. We'll cut into the '70s, the decade of the Clean Water Act, Clean Air Act, Endangered Species Act and the first Earth Day celebration. In the '60s, we'll cut into the year when the National Environmental Policy Act led to establishment of the Environmental Protection Agency, "Silent Spring" was published, the Wilderness Act was signed, and the first men on the moon brought back pictures of our planet, and we saw it whole for the first time. In the 1950s, waterfowl populations, perilously low in Leopold's final years, rebounded to 39 million breeding pairs, and ecology departments emerged in universities throughout the country. Then our saw blade will arrive at 1949, 50 years ago, when "A Sand County Almanac" was published.

How have we done? Would Leopold be proud of how far we've come? There still are daunting ecological crises to address: declining bird populations, disappearing natural landscapes, invasive species, and an unnaturally and frighteningly high extinction rate. I do believe, however, that we've gotten a good start, and we are on the right path.

What lies ahead? Maybe we won't cut down that oak at the edge of campus. We'll let it stand to see the new millennium, see us delist the bald eagle and the eastern timber wolf, and whatever else the future holds.

Leopold wrote, "We shall never achieve harmony with land, any more than we shall achieve justice or liberty for people. In these higher aspirations, the important thing is not to achieve, but to strive."

Let us keep that in mind when things seem impossible. It is up to us, private citizen and public servant alike, to take the land ethic into our hearts and strive to make a difference. Fifty years ago, one man did—he set the course for the future of land management. Now each of us must rise to the challenge he set forth for us in his land ethic and leave our own legacy with the rings of those faithful recorders of history, the growing good oak trees. In the end, it still is important for us all to be able to catch fireflies.





# Aldo Leopold: The Good Life

BY RICHARD BODNER

LEOPOLD INTERPRETER AND CONSERVATIONIST POET AND  
ACTING DIRECTOR, LAND OF ENCHANTMENT POETRY THEATER  
LAS VEGAS, NEW MEXICO

**Editor's Note:** Some text is quoted or adapted from "A Sand County Almanac" and "Round River" by Aldo Leopold ©1949, 1953, 1966, renewed 1977, 1981 by Oxford University Press, Inc., and is used by the permission of Oxford University Press, Inc., and the Aldo Leopold Foundation. The presentation is copyrighted 1999 by Land of Enchantment Poetry Theater (a division of Mapa Systems).

## PREFACE

This is a transcript of a *chautauqua*-style (pronounced "chaw-taw-kwa") creative interpretation, a semi-improvisational performance presented in character. It does not exist apart from its context, and should not be taken (or quoted) as accurately representing the actual Leopold writings.

This is not the place for an extensive treatment of the form, except to note that, in keeping with the characteristic poetic license, I took liberties with the original Leopold texts, freely weaving excerpts together with my own and borrowed words, and did so without benefit of footnotes. As usual, I wore various hats in the course of the dramatic journey through life, with costume shifts on the fly and other visual/dramatic aids. Still, the "Alias Aldo" who emerges is not so much an imitation of the historical figure as a dramatic (and, hopefully, entertaining) vehicle to bring the Leopold message and perspective to life off the page, for the particular group and setting.

The form is not entirely at home in print, in other words, but is simply designed to encourage a kind of creative conversation between interpreter, audience and historical legacy. My *chautauqua*-style programs are partly improvisational, therefore, offered in direct exchange with the audience, usually without text or notes, adapting to particulars "like water taking the shape of its vessel." This is the first time I've put a transcript of such a program together, so please keep in mind that you're reading the transcription of an ephemeral event, not a script meant to stand on its own. A videotape of this particular program

may be ordered from Mapa Systems, University Post Office Box 9900, Las Vegas, New Mexico 87701, \$19 includes shipping.

The program was developed with support from the New Mexico Endowment for the Humanities. Thanks to many hosts, contributors and sponsors, versions of the Leopold *chautauqua* have been offered at schools, banquets and community festivals, libraries and museums, national parks and monuments, leadership retreats and training institutes, churches and meeting halls—wherever people interested in the Leopold message are gathered. Each gathering is unique—none more so than this one.

## INTRODUCTION

BY GITA BODNER

BIOLOGIST

UNIVERSITY OF ARIZONA

In addition to my role as a spokesperson for charismatic microfauna and my interest in how the Leopold land ethic manifests in the forests of Arizona and New Mexico where the early Leopold ideas found such fertile ground, my being here tonight goes back to a moment of Aldo-inspired enthusiasm several years ago when I lent my father my copy—my *only* copy at the time—of "A Sand County Almanac," and apparently, he's still not finished with it. I knew he'd connect with the writing, but I had no idea he'd identify quite so much with the person.

If Aldo were here, I think he might ask us to take his name off the title, because among his own many talks, he never once spoke on "the life of Aldo Leopold." Based on this fact, we know tonight's presenter must be a fake, or as the official description puts it, "*a genuine imitation poor substitute* for the historical figure unfortunately no longer available."

The last time I introduced Richard Bodner to friends at a grassroots forest conference in Arizona, I presented him as "the shallow end of my gene pool and the source of my own questionable genes." On the strength of that, I've been asked to introduce this program tonight. In the process, I get to hobnob with the likes of you and enjoy a family reunion—including my conservation biologist and bird-



banding brother, Gus, from Flagstaff. (My parents only realized several years after having named Gus that they'd prophetically named him after Leopold's famous bird dog.)

Many of you here tonight come from the northern Leopold haunts of prairies and woodlands. Gus and I grew up in the ponderosa-clad mountains of northern New Mexico, where the maternal side of the Leopold family originated, and where *our* mother does her own land ethics work. This spring's issue of *Orion* Afield magazine features an outdoor learning center she helped start, "a child-sized refuge," where she passes on conservation values close to the ground as a special education teacher at Los Ninos Elementary School.

You can see why I feel such a kinship with the Aldo and Estella Leopold offspring, and I'm really here as a bridge across families and generations.

My dad usually shows up alone, or with a dog, and the host does the introduction. This is such a unique occasion, though, such a special place, time and conjunction of people, that it seemed appropriate for us to share this experience together, including the extended friendships with all of you, though we especially dedicate tonight to Starker, Luna, Nina, Carl and Estella Leopold, and to the love of parents and children, in honor of which our presenter will try to refrain from his usual prideful ramblings about the Leopold offspring's wonderful accomplishments!

As far as the lineage *Psuedoleopoldiae*, I should point out that my father—who has never done a program on "the good life of Richard Bodner"—still has his own reality, or as much as you'd expect from a "naive interloper," a.k.a. poet, recording artist . . . I need to find my notes on the rest of his qualifications. You see, he's done many of these things since Gus and I flew the nest. As children, you sort of assume your parents' lives end when you leave, so I was shocked to come back and find that both of my parents had been doing so much and in many new areas, including, in his case, let's see, "naive interloper, poet, recording artist and wandering teacher who believes in listening to mountains and rivers and in deepening land relations through the arts."

Of all the shapes his work takes, the least predictable is that free American form called a "*chautauqua*," from a Seneca word meaning something like "Place of a Big Fish Story," or in tonight's case, "Place of a Big Fish-and-Wildlife Story." In the usual version of the *chautauqua*, a presenter puts on the hat of an historical figure and speaks directly to a contemporary audience to help bring that person's work and legacy to life off the page, freely mixing original, improvised and borrowed words along the way—a little like the western form known as a "Chuckwagon Stew," meaning even the cook won't necessarily know in advance what will end up in it.

With that warning, I'd like you to wipe the slate of your mind clear, open the gateway of your heart and join

me in giving a warm West Virginia family welcome to a character we can truly call "the best currently available Alias Aldo."

## CHAUTAUQUA PRESENTATION

BY RICHARD BODNER

Each year, after the long, deep mountain blizzards, there comes a night of thaw when the sound of dripping water is heard again in the land, and all along the river, and in every fold of the mountains, strange stirrings come to creatures, some of whom have been in bed not just for the night but asleep all winter . . .

However out of season, I feel a related kind of stirring being here with you now in the commons of this incredible Conservation Training Center, the perfect place for our big family reunion. Why it almost feels like coming home. Where else would you expect to find a copy of "The River of the Mother of God" on the night table and family pictures on the wall?

It seems fitting that this program, along with this conference and larger work of which we're part, should reflect the working together of many good people and stewardship groups, so my hat's off to White Sands National Monument for providing the hat and the Cibola National Forest for the rest of this 1912 U.S. Forest Service uniform steeped in pine, sage and history. I mean it from the bottom of my boots, when I say thanks to all of those who've made this gathering possible, including those with the questionable judgment of inviting me to be part of the proceedings—maybe just to prove we have no legends here, and who better to make that clear than that citizen (troublemaker?) and jumping-spider woman, Gita Bodner, unless it's the rest of her low-down relatives. While I heartily thank her for her ice-breaking bridge of words, now that you know who's responsible for my being in this outfit, you know where you can take any complaints down the trail.

In a strange and wonderful way, we are partly the creation of our own offspring. As an offspring myself, familiar with that full-hearted mix of feelings attending the loss of parents, even decades and decades later, I've never felt more humble in my current role than tonight among those who not only should know better, but do—especially Nina and Estella Leopold. It's a good thing they were raised with tolerance and compassion!

Along related lines, my apologies to others in the audience who may have to endure the poetic justice of hearing their own words again—or were they mine to begin with? I guess we're all in this work together on a kind of Round River flowing into itself, and when it comes especially to what we call the teaching, the influence, the legacy, well, that continues through time and across lives.

The last time I spoke to such a pedigreed collection of experts was the 12th North American Wildlife



Conference<sup>1</sup> in 1947—I think I remember seeing some of you there. I must say you're looking good, as if no time has passed. By contrast, the years have left my raw hide a little ragged in comparison with the well-groomed fellow you may remember from the old days or pictured on the covers of some of these embarrassing books. And there is no way around it but to look deeper, which seems to be the usually required direction anyway for people involved with the study of land and ethics or the management of fish and wildlife.

So finally, at the end of my long string of acknowledgments, apologies and disclaimers, my hat's off to each of you for showing up to be part of this creative conversation across time on the importance of a land ethic in particular, and conservation in general, to "The Good Life."

What is the good life, after all, if it doesn't include clean air and water, nourishing food, shelter from the storm, satisfying work, love—that rich spectrum of humanness we derive from our humanities, arts and sciences—and, for me at least, that sense of being fully *alive* that only wildlife and wild country can provide. Finally, the good life includes that sense of responsible connectedness at the heart of what we call stewardship—source of the land ethic that keeps all the rest possible on our Round River. Maybe, at the beginning, the possibility of the good life starts with the ability to appreciate the river's music.

The song of a river ordinarily may be thought of as the sound that water makes on rock and root and rapids, audible to every ear that stops long enough to pay attention, but there is other music here too, not heard by all. On a still night when the campfire is low and the Pleiades have climbed the rimrock, we may sit quietly and listen until we, too, hear it—a vast pulsing harmony, its score inscribed on a thousand hills, its notes the lives of plants and animals, its rhythms spanning seconds and centuries.

In his own quiet way, my father, Carl Leopold, shared the land steward's sense of being part of that greater whole in space and time. Head of the Leopold Desk Company, he also sowed a deep respect for trees, planting a red oak sapling in honor of my birth, January 11, 1887 (did you think I was born yesterday?), there in our yard on a Burlington, Iowa, bluff overlooking "the mile-wide Mississippi shining in the sun." As Mark Twain put it, "The face of the river became in time like a wonderful book, a dead language to the unaware, but which revealed its secret heart to me without reserve, and not a book to be read once and cast aside, for it had a new story to tell every day." It was an inspiring teacher, too, with its first lesson love of adventure.

About as soon as I could walk, it seems, I went with my father on his early morning hunts, learning how to be still and patient in the marsh, open to noticing what those not paying attention never even realize they've missed or scared away. How cold some mornings were, and how delicious! What a gift! My father showed that noticing could happen

on many levels, and when he noticed certain species declining, he taught—by his own example—how NOT to hunt. Long before imposed limits, this pioneer sportsman considered over that curved horizon we call time.

Not everyone had such respect for the future in those thoughtless days of westward pillage, and from our lofty perch on Prospect Hill, you could see whole old-growth forests rafted to lumber mills downstream and bargeloads of dead gamebirds on their way to railheads and markets east, exceeding in peak years even the buffalo slaughter in wanton disregard for the future of life itself.

The wild was taken for granted, I suppose, until progress began to do away with it, but now we face the choice of whether a supposedly higher standard of living is worth its cost in things wild, natural and free. I realize I'm choiring to the preachers, because you know the feeling of that dynamic healthy earth energy drawn up through the legs and in each life-charged breath, so the whole person becomes more alive with the wonder and beauty of the world, and all the more so for the sense of shared adventure as we cross horizons of space and time to become more aware.

A sense of connection through time (some call this a sense of history) may be the most precious gift of our arts and sciences, but imagine that sense of connection through time that must guide the grebe, who existed eons before there was a person and continues partly by being so elusive. Once, wanting to see up close the source of the call I heard, I buried myself prone in the muck of a muskrat house. As my clothes absorbed the local color, a Virginia rail almost brushed my nose . . . . Then, just as I was starting to doze off in the sun, a wild red eye emerged in the open pool and, finding all quiet, followed with its silver body big as a goose—*Aha! Mr. Elusive Grebe himself!* Before I knew it, a second grebe, and on her broad back rode two pearly silver young, neatly folded in the humped-up wings, all rounding the bend before I recovered my breath.

I wouldn't want to be young without wild country to be young in.

Now, from so far away, it almost seems as if I can hear, out of the evening's hush after a day in the magical childhood of the world, my mother, Clara's, voice and livingroom piano song. I suppose we could live without music and the other arts. But why? And at what real cost? And as wonderful as our human music is in its creative range and combination of voices, consider the creative range, variety and working together of voices in that original wild music.

There seems to be a peculiar virtue, for example, to the music of elusive birds, a quail's "Ave Maria" in the hush of dawn, the invisible hermit thrush pouring out his silver chords of song from the shadows, cranes trumpeting through the clouds. The physics of such beauty must still be in the dark ages. How can the bird, less than a millionth of the mass or energy of an acre, make so much



difference? Yet remove it and the whole thing can become dead—which may not seem like much of a change initially to those who never learned to notice its life in the first place.

The ability to hear and see and feel natural beauty doesn't seem to be much associated with formal education or advanced degrees. It's measured not in degrees but in the currency of pure pleasure, yet this sensitivity to beauty changes everything and pays unexpected dividends. What we call wisdom must start with a sense of meaning in nature. Once, a visitor to my school, speaking on "Indian Education," said, "To us, Nature is the gateway to the Great Mystery." Simple words, but how deep, I pondered, during my long boyhood tramps across the countryside.

The first challenge is just to notice what is—then sometimes it can help to write that down, the effort to record sharpening the way we look and possibly extending the view. One summer, boyhood journal in hand, I counted 13 wren nests in our own yard, with 120 babies the year before.

Every backyard and woodland should provide such a rich education, and some world-renowned wildlife experts became so just observing carefully in their own neighborhoods. Although this sometimes means seeing in a new way what we thought we understood, a lesson beginning when I realized that the very same tree diseases and associated insect pests almost everyone complained about (including yours truly) actually made the woods I loved most all the richer, providing refuge for woodpeckers and owls, with hollows for bee hives and wood duck nests and attracting the chickadees who add so much cheer in winter. I learned there could be hidden values in what first looked like adversity, nature's crop of such wisdom never fails, though it's not always harvested.

Consider what we might learn from migrating geese. A cardinal whistling spring to a thaw but finding himself mistaken has only to resume his silence. A chipmunk emerging for a sunbath but finding a blizzard can simply go back to bed. But a migrating goose, staking 200 miles of black night on the chance of finding a hole in the ice, has no easy retreat. His arrival carries the conviction of a prophet who's burned his bridges.

By this international exchange of geese, the extra corn of the Midwest is carried through the clouds to the arctic tundra to combine there with the extra sunlight of a nightless June to grow goslings for all the lands between. In this annual barter of food and light, the whole continent receives as net profit a wild poem dropped from the murky skies upon the muds of March, so that a March morning is only as drab as one who walks in it without a glance skyward, ears cocked for geese, though I know a woman, so well educated she's even been banded by phi beta kappa, who told me she's never once heard nor seen the geese that twice a year proclaim the revolving seasons to her well-insulated roof, making me wonder: is educa-

tion a process by which we trade awareness for things of lesser worth? The goose who trades his awareness is soon a pile of feathers.

It was not my intention to become a pile of anything when I enrolled at that "den of dapper dandies and retirement home for rusty old saws" (as one Harvard fellow called it) known as the Yale College of Forestry, where soon enough I found my head tangled in the underbrush of textbooks and fogged in with formulas, so I had to escape once in a while just to regain my sanity. On one such expedition, I talked with a poacher from down south, who was filling his basket with perch from the water company's lake. (Don't ask what I was doing.)

"Down south sure is the place for huntin' and fishin'," he said with a wistfulness I could well understand. We each need our "down south" somewhere, a land of simple delight where we may live close to the ground; mine was "out west," which is where I was about to be sent back for "serious lack of studious attention." When my mother heard I'd been put on academic probation, she fired off a note urging me to enjoy my great educational opportunity. "I might as well develop a taste for carpet tacks, to pervert nature so," I wrote back, but seeing as she usually was right, I buckled down and even compiled a little guide to help my fellow forestry students and some of the faculty identify trees.

But even there in our ivied walls, it was as if we could feel the great work of the forests calling us. Maybe you know the history—Mr. Theodore Roosevelt (who I understand recently passed through these parts) was in the White House then, and by his side, that practical, European-trained forester Mr. Gifford Pinchot, who'd even given a family forest to Yale, to help grow foresters ... to spread the fertilizer of scientific management across the land through that brand new bureau called the U.S. Forest Service.

In July 1909, I stepped off the train in Albuquerque, in the New Mexico Territory, and made my way to the District 3 Headquarters for all the national forests in the entire Southwest: Mr. Aldo Leopold reporting for duty, with my first assignment heading up a reconnaissance team to find out what we had in one of those newly designated national forests, namely, the Apache. Each cruiser on such a crew was expected to "map, describe, and estimate the productive resources of" about two dozen 40-acre blocks per day. Do the math—almost 1,000 acres a day, and, since the forest didn't originally come in 40-acre blocks, it was up to the crew chief to organize the whole thing while doing some cruising of his own.

Fortunately, I was to get a week's training with an experienced crew on an adjacent forest; unfortunately, I got lost on the way and spent my first five days of that week trying to find the camp. Matters went from worse to worse still, and, starting from a misfigured baseline, by season's end, my figures were so botched an official inquiry was held to decide if I should be sent packing to inflict my "hopeless incompetence" on some other segment of society. But the



service, in its perhaps not quite infinite wisdom, concluded it was partly to blame for putting someone so green in charge, and that, while the incompetence was not in question, there still was hope. The next year, our team was doing some uncanny pacing and enjoying wonderful campfire nights—though no one was safe from the cook, who seemed to be trying his best to do us all in, but, you see, he had to eat his own food, too, and so quit. At a place we called “Camp Indigestion,” we held a funeral and buried his last so-called loaf of bread.

With otherwise great comrades and such wonderful wild country, the forest service seemed not just a livelihood, but a true service, and glorious, too. Once, as I was crossing a grassy glen in the high country at the edge of a summer storm, a lightning strike blasted a 15-foot ponderosa splinter into the ground by my feet, humming for more than a minute.

That wild awakening was tame compared with what happened back in New Mexico when I was introduced to an elementary school teacher named Maria Estella Luna Otero Bergere. At a dance at her family’s hacienda in Santa Fe, all the young ladies carried lanterns in the shapes of birds. When Estella handed me her parrot as an invitation to dance, my heart caught fire and flew the coop, and a dozen other mixed-up metaphors.

When I came to, my prospects looked bleak, with urgent action required, because Estella’s hand already had been asked for by a successful young attorney, with a fine house, big bank account and many influential friends. By contrast, I had a U.S. Forest Service salary, a tent, 70 miles of rugged mountains out of town and friends like you. A hopeless situation—except for Estella’s love of wild country, and my pen inspired by the power and beauty of our land. I wrote: “My Dear Estella—The Taos mountains were a great glory of bronze and gold today, and this night is so wonderful it almost hurts. Are you watching, too, the little sheep-like clouds grazing the moon? I wish you were here right now to walk the canyon and feel its beautiful wild spirit in our hearts together.”

Maybe she thought I was crazy, but not without hope. After six months of such letters, she said yes, so newly promoted, a year later I brought my bride to the Carson National Forest supervisor’s newly built cabin in a place called Tres Piedras, along with a copy of Thoreau’s journals, a wedding gift from my mother. As Thoreau put it: “I went to the woods to live deliberately the essential facts of life, to know life from experience, and not to discover when I came to die that I had not lived.”

Could life be any better? I was grateful just to be and to be forest supervisor, all I ever hoped for, and now with Estella by my side and, eventually, children to share life’s adventure. The challenge now was to do them all justice, including the forest. We started a little newsletter, called “The Carson Pine Cone,” “to scatter the seeds of wisdom and encouragement” across the 9,000 not so square miles

of northern New Mexico under our responsibility, and included some down-to-earth “Backcountry Commandments” for rangers like you. “If thou shouldst hike for 6 days, on the 7th wash thy socks. Pack not tortillas without flour between lest they cleave together. If thou shouldst bump the tent in a rainstorm, please do so over thine own bed. Cherish thine hat that it be with thee at the end of the journey.”

Believe it or not we had some even more serious guidelines, too, like “a fair deal for all, special favors for none.” And “Procedures had better not start taking precedence over the principles they were meant to serve.” And the favorite around the office, “The ranger should be free to range, not stuck in the office perpetually pruning paperwork.” (And that goes double for the supervisor!)

As you may know, a few years earlier, the Carson probably was the most overgrazed and mismanaged in the entire forest system, with the worst effects reflected in the poor vegetation and gullying west of the Rio Grande. Checking the range in the Jicarilla section in April 1913, I got caught in one of northern New Mexico’s great spring blizzards, barely making it back to headquarters about two weeks later. I survived the storm, thanks to the hospitality offered in a Navaho hogan, but the medicine I was given back in Taos just about shut my kidneys down, and it was touch and go for some time, not knowing if I had 20 weeks left or 20 days, and out of the field for a year and a half. Yet, like most folks, I still wanted to be useful . . . I started thinking hard about issues affecting the life of the forest as a whole.

From time to time, to get our bearings in the larger scheme of things, it helps to step outside the thickets of unconsidered detail and the box canyons of routine, to top out on a ridge for a fresh look at where we are, how we got here and where we’re heading.

When it comes to managing public lands, maybe our standard should include the health of the land. Health—in land or any organism—is the capacity for full self-renewal. As in medicine, maybe our first rule should be “do no harm.” Fully self-renewing wildlife—measured not just in numbers, but in the full range, vitality and variety—means healthy country, which we are a part of too.

As my own health gradually returned, I was reassigned to the district office in Albuquerque and started grappling with many of these thorny issues out in the field, while helping folks all across the Southwest set up game and wildlife protection associations.

I’m trying to decide which of these issues you might find particularly interesting now. Asked to help some ranchers whose cows were experiencing an unusually high incidence of miscarriages, we traced the problem to the fact that these cows were eating too many green pine tips dropped by a population explosion of squirrels caused by the fact that these the ranchers had been shooting the hawks.

Now that was an easy enough problem to correct with a perspective of the whole, the solution being to stop shoot-

ing the hawks, but recently I wondered what would have happened if, instead of looking at the whole cycle with its various connections, we focused only on the imbalance in the part—too many squirrels, maybe we'd better poison them...Where would that vicious cycle ultimately lead?

I heard somebody earlier today talking about the fact that I took a job for a while with the Albuquerque Chamber of Commerce. That developed partly from a little difference of opinion I had with the forest service. In a certain grazing area we'd studied, its long-term health required cutting the grazing allotment back by at least 50 percent. We got orders from Washington to *double* the allotment instead, for political reasons. (That could never happen today, I suppose.) You know what happened? All those new cows reached the market at the same time, and the market collapsed, and many of those same ranchers who had lobbied so hard for an increased allotment found themselves bankrupt.

Meanwhile, the U.S. Forest Service saw the error of its ways and encouraged me back. And in 1919, I was sent to do an inspection of that area of my first assignment. Comparing that land with originally similar adjacent land that had remained under native management, I had to report "a painful humiliation to the Forest Service." Good management doesn't mean never making mistakes, but it does mean learning in time.

Consider an issue on which I pondered more than 30 years. Listen to the wolf's howl as it echoes rimrock to rimrock, rolls down the canyon and fades into darkness. To the deer, it is reminder of the way of all flesh. To the rancher, perhaps, it is threat of red ink at the bank. But there's a deeper meaning, too, known by the mountain. Those who can't decipher it nevertheless may recognize it's there from that tingling we feel in the spine. My own conviction on this stems from the time I watched an old wolf die. After pumping lead into a pack spied from the ridge, we reached the old wolf in time to see a fierce green fire fading from her eyes and a pup dragging shot-up legs off into the shadows.

I'm sorry. I was ignorant then, full of trigger itch, and I thought fewer wolves meant more deer, a hunter's paradise. But after watching that fierce green fire fade, I realized the mountain knew better, and since then, I've seen many wolfless mountains grazed to anemia and some to death. The rancher who clears the range of wolves may think he's improved his assets, but only because he hasn't yet learned to think like a mountain. In exchange for short-term profits, he's blindly sacrificed the wolf's help in trimming the herd to what a healthy range can sustain over the long term. He hasn't thought about the connection between overgrazing and erosion washing the future away or that poverty of spirit that results from over-managing things to death. But the fact is, too much safety yields only danger in the long run.

It is a dangerous, dangerous fallacy that we must choose between economic well-being and the environment, which would make stumps and gullies the signs of

our progress and our legacy. Intact forests are not only compatible with civilization, but essential to its highest development. Are we here to skin the country and move on, or to nurture the roots of a lasting community? Since ancient times, people have gone to wild country for renewed vision and a durable scale of values. Back in the wild world organized by nature, we may renew connections never entirely lost and clarify what really is important.

This leads to a dilemma, because the more scarce wild country is, the more it will attract crowds and the less wild it will become, a problem only compounded when we try to develop our way out by building more roads and toilets. Sometimes we even call this road and toilet building "developing our wild resources," though it is more accurately "adding water to an already thin soup."

We humans pride ourselves on being great developers, the irony being that we develop ourselves only quite slowly (a prime characteristic of our species), but the cumulative effect of our technology over countless generations has produced a dizzying and potentially runaway speed with which we change the rest of the world, and since we still are a part of that world, a potential disaster to ourselves.

The only way out of this downward spiral I can suggest is to focus our efforts on the development of human perception—the ability to see and hear and love the wild creatures of our native land. Like other treasures of the mind, developed perception can spread into infinite parts without losing any quality or using up any resource. The beauty of a mountain or the swoop of a hawk may thrill a hundred successive witnesses who have learned to look. To promote such looking for the sheer pleasure of it is the only true development of wild resources, though the implications of this for the good life aren't widely understood.

Once, as a boy daydreaming in school, my glance fell on a map of Brazil on the wall, and in a great blank space beyond the Amazon, I noticed the words, *El Rio Madre de Dios*, "the River Mother of God." That name was electric and seared my consciousness, so that memory of it quickens me to this day, as the perfect symbol of all the wild and untamed places of the earth. We've tamed such places one by one, built roads into them to develop their resources, but now we must draw a line around some, to preserve a fraction of the world's wild spirit for uncounted generations.

I'm pleased to say that in 1924, in our region of the U.S. Forest Service, we started doing just that, and the headwaters of the Gila became the country's first officially designated wilderness, with big plans this June to celebrate the 75th anniversary of that event.

The original ribbon-cutting ceremony occurred five days after the Leopold family packed up from our house on South 14th Street—including Starker, Luna, Nina and Carl. We'd had such productive years in the Southwest, but then, as if beginning life anew, we headed north to Wisconsin, where, in fact, we did start life anew with young Estella, and I eventually put out this little book "Game





Management” and became the country’s first officially designated professor of game and wildlife management.

In the classroom, it seems the sciences are assumed to be separate—as a convenience, I suppose, to professors, who have trouble enough explaining even one discipline, but this doesn’t help much out in the field where many disciplines must be consulted together to understand even the simplest events. Education which does not communicate our infinitely complex and delicate symbiosis with land is no education.

What we call land is not only the raw material of our lives and source out of which all civilization emerges, but in its simplest sense, land is a fountain of energy flowing into itself through complex circuits of weather, soils, plants and animals. What happens in one part of such a circuit affects other parts, sometimes with surprising chains of connection that we may discover only by careful observation over the long term. Those who know the most about it realize the most how little we know, while those who know the least think they already know everything important.

The greatest scientific discovery of the 20th century so far is not television, not even computers, but the rich complexity of the land organism, in which each species, including ours, is a link in many chains. The bobwhite quail eats more than a thousand kinds of plants and animals and is a link in more than a thousand chains, with the whole a tangle of chains so complex as to seem confused, but which turns out to be highly organized.

We live on a kind of Round River flowing into itself, with no living place entirely local, and no organism survives long cut off—disconnected—from its larger flow, a current flowing through time and across lives as well as space, so land decisions can’t be based solely on short-term economics. Sometimes minute numbers of certain species with no economic value in themselves may nevertheless determine the health of the system as a whole.

So, the first rule of intelligent tinkering probably should be “save the pieces.” Not a bad definition of a conservationist, I suppose, “one who believes in saving the pieces” (though maybe a little mechanical). There are many definitions of what a conservationist is. I’ve written a number myself. “A conservationist is one who strives for harmony between humans and the land,” for example. Though the best definitions aren’t written with a pen, but with shovel and axe. When deciding what to chop and plant, each choice writes the future of that land. In the case of the Leopold family land—a great possession recorded in county records as “120 acres more or less”—we turned an old chicken coop into our weekend shack and set to work, encouraged by previous mismanagement to plant over the years more than 30,000 seedlings, mostly pines.

When a person who has learned to pay attention for the sheer pleasure of it applies the art of management to land, a sense of stewardship grows quite as important in itself as any other crop that might be raised, and so democracy itself is renewed with a wisdom from the grass roots.

I realize now that the future of American wildlife depends largely on private land. We conservationists are sometimes like my bird dog, Gus, who, when he can’t find pheasants, points at meadowlarks, an unsatisfactory substitute. We conservationists have found such a substitute in the idea that if the private landowner won’t practice conservation, we can build a government bureau to do it for him. That is not a slam at our public lands managers and agencies. As I said at that meeting at which I saw many of you in 1947, we must fight tooth and nail efforts to turn federal lands over to the states for easier pickings by the special interests. (Again, nothing like that could happen now, but we’d better be watchful just in case.)

Maybe it just comes down to this: what kind of a world do we want to live in and pass on? If we want to have anything left for our kids, we’d better get busy, our wagon hitched to the star of conservation, but with plenty of ordinary axle grease to keep it on its way.

The point here is just that, in a democracy, good policies, public and private, depend on informed and involved citizens—bird watchers and hunters, rangers and ranchers, backyard botanists and wilderness adventurers, even naive interlopers and poets, land-inspired teachers and students all—and all with a few important things still to learn about soils and ecosystems, recreation and wildlife, the effect of wild country on the American character, the dynamic relation of our natural and cultural heritage, even the physics of beauty and the nature of value. We need to pass along what we learn—including the spirit of lifelong learning and, even more important, lifelong caring. We all have a role in the required education, starting with ourselves, and our companions and communities—working together as part of a sacred trust across generations, with a shared commitment to the future, because this work, like earth itself, is never finished. But my time is about through; it’s up to you folks now.

Or not quite...because I have a last word on the subject of this conference (although you may have heard it before).

That land is a community is the basic concept of ecology. That land also is to be respected, with an ethical relation, and loved, is more basic still. It may require a sense of land as alive, changing our role from conquerors of this living community (in which every battle won brings a new threat of disaster) to members in good standing of it.

Decades before there were photographs from space, I wrote: “If we could only see the earth as a whole, we’d recognize it as alive.” Yet, we find this intuitive sense of kinship with a living earth in many ancient traditions, and in the words of our great poets, philosophers and naturalists, and in the teachings of those early ecologists called the prophets, who understood watersheds and the principles of sustainable forestry, and the cross-generational effects of our actions.

As the Lakota elder Black Elk told poet John Niehardt, “I stood on the highest mountain of the world, and as I stood there I saw more than I can tell, and I knew



more than I saw, for I was seeing in a sacred way the shape of all things, and the shape of all shapes, and I saw that the hoop of our people was one of many hoops making together a great circle, and in the center was a mighty flowering tree sheltering all ..." including us here.

I stop and listen to the universal roar, and out of the clouds along the river, the faint honk of geese.

Is there ever enough time? There, that's a good life for you!

## CONCLUSION

As many of you know, Aldo Leopold died on April 21, 1948. On the morning of the day he died, he noted in his journal 871 geese, the greatest single number he'd ever recorded there. Then he smelled smoke and went to help put out a grass fire on his neighbor's farm, just past the border of the Leopold pines. When the body was found, it seemed the fire had lightly grazed over it, and it was even reported in the Madison paper that he had died from the fire, though the immediate cause presumably was a heart attack. The man passed too soon, but the legacy continues to send out roots and branches, some from the words that go on speaking so eloquently in "A Sand County Almanac," published the next year.

In other programs, I talk about the five Leopold offspring here and their wonderful accomplishments, including their contributions to conservation and related sciences, but suffice it to say, you already know much of that and, in any case, have such good sources, including the living examples, I won't talk at length about it tonight, except to mention that they represent a kind of legacy beyond measure.

Their wholeness expresses their mother's legacy, too—the former Santa Fe schoolteacher Maria Estella Luna Otero Bergere, five-times Women's Archery Champion for the State of Wisconsin. Asked about her husband more than 25 years after his death, Mrs. Leopold said, "He always seemed to bring out the best in people." Then asked specifically about his outlook on the future, she said, "I think he was just hopeful people would become more aware." That is what this program and conference and conservation are about, after all.

This legacy is so full, no one program—or conference—can contain it. I look forward to other reunions at which we may continue to explore not only how to define the land ethic, but how to pass that on, how to bring it forth, how to ... swim with the goldfish!

The Leopold family made that shared journey of lifelong learning together, and more than lifelong teaching, cultivating the heart of conservation. Others of us, who never crossed paths with the man himself in this lifetime, nevertheless draw from the source of that wisdom, all the wiser for its personal humility and its sense of closeness to the ground.

In that spirit, I'd like to round off the formal part of tonight's program with a native blessing, shared with me in Oaxaca about a dozen years ago, and expressing the spirit we're talking about.

## [OAXACAN BLESSING]<sup>2</sup>

The Zapotec singer said,  
listen carefully to these words:

Our song is like the heart of the flower,  
our words like pollen on the wind,  
the perfumes of intuition,  
the incense with which we pray,  
blessings opening to the future  
like flowers on the tree of life,  
from roots that are endless,  
through measureless branches,  
seed-heads bursting on the wind,  
each carries a part of the whole,

So here and now, we say to everyone,  
*work together, help each other like relatives,  
go forth and make the world beautiful ...*

[Editors note: An encore followed with poetry, questions and discussion.]

## ENDNOTES

<sup>1</sup> I originally identified this as the Ecological Society of America meeting, but Curt Meine points out that, although Aldo was elected president, he did not attend the 1947 ESA gathering. He did participate in the North American Wildlife Conference, however, and enjoyed a lively exchange with fellow wildlife and conservation professionals. One indirect outcome of that con-

ference was Aldo's involvement in starting the Conservation Foundation later that year.

<sup>2</sup> Based on a traditional Zapotec benediction shared live (in Zapotec and Spanish) by Martin Chacon, in Oaxaca, Mexico, August 1986, said to be "over 2,000 years old in the oral transmission," translated into English by Richard Bodner, Mitch Rayes and friends. Reprinted with the permission of Land of Enchantment Poetry Theater.



# The Land Ethic in Practice

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CASE STUDIES FROM THE FIELD



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# Leopold and the Varieties of Integration

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It was Mark Van Putten yesterday who said that, in a gathering such as this one, the opening speaker often sets the tone. That certainly proved true yesterday. Nina Leopold Bradley, starting us off, introduced what quickly became the day's central theme: the theme of unity and unifying, of integrating and bringing together that which is apart but needs to come together to create wholeness and health.

If I can change the musical metaphor a bit, Nina introduced the theme and later speakers offered variations. Nina talked about Aldo Leopold's attempt to integrate knowledge at the macro, landscape scale; his attempt to bring together the scientific, literary and ethical into a single unity; his attempt to unify the humanities and the sciences, the mind and the heart.

Art Hawkins, in his comments, did what Curt Meine has encouraged all of us to do—think about Aldo Leopold as a unified person, to consider, when we assess him, not one aspect or facet of his life, but all of them. Art captured the whole of Leopold in many of his stories, including his recollection of how Leopold tried to forge links between university experts and the local citizens who inhabited the same Wisconsin farm landscape. Art shared with us a photograph of a blind that Leopold erected in a farm field so local people could watch prairie chickens without disrupting them. The blind wasn't set up so that scientists could engage in study, nor even for graduate students. It was there so that local citizens might enjoy and learn. It was an outreach effort by a man who cared passionately about the entire land community, including its human members, and who knew that the land's fate inevitably rested in the hands of the people who lived on it.

Mark Van Putten continued this theme, talking about how the land ethic requires us to unify knowledge, passion and action, drawing upon our intuitive knowledge as well as our experiential knowledge. Again, this theme of joining the head and the heart. Mark spoke of the need to bring urban residents together with nature. And he spoke of our vital need to integrate the various conservation aims

that now guide our work—the multiple, sometimes conflicting aims that we set into a single conservation goal.

Curt Meine, in his remarks, set the scale in terms of the number of illustrations he offered of our need to integrate when we try to understand Aldo Leopold in all his complexity. Leopold possessed an extraordinary intuitive capacity to integrate, not by ignoring the details of the world, but by merging them into a unified whole. Curt talked of our need to bring together the various pieces, phases or facets of Aldo Leopold into a whole, the abstract as well as the practical, the personal and the professional. He told us about the need to integrate “The Land Ethic” as an essay into the larger body of “A Sand County Almanac,” to read it as a piece of a larger whole, as well as our need to integrate “A Sand County Almanac” into the larger body of Leopold's writings, and his writings, in turn, into his life. Curt ended his presentation with a pointed comment about our need to rebuild our own human social communities, and he expressed profound regrets about the directions in which our country has moved in recent decades, toward increased individualism, fragmentation and selfishness.

In the interest of time, let me condense my summary. Susan Flader gave us a provocative picture of the integrated environmental citizen, the citizen who is a community member and recognizes his or her duties to the community and shoulders them responsibly. Karen Warren explained the benefits of integrating various strands of ethical reasoning into a pluralistic scheme, one that can be flexibly adapted to varying challenges and circumstances. She gave us, too, a strong plea to integrate concerns about ecological issues with ones of social justice, reiterating the need to integrate reason and emotion, the head and the heart. Karen ended with a passionate plea for us to merge our intellectual concerns with a strong sense of caring.

Baird Callicott chiefly focused his remarks on the integration of values and uses that needs to take place on the land itself. Bread and beauty need to grow together, side by side, he explained, just as Leopold told us. Baird

also related how Leopold's own thoughts about the land shifted when he arrived in Wisconsin in the 1920s, entering a landscape far different than the one he left behind in the Southwest. Once in Wisconsin, he focused far more on the challenges and possibilities of mixed landscapes, landscapes where the conservation goal was to meld the wild and the tame into a harmonious whole. In Wisconsin, Leopold tried to come up with a blend of Gifford Pinchot's conservation thought and John Muir's preservation thought. It was that effort at integration, that effort to blend beauty and utility on a single landscape, that led to Leopold's formulation of land health as the overall goal of conservation.

It would be useful, I think, to reflect a moment on this list of integration tasks and prune the list down to the most important tasks for today. I'd like to suggest that we now face three overriding integration tasks, all of a practical nature.

First, we need to integrate the various uses and values of land so that they are fostered on single parcels of land. We need to think of all lands as multiple-use lands, to use the terminology commonly employed in the public lands setting. As Curt Meine explained, Leopold's thoughts about the multiple uses of lands were influenced early in his life in the Southwest, where he was put in charge of surveying and overseeing huge chunks of land. There, Leopold quickly realized that national forestlands had multiple uses, and they would be most valuable to the American people if they were managed to foster all of them. It wasn't long, though, before Leopold realized that private lands were best viewed in the same light; they, too, possessed multiple values and were best used, from the community's point of view, when they were managed not for private benefits alone, but for public ones as well, such as wildlife habitat.

Yet Leopold's awakening to the public benefits of private conservation soon became a problem, for he quickly recognized—by 1930 or so—that many public values of sound land use ran to the community and could not be captured, economically speaking, by the individual landowner. It was largely for this reason that Leopold spent so much of his last 20 years struggling with the enigma of private-lands conservation. If the land as a whole was to become healthy, private landowners needed to practice conservation. Yet, what was their incentive to do so when many of the benefits of conservation were enjoyed by the community at large? From the community's perspective, the perspective that Leopold embraced when setting conservation policy, good land use required an integration of values and uses on farms and landscapes everywhere. How to achieve that integration was, and still is, a primary conservation concern.

The second of our vital integration challenges today is to knit together the various land parcels that form the landscape, bringing them together into a unified whole—into the kind of holistic land community that Leopold described. When I say bring them together, I don't mean that we need to knock down all of our human-created

boundaries. Instead, we need to bring the land together mentally. We need to think about the landscape as a unified whole and focus on that whole, in the process diminishing the adverse efforts that boundaries have on the ways that we think about and use land.

The third challenge that we face is to integrate landowners and citizens generally into a stronger social community, to build within ourselves stronger senses of bondedness and shared fates. This challenge was one that Leopold thought about and worked on in a practical way throughout his life. It is astonishing, when reviewing Leopold's life, to see all of the times and instances when he worked at community building and encouraged others to help, starting with the game protection associations he promoted in the Southwest and continuing through projects such as Coon Valley, the Riley Game Co-Operative, the Wisconsin river marsh project, and the founding of groups such as The Wilderness Society. Leopold was constantly seizing opportunities to get people together, both to work in concert on conservation goals and to foster a greater willingness to sacrifice for the common good.

These various integration challenges, and Leopold's thoughts on them, lead naturally to Leopold's idea of land health. Land health was a term that Leopold used far more often than land ethic. It was, I believe, more important in his life and thought than was the idea of a land ethic.

Leopold's thoughts about the health of the land as whole, and about the various forms of land sickness, were materially shaped by his experiences in the Southwest. The Southwest was an ecologically sensitive place; it was, as he later phrased it, "a land on a hair trigger." It was a land that had to be used carefully, with attentiveness to its real limits, or else it would soon degrade. Of course, by the time Leopold got there, the Southwest already showed marked evidence of degradation. The prime task for Leopold, skilled naturalist and apprentice ecologist, was to connect the degradation to the bad land-use practices and draw the appropriate conclusions.

The degradation that Leopold saw in the Southwest was caused largely by grazing, which disrupted native grasses, eroded the soil and disturbed waterways. With the grasses degraded, natural fire regimes were interrupted, and brush and junipers gradually took over, further reducing the forage value of the range. As Leopold pieced together the history of the southwestern grazing lands, he could see the ripple effects of overgrazing. It heightened his awareness of ecological connections and taught him much about the land's potential sensitivity.

Leopold's exposure in the Southwest to soil erosion and its cascading harms may account for the importance of soil preservation in Leopold's discussions of land health. Leopold often wrote about land health and land sickness, and when he did so, he always started with the soil and the need to keep it intact and fertile. From the issue of soil, Leopold almost always moved to issues of hydrology,



to the disruptions of natural water flows and degradation of waterways. He worried about silt in waterways, about water pollution generally, and about stream-bank erosion, floods and droughts. The over-modification of natural water flows and cycles, he concluded, caused harm throughout the land community, just as soil erosion did.

Having covered soil and water flows, Leopold's comments on land health then often turned to species issues, both species that disappeared from a biological community without visible cause and species that irrupted—to use his favorite term—to become biological pests. Late in life, Leopold would add to this list comments about the shortening of food chains, diminished nutritional quality of farm crops and a handful of other fundamental items.

Let me bring my comments together by offering a few thoughts about Leopold's concept of land health and the role that land health came to play in his thoughts.

First, land health as Leopold described it is a goal that integrates knowledge and intuition in the way that our speakers yesterday encouraged. It is a goal that brings together the head and the heart. It does that because Leopold understood that our knowledge about nature is decidedly incomplete, particularly our knowledge about the ecological roles played by various species. In the case of most plants and animals, we don't know why they are where they are, what they do or how vital they are to the healthy functioning of the land mechanism. Leopold's intuitive sense, faced with this ignorance, was that we ought to keep all of nature's parts. We ought to keep nature's mechanism intact. Leopold the scientist couldn't prove the necessity of acting this way; he couldn't prove that every part was necessary. His conclusion was based more on what he sensed and felt. Or to phrase the matter differently, he used his sentiment as a way of supplementing his scientific knowledge. What he knew, given our vast ignorance, is that if we made decisions based solely upon what we learned scientifically, our decision-making process would be severely flawed.

This lesson, of course, is a profound one, and it is a lesson, sadly, that has by no means sunk into our culture. We remain such a knowledge-focused culture that we have no good mechanisms for taking what we know and then adjusting or supplementing it to take into account what we plainly do not know. Leopold's land ethic was designed to do just that.

The second comment I want to make about land health is that it is a goal for a gathered community to pursue. It is a target for a community to aim at, not something an individual alone can achieve. It is in part for this reason that I like land health as a guiding ideal even more than I like Leopold's more famous land ethic. Leopold phrased his land ethic so as to make it a useful guide for landowners acting as individuals. To be sure, there is real benefit in appealing to people as individuals. There is a drawback or danger as well, for the risk is that landowner's will content themselves with using their own individ-

ual plots well and not attend to the larger landscape issues that require more concerted effort.

Leopold's land ethic, I believe, is understood best when it is integrated into his life and work in precisely the manner that Curt Meine recommended. The proper context for the land ethic is the larger effort that Leopold made to get private landowners to promote conservation on their lands. Time and again, Leopold pondered and struggled with this issue of private lands conservation and the motives that drove landowners to do what they did. Time and again, he sat down at his desk, took out his yellow-lined paper and pencil, and wrote out the key questions: what are the motives for land use; how can we motivate private landowners to promote conservation on their lands; and how can we get them to think of the community as well as themselves and embrace land-use practices that keep the land healthy?

Leopold never came up with sound, practical answers to these questions. He did conclude that landowners were properly viewed not just as individuals, but as community members, and he deemed it entirely appropriate to speak of land ownership as a bundle of duties as well as a bundle of rights. Private landowners, he came to see, owed duties to their communities, chiefly duties to protect the public interest on their private lands. The questions then became: how to enforce these duties; and how to motivate landowners to see their duties and fulfill them? The need was for some type of social controls, but what controls might work? What were the proper social mechanisms to achieve sound private land use? For years, Leopold struggled with this issue. He came up with a variety of answers and alternatives, including economic incentives and legal controls, but his answers never really satisfied him.

It is in the context of Leopold's struggles with the challenge of private lands conservation that his land ethic is understood best. Leopold ultimately decided that if landowners were going to embrace good practices, they needed to feel an ethical obligation to do so. They needed to see themselves as community members, with duties as well as rights. Leopold's land ethic, then, was yet another mechanism to use in pushing landowners to act right. It was yet another means to help achieve the over-arching goal of healthy land. The land ethic, that is, was a means; overall land health was the end.

This distinction between means and end is a useful one when thinking about Leopold's legacy, for Leopold himself often drew the distinction. He commonly did so in the course of criticizing his fellow conservationists for not seeing where they were heading. Too often, the goal they set for themselves was merely a means, and they failed to give due thought to their ultimate end. Lacking a clear end, they often drifted or even headed backwards. Of course, an ethical life, in an important sense, is an end in and of itself, not merely a means to something else. But Leopold plainly thought of the land ethic in instrumental terms; if

landowners everywhere could embrace and implement the land ethic, the land community would benefit greatly.

My own liking of land health as an overall end has a lot to do with its status as a communal rather than an individual goal.<sup>1</sup> No person acting alone can bring about the health of a landscape; only concerted action by a group can bring it about. People living and working in a place need to think of themselves as a community. The pursuit of land health requires them to get together for collective action in a way that the land ethic may not do.

As Baird Callicott has explained, land health ultimately became the centerpiece of Aldo Leopold's work. Once he seized upon the idea, he put it to work, making it serve as the organizing device for nearly all of his thoughts about conservation. To illustrate this point, Baird used the case of wilderness preservation. By the 1930s, Leopold had written extensively about wilderness and gave many reasons why it deserved protection. Once land health became the centerpiece of his thoughts, he added a new primary justification to the list; wilderness, he believed, was invaluable because it provided a benchmark of healthy land. It was a place where one could go to study the land and see what made it tick, drawing lessons that would help guide human practices elsewhere. Wilderness, it's important to note, was not Leopold's only benchmark, but it was a critical one.

The same intellectual transformation occurred in Leopold's thinking about wildlife. Leopold revealed his mature thoughts in an essay, "Planning for Wildlife," that was never published during his life and is only appearing in print this year.<sup>2</sup> "No one can write a plan for accomplishing something," he wrote, "until the reasons for desiring to accomplish it are defined." As Leopold sees it, the plan is plainly the means; the reasons for accomplishing it are the end. Having made his general point, Leopold then applies it to wildlife, "The reasons for restoring wildlife are two. One, it adds to the satisfactions of living. Two, wild plants and animals are parts of the land mechanism, and cannot safely be dispensed with." Leopold's second reason, of course, ties his reasoning into his idea of land health. The main reason one plans for wildlife conservation is to promote land health.

I want to continue reading from this fine essay by Leopold because the next paragraph illustrates nicely Leopold's ability to describe land health in a mere sentence or two: "The land mechanism, like any other mechanism, gets out of order. Abnormal erosion, loss of soil fertility, excessive floods and droughts, the spread of plant and animal pests, the replacement of useful by useless vegetation, and the dying out of protected species are all disorders of the land-mechanism." Leopold the ecologist no doubt yearned to elaborate, but Leopold the essayist and public speaker understood the need to be brief.

Probably Leopold's best known use of land health shows up in the signature line of his land ethic, "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community." That well-known,

final phrase about the integrity, stability and beauty of the biotic community is yet another and even more simplified version of what Leopold called land health, which is to say that when we want to figure out what Leopold meant by this phrase, particularly what he meant when speaking about the land's integrity and stability, we need to turn to his extensive comments on land health.

What, then, might all of this mean today, 50 years after "A Sand County Almanac" appeared in print? What if we decide to take seriously this idea of integration, as so many speakers (and Leopold himself) have encouraged us to do? What if we take seriously the idea of land health? How might these ideas guide the thoughts and work of managers of public lands?

I'd like to conclude by briefly setting forth eight observations, the chief implications, as I see them, of Leopold's ideas as developed at this conference.

The first and most obvious point is that the health of the landscape as a whole needs to provide the focus for conservation work. It needs to be understood as the overall end, with the particular tasks of conservation viewed as the means. And when we think and talk about land health, we ought to do so as Leopold did, by focusing on the fundamentals—on soil, water flows, species diversity, controlling pests and a few other matters.

A second point, an obvious corollary of the first, is that the work of public lands management agencies needs to be tied to the achievement of this goal. In thinking about this point, I'm reminded of Aldo Leopold's well-known letter, written to the forest officers of the Carson National Forest in 1913.<sup>3</sup> Leopold was the forest supervisor, and an attack of acute nephritis sent him back to his native home in Iowa to recuperate. With time to rest and reflect on the forest from afar, he was able to distill his advice to a single key point. The appropriate measure of progress, he said, was the condition of the forest itself, and the key issue always, when considering what to do, was to assess the effect that each action would have on the forest. What are the direct effects on the forest? What are the indirect effects? Which of the effects are good and which are more doubtful?

If we had asked Leopold back in 1913 what he meant about "the effect on the forest," he would not have explained it in terms of land health as he understood that idea 30 years later. But the idea he had in mind was similar, for it plainly had to do with the ability of the forest to keep producing in a healthy manner the multiple things that it could produce and that the country needed it to produce.

A third point is that we need to integrate the various uses and values that land serves on all land and in all landscapes. The implication here, in terms of public lands, is that we need to stop thinking about some lands as multiple-use lands and some lands as single-use lands. All of our lands are multiple-use lands, and we need to manage them wisely for the land to stay healthy.

But it isn't just public lands that we should view this way. Private lands and state-owned lands are no different.





They, too, are multiple-use lands, and they, too, need to carry their full weight in the overall conservation cause.

My fourth point focuses on our need today to soften the boundaries among land parcels. Here it is useful to return to Leopold's comments about means and ends. If we are wise enough to listen to Leopold, land health is going to be our goal, our overall end. For purposes of this end, and the work that's needed to give it specific content in a particular place, human-drawn boundaries are irrelevant if not positively harmful. Land health is a characteristic of a landscape, not an arbitrarily defined plot of land. Measures of land health, then, need to look to the landscape as a whole, putting boundaries to one side.

Where the boundaries become important, and where they need to be taken into account, is in the more practical question of the means. When it comes time to divide up the work, boundaries take on great importance. Landowner A has his own land to tend to, and so does landowner B. Agency A needs to take care of the land entrusted to it, and so does agency B. Political jurisdiction lines are of similar importance. The bottom line, then, is this: we need to soften our boundaries, not to the point of getting them to disappear, but so that we draw upon them when they are useful and overlook them when they are not.

Point five, related to the fourth one, has to do with our similar need to soften significantly the boundary that we have erected, chiefly in our minds, between public lands and private lands. As a factual matter, we don't really have two categories of lands in this country. We have a spectrum of arrangements, from lands that mostly are used and controlled publicly to those that mostly are used and controlled privately. In all cases, public and private interests are mixed. When Leopold wrote about this public/private mixing, he usually focused on lands that were privately owned. Private land-use practices, he said, were very much the public's business. The public was greatly affected by them, and therefore, had a legitimate voice in what private owners did. Given an appropriate occasion, he no doubt would have said the same thing about publicly owned lands, particularly lands such as national forests, where the principal users were private citizens with legally binding grazing permits, mining claims and timber contracts. This mixing of private and public follows naturally from Leopold's concept of land health, just as it draws upon the fundamentals of community ecology.

One particular implication, in the public lands setting, is that local people have a legitimate interest in making sure that public lands are used for the good of the community. The reverse also is true—public lands managers have a legitimate interest in what happens on other, non-public lands, for they, too, are members of the local land community and just as involved in its long-term health.

The sad reality today is that our landscape is badly fragmented, not just on the ground and in physical terms, but in the minds of the people who live there. Fragmentation makes it harder for people who share a

landscape to recognize their common interests, just as it makes it harder for them to imagine land health as an overall goal. Fragmentation contributes to both the deterioration of our lands and the decline of our human social communities.

A sixth point: if we intend to take land health seriously as a goal, we need to use it as the focus for our talking about the land and about conservation. We need to use it, that is, in our rhetoric. When describing what we are doing and why, when charting what needs to happen next, our language needs to draw upon and center around the idea of land health. Rhetoric that draws upon land health is inevitably more ecological in tone, and as such, it can usefully encourage listeners and readers to think of themselves as belonging to and engaged in something larger. Leopold sometimes complained bitterly about what he viewed as the bad propaganda of his day, the propaganda that encouraged people to act selfishly, ignore nature's limits and treat as valueless all parts of nature that could not be sold for cash. There was a lot of bad propaganda roaming the land, and it could only be countered, Leopold believed, by good propaganda—or to tone it down a little, by good rhetoric, by an ecologically and ethically sound strategy for describing the human place in nature.

A related seventh point is the need to make land health a more central element on conservation educational efforts. Whenever Leopold talked about land health, he quickly listed the chief symptoms of land sickness. He did so not just because sickness is easier to describe than health, but because he wanted to educate people on the ill effects of unwise land use. He wanted to further their ecological knowledge, and to do so with evidence that they could confirm with their own eyes and ears.

Finally, if land health is going to come about, and if public lands agencies are going to do their part in helping bring it about, public agencies need to formulate deliberate strategies well aimed at the goal. They need to orchestrate their efforts through an overall planning process so that every step of their conservation work heads in this direction. To paraphrase Leopold, what is the effect on land health? In many settings, the strategy needs to include a distinct legal component so that the positions an agency takes on legal issues all are well aimed at the good of the whole.

I had occasion recently to write an overly long article on one particular aspect of that challenge.<sup>4</sup> I was asked to write about water problems in the national parks, and in doing so, I set forth, as best I could, an overall legal strategy that the National Park Service might follow, not just to improve water flows and water quality, but to use water issues as a means to promote the overall health of park ecosystems. My study covered issues such as water allocation and water rights, including reserved water rights; water-quality issues and state water-quality standards; the issuance of discharge permits under the Clean Water Act; matters of hydrologic modification; the Endangered Species Act; education





efforts—pretty much every relevant issue that I could squeeze in. My chief aim was not to provide all the answers so much as it was to show how land health, taken seriously, can provide a useful guiding light on a wide range of seeming disparate legal and policy issues.

Let me close by drawing upon some particular comments dealing with public lands that Leopold set forth in his thoughtful essay, "The Conservation Ethic."<sup>5</sup> Leopold's topic in this essay, as in so many others, was the issue of private lands conservation, but in addressing that subject, he needed to respond to fellow members of the conservation community who thought that the answer to private irresponsibility was greater public ownership. Leopold disputed this view, not because public lands were unneeded, but because they were not enough. "We cannot dodge the fact," he wrote, "that the forest problem, like the soil problem, is coextensive with the map of the United States." Conservation, that is, required action on all lands everywhere and could not be pursued adequately on some subset of the landscape. Public ownership, Leopold argued, "while highly desirable and good as far as it does, can never go far enough." Underlying the debate on this issue, Leopold believed, were "two conflicting conceptions" of why we practiced conservation on public lands. One conception, he wrote, "regards conservation as a sacrificial offering, made for us vicariously by bureaus, on lands nobody wants for other purposes, in propitiation for the atrocities which still prevail everywhere else." "We have made

a real start on this kind of conservation," Leopold noted wryly, "and we can carry it as far as the tax string on our leg will reach. Obviously, though it conserves our self-respect better than our land."

The other conception of public lands conservation, Leopold claimed, regarded it "as merely extension, teaching, demonstration, an initial nucleus, a means to an end but not the end itself. The real end is a universal symbiosis with land, economic and aesthetic, public and private. To this school of thought public ownership is a patch but not a program."

If Leopold were reading these sentences today, he would be careful when saying that public efforts were merely extension, teaching and demonstration. By using the term "merely," he surely didn't mean to suggest that such work was either unimportant or easy. It was vital, tiring work, and he engaged in it himself. What he meant was that such work wasn't enough; it wasn't a substitute for good conservation practices by all landowners everywhere.

For Leopold, then, public lands are pieces in a larger puzzle, and it was that whole puzzle that drew his energies and his dreams. It was the health of all of it that he wanted; it was each piece of land performing its rightful role. By the end of his life, Leopold had come to integrate the entire land into a single whole, and to think of our conservation challenge as being equally unitary and holistic. He had integrated things on a macro scale, as his daughter, Nina, described yesterday.

Only if we do the same will we succeed in putting our public lands to best use.

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## ENDNOTES

<sup>1</sup> My assessment of land health is set forth in Eric T. Freyfogle. 1998. "Bounded People, Boundless Lands: Envisioning a New Land Ethic." Island Press, Washington, D.C.

<sup>2</sup> Now available in Aldo Leopold, "For the Health of the Land." J. Baird Callicott and Eric T. Freyfogle, eds. 1999. Island Press, Washington, D.C.

<sup>3</sup> Aldo Leopold, "To the Forest Officers of the Carson" in "The River of the Mother of God

and Other Essays." Susan L. Flader and J. Baird Callicott, eds. 1991. University of Wisconsin Press, Madison.

<sup>4</sup> Eric T. Freyfogle. 1997. "Repairing the Waters of the National Parks: Notes on a Long-Term Strategy." 74 *Denver University Law Review* 815.

<sup>5</sup> In Aldo Leopold, "The River of the Mother of God and Other Essays." Susan L. Flader and J. Baird Callicott, eds. 1991. University of Wisconsin Press, Madison.



# Aldo Leopold: Blending Conversations of Public and Private Lands

BY RICHARD KNIGHT  
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Independence Day morning found me driving past Woods Landing, Wyoming, and onto the Laramie Plains. Since leaving the Little Snake River, I had yet to see another car. Just outside of Laramie I spied a truck. Like me, it was towing a trailer. Its trailer, however, wasn't hauling a horse that had been trailing sheep for a week across a Colorado and Wyoming mosaic of private and public lands. No, this trailer contained a four-wheel-drive Jeep, heading for the public lands to recreate. No matter the differences, both of us shared one thing in common, we both lived on private land in an American West that was blended half-and-half of private and public lands.

It made me think. Historically, these private and public lands supported a workscape of people whose livelihoods were based on natural resources of grass, timber, minerals and water. Today, this landscape is producing a new economy, one based on the visual amenities the West always has had in abundance. But what of the future? Will a West that abandons its heritage of ranchers, loggers, miners and dam builders for a West of recreators and rural ranchette owners be any better? While driving home to Livermore, Colorado, I pondered that question. In the end, I revisited a collection of essays that offers perhaps the best advice for those in search of an answer to the question of our times, how can we populate the West without spoiling it? The book, of course, was Aldo Leopold's "A Sand County Almanac," a collection of essays published a half century ago this year.

These essays were written by an Iowan who became a forester, then a wildlife manager and later a teacher, and who died a visionary. Written during the early morning hours in his office on the Madison campus of the University of Wisconsin, Leopold drew upon his experiences of public and private lands in the American West and Midwest. Aldo Leopold was quite aware of the distinctions and commonalities between private and public lands. He understood how human-placed, arbitrary boundary lines had divided the landscape, but he also believed that humans had the power to blend artificially

fragmented landscapes back together again, "It is a fact, patent both to my dog and myself, that at daybreak I am the sole owner of all the acres I can walk over. It is not only boundaries that disappear, but also the thought of being bounded."

Leopold would be happy to know that discussions about private and public lands are evolving for the better. We Americans always have viewed land as property. Indeed, in our Constitution, the word "land" does not occur, but the word "property" does. Because we view private ownership of land under the rubric of property, we tend to emphasize our rights rather than our responsibilities. With every passing year, however, there are more notable exceptions. My neighbors are Catherine and Evan Roberts, and they are what's left of a fifth-generation ranch family. They are trying to ensure that their ranch stays in agriculture and out of residential development. When asked how they view their ranch, they reply, "We have never felt like we owned the land, we have always felt like it owned us." Catherine and Evan believe there are two kinds of people today in America—the "takers" and the "caretakers." They always have felt that they belonged to the latter, placing their obligations to the land on a higher level than their rights to exploit it.

Aldo Leopold's writings reflect a balanced consideration and concern for private and public land relationships. Raised in Burlington, Iowa, he knew only private land in his youth.

However, when age, education and a job allowed, he migrated to the American West and its immense public domain. For 15 years he worked the national forests of Arizona and New Mexico. And he learned a good deal. He began to see that human uses of land could be beneficial or harmful, depending on the user's sense of stewardship; that soil had to be carefully cultivated and was no more deeded to the land than the wind that brushed across it; that the behaviors of deer, mountain lions, wolves and grizzly bears were as intricately designed as the bones, sinew and fiber that made their bodies so graceful;

# Architecture as Pedagogy

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**Editor's Note:** This article first appeared in and is reprinted here courtesy of Orion Afield magazine.

*"The worst thing we can do to our children is to convince them that ugliness is normal."*

Rene Dubos

As commonly practiced, education has little to do with its specific setting or locality. The typical campus is regarded mostly as a place where learning occurs, but is, itself, believed to be the source of no useful learning. It is intended, rather, to be convenient, efficient or esthetically pleasing, but not instructional. It neither requires nor facilitates competence or mindfulness. By that standard, the same education could happen as well in California or Kazakhstan, or on Mars, for that matter. The same could be said of the buildings and landscape that make up a college campus (Orr 1993). The design of buildings and landscapes is thought to have little or nothing to do with the process of learning or the quality of scholarship that occurs in a particular place. In fact, buildings and landscapes reflect a hidden curriculum that powerfully influences the learning process.

The curriculum embedded in any building instructs as fully and as powerfully as any course taught in it. Most of my classes, for example, are taught in a building that I think philosopher and mathematician René Descartes would have liked. It is a building with lots of squareness and straight lines. There is nothing whatsoever that reflects its locality in northeastern Ohio in what once had been a vast forested wetland (Sherman 1996). How it is cooled, heated and lighted and at what true cost to the world is a mystery to its occupants. It offers no clue about the origins of the materials used to build it. It tells no story. With only minor modifications, it could be converted to use as a factory or prison. When classes are over, students seldom linger for long. The building resonates with no part of our biology, evolutionary experience or esthetic sensibilities. It reflects no understanding of ecology or ecological processes. It is intended to be functional, efficient, minimally offensive and little more. What else does it do?

First, it tells its users that locality, knowing where they are, is unimportant. To be sure, this is not said in so many words anywhere in this or any other building. Rather, it is said tacitly throughout the entire building. Second, because it uses energy wastefully, the building tells its users that energy is cheap and abundant and can be squandered with no thought for the morrow. Third, nowhere in the building do students learn about the materials used in its construction or who was downwind or downstream from the wells, mines, forests and manufacturing facilities where those materials originated or where they eventually will be discarded. The lesson learned is mindlessness, which is to say it teaches that disconnectedness is normal. Try as one might to teach that we are implicated in the larger enterprise of life, standard architectural design mostly conveys other lessons. There often is a miscalibration between what is taught in classes and the way buildings actually work. Buildings are provisioned with energy, materials and water, and dispose of their waste in ways that say to students that the world is linear and that we are no part of the larger web of life. Finally, there is no apparent connection in this or any other building on campus to the larger set of issues having to do with climatic change, biotic impoverishment and the unraveling of the fabric of life on earth. Students begin to suspect, I think, that those issues are unreal or that they are unsolvable in any practical way, or that they occur somewhere else.

Through the design of buildings and entire campuses, is it possible to teach our students that our ecological problems are solvable and that we are connected to the larger community of life (Lyle 1994)? I think so. For the past three years (1995 to 1998), I have worked with a team of students, faculty and designers to design such a building for Oberlin College. As a first step, we hired two graduates from the class of 1993 to help coordinate the design of the project and to engage students, faculty and the wider community in the design process. We also engaged architect, John Lyle, to help conduct the major design charrettes or planning sessions that began in autumn of 1995. Some 250 students, faculty and community members participated in the 13 charrettes that set the



goals for the 14,000-square foot Adam Joseph Lewis Center. The final program called for a building:

- discharging no wastewater, i.e., drinking water in, drinking water out;
- generating more electricity than it used;
- using no materials known to be carcinogenic, mutagenic or endocrine disrupters;
- maximizing energy and materials efficiency;
- made from products and materials grown or manufactured sustainably;
- landscaped to promote biological diversity;
- promoting analytical skill, such as least-cost end-use analysis and life-cycle costing, as well as practical competence in horticulture, gardening, ecological engineering, landscape management, restoration ecology and solar technologies; and
- meeting rigorous requirements for full-cost accounting.

We intended, in other words, a building that did not impair human or ecological health somewhere else or at some later time and one that instructed passively through its design and actively through routine operations.

From 26 architectural firms that applied for the job, we selected William McDonough & Partners in Charlottesville, Virginia. Part of their task was to coordinate a larger design team that would meet throughout the process. To fulfill the requirement that the building generate more electricity than it used, we engaged Amory Lovins and Bill Browning from the Rocky Mountain Institute, as well as scientists from NASA, Lewis Space Center. In order to meet the standard of zero discharge, we hired John Todd and Michael Shaw, the leading figures in the field of ecological engineering. For landscaping we brought in John Lyle and the firm of Andropogen, Inc., from Philadelphia. To this team, we added structural and mechanical engineers (Lev Zetlin, Inc., New York City) and a contractor. In all, some 18 experts representing a dozen or more fields participated in the design phase. During programming and schematic design, this team and representatives from Oberlin College met by conference call weekly and in regular working sessions.

The team approach to architectural design was new to the college. Typically, architects design a building, hire engineers to heat and cool it, and bring in landscapers to make it look pretty. By engaging the full design team from the beginning, we intended to improve the integration of building systems and technologies and the relationship between the building and its landscape. Early on, we decided that the standard for technology in the building was to be state-of-the-shelf, but within state-of-the-art design. In other words, we did not want the risk of untried technologies, but we did want the entire building to be at the frontier of what it now is possible to do with ecologically smart design.

The building program called for major changes, not only in the design process but also in the selection of materials and relationship to manufacturers, and in the way we counted the costs of the project. We intended to use materials that did not compromise human or ecological health somewhere else or at some later time. We also wanted to use materials that had as little embodied fossil energy as possible, hence giving preference to those locally manufactured or grown. In the process, we discovered how little is known about the ecological and human effects of the materials used in construction. Unsurprisingly, we also discovered that the present system of building codes does little to encourage innovation leading to greater resource efficiency and environmental quality.

Typical buildings give a kind of snapshot of the state of technology about one year before they open, which means that they are obsolete the day they open. We intended for this building to remain technologically dynamic over a long period of time by making it possible to adapt easily to changing technology. The use of raised flooring, for example, will permit quick changes of wiring and air-handling systems. Similarly, we intend to lease a photovoltaic array from a manufacturer so that the system can be upgraded as technology improves.

The same strategy is being applied to some materials as well. Buildings represent a union of two different metabolisms, one technical and one ecological (McDonough and Braungart 1998). Materials that might eventually decompose into soil are part of an ecological metabolism. Otherwise they are "technical nutrients" to be leased from the manufacturer and eventually returned as a feedstock to be remanufactured into new product. Carpet in the building, accordingly, will be leased from Interface Corporation as a "product of service." When worn out or changed, it will be returned to Interface to be made into new carpet, not sent to a landfill. This means that Interface designs carpet that it wants back and that landfills do not fill up with bulky material impervious to decay for thousands of years.

The costs of new buildings typically are calculated narrowly to include only those of design and construction excluding life-cycle operating costs and costs to environment and human health. The result is a gross underestimate of what buildings actually cost their owners over their useful lifetime and what price they exact from society. In contrast, we will assess life-cycle costs of this building, including the amount of CO<sub>2</sub> released in the construction phase.

From computer simulation (DOE-2), we anticipate that the total electrical budget to heat, ventilate, air condition and light the building will be ~63,000 kilowatt hours per year or 16,499 British thermal units per square foot per year. This is approximately 22 percent of the average for comparable new construction in northern Ohio, as shown in the table below.



Energy costs to heat, ventilate, light and cool,  
measured in Btus per square foot per year.

The Lewis Center  
16,500

Federal standards  
50,000

Average for new construction  
~75,000

The electrical system for the center will consist of a 3,700-square foot photovoltaic array which eventually will be combined with a fuel cell. In a cloudy climate, the technological problem is to level out energy production from sunlight and actual energy use. With help from NASA scientists and others, our plan is to do so as shown below.

**Adam Joseph Lewis Center Energy System**  
**PHOTONSELECTRONS-**  
**HYDROGENELECTRONS + HEATH<sub>2</sub>O**  
**SUNLIGHTPHOTOVOLTAIC-**  
**SELECTROLYSISFUEL CELL**

The building is designed to purify wastewater on site using a living machine developed by ecological engineer John Todd. It will minimize or eliminate the use of toxic materials. It will be instrumented to display energy and significant ecological data in the atrium. The story of the building will be prominently displayed throughout the structure. The landscape will include a restored wetland and forest, as well as gardens, orchards and greenhouse, all maintained by students. The south entry is a plaza, named in honor of its designer, John Lyle, featuring a sundial marking winter and summer solstices. The landscape will be used as much as classrooms to teach horticulture, gardening, landscape management and ecological design.

Groundbreaking on the Adam Joseph Lewis Center for Environmental Studies occurred in September 1998, with a tentative completion of late autumn 1999. As important as the building and its landscape are, the more important effects of the project have been the impacts on those who participated in it. Many of the students, who learned ecological design by working with some of the best practitioners in the world, now describe the center as their legacy to the college. Faculty who participated perhaps are less pessimistic about the possibilities for institutional change. And the president of Oberlin, Nancy Dye, who initially authorized the project, has shown other administrators that risks for the right purposes can pay off.

The real test, however, lies ahead. It will be tempting for some, no doubt, to regard this as an interesting but isolated experiment having no relation to other

buildings now in the planning stage or for campus landscaping or resource management. The pedagogically challenged will see no further possibilities for rethinking the process, substance and goals of education. If so, the center will exist as an island on a campus that mirrors the larger culture. On the other hand, the project offers a model that might inform:

- architectural standards for all new construction and renovation;
- landscape management;
- financial criteria for payback times and full-cost accounting;
- courses and projects organized around real problems;
- how we involve the wider community; and
- campus-wide planning.

Colleges, like many other organizations, often are risk averse, slow to innovate, administratively fragmented and focused on the short-term. To succeed, however, this project required a willingness to risk failure, the capacity to make timely decisions, integrated planning and a long-term planning horizon. New wine should not be put in old wineskins. We set out to change the ecology of a single building only to discover that, to do so, it was necessary to change the ecology of the planning process. By some estimates, humankind is preparing to build more in the next half century than it has built throughout all of recorded history. If we do this inefficiently and carelessly, we will cast a long ecological shadow on the human future. If we fail to pay the full environmental costs of development, the resulting ecological and human damage will be irreparable. To the extent that we do not aim for efficiency and the use of renewable energy sources, the energy and maintenance costs will unnecessarily divert capital from other and far better purposes. The dream of sustainability, however defined, then would prove to be only a fantasy. Ideas and ideals need to be rendered into models and examples that make them visible, comprehensible and compelling. Who will do this?

More than any other institution in modern society, colleges and universities have a moral stake in the health, beauty and integrity of the world our students will inherit. We have an obligation to provide our students with tangible models that calibrate our values and capabilities, models that they can see, touch and experience. We have an obligation to create grounds for hope in our students who sometimes define themselves as the "X generation." But hope is different than wishful thinking, so we have a corollary obligation to equip our students with the analytical skills and practical competence necessary to act on high expectations. When the pedagogical abstractions, words and whole courses do not fit the way the buildings and landscape constituting the academic campus in fact work, they learn that hope is just wishful thinking or worse, rank hypocrisy. In short, we have an obligation to equip our students to do the hard work ahead of:



- learning to power civilization by current sunlight;
- reducing the amount of materials, water and land use per capita;
- growing their food and fiber sustainably;
- disinventing the concept of waste;
- preserving biological diversity;
- restoring ecologies ruined in the past century;
- rethinking the political basis of modern society;
- developing economies that can be sustained within the limits of nature; and
- distributing wealth fairly within and between generations.

No generation ever faced a more daunting agenda. True. None ever faced more exciting possibilities either. Do we now have or could we acquire the know-how to power civilization by current sunlight or reduce the size of the "human footprint" (Wackernagel and Rees 1996) or grow our food sustainably or prevent pollution or preserve biological diversity or restore degraded ecologies? In each case,

I believe that the answer is yes. Whether we possess the political will and moral energy to do so remains to be seen.

Finally, the potential for ecologically smarter design in all of its manifestations in architecture, landscape design, community design, management of agricultural lands and forestlands, manufacturing, and technology does not amount to a fix for all that ails us. Reducing the amount of damage we do to the world per capita will only buy us a few decades, perhaps a century if we are lucky. If we squander that reprieve, we will have succeeded only in delaying the eventual collision between unfettered human desires and the limits of the earth. The default setting of our civilization needs to be reset to ensure that we build a sustainable world that also is humanly sustaining. This is not a battle between left and right or haves and have-nots as it often is described. At a deeper level, the issue has to do with art and beauty. In the largest sense, what we must do to ensure human tenure on the earth is cultivate a new standard that defines beauty as that which causes no ugliness somewhere else or at some later time.

## REFERENCES

- Lyle, J. 1994. Regenerative design for sustainable development. John Wiley, New York.
- McDonough, W. and M. Braungart. 1998. The next industrial revolution. *The Atlantic Monthly* (October): 82-92. 282: 4.
- Orr, D. 1993. Architecture as pedagogy. *Conserv. Biol.*
- Rocky Mountain Institute. 1998. Green development. John Wiley, New York.
- Sherman, T. 1996. A place on the glacial till. Oxford Univ. Press, New York.
- Wackernagel, M. and W. Rees. 1996. Our ecological footprint. New Society Publ., Philadelphia, Pennsylvania.



# Breakout Sessions

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# North Carolina Sandhills Conservation Initiative— From Sand County to the Sandhills

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## — Introduction —

### THE PROBLEM

Longleaf pine forest is under siege throughout the Southeast. Today, the longleaf pine forest covers less than 3.8 million acres (as compared with a historical estimate of 92 million acres), a majority of which is second-growth. Aside from land conversion, fire suppression is the greatest threat to the survival of the longleaf pine ecosystem. According to "Endangered Ecosystems of the United States: A Preliminary Assessment of Loss and Degradation," by Reed F. Noss, Edward T. LaRoe III and J. Michael Scott, the longleaf pine ecosystem is one of the most endangered ecosystems in North America. Longleaf pine, which once covered more than 60 percent of the uplands of the region and 40 percent of the entire region, has declined by more than 98 percent, whereas wetlands regionwide have declined only by about 28 percent. A U.S. Fish and Wildlife Service review of the status of ecosystems in the Southeast by Boyce and Martin in 1993 revealed that, "of all our natural biotic communities, the longleaf pine type may be the hardest to find in anything approaching its original condition."

From upland ridges to flat, wet savannas, longleaf pine forests harbor a rich assemblage of plants and animals. Some longleaf pine savanna sites often have in excess of 30 different species per square meter, making these communities the richest in temperate North America. Recent inventories of the Sandhills, particularly on Fort Bragg, have uncovered a virtual treasure trove of biodiversity. Biologists have estimated that there are 1,500 plant species on Fort Bragg, nearly 30 percent of the species that occur in the entire state of North Carolina. Several plant species, such as Well's pixie-moss, occur nowhere else but in the Sandhills. Inventories and checklists for the Sandhills area describe more than 250 bird species, 67 mammals, and 83 reptiles and amphibians.

The Sandhills area supports an unusual diversity of plant and animal life, including many rare, declining or endangered species. The best known and most widespread endangered species in the Sandhills of North Carolina is the red-cockaded woodpecker (*Picoides borealis*). Other endangered species known to occur in the Sandhills include Michaux's sumac (*Rhus michauxii*), rough-leaved loosestrife (*Lysimachia asperulaefolia*), American chaffseed (*Schwalbea americana*) and St. Francis's satyr (*Neonympha mitchelli francisci*). Each of these species is known to occur on Fort Bragg and also may occur on other land in the Sandhills. At least 11 other animal species and 29 plant species that currently are federal species of concern, under study for possible future inclusion on the Federal List of Endangered and Threatened Wildlife and Plants, also may occur in the Sandhills. Seventeen of these candidate species are red-cockaded woodpecker associates; i.e., they occur in longleaf pine upland and ecotonal habitats.

The North Carolina Sandhills population of the federally listed endangered red-cockaded woodpecker is the second largest of 15 populations identified in the U.S. Fish and Wildlife Service's 1985 Red-cockaded Woodpecker Recovery Plan. Unlike the other 14 populations listed in the recovery plan, the North Carolina Sandhills population is spread across a mosaic of federal, state and private lands. Currently, the population is fragmented into two distinct subpopulations, Fort Bragg/Southern Pines and Sandhills Gamelands/Camp Mackall. These two subpopulations are separated by a 6-mile gap of private lands devoid of active red-cockaded woodpecker groups. Two of the major core areas of highest cluster densities reside on the Fort Bragg Military Reservation and the North Carolina Sandhills Gamelands. In order for the recovery objective, as defined in the recovery plan, to be realized, demographically viable and sustainable linkages must be created between these two subpopulations.

Among the factors that have contributed to the decline of the red-cockaded woodpecker in the North Carolina Sandhills are timber harvesting programs that utilize rotation cycles too short to allow trees to reach sufficient age for cavity excavation; fire suppression, with the resultant hardwood encroachment; and fragmentation, a result of urban and agricultural growth. As a result of these many factors, despite protection as an endangered species since 1970, the red-cockaded woodpecker has declined steadily, particularly on private land. Much of the decline on private land can be attributed to the lack of active habitat management. In some cases, certain land management practices, such as prescribed fire and longleaf pine regeneration, have been avoided expressly to discourage red-cockaded woodpecker occurrence.

Currently, more than 30 percent of the red-cockaded woodpecker groups/clusters are found on private lands. Land use on private lands includes golf courses, horse farms, private and commercial forests, and residential properties. The counties in the Sandhills are experiencing a significant period of growth resulting in an overall decrease in longleaf pine habitat due to increased harvest of longleaf pine and subsequent land use conversions of forest into residential, commercial and horse farm properties. The loss of habitat and increase in habitat fragmentation have resulted in an overall reduction in the number of private lands red-cockaded woodpecker breeding groups, and an increase in nest failure rate and number of single bird groups. Between 1992 and 1998, the Southern Pines/Pinehurst clusters have shown a 22-percent decrease in the number of breeding groups, 50-percent increase in the number of nest failures and 5-percent increase in the number of groups with no females present. The North Carolina Sandhills Gamelands and Fort Bragg red-cockaded woodpecker subpopulations are stable at best. However, if the loss of forested habitat adjacent to these public lands is not curtailed, and private land longleaf pine habitat is not protected and intensively managed, red-cockaded woodpeckers on public lands may begin to show signs of instability. The U.S. Fish and Wildlife Service and U.S. Army have acknowledged that the existing private land red-cockaded woodpecker groups are critical to the recovery of the North Carolina Sandhills population.

## THE PARTNERSHIP

The core partners involved in this effort are the U.S. Fish and Wildlife Service; U.S. Army, Fort Bragg; U.S. Army Environmental Center; North Carolina Wildlife Resources Commission; The Nature Conservancy; and Sandhills Ecological Institute.

Federal and state partners currently managing public lands for longleaf pine protection and restoration in the North Carolina Sandhills include the U.S. Department of the Army (Fort Bragg Military Reservation and Camp Mackall), North Carolina Wildlife Resources

Commission (Sandhills Game Land in Moore, Richmond and Scotland counties), North Carolina State Park System (Weymouth Woods Nature Preserve in Southern Pines, Moore County) and North Carolina Department of Agriculture (McCain Tract in Hoke County).

The Nature Conservancy has initiated an ecosystem conservation campaign featuring longleaf pine communities in the Sandhills and is actively involved with the purchase, restoration and management of private lands for the conservation of longleaf pine habitat. This initiative involves recognition, protection and management of good examples of the natural communities of the once widespread longleaf ecosystem.

Together, the core agencies and conservation organizations own and manage approximately 224,269 acres within the proposed North Carolina Longleaf Reserve. However, these lands are disjunct. The seminal goal of the Sandhills Conservation Initiative is to begin connecting these publicly owned lands by acquiring adjacent private lands, thus filling in the gap. To this end, approximately \$1.76 million have been contributed by various partners to date toward the establishment of a longleaf reserve in the North Carolina Sandhills.

Additional stakeholders will be invited to participate with the core partners in this process. Other state agencies, county and local governments, and private organizations that have an interest in preserving the integrity of the North Carolina Sandhills will have representation on various working groups currently in formation. The task of these working groups will be to develop acquisition, management and outreach plans specifically to promote protection and sound management of longleaf pine habitat, including rare and threatened vegetation communities, to sustain red-cockaded woodpeckers and other endemic species.

## CHRONOLOGY OF KEY EVENTS IN THE NORTH CAROLINA SANDHILLS

Since 1992, the North Carolina Sandhills red-cockaded woodpecker population has been the focus of much attention from various conservation organizations, such as The Nature Conservancy, Environmental Defense Fund, Sandhills Area Land Trust, U.S. Army and U.S. Fish and Wildlife Service. Since the first Red-cockaded Woodpecker Conference held in September 1992 between the U.S. Fish and Wildlife Service and the Army, the following events and milestones have occurred.

In 1993, the Sandhills Red-cockaded Woodpecker Working Group was established. Participants include researchers from local universities, biologists from Fort Bragg, North Carolina Wildlife Resources Commission, North Carolina Parks, North Carolina Natural Heritage Program and U.S. Fish and Wildlife Service, and representatives from the Sandhills Area Land Trust, Environmental Defense Fund and The Nature Conservancy.



In 1994, the U.S. Fish and Wildlife Service's North Carolina Sandhills Field Station was established. Funded by the Army through a Memorandum of Agreement with the U.S. Fish and Wildlife Service and staffed by a service biologist, this office is responsible for developing a North Carolina Sandhills red-cockaded woodpecker population recovery strategy, and coordinating and integrating recovery activities and programs on public and private lands in the North Carolina Sandhills.

In 1995, Secretary of the Interior Bruce Babbitt announced the nation's first Safe Harbor Habitat Conservation Plan in the North Carolina Sandhills featuring red-cockaded woodpeckers. The associated regional HCP established a Safe Harbor Program designed to facilitate positive habitat improvement for red-cockaded woodpeckers on private lands in the North Carolina Sandhills. Implementation of the Sandhills HCP Safe Harbor Program is the responsibility of the North Carolina Sandhills Field Station. Interest in the Sandhills Safe Harbor Program has far exceeded our expectations. In less than three years, 43 landowners have been enrolled or are in the process of enrolling in this program, with a total of 32,577 acres expected to be enrolled by the end of this fiscal year. It is anticipated that the number of acres enrolled in the Sandhills Safe Harbor Program will double by the end of FY 2000.

Also in 1995, a joint project, funded by the U.S. Army Environmental Center and executed by the National Biological Service and researchers at North Carolina State University, was launched to create a landscape-based conservation model for the North Carolina Sandhills. This model is designed to identify and prioritize critical habitat for the red-cockaded woodpecker and other biota of the longleaf pine ecosystem.

In 1996, the U.S. Army Environmental Center entered into a Memorandum of Agreement with the North Carolina Chapter of The Nature Conservancy to purchase key lands for the protection and restoration of the red-cockaded woodpecker and associated longleaf pine habitats. The Army Environmental Center also entered into an Interagency Agreement with the U.S. Fish and Wildlife Service to fund the North Carolina Sandhills red-cockaded woodpecker coordinator position for up to five years. It was deemed in the Army's interest to support recovery activities, especially the Sandhills Safe Harbor Program, on private lands adjacent to Fort Bragg, with the expectation that these activities would expedite recovery and subsequent relaxation of restrictions currently imposed on Fort Bragg for protection of red-cockaded woodpeckers. In addition to red-cockaded woodpecker recovery, the Army also is charged with the restoration and management of the longleaf ecosystem on military property. The agreement between the U.S. Fish and Wildlife Service and the Army Environmental Center extends the scope of activities to include "cooperation to assist in the recovery of other

threatened and endangered species in the North Carolina Sandhills and to advance the state of longleaf pine forest ecosystem management and bio-regional planning."

In 1999, the U.S. Fish and Wildlife Service approved the preliminary project proposal for the Southern Pines National Wildlife Refuge. The purpose of this refuge will be to preserve, restore and manage longleaf pine habitat for the recovery of the red-cockaded woodpecker and protection of other rare, threatened and endangered species endemic to the North Carolina Sandhills. Funding support would come from the Land and Water Conservation Fund.

## — Planning and Implementation —

### THE SANDHILLS LONGLEAF RESERVE

Establishment of a North Carolina Sandhills Longleaf Reserve is key to accomplishing the goal of developing and implementing a conservation strategy for the federally endangered red-cockaded woodpecker and other rare biota of the longleaf pine ecosystem in the Sandhills of North Carolina. The population of red-cockaded woodpeckers that now occurs in the North Carolina Sandhills is unique among those designated essential for recovery of the species. The challenge presented by the Sandhills population is that significant portions occur on federal, state and private lands. Since this occurrence includes the entire scope of land ownership potential, it follows that the diversity of land uses, landowner goals and public attitudes spans the range of possibilities. In addition to fragmenting the land ownership and the forests of the Sandhills region, land-use practices have modified the natural disturbance regimes that influence the forest structure and composition. Any concise approach to red-cockaded woodpecker conservation can only address a segment of landowners or land uses, or even land management needs at one time, so what is presented here is a framework to coordinate the conservation of red-cockaded woodpeckers, a strategy comprised of many approaches, including the establishment of a longleaf pine ecosystem reserve.

The objective of the North Carolina Sandhills Conservation Initiative is to acquire, restore, protect and manage a mosaic of land parcels within an established longleaf ecosystem reserve boundary. Establishing public ownership and management of key land parcels and the protection of other essential private lands through conservation easements will ensure the long-term viability of the red-cockaded woodpecker, other threatened and endangered species, and a variety of other wildlife endemic to the Sandhills. Together with the existing public lands held by the Department of the Army, State of North Carolina, North Carolina Chapter of The Nature Conservancy and Sandhills Area Land Trust, the proposed acquisitions will form the core of the North Carolina Longleaf Reserve.



Acquisition and management of the proposed reserve area would preserve valuable longleaf pine habitat critical to recovery (genetic viability and demographic stability) of the red-cockaded woodpecker in the North Carolina Sandhills while providing additional public lands for recreational purposes. The recovery goal is to maintain a viable red-cockaded woodpecker population in the North Carolina Sandhills physiographic region. A viable population in this area is essential for downlisting of the species. Over the last 20 years since protection of the red-cockaded woodpecker was afforded by the Endangered Species Act, the numbers of breeding groups and quantity of suitable habitat, as well as the quality of suitable habitat, all have declined in the Sandhills region. The acquisition and restoration of lands identified in the Sandhills Longleaf Reserve Design, in conjunction with programs designed to protect and enhance habitat on privately owned lands, such as Safe Harbor, should reverse these downward trends.

Through fee-simple acquisition of lands and the purchase of conservation easements on other selected private lands, the partners' objectives are to protect existing longleaf habitat, restore degraded lands and manage longleaf pine habitat for the recovery of the red-cockaded woodpecker and protection of other species endemic to this ecosystem.

## ACQUISITION AND MANAGEMENT

The Sandhills Longleaf Reserve will encompass parcels in the Sandhills physiographic region of southcentral North Carolina located within Cumberland, Harnett, Hoke, Moore, Richmond and Scotland counties. A more specific reserve boundary will be established using the best scientific knowledge available for species associated with the longleaf pine ecosystem. As an example, our objective is to utilize a landscape-based model linked to a demographic model for the red-cockaded woodpecker to identify a population boundary for this species that will restore this population's genetic viability and demographic stability.

The Sandhills Longleaf Reserve will include lands owned by federal and state agencies and nonprofit conservation organizations, as well as private lands managed through conservation agreements or the U.S. Fish and Wildlife Service's Safe Harbor Program (Table 1). The total acreage within the proposed reserve will be managed in partnership among these participants. Prioritization of acquisition for the initial 15 land parcels will be based on landscape model output which identifies specific lands critical to reconnection of the fragmented red-cockaded woodpecker population in the North Carolina Sandhills.

The landscape model also will be used to identify other key parcels for inclusion in the reserve. It is anticipated that a combination of conservation management agreements and fee title/easement purchases will be used to protect the lands within the reserve.

**Table 1. Current public landholdings in the North Carolina Sandhills.**

<u>LANDHOLDING</u>	<u>OWNER</u>	<u>SIZE (ACRES)</u>
Fort Bragg	U.S. Department of Army	161,071
Camp Mackall	U.S. Department of Army	5,300
Sandhills Game Land	North Carolina Wildlife Resources Commission	57,000
McCain Tract	North Carolina Department of Agriculture	4,300
Weymouth Woods SNP	North Carolina State Parks	898
Total		228,569

One of the products we expect to produce under this initiative is a holistic approach to managing longleaf pine habitat and rare communities within the established reserve. A bio-reserve management plan will incorporate existing management plans for public lands with management strategies for private lands to ensure that management activities are implemented to meet the groups' overall goals and objectives. In essence, the vision is to initiate an ecosystem management program which transcends ownership boundaries and emphasizes the preservation and restoration of key biotic communities.

Finally, in addition to the ongoing partnership activities in the North Carolina Sandhills, our long-term objective is to expand the longleaf reserve concept throughout the range of the longleaf pine/wiregrass community. This area will encompass that portion of the South Carolina Sandhills which includes 60,000 acres in the Carolina Sandhills National Wildlife Refuge and 40,000 acres of adjacent South Carolina State Forest Service lands currently being managed to promote longleaf pine habitat. The USDA Forest Service, while not owning any land within the Sandhills, has ongoing research in longleaf/wiregrass restoration and is interested in becoming a full partner in the longleaf pine reserve initiative.



# Management at the Edge of Opportunity

BY BOB BUDD

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"Why do species become extinct? Because they first become rare. Why do they become rare? Because of shrinkage in the particular environments which their particular adaptations enable them to inhabit. Can such shrinkage be controlled? Yes, once the specifications are known. How known? Through ecological research. How controlled? By modifying the environment with those same tools and skills already used in agriculture and forestry" (Leopold, "The Land Ethic").

As people, we tend to see in shades of black-and-white, place values on our world and demand results. Even in nature, we expect to have sure, certain outcomes from our actions. We decide what is important and what is not, placing value-laden terms, such as "good," or "fair" or "poor," on landscapes as well as species. For those of us who live on the land, the world rarely catches hues of black or white, only occasional shades of darker or lighter grey.

On any given day, I will encounter many things, from peregrine falcons soaring over my head, to rattlesnakes beneath my feet, to the new life of a black-baldy calf in my arms. On the slopes where I work, seven species of rare plants make a living among the representative plant communities that define my existence and that of other species. Sagebrush, bitterbrush, yarrow and balsamroot scent the air. Soon it will be a mix of later season plants that integrate themselves into the seasons of my senses. The riparian areas in my temporary care are a mixture of constantly mobile sand and silt, contradicted by stable stands of willow and birch older than the ranch house, even ancient juniper fence posts. There are frogs in the stream now, a revelation. The sound of that first frog's belly hitting the water was as riveting as a gunshot. We raced through the snagging, snarling roses to see this green messenger, and we danced in the sedges like children!

The 35,000 acres upon which I work are owned by The Nature Conservancy, and we use cows to achieve multiple objectives associated with conserving biological diversity in the southern Wind River Mountains. Some assume there must be some contradiction in terms, in mission, in

realities. Nothing could be further from the truth. "Given ... the knowledge and the desire, this idea of controlled wild culture or 'management' can be applied not only to quail and trout, but to *any living thing* from bloodroots to Bell's vireos. Within the limits imposed by the plant succession, the soil, the size of the property, and the gamut of the seasons, the landowner can raise any wild plant, fish, bird, or mammal he wants to. A rare bird or flower need remain no rarer than the people willing to venture their skill in *building it a habitat*" (Leopold, "The Land Ethic").

Every day in the Rocky Mountain West, hundreds of thousands of acres are converted from open ranchland to housing, recreational venues, and uses which wildlife and natural things do not seem to comprehend. When we assess threats to plant communities and the species that depend on them, few compare with this current race to fragment habitats. Yet, we often find ourselves mired in debate over uses of the landscape—emotional, sometimes irrational extensions of our personal biases which may forsake the task at hand. Conservation is the task at hand, and how we get there is as much a function of conserving people who can do this job daily, as it is a necessity to "save all the pieces."

I work with grazing animals and people who like grazing animals. Most of the animals are cows, but some are bison. Some are animals native to this land; others are not. They are grazing animals, defined in most dictionaries as "animals that eat grass." I work on public lands and private lands, from alpine forest to cold desert. I would rather think of the land in its ecological sense than by its political identity—it seems more honest and fair. Ridges don't run on grid lines. Creeks and rivers follow the terrain and not a map. Mule deer could care less about the politics.

Today, there is constant debate about grazing animals, or at least cows and sheep. Some would remove livestock from all public lands. Others would be happy to remove livestock from the landscape altogether (including me, at the end of calving or the height of weaning). But, how do you measure success when that objective is achieved?

Just down the road lie 400 acres of ranchland where livestock have been removed. It began simply enough,

with reductions in numbers of animals on public lands. And the banker waited, and he wanted his money back, as he should. It mattered not that the number of cows to make the payment now were being concentrated on the private lands, where streams and springs were plentiful, and the rancher tried to make the land carry the load, to make it work, as he should. A deal is a deal. When cows no longer made the payments, and the land was tired, it was plowed to make way for a cash crop that might return more per acre. Fertilizers were jabbed into the soil, and chemicals kept the crops "pure." In time, willow stands and chokecherry bushes were removed. The land was leveled and drained, and made better for crops such as corn or wheat. But, even that did not sustain the people on the land, and in time, 400 acres became 40 lots.

This must be a model of success, for there are no cattle on this ranch anymore. Now, there are 40 houses, 40 sheds, 40 roads, 40 septic tanks, 40 wells, 40 sets of trash barrels, 40 haystacks, 40 irrigation ditches, 40 fences, 80 dogs, 80 cats, 80 cars that run, 80 cars that will run no more, 120 horses that never get ridden, a handful of llamas, 240 sheep and a bunch of rabbits in cages. There is leafy spurge and knapweed, houndstongue and toadflax. When it rains, brown water runs from the roads to the creek. Sometimes, it makes a light tan foam where it enters the stream. No one fishes here much.

Last week, with several hundred cattle as witnesses, my 8-year-old son caught a fish as long as his arm on a willow battered fly he finally threw with finesse. The next day, he saddled his own horse at dawn and moved cattle to the mountains.

To that rancher, choices were very simple. We can choose to "save" something like the stream he loves by taking away something else he loves, or we can work to care for the whole. If we truly wish to manage for landscapes in which wild things can thrive, to offer them a future, then we must think on a larger scale. We cannot take a traditional, reductionist view of science and impose it on nature. As the saying goes, "don't try to teach a pig to sing—it's frustrating for you, and it annoys the pig."

To get there, we really don't have that many tools at our disposal. We often jump first to *technology*, that "thing" humans run to whenever we venture out of black-and-white land, that thing which moves us to select quick-fixes to our problems so that we might get back to the current murder on our latest version of the television. Technology is an answer, but it is not the *only* answer. At times, the technology solution is driven by a reactionary chain that addresses more symptoms than problems. And, at times, we do not sufficiently work out effects and unintended consequences of technological advance, leading us to take two steps forward and one back, or one forward and two back.

We have *fire*, removed from our box of tools long ago, long enough that we now must understand the need to make fuel loads appropriate to the places where we might

burn. Fire is essential, and yet, we must be careful to make fire work in a natural sense, at a time when fires should burn, in fuels that aren't laden with the baggage of decades or generations of suppression. Fire has even become the short-term goal in some cases, leading us to use other tools so that fire itself becomes a usable force in the future.

There is *rest*, long used and often abused. In ecosystems where I work, grazing animals have been part of the landscape since the Pleistocene, and in fact, now are some of the species we worry most about. Like uncertain doctors, we prescribe rest and monitor symptoms, often finding that the patient recovers miraculously to our wisdom. But few of us follow the patient home, and when it begins to lose vigor to a place where it cannot recover, we look only to the latest episode and not the life of the system. Land is a living thing. When we restrain it to save it, we must at least check in once in awhile to see that all is well. We may find that our prescription is akin to paralysis, a total lack of energy in the system, a slow death we don't see or care enough to reverse. However, when used in a managed grazing program, rest can be an extremely effective tool, paving the way for fire, living organisms, animal use and other combinations of management which ultimately point us toward our goal for a given piece of land.

*Living organisms* often are not immediate change agents, and humans are woefully inadequate in understanding relationships, so we scurry to things which look to be better and faster ways of achieving immediate satisfaction. Even if we can understand that grasshoppers live in a 7- or 11-year cycle, we still are not satisfied to connect the hoppers to the sage grouse to the alfalfa to the weevils to water to soil to pesticides to heat or cold. Use of this tool can be rewarding and instructive, and keeping it in mind can help us comprehend both biological diversity and the need to think on a larger scale.

And then there are *grazing animals* ... a concept that ventures into images of black and white. At Red Canyon Ranch, we often ask people to name three grazing animals. Adults uniformly point out cow, horse and sheep. Children see beyond paradigms of adult knowledge and cry out, "goose!, deer!, buffalo!, grasshopper!, elk!, mole!, mountain sheep!, rabbit!, gopher!, prairie dog!, cow!" Arms raised high, with their other arms wrapped around their necks to hold the uplifted arms firm, they see this essential tool for what it is. One girl raised her arm, nose, eyebrows and bangs to be noticed, and shouted out, "APHIDS—the cows of ants!"

We focus most of our attention on the tool of grazing and associated *animal impacts*, for a number of reasons. First, grazing is an ancient and prevalent force in the landscapes in which we work—our natural systems evolved with grazing animals, and while the current user may not be exactly the same as those through history, it is a force we can manage with an incredible degree of sensitivity.





Second, livestock are an economic force that maintains vast landscapes by generating a profit for people who love the land and want nothing more than the chance to continue making a living by caring for natural landscapes. These are the people of whom Leopold speaks in "The Land Ethic" when he suggests that the "harmonious integration" of bread and beauty "can make farming not only a business but an art; the land not only a food factory but an instrument for self-expression, on which each can play music of his own choosing." Livestock and people who raise them are fibers in the cultural tapestry of western communities, a source of stability to local economies and traditions, but more so, those who hold the line against fragmentation of habitats, loss of opportunity, and a chance to maintain and improve upon what we have now. In light of challenges to wildlife and natural things, these are the people who must become and be seen as the musicians and artists Leopold envisioned. No rancher wishes to become a "museum piece" in their lifetime, but they feel the pressures of extinction all too well.

Third, we must look at our ability to affect vast ecosystems beyond our borders. In that sense, economic uses which contribute to biological diversity, healthy streams and wetlands, and constantly changing upland ecosystems may meet some of the world demand for food, fiber and other goods without sacrificing rain forests and other habitats under siege. A huge percentage of all beef eaten is consumed as ground beef supplied from areas where slash-and-burn tactics are viewed as the only alternative to poverty. If we produce an adequate supply of healthy, high-quality products on native rangelands, while at the same time conserving our ecological treasures, we might even be successful in aiding the brilliant songbirds at my window today when they venture south for winter.

Using grazing animals as a tool, as well as an economic agent, the drawers of our tool box contain more magic than we might have thought. Number of animals, season of use, length of grazing period, type of animals and other applications will derive different results. As we build programs of livestock use, we can look to prehistoric and recent historic records to guide us in managing for a variety of objectives. At Red Canyon, bison probably were not the main agent of change. There is some record of bison presence, but it was a fairly ephemeral occurrence, wandering bulls perhaps, or small bunches seeking shelter or escape. The primary animals noted on cave walls, and in the journals of trappers and explorers more commonly were elk, bighorn sheep, deer and pronghorn. Of those, elk and sheep were the herd animals most likely to shape the environment. In looking at animals which might mimic that activity, cattle have a fairly direct dietary overlap and prefer similar habitats.

We know that big, native ungulates did not follow a plan derived by Lewis and Clark. Rather, they are respon-

sive to natural events and occurrences which led to their foraging behavior. Predators, fire, drought, rain, lack of feed and other natural factors moved the animals, probably imperfectly, across the landscape. We surmise that these animals had a range they preferred, and we still see elk calving or wintering in the same safe havens. It is certain these animals did not avoid riparian and wetland habitats—they still favor those areas, much as most other species favor them. Consequently, in our design of grazing systems, one of the most important tools we can use to mimic natural disturbance is the amount of time animals spend in a given area.

We can enhance those habitats further by varying the season that animals are there, thus leading to a different plant response over the longer term. With children, I tell a story about how plants think, how some of them see spring as a time to grow as fast as possible, while others are content to lay in bed until it is really hot. If we don't toss challenges at these plants, they will quickly learn that their actions will create the same reaction—those which are eaten will give up and go away, leaving the landscape to those who are lazy. In time, a pasture perfect for spring use will become worthless for that purpose, blooming late in the year, sometimes when that pasture is unusable. The optimal result comes when we manage for diversity in all of our pastures.

When asked what we are trying to create with this management scheme, I proudly answer, "chaos and confusion!" This causes great consternation. We humans do things in our minds that lead us astray—one is to assume that the natural world should appear "pristine," a raked forest floor in a moody photograph. The natural world may be pristine, but it is not that photogenic. There is new growth, decay, erosion, floods, fire scars and a world of successional variation on our landscape, and that will not be sustained if we insist on a textbook example of mid-seral conditions. We must celebrate the fact that grazing animals can have an impact on these systems, an impact as natural as wind, rain or fire. In many cases, we should look at grazing animals as keystone species that maintain or craft environments for others. Where we have discounted such interactions, we sometimes have paid the price dearly.

There are two key areas animals can affect most rapidly in natural systems. The first is *succession*. Animals can be used, by understanding diet, behavioral tendencies and other characteristics, to favor or disfavor plants, often by impacting other vegetation. In the case of riparian and wetland systems, escaped bromes seize waterways through quick, early growth. By the time woody species have a chance to grow, they must compete with a 4-foot canopy of dense grass in order to photosynthesize. The same reality can take place in a sedge meadow. By grazing these areas early in the season, as the native animals may have done, we can reduce canopies of brome grass or other undesirables and see sprouting of willow, birch and other woody desirables increase laterally and within stands.



Streams can narrow and deepen, and fisheries can produce trout as long as an 8-year-old's arm.

The key to management is to have as complete an understanding as possible of the targets, goals or objectives for the system of choice. Using grazing animals to move in the desired direction can be an effective means of maintaining biological diversity, along with local cultures and economies.

In addition to succession, grazing animals may be essential integrators of energy within natural systems. In addition to the obvious contributions of dung and urine, animals can have a profound impact on energy tied up in vegetative systems. When we look at long-term exclosures in conjunction with adjacent, grazed systems, we may find some unsettling realities. At the outset of rest, vegetation within exclosures released and began to flourish. For a number of years, it appeared as if exclusion was the cure. The area was assumed to be "healed." But at some point long beyond that of a master's or doctorate program, many of these systems began to unravel. Woody vegetation became more scattered, characterized by older, perhaps less vigorous plants. Weeds occupied more of the areas. Measured differences began to confirm human observation and ask questions of their own. Diversity of species appeared to be less, and occurrences of "less desirable" species appeared more. Why is this happening? Perhaps it is a function of energy in natural systems, that field of science that so terrifies us due to

our lack of understanding and inability to see it work. Without agents to mobilize energy above and below ground, systems may reach points of stasis that become binding. Perhaps it is the stable states described by many in the research world. It appears that without challenge, disturbance or outright energy release, many of the systems we seek to maintain will be crushed under their own weight. As this process occurs, other species may vacate, perhaps indicators that the system is in peril. We do not yet know these species of alarm, so we must think of them all as "possibles," if possible, without overreacting. We do have time to figure these things out, but only if we approach the world as something we will not "save" in our own time, and instead, as a mystery we can help our children better comprehend.

In closing, let me express my appreciation for the opportunity to share this time with all of you. The ideas presented here come more in the form of questions than answers. Images and data ultimately may support some of these ideas and refute others. It is not my ego which is important. If we truly wish to conserve the many species and communities we cherish in the West, we must find the will and wisdom to manage for those values. We must share them, and we must be both bold and patient. Within the hearts, minds and hands of local people on the land lies the key to opportunity. Aldo Leopold said it best ... "The only progress that counts is that on the actual landscape of the back forty."



# Leopold, the Leopold Education Project and Environmental Education

BY RUSS SEWELL

VICE PRESIDENT OF EDUCATION

PHEASANTS FOREVER/LEOPOLD EDUCATION PROJECT

Many thanks to our cosponsors for the opportunity to speak with this dedicated group of Leopold conservationists. Coming from Minnesota, I'll try to curtail the "you betchas" and "yeah, sure, ya knows" that most folks expect after seeing the movie " Fargo." Instead, in reference to a recent David Letterman show, I'd like to invite you all out for a St. Patrick's Day festival in St. Paul sponsored by our new governor, Jesse "the Mind" Ventura. Seriously, I am honored to be here to talk briefly with you about Aldo Leopold, this special anniversary of "A Sand County Almanac" and the Leopold Education Project.

As many of you know, this year marks the 50th anniversary of Aldo Leopold's much venerated conservation classic, "A Sand County Almanac." Published posthumously in 1949, the "Almanac" has become a conservationist bible. Its influence continues to grow yearly; it is more popular today than ever. In fact, Leopold has become the most quoted conservationist of all times. Although many great people have contributed to the conservation movement, Henry David Thoreau, Rachael Carson, Theodore Roosevelt and John Muir to name a few, it has been Leopold's modest essays portraying his love for the land that writers and environmental warriors rely on as a catalyst for their thoughts and actions. Published in nine languages and having sold well more than a million copies, the "Almanac" has become a stimulus for broad social awakening, as new generations of readers eager to explore their own relationship to the land seize upon Leopold's words. Leopold originally titled the book "Great Possessions." It was changed prepublication by Oxford Press to "A Sand County Almanac," but this fine bit of prose indeed has become a great possession of all those who love the land.

Probably one of the most often used Leopold quotes is from the "Good Oak" essay, "There are two spiritual dangers in not owning a farm. One is the danger of supposing that breakfast comes from a grocery, and the other is that heat comes from a furnace."

Leopold's ability to articulate clearly with strength, endurance and depth, and stimulate further thought is evident in this passage. Leopold penned the "Good Oak" in 1947, after many of the "Almanac's" other essays and when he already had begun to review Charlie Schwartz's artwork for the book. The "Good Oak" chronicled the past drama of Wisconsin's landscape as he and his chief sawyer, his wife Estella, cut up an 80-year-old black oak which had succumb to a lightning strike.

At this time, 29 percent of our population resided in rural areas associated with farming. Today, according to the federal census figures, somewhat less than 2 percent of our population is involved with producing the food and fiber we consume. This mass exodus from the land, coupled with drastic changes in other demographics (e.g., less leisure time, 21 fewer days than in 1969, and increased prevalence of single-parent households) changed the manner and the amount of contact we have with the land and, therefore, our relationship with the land. I am, of course, defining land as Leopold did to include collectively the "soils, waters, plants and animals" we share this world with.

Leopold aptly defined the dilemma of environmental or conservation education when he said, "The problem is how to bring about a striving for harmony with the land among a people many of whom have forgotten there is any such thing as land, among whom education and culture have become almost synonymous with landlessness. This is the problem of conservation education." The harmony Leopold was referring to was his infamous plea for a major philosophical shift—a shift Leopold saw as a widening of the concept of community.

In the "Land Ethic" section of "A Sand County Almanac," Leopold described this extension of ethics as both an evolutionary possibility and an ecological necessity. He viewed ethics as "possibly a kind of community instinct in the making."

## THE COMMUNITY CONCEPT

"All ethics so far evolved rest upon a single premise: that the individual is a member of a community of interdependent parts. His instincts prompt him to compete for his place in that community, but his ethics prompt him also to co-operate (perhaps in order that there may be a place to compete for).

"The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land.

"In short, a land ethic changes the role of *Homo Sapiens* from conqueror of the land-community to plain member and citizen of it. It implies respect for his fellow-members, and also respect for the community as such."

Leopold was not the first to make such a plea. Certainly, both Henry David Thoreau and John Muir advocated that nature has rights. But what set Leopold apart from those who preceded him is that he provided a sound scientific underpinning for his call.

The question remains to those of us who yearn for an ecologically literate citizenry: how do we facilitate such a change in the hearts and desires of our society? As environmental educators and persons who strive to foster an ethical relationship to the land, I think we begin by looking back to where our own interests, love and admiration for the land community began.

How do you develop a passion for plants, animals, soils and waters? Louise Chawla of Kentucky State University reviewed research on the sources of commitment of environmentalists and identified two common sources that were predominant: (1) many hours spent in the outdoors in a keenly remembered wild or semi-wild place during childhood or adolescence; and (2) an adult mentor who taught a respect and love for nature.

In regard to the demographic changes I mentioned earlier, you can see we certainly have our work cut out for us as environmental educators. As teachers, parents, naturalists and lovers of the land, we need to address these two basic roots of environmental education by providing opportunities for youngsters to experience the natural world outside the traditional classroom. Wetlands need to be explored in boots with mud, not via virtual reality. We need to take the time to do it ourselves, to be the mentor our children and students need in this techno-distanced society.

All education is environmental education. Discipline-centric education has, either by inclusion or exclusion of an awareness of the interconnectedness of the human/land relationship, produced students who see themselves either as members of the land community or

alien from it. The former maintain a sense of place and belonging and a depth of self understanding that encompasses the spiritual, emotional and intellectual traits requisite of good citizens. The latter lack any sense of place or community, and their actions reflect this disconnection in poor stewardship and the ignorance of the need to act otherwise. The way to begin to produce prudent stewards lies in restructuring educational processes so that students are given the opportunity to study interactions across the boundaries of conventional knowledge. An example of how I personally have worked toward this goal with the Leopold Education Project is to provide out-of-the-box avenues for learning, such as LEP's literature model for environmental investigation, rather than the in-the-box recipes for investigating biomechanics so commonly used.

Leopold said, "I am trying to teach you that this alphabet of natural objects (soils and rivers, birds and beasts) spells out a story, which he who runs may read—if he knows how. Once you learn to read the land, I have no fear of what you will do to it, or with it. And I know many pleasant things it will do to you."

This passage is from "Wherefore Wildlife Ecology," a penciled, two-page course objectives address Leopold gave mid-way through the semester to his undergraduate wildlife ecology class in 1947. It is foundational to what the Leopold Education Project strives for, in motivating students to read the landscape and experience the outdoors firsthand.

We need developmentally appropriate curricula. In my travels across the country working with public schools, colleges and natural resource agencies, I see a common mistake. We adults tend to be unable to look through the eyes of children.

When I asked you earlier how you developed an environmental or land ethic, I heard no one cite learning about an environmental tragedy during childhood as a catalyst. Yet, in elementary schools around the nation, children are bombarded with issues and tragedies at far too early an age. When they should be out catching tadpoles and honey bees, we are trying to indoctrinate or at least advocate positions on rainforest destruction, water pollution, chemical poisoning, wildlife extinction and global warming—indeed, all very pressing environmental dilemmas, but probably not appropriate for a second grader to deal with.

David Sobel, noted educator and author of "Beyond Ecophobia" writes, "Lurking beneath 'environmentally correct' curricula is the assumption that if children see the horrible things that are happening, then they will be motivated to make a difference. But those images have a nightmarish effect on children whose sense of time, place, and self are still forming. What is important is that children have the opportunity to bond with the natural world, to learn to love it, and feel comfortable in it before being asked to heal its wounds."



## THE LEOPOLD EDUCATION PROJECT

The Leopold Education Project takes David Sobel's thoughts to heart by striving to foster a positive relationship between an increasingly disconnected people and soils, waters, plants and animals, or what Leopold collectively called the land. In his classic book, "A Sand County Almanac," Leopold introduces the reader to the beauty that is found in the natural world before asking the reader to understand its wounds and how to heal them. This sequence also is what Sobel was explaining and what LEP uses as a model in its education program.

The Leopold Education Project was started a little more than 10 years ago by a group of Illinois Soil and Water Conservation Districts called Council 16. Council 16 felt so strongly about Leopold's land ethics message that it purchased 10,000 copies of "A Sand County Almanac" and distributed them to local landowners. Later, Council 16 adopted a Wisconsin science teachers' curriculum, "Lessons in a Land Ethic," to reach out to students. Council 16 was effective at reaching a small audience, but the message presented in the materials was thought to have application to a much greater audience.

In 1994, Pheasants Forever, a conservation organization focused on wildlife habitat, was introduced to the Leopold Education Project and also felt that the land ethics message deserved broader distribution. Pheasants Forever took over primary ownership of the Leopold Education Project and has guided its progress since. Today, LEP has spread to more than 40 states and continues to grow by leaps and bounds.

The Leopold Education Project's curricula now consists of "A Sand County Almanac," which is used as a student text, the "Lessons in a Land Ethic" curriculum, a biographical video called "A Prophet for All Seasons," and a set of activity task cards designed to compliment the other materials. The "Almanac" works ideally as a springboard for conservation education due to its interdisciplinary context and eloquent literary style. The "Lessons in a Land Ethic" curriculum consists of 22 units based on the first third of the "Almanac."

The lessons combine the subjects of history, math, geography, language arts and, of course, science to create an interdisciplinary curriculum that teaches content knowledge along with critical and creative thinking skills. Adaptable from kindergarten through collegiate level, the curriculum guide is an excellent way to introduce the land ethic to students of any age. The video, "A Prophet for

All Seasons," introduces students to Leopold through a brief biographical sketch and review of the essays found in the first third of the "Almanac." The task cards provide directed hands-on activities that focus the students' attention toward observation and questioning or understanding the natural world.

Working as an integrated education program, LEP curricula provides effective channels for students to build a relationship with the land while incorporating the information necessary to meet many formal education standards. This is not to say that the LEP curriculum is meant to replace conventional curriculum already present in the classroom, rather it is a supplement to address complex environmental ethics issues. Instead of ignoring this sometimes controversial topic, LEP attempts to broach the pervasive problem of addressing environmental ethics by providing meaningful activities and discussions that encourage students to develop their own ethics.

The Leopold Education Project uses educator workshops to get the "Lessons in a Land Ethic" curriculum and other materials into the classroom. Workshops are offered at local, regional and national levels. During these workshops, educators are exposed to increasing degrees of familiarity with Aldo Leopold and the LEP's curricula.

At the basic level, educators are trained to use the materials directly in their classrooms. The regional workshops expound on the basic workshops by training facilitators to return to their communities and conduct local workshops. Finally, the national workshops provide opportunities for educators to learn about Leopold and his messages from prominent Leopold scholars and nationally recognized environmental education leaders.

LEP now offers workshops in more than 40 states and continues to grow. Approximately 4,000 educators have received training in the LEP, and they, in turn, estimate reaching about 500,000 students each year. This is an inspirational feat that provides concrete evidence that Leopold's legacy is alive and strong. Just as this year's conferences are meant to reactivate this country's conservation professionals, LEP's goal is to activate the conservation leaders of tomorrow.

Thank you all for participating in this landmark gathering. It is wonderful to see that the conservation field is becoming more comfortable in the role it must play in affecting tomorrow's landscape. Although it still is under-represented in the big picture, I hope that the importance and necessity of education to convey the messages we all carry forward is realized in the near future.

# Distinguished Panel

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QUESTION AND ANSWER SESSION



# Integrating Public Land Management and the Land Ethic in the Next Century

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## DISTINGUISHED PANEL:

Tom Jensen, Troutman Sanders LLP, Washington, D.C.  
Robert Stanton, National Park Service, Washington, D.C.  
William Meadows, The Wilderness Society, Washington, D.C.  
Paul Johnson, Iowa Department of Natural Resources, Des Moines, Iowa  
Estella Leopold, Aldo Leopold Foundation, Inc., Baraboo, Wisconsin  
J. Baird Callicott, University of North Texas, Denton, Texas  
Lt. General Stewart Cranston, Department of Defense, Fairborn, Ohio  
David W. Orr, Oberlin College, Oberlin, Ohio  
Karen Warren, Macalester College, St. Paul, Minnesota

## JIM VAN NESS DEPARTMENT OF DEFENSE:

I'd like to introduce my good friend, Tom Jensen, who will introduce the remaining members of the distinguished panel. I consciously said it that way because I consider Tom one of the distinguished panel. When I first came to Washington four or five years ago and began to represent the Department of Defense in interagency work groups to develop policy, it became apparent to me that folks in Washington were no better than folks in the field in terms of holding meetings that actually helped resolve contentious issues and reach conclusions. There's a rare exception to that, and that rare exception is Tom Jensen. He's a master. We put this panel together and tried to imagine who could manage this distinguished group. We looked among ourselves first and knew we had to go outside. Tom's name occurred to me immediately. He graciously accepted the invitation, and we're very pleased to have him here. I give you Tom Jensen.

## TOM JENSEN OF COUNSEL, TROUTMAN SANDERS LLP:

The ability to run a meeting usually isn't qualification to participate in an academic or intellectual debate, but I'll try my best from that scanty start. I want to thank everyone who has contributed in pulling this panel together and offering their thoughts. I haven't had this much fun thinking in a long time, and it's really been a treat. Whole new

areas of thought have been revealed, and many old areas have been rediscovered. I'd also like to acknowledge all of you with whom I've had the privilege to work over the years on Everglades, monuments, stopping the rewriting of the Fifth Amendment and pulling dams out of parks. Many of us have crossed paths over the years trying to keep our footing on the shoulders of the giants who preceded us, including Aldo Leopold. It's been a noble enterprise, and I'm very grateful for your time.

This is an intimidating prospect, in part because these people represent integrity, stability and beauty, and I represent the still unlovely human mind. As a bald attorney, several years ago, while jogging in Phoenix, I was attacked by a mockingbird protecting its nest. When I told my 6-year-old son, Henry, about it, he told me that birds attack their own reflections. It happened to me again this morning. I was sure that could never happen to someone twice.

So, here I am in a room full of people very tightly bound to nature, and if any of you have that impulse, I hope you will restrain yourselves and stay in your seats. I'd also appreciate a warning if you see any incoming.

Let me introduce the folks you have not yet met formally.

Bob Stanton, director of the National Park Service, enjoys a long and distinguished career safeguarding the crown jewels of the park system.

Estella Leopold needs no introduction, but merits a round of applause. She is a distinguished scientist and highly respected member of the team you are all part of.

General Stewart Cranston brings broad experience from the Department of Defense and U.S. Air Force in actually making conservation happen on the ground, more than almost anybody you've met.

Bill Meadows is president of The Wilderness Society. He, too, has a long, varied and distinguished career in conservation. Almost all of us have crossed his trail at one place or another.

Paul Johnson is director of the Iowa Department of Natural Resources.

Let's give this panel a round of applause and put them to work. Our task is to take advantage of the collective intelligence of everyone's presentations and garner the synergistic benefit of uniting these experienced, thoughtful and committed people.

As a group, I think we can identify some opportunities to invigorate ourselves as individuals and, more importantly, invigorate the missions of the organizations with which we are affiliated and the relationships among those institutions and individuals.

We've heard a great deal about integration and pulling pieces together—whether it's the fruit basket metaphor for ethical perspectives or the integration of uses on a given parcel or among parcels of land. We hope to achieve that same thing with this group of people. My job, as Jim Van Ness put it, is to be the ball boy for the Lakers and do nothing more than toss the ball on the floor and let the team go at it. I'm going to start with a somewhat parochial notion.

I believe Rick Knight mentioned during this conference that Aldo Leopold was always asking how we can become more effective. Curt Meine and Eric Freyfogle made similar points in their presentations, noting how hard Leopold worked to adapt his message to his audience, another way of trying to become more effective. Leopold talked about the importance of developing the perceptive faculty in Americans. He said that ecology is the woodcraft of the future. I think he used the term woodcraft to invoke the romantic, practical image of integrity and ethics. Yet, almost on the same page, he said that only the scholar understands why the raw wilderness gives definition and meaning to the human enterprise. I'd like to ask the panel to begin thinking about whether, in saying that, Leopold was speaking from frustration about the fact that only scholars can understand the value of wilderness. Was he talking about something broader? Was he talking about the current state of understanding in the country at that time? If so, did he have hope that developing the perceptive faculty in Americans and giving life to ecology as the woodcraft of the future would work and could be done? Can we break out of specialized and, in some cases, isolated lives and pursuits and bring something that is more integrative, something that is broader and involves more Americans in its realization?

**J. BAIRD CALLICOTT**  
**PROFESSOR OF PHILOSOPHY AND RELIGION**  
**STUDIES, UNIVERSITY OF NORTH TEXAS:**

The scholar may understand in an analytical way how ideas and values shape a culture or society. But I think we live, all of us, whether we are aware of it or have the scholarly capacity to understand and analyze it, in an atmosphere or ether of values and ideas.

Anthropologists call this a world view, and it's very obvious when we are traveling in another culture or civilization. There are attitudes and values that we find foreign, and they stick out like a sore thumb. We're not aware that we share attitudes and values within our culture as well.

I think Leopold was saying that the scholar can analyze, think about and understand these attitudes and values, but we all share them. The job we have is not building roads into lovely country, but building receptivity into the still unlovely cultural mind. It's possible to change this, though our fellow cultural denizens may not be aware of the fact that they have such attitudes and values or that they are changing. Nevertheless, during the time that I've been the scholar studying these things, since the early 1970s or late 1960s, I've seen immense changes in the attitudes, values and receptivity of our fellow citizens, especially in the agencies. When I started teaching environmental ethics in 1971, I couldn't imagine that there would be a conference such as this. It just shows how far we've come in developing receptivity. The American mind is becoming lovelier, I think, by the day.

**TOM JENSEN:**

Do you feel that Aldo Leopold would change that statement with respect to what has happened since 1948?

**J. BAIRD CALLICOTT:**

I think so. I was suggesting that in the short period of time that I've been involved in conservation, in comparison with Leopold's lifetime of involvement which began around the turn of the century, the pace of positive change has picked up. Yes, I think that he would be appalled by some changes, but quite gratified by others, don't you?

**WILLIAM MEADOWS**  
**PRESIDENT, THE WILDERNESS SOCIETY:**

We have learned from Aldo Leopold about the relationship among scientific research through an intellectual understanding of wilderness values, the role of public education and the role of advocacy. He was the epitome of success in all three areas and still guides our thinking.





This integration of values to action is really important as we apply a land ethic to our current decision-making process and public policy debates. It's critical that we count not only on the scholarship, but that we transform that scholarship into true advocacy. I think you do that through engaging people in an educational process, such as this conference.

### **TOM JENSEN:**

Bob, you have talked about engaging people who are most remote from nature—inner city populations and others. What do you think?

### **ROBERT STANTON DIRECTOR, NATIONAL PARK SERVICE:**

Let me preface my comment by commending those who are responsible for this magnificent symposium and acknowledging the outstanding support of the Leopold family. I think that all of us are honored by the participation of members of the Leopold family. It's also a point of personal pride to those of us in the National Park Service that one of our distinguished alumni also was a Leopold. The late Dr. Starker Leopold served as our chief scientist for a year and presented us with a comprehensive report on the management of natural resources and trust site care.

As I reflect on the question raised and the responses to it by my fellow panelists, I think that those who are into scholarly endeavors eventually become practitioners of an ethic, if you will, conveying the importance of resource stewardship. Those of us who are the practitioners in terms of the day-to-day responsibilities also become scholars.

Those who manage and care for our natural and cultural resources as laymen also become scholars and practitioners. So, at some point in time, everything merges and takes a scholarly approach.

True learning comes from having personal involvement and association with that which you are attempting to do. Certainly, those in academia, my distinguished colleagues and others, get into the field and apply the scholarship that they have. Those of us who experience managing resources on a day-to-day basis hopefully have increased our intellectual and emotional capabilities and talents and, therefore, become more scholarly and informed about the resources.

When all is said and done, it is a question of whether we are taking the experiences of the practitioners and the scholarly approach and putting them in such a way that young stewards, often referred to as our students from kindergarten through graduate levels, have the opportunity to benefit from our experiences. I think we have a responsibility to move beyond our organizational and geographical park and refuge boundaries to impart to our young people a sense of pride and responsibility for assum-

ing the stewardship role that we play today. If young people participated in this kind of symposium, I think that would be an added measure, in terms of our responsibility.

### **PAUL JOHNSON DIRECTOR, IOWA DEPARTMENT OF NATURAL RESOURCES:**

Leopold was at a land grant university, in fact, in a college of agriculture, I believe. He understood the idea of research education and extension. At least up until recently, I think public land managers felt it was their land to manage. I think the public is a lot more involved today. Certainly on the private side of it, Leopold was well aware of the fact that you can have the research and education, but you can never do the conservation. It is the individual out on the land who must do it. Our job is to provide ideas and information. The landowner, in the case of private lands, must do the rest.

### **KAREN WARREN PROFESSOR OF PHILOSOPHY, MACALESTER COLLEGE:**

The quote we were given was that only scholars can understand the value of wilderness. I think one of the assumptions being made is that scholars are experts. I'm going to speak from my position as an ecofeminist. One of the issues I've dealt with as an ecofeminist is how to conduct our research. To whom do we go for data? How do we ask for that data? I've learned that, in most of this, I'm an outsider, and data come from local experts.

I'm going to give you an example of a way in which we have come to see the gendered and, in some sense, racial nature of scholarship. In 1974, in northern India, 24 uneducated, local women protested the commercial felling of local indigenous forests by hugging the trees. In Hindi, the word "chipko" means to hug or embrace, so it was called the Chipko Movement. I cite this movement because the Chipko women had an ecological understanding of the importance of trees not just for resin, oil and cash commodity crop exports to Europe and the First World, but for the value of trees for soil, water and air. These were uneducated, local experts. Not knowing that, one of the mistakes that First World foresters made was assuming that they knew best what to do about a tree shortage in northern India. The World Bank planted eucalyptus monoculture species plantations to replace the indigenous forests.

This decision was absolutely disastrous for women because, in India, women are the forest managers. Women walk an average of four to seven hours each day four days each week to collect firewood. Indigenous forests provide food, fuel and fodder for cattle. They provide material for building houses and cooking. For

many women, the forests provide the only income-generating opportunity, which is to sell wooden utensils on an open market.

Eucalyptus does not provide food, herbs, dyes, medicine or clothing. It's a poor burning fuel when you're out in the bush all day looking for kindling. It is, however, a wonderful cash crop to export to the U.S. The men who left the towns to work in the cities and eucalyptus plants benefitted, but women now needed to manage the forest and maintain a subsistence domestic economy without the help of men.

This is an example of how scholars, that is First World foresters, assumed that they would know best what to do about tree shortages in India. In fact, the uneducated, local experts knew that they needed multicultural species and indigenous forests, not fast-growing eucalyptus monoculture.

One of the things we learned from that and many other failed World Bank projects is that the local experts may not be scholars. In fact, scholars may be blinded by gender, race, class or ethnocentric biases and not notice what technology is appropriate or what kind of seedlings or plantings are appropriate.

I would challenge the notion of the scholar as expert and have us, particularly as academics, humbly remind ourselves that there are lots of ways in which, because of our privilege as scholars, we are less qualified to make judgments without knowing the historical context.

**ESTELLA LEOPOLD**  
PROFESSOR OF BOTANY, UNIVERSITY OF  
WASHINGTON:

We have talked about practitioners and other aspects, but it's important to realize that Leopold may have been talking about our cultural values. We can wander into more technical aspects. How do you take it?

**TOM JENSEN:**

When I listened to Karen Warren speak yesterday, the quote from Leopold that came back to me in a new light was his statement about land yielding a cultural harvest. He used the split rail metaphor. I heard Karen saying that our attitude toward land is a way to reevaluate the workings of our culture. That sounds a bit like what some of you are saying today. Do you agree?

**DAVID W. ORR**  
PROFESSOR AND CHAIR OF ENVIRONMENTAL  
STUDIES, OBERLIN COLLEGE:

If you read Leopold on education and his attitudes toward the academy, he's clearly ambiguous. He earns his keep in part as a professor, but you can find as many

quotes where he is skeptical about the value of the professorate, its tendency to carve things up into disciplines and monopolize knowledge.

I think Leopold is an appealing figure because he is so hard to classify. Curt Meine went through a series of aspects or facets of the man's life and community. He is no easy person to pigeonhole. That alone makes him suspect in the academy, but it makes him very appealing for our time. I think Leopold was defining a porous academy in which ideas didn't stay within the confines of the academic walls. He was out in the field. A large fraction of his writings are for public audiences in a variety of newsletters and magazines. One of the great things that Baird Callicott and Eric Freyfogle are doing is bringing some of these back in a publication that comes out this fall from Island Press. Here's a man who wasn't simply writing unread articles for obscure journals to get tenure and promotion. Leopold was a bridge between the academic world and a variety of disciplines in it, and the outside world of practitioners, land managers and landowners. He also was a bridge into the academy for those ideas in the outside world that revitalized a number of different fields within the academy.

That's the model. You can point to Aldo Leopold and Rachel Carson. They didn't necessarily see eye to eye, but they now are models of a very different kind of scholarship and public scholar.

**LT. GENERAL STEWART CRANSTON**  
VICE COMMANDER, WRIGHT-PATTERSON AIR  
FORCE BASE:

Let me offer a perspective from the point of view of the practitioner. I certainly couldn't claim to be a scholar in this area, but I think the quote meant that only scholars can understand the value. Well, perhaps only practitioners know what works.

My organization is one of the larger land-holding organizations in the U.S. We are responsible for about 1.8 million acres of land, and we have a dual responsibility there. One is to use the land for the national security purpose it was entrusted to us for. The other responsibility is to maintain that land for future generations. Ultimately, when we give it back to the public, we should give it back in better condition.

As I read "A Sand County Almanac," I was interested in how much Leopold's words and ideas resonate with the techniques that we are trying to apply in managing these large land holdings that we have in four primary range complexes—one each in northwestern Florida, Tennessee, Utah and southern California.

At the Edmond Range Complex around 1990, the natural resource management people recognized that to be successful in complying with the Endangered Species Act, we had to take a new approach. That approach is ecosystem management. This is a holistic view of managing the



total ecosystem consistent with the way it was managed by nature. We try to emulate nature's practices, maintain the natural flora and fauna and introduce the kinds of mechanisms that worked in nature. That approach, which I think is entirely consistent with Leopold's ideas, has been remarkably successful in rejuvenating that land, as evidenced by the recovery of endangered species.

Ecosystem management benefits both of the responsibilities—it enables us to use the land. When we do inflict harm on the land, which occurs from time to time because of our mission, we find that this healthy ecosystem recovers much better, just as a healthy individual recovers much quicker from an injury. That gives us confidence that we can continue our national security mission and fulfill the second responsibility of returning these wonderful natural resources to the public in a better state than we got them.

### ROBERT STANTON:

I hold to the notion that our parks and other public lands provide opportunities and experiences to awaken the potential in each of us to become better stewards. As I've reflected on "A Sand County Almanac," Dr. Starker Leopold's report on the National Park Service's resource management program and, more recently, Dr. Dick Sellers' book on preserving nature in the national parks, there is a common thread. They all are provocative. We sometimes lull ourselves into hoping that things will be alright until a "Silent Spring" shocks us. It seems to me that one of the challenges and obligations we have as public land management agencies is to provide educational interpretive programs not only for the casual visitor, but to provoke and develop curiosity and stewardship responsibility in young people. Therefore, stewardship cannot be a passive action on our part. It is an active outreach to bridge that relationship.

### TOM JENSEN:

Mark Van Putten, president of the National Wildlife Federation, asked how you can expect people to practice an ethic if you never give them a chance. It's a good and loaded question. A couple of western writers have asked the same question in a slightly different way. I don't know that this is limited to the West or public lands necessarily, but Don Snow, with the Northern Lights Institute, wrote, "The public lands West is not a region with a long, robust history of accepting full political responsibility. Indeed, the federal presence and the public lands themselves have helped insulate the West from the kind of local responsibility demanded by community conservation."

Doug Kenney, with the Natural Resources Law Center in Boulder, wrote, "The movement in favor of community-based resource management is the most significant and

exciting development in resources management since the environmental movement of the 1960s and 1970s."

Citizen conservation is a controversial idea. It is very controversial with public land and resource managers. I wonder whether the emergent emphasis on community involvement, more than in a notice and comment role, but in a true decision support role or participation role, is consistent with Leopold's vision or a departure from it and an abdication of the informed scholarly leadership role about which he admittedly was ambivalent, but nevertheless didn't abandon.

Comments, Bill? Your organization has some history on these community movements. You opposed one recently.

### WILLIAM MEADOWS:

Well, the Quincy Library was a community movement that concerned us greatly. In practice, Quincy Library did not represent a community conservation plan. It was imposed by Congress. It ended up being a legislative effort to mandate a certain standard of practice and approach that then could be transferred from place to place. We were concerned about that aspect of it, but also the narrowness of perspective that was involved in the collaboration.

We are participants in a number of local collaborative programs. We're working with the U.S. Fish and Wildlife Service on the Okefenokee National Wildlife Refuge where DuPont has been trying to expand their mining operation for titanium dioxide on the eastern side of that refuge. They took a lot of heat from local people and national organizations, as well as from the Secretary of the Interior. They determined that they would open up a process that would bring all stakeholders, including representatives from national organizations, into a discussion. That has led to some interesting outcomes. We are supportive of those outcomes. A lot depends on who's at the table, what the discussion is and what you expect to come out of it. Are the decisions going to be applied locally, or do they have a broader application that may not be appropriate in other places? These are some of the concerns we've addressed.

### ESTELLA LEOPOLD:

In order to have effective collaborative conservation projects, we need to stress the importance of educating the public. There's a frightening example on our farm in Wisconsin where there's a proposed refuge to be called the Aldo Leopold Wildlife Refuge. It was a well-kept secret for quite a while, and we were hoping that word wouldn't get out until the U.S. Fish and Wildlife Service had a chance to talk to all the local farmers and get them on board and behind it.

It did leak out, and now there's great uproar about "not in my backyard." It's a very serious problem for the Aldo Leopold Foundation and for my father's name. I

think the point is that there can be very good collaborative efforts with care. It's obviously going to take citizen education on the topic. If the problem, for example, is control of a deer herd, so needed in various parts of the Midwest, the public must know a lot about food chains and problems of overpopulation from lack of predators or hunting. Only then will it work.

### ROBERT STANTON:

I interpret Ms. Leopold's comments as a kindly comment that those of us in public land management agencies have tended to be insular in practice and attitudes. I take that as accepted guidance.

Education is critically important. As I look on today's challenges and reflect on Aldo Leopold's admonishments, observations and suggestions about the importance of stewardship in the context of communities and individual responsibilities, I don't think there's a view that we should require legislative mandate to structure community involvement. The National Environment Policy Act of 1972 and Historic Preservation Act of 1966 structure an obligation on our part to invite the public into our decision making. Again, those of us in public land management agencies are maturing. It's difficult, but as far as the salvation and conservation of our rich heritage are concerned, that's the only way it's going to happen. Everyone must feel part of the process and take a stake in the outcome.

Let me also mention the point that Karen Warren echoed in her presentation yesterday. The strength of resource preservation will be directly, in my judgment, dependent on the level of inclusion. Everyone has to be included. The demographics of our country have changed so drastically, but admittedly, everyone is not at the table. We have an active responsibility to bring everyone to the table.

### PAUL JOHNSON:

I had an interesting experience moderating a meeting of our natural resources commission in Iowa along the Mississippi River. Some of you may know the place called Lake Odessa. It's a backwater of the Mississippi, and in the 1940s, the U.S. Army Corps of Engineers passed on some management responsibility to the U.S. Fish and Wildlife Service. They then passed some management responsibility to the Iowa Department of Natural Resources.

Landowners along Lake Odessa were upset about the water level. We held a meeting and listened to them. I was struck by the language used. For instance, the forester from the Corps of Engineers said, "I'll start. This is our land." He described his management objectives. Then the U.S. Fish and Wildlife Service representative described management objectives for their portion of the land. The Iowa DNR representative discussed their portion of the land. It was always, "this is our portion." I saw that dynamic with-

in that meeting among all the citizens who live and work there. Now, in this case, I don't believe the landowners should manage the area; the agencies manage it for specific purposes. But it was obvious that we had not spent much time with landowners discussing why we managed Lake Odessa the way we did. We spent three hours that night and never got where we needed to be, but I know now what we have to do to get there.

Rick Knight was involved in a book titled "Managing Beyond Boundaries." There were some wonderful ideas in there about the boundaries that we put around ourselves in the ownership of land, whether it be a public piece of land or private lands. Also discussed were the boundaries among agencies, and believe me they're there.

We really have to work at those things. I suggest that you take a look at that set of essays. We've got to break down these boundaries that say this is the U.S. Army Corps of Engineers' land, this is the Iowa Department of Natural Resources' land and that's your piece of property. That isn't how the world works. We keep talking about ecosystems, and even when we've moved to ecosystem management, in some cases, public land ecosystems end at their borders with private land. If you're going to practice ecosystem management in a national forest and decide to cut back on timber harvest, guess what? That land outside is going to get a terrific amount of impact. We've got to break down those boundaries, and everything we can do to discuss those things and make movements in that direction will get us to where Aldo Leopold talked about.

### TOM JENSEN:

When I asked Jamie Clark, director of the U.S. Fish and Wildlife Service, what she wanted to achieve from this discussion, she said inspiration and ideas on how my people can take risks. There are few greater risks or perceived risks than those that come with challenging boundaries, both geographic and jurisdictional.

### DAVID W. ORR:

Generally, land is managed in such a way that people are removed from fundamental decisions about how they are provisioned with food, energy, water, materials and waste cycling. An average suburb is an ecological sensory deprivation chamber.

The point is two-fold. First, there is a constituency that has to be built for those of you who are land managers and have to make tough decisions and rely on the public's ecological IQ. Second, some of those decisions would be at the boundaries between public land management, both state and federal, and private developments. There are partnerships affecting how land works and how people are provisioned on the private side of that land-use continuum.



That's where some exciting things can occur that would be risky and probably get some people fired, but they would begin the process of developing or training an ecologically smart constituency. You need the public; we all need them.

#### **LT. GENERAL STEWART CRANSTON:**

Is community involvement consistent with Aldo Leopold's ideas? Community involvement is something that public land managers have to foster. We need to address two communities. One is the professional, knowledgeable community. We have to work with our colleagues across federal, state and private boundaries.

When I was commander at Edmond Air Force Base, the forestry branch aggressively sought out these partnerships. In fact, one of the architects of ecosystem management, Carl Pedrich, is here today. He is the wildlife manager at Edmond. He understood that you had to get as much knowledge as you could from other agencies. The Nature Conservancy played a key role in the development of the ecosystem management plan, as did the U.S. Fish and Wildlife Service, Department of Forestry, Florida Department of Environmental Protection and so on.

The other community that we have to involve is the public. You simply can't keep them out of this. They have a vested interest and good instincts toward the preservation of natural resources. Certainly, they all have self-interests, and where their self-interests are in direct conflict, they're going to be driven by them. However, most people don't have direct conflict, and they do have an interest in preserving natural resources. I have found that they're appreciative of state and federal land holdings because those land holdings are somewhat protected from development.

#### **WILLIAM MEADOWS:**

One of the great challenges is to bring people together around common values. I don't think it's fair for The Wilderness Society, for example, to come into a collaborative process and impose a value that the only outcome will be wilderness protection for this ecosystem. Nor do I think it is fair for the local chamber of commerce to come in with a value that our ultimate goal is to maintain employment in this sawmill.

The issues revolve around ecological values, economic values and social values. How do you bring all of those to the table? That's the challenge. The boundaries between agencies, public and private landowners, and interest groups is challenge enough, but how do you then bring societal values into the discussion? That is what Aldo Leopold was wrestling with. How do you look at an ecological value system

and understand that it plays out in economic and social terms with roles for wilderness?

#### **TOM JENSEN:**

Can anyone point to an example in the context of public resource management where community and natural values have been brought together in a successful and durable way? Is there a successful model? If Quincy Library is not it, and many people think it isn't, is there something out there that looks and smells right?

#### **J. BAIRD CALLICOTT:**

I just finished a three-year grant with the Great Lakes Fishery Commission, and I think it represents a successful model.

Three workshops were held to test values and management philosophies, one per year. The project was to reenvision Great Lakes fishery management for the next century. The workshop in the second year was for managers from all state and federal agencies involved. The managers had the greatest fears, resistance and entrenched interests. We thought that was a harbinger for the last workshop, which was for stakeholders. It included tribal fisheries versus commercial fisheries versus sport fisheries in the Great Lakes. These groups are very contentious, given the Pacific salmon introduction issues and conflicts. To our amazement, the stakeholder meeting was the one in which there seemed to be the greatest unanimity around common ecological values. This was not an issue of resource allocation, but a search for a coherent articulation of values and policy. People sat down, and it was an amazingly successful exchange. We didn't come to an agreement in terms of policies, but there was an amazing amount of agreement about the need for change and reorientation in the direction of ecological values.

#### **TOM JENSEN:**

Was this a fluke? That's not a fish pun. Was it an accident of the right people being in the right room? Was it brilliantly designed?

#### **J. BAIRD CALLICOTT:**

We did stay away from the most extreme players; they were well known. We selected people on the basis of their representation of certain groups—charter boat operators, sport fishing organizations, tribal fishing communities and so on. It wasn't a randomly selected group to emphasize the lowest common denominator. Nor was it a self-selected group. We proactively solicited organizations that represented large stakeholder groups to send their representatives or nominate people.

**TOM JENSEN:**

So it's a community model, but not necessarily a democratic one?

**J. BAIRD CALLICOTT:**

It was a mixture. There was some democracy and self-selection, and there was some proactive outreach and solicitation of participation.

**ROBERT STANTON:**

We are involved the preservation of the Chesapeake Bay, which is a multi-state, multi-agency, multi-community and multi-private sector project. There seemed to be a rallying around the goal by citizens at all levels to preserve the Chesapeake Bay. Restoration of the Everglades is another major effort. There has been a rallying cry by the community, state, tribal governments and others to preserve that magnificent resource.

**ESTELLA LEOPOLD:**

We are looking toward extending the ideas of Aldo Leopold into the next century. What role did science play in this effort of getting collaborative ideas across to the public?

**J. BAIRD CALLICOTT:**

It played a central but indirect role. I am impressed with the ideas of science eventually disseminating into our culture and changing values and attitudes. The language of ecosystem management, biodiversity and intrinsic value has begun to enter public discourse. This evolution of discourse is, in part and in a very important way, informed by science. My students complain that, in philosophy and the academic world, talk is cheap, but it actually is very dear, because our culture exists in language. As language evolves, it changes the way we look at and think about the world. A lot of that language comes from science. The stakeholders who met with us probably couldn't define biodiversity, but it was a concept that was ambient in our discourse. When we talked about managing the Great Lakes at an ecosystem scale for the intrinsic value of biodiversity, it was readily intelligible to all of the members—tribal members, sport fishers and commercial fishery people.

**ESTELLA LEOPOLD:**

Intrinsic in Leopold's thinking is good science. He wanted to bring good science to bear on management, decision making and careful consideration of food

chains and population levels. I'm worried about land management agencies losing their great pool of scientists to government restructuring. What can be done?

**ROBERT STANTON:**

We're going to make it work.

**TOM JENSEN:**

Did you get that on tape? We're counting on it!

**ESTELLA LEOPOLD:**

We hope, in the next 10 years, you will reverse that trend and bring those people back within your agencies so that they are interacting with your management team on an applied research level, which is more relevant. Then the budget management will be much clearer and simpler.

**PAUL JOHNSON:**

The Soil Conservation Service lost its research arm in 1952. It went to the Agriculture Research Service, and I can tell you the SCS has not been served well by that.

**WILLIAM MEADOWS:**

Estella has pointed out a serious issue. Agencies that have a responsibility for managing public lands are making decisions that are not being informed by ecological values. When they are, they're frequently short-circuited by a political process imposed from above. We work in the legislative arena all the time. We see politics ruling rather than ecological values. In the private arena, economics rule. There are too many instances where people make short-term land decisions on their own property that work against a holistic approach. The challenge for all of us is to highlight the need for greater investment in ecological studies. If we are guided in this collaborative effort by a holistic approach of looking at land, we will have more confidence going to the table expecting good public policy.

**DAVID W. ORR:**

We have to evolve very different kinds of political institutions that are inclusive, have the capacity to be integrative and the capability or staying power to support a long-term perspective.

Historically, that's not what this country has been about. That's a much bigger issue than this conference or this panel, but it is the crux of the matter. Leopold was moving in that direction during the last 10 years of his life. I find more and more references to political issues with citizenship built in. What kind of institutions can





convert civilization from, as he put it, a trial balloon to something that can be sustained over the long haul. If we don't deal with that, all our talk about scientific land management will be a moot point. You see what's happened with climatic change. Scientists have spoken, but there's a public relations campaign dismissing them. Congress, in its infinite wisdom, is utterly stymied. Something else needs to happen politically. I don't know what it is, but that's the beast behind us.

#### **TOM JENSEN:**

Are there laws as opposed to political processes that impede achievement of this integration of science? Are there laws stopping that, or is it merely an artifact of power in the Senate?

#### **WILLIAM MEADOWS:**

The political process is more of a deterrent than the laws themselves. We've been wrestling with a supplemental appropriations bill that has a number of anti-environmental riders attached. The arrogance embodied in the political process is directly opposed to the humility that all of us in this room are trying to bring to land management decisions. Decisions are being imposed on us more by a political process than by the laws. The laws are pretty powerful if we can apply them and have confidence that the Senate or House won't counteract them with a rider. That's a short-term challenge for us. We need to educate the public so that they understand these issues better.

#### **TOM JENSEN:**

Is there a newfound constituency in the Great Lakes for good science and natural resource management?

#### **J. BAIRD CALLICOTT:**

I don't know if I can answer that with complete expertise. I've been a part of the process to re-envision the management of the Great Lakes for three years. You'd have to talk to the senior scientists on the Great Lakes Fishery Commission for more informed judgment. With that qualification, there are constituencies in the Great Lakes that are resisting science. It's mostly the sport fishing people who resist the idea that stocks can't be maintained by stocking, for example. In the Great Lakes, there's an irony of successful conservation. The International Joint Commission successfully reduced the amount of municipal sewage and other nutrients going into the lakes, with the result of lower primary productivity and reduced forage base. Basically, the carrying capacity of the lakes is declining with increased water clarity.

Clarity has been enhanced by invasion of the zebra mussel, carrying the lakes toward oligotrophy. It's a fairly sophisticated chain of scientific reasoning that leads to these conclusions. There is resistance in certain constituencies to accept the results of this science.

#### **TOM JENSEN:**

Are there other places, in your experience, where use of an ethic based on science and community involvement has hit it off? Do you know of an instance where an emergent political consensus in support of doing it in this better way is evident, people are learning and there is a transition underway from the battles of the prior generation to the successes of the next?

#### **KAREN WARREN:**

From what has been said so far, it sounds as though citizens in the community are to be tolerated. My view is quite the opposite. Each of us knows what it is to be a consumer. As Mark Sagoff, the environmental lawyer, argued 15 years ago, we deliberately vote for policies that infringe on our consumer interests because, as consumers, we are likely to act against values that, in the long term, we hold dear. So I will buy a Coca-Cola. I may put an empty Coke bottle in a regular trash can, but I'm going to vote for mandatory recycling.

That says something about a lot of us. The laws are not for those of us who have ecological values and would act on them all the time. There are no such people. In our society, we can't act in an ecologically perfect way all the time. The laws encourage us to do the right thing, and they are important for those of us who never will have ecological values to make us do the right thing.

When I think about responsible citizenry, mandatory recycling is one way in which I get to do the right thing. Tree planting in my area, devastated by winds a year ago, is a way in which I get to do the right thing. I'm putting in wildflower gardens to encourage native species to return to my area. I'm getting help from my city on that. It's letting me do the right thing. The availability of green products, supporting my colleagues who sell their fruits on the open market, lets me do the right thing.

Those are citizen-initiated and legally supported actions. Local communities that want input are the strength of the environmental movement. When we look at the new core radical environmental activists, we see urban people and private single-home dwellers. They are single mothers who don't want asbestos in their apartments or schools next to chemical factories. That consciousness has created a resurgence of interest in ecological values. We need to honor, welcome and encourage that, not apologize for it. That's how the environmental movement will be sustained in the 21st





century. It's not by scholars; it's by those community activists who get a chance to do the right thing using laws to support us when we have conflicts of interest. Having conflicts of interest simply is part of what is involved in being human.

### **WILLIAM MEADOWS:**

I followed the discussion in New York City regarding community gardens. The power was in local people who cared about something in their neighborhoods. The power comes from people caring about where the politics of land management decisions in this country are going. I'm optimistic because we have those efforts from local people throughout the U.S.

I spoke at an annual dinner for the Great Swamp Watershed Association in New Jersey. The Great Swamp Watershed actually is the first non-USDA Forest Service wilderness area to be adopted after passage of the Wilderness Act in 1968. The watershed still is under enormous threat. It's 26 miles from downtown Manhattan. There are about 7,000 acres there, half of which is wilderness. There's an effort within that community to look at the entire watershed, because the wildlife refuge is being damaged. Republicans, Democrats, people who vote and don't vote, children and elders all are involved in the process of trying to protect that watershed and pass local land-use legislation that affects the quality of that federal land.

In the last election, there were more than 200 ballot initiatives in this country asking for protection of open space. Seven billion dollars of bonding authority was granted in this country. That's powerful. More than 80 percent of those ballot initiatives passed. I'm optimistic because that's happening in this country right now. That's the power of the people. That isn't laws. I think it's informed by science, but it has to do with people caring about the places that they see and live in, places that they love.

### **TOM JENSEN:**

All of that occurred largely without any involvement or advocacy from federal land or research managers.

### **ESTELLA LEOPOLD:**

There is great need for focusing citizen interest on local environmental problems and looking toward local leadership. For example, in deer overpopulation issues, the people who love nature and are out there recycling also love deer.

### **WILLIAM MEADOWS:**

We're going to make them love wolves.

### **ESTELLA LEOPOLD:**

The public has a very serious reaction if anybody talks about a lot of deer hunting in the area. I think that with all good respect to the citizen's new interest, we really need some strong leadership in setting up stronger hunting seasons and/or doe seasons. In the last 10 years of his life, my father fought for this rather unsuccessfully, unfortunately. We need citizen direction in this. We need to demand state-level hunting prerequisites so that we can control our deer herds. People who live in the outskirts of Philadelphia should not need to cover their bushes with hairnets to prevent deer from eating new growth.

### **PAUL JOHNSON:**

When I came to work for the Iowa Department of Natural Resources, the local press called to ask what I was going to do about the deer, because they have 70 or 80 deer per square mile in Iowa City now. It's quite a problem, and they can't seem to deal with it. My response was that we were going to reintroduce the wolf. Unfortunately, about two weeks later, a guy who had two wolves in his backyard in cages let one of them get loose. It killed several dogs. I don't think we should take these things lightly.

### **TOM JENSEN:**

Reading Leopold's comment about ecology being the woodcraft of the future, the word woodcraft brings to mind not millwork, but Davy Crockett and Abraham Lincoln. I think of Aldo Leopold—people who have character and courage doing things in challenging settings and being recognized as virtuous citizens for it. The image is rural and romantic. It's a popular image. It's an image that spawned television shows.

Eric Freyfogle spoke at this conference about singer/songwriter Woody Guthrie in the context of what is and isn't research. Woody Guthrie did a better job of evoking images of America and Americans than just about anybody else.

Rick Knight talked here about the elegant and inspiring, though fictitious, maps of America that appeared in his biology and geology books. I wonder if there is a way that we in the resource management world can evoke images of woodcraft, images that have the cultural resonance that Woody Guthrie's lyrics had. Is there a way that we can present what we're about that resonates broadly enough to carry us into the next century with successes, not just with controversies? Can we inspire more people? Can we create and invigorate the movement? Do we have examples that show us now how to do that 50 years from now?



## PAUL JOHNSON:

I have come to admire people working in the public and private lands arena. State agencies, local groups, county conservation people—these people are a national treasure. Their skills are built on those who have come before, and there's nothing like it. There's never been anything like it on the face of this earth. As we talk about how to get people more inspired and concerned about this, we've also got to figure out how to get the American people to understand how good we are. It frustrates me that we are so down on public servants. They are just as much a national treasure as the Washington Monument or the local library.

## LT. GENERAL STEWART CRANSTON:

The public's interest at an individual citizen level gives me optimism. A lot of the right things go on at the public institution level too. There was discussion about science and how much it drives our decision making. In the case of the Air Force, we rely heavily on science. In my organization, we have 19 professionals with degrees in wildlife or resource management. We also recognize that there are gaps in our science. We work with academic and other institutions to fill those gaps.

The other aspect of decision making involves internal values of institutions. What I see in the Air Force strongly supports Leopold's land ethic. We still experience political pressure, but I have never felt undue pressure to make a decision that I thought was inimical to the overall long-term health of the land. That doesn't mean that I don't have to push back occasionally.

## KAREN WARREN:

Although environmental science programs have been in existence in major research universities for a long time, the explosion of interest in environmental studies as a major in this country over the past 10 years is phenomenal. The difference between environmental science and environmental studies basically is the emphasis. Environmental studies includes the humanities with the sciences, arts and literature. These students have to have a core major of at least six or seven courses in biology or chemistry, plus emphasis in the areas of social sciences and humanities. I would encourage the USDA Forest Service and National Park Service to make internships available while we are sending our students through our four-year programs so they can spend a semester working with you. That would make them understand your agencies better, perhaps be future employees of your agencies, and it would make a wonderful connection between private liberal arts colleges and the public sphere.

## WILLIAM MEADOWS:

In Leopold's writing, we are guided by the sense of wholeness. I'd love to take the best of what is happening at local, state and federal levels, and create a story of land management and land conservation that has a more holistic approach. The Wilderness Society has adopted a model of a network of wildlands as that example. That sense of connectivity from backyard to wilderness is important in our thinking. We need to challenge the state agencies, local park and recreation departments and federal agencies to be part of that story.

## TOM JENSEN:

I'd like to ask each of the panel members to assume we're 100 years down the road. This living building stands, but it has been refitted. Our successors have been asked what Leopold's legacy is. What have we made of his extraordinary vision in the 150 years since publication of "A Sand County Almanac"? Where have we taken it? How have we benefitted from it? In the fullness of time, what has he opened up to us?

## DAVID W. ORR:

You would hope that we would have surmounted some of the major crises of the time, stabilized greenhouse gases and begun the reduction of CO<sub>2</sub> levels and equivalent gases, stopped the hemorrhaging of life in the loss of biotic resources, stopped soil erosion, stabilized population and redistributed a substantial part of the wealth of the world. But all that does is buy us time. I think Aldo Leopold was pointing toward something beyond that to a human dimension. We would have declared peace in the long war of humankind versus the natural world, and we would have declared peace in the real wars among ourselves. A land ethic is a means to an end. The end is harmony between people and nature and among people. If we are successful, and I think we will be successful, it will not be an easy thing. It will be a close, hard-fought battle. But 100 years is time enough, perhaps, to achieve that victory.

## ROBERT STANTON:

Those who will be asked to assess this century hence will be confronted with major challenges, not withstanding that there will be many accomplishments between here and the year 2100. It's an obligation that each generation, to the best of its ability, prepare the succeeding generation to achieve and accomplish things that need to be addressed. Most important is the obligation that we have in keeping with the Leopold legacy to keep the human spirit high. If we become defeated in our own attitudes and outlook on life (notwithstanding things such as population

growth and global warming), if we allow a diminishing of the human spirit, then the ills of the world will overcome. I came into the National Park Service when the nation was testing our will to provide equality and rid ourselves of segregation in public places in the early '60s—the height of the Civil Rights Movement. Our young president at that time made the observation that, when the dust of centuries has passed over our cities, we, too, will be remembered not for our victories or defeats in battles or in politics, but rather for our contributions to the human spirit. That was John F. Kennedy, and I think he must have read “A Sand County Almanac.” The human spirit ultimately will be the savior of our planet.

#### **LT. GENERAL STEWART CRANSTON:**

I think we'll have moved in the right direction in 100 years. Certainly our science will have advanced in all areas, and much of that science will have escaped into the public discourse. That will heighten the awareness of people in the general community. When we have to balance the needs of land use versus the ecological values that Leopold discussed, we will do a better job of striking that balance. Ultimately, we have to recognize that mankind does need to use the land and, at the same time, fulfill the long-term responsibility of sustaining our ecology.

One of the advantages that I have as a military officer is foreign travel. You don't have to travel very far outside the boundaries of this country to recognize that however many pitfalls we have in our approach to ecology, we're light years ahead of most every place else.

I had opportunity to go to the Ukraine and visit Kiev, just south of Chernobyl. Enough has been said about their understanding of ecology. Perhaps one of our greatest educational challenges will be bringing the rest of the world along at our pace, because their ecological problems are going to impact increasingly upon the biosphere that we have in the United States.

#### **WILLIAM MEADOWS:**

In 100 years, we all would understand this sense of wholeness, the way things are connected, one to the other, and the relationship of things to each other will be well understood by everyone. Decisions will be made in the context of what they mean regarding the whole.

There also will be a sense of community. It is an understanding not only of natural communities and what they embody, but the connectedness of one natural community to another, connectedness of the human community to the natural community and the connection between human communities. That kind of holistic approach to understanding community will be well understood in 100 years, and we will have that peace for which we all hope and strive.

#### **PAUL JOHNSON:**

If you think of where we've come from in the last 100 years, I think we've bottomed out. We can talk forever about the violence to land and people that continues, but in Leopold's era, in the '30s and '40s, we did turn things around in this country. We added to that in the '60s and '70s with Rachel Carson and environmental protection legislation.

I hope that continues, and I think it will. We'll continue to build on these wonderful people who have brought us where we are today in the environmental and conservation arena.

To paraphrase, Leopold believed that what's important is not whether we're there, but whether we're going in the right direction. I hope that 100 years from now we will be more sensitive to, as Easley called it, the immense journey that we're on. We're part of an evolutionary journey, and we will realize our place in that journey with a lot of fellow travelers. We'll have a better sense of our place.

#### **ESTELLA LEOPOLD:**

I have a wish list. One hundred years down the road, I hope the World Bank will have come around to seeing Carl Leopold's methods of restoring rainforests, and will have implemented and subsidized them. He's doing that work now in Costa Rica. I hope that our culture will continue to revert to holistic values.

I hope that educators will line up to take kids to local parks, because we need contact with nature. That should be a continuing part of our concern with growing population problems.

Finally, I hope we look toward the National Environmental Policy Act and try to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic and other requirements of present and future generations of Americans. That's our law. There ought to be ways to be creative about these important statements.

#### **J. BAIRD CALLICOTT:**

Aldo Leopold had a positive vision. I've seen environmental debates both in terms of provision for wildlife and wilderness and provision for human interests represented as a zero sum situation—if one party wins, the other party necessarily loses. Aldo Leopold's great vision was that this is not necessarily so. We can have beauty and utility. We can have our cake and eat it too. We like to think that we don't rationally undertake a development project unless the figures work out economically and benefits exceed costs. There should be ecological accounting as well. Ecology, as well as economics, provides parameters and constraints on what we can do, but it's not a tradeoff of one thing against another. This was a positive vision. I'm not necessarily optimistic about its imple-



mentation in 100 years, but I do want to be optimistic in the sense that I think Leopold is pointing a way out of the dilemma that we traditionally thought we faced. It's not one thing or the other; it's possible to have our human goals and aspirations fulfilled, as long as we set certain parameters that we derive from science. We can work within these to achieve our goals without sacrificing our ecological goals. That's a lesson Leopold teaches us, and I hope that public lands policy will begin to think in terms of and implement it.

## KAREN WARREN:

By 1947, Leopold had us thinking of ourselves as ecological beings and members of an ecological community. Apart from the opening passage of "The Land Ethic" about Odysseus' slave girls, I don't think Leopold was in a position, appropriately so, to think about the relationships between gender, race, class and nature.

My wish is that we will see the connections between all systems of domination, and we see that the same mental framework of superiority/inferiority that has always been used to dominate people of color and women and the underclass and children is exactly the same framework that has been used to dominate the earth. It must be eliminated. I hope that we replace the culture of violence that is intrinsic to any system of domination with a culture of peacemaking. I hope in 100 years that the philosopher, linguist and social commentator Chomsky is wrong in his belief that the 6,000 languages that currently exist in the world will be reduced to 600. When we lose a language, we lose a culture, and when we lose a culture, we lose biological diversity. I'm hoping that cultural diversity still will be 6,000 languages strong, with no more loss of biodiversity.

I hope that our educational systems produce informed citizens and community servants, not just scholars.

I hope that churches and synagogues get mobilized. They are an untapped resource for informed environmental activism that has a built-in infrastructure and ideology useful to those in the environmental movement. I hope that these institutions are mobilized by the National Park Service and U.S. Fish and Wildlife Service.

Last, and most passionately, I hope we recognize the value of every child and the possible ecological citizen that child represents.

## TOM JENSEN:

With that, we're going to bring this panel to a close. I'd like to ask you to join me in thanking this group of extraordinary individuals for their time and thoughts.

## JIM VAN NESS:

I've been asked to wrap things up, but I'm utterly ill equipped to do that. I couldn't presume to try. I've attend-

ed many conferences over the years. I have spoken at no small number. This is the first one I've ever been engaged in planning. What's extraordinary to me is the undertow of emotion that seems quite palpable these last few days. I would attribute it to the tremendous support of Nina Leopold Bradley and Estella Leopold. Their presence is felt by all of us. We got onto an emotional plane, and we've stayed there. I think that's to our great benefit, and I feel grateful to be part of that.

I read "A Sand County Almanac" in 1967 as a freshman fish and wildlife student at Iowa State University. Why did the book mean anything to me? Why did the book mean anything to you? We didn't begin feeling after reading the book. It's a terrific book, I admit it, but we were people with feelings before that. The book gave voice to those feelings. It informed. It refined. It inflamed feelings we already had.

As we leave here and consider what we might contribute to future conferences and this dialogue that we hope to continue, we should ask ourselves how we developed those feelings in the first instance. What was it about our upbringing that made us receptive to those thoughts from the very first instance?

The first day I was here, I took a walk in the woods and heard a mourning dove calling in the distance. Whenever I hear a mourning dove, my instantaneous recollection is of fishing with my father. We went fishing on Father's Day, as we were wont to do. A mourning dove called during that trip, and it imprinted in my mind. My father and I never really had a dialogue or discussion that wasn't surrounding some involvement with the land—fishing, hunting, gardening or looking for mushrooms. We didn't talk about much when we weren't doing those things; we hardly talked at all. It was the vehicle for my communication. It also provided me with a foundation—when I read "A Sand County Almanac," it meant something to me. It plucked at my heartstrings. It has continued to be a centerpiece of my life for 25 years and has led me here today.

It seems to me there is no better way to end this conference than to invite Nina Leopold to read from the book.

## NINA LEOPOLD BRADLEY BOARD OF DIRECTORS, ALDO LEOPOLD FOUNDATION:

I'm usually reluctant to try to say what my father might think about things, with the exception of this meeting. I think he would have been deeply touched by the very spirit of all of you.

I would like to read my favorite essay, "If I Were the Wind."

"The wind that makes music in November corn is in a hurry. The stalks hum. The loose husks whisk

skyward in half playful swirls, and the wind hurries on. In the marsh, long windy waves surge across the grassy sloughs, beat against the far willows.

"A tree tries to argue, bare limbs waving, but there is no detaining the wind. On the sandbar, there is only wind and the river sliding seaward. Every whisp of grass is drawing circles on the sand.

"I wander over the bar to a driftwood log, where I sit and listen to the universal roar and to the tinkle of wavelets on the shore.

"The river is lifeless, not a duck, heron, marsh hawk or gull that has sought refuge from the wind. Out

of the crowds I hear a faint bark as of a faraway dog. It is strange how the world cocks its ears at that sound, wondering.

"Soon it is louder, the honk of geese invisible but coming on. The flock emerges from the clouds a tattered banner of birds, dipping and rising, blown up and blown down. Blown together and blown apart, but advancing. The wind wrestling lovingly with each winnowing wing.

"When the flock is a blur in the far sky, I hear the last honk sounding taps for summer. It is warm behind the driftwood now, for the wind has gone with the geese, and so would I if I were the wind."

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# Appendices

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# Appendix A:

## Speaker Biographies (listed alphabetically)

**RICHARD BODNER**  
LAS VEGAS, NEW MEXICO

A wandering teacher and founder of Land of Enchantment Poetry Theater, Richard Bodner spreads love of land and language across arts and disciplines, translating our natural and cultural heritage to clarify, inspire and inform. Poet, recording artist and consultant, he becomes a traveling chautauquan to bring the legacy of great land writers, such as Aldo Leopold and Matsuo Basho, to life off the page. Richard is a graduate of Mount Hermon, Harvard and the University of Nevada.

**BOB BUDD**  
THE NATURE CONSERVANCY, LANDER, WYOMING

Bob Budd is director of stewardship for The Nature Conservancy in Wyoming and manager of the 35,000-acre Red Canyon Ranch near Lander. Red Canyon Ranch is an internationally recognized site for integration of the art and science of rangeland ecology and management and for its cooperative approach to management. Bob has a master's degree in range management and bachelor's degrees in animal science and agricultural business, all from the University of Wyoming. He also is trained in holistic resource management and as a facilitator in coordinated resource management. Bob currently is a member of the board of directors of the International Society for Range Management and serves on dozens of advisory committees in Wyoming and the West.

**J. BAIRD CALLICOTT**  
UNIVERSITY OF NORTH TEXAS, DENTON, TEXAS

J. Baird Callicott is a professor of philosophy and religion studies at the University of North Texas. He is author of "In Defense of the Land Ethic" (1989) and "Beyond the Land Ethic" (1999), both published by SUNY Press. He is editor of "Companion to A Sand County Almanac: Interpretive and Critical Essays" (1987), published by University of Wisconsin Press, and two recent books of Aldo Leopold writings—"The River of the Mother of God and Other Essays by Aldo Leopold" (1991), also from Wisconsin Press and edited with Susan Flader, and "For the Health of the Land," edited with Eric Freyfogle and forthcoming from Island Press.

**PETER CAMPBELL**  
U.S. FISH AND WILDLIFE SERVICE, SOUTHERN PINES, NORTH CAROLINA

Peter Campbell is a biologist for the U.S. Fish and Wildlife Service, stationed in Southern Pines, North Carolina. He serves as the red-cockaded woodpecker recovery coordinator for the state, developing and implementing a bioregional partnership and conservation strategy to recover this population of woodpeckers and promote longleaf pine ecosystem restoration and management. Peter has a degree in wildlife biology from North Carolina State University. He worked in the private sector and for North Carolina State University before entering federal service with the U.S. Geological Survey's Biological Resources Division and, most recently, the U.S. Fish and Wildlife Service.



**JAMIE RAPPAPORT CLARK**  
**U.S. FISH AND WILDLIFE SERVICE, WASHINGTON, D.C.**

Jamie Clark was confirmed as director of the Department of Interior's U.S. Fish and Wildlife Service by the U.S. Senate on July 31, 1997. Prior to that, she served as assistant director for Ecological Services, overseeing service responsibilities for the Endangered Species Act, wetland and upland habitat restoration activities, federal permit coordination and reviews, environmental contaminants, and the national wetlands mapping program. Other positions held with the service include chief of Endangered Species, deputy assistant regional director for the Southwest region and senior staff biologist for the Endangered Species Division. Jamie Clark has a bachelor's degree in wildlife biology from Towson State University in Baltimore, Maryland, and a master's degree in wildlife ecology from the University of Maryland, College Park.

**LT. GENERAL STEWART CRANSTON**  
**DEPARTMENT OF DEFENSE, WRIGHT-PATTERSON, AIR FORCE BASE, OHIO**

Lt. General Stewart Cranston is vice commander, Headquarters Air Force Materiel Command, Wright-Patterson Air Force Base, Ohio. The command conducts research, development, tests and evaluation, and provides the acquisition management and logistic support necessary for Air Force weapons systems to operate during peace and war. Lt. General Cranston has commanded a test squadron, inspection center, test wing and test center. He is a distinguished graduate of the U.S. Air Force Test Pilot School and a command pilot with 3,500 plus hours in more than 30 different aircraft, including 300 combat missions, accumulating 514 combat flying hours in Southeast Asia.

**SUSAN FLADER**  
**UNIVERSITY OF MISSOURI-COLUMBIA, COLUMBIA, MISSOURI**

Susan Flader is professor of American western and environmental history at the University of Missouri-Columbia. She has written or edited six books and numerous articles, including: "Thinking Like a Mountain," "The River of the Mother of God" (edited with J. Baird Callicott) and "Exploring Missouri's Legacy: State Parks and Historic Sites." Susan has served as president of the American Society for Environmental History and the Missouri Parks Association, and director of the National Audubon Society, American Forestry Association and Forest History Society.

**ERIC T. FREYFOGLE**  
**UNIVERSITY OF ILLINOIS, COLLEGE OF LAW, CHAMPAIGN, ILLINOIS**

Eric Freyfogle, a native of central Illinois, has long been active in state and local conservation efforts. For the past 16 years, he has taught environmental and natural resources law at the University of Illinois College of Law, where he is the Max L. Rowe Professor. He is the author of "Bounded People, Boundless Lands: Envisioning a New Land Ethic" (1998) and "Justice and the Earth" (1993), and coeditor with J. Baird Callicott of the forthcoming book of essays by Aldo Leopold, "For the Health of the Land." His new work in progress is titled, "Property, Community, and the Pursuit of Land Health."

**BRUCE DEGRAZIA**  
**ASSISTANT DEPUTY UNDER SECRETARY OF DEFENSE, WASHINGTON, D.C.**

Bruce deGrazia is the Assistant Deputy Under Secretary of Defense for Environmental Quality, responsible for Defense Department oversight and policy in the areas of conservation, environmental compliance, pollution prevention, historic buildings and archaeological artifacts. He is a graduate of DePaul University in Chicago (B.A. and J.D.) and the University of London (M.A.). Prior to joining the Defense Department, Mr. deGrazia was an environmental and international lawyer in the Midwest. He also served in the U.S. Navy in the Judge Advocate General's Corps.



**ARTHUR S. HAWKINS**  
**RETIRED, U.S. FISH AND WILDLIFE SERVICE, HUGO, MINNESOTA**

Art Hawkins is a pioneer in waterfowl conservation. He served for nearly two decades as the Mississippi Flyway representative for the U.S. Fish and Wildlife Service before retiring in 1972 and returning as an annuitant through 1980. He received his undergraduate degree at Cornell University and accepted a graduate position under Aldo Leopold in 1934 to investigate quail populations in northern Wisconsin. During and after his graduate years, Art came to know Leopold as a teacher, friend and colleague. He served as technical reviewer for *Waterfowl Tomorrow* and "Ducks, Geese and Swans of North America," and coedited "Flyways: Pioneering Waterfowl Management in North America." Art remains an active conservationist and, along with his wife, Betty, continues to share his understanding, appreciation and concern for the land with others.

**WELLINGTON "BUDDY" HUFFAKER IV**  
**ALDO LEOPOLD FOUNDATION, INC., BARABOO, WISCONSIN**

Buddy Huffaker has overseen all land conservation activities for the Aldo Leopold Foundation since 1996. In January of 1999, he was appointed Executive Director for the Foundation. Buddy's graduate work at the University of Illinois investigated the monitoring of prairie restorations and assessing various sampling techniques. He has experience as an educator, private landscape architect and designer, and has served as a field ecologist for The Nature Conservancy and Lake County Forest Preserve District in Illinois.

**TOM JENSEN**  
**TROUTMAN SANDERS LLP, WASHINGTON, D.C.**

Tom Jensen is Of Counsel to the law firm Troutman Sanders LLP. Before joining the firm, Tom served as associate director for natural resources on the White House Council of Environmental Quality, executive director of the Grand Canyon National Trust and majority counsel on the Senate Committee on Energy and Natural Resources. He received his law degree from Northwestern School of Law, Lewis and Clark College, and in 1995, received the law school's first Distinguished Environmental Law Graduate award. His undergraduate degree is from the University of Southern California. Tom serves on the board and executive committee of the University of Wyoming's Institute for Environment and Natural Resources, is a trustee of the Natural Heritage Institute, and member of the U.S. Supreme Court, Oregon and Washington, D.C. bar associations.

**PAUL JOHNSON**  
**IOWA DEPARTMENT OF NATURAL RESOURCES, DES MOINES, IOWA**

Paul Johnson was appointed director of the Iowa Department of Natural Resources on January 15, 1999. He previously served as chief conservationist of USDA's Natural Resource Conservation Service and state representative for District 31 in the Iowa Legislature. Two of his significant environmental accomplishments include helping to author Iowa's landmark Groundwater Protection Act and being a major force behind the state's Resource Enhancement and Protection Act. Paul is a graduate of the University of Michigan, with bachelor's and master's degrees in forestry. He has served in the Peace Corps in Ghana and has been a member of numerous agricultural and conservation boards, including two 3-year terms on the National Academy of Sciences Board on Agriculture.

**RICHARD KNIGHT**  
**COLORADO STATE UNIVERSITY, FORT COLLINS, COLORADO**

Rick Knight is a professor of wildlife conservation at Colorado State University. He received graduate degrees from the University of Washington and University of Wisconsin-Madison. While at Wisconsin, he was awarded an Aldo Leopold Fellowship and conducted his research at the Leopold's farm, living in the Shack. He is a governor for the Society of Conservation Biology and sits on boards for the Center of the American West and Natural Resources Law Center, both at the University of Colorado. He was selected by the Ecological Society of America for the first cohort of Aldo Leopold Leadership Fellows. Along with writing more than 90 peer-reviewed journal articles and 35 book chapters, Rick has coedited: "Wildlife and Recreationists" (1995, Island Press), "A New Century for Natural Resources Management" (1995, Island Press), "Stewardship Across Boundaries" (1998, Island Press), "The Essential Aldo Leopold" (1999, University of Wisconsin Press) and "Forest Fragmentation in the Southern Rocky Mountains" (in press, University Press of Colorado).

**JOHN "RICK" LEMON**  
**U.S. FISH AND WILDLIFE SERVICE, SHEPHERDSTOWN, WEST VIRGINIA**

Rick Lemon is the Director of the U.S. Fish and Wildlife Service's National Conservation Training Center. He has been involved in the planning, design, construction, staffing and course development for NCTC since 1990 and has directed its operation since its opening in 1997. Previously, Rick oversaw endangered species, wetland and environmental contaminants programs in the eight-state Minneapolis Region. He also worked in land acquisition and education programs in Federal Aid in the Denver and Portland Regional Offices. He began his career in the Service in Fish Hatcheries at two field offices in Colorado and Utah. Prior to the Service, Rick worked for three years in the Peace Corps in Central Africa as a fish culture extension agent, a volunteer leader and, finally, Director of Training.

**ESTELLA LEOPOLD**  
**ALDO LEOPOLD FOUNDATION, INC., BARABOO, WISCONSIN**

Estella Leopold, youngest daughter of Aldo Leopold, is professor of botany and past director of the Quaternary Research Center at the University of Washington. Dr. Leopold was elected to the National Academy of Sciences and American Academy of Arts and Sciences. Her research and publication interests focus on paleoecology, forest history and environmental quality. Leopold studies fossil pollen and seeds to reconstruct ancient vegetation and climate in Washington, Alaska and China.

**NINA LEOPOLD BRADLEY**  
**ALDO LEOPOLD FOUNDATION, INC., BARABOO, WISCONSIN**

Nina Leopold Bradley, eldest daughter of Aldo Leopold, has undertaken ecological research throughout her life, established two family planning clinics, and currently lectures widely on Leopold and the land ethic. Nina and her husband Charles have directed research and ecological restoration at the Leopold Memorial Reserve since 1978. She received an honorary doctorate degree in environmental sciences from the University of Wisconsin and has received many awards, including the Wilderness Society's Bob Marshall Award in 1995.

**WILLIAM MEADOWS**  
**THE WILDERNESS SOCIETY, WASHINGTON, D.C.**

Bill Meadows has been president of The Wilderness Society since December 1996. Prior to that, he served as director of the centennial campaign for the Sierra Club, where he provided oversight for a \$92 million fundraising campaign. Bill has a long history in environmental work, beginning with Earth Day in 1970. A Tennessee native, he served there for many years as a leader within the state- and local-level Sierra Club, was on the board of the Tennessee Environmental Council, and was founder and board member of the Environmental Action Fund, a state lobbying foundation. He serves on the boards of the League of Conservation Voters and the Wilderness Project, and is a steering committee member for the White-Cloud Council and Bio-diversity Project.

**CURT MEINE**  
**INTERNATIONAL CRANE FOUNDATION, BARABOO, WISCONSIN**

Curt Meine is a conservation biologist, writer and historian based at the International Crane Foundation in Wisconsin. He is author of the biography "Aldo Leopold: His Life and Work" (1988), editor of the collection "Wallace Stegner and the Continental Vision: Essays on Literature, History, and Landscape" (1997), and coeditor of "The Essential Aldo Leopold: Quotations and Commentaries" (1999). Curt also is a member of the Crane Specialist Group of the World Conservation Union (IUCN) and coauthored, with George Archibald, "The Cranes: Status Survey and Conservation Action Plan" (1996). He serves on the board of governors of the Society for Conservation Biology and on editorial boards of both *Environmental Ethics* and *Conservation Biology*.



**DAVID W. ORR**  
**OBERLIN COLLEGE, OBERLIN, OHIO**

David Orr is professor and chair of the Environmental Studies Program at Oberlin College. He has a bachelor's degree from Westminster College, a master's degree from Michigan State University and a doctorate in International Relations from the University of Pennsylvania. David was awarded a National Conservation Achievement Award by the National Wildlife Federation in 1993, a Lyndhurst Prize in 1992 by the Lyndhurst Foundation, the Benton Box award from Clemson University in 1995 and an honorary doctorate in humane letters from Arkansas College in 1990. He has been distinguished scholar in residence at both Ball State University and Westminster College. He is author and coeditor of many books and more than 90 articles, education editor of *Conservation Biology* and member of the editorial advisory board for *Orion Nature Quarterly*. David also is a trustee of the Educational Foundation of America, The Annenburg Rural Challenge and the JED Fund.

**RUSS SEWELL**  
**PHEASANTS FOREVER AND LEOPOLD EDUCATION PROJECT, ST. PAUL, MINNESOTA**

Russ Sewell began working for Pheasants Forever in 1989 as a regional biologist. He has been vice-president of education since 1991. In 1992, he also became director of the Leopold Education Project and has been conducting workshops for educators across the country. LEP is a unique land ethics critical-thinking based curriculum that uses Leopold's writings as a springboard for conservation learning. Russ also currently chairs The Wildlife Society's Public Conservation Education and Extension Working Group. His diverse employment background includes work in teaching and administration for college programs, and wildlife research and management for universities and federal agencies. He received a bachelor's degree from the University of Minnesota-Duluth and a master's degree from South Dakota State University, where he studied the flora and fauna colonization of restored prairie wetlands.

**ROBERT STANTON**  
**NATIONAL PARK SERVICE, WASHINGTON, D.C.**

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